



## **SmartAX MA5600T/MA5603T/MA5608T Multi-service Access Module**

# **Hardware Description**

**Issue**     **24**  
**Date**      **2018-07-30**

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# About This Document

## Intended Audience





This document describes the hardware used in the MA5600T/MA5603T/MA5608T, including the cabinet, subrack, chassis, board, cable, and electromechanical device.


This document is intended for:

- Network planning engineers
- Hardware installation engineers
- Installation and commissioning engineers
- Field maintenance engineers
- Data configuration engineers
- System maintenance engineers

## Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 <b>NOTICE</b>	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
 <b>NOTE</b>	<p>Calls attention to important information, best practices and tips.</p> <p>NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.</p>

## Update History

Updates between document issues are cumulative. Therefore, the latest document issue contains all updates made in previous issues.

### Updates in Issue 24 (2018-07-30)

Based on issue 23 (2018-04-27), the document is updated as follows:

Position	Description
<b>3.2 Mapping Between Boards and Software Versions</b>	Updated the description of the card support version.

### Updates in Issue 23 (2018-04-27)

Based on issue 22 (2017-12-29), the document is updated as follows:

Position	Description
<b>3.8.1 Upstream Interface Boards Comparison</b>	Updated the description of the upstream interface boards comparison.

### Updates in Issue 22 (2017-12-29)

Based on issue 21 (2017-09-30), the document is updated as follows:

Position	Description
<b>3 Board</b>	Added the <b>3.8.7 H802GICK Board Description</b> and <b>3.23.3 H806VPEF Board Description</b> .
<b>5 Cable</b>	Added the <b>5.1.4 AC Power Cable (Device)</b> .

## Updates in Issue 21 (2017-09-30)

Based on issue 20 (2017-04-24), the document is updated as follows:

Position	Description
<b>3 Board</b>	Added the <b>3.8.13 H801X2CK Board Description</b> and <b>3.19.8 H80DCSPE Board Description</b> .

Included the V800R018C10 updates.

## Updates in Issue 20 (2017-04-24)

Based on issue 19 (2016-10-30), the document is updated as follows:

Position	Description
<b>3 Board</b>	Added the <b>3.8.12 H802X2CS Board Description</b> and <b>3.22.23 H80DSDPM Board Description</b> .

Included the V800R018C00 updates.

## Updates in Issue 19 (2016-10-30)

Based on issue 18 (2016-07-30), the document is updated as follows:

Position	Description
<b>3 Board</b>	Added the <b>3.22.8 H80BVDMF Board Description</b> .
<b>5.9 Local Maintenance and Environment Monitoring Combo Cable</b>	Updated the cable connector and pin assignments.

## Updates in Issue 18 (2016-07-30)

Based on issue 17 (2016-04-29), the document is updated as follows:

Position	Description
<b>3 Board</b>	Added the <b>3.22.11 H80DSDMM Board Description</b> , <b>3.20.6 H80BASP Board Description</b> and <b>3.20.7 H80CASP Board Description</b> .
<b>3.2 Mapping Between Boards and Software Versions</b>	Updated the description of the card support version.

Position	Description
<a href="#">3.3 Power Consumption and Maximum Frame Size of Boards</a>	Added the note for the power consumption of the board.

Included the V800R017C00 updates.

## Updates in Issue 17 (2016-04-29)

Based on issue 16 (2015-09-30), the document is updated as follows:

Position	Description
<a href="#">3 Board</a>	Added the <a href="#">3.20.6 H80BASP Board Description</a> , <a href="#">3.20.7 H80CASP Board Description</a> and <a href="#">3.22.11 H80SDMM Board Description</a> .
<a href="#">3.2 Mapping Between Boards and Software Versions</a>	Optimized the description of the card support version.

## Updates in Issue 16 (2015-09-30)

Based on issue 15 (2015-07-28), the document is updated as follows:

Position	Description
<a href="#">3.1.2 Board Dimensions</a>	Added the dimension of MPWE board.
<a href="#">3.7.3 H801MCUD1 Board Description</a>	Added the pin assignment of the BITS/TOD port of H801MCUD1 board.
<a href="#">2.3.3 Configuration</a>	MA5600T IEC Service Subrack supports the H802MABH backplane.
<a href="#">2.6.7 Power Distribution Principle</a>	Added the MPWE board.
<a href="#">5.4.2 120-ohm Clock Cable</a>	Added the pin assignment of the 120-ohm Clock Cable.

## Updates in Issue 15 (2015-07-28)

Based on issue 14 (2015-04-30), the document is updated as follows:

Position	Description
<b>3 Board</b>	The ETSI service subrack supports a new backplane H803MABC.
<b>3.6.1 SCU Boards Comparison</b>	The GE/10GE upstream ports of the H801SCUH and H801SCUV boards support automatic switching for remote software commissioning using GE upstream transmission.

Included the V800R016C00SPC100 updates.

### Updates in Issue 14 (2015-04-30)

Based on issue 13 (2015-03-30), the document is updated as follows:

Position	Description
<b>3 Board</b>	Added the <b>3.21.15 H807ADPE Board Description</b> , <b>3.21.14 H807ADPD Board Description</b> , <b>3.21.16 H807ADPM Board Description</b> , <b>3.22.21 H80DVCPE Board Description</b> , <b>3.22.20 H80DVCPD Board Description</b> , <b>3.22.22 H80DVCPM Board Description</b> , <b>3.19.7 H80DCCPE Board Description</b> , and <b>3.14.2 H801TOPB Board Description</b> .

Included the V800R016C00 updates.

### Updates in Issue 13 (2015-03-30)

Based on issue 12 (2015-01-19), the document is updated as follows:

Position	Description
<b>3.8 Upstream Interface Board (GIU)</b> <b>3.9 Universal Interface Board (GPIO)</b>	Updated the description of the upstream interface board and universal interface board.
<b>3 Board</b>	Added the <b>3.22.14 H80AVCPD Board Description</b> and <b>3.22.15 H80AVCPM Board Description</b> .

### Updates in Issue 12 (2015-01-19)

Based on issue 11 (2014-11-25), the document is updated as follows:

Position	Description
<b>3.2 Mapping Between Boards and Software Versions</b>	<ul style="list-style-type: none"><li>● Modified the H801GICF replacement relationship.</li><li>● Modified the software version supported by the H806CCPE board.</li></ul>

Included the V800R015C10SPC100 updates.

## Updates in Issue 11 (2014-11-25)

Based on issue 10 (2014-07-30), the document is updated as follows:

Position	Description
<b>3 Board</b>	Added the <b>3.6.3 H802SCUB Board Description, 3.11.3 H801MPWE Board Description, 3.19.4 H806CAME Board Description.</b>
<b>3.4 Board Configuration(MA5600T/MA5603T)</b>	Modified the H80BADPE and H80BVDPE boards supported by the H801SCUF control board.

Included the V800R015C10 updates.

## Updates in Issue 10 (2014-07-30)

Based on issue 09 (2014-04-30), the document is updated as follows:

Position	Description
<b>3 Board</b>	Added the <b>3.6.6 H801SCUK Board Description.</b>
<b>1 Cabinet</b>	Optimized the description of cabinets.
<b>3 Board</b>	Optimized the description of boards, including panel appearance and LED status.

Included the V800R015C00SPC100 updates.

## Updates in Issue 09 (2014-04-30)

Based on issue 08 (2013-12-18), the document is updated as follows:



Position	Description
<b>3 Board</b>	Added the boards: <b>3.15.6 H807GPBH Board Description, 3.15.8 H805GPFD Board Description, 3.19.6 H806CCPE Board Description, 3.22.16 H806VCPE Board Description, 3.23.4 H806VPGA Board Description, 3.16.3 H801XGBD Board Description.</b>
<b>4 Optical and Electrical Module</b>	Added the <b>4.6 FE/GE Adaptive Optical Module.</b> Added an one-channel one-fiber bi-directional FE optical module in <b>4.5 FE Optical Module.</b>
<b>3.3 Power Consumption and Maximum Frame Size of Boards</b>	The power consumption and maximum frame size of boards are all introduced in <b>3.3 Power Consumption and Maximum Frame Size of Boards.</b> Parameter MTU is modified to Maximum Frame Size. Parameter Maximum Frame Size indicates the maximum frame transmission capability of a board.
<b>3.6 Control Board (SCU) 3.7 Control Board (MCU)</b>	Optimized the LED status description of control boards.
<b>3.21 ADSL2+ Service Board 3.22 VDSL2 Service Board 3.24 SHDSL Service Board</b>	Added the DC block in the working principle figures of xDSL boards.

Included the V800R015C00 updates.

## Updates in Issue 08 (2013-12-18)

Based on issue 07 (2013-11-15), the document is updated as follows:

Position	Description
<b>3.5 Board Configuration(MA5608T)</b>	Added the H802GPBD, H805VDRD boards in <b>3.5 Board Configuration(MA5608T).</b>
<b>3.2 Mapping Between Boards and Software Versions</b>	The <b>Out of Production</b> information is replaced by <b>Life Cycle Status</b> information in <b>3.2 Mapping Between Boards and Software Versions.</b> The out of production information in the board description is deleted. Please query the information in <b>3.2 Mapping Between Boards and Software Versions.</b>

## Updates in Issue 07 (2013-11-15)

Based on issue 06 (2013-10-30), the document is updated as follows:

Position	Description
<a href="#">3.4 Board Configuration(MA5600T/MA5603T)</a>	Modified the mapping between some boards and versions.
<ul style="list-style-type: none"><li>● <a href="#">3.21.1 32-Channel ADSL2+ Service Board Comparison</a></li><li>● <a href="#">3.22.1 24-Channel VDSL2 Service Board Comparison</a></li><li>● <a href="#">3.22.3 64-Channel VDSL2 Service Board Comparison</a></li></ul>	Optimized the description.

### Updates in Issue 06 (2013-10-30)

Based on issue 05 (2013-09-18), the document is updated as follows:

Position	Description
<a href="#">3.12.1 Comparison Between SPU Service Processing Boards</a>	Added the comparison of SPU boards.
<a href="#">4.3 GE Optical/Electrical Module</a>	Optimized the description.

### Updates in Issue 05 (2013-09-18)

Based on issue 04 (2013-09-12), the document is updated as follows:

Position	Description
<a href="#">3 Board</a>	Added the boards: H801CKMD, <a href="#">3.17.4 H802OPGE Board Description</a> , <a href="#">3.12.4 H801SPUC Board Description</a> , <a href="#">3.24.5 H802SHGM Board Description</a> .

Included the V800R013C10 updates.

### Updates in Issue 04 (2013-09-12)

Based on issue 03 (2013-07-25), the document is updated as follows:

Position	Description
<a href="#">3.2 Mapping Between Boards and Software Versions</a>	Modified the mapping between some boards and versions.
Appearance of subracks	Deleted the notes below the figures of subrack appearance.

## Updates in Issue 03 (2013-07-25)

Based on issue 02 (2013-04-30), the document is updated as follows:

Included the V800R013C00SPC100 updates.

Position	Description
Appearance of cabinets	Added appearance description of cabinets.
Parameters of subracks and chassis	Modified the power consumption of service subracks and chassis.
Work temperature of boards	Added the description of work temperature of boards.
<a href="#">3.23.2 H806VPEA Board Description</a>	Added the power consumption of H806VPEA board.
<a href="#">3.2 Mapping Between Boards and Software Versions</a>	Modified the mapping between some boards and versions.
<a href="#">3 Board</a>	<ul style="list-style-type: none"> <li>● Optimize the comparison of similar boards. Some software specifications are added.</li> <li>● Optimize the board description. The figures of external connections and internal principle are combined as one figure.</li> </ul>

## Updates in Issue 02 (2013-04-30)

Based on issue 01 (2013-03-15), the document is updated as follows:

Position	Description
<a href="#">3 Board</a>	Added the boards: <a href="#">3.15.9 H801GPMD Board Description</a> , <a href="#">3.7.4 H801MCUE Board Description</a> , <a href="#">3.11.2 H801MPWD Board Description</a> , <a href="#">3.6.10 H801SCUV Board Description</a> , <a href="#">3.12.5 H801SPUF Board Description</a> , <a href="#">3.23.2 H806VPEA Board Description</a> .

Included the V800R013C00 updates.

## Updates in Issue 01 (2013-03-15)

This issue is the first official release.

The hardware description of V800R008C01 and later versions is integrated to facilitate query of hardware support and implementation for various versions.

**3.2 Mapping Between Boards and Software Versions** is added to describe Software Versions Supported by This Board, Out of Product or Not, and Substitution Relationship.

Included the V800R011C00SPC102 updates.

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# 1 Cabinet

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## About This Chapter

### [1.1 N63E-22 Cabinet Description](#)

The N63E-22 cabinet complies with the ETSI standard. This topic provides the appearance, and specification of the N63E-22 cabinet, and describes the configuration, cable holes, ESD jack, air filter, external cable connections, and ventilation of the cabinet.

### [1.2 N66E-18 Cabinet Description](#)

The N66E-18 dual-standard cabinet complies with both the ETSI standard and the IEC standard. This topic covers the appearance, configuration, cable holes, ESD jack, air filter, external cable connections, ventilation, and specification of the N66E-18 dual-standard cabinet.

### [1.3 N66E-22 Cabinet Description](#)

The N66E-22 cabinet complies with the IEC standard. This topic provides the appearance, and specification of the N66E-22 cabinet, and describes the configuration, cable holes, ESD jack, air filter, external cable connections, and ventilation of the cabinet.

## 1.1 N63E-22 Cabinet Description

The N63E-22 cabinet complies with the ETSI standard. This topic provides the appearance, and specification of the N63E-22 cabinet, and describes the configuration, cable holes, ESD jack, air filter, external cable connections, and ventilation of the cabinet.

### 1.1.1 Appearance

This topic provides the appearance of the N63E-22 cabinet.

The N63E-22 cabinet is an ETSI 300 mm middle standing pillar cabinet of NC purple grey.

The N63E-22 cabinet houses the MA5600T ETSI subrack and MA5608T chassis.

The N63E-22 cabinet consists of the rack (main frame), a front door, a rear panel fixed by screws, and side panels on the left and right sides.

The door of the N63E-22 cabinet is removable and the top of the cabinet has the grounding point.

**Figure 1-1** Appearance of the N63E-22 cabinet

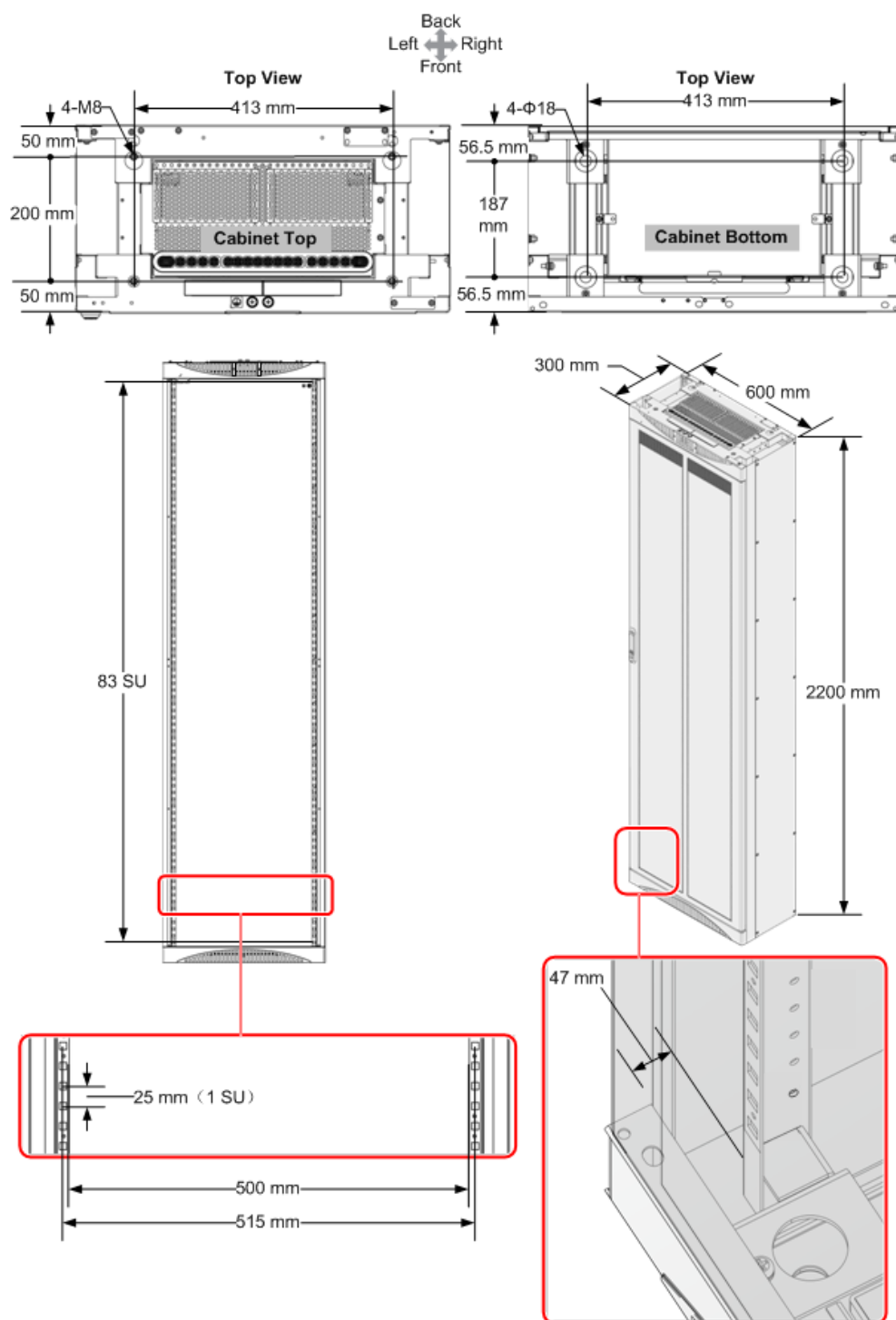


## 1.1.2 Physical Specifications

This topic provides the dimensions, weight and power specifications of the N63E-22 cabinet.

## Dimensions and Weight

Figure 1-2 Dimensions of the N63E-22 cabinet



**Table 1-1** Dimensions and weight of the N63E-22 cabinet

Specification	Value
Standard compliance	ETSI cabinet (21-inch): ETSI 300 119-3
Weight (empty cabinet)	45 kg
Dimensions (W x D x H)	600 mm x 300 mm x 2200 mm
Installation dimensions of the cabinet top	Installation interface <ul style="list-style-type: none"><li>● Hole positions: 413 mm x 200 mm (W x D)</li><li>● Nut specifications: four M8 nuts</li></ul>
Installation dimensions of the cabinet bottom	Installation interface <ul style="list-style-type: none"><li>● Hole positions: 413 mm x 187 mm (W x D)</li><li>● Bolt specifications: four M12 expansion bolts</li></ul>
Distance between mounting bar holes	1 SU = 25 mm. (SU: System Unit.)
Available space	83 SU
Angle opening width	500 mm
Fixing centres	515 mm
Distance between the installation surface of the mounting bar and the inner side of the air filter on the cabinet front door	47 mm

 **NOTE**

For cabinet power specifications, see relevant PDB specification requirements.

### 1.1.3 Configuration (MA5600T ETSI subrack)

The N63E-22 cabinet adopts the DC power. This topic describes the MA5600T ETSI subrack configuration of the N63E-22 cabinet, and lists the maximum number of subscribers of the cabinet.

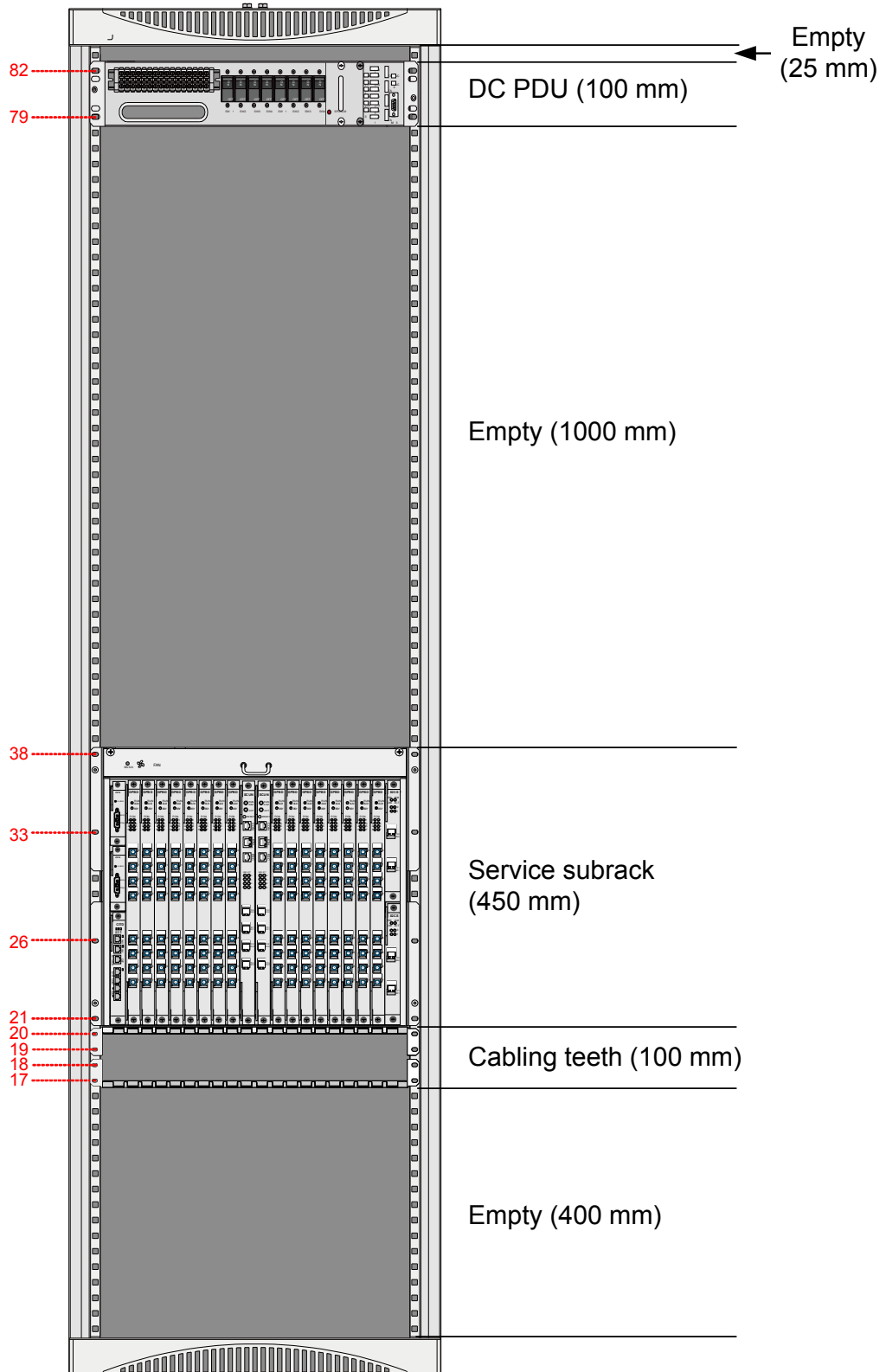
The N63E-22 cabinet has the following configurations:

- Configuration of one ETSI subrack
- Configuration of two ETSI subracks
- Configuration of one ETSI subrack and one SPL subrack
- Configuration of the OLT and OLS



## Configuration of One ETSI Subrack

Figure 1-3 Configuration of the N63E-22 cabinet installed with one ETSI subrack

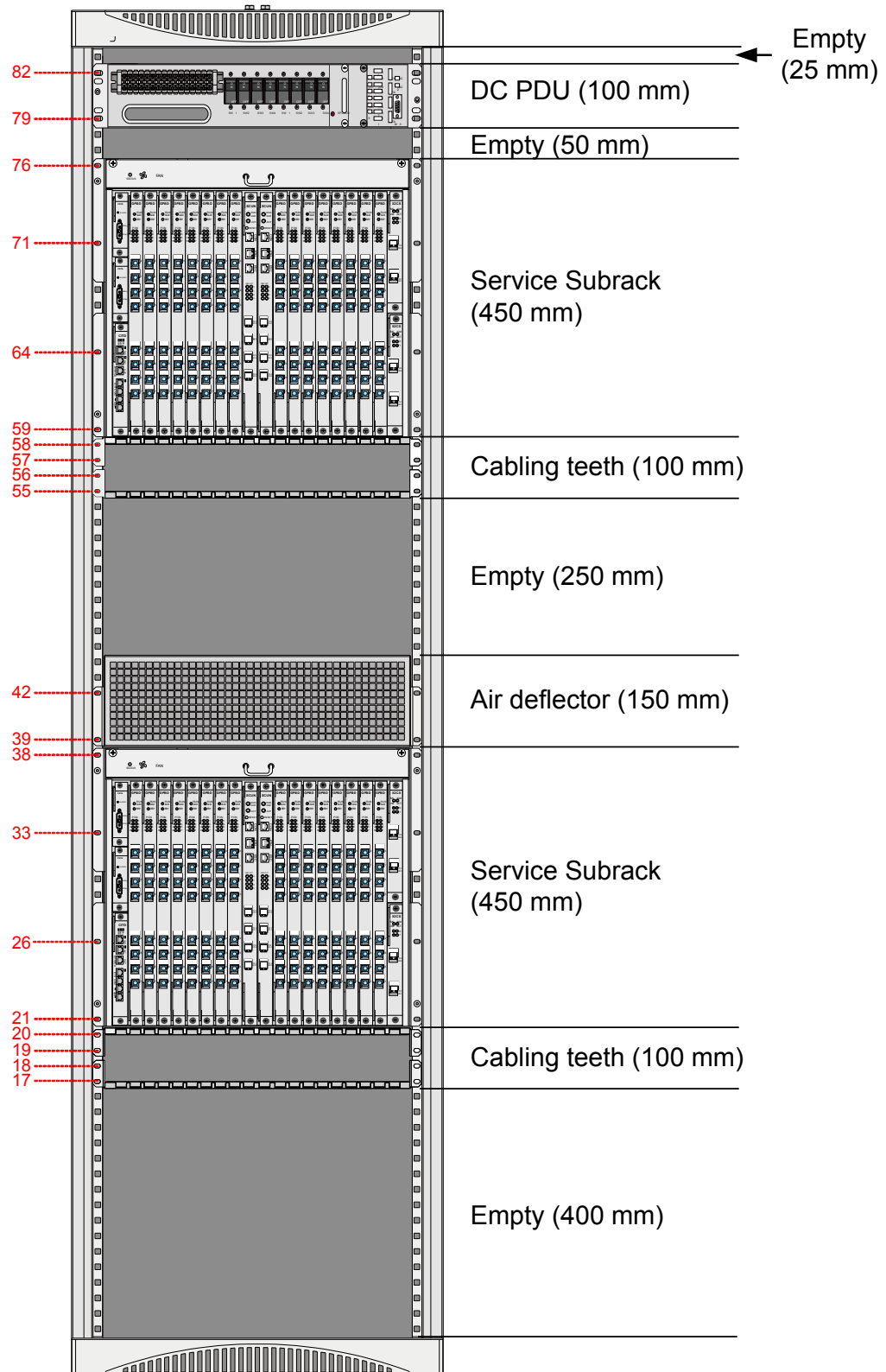


 **NOTE**

- The filled holes are for floating nuts to fasten subracks.
- For the I-type or C3-type PDU, use installation holes 79 and 82; for the B-type PDU, use installation holes 79 and 81.
- The cabinet can also support an additional service subrack. In this case, it is recommended that the air deflector (if not configured) be configured.

## Configuration of Two ETSI Subracks

Figure 1-4 Configuration of the N63E-22 cabinet installed with two ETSI subracks

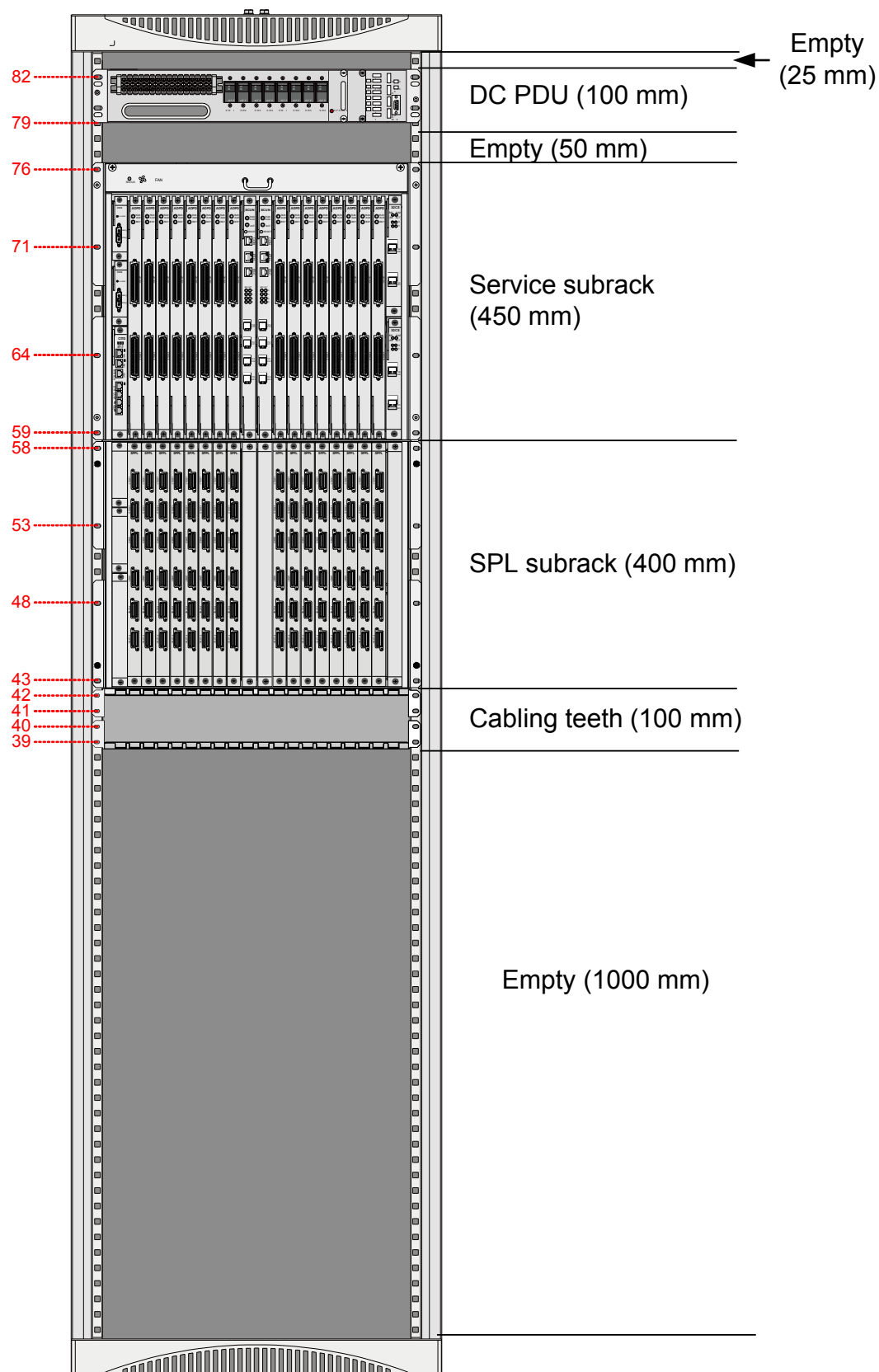


 **NOTE**

- The filled holes are for floating nuts to fasten subracks.
- For the I-type or C3-type PDU, use installation holes 79 and 82; for the B-type PDU, use installation holes 79 and 81.
- The air deflector is included in the standard configuration.

## Configuration of One ETSI Subrack and One SPL Subrack

**Figure 1-5** Configuration of the N63E-22 cabinet installed with one ETSI subrack and one SPL subrack



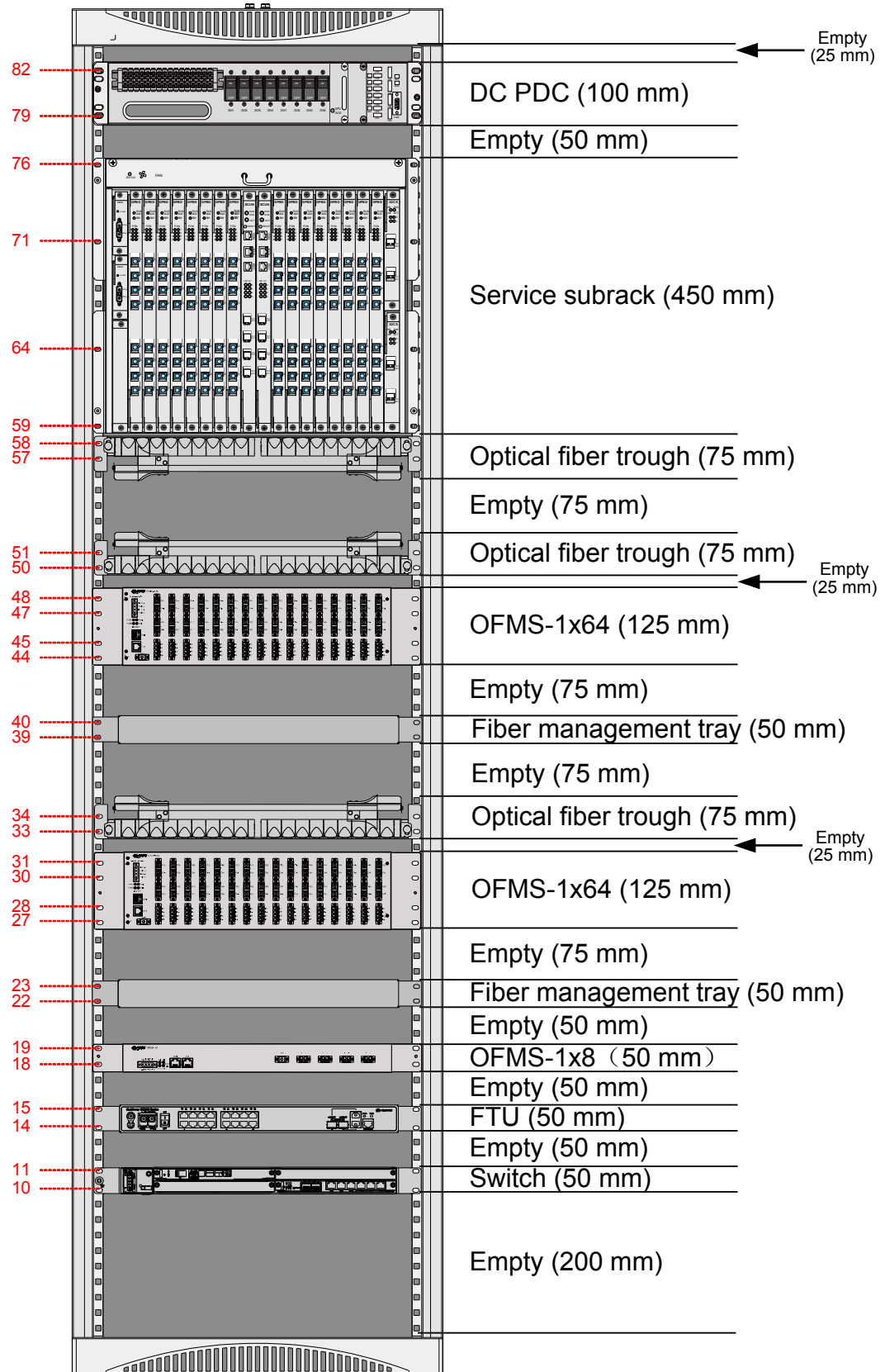
 **NOTE**

- The filled holes are for floating nuts to fasten subracks.
- For the I-type or C3-type PDU, use installation holes 79 and 82; for the B-type PDU, use installation holes 79 and 81.

## Configuration of the OLT and OLS



Figure 1-6 N63E-22 cabinet installed with the OLT and OLS



 **NOTE**

- The filled holes are for floating nuts to fasten subracks.
- For the I-type or C3-type PDU, use installation holes 79 and 82; for the B-type PDU, use installation holes 79 and 81.
- The OFMS-1\*8, FTU, and S2318 shown in [Figure 1-6](#) are required when the cabinet functions as a master cabinet and they need to be installed onsite. For details, see *iManager N2510 Line Assurance System*.

## 1.1.4 Configuration (MA5608T)

The N63E-22 cabinet adopts the DC power. This topic describes the MA5608T configuration of the N63E-22 cabinet, and lists the maximum number of chassis of the cabinet.

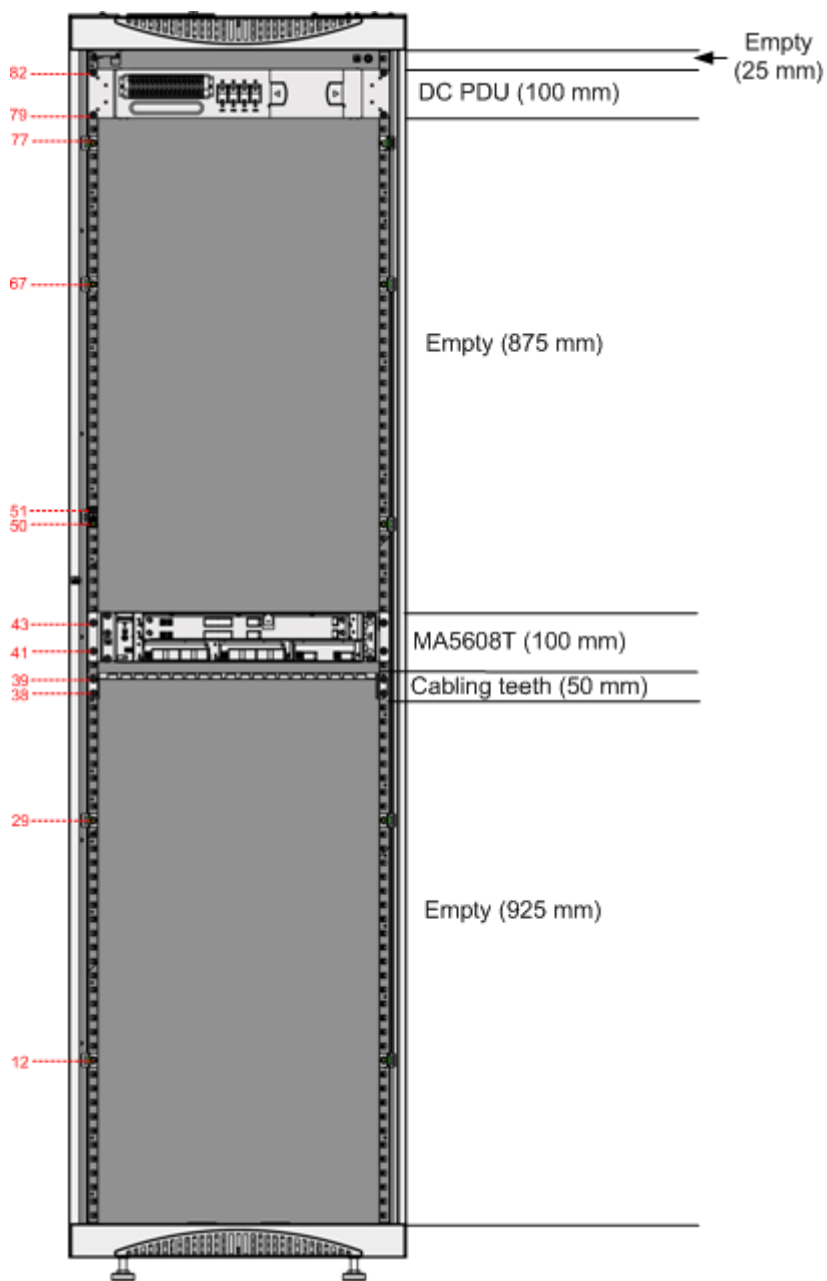
The N63E-22 cabinet has the following configurations:

- Configuration of one MA5608T
- Configuration of two MA5608T

### Configuration of One MA5608T

[Figure 1-7](#) shows the configuration of the N63E-22 cabinet installed with one MA5608T.

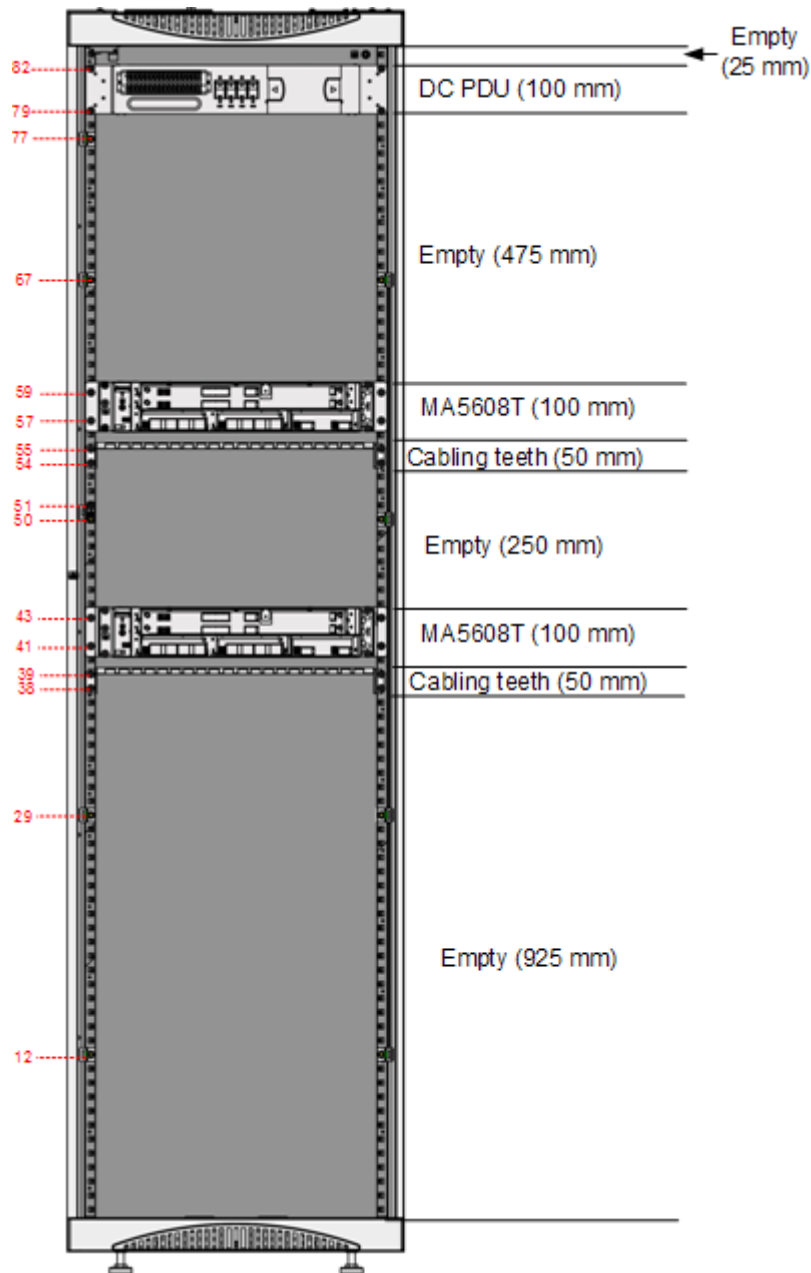
**Figure 1-7** Configuration of the N63E-22 cabinet installed with one MA5608T



## Configuration of Two MA5608T

**Figure 1-8** shows the configuration of the N63E-22 cabinet installed with two MA5608T.

**Figure 1-8** Configuration of the N63E-22 cabinet installed with two MA5608T



**NOTE**

- In **Figure 1-8** and **Figure 1-8**, the filled holes are for floating nuts to fasten subracks.
- For the I-type or C3-type PDU, use installation holes 79 and 82; for the B-type PDU, use installation holes 79 and 81.
- The cabinet can also support an additional service subrack. In this case, it is recommended that the air deflector (if not configured) be configured.

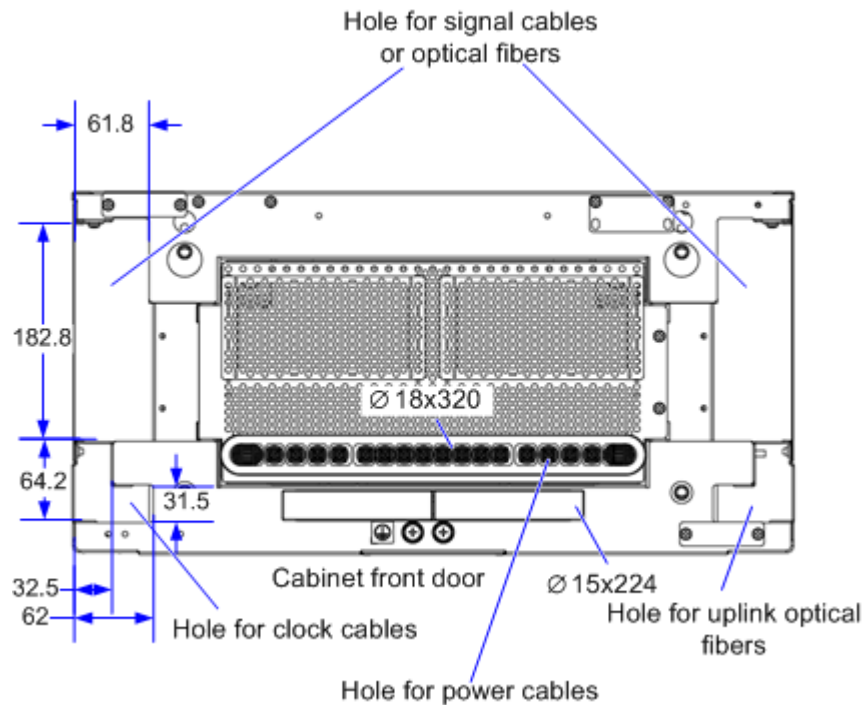
## 1.1.5 Cable Hole

The power cables and subscriber cables are led into the N63E-22 cabinet from the top and the bottom of the cabinet. This topic describes the positions of cable holes at the top and the bottom of the N63E-22 cabinet.

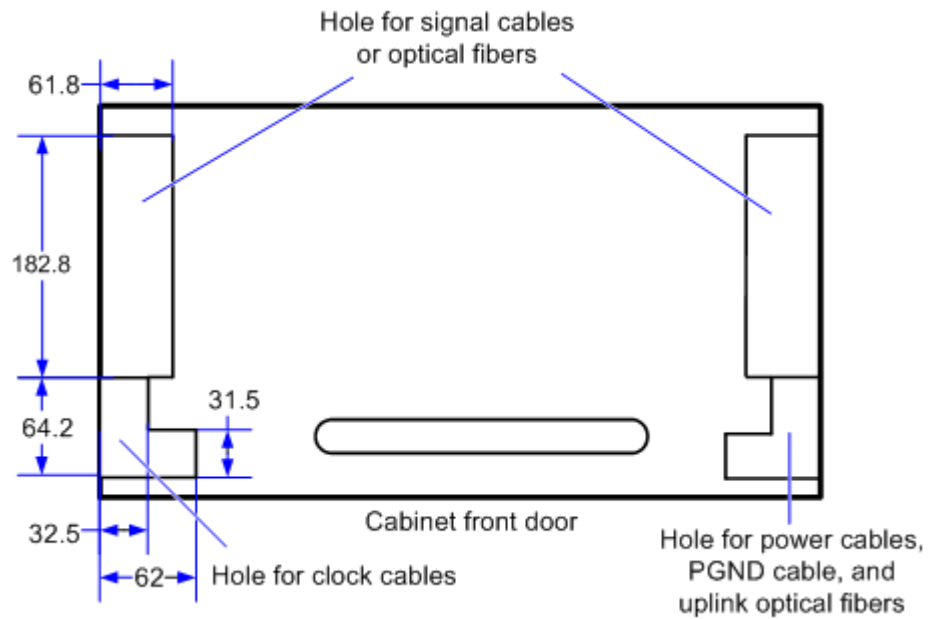
The cables of the N63E-22 cabinet can be routed in the overhead cabling mode or the underfloor cabling mode.

- In the overhead cabling mode, external cables are led into the cabinet through the top of the cabinet. **Figure 1-9** shows the positions of cable holes at the top of the cabinet.
- In the underfloor cabling mode, external cables are led into the cabinet through the bottom of the cabinet. **Figure 1-10** shows the positions of cable holes at the bottom of the cabinet.

**Figure 1-9** Cable holes at the top of the cabinet (top view)



**Figure 1-10** Cable holes at the bottom of the cabinet (top view)



**NOTE**

The unit for figures in this topic is mm, unless otherwise stated.

## 1.1.6 ESD Jack

The ESD jack of the N63E-22 cabinet is on the middle of the left mounting angle, which is used to connect the ESD wrist strap to prevent device damage caused by electrostatic discharge.

The position of the N63E-22 cabinet ESD jack, as shown in [Figure 1-11](#).

**Figure 1-11** ESD jack of the N63E-22 cabinet



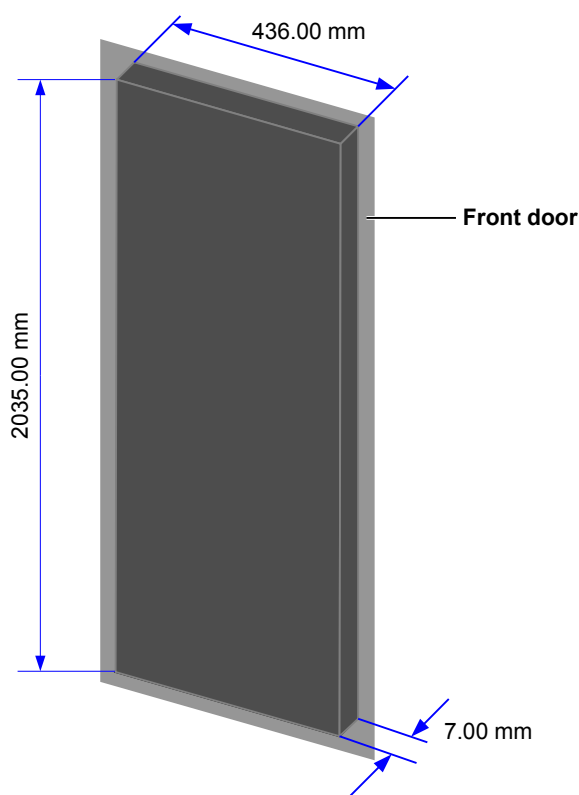
## 1.1.7 Air Filter

The air filters are installed on the inner side of the front door and at the bottom of the cabinet. This topic provides the appearance and dimensions of the air filters, and describes the material and function of the air filters.

### Appearance and Dimensions

**Figure 1-12** and **Table 1-2** lists the materials and dimensions of the air filter on the inner side of the front door of the N63E-22 cabinet.

**Figure 1-12** Dimensions of the air filter on the inner side of the front door of the N63E-22 cabinet

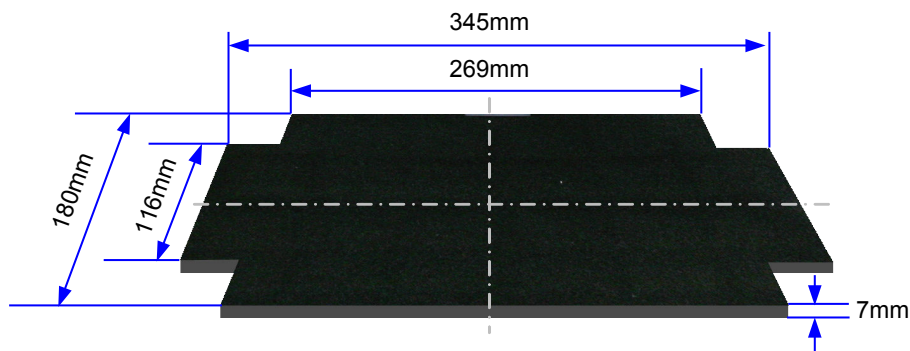


**Table 1-2** Material of the air filter on the inner side of the front door of the N63E-22 cabinet

Cabinet	Material
N63E-22	50PPI (50 sponge picks per inch) black sponge

**Figure 1-13** shows the air filter at the bottom of the N63E-22 cabinet.

**Figure 1-13** Appearance of the air filter at the bottom of the N63E-22 cabinet



**Table 1-3** lists the materials and dimensions of the air filter at the bottom of the N63E-22 cabinet.

**Table 1-3** Materials of the air filter at the bottom of the N63E-22 cabinet

Cabinet	Material
N63E-22	50PPI (50 sponge picks per inch) black sponge

## Function

The air filter on the inner side of the front door prevents dust from entering the cabinet.

During the ventilation, cool air enters the cabinet through the air intake vent at the bottom of the cabinet. The air filter at the bottom of the cabinet prevents dust from entering the cabinet.

## 1.1.8 Cable Manager

This topic describes the appearance and functions of the cable manager.

### Appearance

**Figure 1-14** shows the appearance of the cable manager.

**Figure 1-14** Appearance of the cable manager





## Functions

The cable manager is configured under the service subrack or SPL subrack.

The cable manager supports the following functions:

- The main function of the upper cable manager is to clearly separate cables of each slot from each other so that cables can be routed in order and cables in one slot do not affect the insertion or removal of the board in the neighboring slot.
- The main function of the lower cable manager is to bear optical fibers.

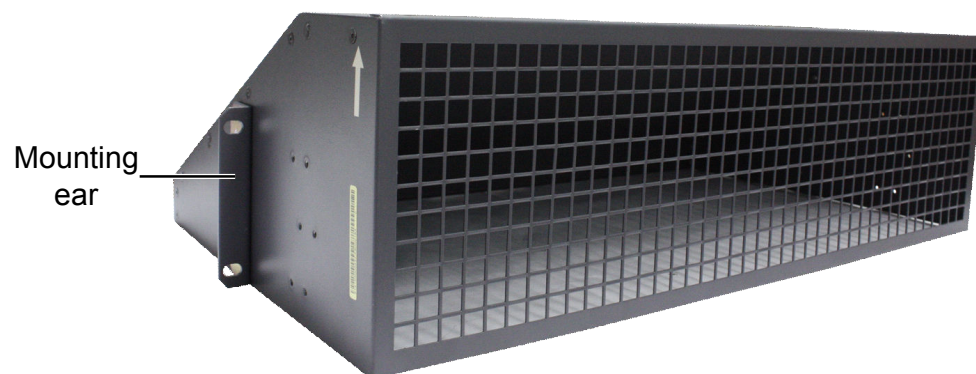
### 1.1.9 Air Deflector

This topic describes the appearance, specifications and function of the air deflector.

#### Appearance

**Figure 1-15** shows the appearance of the air deflector.

**Figure 1-15** Appearance of the air deflector



#### Specifications

**Table 1-4** lists the specifications of the air deflector.

**Table 1-4** Dimensions and weight of the air deflector

Item	Specification
Dimensions (W x D x H)	493.7 mm x 289.2 mm x 147.2 mm
Weight	2.2 kg

#### Function

The N63E-22 cabinet needs the air deflector when it installed with two ETSI subracks. The air baffle of the air deflector blocks the hot air from the lower service subrack and exhausts

the hot air out of the front of the air deflector. The N66E-18 cabinet need the air deflector too when it installed with two MA5600T. For details about the configuration, reference the [1.1.3 Configuration \(MA5600T ETSI subrack\)](#).

## 1.1.10 Grounding

This topic describes the grounding principle of the N63E-22 cabinet and the position of the ground point.



Connect the ground cables properly to guarantee protection against lightening and interference for the N63E-22 cabinet.

---

The power input end of the N63E-22 cabinet has a noise filter. The center ground of the noise filter connects to the cabinet, called the cabinet ground, that is, the protection ground. Ground the cabinet securely so that the influence electricity, leakage electricity can flow to the ground, improving the protection against electromagnetic interference.

Use a ground cable to connect the ground point of the cabinet to the ground bar of the telecommunications room or to the ground directly. It is recommended that the grounding resistance of the telecommunications room should be less than 10 ohms. Refer to the local standards to ground the cabinet.

The ground point of the cabinet is on the top of the cabinet, as shown in [Figure 1-16](#).

**Figure 1-16** Grounding of the N63E-22 cabinet



## 1.1.11 External Connections

This topic describes the external connections of the N63E-22 cabinet.

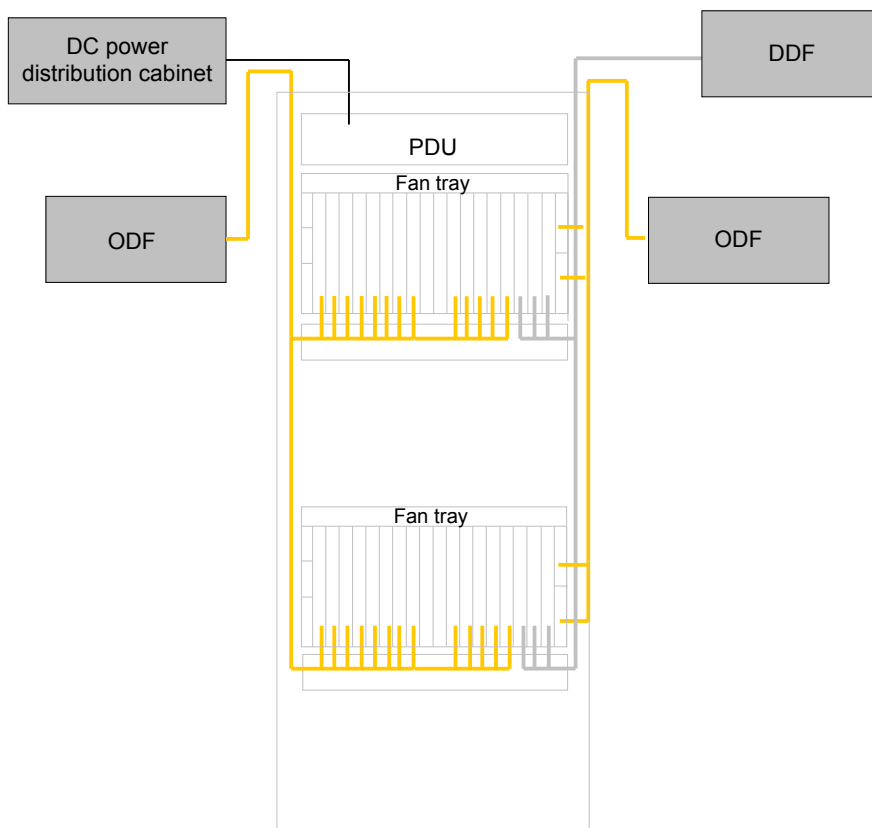
### NOTE

External cables are not used in the assembly and debugging of the integrated equipment, but are delivered to the customers and installed on site.

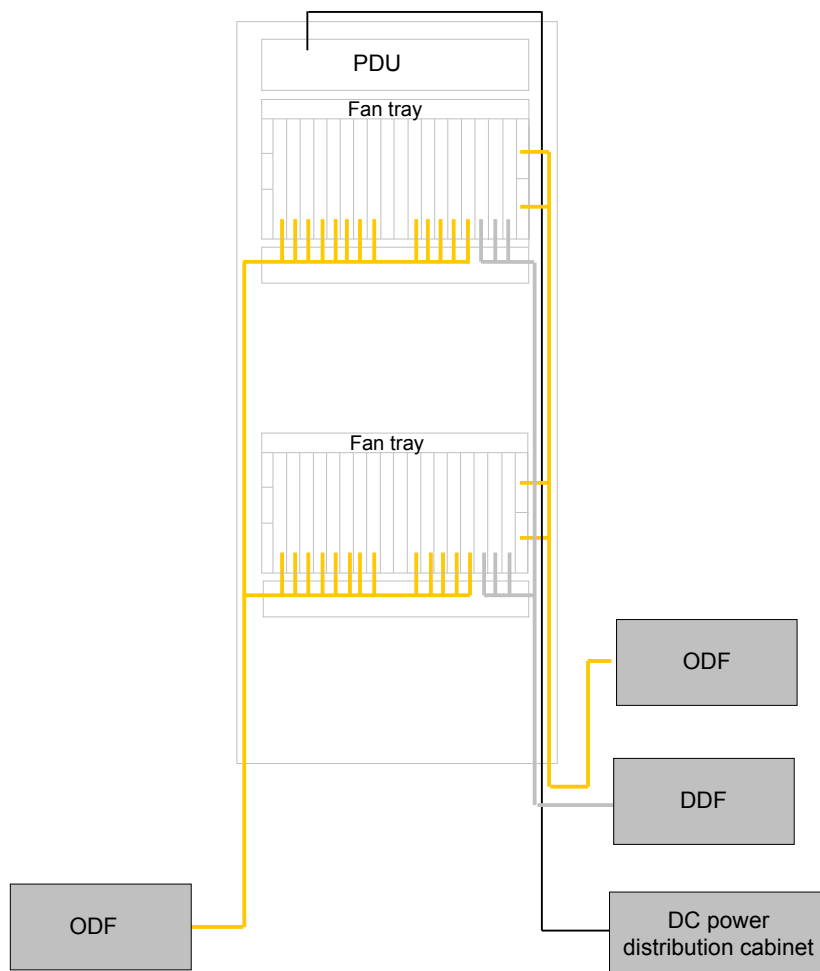
### External Connections of the N63E-22 Cabinet Installed with Two Service Subracks (PON)

**Figure 1-17** and **Figure 1-18** show the external connections of the N63E-22 cabinet installed with two service subracks.

**Figure 1-17** External connections of the cabinet installed with two service subracks (overhead cabling)



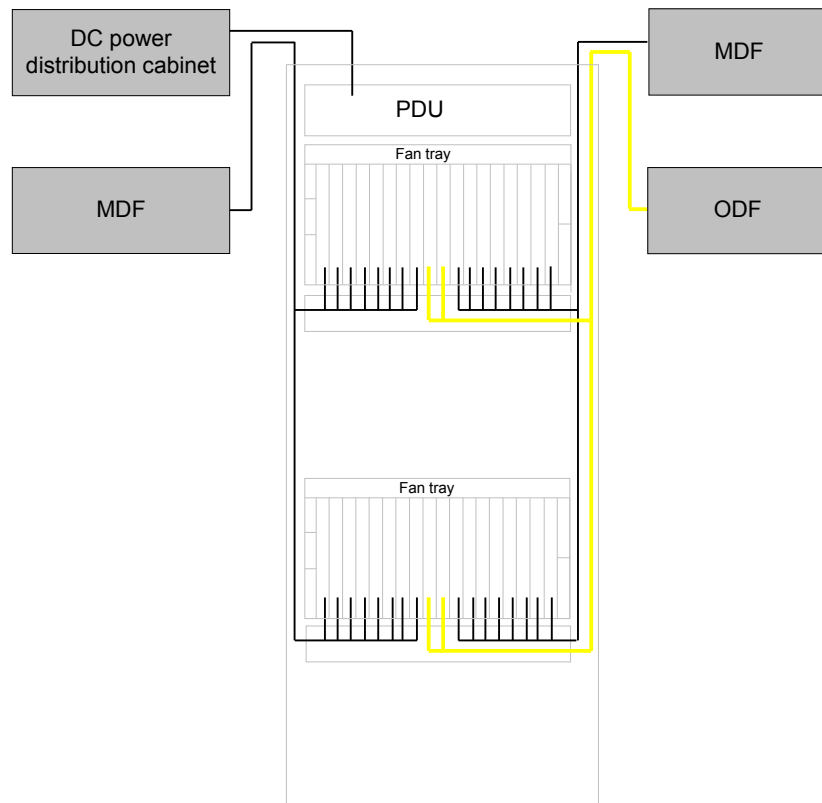
**Figure 1-18** External connections of the cabinet installed with two service subracks (underfloor cabling)



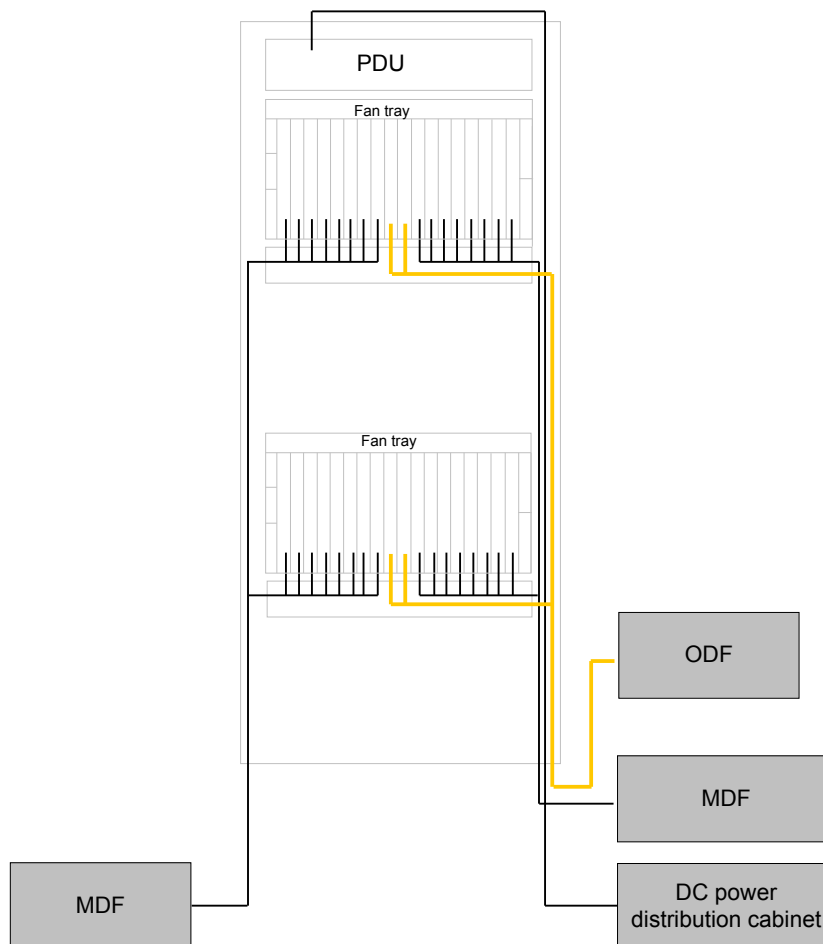
### External Connections of the N63E-22 Cabinet Installed with Two Service Subracks (xDSL)

**Figure 1-19** and **Figure 1-20** show the external connections of the N63E-22 cabinet installed with two service subracks.

**Figure 1-19** External connections of the cabinet installed with two service subracks (overhead cabling)



**Figure 1-20** External connections of the cabinet installed with two service subracks (underfloor cabling)



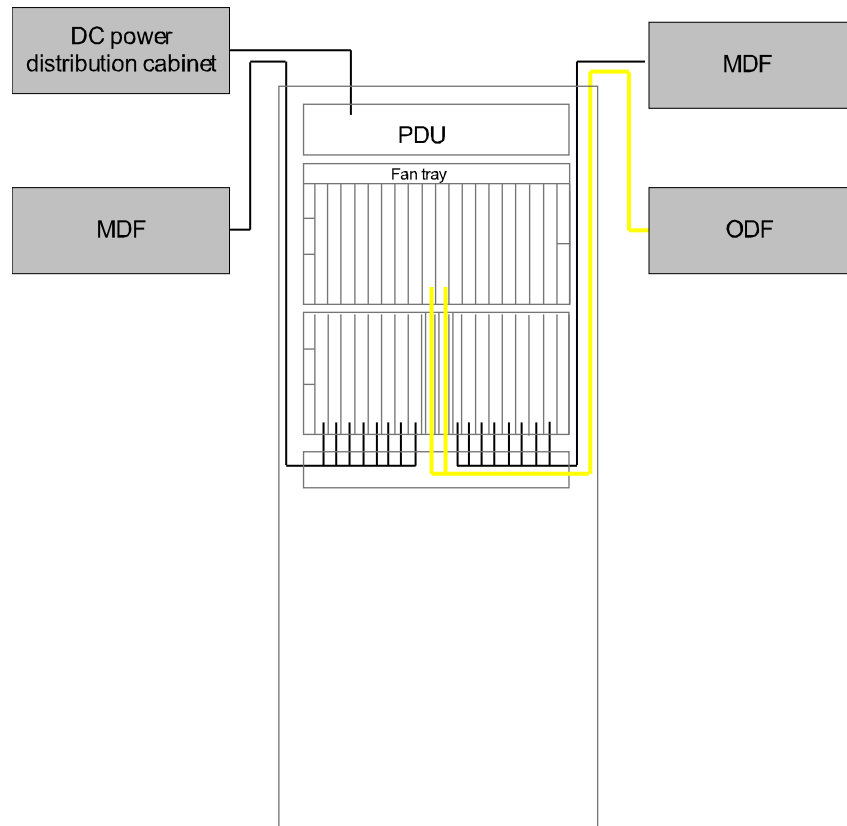
**NOTE**

- The GIU slot can be installed with the upstream optical interface board to provide upstream transmission or cascading over optical fibers. The upstream optical interface board is connected to the ODF through optical fibers.
- The GIU slot can be installed with the upstream electrical interface board to provide upstream transmission or cascading over the electrical port. The upstream electrical interface board is connected to the GE port of the upper layer device or cascading device through network cables.

## External Connections of the N63E-22 Cabinet Installed with One Service Subrack and One SPL Subrack (xDSL)

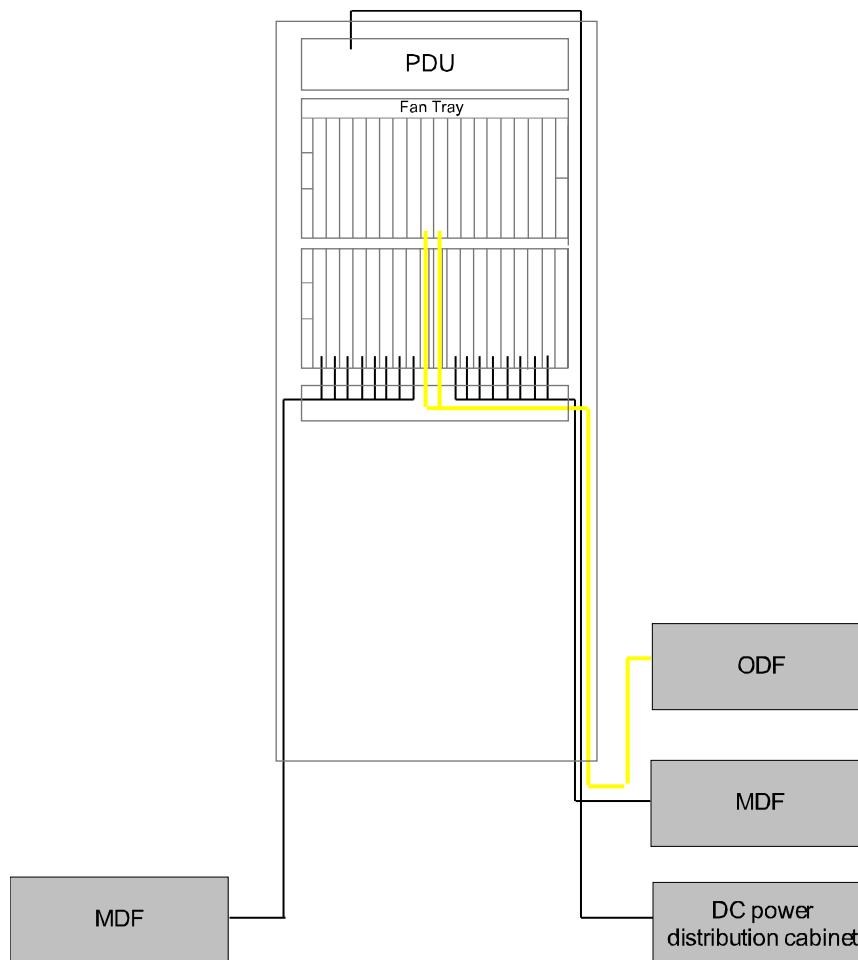
**Figure 1-21** and **Figure 1-22** show the external connections of the cabinet installed with one service subrack and one SPL subrack.

**Figure 1-21** External connections of the cabinet installed with one service subrack and one SPL subrack (overhead cabling)





**Figure 1-22** External connections of the cabinet installed with one service subrack and one SPL subrack (underfloor cabling)



**NOTE**

- The GIU slot can be installed with the upstream optical interface board to provide upstream transmission or cascading over optical fibers. The upstream optical interface board is connected to the ODF through optical fibers.
- The GIU slot can be installed with the upstream electrical interface board to provide upstream transmission or cascading over the electrical port. The upstream electrical interface board is connected to the GE port of the upper layer device or cascading device through network cables.

## 1.1.12 Heat Dissipation

This topic describes the ventilation of the N63E-22 cabinet.

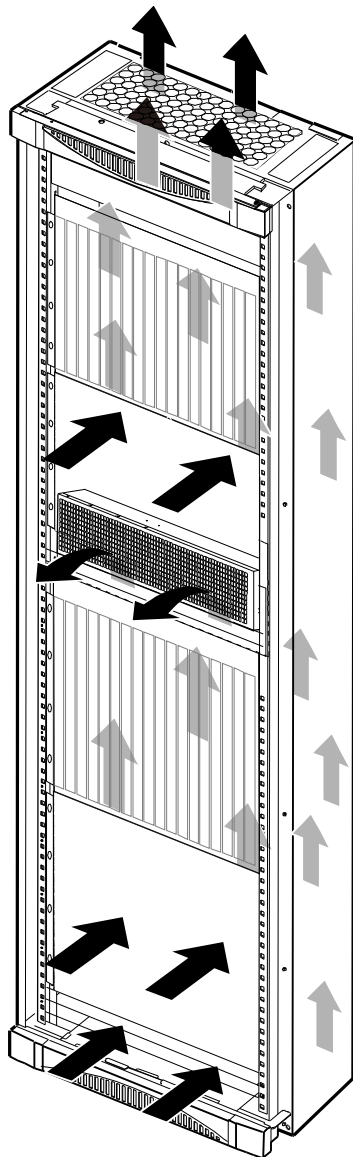
The N63E-22 cabinet has a fan tray at the top of the service subrack to exhaust hot air for heat dissipation.

**NOTE**

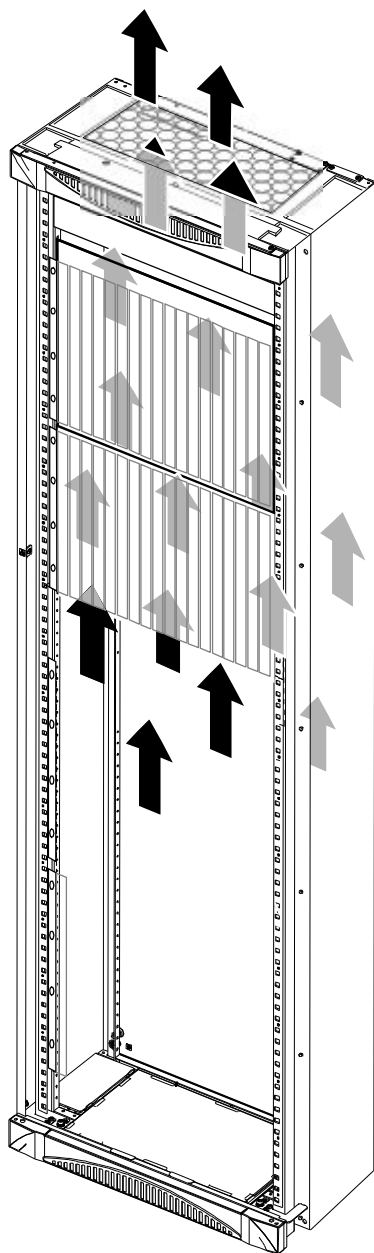
The following uses the MA5600T ETSI service subrack configured in the N63E-22 cabinet as an example to describe the ventilation principles. When the MA5608T chassis is configured in the N63E-22 cabinet, the air enters the cabinet from the left side and is exhausted from the right side.

The ventilation of the N63E-22 cabinet is as follows: Cool air enters the cabinet through the cable space at the bottom of the service subrack. The air is exhausted by the fans upward through the service subracks. The air exits from the top or from the air deflector of the cabinet, as shown in [Figure 1-23](#) and [Figure 1-24](#).

**Figure 1-23** Ventilation of the N63E-22 cabinet installed with two service subracks



**Figure 1-24** Ventilation of the N63E-22 cabinet installed with one service subrack and one SPL subrack



## 1.2 N66E-18 Cabinet Description

The N66E-18 dual-standard cabinet complies with both the ETSI standard and the IEC standard. This topic covers the appearance, configuration, cable holes, ESD jack, air filter, external cable connections, ventilation, and specification of the N66E-18 dual-standard cabinet.

## 1.2.1 Appearance

This topic provides the appearance of the N66E-18 dual-standard cabinet.

The N66E-18 cabinet is a dual-standard 600 mm cabinet of NC purple grey. One side complies with IEC and the other side complies with ETSI.

The N66E-18 cabinet houses the MA5600T ETSI/IEC subrack and MA5603T chassis.

The N66E-18 cabinet consists of the rack (main frame), a front door, a rear door, and side panels on the left and right sides.

Doors of the N66E-18 cabinet are removable and the top of the cabinet has the grounding point. All N66E-18 cabinets have the same keys for the front and rear doors.

**Figure 1-25** Appearance of the N66E-18 dual-standard cabinet

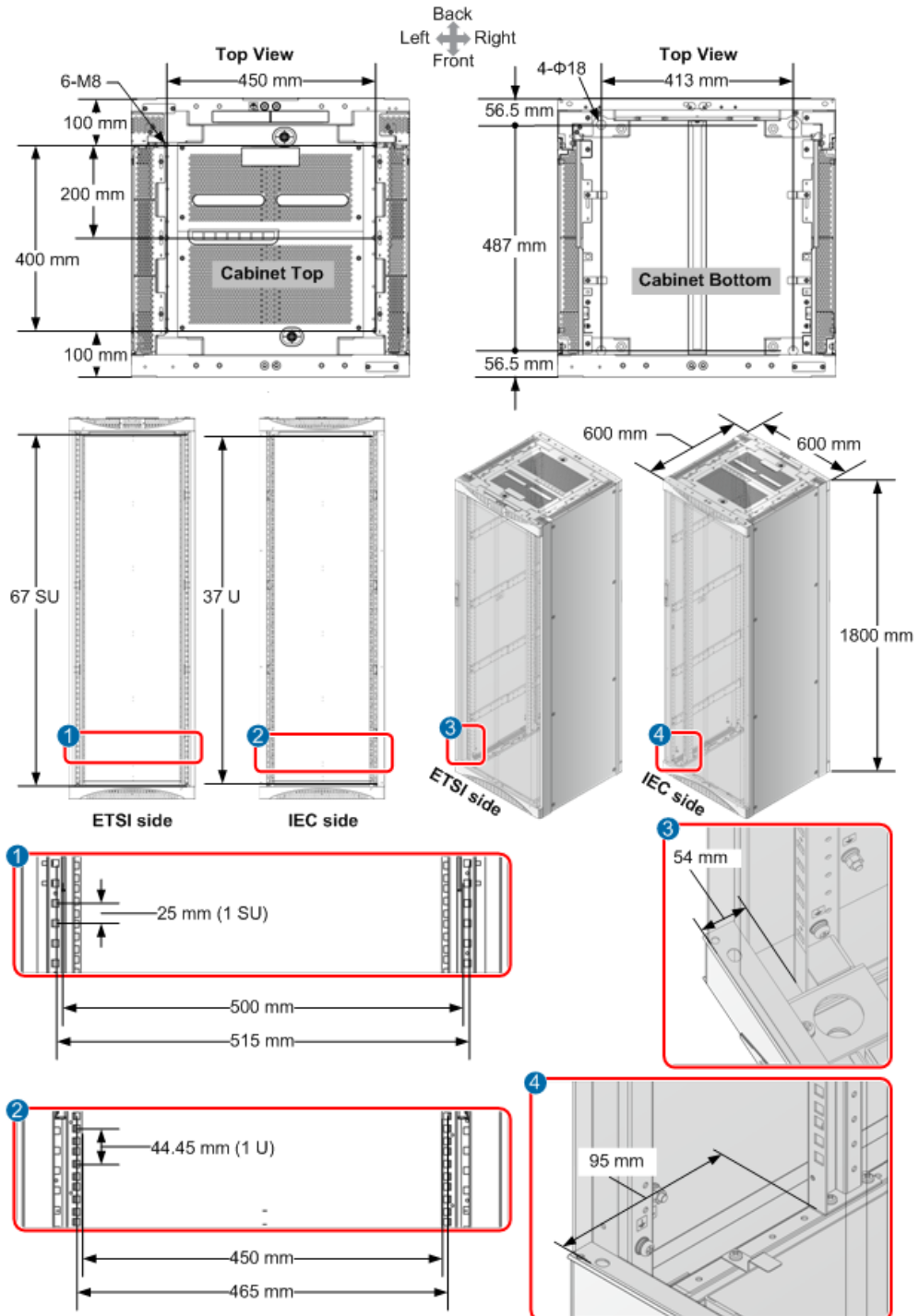


## 1.2.2 Physical Specifications

This topic provides the dimensions and weight of the N66E-18 dual-standard cabinet.

### Dimensions and Weight

Figure 1-26 Dimensions of the N66E-18 dual-standard cabinet



**Table 1-5** Dimensions and weight of the N66E-18 dual-standard cabinet

Specification	Value
Standard compliance	<ul style="list-style-type: none"> <li>● ETSI side (21-inch): ETSI 300 119-3</li> <li>● IEC side (19-inch): IEC 60297-3</li> </ul>
Weight (empty cabinet)	67.3 kg
Dimensions (W x D x H)	600 mm x 600 mm x 1800 mm
Installation dimensions of the cabinet top	Installation interface <ul style="list-style-type: none"> <li>● Hole positions: 450 mm x 400 mm (W x D)</li> <li>● Nut specifications: six M8 nuts</li> </ul>
Installation dimensions of the cabinet bottom	Installation interface <ul style="list-style-type: none"> <li>● Hole positions: 413 mm x 487 mm (W x D)</li> <li>● Bolt specifications: four M12 expansion bolts</li> </ul>
Distance between mounting bar holes	<ul style="list-style-type: none"> <li>● ETSI side: 1 SU = 25 mm</li> <li>● IEC side: 1 U = 44.45 mm</li> </ul>
Available space	<ul style="list-style-type: none"> <li>● ETSI side: 67 SU</li> <li>● IEC side: 37 U</li> </ul>
Angle opening width	<ul style="list-style-type: none"> <li>● ETSI side: 500 mm</li> <li>● IEC side: 450 mm</li> </ul>
Fixing centres	<ul style="list-style-type: none"> <li>● ETSI side: 515 mm</li> <li>● IEC side: 465 mm</li> </ul>
Distance between the installation surface of the mounting bar and the inner side of the cabinet door	<ul style="list-style-type: none"> <li>● ETSI side: 54 mm</li> <li>● IEC side: 95 mm</li> </ul>

 **NOTE**

For cabinet power specifications, see relevant PDB specification requirements.

### 1.2.3 Configuration (ETSI subrack)

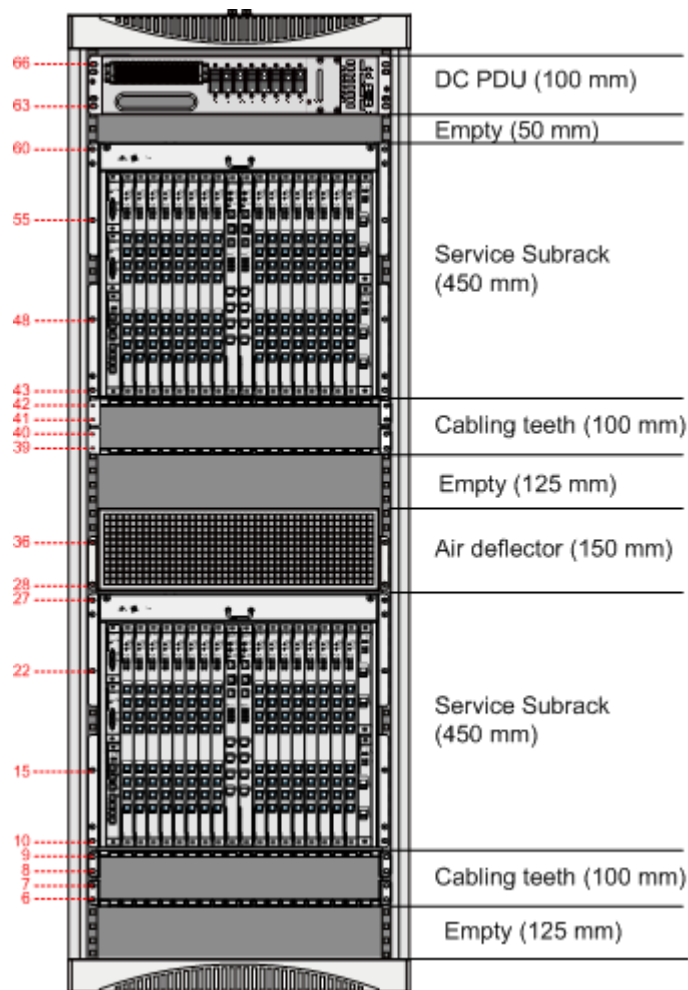
The N66E-18 dual-standard cabinet uses AC or DC power supply. This topic describes the configurations of MA5600T ETSI subracks in the cabinet.

 **NOTE**

The MA5600T ETSI subrack is installed on the ETSI side of the cabinet.

## DC-powered Cabinet with Two ETSI Subracks

Figure 1-27 Configuration of the N66E-18 cabinet installed with two ETSI subracks

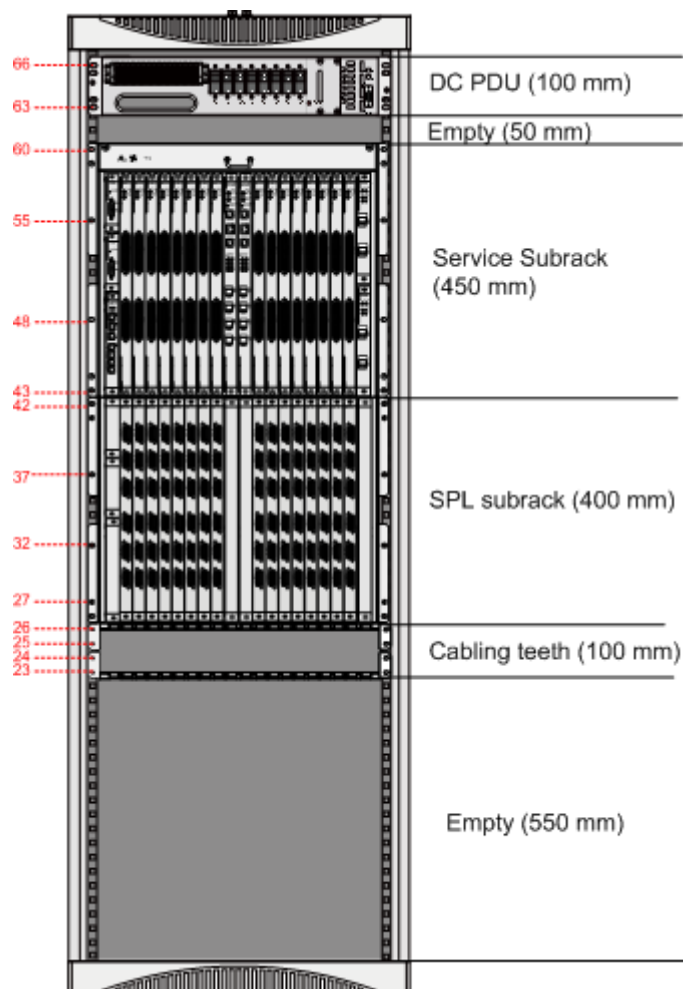


### NOTE

- In [Figure 1-27](#), the filled holes are for floating nuts to fasten subracks.
- The I-type PDU is used for the DC power supply.
- Cabinet installation against the wall or back-to-back cabinet installation is not supported.
- When high-density boards are configured, cables in some areas are close to the air exhaust vents of the ETSI subrack. In this case, to ensure smooth ventilation, no cabling is allowed at least 1 U space around the air exhaust vents.

## DC-powered Cabinet with One ETSI Subrack and One SPL Subrack

**Figure 1-28** Configuration of the N66E-18 cabinet installed with one ETSI subrack and one SPL subrack



### NOTE

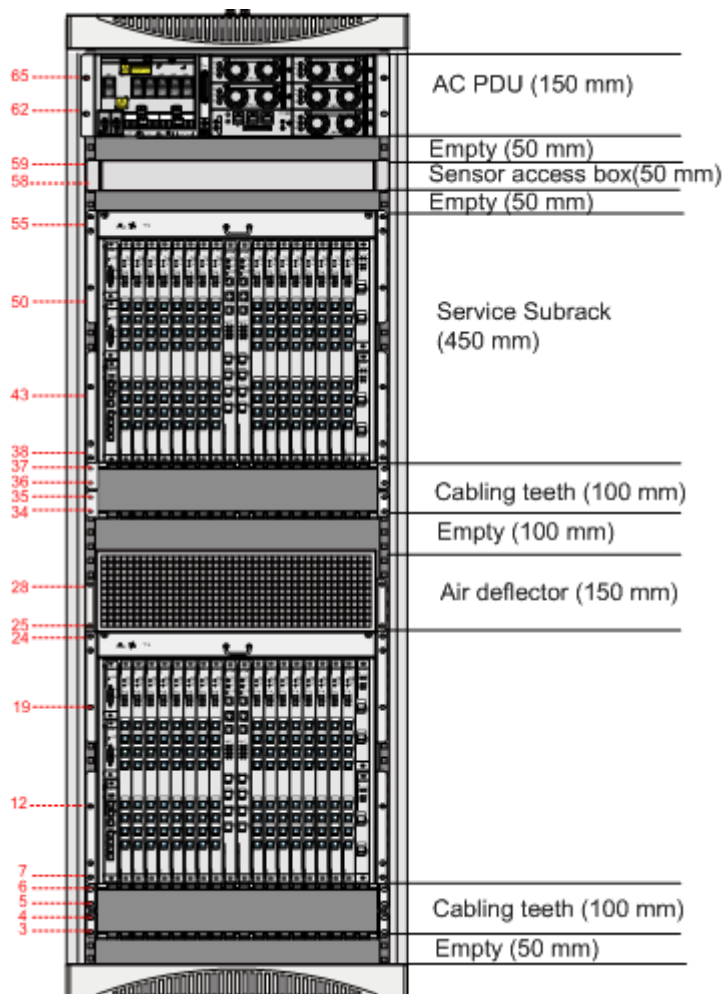
- In [Figure 1-28](#), the filled holes are for floating nuts to fasten subracks.
- The I-type PDU is used for the DC power supply.
- Cabinet installation against the wall or back-to-back cabinet installation is not supported.

## AC-powered Cabinet with Two ETSI Subracks

[Figure 1-29](#) shows the configuration of the N66E-18 cabinet installed with two ETSI subracks.



**Figure 1-29** Configuration of the N66E-18 cabinet installed with two ETSI subracks



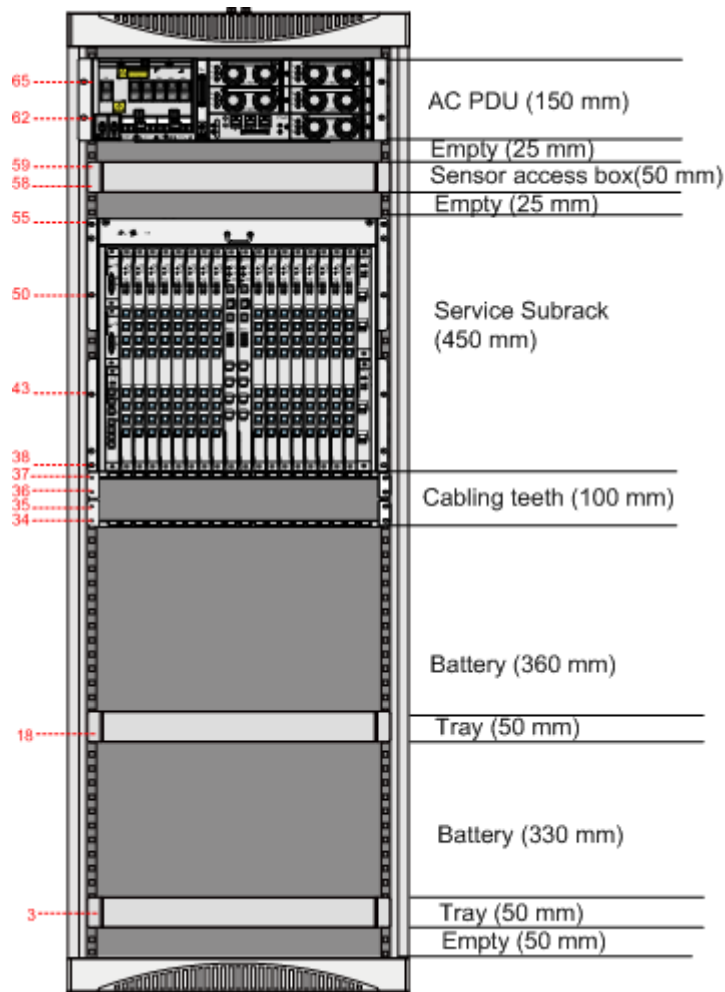
**NOTE**

- In **Figure 1-29**, the filled holes are for floating nuts to fasten subracks.
- The EPS75-4815A power supply provides only two 40 A inputs. Therefore, only one power board is allowed in each of the two ETSI subracks.
- In the range of 90 V AC to 175 V AC, the output current of the EPS75-4815AF power system decreases linearly, limited within a specified range. In areas with 110 V power supply, dual-live-wire input is recommended. When 110 V single-live-wire input is used, the output power of the EPS75-4815AF power system reduces to half (maximum: 1600 W) of that in 220 V. In this case, only one subrack is allowed in the cabinet.
- When high-density boards are configured, cables in some areas are close to the air exhaust vents of the ETSI subrack. In this case, to ensure smooth ventilation, no cabling is allowed at least 1 U space around the air exhaust vents.
- Cabinet installation against the wall or back-to-back cabinet installation is not supported.

### AC-powered Cabinet with One ETSI Subrack

**Figure 1-30** shows the configuration of the N66E-18 cabinet installed with one ETSI subrack.

**Figure 1-30** Configuration of the N66E-18 cabinet installed with one ETSI subrack



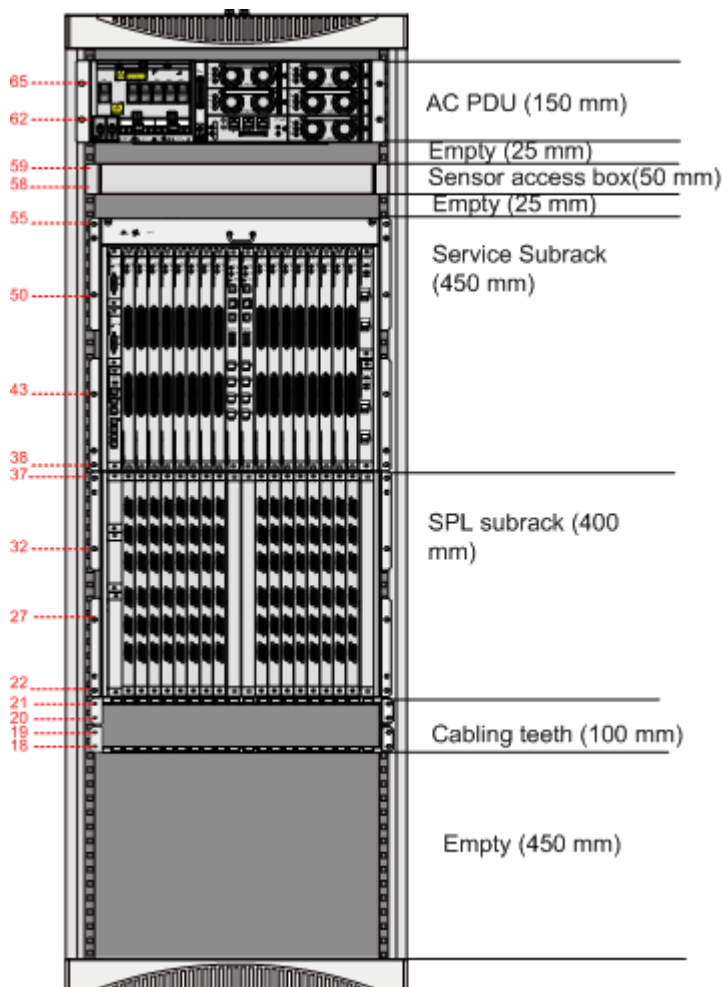
**NOTE**

- In [Figure 1-30](#), the filled holes are for floating nuts to fasten subracks.
- Two power cables are configured for the ETSI subrack by default.
- Only this configuration is able to provide the battery group, and at most 100 AH is supported.
- In the range of 90 V AC to 175 V AC, the output current of the EPS75-4815AF power system decreases linearly, limited within a specified range. In areas with 110 V power supply, dual-live-wire input is recommended. When 110 V single-live-wire input is used, the output power of the EPS75-4815AF power system reduces to half (maximum: 1600 W) of that in 220 V.
- Cabinet installation against the wall or back-to-back cabinet installation is not supported.

## AC-powered Cabinet with One ETSI Subrack and One SPL Subrack

[Figure 1-31](#) shows the configuration of the N66E-18 cabinet installed with one ETSI subrack and one SPL subrack.

**Figure 1-31** Configuration of the N66E-18 cabinet installed with one ETSI subrack and one SPL subrack



**NOTE**

- In **Figure 1-31**, the filled holes are for floating nuts to fasten subracks.
- Two power cables are configured for the ETSI subrack by default.
- Cabinet installation against the wall or back-to-back cabinet installation is not supported.

## 1.2.4 Configuration (MA5603T)

The N66E-18 dual-standard cabinet uses AC or DC power supply. This topic describes the configurations of MA5603T in the cabinet.

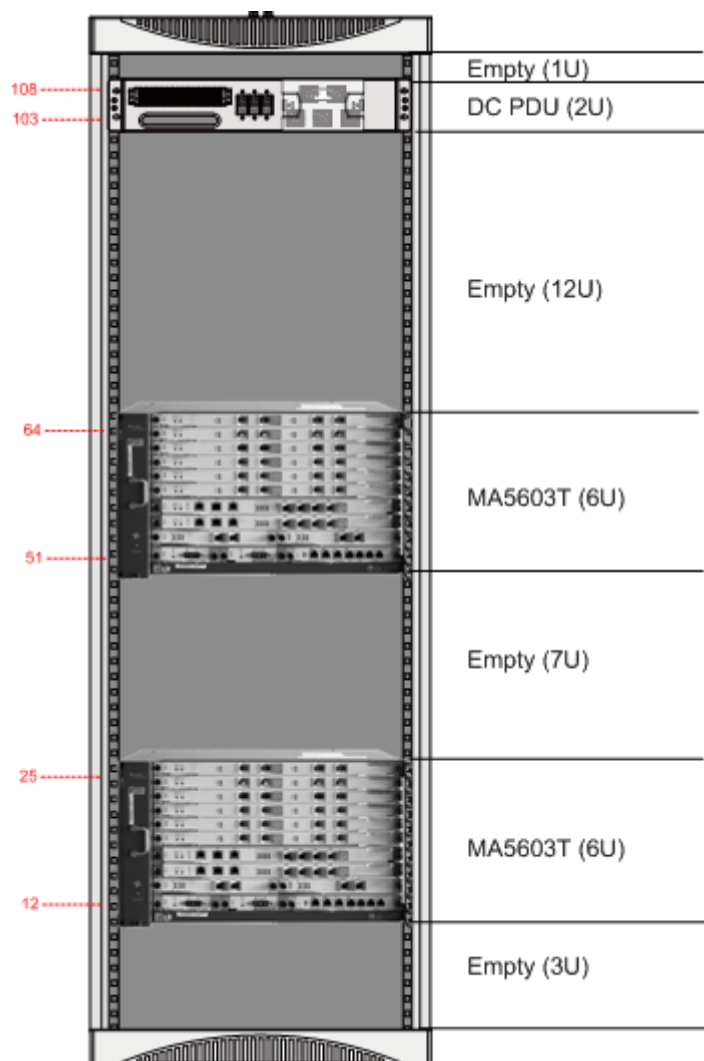
**NOTE**

the MA5603T chassis is installed on the IEC side of the cabinet.

### DC-powered Cabinet with Two MA5603T Chassis

**Figure 1-32** shows the configuration of the N66E-18 cabinet installed with two MA5603T chassis.

**Figure 1-32** Configuration of the N66E-18 cabinet installed with two MA5603T chassis



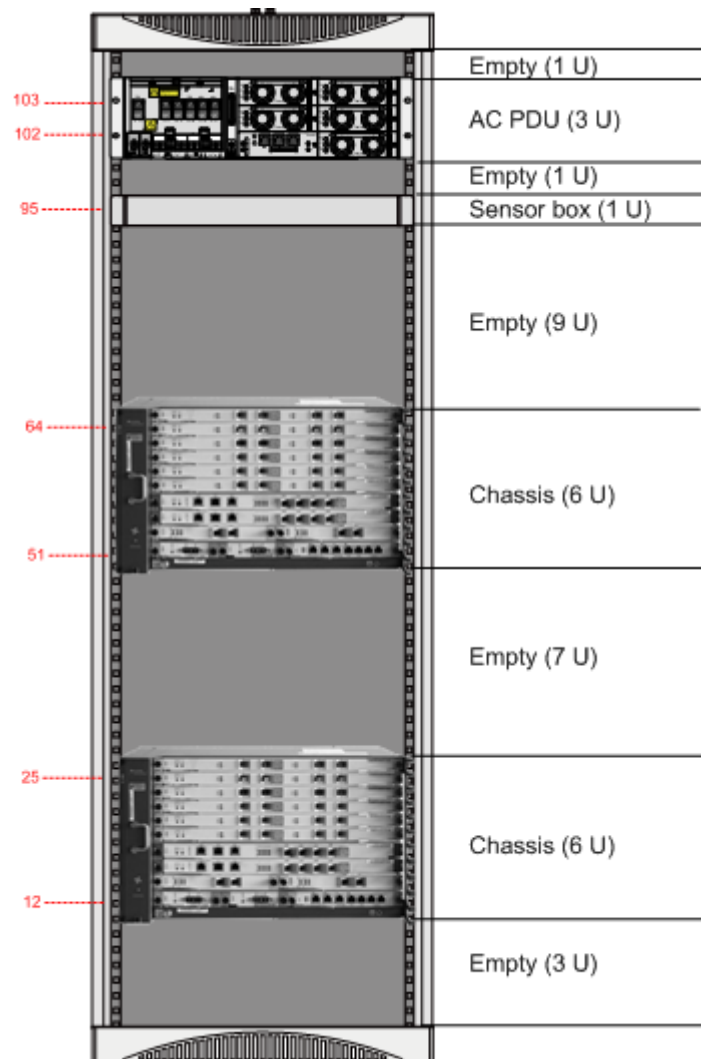
**NOTE**

- In [Figure 1-32](#), the filled holes are for floating nuts to fasten chassis.
- When all the service slots in the chassis are installed with the VDSL, combo, or PON boards, one chassis is allowed in the cabinet.
- Cabinet installation against the wall or back-to-back cabinet installation is not supported.

## AC-powered Cabinet with Two MA5603T Chassis

[Figure 1-33](#) shows the configuration of the N66E-18 cabinet installed with two MA5603T chassis.

**Figure 1-33** Configuration of the N66E-18 cabinet installed with two MA5603T chassis



**NOTE**

- In [Figure 1-33](#), the filled holes are for floating nuts to fasten chassis.
- When all the service slots in the chassis are installed with the VDSL, combo, or PON boards, one chassis is allowed in the cabinet.
- In the range of 90 V AC to 175 V AC, the output current of the EPS75-4815AF power system decreases linearly, limited within a specified range. In areas with 110 V power supply, dual-live-wire input is recommended. When 110 V single-live-wire input is used, the output power of the EPS75-4815AF power system reduces to half (maximum: 1600 W) of that in 220 V. In this case, only one chassis is allowed in the cabinet.
- Cabinet installation against the wall or back-to-back cabinet installation is not supported.

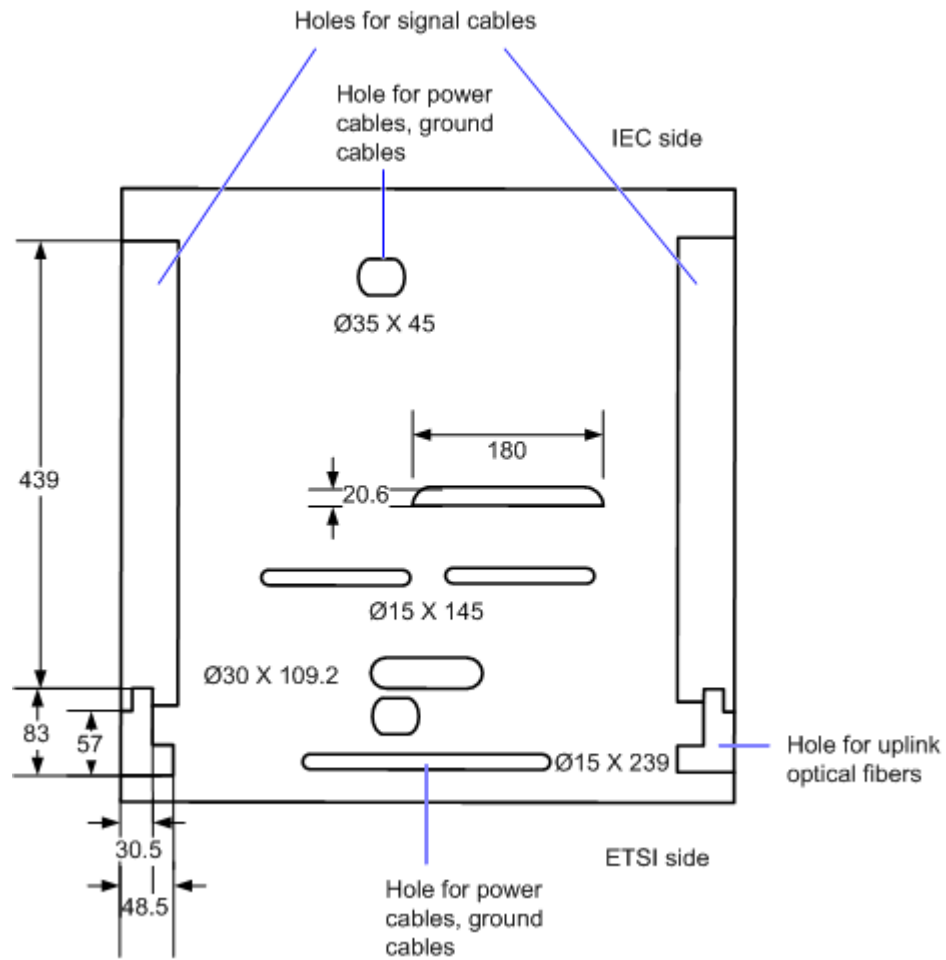
## 1.2.5 Cable Hole

The power cables and subscriber cables are led into the N66E-18 dual-standard cabinet from the top and the bottom of the cabinet. This topic describes the positions of cable holes at the top and the bottom of the N66E-18 dual-standard cabinet.

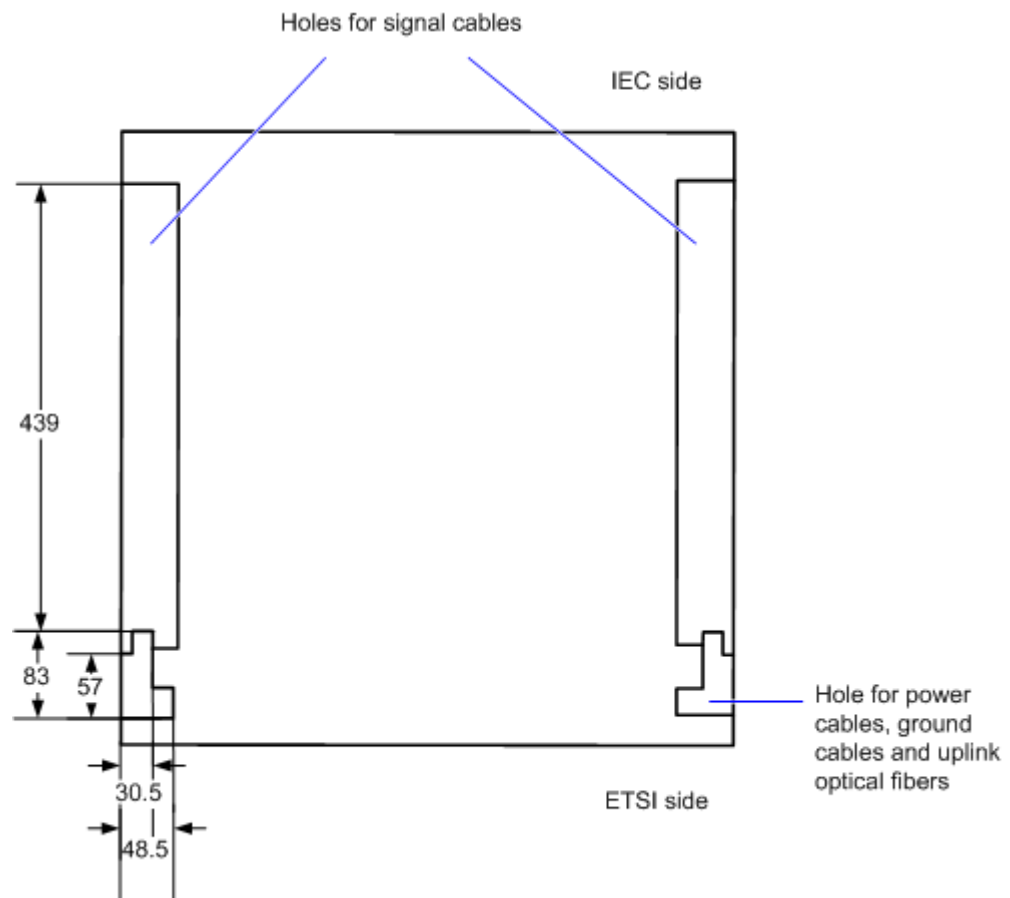
The cables of the N66E-18 dual-standard cabinet can be routed in the overhead cabling mode or the underfloor cabling mode.

- In the overhead cabling mode, external cables are led into the cabinet through the top of the cabinet. **Figure 1-34** shows the positions of cable holes at the top of the cabinet.
- In the underfloor cabling mode, external cables are led into the cabinet through the bottom of the cabinet. **Figure 1-35** shows the positions of cable holes at the bottom of the cabinet.

**Figure 1-34** Cable holes at the top of the cabinet (top view)



**Figure 1-35** Cable holes at the bottom of the cabinet (top view)



**NOTE**

The unit for figures in this topic is mm, unless otherwise stated.

## 1.2.6 ESD Jack

The ESD jack of the N66E-18 dual-standard cabinet is on the middle of the left mounting angle, which is used to connect the ESD wrist strap to prevent device damage caused by electrostatic discharge.

The position of the N66E-18 dual-standard cabinet ESD jack, as shown in [Figure 1-36](#).

**Figure 1-36** ESD jack of the N66E-18 dual-standard cabinet



## 1.2.7 Air Filter

The N66E-18 cabinet is installed with an air filter on the inner side of the doors and at the bottom. This topic covers the appearance, dimensions, material, and maintenance of the air filters.

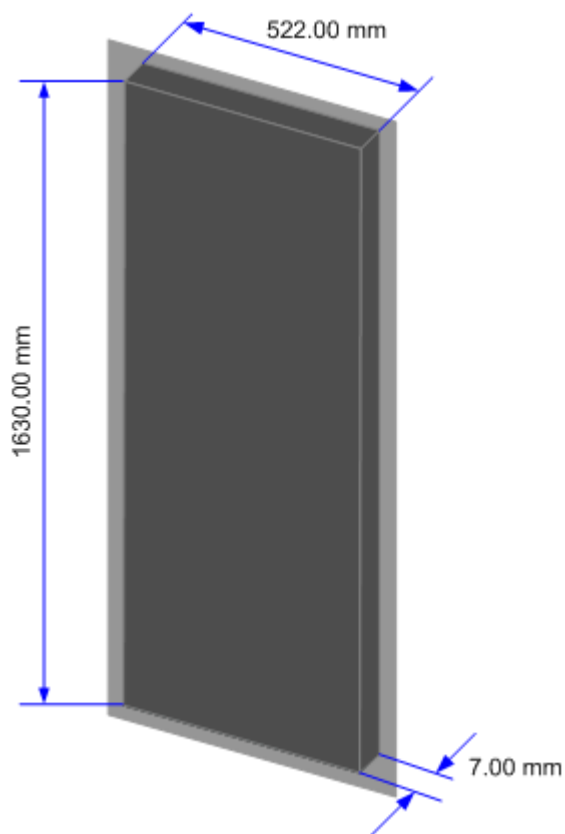
### Appearance and Dimensions

In the N66E-18 cabinet, the air filters are installed on the inner side of the doors and at the bottom of the cabinet.

**Figure 1-37** and **Table 1-6** lists the materials and dimensions of the air filter on the inner side of the doors of the N66E-18 cabinet.



**Figure 1-37** Dimensions of the air filter on the inner side of the doors of the N66E-18 cabinet

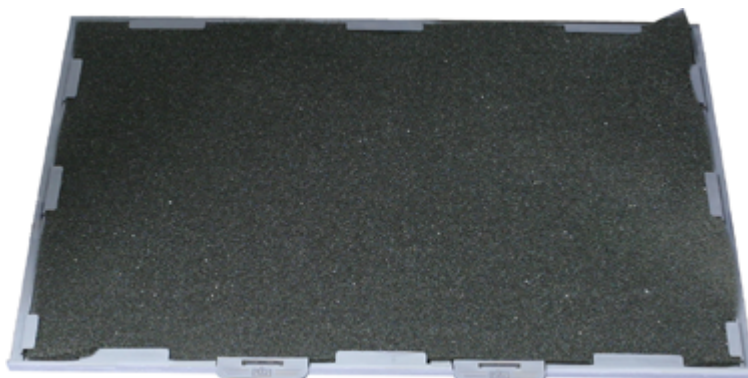


**Table 1-6** Material and dimensions of the air filter on the inner side of the doors of the N66E-18 cabinet

Cabinet	Material	Dimensions (Width x Height x Thickness)
N66E-18	50PPI (50 sponge picks per inch) black sponge	522.00 mm x 1630.00 mm x 7.00 mm

**Figure 1-38** shows the air filter at the bottom of the N66E-18 cabinet.

**Figure 1-38** Appearance of the air filter at the bottom of the N66E-18 cabinet



**Table 1-7** lists the materials and dimensions of the air filter at the bottom of the N66E-18 cabinet.

**Table 1-7** Materials and dimensions of the air filter at the bottom of the N63E-22 cabinet

Cabinet	Material	Dimensions (W x D x H)
N66E-18	50PPI (50 sponge picks per inch) black sponge	494.00 mm x 410.00 mm x 7.00 mm

## Function

The air filter on the inner side of the front door prevents dust from entering the cabinet.

During the ventilation, cool air enters the cabinet through the air intake vent at the bottom of the cabinet. The air filter at the bottom of the cabinet prevents dust from entering the cabinet.

## 1.2.8 Cable Manager

This topic describes the appearance and functions of the cable manager.

### Appearance

**Figure 1-39** shows the appearance of the cable manager.

**Figure 1-39** Appearance of the cable manager



### Functions

The cable manager is configured under the service subrack or SPL subrack.

The cable manager supports the following functions:

- The main function of the upper cable manager is to clearly separate cables of each slot from each other so that cables can be routed in order and cables in one slot do not affect the insertion or removal of the board in the neighboring slot.
- The main function of the lower cable manager is to bear optical fibers.

## 1.2.9 Grounding

This topic describes the grounding principle of the N66E-18 cabinet and the position of the ground point.



Connect the ground cables properly to guarantee protection against lightening and interference for the N66E-18 cabinet.

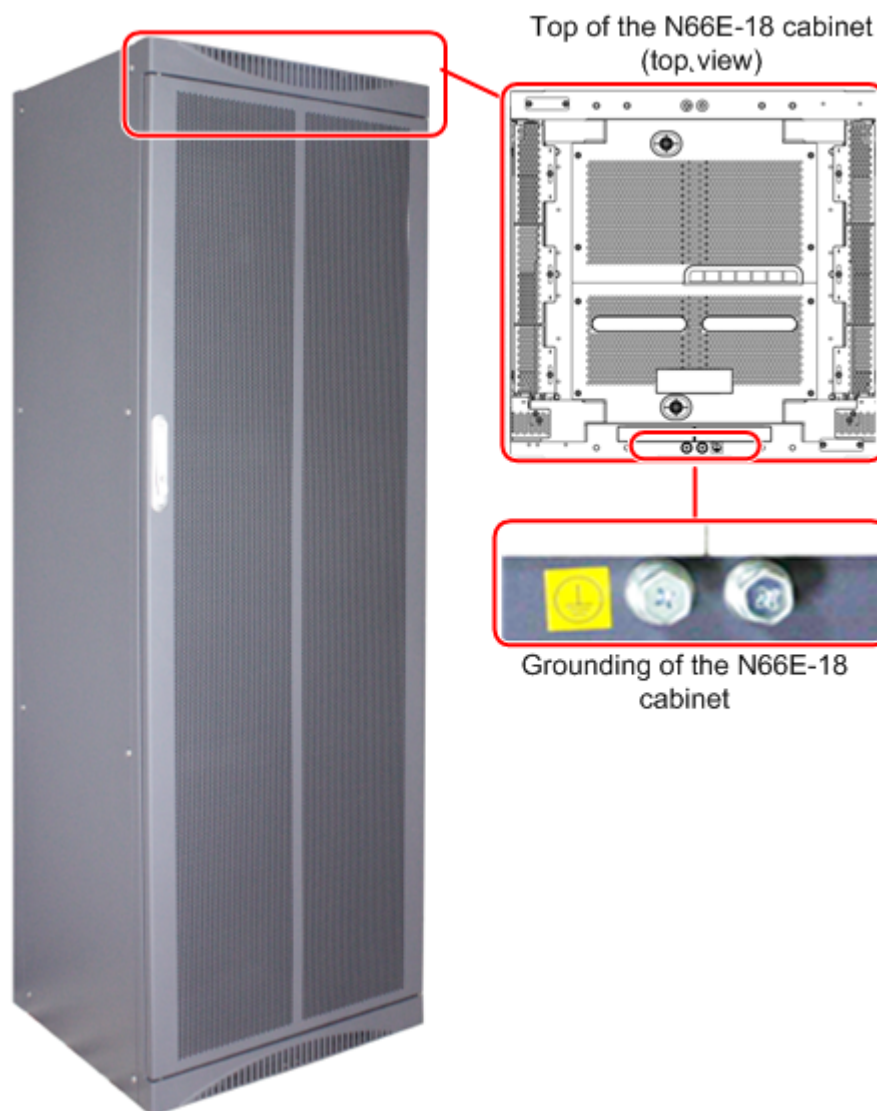
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The power input end of the N66E-18 cabinet has a noise filter. The center ground of the noise filter connects to the cabinet, called the cabinet ground, that is, the protection ground. Ground the cabinet securely so that the influence electricity, leakage electricity can flow to the ground, improving the protection against electromagnetic interference.

Use a ground cable to connect the ground point of the cabinet to the ground bar of the telecommunications room or to the ground directly. It is recommended that the grounding resistance of the telecommunications room should be less than 10 ohms. Refer to the local standards to ground the cabinet.

The ground point of the cabinet is on the top of the cabinet, as shown in [Figure 1-40](#).

**Figure 1-40** Grounding of the N66E-18 cabinet



## 1.2.10 External Connections

This topic describes the external connections of the N66E-18 cabinet.

### NOTE

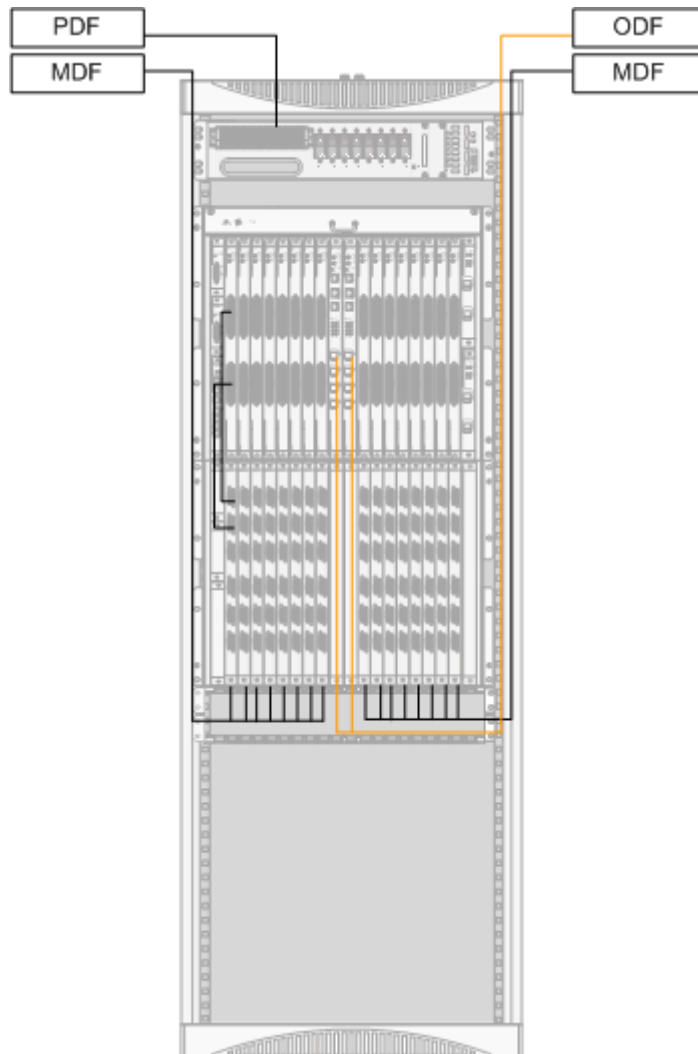
External cables are not used in the assembly and debugging of the integrated equipment, but are delivered to the customers and installed on site.

For the external connections of the MA5600T (DC/AC-powered, two service subracks or one service subrack+one SPL subrack) and MA5603T (DC-powered, two chassis), see the following similar figures.

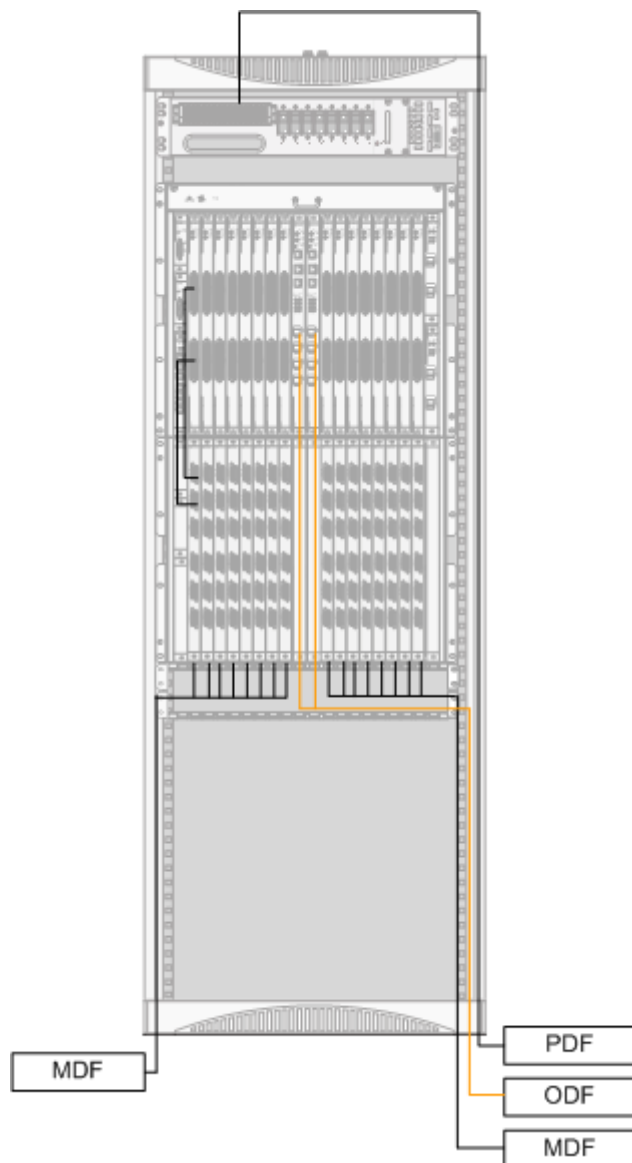
### External Connections of the DC-powered Cabinet with One Service Subrack and One SPL Subrack (MA5600T)

**Figure 1-41** and **Figure 1-42** show the external connections of the DC-powered N66E-18 cabinet installed with one service subrack and one SPL subrack.

**Figure 1-41** External connections of the DC-powered cabinet installed with one service subrack and one SPL subrack (overhead cabling)



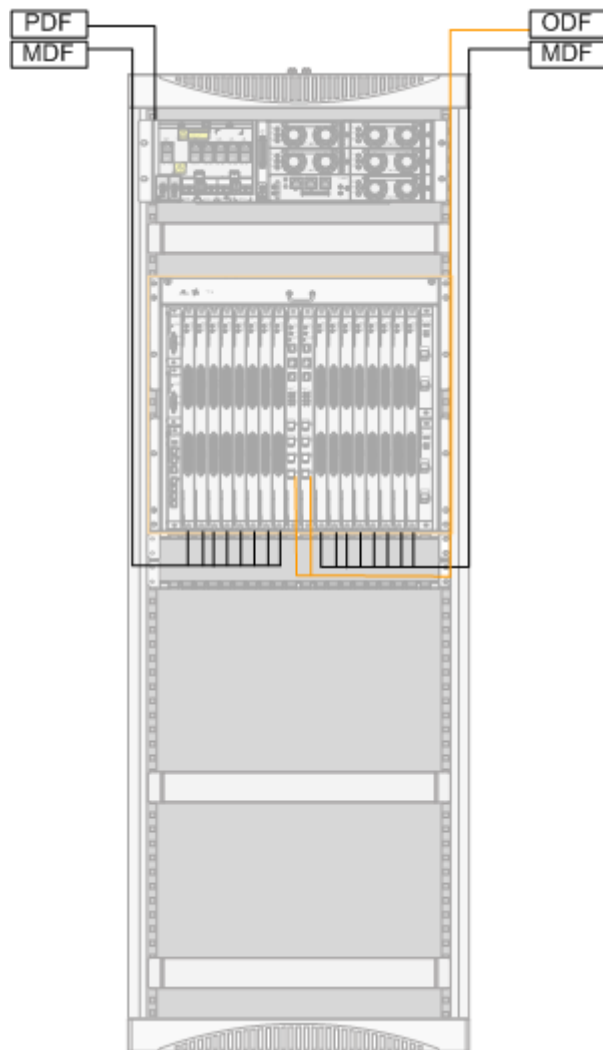
**Figure 1-42** External connections of the DC-powered cabinet installed with one service subrack and one SPL subrack (underfloor cabling)



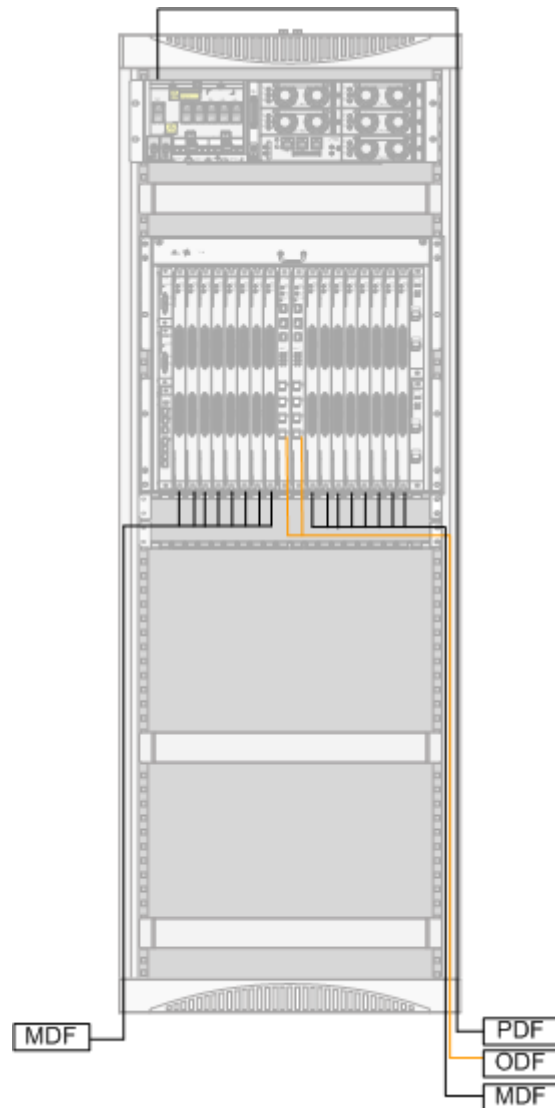
### External Connections of the AC-powered Cabinet with One Service Subrack (MA5600T, with a Battery Group)

**Figure 1-43** and **Figure 1-44** show the external connections of the N66E-18 cabinet installed with two service subracks.

**Figure 1-43** External connections of the AC-powered cabinet installed with one service subrack (overhead cabling)



**Figure 1-44** External connections of the AC-powered cabinet installed with one service subrack (underfloor cabling)

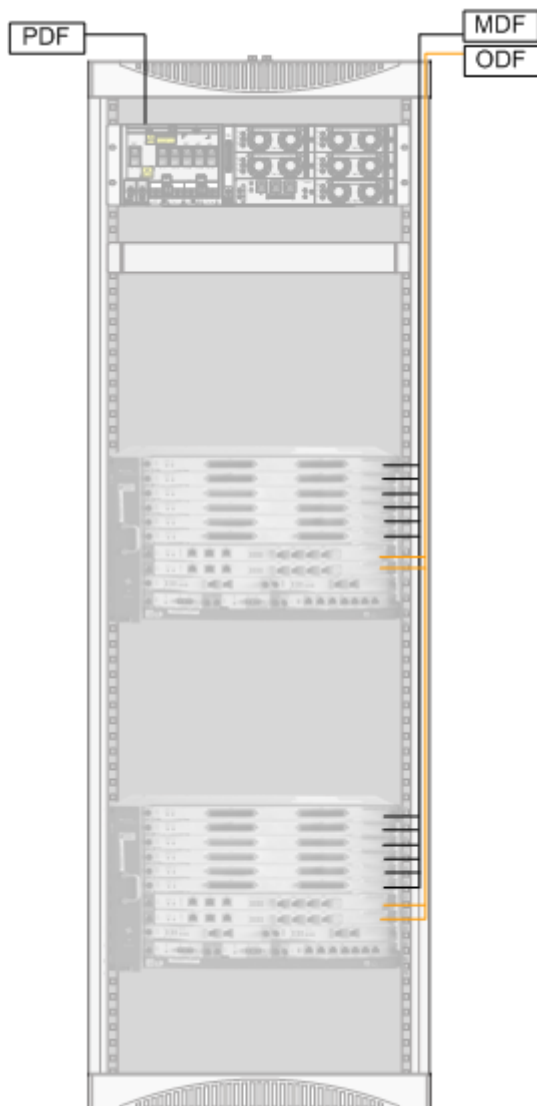


## External Connections of the AC-powered Cabinet with two MA5603T Chassis

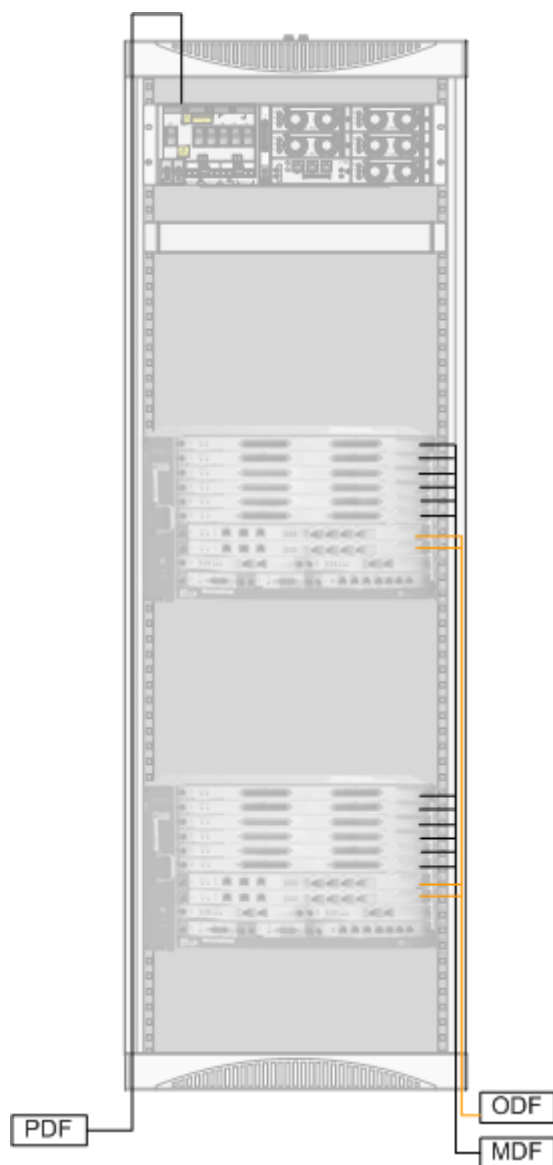
**Figure 1-45** and **Figure 1-46** show the external connections of the N66E-18 cabinet installed with two MA5603T chassis.



**Figure 1-45** External connections of the AC-powered cabinet installed with two MA5603T chassis (overhead cabling)



**Figure 1-46** External connections of the AC-powered cabinet installed with two MA5603T chassis (underfloor cabling)



## 1.2.11 Heat Dissipation

This topic describes the ventilation of the N66E-18 cabinet.

The N66E-18 cabinet has a fan tray at the top of the service subrack to exhaust hot air for heat dissipation.

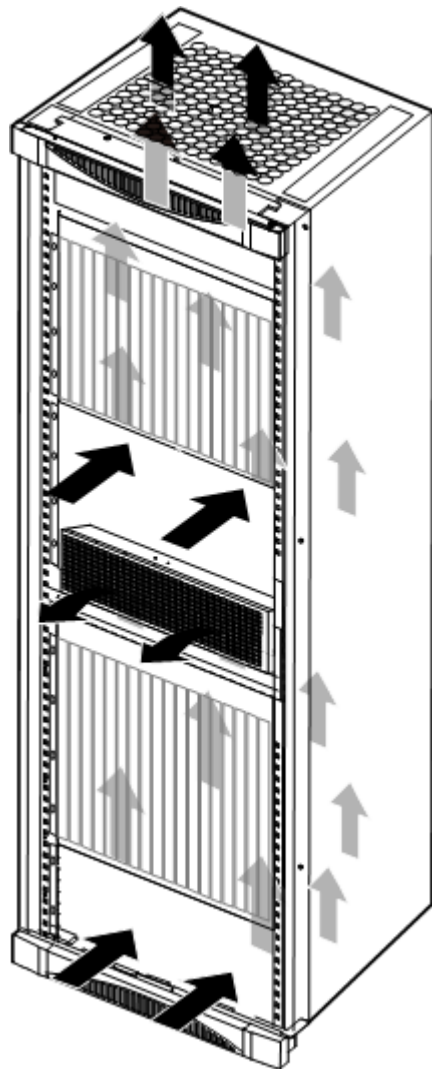
### NOTE

The following uses the MA5600T ETSI service subrack configured in the N63E-22 cabinet as an example to describe the ventilation principles. When the MA5603T chassis is configured in the N63E-22 cabinet, the air enters the cabinet from the left side and is exhausted from the right side.

The ventilation of the N66E-18 cabinet is as follows: Cool air enters the cabinet through the cable space at the bottom of the service subrack. The air is exhausted by the fans upward

through the service subracks. The air exits from the top or from the air deflector of the cabinet, as shown in [Figure 1-47](#).

**Figure 1-47** Ventilation of the N66E-18 cabinet installed with two service subracks



## 1.3 N66E-22 Cabinet Description

The N66E-22 cabinet complies with the IEC standard. This topic provides the appearance, and specification of the N66E-22 cabinet, and describes the configuration, cable holes, ESD jack, air filter, external cable connections, and ventilation of the cabinet.

### 1.3.1 Appearance

This topic provides the appearance of the N66E-22 cabinet.

The N66E-22 cabinet is an IEC 600 mm middle standing pillar cabinet of NC purple grey.

The N66E-22 cabinet houses the MA5600T IEC subrack and MA5603T chassis.

The N66E-22 cabinet consists of the rack (main frame), a front door, a rear panel fixed by screws, and side panels on the left and right sides.

The door of the N66E-22 cabinet is removable and the top of the cabinet has the grounding point. All N66E-22 cabinets have the same key for the front door.

**Figure 1-48** Appearance of the N66E-22 cabinet

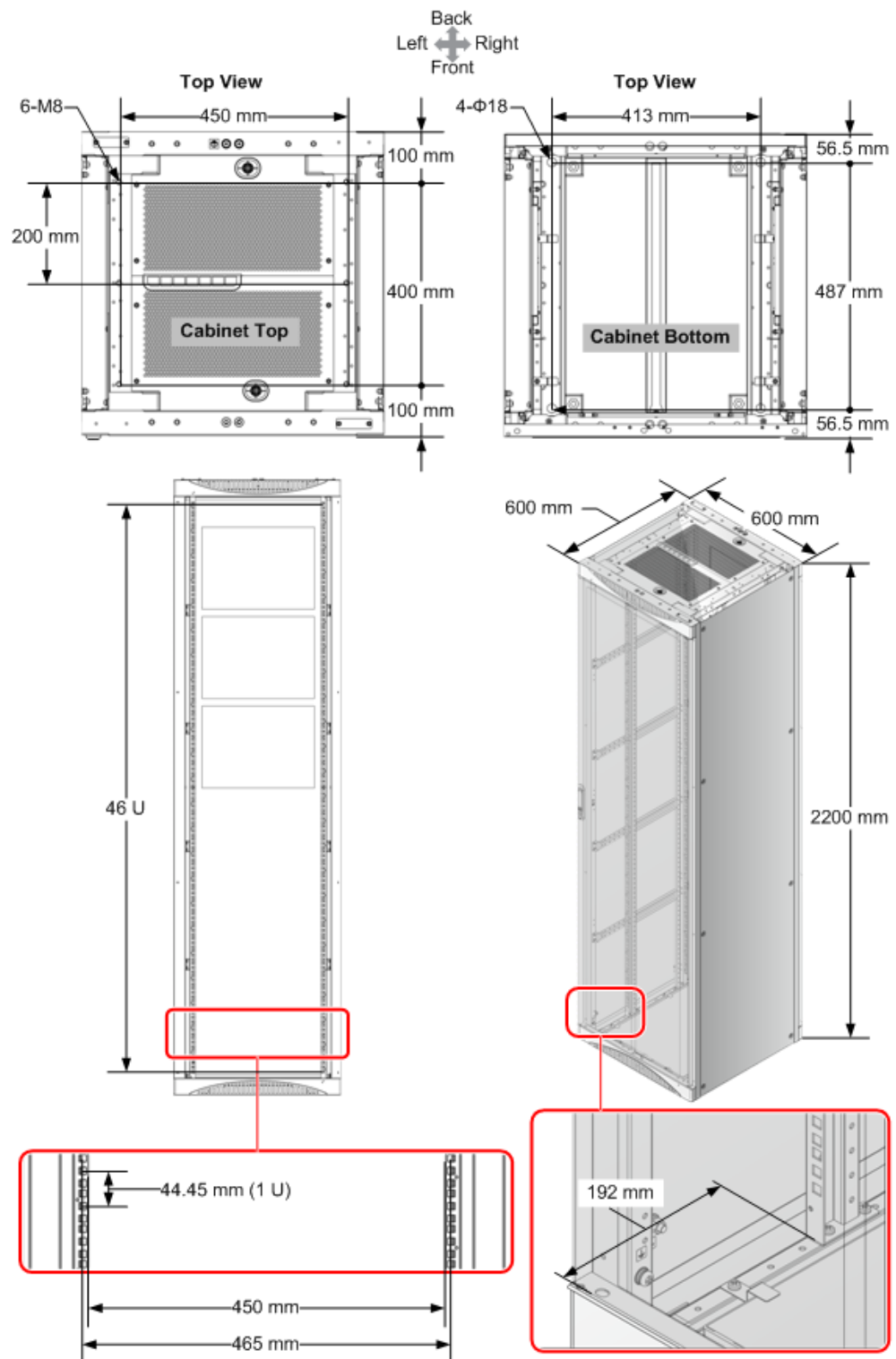


## 1.3.2 Physical Specifications

This topic provides the dimensions, weight and power specifications of the N66E-22 cabinet.

## Dimensions and Weight

Figure 1-49 Dimensions of the N66E-22 cabinet



**Table 1-8** Dimensions and weight of the N66E-22 cabinet

Specification	Value
Standard Compliance	IEC cabinet (19-inch): IEC 60297-3
Weight (Empty Cabinet)	73 kg
Dimensions (W x D x H)	600 mm x 600 mm x 2200 mm
Installation Dimensions of the Cabinet Top	Installation interface <ul style="list-style-type: none"> <li>● Hole positions: 450 mm x 400 mm (W x D)</li> <li>● Nut specifications: six M8 nuts</li> </ul>
Installation Dimensions of the Cabinet Bottom	Installation interface <ul style="list-style-type: none"> <li>● Hole positions: 413 mm x 487 mm (W x D)</li> <li>● Bolt specifications: four M12 expansion bolts</li> </ul>
Distance Between Mounting Bar Holes	1 U = 44.45 mm
Available Space	46 U
Angle Opening Width	450 mm
Fixing Centres	465 mm
Distance Between the Installation Surface of the Mounting Bar and the Inner Side of the Cabinet Front Door	192 mm

 **NOTE**

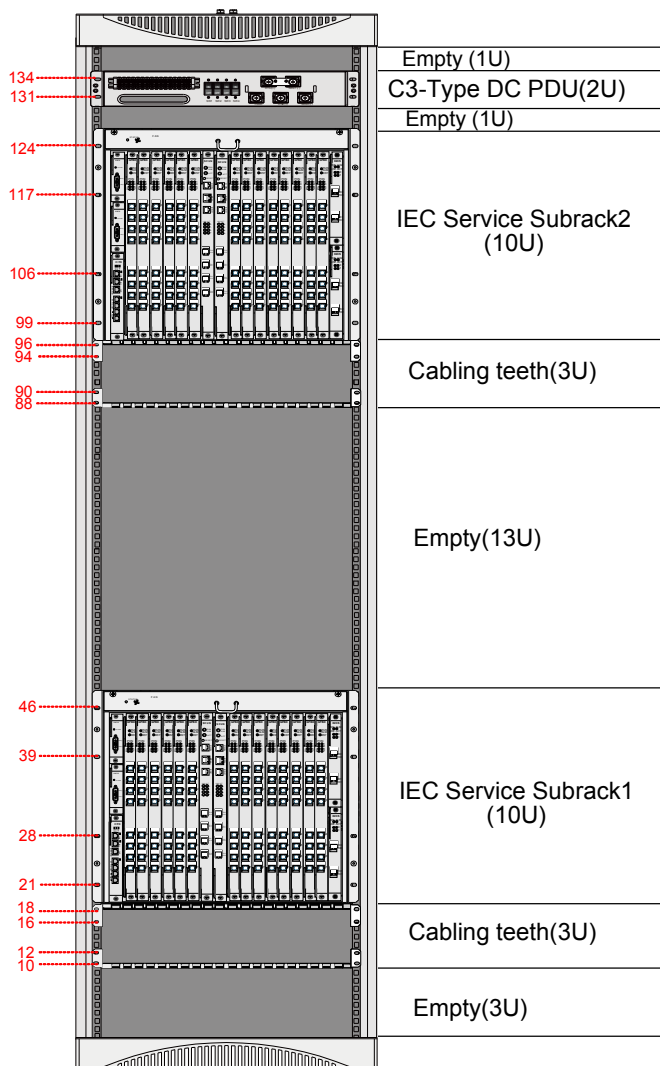
For cabinet power specifications, see relevant PDB specification requirements.

### 1.3.3 Configuration

The N66E-22 cabinet adopts the DC power. This topic describes the service subrack configuration, maximum number of subscribers and maximum power consumption of the N66E-22 cabinet.

**Figure 1-50** shows the configuration of the N66E-22 cabinet installed with two service shelves.

**Figure 1-50** Configuration of the N66E-22 cabinet installed with two service shelves



**NOTE**

In **Figure 1-50**, the filled holes are for floating nuts to fasten subracks.

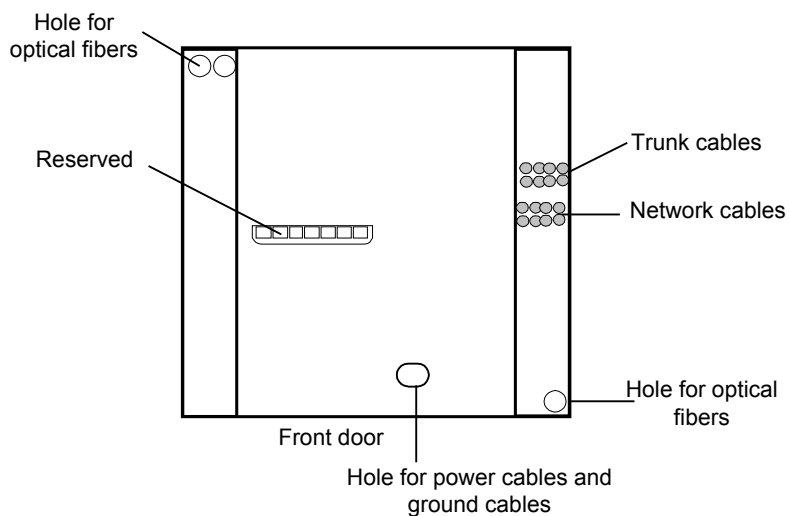
### 1.3.4 Cable Hole

The power cables and subscriber cables are led into the N66E-22 cabinet from the top and the bottom of the cabinet. This topic describes the positions of cable holes at the top and the bottom of the N66E-22 cabinet.

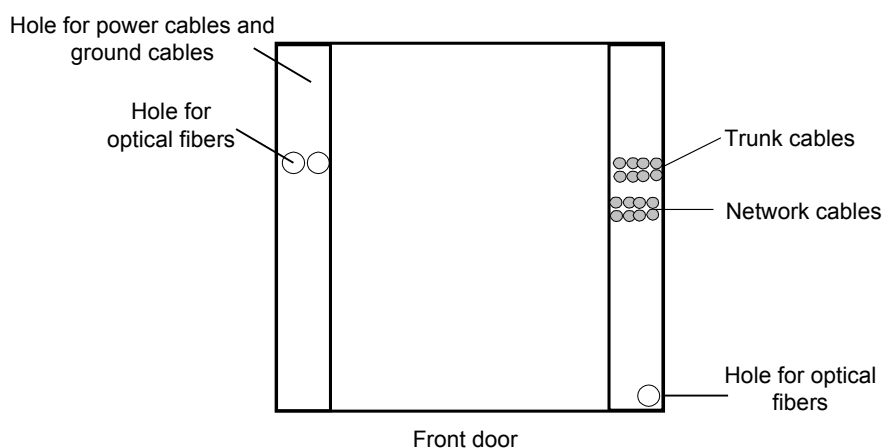
The cables of the N66E-22 cabinet can be routed in the overhead cabling mode or the underfloor cabling mode.

- In the overhead cabling mode, external cables are led into the cabinet through the top of the cabinet. **Figure 1-51** shows the positions of cable holes at the top of the cabinet.
- In the underfloor cabling mode, external cables are led into the cabinet through the bottom of the cabinet. **Figure 1-52** shows the positions of cable holes at the bottom of the cabinet.

**Figure 1-51** Cable holes at the top of the cabinet (top view)



**Figure 1-52** Cable holes at the bottom of the cabinet (top view)



### 1.3.5 ESD Jack

The ESD jack of the N66E-22 cabinet is on the middle of the left mounting angle, which is used to connect the ESD wrist strap to prevent device damage caused by electrostatic discharge.

The position of the N66E-22 cabinet ESD jack, as shown in [Figure 1-53](#).



**Figure 1-53** ESD jack of the N66E-22 cabinet



## 1.3.6 Air Filter

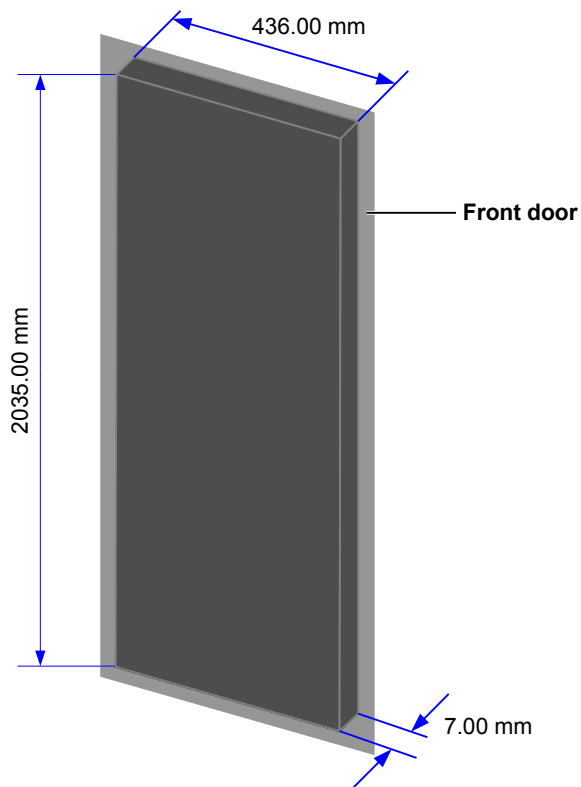
The N66E-22 cabinet is installed with an air filter on the inner side of the front door and at the bottom. This topic provides the appearance and dimensions of the air filters, and describes the material and maintenance of the air filters.

### Appearance and Dimensions

In the N66E-22 cabinet, the air filters are installed on the inner side of the front door and at the bottom of the cabinet.

**Figure 1-54** and **Table 1-9** lists the materials and dimensions of the air filter on the inner side of the front door of the N66E-22 cabinet.

**Figure 1-54** Dimensions of the air filter on the inner side of the front door of the N66E-22 cabinet



**Table 1-9** Material and dimensions of the air filter on the inner side of the front door of the N66E-22 cabinet

Cabinet	Material	Dimensions (W x D x Thickness)
N66E-22	50PPI black sponge	522.00mm×2046.00mm×7.00mm

**Figure 1-55** shows the air filter at the bottom of the N66E-22 cabinet.

**Figure 1-55** Appearance of the air filter at the bottom of the N63E-22 cabinet



**Table 1-10** lists the materials and dimensions of the air filter at the bottom of the N66E-22 cabinet.

**Table 1-10** Materials and dimensions of the air filter at the bottom of the N66E-22 cabinet

Cabinet	Material	Dimensions (W x D x H)
N66E-22	50PPI black sponge	415.00mm×500.00mm×7.00mm

## Function

The air filter on the inner side of the front door prevents dust from entering the cabinet.

During the ventilation, cool air enters the cabinet through the air intake vent at the bottom of the cabinet. The air filter at the bottom of the cabinet prevents dust from entering the cabinet.

## 1.3.7 Cable Manager

This topic describes the appearance and functions of the cable manager.

### Appearance

**Figure 1-56** shows the appearance of the cable manager.

**Figure 1-56** Appearance of the cable manager



## Functions

The cable manager is configured under the service subrack or SPL subrack.

The cable manager supports the following functions:

- The main function of the upper cable manager is to clearly separate cables of each slot from each other so that cables can be routed in order and cables in one slot do not affect the insertion or removal of the board in the neighboring slot.
- The main function of the lower cable manager is to bear optical fibers.

## 1.3.8 Grounding

This topic describes the grounding principle of the N66E-22 cabinet and the position of the ground point.



Connect the ground cables properly to guarantee protection against lightening and interference for the N66E-22 cabinet.

---

The power input end of the N66E-22 cabinet has a noise filter. The center ground of the noise filter connects to the cabinet, called the cabinet ground, that is, the protection ground. Ground the cabinet securely so that the influence electricity, leakage electricity can flow to the ground, improving the protection against electromagnetic interference.

Use a ground cable to connect the ground point of the cabinet to the ground bar of the telecommunications room or to the ground directly. It is recommended that the grounding resistance of the telecommunications room should be less than 10 ohms. Refer to the local standards to ground the cabinet.

The ground point of the cabinet is on the top of the cabinet, as shown in [Figure 1-57](#).

**Figure 1-57** Grounding of the N66E-22 cabinet



## 1.3.9 External Connections

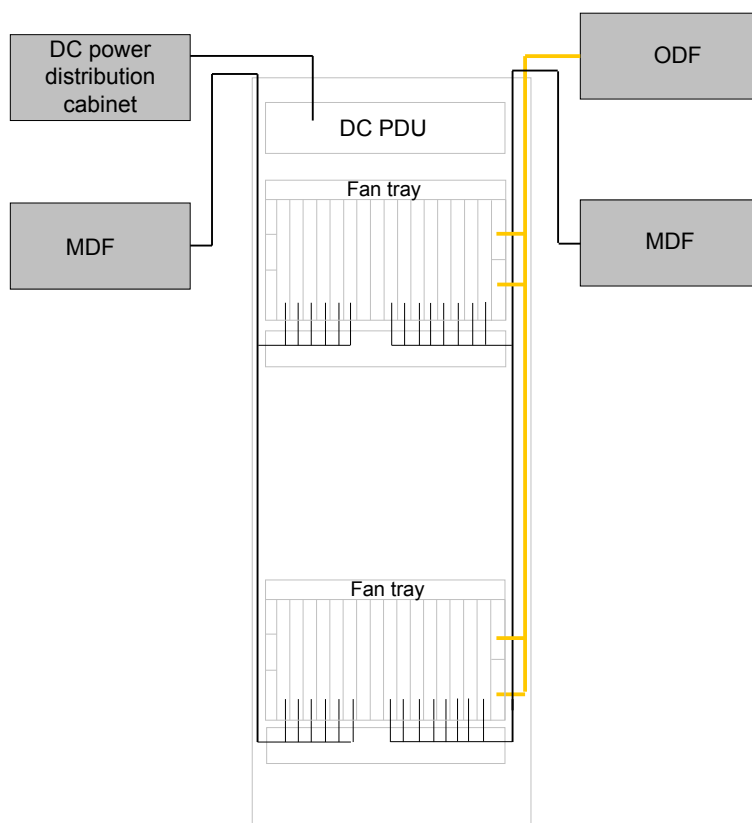
This topic describes the external connections of the N66E-22 cabinet.

**NOTE**

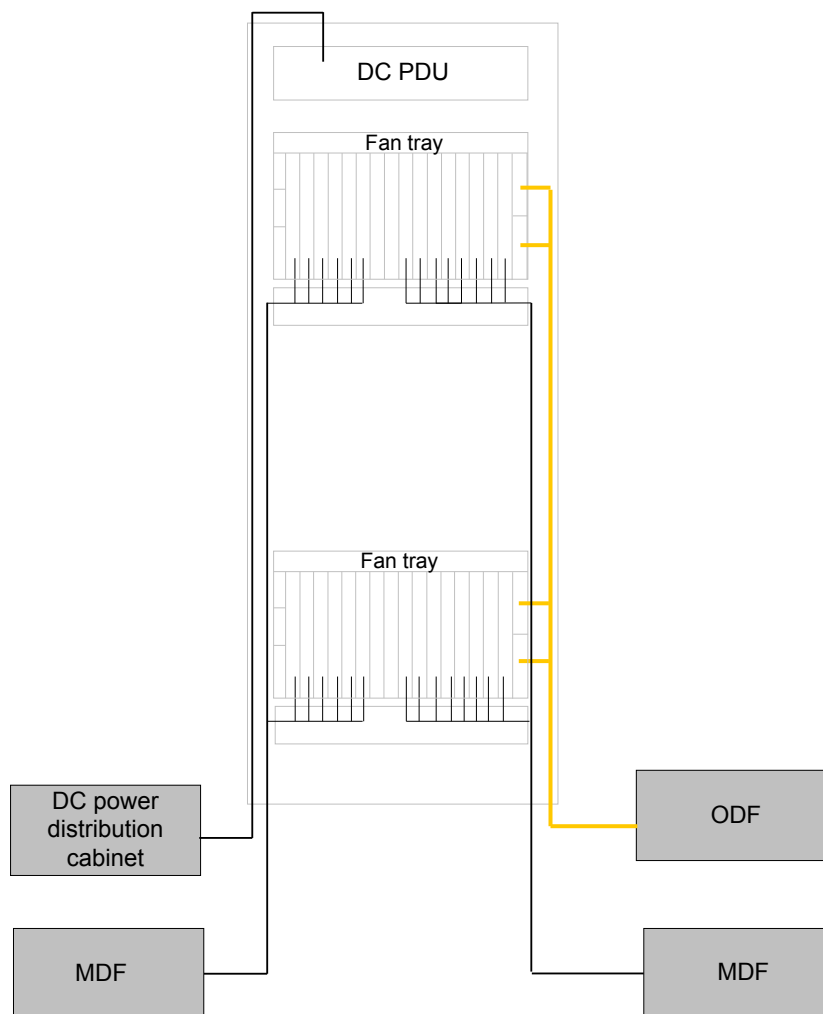
External cables are not used in the assembly and debugging of the integrated equipment, but are delivered to the customers and installed on site.

**Figure 1-58** and **Figure 1-59** show the external connections of the N66E-22 cabinet.

**Figure 1-58** External connections of the cabinet (overhead cabling)



**Figure 1-59** External connections of the cabinet (underfloor cabling)



### 1.3.10 Heat Dissipation

This topic describes the ventilation of the N66E-22 cabinet.

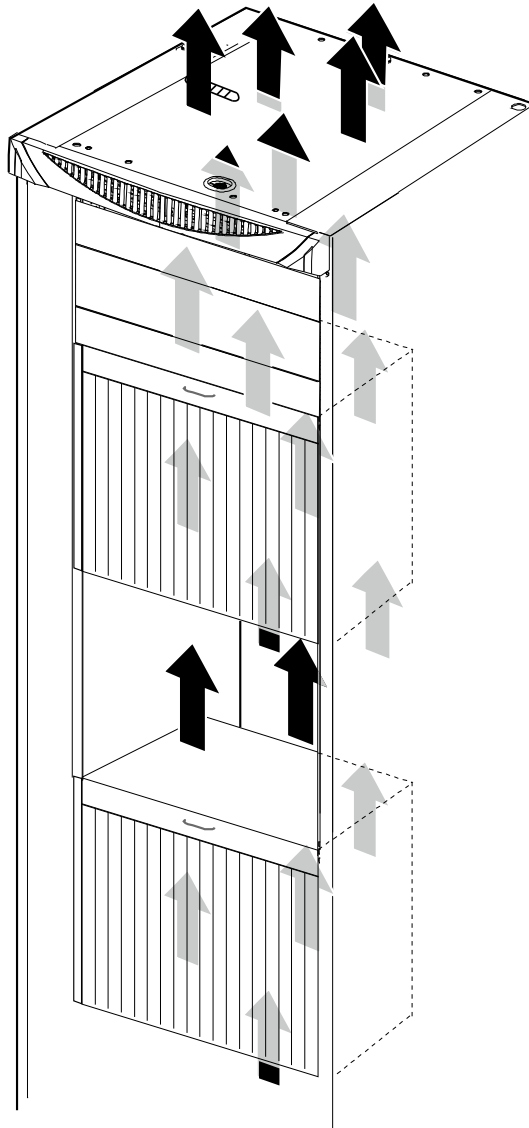
The N66E-22 cabinet has a fan tray at the top of the service shelf to exhaust hot air for heat dissipation.

The ventilation of the N66E-22 cabinet is shown in [Figure 1-60](#).

- The ventilation for the upper shelf of the N66E-22 cabinet is as follows:
  - a. Cold air enters the cabinet through the front of the cooling space.
  - b. The air flows upward through the upper shelf.
  - c. The air is exhausted from the top of the cabinet.
- The ventilation for the lower shelf of the N66E-22 cabinet is as follows:
  - a. Cool air enters the service shelves through the bottom of the cabinet and the bottom of the service shelf.
  - b. The air flows upwards through the service shelves.

- c. The air flows to the back of the cabinet along the air baffle.
- d. The air exits through the top of the cabinet.

**Figure 1-60** Ventilation of the N66E-22 cabinet





# 2 Subrack and Chassis

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## About This Chapter

### [2.1 MA5600T ETSI Service Subrack Description](#)

This topic provides the appearance, specification, function, working principle, configuration and fan tray of the ETSI service subrack.

### [2.2 MA5600T ETSI SPL Subrack Description](#)

This topic provides the appearance and specifications of the ETSI SPL subrack, and describes the structure, function, and configuration of the subrack.

### [2.3 MA5600T IEC Service Subrack Description](#)

This topic provides the appearance, specification, function, working principle, configuration and fan tray of the IEC service subrack.

### [2.4 MA5623AR Extended subrack Description](#)

This topic provides the appearance, ports, and function of the MA5623AR extended subrack.

### [2.5 MA5603T Chassis Description](#)

This topic describes the chassis and fan tray of the MA5603T.

### [2.6 MA5608T Chassis Description](#)

This topic describes the chassis and fan tray of the MA5608T.

## 2.1 MA5600T ETSI Service Subrack Description

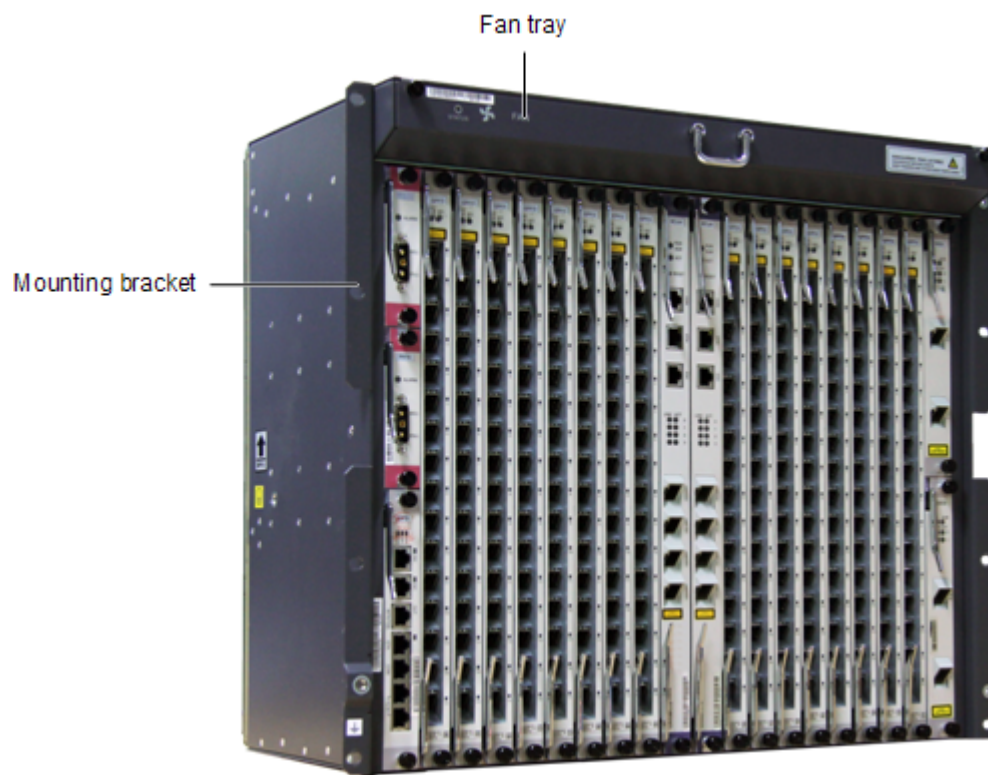
This topic provides the appearance, specification, function, working principle, configuration and fan tray of the ETSI service subrack.

### 2.1.1 Appearance

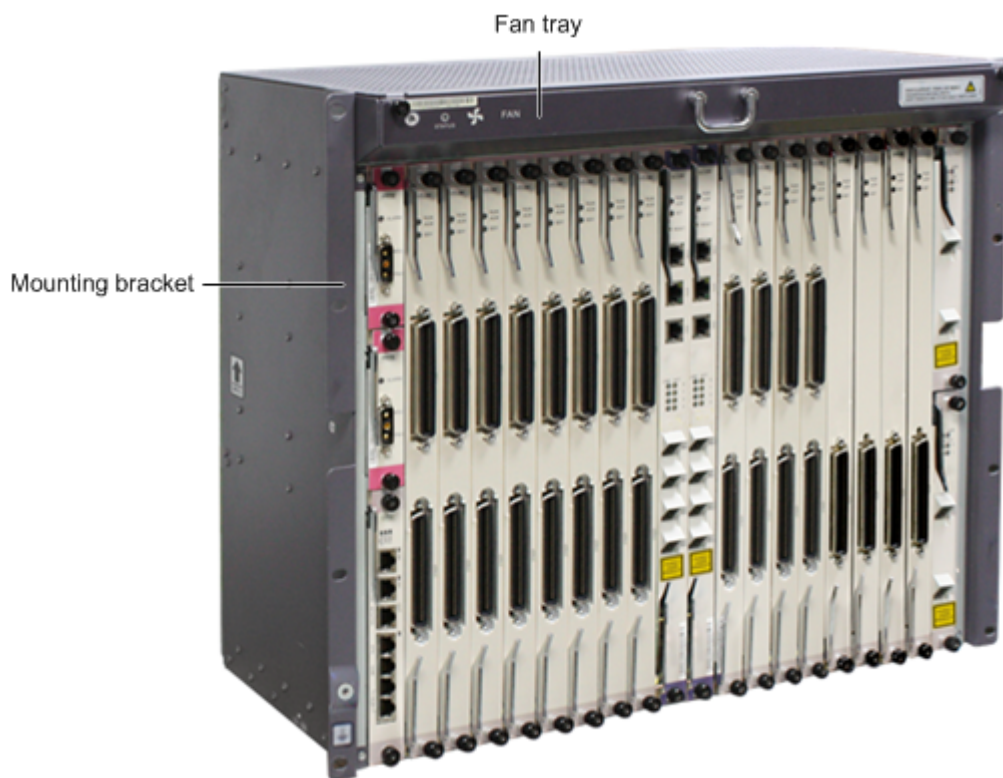
The ETSI service subrack provides 23 slots, and has a fan tray at the top. The subrack is installed in the cabinet through the mounting brackets. This topic provides the appearance of the ETSI service subrack.

## Appearance

**Figure 2-1** Appearance of the ETSI service subrack(GPON)



**Figure 2-2** Appearance of the ETSI service subrack(xDSL)



## 2.1.2 Physical Specifications

This topic provides the dimensions, weight, and power consumption of the ETSI service subrack.

### Dimensions and Weight

**Table 2-1** Specifications of the ETSI service subrack

Item	Specification
Dimensions (W x D x H, including mounting ears)	530.00 mm x 275.80 mm x 447.20 mm
Dimensions (W x D x H, excluding mounting ears)	490.00 mm x 275.80 mm x 447.20 mm
Maximum weight at full configuration (including mounting ears)	33.00 kg

## Power Supply

**Table 2-2** Power specifications of the ETSI service subrack

Specification	Value
Power supply mode	DC (dual power for backup)
Rated voltage	-48 V / -60 V
Working voltage range	-38.4 V to -72 V
Maximum input current	40 A

## Power Consumption

**Table 2-3** Power consumption of the ETSI service subrack (Unit: W)

Typical Configuration	Static power consumption	Maximum power consumption	Typical power consumption	Board configuration
ADSL2+	306.84	1266.55	786.695	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H805ADPD*16
VDSL2	514.84	1522.55	1018.695	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H80BVDPM(17a)*16
P2P	1234.84	1810.55	1522.695	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H802OPGD*16
POTS	370.84	706.55	538.695	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H808ASPB*16
GPON (H805GPBD)	802.84	994.55	898.695	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H805GPBD*16
GPON (H806GPBH)	626.84	946.55	786.695	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H806GPBH*16
GPON (H802SCUN+H805GPF D)	530.84	1010.55	770.695	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H805GPF D*16

Typical Configuration	Static power consumption	Maximum power consumption	Typical power consumption	Board configuration
GPON (H801SCUH +H805GPF D)	648.84	1178.55	913.695	H801SCUH*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H805GPF*16

 **NOTE**

The power consumption of the subrack is tested in the following conditions:

- Working voltage: -53.5 V DC.
- Ambient temperature: 25 °C.
- Static power consumption: All ports do not carry any loads. Specifically, users under POTS ports hang up phones, xDSL ports are deactivated, and optical modules are not installed on optical ports
- Maximum power consumption: All ports fully carry loads. However, only 25% users under POTS ports concurrently pick up phones and the feeding current is 20 mA.
- Typical power consumption: half of the total value of static power consumption and maximum power consumption.
- The preceding table lists power consumption under typical configuration. For power consumption under other configurations, use [Access Network Hardware Configuration Tool](#).
- In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

## 2.1.3 Configuration

The ETSI service subrack provides 16 slots for service boards, two slots for control boards, two slots for power boards, one for universal interface board and two for upstream interface boards. This topic lists the types of boards supported by the ETSI service subrack and the slot restriction.

### Configuration

H801MABC, H802MABC and H803MABC are the backplane supported by the ETSI service subrack. H801MABC does not support the Vectoring feature, H802MABC and H803MABC support the Vectoring feature.

**Figure 2-3** Configuration of boards in the ETSI service subrack

Fan tray																			
21	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Power	Service board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	Control board	Control board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	G I U
22									20										
0									G P I O										

**Table 2-4** lists the configuration of boards in the ETSI service subrack. For details, see [3.4 Board Configuration\(MA5600T/MA5603T\)](#).

**Table 2-4** Boards in the ETSI service subrack

Slot Type	Slot	Supported Board	Remarks
Control board (SCU) slot	9,10	Control board	Two slots must be configured with the same control board. You are advised to configure 2 control boards working in active/standby mode.
Uplink interface board (GIU) slot	19,20	Uplink interface board	Mixed configuration of upstream interface boards is supported; however, it is recommended to use the same upstream interface board in the configuration.
Power board slot	21,22	Power board	It is recommended to configure the same power board in the two slots.
Universal interface board (GPIO) slot	0	Universal interface board	-

Slot Type	Slot	Supported Board	Remarks
Service board slot	1-8,11-18	<ul style="list-style-type: none"> <li>● Service board                             <ul style="list-style-type: none"> <li>- SPU board</li> <li>- Ethernet service access board</li> <li>- TDM service processing board</li> <li>- GPON service board</li> <li>- 10G GPON service board</li> <li>- P2P interface board</li> <li>- ATM interface board</li> <li>- Combo board</li> <li>- Voice board</li> <li>- ADSL2+ service board</li> <li>- VDSL2 service board</li> <li>- Vectoring processing board</li> <li>- SHDSL service board</li> </ul> </li> <li>● SPL board                             <ul style="list-style-type: none"> <li>- ADSL SPL board</li> <li>- VDSL SPL board</li> </ul> </li> <li>● Extension board</li> </ul>	<p>Mixed configuration of service boards is supported. When the SPL board or transfer extension board is configured in the slot, select the slot next to the corresponding service board.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>● GPON boards are recommended to be installed from left to right and other boards are recommended from right to left.</li> <li>● A vectoring processing board can be installed only in slots 8 and 11. When installed in slot 8, the board processes the vectoring services of slots 1-6. When installed in slot 11, the board processes the vectoring services of slots 13-18. Slots 7 and 12 cannot house vectoring service boards but can house other service boards.</li> </ul>

## 2.1.4 ETSI Fan Tray (FCBB)

A fan tray functions heat dissipation, monitoring, and fan speed adjustment, which ensures that the device works at a stable temperature.

### Appearance

Four fans are configured in the ETSI fan tray (FCBB) of the MA5600T.



## Specification

Item	Specification
Dimensions (W x D x H)	486.00 mm x 245.20 mm x 44.00 mm
Weight	2.90 kg
Power consumption	<ul style="list-style-type: none"><li>● Static: 23 W</li><li>● Maximum: 65 W</li></ul>

### NOTE

In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

## Function

The functions of the fan tray are as follows:

- **Heat dissipation**

The fan tray is at the top of the service subrack and exhausts hot air for heat dissipation. The cool air flows to the subrack from the bottom of the subrack and then is exhausted from the top of the subrack after passing the boards.
- **Monitoring**

The fan tray is configured with the fan monitoring board to detect whether the fans are working in the normal state. The fan monitoring board also provides the port for communication with the control board. The detected information is transmitted to the control board through the fan monitoring board periodically.
- **Speed adjustment**

The rotating speed of the fans can be adjusted according to the detected temperature automatically or be adjusted by setting the related data manually.



## LED

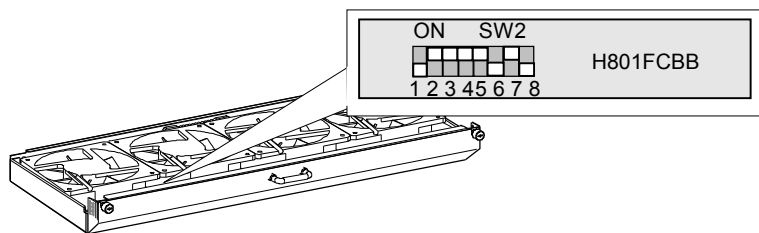
Indicator	Color	Status	Meaning	Operation Description
STATUS	Yellow	Blinking quickly (on for 0.3 s and off for 0.3 s repeatedly)	The fan tray is not registered or is being loaded.	No action is required.
			The communication between the host and the fan tray is interrupted.	Check communication between the fan tray and device.
	Green	Blinking	The fan tray works in the normal state.	No action is required.
	Yellow	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The fan tray generates alarms that do not affect services.	Handle it based on the corresponding alarm.
	Red	Blinking	The fan tray is faulty or the fan tray generates an over-temperature alarm.	<ul style="list-style-type: none"> <li>● Increase the fan speed to lower the temperature.</li> <li>● Replace the faulty fan tray.</li> </ul>

### NOTE

When only one power board is configured, the LED turns yellow and blinks. The services are not affected.

## DIP Switches

The fan tray uses the FCBB monitoring board, which supports the -48 V / -60 V input voltage and provides a set of DIP switches SW2. The following figure shows the layout of DIP switches and default settings.



**Table 2-5** describes the settings of SW2.

**Table 2-5** Settings of SW2

DIP Switch	Indication		Default Settings
SW2-1	It is used to set the subnode address of the fan tray that maps the data configuration. ● ON: The address bit is 0. ● OFF: The address bit is 1. By default, the address bit is 1.		OFF
SW2-2			ON
SW2-3			ON
SW2-4	ON	The baud rate of the communication between the fan tray and the control board is 19200 bit/s.	ON
	OFF	The baud rate of the communication between the fan tray and the control board is 9600 bit/s.	
SW2-5	It is used to set the quantity of fans.		ON
SW2-6			OFF
SW2-7	It is used to set the mode of adjusting the fan speed.		ON
SW2-8			OFF

**Table 2-6**, **Table 2-7**, and **Table 2-8** describe the settings of the DIP switches of SW2.

**Table 2-6** Settings of SW2-1, SW2-2, and SW2-3

SW2-3	SW2-2	SW2-1	Address Value
ON	ON	ON	0
ON	ON	OFF	1
ON	OFF	ON	2
ON	OFF	OFF	3
OFF	ON	ON	4

SW2-3	SW2-2	SW2-1	Address Value
OFF	ON	OFF	5
OFF	OFF	ON	6
OFF	OFF	OFF	7

 **NOTE**

When SW2-1, SW2-2, and SW2-3 are used to set the subnode address, make sure that the DIP switch settings are consistent with the data configuration. But the subnode address value cannot be the same as that of the environment monitoring board.

**Table 2-7** Settings of SW2-5 and SW2-6

SW2-6	SW2-5	Fan Quantity
ON	ON	6
ON	OFF	8
OFF	ON	4
OFF	OFF	10

 **NOTE**

Four fans are configured in the ETSI fan tray (FCBB) of the MA5600T.

**Table 2-8** Settings of SW2-7 and SW2-8

SW2-8	SW2-7	Speed Adjustment Mode	Adjustment Strategy
ON	ON	Temperature measurement at the air intake vent (reserved)	Strategy 1
ON	OFF	Temperature measurement at the air exhaust vent	Strategy 2
OFF	ON	Temperature measurement at the air intake vent	Strategy 3
OFF	OFF	Temperature measurement at the air intake vent (the fan stops rotating)	Strategy 4

 **NOTE**

The ETSI fan tray (FCBB) of the MA5600T must use speed adjustment policy 3.

## Fan Speed Adjustment

Set the fan speed adjustment mode to "automatic" or "manual" in the command line interface (CLI). After the fans are installed, they work in automatic mode by default.

- Automatic mode
  - Control-system-triggering: The control system automatically adjusts fan speed according to the board temperatures for energy conservation.
  - Monitoring-board-triggering: Electric switches 7 and 8 of the SW2 DIP switch on the monitoring board are set in four different ways to achieve four speed adjustment policies (the ETSI subrack supports only the third policy).

### NOTE

The automatic mode has two variants (automatically selected by the system): control-system-triggering and monitoring-board-triggering.

- Manual mode

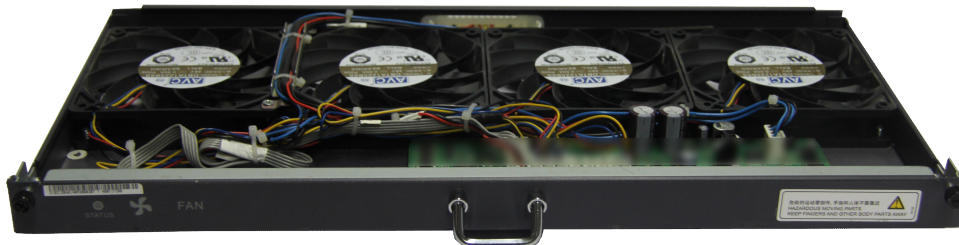
Commands are executed to adjust fan speed. The levels range from 0 to 6, level 0 being the lowest speed and level 6 being the highest speed.

## 2.1.5 ETSI Fan Tray (FCBI)

A fan tray functions heat dissipation, monitoring, and fan speed adjustment, which ensures that the device works at a stable temperature.

## Appearance

Four fans are configured in the ETSI fan tray (FCBI) of the MA5600T.



## Specification

Item	Specification
Dimensions (W x D x H)	486.00 mm x 245.20 mm x 44.00 mm
Weight	2.90 kg
Power consumption	<ul style="list-style-type: none"><li>● Static: 13 W</li><li>● Maximum: 67 W</li></ul>

### NOTE

In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

## Function

The functions of the fan tray are as follows:

- **Heat dissipation**

The fan tray is at the top of the service subrack and exhausts hot air for heat dissipation. The cool air flows to the subrack from the bottom of the subrack and then is exhausted from the top of the subrack after passing the boards.

- **Monitoring**

The fan tray is configured with the fan monitoring board to detect whether the fans are working in the normal state. The fan monitoring board also provides the port for communication with the control board. The detected information is transmitted to the control board through the fan monitoring board periodically.

- **Speed adjustment**

The rotating speed of the fans can be adjusted according to the detected temperature automatically or be adjusted by setting the related data manually.

## LED

Indicator	Color	Status	Meaning	Operation Description
STATUS	Yellow	Blinking quickly (on for 0.125 s and off for 0.125 s repeatedly)	The fan tray is not registered or is being loaded.	No action is required.
			The communication between the host and the fan tray is interrupted.	Check communication between the fan tray and device.
	Green	Blinking	The fan tray works in the normal state.	No action is required.
	Yellow	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The fan tray generates alarms that do not affect services.	Handle it based on the corresponding alarm.

Indicator	Color	Status	Meaning	Operation Description
	Red	Blinking (on for 0.125 s and off for 0.125 s repeatedly)	The fan tray is faulty or the fan tray generates an over-temperature alarm.	<ul style="list-style-type: none"> <li>● Increase the fan speed to lower the temperature.</li> <li>● Replace the faulty fan tray.</li> </ul>

 **NOTE**

When only one power board is configured, the LED turns yellow and blinks. The services are not affected.

## DIP Switches

The fan tray uses the FCBI monitoring board, which supports the -48 V / -60 V input voltage, which provides a set of DIP switches SW1-S1.

**Table 2-9** describes the settings of SW1-S1.

**Table 2-9** Settings of SW1-S1

DIP Switch	Indication		Default Settings
S1-1	It is used to set the subnode address of the fan tray that maps the data configuration. <ul style="list-style-type: none"> <li>● ON: The address bit is 0.</li> <li>● OFF: The address bit is 1.</li> </ul> By default, the address bit is 1.		OFF
S1-2			ON
S1-3			ON
S1-4	ON	The baud rate of the communication between the fan tray and the control board is 19200 bit/s.	ON
	OFF	The baud rate of the communication between the fan tray and the control board is 9600 bit/s.	
S1-5	It is used to set the scenario of fans. The high eight dip switch should be 0000 1010 for ETSI subrack. <ul style="list-style-type: none"> <li>● 0 indicates the switch should be ON.</li> <li>● 1 indicates the switch should be OFF.</li> </ul>		ON
S1-6			OFF
S1-7			ON
S1-8			OFF
SW1-1			ON

DIP Switch	Indication	Default Settings
SW1-2		ON
SW1-3		ON
SW1-4		ON

**Table 2-10** describes the settings of the DIP switches of low three switch.

**Table 2-10** Settings of S1-1, S1-2, and S1-3

S1-3	S1-2	S1-1	Address Value
ON	ON	ON	0
ON	ON	OFF	1
ON	OFF	ON	2
ON	OFF	OFF	3
OFF	ON	ON	4
OFF	ON	OFF	5
OFF	OFF	ON	6
OFF	OFF	OFF	7

 **NOTE**

When S1-1, S1-2, and S1-3 are used to set the subnode address, make sure that the DIP switch settings are consistent with the data configuration. But the subnode address value cannot be the same as that of the environment monitoring board.

## Fan Speed Adjustment

Set the fan speed adjustment mode to "automatic" or "manual" in the command line interface (CLI). After the fans are installed, they work in automatic mode by default.

- Automatic mode
  - Control-system-triggering: The control system automatically adjusts fan speed according to the board temperatures for energy conservation.
  - Monitoring-board-triggering: Electric switches 7 and 8 of the SW2 DIP switch on the monitoring board are set in four different ways to achieve four speed adjustment policies (the ETSI subrack supports only the third policy).

 **NOTE**

The automatic mode has two variants (automatically selected by the system): control-system-triggering and monitoring-board-triggering.

- Manual mode

Commands are executed to adjust fan speed. The levels range from 0 to 6, level 0 being the lowest speed and level 6 being the highest speed.

## 2.1.6 ESD Jack

The ESD jack of the ETSI subrack is on the left of the fan tray, which is used to connect the ESD wrist strap to prevent device damage caused by electrostatic discharge.

The position of the ETSI subrack ESD jack, as shown in [Figure 2-4](#).

**Figure 2-4** Position of the ETSI subrack ESD jack



## 2.1.7 Grounding

This topic describes the grounding principle of the ETSI subrack and the position of the ground point.

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### NOTICE

Connect the ground cables properly to guarantee protection against lightening and interference for the ETSI subrack. When a Huawei cabinet is installed, the service subrack is grounded through mounting ears and therefore no separate ground cables are required. When a third-party cabinet is installed, the separate ground cable needs to be connected to the service subrack and ground point on the cabinet.

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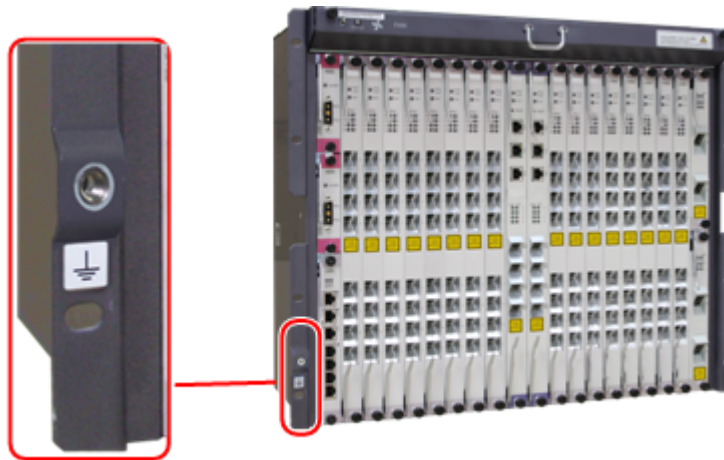
The power input end of the ETSI subrack has a noise filter. The center ground of the noise filter connects to the subrack, called the subrack ground, that is, the protection ground. Ground the subrack securely so that the influence electricity, leakage electricity can flow to the ground, improving the protection against electromagnetic interference.

Use a ground cable to connect the ground point of the subrack to the ground bar of the telecommunications room or to the ground directly. It is recommended that the grounding resistance of the telecommunications room should be less than 10 ohms. Refer to the local standards to ground the subrack.



The ground point of the subrack is on the left corner of the subrack, as shown in [Figure 2-5](#).

**Figure 2-5** Grounding of the ETSI subrack



## 2.1.8 Heat Dissipation

This topic describes the ventilation of the MA5600T ETSI service subrack.

The MA5600T ETSI service subrack has a fan tray at the top to exhaust hot air for heat dissipation.

The airflow is as follows: The cool air enters the MA5600T ETSI service subrack at the bottom, and is blown towards the top side by the fans, and finally, exits at the top side of the MA5600T ETSI service subrack. [Figure 2-6](#) shows the heat dissipation of the MA5600T ETSI service subrack.

**Figure 2-6** Ventilation of the MA5600T ETSI service subrack



## 2.2 MA5600T ETSI SPL Subrack Description

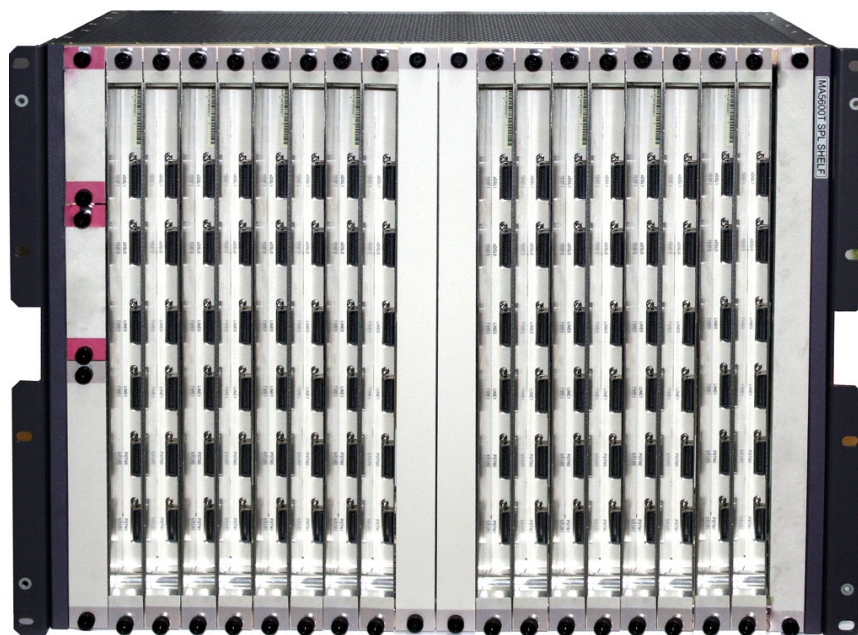
This topic provides the appearance and specifications of the ETSI SPL subrack, and describes the structure, function, and configuration of the subrack.

### 2.2.1 Appearance

The ETSI SPL subrack provides 22 slots. The SPL subrack is installed in the cabinet through the mounting brackets. This topic provides the appearance and composition of the ETSI SPL subrack.

## Appearance

Figure 2-7 Appearance and composition of the ETSI SPL subrack



### NOTE

Figure 2-7 shows the ETSI SPL subrack configured with the high-density SPL boards.

## 2.2.2 Physical Specifications

This topic provides the dimensions and weight of the ETSI SPL subrack.

### Dimensions and Weight

Table 2-11 Specifications of the ETSI SPL subrack

Item	Specification
Dimensions (W x D x H, including mounting brackets)	530.00 mm x 235.00 mm x 397.20 mm
Dimensions (W x D x H, excluding mounting brackets)	490.00 mm x 235.00 mm x 397.20 mm
Maximum weight	22.50 kg
Maximum power consumption	0 W

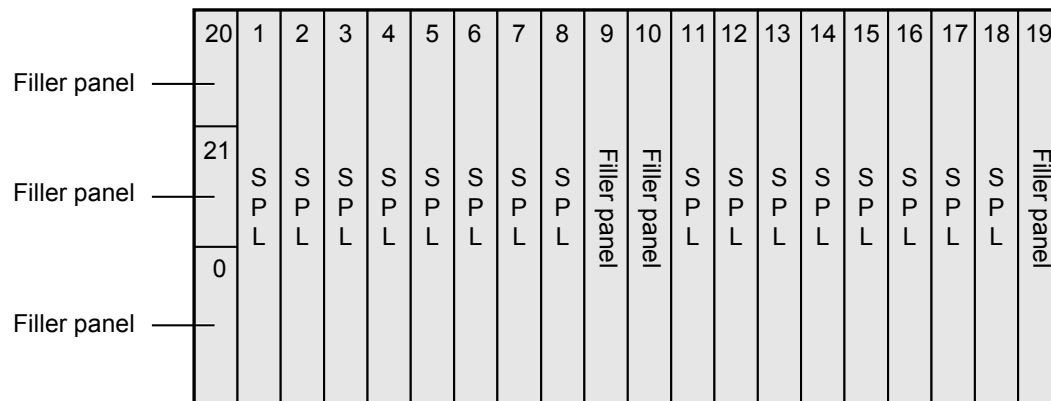
## 2.2.3 Configuration

The ETSI SPL subrack can be configured with 16 SPL boards.

## Configuration

The ETSI SPL subrack provides 22 slots.

**Figure 2-8** Configuration of boards in the ETSI SPL subrack



**Table 2-12** Boards in the ETSI SPL subrack

Slot	Supported Board
1-8,11-18	SPL board
0,9,10,19-21	Filler panel

**NOTE**

The ETSI SPL subrack is used to accommodate the low-density SPL board, high-density SPL board with built-in front panel, and transfer board with built-in front panel.

## 2.3 MA5600T IEC Service Subrack Description

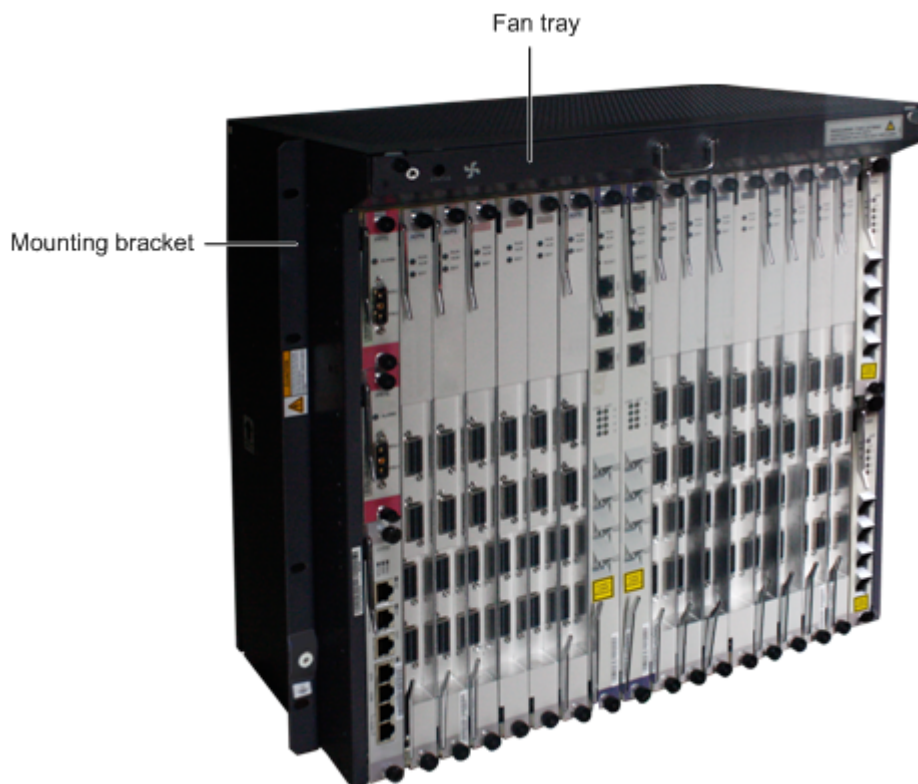
This topic provides the appearance, specification, function, working principle, configuration and fan tray of the IEC service subrack.

### 2.3.1 Appearance

The IEC service subrack provides 21 slots, and has a fan tray at the top. The subrack is installed in the cabinet through the mounting brackets. This topic provides the appearance of the IEC service subrack.

## Appearance

**Figure 2-9** Appearance of the IEC service subrack(xDSL)



### 2.3.2 Physical Specifications

This topic provides the dimensions, weight, and power consumption of the IEC service subrack.

#### Dimensions and Weight

**Table 2-13** Specifications of the IEC service subrack

Item	Specification
Dimensions (W x D x H, including mounting ears)	482.60 mm × 275.80 mm × 441.70 mm
Dimensions (W x D x H, excluding mounting ears)	442.00 mm × 275.80 mm × 441.70 mm
Maximum weight at full configuration (including mounting ears)	30.54 kg

## Power Supply

**Table 2-14** Power specifications of the IEC service subrack

Item	Specification
Power supply mode	DC (dual power for backup)
Rated voltage	-48 V / -60 V
Working voltage range	-38.4 V to -72 V
Maximum input current	40 A

## Power Consumption

**Table 2-15** Power consumption of the IEC service subrack (Unit: W)

Typical Configuration	Static power consumption	Maximum power consumption	Typical power consumption	Board configuration
ADSL2+	290.84	1155.55	723.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBH+H805ADPD*14
VDSL2	472.84	1379.55	926.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBH+H80BVDPM(17a)*14
POTS	346.84	665.55	506.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBH+H808ASPB*14
P2P	1102.84	1631.55	1367.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBH+H802OPGD*14
GPON (H805GPBD)	724.84	917.55	821.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBH+H805GPBD*14
GPON (H806GPBH)	570.84	875.55	723.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBH+H806GPBD/H806GPBH*14
GPON (H802SCUN+H803GPF)	668.84	1085.55	877.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBH+H806GPBD/H802GPF*14

Typical Configuration	Static power consumption	Maximum power consumption	Typical power consumption	Board configuration
GPON (H801SCUH+H803GPFD)	786.84	1253.55	1020.195	H801SCUH*2+H801X2CS*2+H801CID+H801PRTE*2+H801FCBH+H806GPBD/H802GPFD*14

 **NOTE**

The power consumption of the subrack is tested in the following conditions:

- Working voltage: -53.5 V DC
- Ambient temperature of 25 °C
- Static power consumption: All ports do not carry any loads. Specifically, users under POTS ports hang up phones, xDSL ports are deactivated, and optical modules are not installed on optical ports
- Maximum power consumption: All ports fully carry loads. However, only 25% users under POTS ports concurrently pick up phones and the feeding current is 20 mA.
- Typical power consumption: half of the total value of static power consumption and maximum power consumption.
- The preceding table lists power consumption under typical configuration. For power consumption under other configurations, use [Access Network Hardware Configuration Tool](#).
- In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

## 2.3.3 Configuration

The IEC service subrack provides 14 slots for service boards, two slots for control boards, two slots for power boards, one for universal interface board and two for upstream interface boards. This topic lists the types of boards supported by the IEC service subrack and the slot restriction.

### Configuration

H801MABH and H802MABH are the backplane supported by the IEC service subrack. H801MABH does not support the Vectoring feature, H802MABH supports the Vectoring feature.

**Figure 2-10** Configuration of boards in the IEC service subrack

Fan tray																	
19	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Power	Service board	Service board	Service board	Service board	Service board	Service board	Control board	Control board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	G - U
20																	
Power																	G - U - O

**Table 2-16** shows the configuration of boards in the IEC service subrack.

**Table 2-16** Boards in the IEC service subrack

Slot Type	Slot	Supported Board	Remarks
Control board slot	7,8	Control board	Two slots must be configured with the same control board. You are advised to configure 2 control boards working in active/standby mode.
Uplink interface board (GIU) slot	17,18	Uplink interface board	Mixed configuration of upstream interface boards is supported; however, it is recommended to use the same upstream interface board in the configuration.
Power board slot	19,20	Power board	It is recommended to configure the same power board in the two slots.
Universal interface board (GPIO) slot	0	Universal interface board	-



Slot Type	Slot	Supported Board	Remarks
Service board slot	1-6,9-16	<ul style="list-style-type: none"> <li>● Service board                             <ul style="list-style-type: none"> <li>- SPU board</li> <li>- TDM service processing board</li> <li>- Combo board</li> <li>- Voice board</li> <li>- ADSL2+ service board</li> <li>- VDSL2 service board</li> <li>- Vectoring processing board</li> <li>- SHDSL service board</li> <li>- P2P service board</li> <li>- GPON service board</li> <li>- 10G GPON service board</li> </ul> </li> <li>● SPL board                             <ul style="list-style-type: none"> <li>- ADSL SPL board</li> <li>- ,</li> <li>- VDSL SPL board</li> </ul> </li> <li>● Extension board</li> </ul>	Mixed configuration of service boards is supported. <b>NOTE</b> <ul style="list-style-type: none"> <li>● GPON boards are recommended to be installed from left to right and other boards are recommended from right to left.</li> <li>● A vectoring processing board can be installed only in slots 9 and 10. When installed in slot 9, the board processes the vectoring services of slots 1-6. When installed in slot 10, the board processes the vectoring services of slots 11-16.</li> </ul>

## 2.3.4 IEC Fan Tray (FCBC)

A fan tray functions heat dissipation, monitoring, and fan speed adjustment, which ensures that the device works at a stable temperature.

### Appearance

Eight fans are configured in the IEC fan tray (FCBC) of the MA5600T.



## Specification

Item	Specification
Dimensions (W x D x H)	438.00 mm x 245.00 mm x 38.50 mm
Weight	2.20 kg
Power consumption	<ul style="list-style-type: none"> <li>● Static: 17 W</li> <li>● Maximum: 52 W</li> </ul>

### NOTE

In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

## Function

The functions of the fan tray are as follows:

- **Heat dissipation**  
 The fan tray is at the top of the service subrack and exhausts hot air for heat dissipation. The cool air flows to the subrack from the bottom of the subrack and then is exhausted from the top of the subrack after passing the boards.
- **Monitoring**  
 The fan tray is configured with the fan monitoring board to detect whether the fans are working in the normal state. The fan monitoring board also provides the port for communication with the control board. The detected information is transmitted to the control board through the fan monitoring board periodically.
- **Speed adjustment**  
 The rotating speed of the fans can be adjusted according to the detected temperature automatically or be adjusted by setting the related data manually.

## LED

Indicator	Color	Status	Meaning	Operation Description
STATUS	Yellow	Blinking quickly (on for 0.3 s and off for 0.3 s repeatedly)	The fan tray is not registered or is being loaded.	No action is required.

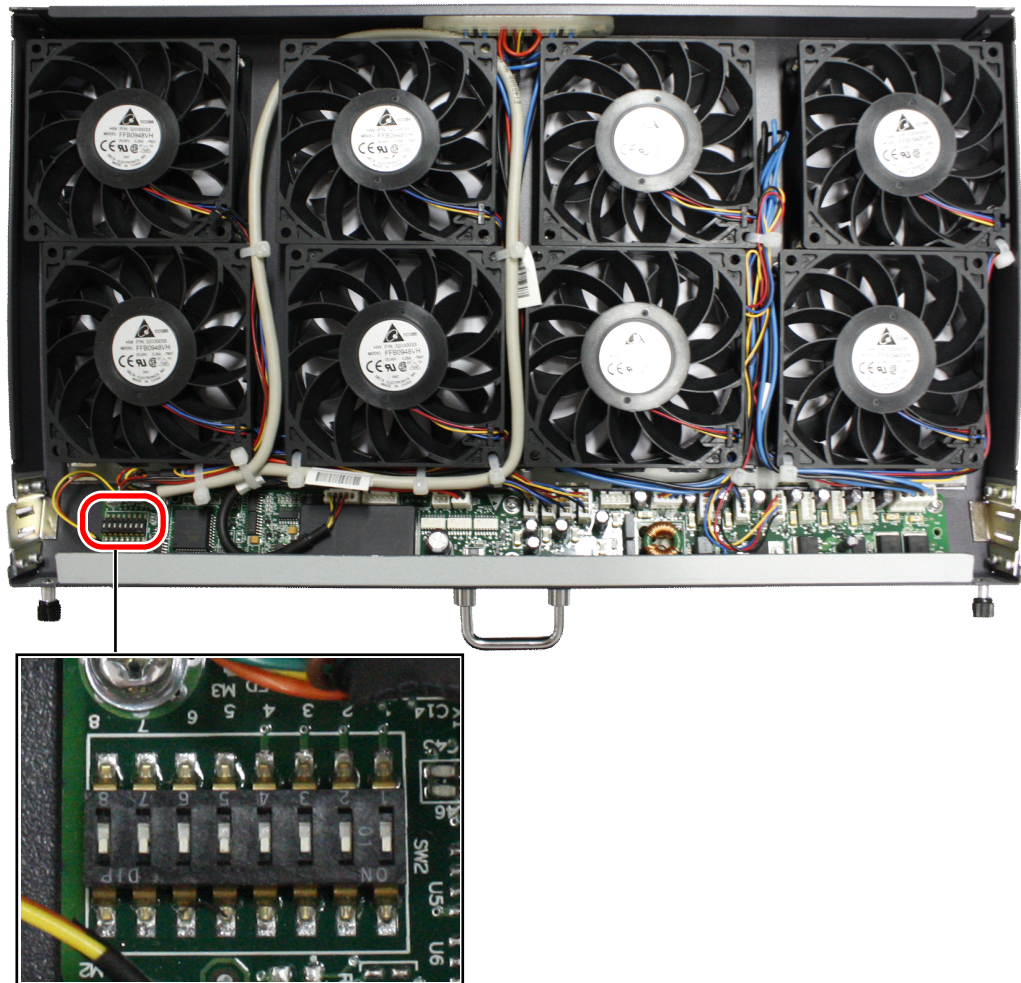
Indicator	Color	Status	Meaning	Operation Description
			The communication between the host and the fan tray is interrupted.	Check communication between the fan tray and device.
	Green	Blinking	The fan tray works in the normal state.	No action is required.
	Yellow	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The fan tray generates alarms that do not affect services.	Handle it based on the corresponding alarm.
	Red	Blinking	The fan tray is faulty or the fan tray generates an over-temperature alarm.	<ul style="list-style-type: none"> <li>● Increase the fan speed to lower the temperature.</li> <li>● Replace the faulty fan tray.</li> </ul>

 **NOTE**

When only one PRTE board is configured, the LED turns yellow and blinks. The services are not affected.

## DIP Switches

The fan tray uses the FCBC monitoring board, which provides a set of DIP switches. This section describes the indications and settings of the DIP switches SW2. The following figure shows the layout of DIP switches and default settings.



**NOTE**

**Table 2-17** describes the settings of SW2.

**Table 2-17** Settings of SW2

DIP Switch	Indication		Default Settings
SW2-1	It is used to set the subnode address of the fan tray that maps the data configuration. ● ON: The address bit is 0. ● OFF: The address bit is 1. By default, the address bit is 1.		OFF
SW2-2			ON
SW2-3			ON
SW2-4	ON	The baud rate of the communication between the fan tray and the control board is 19200 bit/s.	ON

DIP Switch	Indication		Default Settings
	OFF	The baud rate of the communication between the fan tray and the control board is 9600 bit/s.	
SW2-5	It is used to set the quantity of fans.		ON
SW2-6			OFF
SW2-7	It is used to set the mode of adjusting the fan speed.		ON
SW2-8			OFF

**Table 2-18**, **Table 2-19**, and **Table 2-20** describe the settings of the DIP switches of SW2.

**Table 2-18** Settings of SW2-1, SW2-2, and SW2-3

SW2-3	SW2-2	SW2-1	Address Value
ON	ON	ON	0
ON	ON	OFF	1
ON	OFF	ON	2
ON	OFF	OFF	3
OFF	ON	ON	4
OFF	ON	OFF	5
OFF	OFF	ON	6
OFF	OFF	OFF	7

 **NOTE**

When SW2-1, SW2-2, and SW2-3 are used to set the subnode address, make sure that the DIP switch settings are consistent with the data configuration. But the subnode address value cannot be the same as that of the environment monitoring board.

**Table 2-19** Settings of SW2-5 and SW2-6

SW2-6	SW2-5	Fan Quantity
ON	ON	6
ON	OFF	8
OFF	ON	4
OFF	OFF	10

 **NOTE**

Six fans are configured in the IEC fan tray (FCBC) of the MA5600T.

**Table 2-20** Settings of SW2-7 and SW2-8

SW2-8	SW2-7	Speed Adjustment Mode	Adjustment Strategy
ON	ON	Temperature measurement at the air intake vent (reserved)	Strategy 1
ON	OFF	Temperature measurement at the air exhaust vent	Strategy 2
OFF	ON	Temperature measurement at the air intake vent	Strategy 3
OFF	OFF	Temperature measurement at the air intake vent (the fan stops rotating)	Strategy 4

 **NOTE**

The IEC fan tray (FCBC) of the MA5600T must use speed adjustment policy 3.

## Fan Speed Adjustment

Set the fan speed adjustment mode to "automatic" or "manual" in the command line interface (CLI). After the fans are installed, they work in automatic mode by default.

 **NOTE**

The fan tray dissipates heat for the device to ensure that the device works at a normal temperature. When the ambient temperature of the device exceeds its environment specifications, the system automatically reports a high-temperature (or low-temperature) alarm.

- Automatic mode
  - Fan-control mode: The system automatically adjusts the fan speed according to the board temperatures for energy saving.
  - Control-board-control mode: Electric switches 7 and 8 of the SW2 DIP switch on the monitoring board are set in four different ways to achieve four speed adjustment policies (the IEC subrack supports only the third policy), as described in [Table 2-21](#).

**Table 2-21** Fan speed adjustment strategies

No.	Description
1	<ul style="list-style-type: none"><li>● At the temperature less than 25°C, the fans rotate at 50% of the full speed.</li><li>● At the temperature from 25°C to 35°C, the fans rotate at 50% to 100% of the full speed.</li><li>● At the temperature greater than 35°C, the fans rotate at full speed.</li></ul>
2	<ul style="list-style-type: none"><li>● At the temperature less than 55°C, the fans rotate at 50% of the full speed.</li><li>● At the temperature from 55°C to 65°C, the fans rotate at 50% to 100% of the full speed.</li><li>● At the temperature greater than 65°C, the fans rotate at full speed.</li></ul>
3	<ul style="list-style-type: none"><li>● At the temperature less than 30°C, the fans rotate at 50% of the full speed.</li><li>● At the temperature from 30°C to 50°C, the fans rotate at 50% to 100% of the full speed.</li><li>● At the temperature greater than 50°C, the fans rotate at full speed.</li></ul>
4	<ul style="list-style-type: none"><li>● At the temperature less than 15°C, the fans stop rotating.</li><li>● At the temperature from 15°C to 45°C, the fans rotate at 50% of the full speed.</li><li>● At the temperature from 45°C to 65°C, the fans rotate at 50% to 100% of the full speed.</li><li>● At the temperature greater than 65°C, the fans rotate at full speed.</li></ul>

 **NOTE**

When the automatic mode is used, the device automatically switches between the fan-control mode and control-board-control mode.

- **Manual mode**

Commands are executed to adjust fan speed. The levels range from 0 to 6, level 0 being the lowest speed and level 6 being the highest speed.

## 2.3.5 IEC Fan Tray (FCBH)

A fan tray functions heat dissipation, monitoring, and fan speed adjustment, which ensures that the device works at a stable temperature.

### Appearance

Ten fans are configured in the IEC fan tray (FCBH) of the MA5600T.



## Specification

Item	Specification
Dimensions (W x D x H)	438.00 mm x 245.00 mm x 38.50 mm
Weight	2.55 kg
Power consumption	<ul style="list-style-type: none"><li>● Static: 17 W</li><li>● Maximum: 52 W</li><li>● Static: 21 W</li><li>● Maximum: 88 W</li></ul>

### NOTE

In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

## Function

The functions of the fan tray are as follows:

- **Heat dissipation**

The fan tray is at the top of the service subrack and exhausts hot air for heat dissipation. The cool air flows to the subrack from the bottom of the subrack and then is exhausted from the top of the subrack after passing the boards.
- **Monitoring**

The fan tray is configured with the fan monitoring board to detect whether the fans are working in the normal state. The fan monitoring board also provides the port for communication with the control board. The detected information is transmitted to the control board through the fan monitoring board periodically.
- **Speed adjustment**

The rotating speed of the fans can be adjusted according to the detected temperature automatically or be adjusted by setting the related data manually.



## Configuration

The IEC fan tray is configured with 10 fans. Each fan can be installed and dismantled separately.

## LED

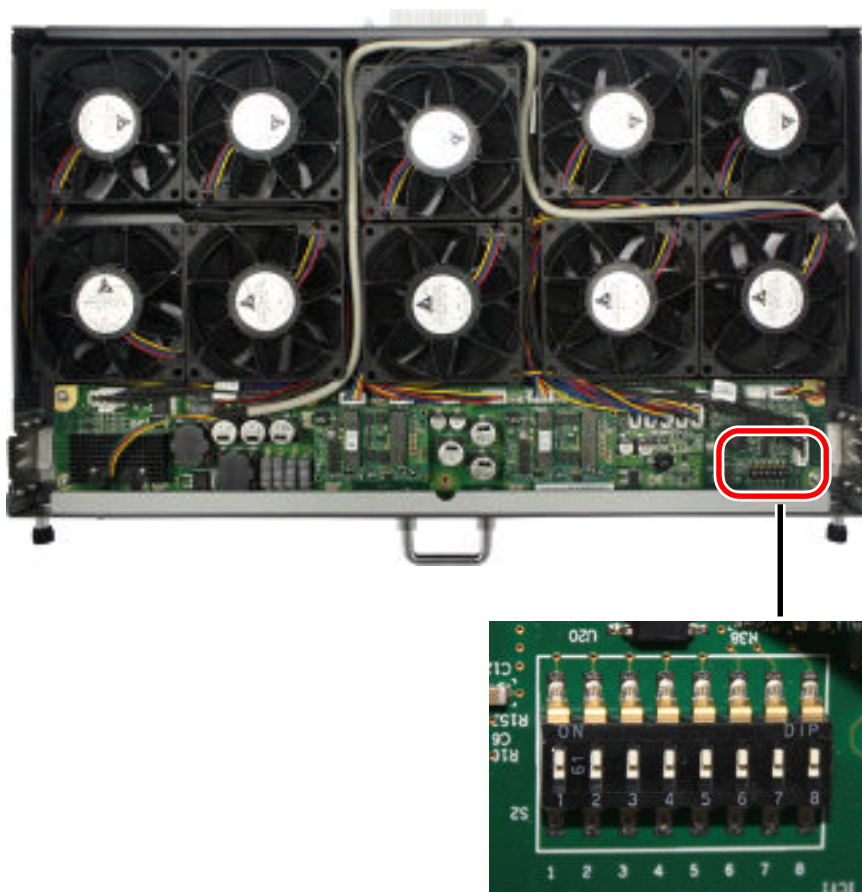
Indicator	Color	Status	Meaning	Operation Description
STATUS	Yellow	Blinking quickly (on for 0.125 s and off for 0.125 s repeatedly)	The fan tray is not registered or is being loaded.	No action is required.
			The communication between the host and the fan tray is interrupted.	Check communication between the fan tray and device.
	Green	Blinking	The fan tray works in the normal state.	No action is required.
	Yellow	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The fan tray generates alarms that do not affect services.	Handle it based on the corresponding alarm.
Red	Blinking (on for 0.125 s and off for 0.125 s repeatedly)	The fan tray is faulty or the fan tray generates an over-temperature alarm.	<ul style="list-style-type: none"> <li>● Increase the fan speed to lower the temperature.</li> <li>● Replace the faulty fan tray.</li> </ul>	

### NOTE

When only one power board is configured, the yellow LED is on for 1s and off for 1s repeatedly. The services are not affected.

## DIP Switches

The fan tray uses the FCBH monitoring board, which provides a set of DIP switches. This section describes the indications and settings of the DIP switches SW2. The following figure shows the layout of DIP switches and default settings.



 NOTE

Table 2-22 describes the settings of SW2.

**Table 2-22** Settings of SW2

DIP Switch	Indication		Default Settings
SW2-1	It is used to set the subnode address of the fan tray that maps the data configuration. <ul style="list-style-type: none"> <li>● ON: The address bit is 0.</li> <li>● OFF: The address bit is 1.</li> </ul> By default, the address bit is 1.		OFF
SW2-2			ON
SW2-3			ON
SW2-4	ON	The baud rate of the communication between the fan tray and the control board is 19200 bit/s.	ON
	OFF	The baud rate of the communication between the fan tray and the control board is 9600 bit/s.	
SW2-5	It is used to set the quantity of fans.		ON

DIP Switch	Indication	Default Settings
SW2-6		ON
SW2-7	It is used to set the mode of adjusting the fan speed.	ON
SW2-8		ON

**Table 2-23**, **Table 2-24**, and **Table 2-25** describe the settings of the DIP switches of SW2.

**Table 2-23** Settings of SW2-1, SW2-2, and SW2-3

SW2-3	SW2-2	SW2-1	Address Value
ON	ON	ON	0
ON	ON	OFF	1
ON	OFF	ON	2
ON	OFF	OFF	3
OFF	ON	ON	4
OFF	ON	OFF	5
OFF	OFF	ON	6
OFF	OFF	OFF	7

 **NOTE**

When SW2-1, SW2-2, and SW2-3 are used to set the subnode address, make sure that the DIP switch settings are consistent with the data configuration. But the subnode address value cannot be the same as that of the environment monitoring board.

**Table 2-24** Settings of SW2-5 and SW2-6

SW2-6	SW2-5	Fan Quantity
ON	ON	10
ON	OFF	8
OFF	ON	6
OFF	OFF	4

 **NOTE**

Ten fans are configured in the IEC fan tray (FCBH) of the MA5600T.

**Table 2-25** Settings of SW2-7 and SW2-8

SW2-8	SW2-7	Speed Adjustment Mode	Adjustment Strategy
ON	ON	Temperature measurement at the air intake vent	Strategy 1
ON	OFF	Temperature measurement at the air exhaust vent	Strategy 2
OFF	ON	Temperature measurement at the air intake vent	Strategy 3
OFF	OFF	Temperature measurement at the air intake vent (the fan stops rotating)	Strategy 4

 **NOTE**

The IEC fan tray (FCBH) of the MA5600T must use speed adjustment policy 1.

## Fan Speed Adjustment

The fan tray provides fan speed adjustment in automatic mode and manual mode.

 **NOTE**

The fan tray dissipates heat for the device to ensure that the device works at a normal temperature. When the ambient temperature of the device exceeds its environment specifications, the system automatically reports a high-temperature (or low-temperature) alarm.

- Automatic mode
  - Fan-control mode: The system automatically adjusts the fan speed according to the board temperatures for energy saving.
  - Control-board-control mode: Electric switches 7 and 8 of the SW2 DIP switch on the monitoring board are set in four different ways to achieve four speed adjustment policies (the IEC subrack supports only one policy).

 **NOTE**

When the automatic mode is used, the device automatically switches between the fan-control mode and control-board-control mode. When the control board and fan tray both function properly, the default fan speed adjustment mode of the fan tray is control-board-control mode. When the fan tray fails to communicate with the control board, the system automatically switches to the fan-control mode.

- Manual mode

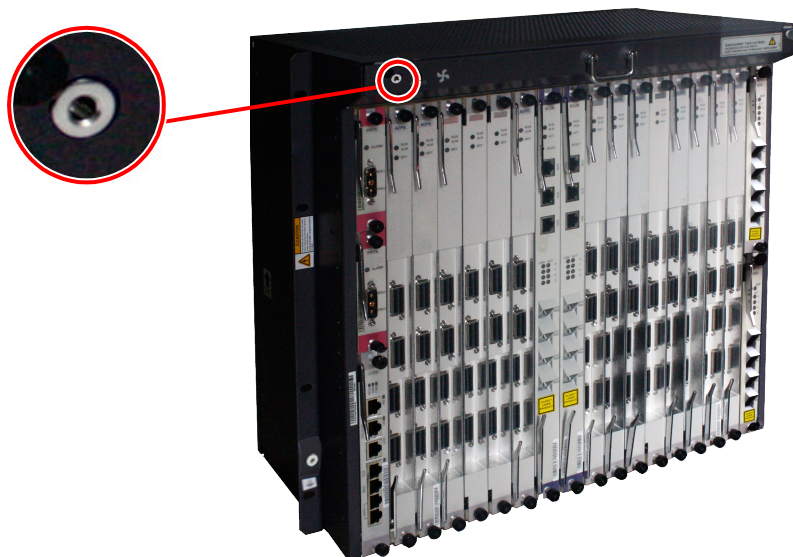
Commands are executed to adjust the fan speed. The levels range from 0 to 6, level 0 being the lowest speed and level 6 being the highest speed.

## 2.3.6 ESD Jack

The ESD jack of the IEC subrack is on the left of the fan tray, which is used to connect the ESD wrist strap to prevent device damage caused by electrostatic discharge.

The position of the ETSI subrack ESD jack, as shown in [Figure 2-11](#).

**Figure 2-11** Position of the IEC subrack ESD jack (xDSL)



## 2.3.7 Grounding

This topic describes the grounding principle of the IEC subrack and the position of the ground point.

---

### NOTICE

Connect the ground cables properly to guarantee protection against lightening and interference for the IEC subrack. When a Huawei cabinet is installed, the service subrack is grounded through mounting ears and therefore no separate ground cables are required. When a third-party cabinet is installed, the separate ground cable needs to be connected to the service subrack and ground point on the cabinet.

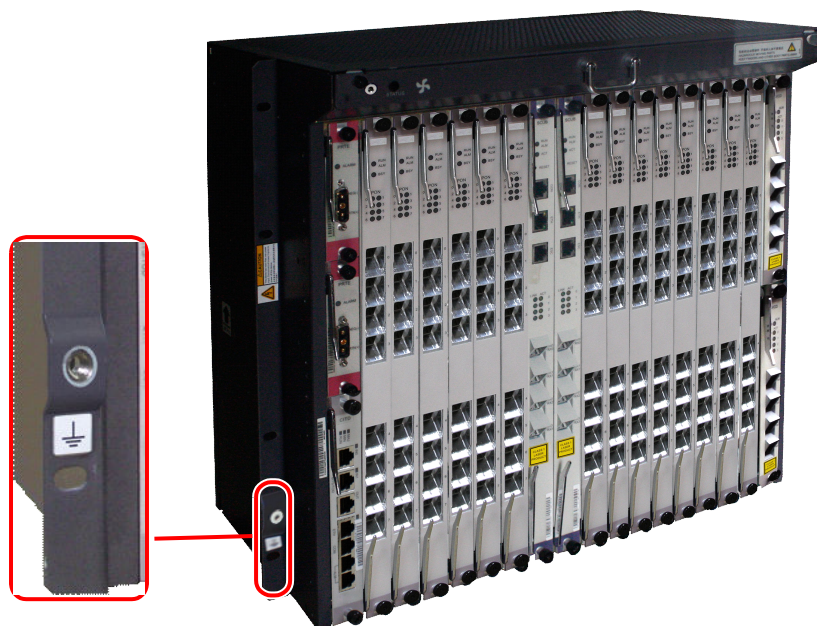
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The power input end of the IEC subrack has a noise filter. The center ground of the noise filter connects to the subrack, called the subrack ground, that is, the protection ground. Ground the subrack securely so that the influence electricity, leakage electricity can flow to the ground, improving the protection against electromagnetic interference.

Use a ground cable to connect the ground point of the subrack to the ground bar of the telecommunications room or to the ground directly. It is recommended that the grounding resistance of the telecommunications room should be less than 10 ohms. Refer to the local standards to ground the subrack.

The ground point of the subrack is on the left corner of the subrack, as shown in [Figure 2-12](#).

**Figure 2-12** Grounding of the IEC subrack



## 2.3.8 Heat Dissipation

This topic describes the ventilation of the MA5600T IEC service subrack.

The MA5600T IEC service subrack has a fan tray at the top to exhaust hot air for heat dissipation.

The airflow is as follows: The cool air enters the MA5600T IEC service subrack at the bottom, and is blown towards the top side by the fans, and finally, exits at the top side of the MA5600T IEC service subrack. [Figure 2-13](#) shows the heat dissipation of the MA5600T IEC service subrack.

Figure 2-13 Ventilation of the MA5600T IEC service subrack



## 2.4 MA5623AR Extended subrack Description

This topic provides the appearance, ports, and function of the MA5623AR extended subrack.

### NOTE

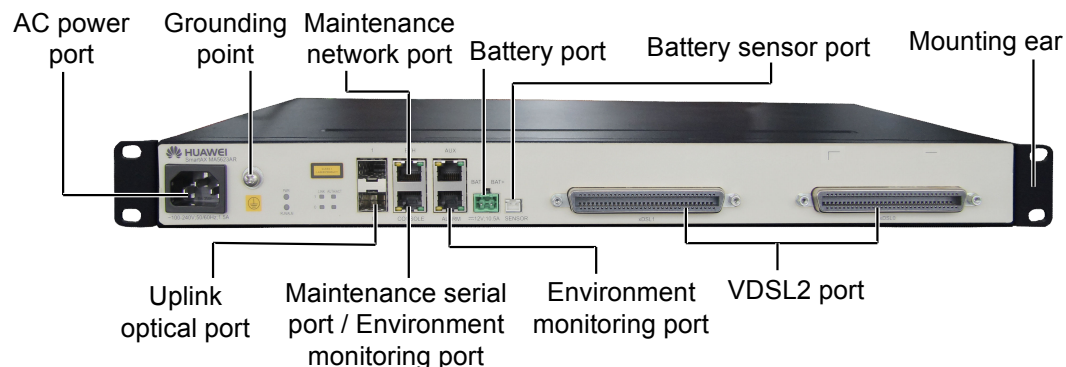
V800R012C00 and later versions support the MA5623AR extended subrack, which is upstream connected to the ETHB board through the GE port for extended subrack cascading.

### 2.4.1 Appearance and Ports

The MA5623AR box-shaped device has a fan tray at the right. The subrack is installed in the cabinet through the mounting brackets.

The MA5623AR provides two configuration models, which differ in the power supply mode (DC or AC). [Figure 2-14](#) and [Figure 2-15](#) show the appearance of MA5623AR. [Table 2-26](#) describes the ports on MA5623AR.

**Figure 2-14** Appearance of an AC-powered MA5623AR



**Figure 2-15** Appearance of an DC-powered MA5623AR



**Table 2-26** Ports on a MA5623AR

Port Name	Silk Screen	Number of Ports	Function
AC power port	-	1	Connects to 110 V or 220 V AC power.
DC power port	-	1	Connects to 48 V DC power.
Ground point	-	1	Connects the device to the ground.
Uplink optical port	0, 1	2	GE optical port: <ul style="list-style-type: none"> <li>● Uses the small form-factor pluggable (SFP) optical module.</li> <li>● Supports different transmission distances using various SFP optical modules.</li> <li>● Supports single-mode and multi-mode optical modules.</li> </ul>
Maintenance network port	ETH	1	It is a 100M Base-T commissioning network port and supports 100 Mbit/s full-duplex autonegotiation.



Port Name	Silk Screen	Number of Ports	Function
Maintenance serial port/ Environment monitoring port (RS-232 port)	CONSOLE	1	<p>The MA5623AR provides one serial port, which can function as a maintenance serial port and maintenance network port at the same time after a console-Ethernet integrated cable is connected to it.</p> <ul style="list-style-type: none"> <li>● During the BIOS loading process, this serial port can only be used as a maintenance serial port. In this case, the first user port on the device can be used as the maintenance network port.</li> <li>● When the device is running, the functions of this port are as follows: <ul style="list-style-type: none"> <li>- It can be used as a maintenance serial port. In this case, you can configure a user port on the device to manage the device locally.</li> <li>- It can function as a maintenance serial port and maintenance network port at the same time after a console-Ethernet integrated cable is connected to it.</li> </ul> </li> <li>● When the serial port mode of the MA5623AR is emu, can be connected to environment monitoring unit (EMU) to monitor the digital parameter. The port can also be used for the communication between the device and Fe-lithium batteries.</li> </ul>
Battery port	BAT-/BAT+	1	<p>The port is used to connect the device to lead-acid batteries. The port uses a design that protects against inverse cable connector insertion, and the through-current capacity is 16 A.</p> <p><b>NOTE</b> The DC-powered MA5623AR does not support the battery port.</p>
Battery sensor port	SENSOR	1	<p>The port supports external temperature sensors if the device uses an AC power source and lead-acid batteries.</p> <p><b>NOTE</b> The DC-powered MA5623AR does not support the battery sensor port.</p>
Environment monitoring port	ALARM	1	<p>Supports four digital sensors: door status, surge protection, main distribution frame, and smoke sensors.</p>

Port Name	Silk Screen	Number of Ports	Function
VDSL2 Port	xDSL0 and xDSL1	2	The VDSL2 port supports a maximum transmission distance of 3.5 km (11,482 feet) and supports VDSL2 service access in 48 channels. <b>NOTE</b> For pin assignments of the xDSL0 port, see <a href="#">Table 2-27</a> . For pin assignments of the xDSL1 port, see <a href="#">Table 2-28</a> .
Mounting ears	-	2	Used for fixing the device.

**Table 2-27** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		31			15			
62	14	46	6		30	17	14	-
61		29			13			
60	13	44	5		28	18	12	-
59		27			11			
58	12	42	4		26	19	10	-
57		25			9			
56	11	40	3		24	20	8	-
55		23			7			
54	10	38	2		22	21	6	-
53		21			5			
52	9	36	1		20	22	4	-
51		19			3			
50	8	34	0		18	23	2	-
49		17			1			

**Table 2-28** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	39	48	31		32	40	16	-
63		47			31		15	
62	38	46	30		30	41	14	-
61		45			29		13	
60	37	44	29		28	42	12	-
59		43			27		11	
58	36	42	28		26	43	10	-
57		41			25		9	
56	35	40	27		24	44	8	-
55		39			23		7	
54	34	38	26		22	45	6	-
53		37			21		5	
52	33	36	25		20	46	4	-
51		35			19		3	
50	32	34	24		18	47	2	-
49		33			17		1	

## 2.4.2 Physical Specifications

This topic provides the dimensions, weight, and power consumption of the MA5623AR extended subrack.

**Table 2-29** Dimensions, weight, and power consumption of the MA5623AR

Item	Specification
Dimensions (W x D x H, excluding mounting brackets)	442mm×220mm×43.6mm
Dimensions (W x D x H, including mounting brackets)	482.6mm×220mm×43.6mm
Weight (empty chassis)	3.2 kg
Power (17a)	<ul style="list-style-type: none"> <li>● Static: 23 W</li> <li>● Maximum: 73 W</li> </ul>

Item	Specification
Maximum power (8b)	<ul style="list-style-type: none"> <li>● Static: 23 W</li> <li>● Maximum: 79 W</li> </ul>

 **NOTE**

The power consumption of the subrack is tested in the following conditions:

- -53.5 V DC
- Ambient temperature of 25°C
- Static power consumption: power consumption of the powered-on equipment with no load (all user ports are deactivated)
- Maximum power consumption: power consumption of the powered-on equipment with full services
- In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

## 2.4.3 Function

The MA5623AR extended subrack can be considered as the extension service board for the primary subrack of the MA5600T/MA5603T. The primary subrack manages the MA5623AR extended subrack in the same way as it manages its service boards. The MA5623AR extended subrack provides the same functions as the VDSL2 board of the primary subrack. It connects to the ETHB board through the GE upstream port, cascading the primary subrack.

The MA5623AR extended subrack supports the following functions:

- 48-channel VDSL2 access service.
- Vectoring.
- Port protection
- 2-pair VDSL2 bonding when the 8a, 8b, 8c, or 8d profile is used.
- Single-ended loop test (SELT)
- Metallic loop test (MELT)
- VDSL2 8a, 8b, 8c, 8d, 12a, 12b, and 17a profiles
- G.992.1 Annex A, G.992.3 Annex A/B/L/M, G.992.5 Annex A/B/M, G.993.2 Annex A/B
- G.INP physical layer retransmission

 **NOTE**

In bonding mode, the G.INP physical-layer retransmission is not supported.

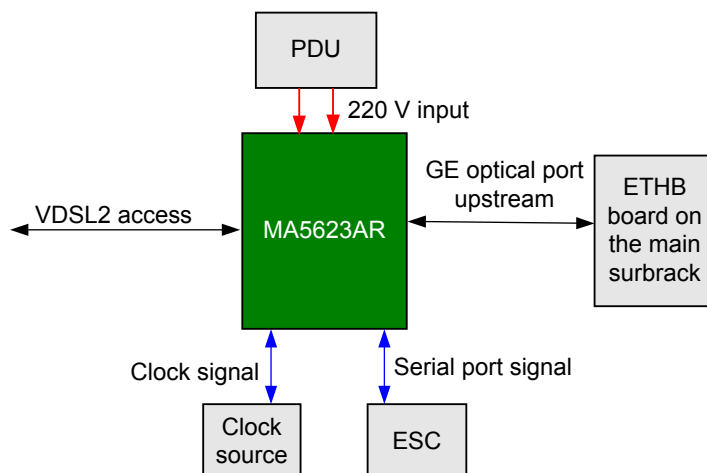
- Temperature query and high-temperature alarm
- Automatic power shutdown in case of a high temperature

**Figure 2-16** shows the external connections of the MA5623AR extended subrack.

 **NOTE**

The MA5623AR extended subrack supports -48/-60 V DC and 220 V AC input power. The MA5623AR extended subrack that supports 220 V AC input power is used as an example in the following figure.

**Figure 2-16** External connections of the MA5623AR extended subrack

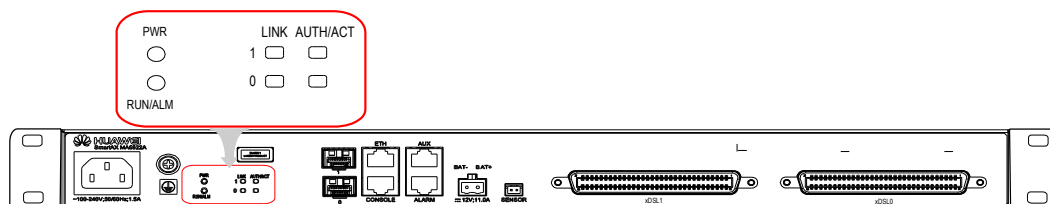


## 2.4.4 Indicators

The MA5623AR provides various indicators on the panel to help users learn about the running status of the device.

**Figure 2-17** shows the panel indicators provided by the MA5623AR and **Table 2-30** describes the status and meanings of these indicators.

**Figure 2-17** Indicators provided by the MA5623AR



**Table 2-30** Status and meanings of the indicators provided by the MA5623AR

Indicator	Name	Color	Status	Description
PWR	Power supply status indicator	Green	On	The device is powered on.
		-	Off	The device is powered off.
RUN/ALM	Running status indicator	Red	Blinking (on for 0.25 s and off for 0.25 s repeatedly)	The device is starting up.

Indicator	Name	Color	Status	Description
		Green	Blinking (on for 1 s and off for 1 s repeatedly)	The device is working properly.
		Red	On	The device is faulty.
LINK	Link status indicator	Green	On	The uplink optical port is receiving optical signals.
		-	Off	The uplink port fails to receive optical signals or an optical fiber is not connected to device.
ACT	Data status indicator	Green	Blinking	The GE optical port is transmitting or receiving data.
		-	Off	No data is transmitted or received on the GE optical port.

## 2.4.5 Heat Dissipation

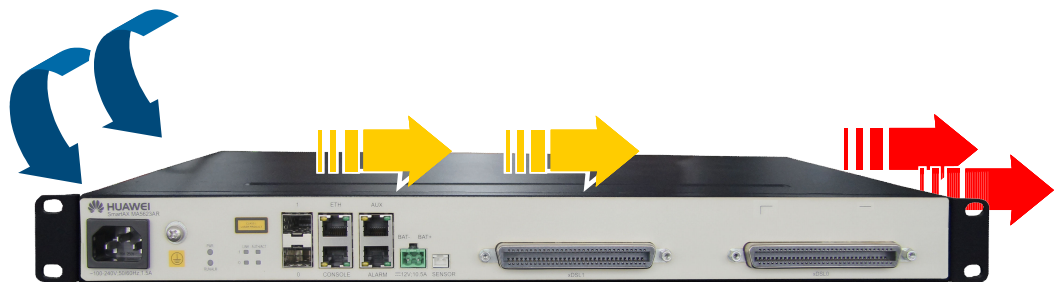
The MA5623AR supports a high density of user access. In addition, the MA5623AR adopts an optimal design to implement wind cooling heat dissipation.

Two fans are located in the right side of the MA5623AR, used for ventilation of the chassis in the exhaust mode.

The airflow is as follows: the cool air enters the MA5623AR at the left side, and is blown towards the right side by the fans, and finally, exits at the right side of the MA5623AR

**Figure 2-18** shows the airflow for the MA5623AR

**Figure 2-18** Airflow for the MA5623AR



MA5623AR supports automatic setting the fan speed, the fan speed is automatically adjusted according to the temperature detected by the temperature sensor configured on the control board.

The fans of the MA5623AR support alarm report when the fan is blocked.

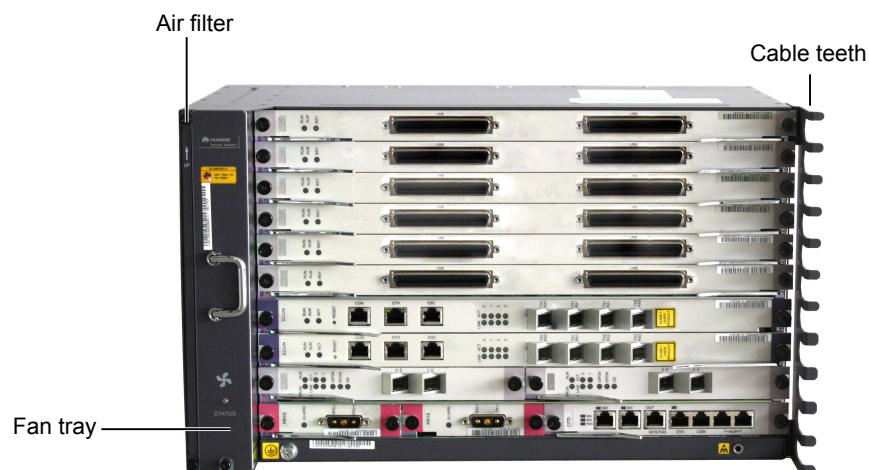
## 2.5 MA5603T Chassis Description

This topic describes the chassis and fan tray of the MA5603T.

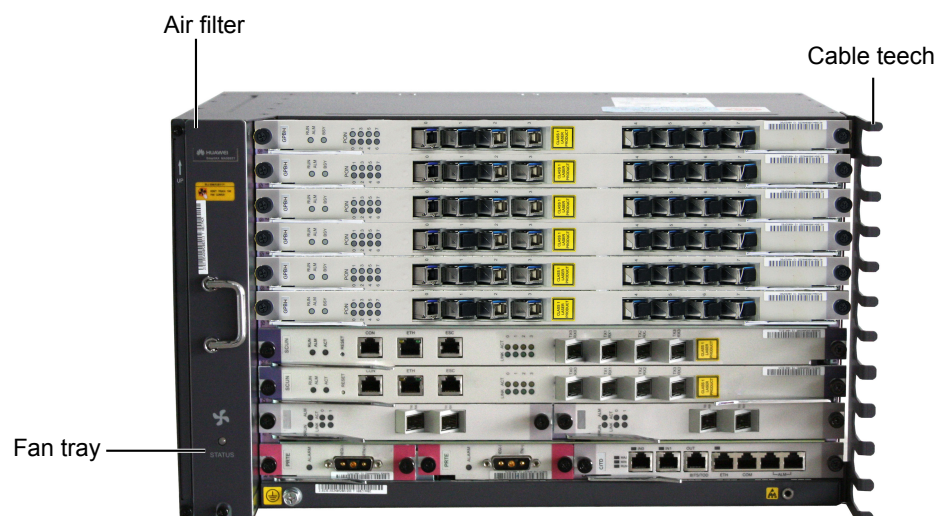
### 2.5.1 Appearance

The MA5603T has a fan tray at the left. The subrack is installed in the cabinet through the mounting brackets.

**Figure 2-19** Appearance of the MA5603T chassis(xDSL)



**Figure 2-20** Appearance of the MA5603T chassis(GPON)



## 2.5.2 Physical Specifications

This topic provides the dimensions, weight, and power consumption of the MA5603T chassis.

### Dimensions and Weight

**Table 2-31** Dimensions and weight of the MA5603T

Item	Specification
Dimensions (W x D x H, excluding mounting brackets)	442.00 mm x 283.20 mm x 263.90 mm
Dimensions (W x D x H, including mounting brackets of 19-inch standard)	482.60 mm x 283.20 mm x 263.90 mm
Dimensions (W x D x H, including mounting brackets of ETSI standard)	535.00 mm x 283.20 mm x 263.90 mm
Weight (empty chassis)	7.00 kg

### Power Supply

**Table 2-32** Power specifications of the MA5603T

Item	Specification
Power supply mode	DC (dual power for backup)
Rated voltage	-48 V / -60 V
Working voltage range	-38.4 V to -72 V
Maximum input current	20 A

### Power Consumption

**Table 2-33** Power consumption of the MA5603T chassis (Unit: W)

Typical Configuration	Static power consumption	Maximum power consumption	Typical power consumption	Board configuration
ADSL2+	189.84	606.55	398.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H805ADPD*6



Typical Configuration	Static power consumption	Maximum power consumption	Typical power consumption	Board configuration
VDSL2	267.84	702.55	485.195	H801SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H80BVDPM(17a)*6
POTS	213.84	396.55	305.195	H801SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H808ASPB*6
P2P	537.84	810.55	674.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H802OPGD*6
GPON (H805GPBD)	375.84	504.55	440.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H805GPBD*6
GPON (H806GPBH)	309.84	486.55	398.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H806GPBH*6
GPON (H802SCUN+H805GPFD)	273.84	510.55	392.195	H802SCUN*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H805GPFD*6
GPON (H801SCUH+H805GPFD)	391.84	678.55	535.195	H801SCUH*2+H801X2CS*2+H801CITD+H801PRTE*2+H801FCBI+H805GPFD*6

 **NOTE**

The power consumption of the subrack is tested in the following conditions:

- Working voltage: -53.5 V DC
- Ambient temperature: 25°C
- Static power consumption: All ports do not carry any loads. Specifically, users under POTS ports hang up phones, xDSL ports are deactivated, and optical modules are not installed on optical ports
- Maximum power consumption: All ports fully carry loads. However, only 25% users under POTS ports concurrently pick up phones and the feeding current is 20 mA.
- Typical power consumption: half of the total value of static power consumption and maximum power consumption.
- The preceding table lists power consumption under typical configuration. For power consumption under other configurations, use [Access Network Hardware Configuration Tool](#).
- In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

## 2.5.3 Configuration

This topic provides the configuration of the boards in the MA5603T chassis, and lists the type of the boards.

H801MABO and H802MABO are the backplanes supported by the MA5603T. H801MABO does not support the Vectoring feature, and H802MABO supports the Vectoring feature.

**Figure 2-21** Configuration of boards in the MA5603T chassis

FAN	0		Service board	
	1		Service board	
	2		Service board	
	3		Service board	
	4		Service board	
	5		Service board	
	6		Control board	
	7		Control board	
	8	GIU	9	GIU
	10	Power	11	Power
		12	GPIO	

[Table 2-34](#) lists the configuration of boards in the MA5603T chassis. For details, see [3.4 Board Configuration\(MA5600T/MA5603T\)](#).

**Table 2-34** Boards in the MA5603T chassis

Slot Type	Slot	Supported Board	Remarks
Control board (SCU) slot	6,7	Control board	Two slots must be configured with the same control board. You are advised to configure 2 control boards working in active/standby mode.
Uplink interface board (GIU) slot	8,9	Uplink interface board	Mixed configuration of upstream interface boards is supported; however, it is recommended to use the same upstream interface board in the configuration.
Power board slot	10,11	Power board	It is recommended to configure the same power board in the two slots.
Universal interface board (GPIO) slot	12	<ul style="list-style-type: none"> <li>● Universal interface board</li> <li>● Vectoring processing board</li> </ul>	-
Service board slot	0-5	<ul style="list-style-type: none"> <li>● Service board                             <ul style="list-style-type: none"> <li>- SPU board</li> <li>- Ethernet service access board</li> <li>- TDM service processing board</li> <li>- GPON service board</li> <li>- 10G GPON service board</li> <li>- P2P interface board</li> <li>- ATM interface board</li> <li>- Combo board</li> <li>- Voice board</li> <li>- ADSL2+ service board</li> <li>- VDSL2 service board</li> <li>- SHDSL service board</li> </ul> </li> <li>● SPL board                             <ul style="list-style-type: none"> <li>- ADSL SPL board</li> <li>- VDSL SPL board</li> </ul> </li> <li>● Extension board</li> </ul>	Mixed configuration of service boards is supported. When the SPL board is configured in the slot, select the slot next to the corresponding service board.

## 2.5.4 Fan Tray(FMCA)

A fan tray functions heat dissipation, monitoring, and fan speed adjustment, which ensures that the device works at a stable temperature.

### Appearance

Six fans are configured in the fan tray (FMCA) of the MA5603T.



### Specification

Item	Specification
Dimensions (W x D x H)	53.0 mm x 272.5 mm x 245.7 mm
Weight	2.0 kg
Power consumption (including FMCA board)	<ul style="list-style-type: none"><li>● Static: 30 W</li><li>● Maximum: 72 W</li></ul>

#### NOTE

In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

### Function

The functions of the fan tray are as follows:

- **Heat dissipation**

The fan tray is at the left of the service subrack and blows air for heat dissipation of the service subrack. The cool air flows to the subrack from the left of the subrack and then is exhausted from the right of the subrack after passing the boards.
- **Monitoring**

The fan tray is configured with a fan monitoring board. The fan monitoring board transmits speed adjustment signals to the fan tray, collects the rotating speed signals of the fans, and reports the rotating speed signals to the control board.
- **Speed adjustment**

The rotating speed of the fans can be adjusted according to the detected temperature automatically or be adjusted by software manually.

## LED

Indicator	Color	Status	Meaning	Operation Description
STATUS	Yellow	Blinking quickly (on for 0.3 s and off for 0.3 s repeatedly)	The fan tray is not registered or is being loaded.	No action is required.
			The communication between the host and the fan tray is interrupted.	Check communication between the fan tray and device.
	Green	Blinking	The fan tray works in the normal state.	No action is required.
	Yellow	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The fan tray generates alarms that do not affect services.	Handle it based on the corresponding alarm.
	Red	Blinking	The fan tray is faulty or the fan tray generates an over-temperature alarm.	<ul style="list-style-type: none"> <li>● Increase the fan speed to lower the temperature.</li> <li>● Replace the faulty fan tray.</li> </ul>

## DIP Switches

The fan tray uses the FMCA monitoring board, which supports the -48 V / -60 V input voltage, which provides a set of DIP switches S1.

[Table 2-35](#) describes the settings of S1.

**Table 2-35** Settings of S1

DIP Switch	Indication	Default Settings
S1-1	It is used to set the subnode address of the fan tray that maps the data configuration.	OFF
S1-2		ON

DIP Switch	Indication		Default Settings
S1-3	<ul style="list-style-type: none"> <li>● ON: The address bit is 0.</li> <li>● OFF: The address bit is 1.</li> </ul> By default, the address bit is 1.		ON
S1-4	ON	The baud rate of the communication between the fan tray and the control board is 19200 bit/s.	ON
	OFF	The baud rate of the communication between the fan tray and the control board is 9600 bit/s.	
S1-5	It is used to set the quantity of fans.		ON
S1-6			ON
S1-7	It is used to set the mode of adjusting the fan speed.		ON
S1-8			ON

[Table 2-36](#), [Table 2-37](#), and [Table 2-38](#) describe the settings of the DIP switches of S1.

**Table 2-36** Settings of S1-1, S1-2, and S1-3

S1-3	S1-2	S1-1	Address Value
ON	ON	ON	0
ON	ON	OFF	1
ON	OFF	ON	2
ON	OFF	OFF	3
OFF	ON	ON	4
OFF	ON	OFF	5
OFF	OFF	ON	6
OFF	OFF	OFF	7

 **NOTE**

When S1-1, S1-2, and W1-3 are used to set the subnode address, make sure that the DIP switch settings are consistent with the data configuration. But the subnode address value cannot be the same as that of the environment monitoring board.

**Table 2-37** Settings of S1-5 and S1-6

S1-6	S1-5	Fan Quantity
ON	ON	6
ON	OFF	8
OFF	ON	4
OFF	OFF	10

**Table 2-38** Settings of S1-7 and S1-8

S1-8	S1-7	Speed Adjustment Mode	Adjustment Strategy
ON	ON	Temperature measurement at the air intake vent (reserved)	Strategy 1
ON	OFF	Temperature measurement at the air exhaust vent	Strategy 2
OFF	ON	Temperature measurement at the air intake vent	Strategy 3
OFF	OFF	Temperature measurement at the air intake vent (the fan stops rotating)	Strategy 4

 **NOTE**

The fan tray (FMCA) of the MA5603T must use speed adjustment policy 1.

## Fan Speed Adjustment

Set the fan speed adjustment mode to "automatic" or "manual" in the command line interface (CLI). After the fans are installed, they work in automatic mode by default.

- Automatic mode
  - Control-system-triggering: The control system automatically adjusts fan speed according to the board temperatures for energy conservation.
  - Monitoring-board-triggering: The speed is automatically adjusted based on the temperature which is detected by a temperature sensor.

 **NOTE**

The automatic mode has two variants (automatically selected by the system): control-system-triggering and monitoring-board-triggering.

- Manual mode
 

Commands are executed to adjust fan speed. The levels range from 0 to 6, level 0 being the lowest speed and level 6 being the highest speed.

## 2.5.5 Fan Tray (FCBI)

A fan tray functions heat dissipation, monitoring, and fan speed adjustment, which ensures that the device works at a stable temperature.

### Appearance

Six fans are configured in the fan tray (FCBI) of the MA5603T.



### Specification

Item	Specification
Dimensions (W x D x H)	53.00 mm x 272.50 mm x 245.70 mm
Weight	2.00 kg
Power consumption (including FCBI board)	<ul style="list-style-type: none"><li>● Static: 16 W</li><li>● Maximum: 67 W</li></ul>

#### NOTE

In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

### Function

The functions of the fan tray are as follows:

- **Heat dissipation**

The fan tray is at the left of the service subrack and blows air for heat dissipation of the service subrack. The cool air flows to the subrack from the left of the subrack and then is exhausted from the right of the subrack after passing the boards.
- **Monitoring**

The fan tray is configured with a fan monitoring board. The fan monitoring board transmits speed adjustment signals to the fan tray, collects the rotating speed signals of the fans, and reports the rotating speed signals to the control board.
- **Speed adjustment**

The rotating speed of the fans can be adjusted according to the detected temperature automatically or be adjusted by software manually.



## LED

Indicator	Color	Status	Meaning	Operation Description
STATUS	Yellow	Blinking quickly (on for 0.3 s and off for 0.3 s repeatedly)	The fan tray is not registered or is being loaded.	No action is required.
			The communication between the host and the fan tray is interrupted.	Check communication between the fan tray and device.
	Green	Blinking	The fan tray works in the normal state.	No action is required.
	Yellow	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The fan tray generates alarms that do not affect services.	Handle it based on the corresponding alarm.
	Red	Blinking	The fan tray is faulty or the fan tray generates an over-temperature alarm.	<ul style="list-style-type: none"> <li>● Increase the fan speed to lower the temperature.</li> <li>● Replace the faulty fan tray.</li> </ul>

## DIP Switches

The fan tray uses the FCBI monitoring board, which supports the -48 V / -60 V input voltage, which provides a set of DIP switches SW1-S1.

[Table 2-39](#) describes the settings of SW1-S1.

**Table 2-39** Settings of SW1-S1

DIP Switch	Indication	Default Settings
S1-1	It is used to set the subnode address of the fan tray that maps the data configuration.	OFF
S1-2		ON

DIP Switch	Indication		Default Settings
S1-3	<ul style="list-style-type: none"> <li>● ON: The address bit is 0.</li> <li>● OFF: The address bit is 1.</li> </ul> By default, the address bit is 1.		ON
S1-4	ON	The baud rate of the communication between the fan tray and the control board is 19200 bit/s.	ON
	OFF	The baud rate of the communication between the fan tray and the control board is 9600 bit/s.	
S1-5	It is used to set the scenario of fans. The high eight dip switch should be 0000 0000 for MA5603T subrack. <ul style="list-style-type: none"> <li>● 0 indicates the switch should be ON.</li> <li>● 1 indicates the switch should be OFF.</li> </ul>		ON
S1-6			ON
S1-7			ON
S1-8			ON
SW1-1			ON
SW1-2			ON
SW1-3			ON
SW1-4			ON

**Table 2-40** describes the settings of the low three DIP switches of S1.

**Table 2-40** Settings of S1-1, S1-2, and S1-3

S1-3	S1-2	S1-1	Address Value
ON	ON	ON	0
ON	ON	OFF	1
ON	OFF	ON	2
ON	OFF	OFF	3
OFF	ON	ON	4
OFF	ON	OFF	5
OFF	OFF	ON	6
OFF	OFF	OFF	7

 **NOTE**

When S1-1, S1-2, and S1-3 are used to set the subnode address, make sure that the DIP switch settings are consistent with the data configuration. But the subnode address value cannot be the same as that of the environment monitoring board.

## Fan Speed Adjustment

Set the fan speed adjustment mode to "automatic" or "manual" in the command line interface (CLI). After the fans are installed, they work in automatic mode by default.

- Automatic mode
  - Control-system-triggering: The control system automatically adjusts fan speed according to the board temperatures for energy conservation.
  - Monitoring-board-triggering: The speed is automatically adjusted based on the temperature which is detected by a temperature sensor.

 **NOTE**

The automatic mode has two variants (automatically selected by the system): control-system-triggering and monitoring-board-triggering.

- Manual mode

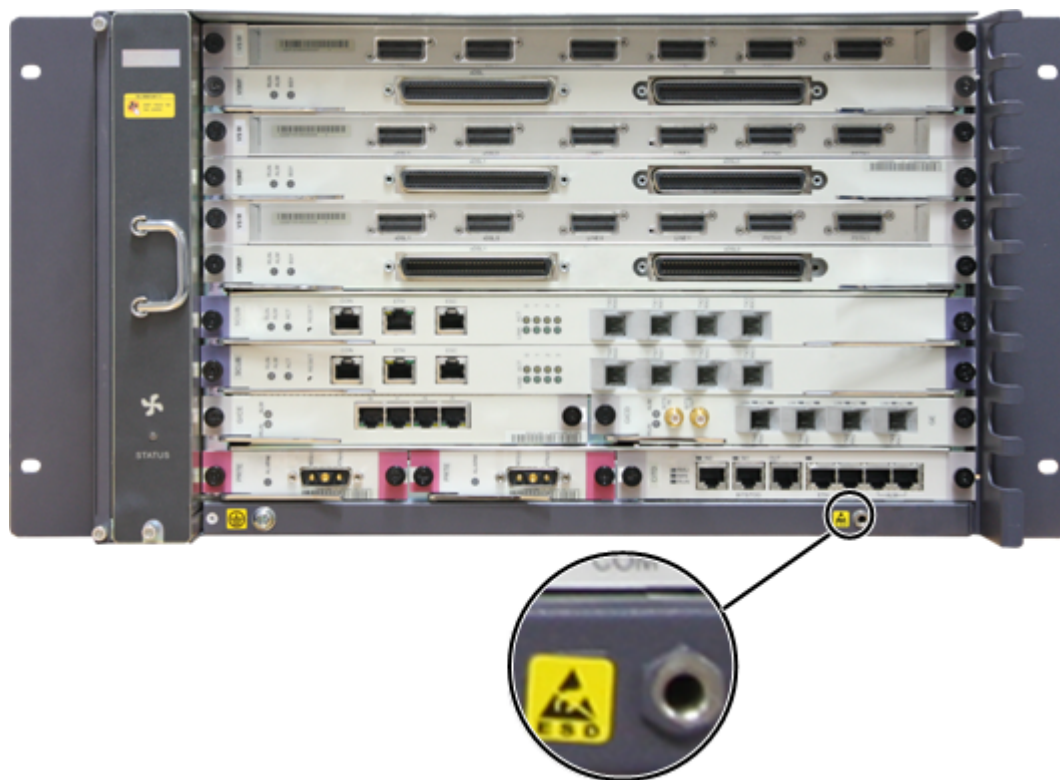
Commands are executed to adjust fan speed. The levels range from 0 to 6, level 0 being the lowest speed and level 6 being the highest speed.

## 2.5.6 ESD Jack

The ESD jack of the MA5603T chassis is on the lower right corner of the chassis, which is used to connect the ESD wrist strap to prevent device damage caused by electrostatic discharge.

The position of the MA5603T chassis ESD jack, as shown in [Figure 2-22](#).

**Figure 2-22** Position of the MA5603T chassis ESD jack



## 2.5.7 Air Filter

In the MA5603T chassis, the air filter is installed at the left of the chassis. This topic provides the appearance, dimensions, and function of the air filters used in the MA5603T chassis.

### Appearance and Dimensions

[Figure 2-23](#) shows the appearance of the air filter in the MA5603T chassis.

**Figure 2-23** Appearance of the air filter in the MA5603T chassis



**Table 2-41** lists the material and dimensions of the air filter.

**Table 2-41** Material and dimensions of the air filter

Chassis	Material	Dimensions (W x D x H)
MA5603T	Wire netting	11.0 mm x 272.3 mm x 245.4 mm

## Function

The air filter is installed at the left of the MA5603T chassis. The air filter is installed in the slot at the left of the fan tray. When the cold air enters the chassis from the left of the chassis, the air filter can filter the dust in the air.

## 2.5.8 Grounding

This topic describes the grounding principle of the MA5603T chassis and the position of the ground point.

### NOTICE

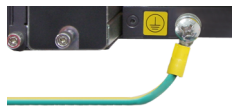
Connect the ground cables properly to guarantee protection against lightening and interference for the MA5603T. When a Huawei cabinet is installed, the service subrack is grounded through mounting ears and therefore no separate ground cables are required. When a third-party cabinet is installed, the separate ground cable needs to be connected to the service subrack and ground point on the cabinet.

The power input end of the MA5603T has a noise filter. The center ground of the noise filter connects to the chassis, called the chassis shell ground, that is, the protection ground. Ground the chassis shell securely so that the influence electricity, leakage electricity can flow to the ground, improving the protection against electromagnetic interference.

Use a ground cable to connect the ground point of the chassis shell to the ground bar of the telecommunications room or to the ground directly. It is recommended that the grounding resistance of the telecommunications room should be less than 10 ohms. Refer to the local standards to ground the chassis.

The ground point of the chassis shell is on the front of the chassis, as shown in [Figure 2-24](#).

**Figure 2-24** Grounding of the chassis



## 2.5.9 Power Distribution Principle

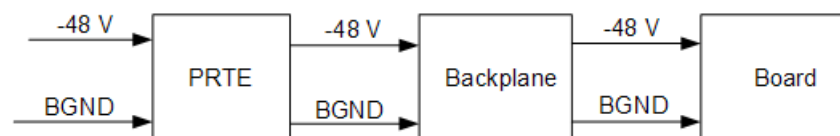
The MA5603T chassis adopts DC power supply. This topic describes the power distribution principle of the MA5603T chassis.

[Figure 2-25](#) shows the power distribution principle of the MA5603T chassis.

### NOTE

The MA5603T chassis supports -48 V (-38.4 V to -57.6 V)/-60 V (-38.4 V to -72 V) power supply. The following uses the -48 V as an example.

**Figure 2-25** Power distribution principle of the MA5603T chassis



The PRTE power interface board leads one -48 V input to the backplane, and then the backplane supplies power to each board.

Two PRTE boards can be configured for dual-system hot backup. If one PRTE board is off, the other supplies power to the chassis can guarantee normal running of the system.

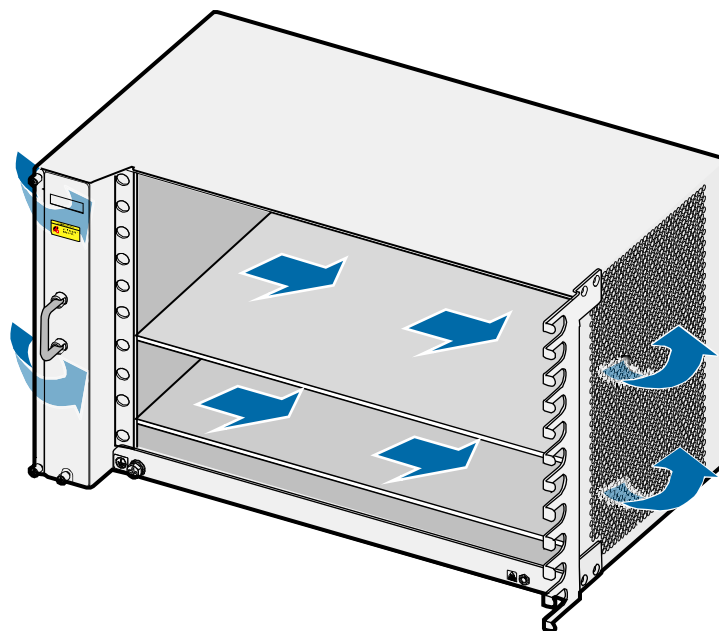
## 2.5.10 Heat Dissipation

This topic describes the ventilation of the MA5603T chassis.

The MA5603T chassis has a fan tray at the left to blow air for heat dissipation.

The airflow for the MA5603T chassis is as follows: The cool air flows to the chassis through the left side, and then the fans blow the air to the right side of the chassis through the boards. Finally, the air exits through the right side of the chassis. **Figure 2-26** shows the ventilation of the MA5603T chassis.

**Figure 2-26** Ventilation of the MA5603T chassis



## 2.6 MA5608T Chassis Description

This topic describes the chassis and fan tray of the MA5608T.

### 2.6.1 Appearance

The MA5608T has a fan tray at the left. The subrack is installed in the cabinet through the mounting brackets.

**Figure 2-27** Appearance of the MA5608T chassis(xDSL)



**Figure 2-28** Appearance of the MA5608T chassis(GPON)



## 2.6.2 Physical Specifications

This topic provides the dimensions, weight, and power consumption of the MA5608T chassis.

### Dimensions and Weight

**Table 2-42** Dimensions and weight of the MA5608T

Item	Specification
Dimensions (W x D x H, excluding mounting brackets)	442mm×244.5mm×88.1mm
Dimensions (W x D x H, including mounting brackets of IEC standard)	482.6mm×244.5mm×88.1mm
Dimensions (W x D x H, including mounting brackets of ETSI standard)	535mm×244.5mm×88.1mm
<b>NOTE</b> ETSI standard dimension is to add the ETSI mounting bracket on the IEC mounting bracket.	



Item	Specification
Weight (empty chassis)	3.55kg

## Power Supply

**Table 2-43** Power specifications of the MA5608T

Item	Specification
Power supply mode	DC (dual power for backup) or AC power + battery
Rated voltage	DC power supply: -48 V / -60 V AC power supply: 110 V / 220 V
Working voltage range	DC power supply: -38.4 V to -72 V AC power supply: 100 V to 240 V
Maximum input current	DC power supply: 10 A AC power supply: 6 A

## Power Consumption

**Table 2-44** Power consumption of the MA5608T chassis (Unit: W)

Typical Configuration	Static Power Consumption	Maximum Power Consumption	Typical Power Consumption	Board Configuration
ADSL2+	78.5	225.5	152	H801MCUD*2+H801MPWC+H831FCBB+H805ADPD*2
VDSL2	104.5	257.5	181	H801MCUD*2+H801MPWC+H831FCBB+H80BVDPM(17a)*2
POTS	86.5	155.5	121	H801MCUD*2+H801MPWC+H831FCBB+H808ASPB*2
P2P	194.5	293.5	244	H801MCUD*2+H801MPWC+H831FCBB+H802OPGD*2
GPON (H805GPBD)	140.5	191.5	166	H801MCUD*2+H801MPWC+H831FCBB+H805GPBD*2

Typical Configuration	Static Power Consumption	Maximum Power Consumption	Typical Power Consumption	Board Configuration
GPON (H806GPBH)	118.5	185.5	152	H801MCUD*2+H801MPWC+H831FCBB+H806GPBH*2
GPON (H805GPDF)	106.5	193.5	150	H801MCUD*2+H801MPWC+H831FCBB+H805GPDF*2

 **NOTE**

The power consumption of the subrack is tested in the following conditions:

- Working voltage: -53.5 V DC.
- Ambient temperature: 25 °C.
- Static power consumption: All ports do not carry any loads. Specifically, users under POTS ports hang up phones, xDSL ports are deactivated, and optical modules are not installed on optical ports
- Maximum power consumption: All ports fully carry loads. However, only 25% users under POTS ports concurrently pick up phones and the feeding current is 20 mA.
- Typical power consumption: half of the total value of static power consumption and maximum power consumption.
- The preceding table lists power consumption under typical configuration. For power consumption under other configurations, use [Access Network Hardware Configuration Tool](#).
- In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

## 2.6.3 Configuration

This topic provides the configuration of the boards in the MA5608T chassis, and lists the type of the boards.

H801MABR is the backplane supported by the MA5608T. When the MA5608T is configured in a cabinet, the lower cable manager must be configured.

**Figure 2-29** Configuration of boards in the MA5608T chassis (with H801MPWC or H801MPWD power board)

FAN	0	Service board		
	1	Service board		
	2	Control board	3 Control board	4 Power board

**Figure 2-30** Configuration of boards in the MA5608T chassis (with H801MPWE power board)

FAN	0 Service board			
	1 Service board			
	2 Control board	3 Control board	4 Power board	5 Power board

**Table 2-45** lists the configuration of boards in the MA5608T chassis. For details, see [3.5 Board Configuration\(MA5608T\)](#).

**Table 2-45** Boards in the MA5608T chassis

Slot Type	Slot	Supported Board	Remarks
Control board slot	2, 3	Control board	Two slots must be configured with the same control board. You are advised to configure 2 control boards working in active/standby mode.
Power board slot	4	H801MPWC, H801MPWD power board	-
	4, 5	H801MPWE power board	-
Service board slot	0, 1	Service board <ul style="list-style-type: none"> <li>● SPU board</li> <li>● Ethernet service access board</li> <li>● TDM service processing board</li> <li>● GPON service board</li> <li>● 10G GPON service board</li> <li>● P2P interface board</li> <li>● ATM interface board</li> <li>● Combo board</li> <li>● Voice board</li> <li>● ADSL2+ service board</li> <li>● VDSL2 service board</li> <li>● SHDSL service board</li> </ul>	Mixed configuration of service boards is supported.

## 2.6.4 Fan Tray

A fan tray functions heat dissipation, monitoring, and fan speed adjustment, which ensures that the device works at a stable temperature.

### Appearance

Two fans are configured in the fan tray of the MA5608T.



### Specification

Item	Specification
Dimensions (W x D x H)	29mm×220mm×85.5mm
Weight	0.5kg
Power consumption (including FCBB board)	<ul style="list-style-type: none"><li>● Static: 4 W</li><li>● Maximum: 39 W</li></ul>

#### NOTE

In the case of Access device, power consumption is generally transformed into heat consumption. Hence, heat consumption (BTU/h) and power consumption (W) can be converted to each other in the formula: 1 BTU/h = 0.2931 W.

### Function

The functions of the fan tray are as follows:

- **Heat dissipation**  
The fan tray is at the left of the service subrack and blows air for heat dissipation of the service subrack. The cool air flows to the subrack from the left of the subrack and then is exhausted from the right of the subrack after passing the boards.
- **Monitoring**  
The fan tray is configured with a fan monitoring board. The fan monitoring board transmits speed adjustment signals to the fan tray, collects the rotating speed signals of the fans, and reports the rotating speed signals to the control board.
- **Speed adjustment**

The rotating speed of the fans can be adjusted according to the detected temperature automatically or be adjusted by software manually.

## LED

Indicator	Color	Status	Meaning	Operation Description
FAN	Green	On	The fan tray functions properly.	No action is required.
	Red	On	The fan tray is abnormal.	<ul style="list-style-type: none"> <li>● A power alarm or temperature sensor alarm may be generated. Handle it based on the specific alarm</li> <li>● Adjust the fan speed because a high temperature alarm or low temperature alarm may be generated.</li> <li>● Check communication between the fan tray and device because communication between them may be interrupted.</li> <li>● Fans may be faulty. Replace the faulty fan tray.</li> </ul>

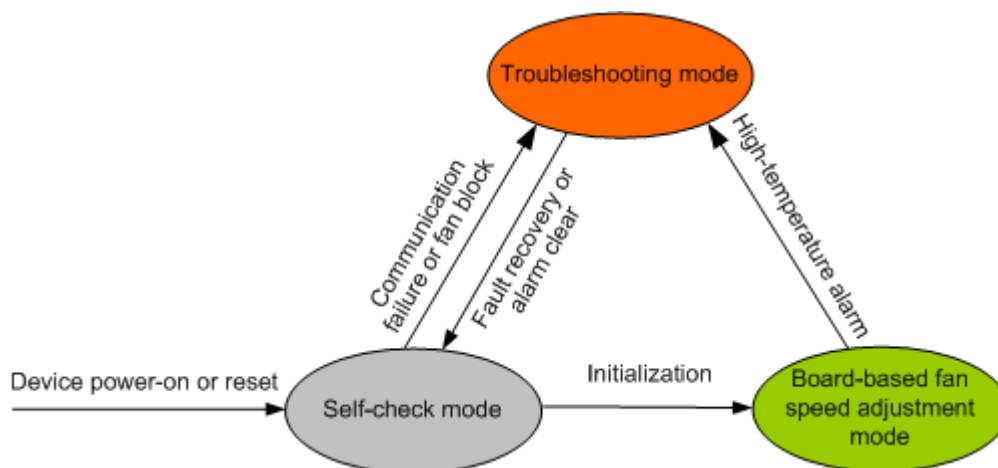
## Fan Speed Adjustment

Fans in the fan tray of the MA5608T chassis have the following modes:

- Self-check mode: Fans start running at full speed when the device is powered on for the first time or is reset. After fans start up, the duty ratio of fans is initialized.
- Troubleshooting mode: Fans run at the old speed and related alarms are reported when faults occur.
- Board-based fan speed adjustment mode: According to the temperatures detected by temperature sensors on all boards, fans automatically adjust their speed.
- Temperature mode: According to the temperature of the fans, fans automatically adjust their speed.

**Figure 2-31** shows the status transfer of the fans after the fan tray starts up.

Figure 2-31 Fan status transfer

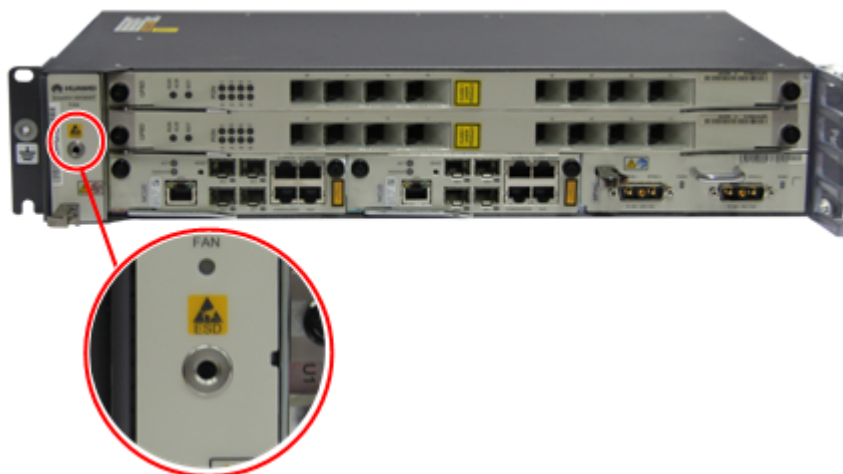


## 2.6.5 ESD Jack

The ESD jack of the MA5608T chassis is on the middle of the fan tray, which is used to connect the ESD wrist strap to prevent device damage caused by electrostatic discharge.

The position of the MA5608T chassis ESD jack, as shown in [Figure 2-32](#).

Figure 2-32 Position of the MA5608T chassis ESD jack



## 2.6.6 Grounding

This topic describes the grounding principle of the MA5608T chassis and the position of the ground point.

## NOTICE

Connect the ground cables properly to guarantee protection against lightening and interference for the MA5608T. When a Huawei cabinet is installed, the service subrack is grounded through mounting ears and therefore no separate ground cables are required. When a third-party cabinet is installed, the separate ground cable needs to be connected to the service subrack and ground point on the cabinet.

Ground the chassis shell securely so that the influence electricity, leakage electricity can flow to the ground, improving the protection against electromagnetic interference.

Use a ground cable to connect the ground point of the chassis shell to the ground bar of the telecommunications room or to the ground directly. It is recommended that the grounding resistance of the telecommunications room should be less than 10 ohms. Refer to the local standards to ground the chassis.

The ground point of the chassis shell is on the left of the chassis, and there is a ground point on the front of the left mounting bracket as shown in [Figure 2-33](#).

**Figure 2-33** Grounding of the MA5608T chassis



## 2.6.7 Power Distribution Principle

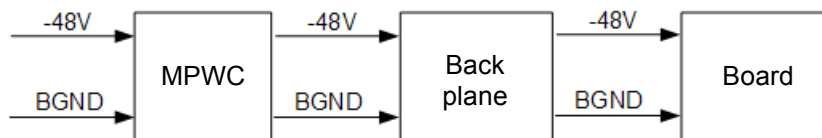
The MA5608T chassis adopts AC and DC power supply. This topic describes the power distribution principle of the MA5608T chassis.

The power distribution principle of the MA5608T, as shown in [Figure 2-34](#).

### NOTE

The MA5608T chassis adopts -48 V (-38.4 V to -57.6 V)/-60 V (-38.4 V to -72 V) DC power supply and AC power supply. The following uses the -48 V DC as an example.

**Figure 2-34** Power distribution principle of the MA5608T chassis



The MPWC power interface board leads two -48 V input to the backplane, and then the backplane supplies power to each board.

The MPWC boards supports two -48 V DC input. If one input is off, the other supplies power to the chassis can guarantee normal running of the system.

The MPWD power interface board supports the AC input. After AC/DC conversion, the power is supplied to the system backplane at -48 V DC.

Two MPWE boards can be configured for dual-system hot backup. Each MPWC board supports one -48 V DC input. If one MPWE board is off, the other supplies power to the chassis can guarantee normal running of the system.

## 2.6.8 Heat Dissipation

This topic describes the ventilation of the MA5608T chassis.

The MA5608T chassis has a fan tray at the left to blow air for heat dissipation.

The airflow for the MA5608T chassis is as follows: The cool air flows to the chassis through the left side, and then the fans blow the air to the right side of the chassis through the boards. Finally, the air exits through the right side of the chassis. **Figure 2-35** shows the ventilation of the MA5608T chassis.

**Figure 2-35** Ventilation of the MA5608T chassis





# 3 Board

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## About This Chapter

This topic describes the function, front panel, port, daughter board, and pin assignments of the boards, and lists the specification of the boards.

The temperature specification of the boards is +65°C. If there is special specification, you can reference the function of the board.

### [3.1 Board Overview](#)

This topic describes the structure, dimensions, name, version and label of the boards. This manual describes the supply of boards supported by the product. However, the availability of the boards is subject to the product change notices (PCNs). For the availability of the boards, contact product managers at Huawei representative offices.

### [3.2 Mapping Between Boards and Software Versions](#)

This topic provides the following information: mapping between boards and software versions; whether a board is out of production; substitution relationship between boards.

### [3.3 Power Consumption and Maximum Frame Size of Boards](#)

You can query power consumption, maximum frame size, and normal operating temperature of all boards.

### [3.4 Board Configuration\(MA5600T/MA5603T\)](#)

This topic describes the type, name, slot and mapping of the boards supported by the MA5600T/MA5603T.

### [3.5 Board Configuration\(MA5608T\)](#)

This topic describes the type, name, slot and mapping of the boards supported by the MA5608T.

### [3.6 Control Board \(SCU\)](#)

A control board, as the control and management unit of the system, configures, manages, and controls the device and also implements simple routing protocol functions.

### [3.7 Control Board \(MCU\)](#)

A control board, as the control and management unit of the system, configures, manages, and controls the device and also implements simple routing protocol functions. The MCU control board is used on the MA5608T.

### [3.8 Upstream Interface Board \(GIU\)](#)

Upstream interface boards provide upstream or cascading ports for the system. GIU is short for general interface unit.

### 3.9 Universal Interface Board (GPIO)

Universal interface boards (installed in the GPIO slot) receive the clock signals and ESC parameters. GPIO is short for general purpose input/output.

### 3.10 Power Board (PRT)

Power boards (PRT) lead in DC power for supplying power to the device MA5600T or MA5603T.

### 3.11 Power Board (MPW)

Power boards (MPW) lead in DC or AC power for supplying power to the device MA5608T.

### 3.12 SPU Board

SPU is a service processing board.

### 3.13 Ethernet Service Access Board (ETH)

Ethernet service access boards provide Ethernet service cascading or upstream transmission, which does not support user access and user management.

### 3.14 TDM Service Processing Board

TDM service processing boards include H801TOPA, H801TOPB and H801CSPA.

### 3.15 GPON Service Board

GPON service boards work with ONUs to provide GPON access service.

### 3.16 10G GPON Service Board

10G GPON service boards work with ONUs to provide 10G GPON access service.

### 3.17 P2P Interface Board

Point-to-point (P2P) interface boards work with Ethernet optical network terminals (for example the ONT supporting GE upstream, MxU and lanswitch) to provide P2P optical access services for users.

### 3.18 ATM Interface Board

The ATM interface board includes H801AIUG.

### 3.19 DSL&POTS Combo Board

The DSL&POTS combo board is a broadband and narrowband combo service board and provides three application modes: combo mode, broadband mode, and narrowband mode. In combo mode, the combo board supports both broadband and voice services.

### 3.20 Voice Board

Voice boards support VoIP POTS, ISDN BRA, and ISDN PRA services.

### 3.21 ADSL2+ Service Board

ADSL2+ service boards provide ADSL2+ access services using their broadband ports.

### 3.22 VDSL2 Service Board

VDSL2 service boards provide VDSL2 access services using their broadband ports.

### 3.23 Vectoring Processing Board

The Vectoring processing board provides the Vectoring feature, and it is used to eliminate the signal crosstalk in the VDSL2 system.

### 3.24 SHDSL Service Board

SHDSL service boards provide SHDSL access services using their broadband ports.

### 3.25 ADSL2+ SPL Board

The ADSL SPL board separates narrowband signals from ADSL signals.

#### [3.26 VDSL2 SPL Board](#)

The VDSL SPL board separates narrowband signals from VDSL signals.

#### [3.27 Extension Board](#)

Extension boards transfer services of the service boards.

#### [3.28 Filler Panel](#)

A filler panel is used to cover a slot that is not in use in a subrack.

## 3.1 Board Overview

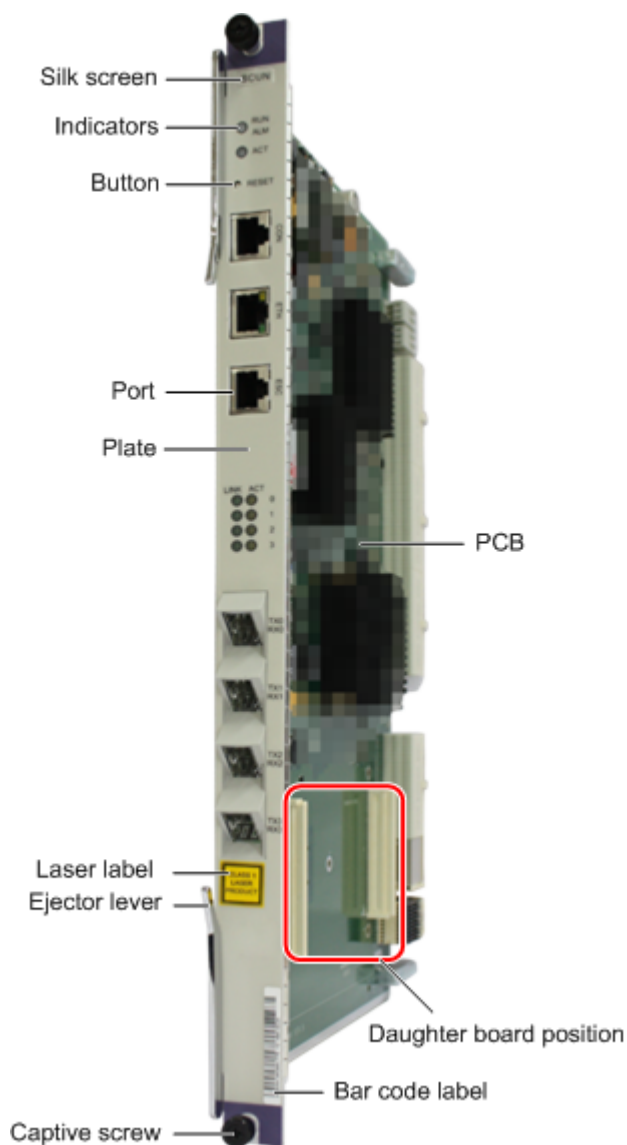
This topic describes the structure, dimensions, name, version and label of the boards. This manual describes the supply of boards supported by the product. However, the availability of the boards is subject to the product change notices (PCNs). For the availability of the boards, contact product managers at Huawei representative offices.

### 3.1.1 Board Structure

A board mainly consists of the printed circuit board (PCB) and the front panel.

[Figure 3-1](#) shows the structure of a board (using the SCUN board as an example).

Figure 3-1 Board structure



A board mainly consists of the following parts:

- PCB  
The PCB houses various functional chips of the board and is the most important part of the board. Through the front panel, the PCB provides indicators, buttons, and ports. For some boards, the PCB also provides a position for installing a daughter board.

**NOTE**

Different boards provide different indicators, buttons, and ports; not all boards support a daughter board. For details, see the description of each board.

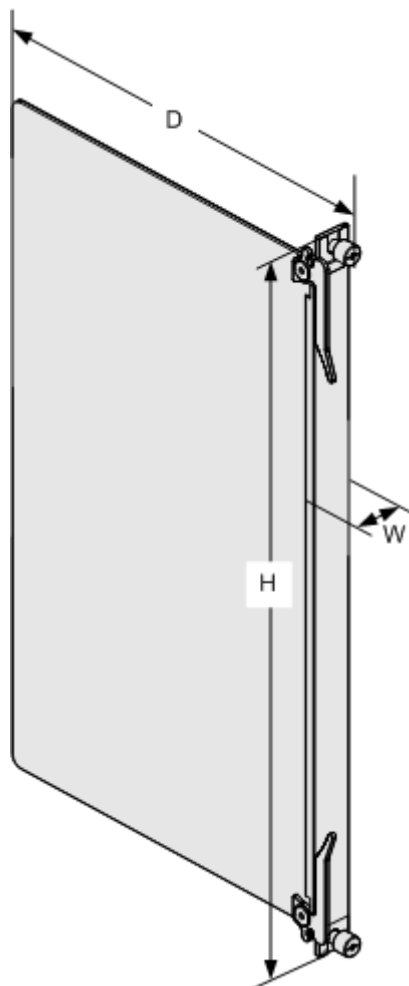
- Front panel, including the captive screws, ejector levers, and plate
  - Captive screws: secure the board in the subrack.
  - Ejector levers: used for inserting or removing the board.
  - Plate: connects the PCB and the ejector levers. The plate also provides a surface for attaching some labels (such as the bar code label and laser label).

## 3.1.2 Board Dimensions

This topic describes the dimensions of each type of board.

**Figure 3-2** illustrates the dimensions of a board (using a service board as an example).


**Figure 3-2** Board structure



**Table 3-1** lists the dimensions of the boards supported by the product.

**Table 3-1** Board dimensions

Board Type	Board Appearance	Dimensions (W x D x H)
Control board(SCU)		25.40 mm x 237.00 mm x 395.40 mm
Control board(MCU)		35.56 mm x 237.00 mm x 134.84 mm
Universal interface board		25.40 mm x 237.00 mm x 183.20 mm
Upstream interface board		25.40 mm x 237.00 mm x 197.20 mm
Power board(PRT)		25.40 mm x 237.00 mm x 105.10 mm
Power board(MPW)	MPWC/MPWD: 	MPWC/MPWD: 35.56 mm x 252.70 mm x 132.10 mm
	MPWE: 	MPWE: 35.56 mm x 245.25 mm x 65.60 mm
Service board		22.86 mm x 237.00 mm x 395.40 mm

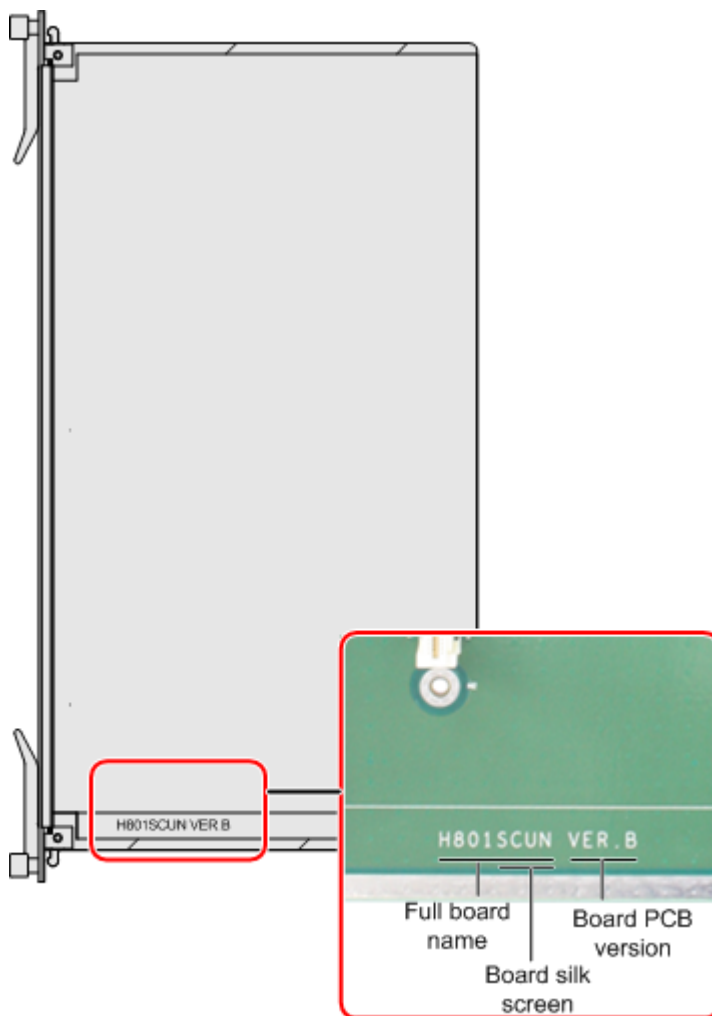
Board Type	Board Appearance	Dimensions (W x D x H)
SPL board		22.86 mm x 237.00 mm x 395.40 mm

### 3.1.3 Board Name and Version

This topic describes the board name and version.

As shown in [Figure 3-3](#) (using the SCUN board as an example), the board name and version are printed on the PCB of a board.

**Figure 3-3** Board name and version



 **NOTE**

- H801SCUN is the full board name. Different full board names indicate different boards. For example, H802GPBD and H805GPBD are two different boards.
- SCUN is the board silk screen, indicating a type of board. For example, GPBD includes H802GPBD and H805GPBD that have the same silk screen.
- VER.B is the board PCB version. The PCB version will be upgraded with regard to technology development or due to end of production of some key components. Generally, a PCB version change does not cause board function changes, unless otherwise specified in the document.

### 3.1.4 Board Label

This topic describes the meanings of the labels attached to the board front panel.

#### Laser Label

The optical ports of all boards use the same laser label: CLASS 1 LASER PRODUCT, which indicates a class 1 laser.

The optical port with a class 1 laser provides an output optical power lower than 10 dBm (10 mW).



#### **DANGER**

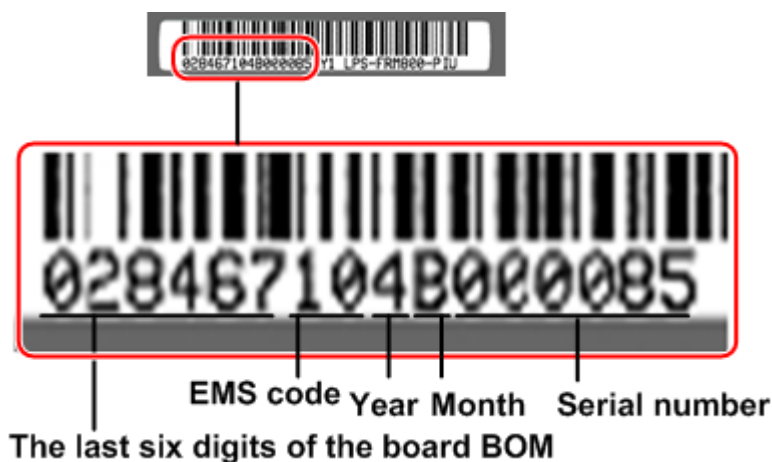
Please do not look into an optical port without eye protection. The laser will injure your eyes.

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#### Bar Code Label

The bar code label is the first 16 digits of a generally board label, as shown in [Figure 3-4](#).

**Figure 3-4** Board bar code





Position	Name	Introduction
1-6	The last six digits of the board BOM.	The first two digits of the board BOM is 03. The BOM is used to identify the board.
7, 8	EMS code	Codes for differentiating different vendors.
9	Year	The year of production date, the last digit is used. For example, year 2004 is recorded as 4. From 2010, letters are used, A to Z indicate years starting from 2010.
10	Month	The month of production date, in hexadecimal notation. For example, October is displayed as A.
11-16	Serial number	The serial number (SN) of a board. It is updated every month and ranges from 000001 to 999999.

## 3.2 Mapping Between Boards and Software Versions

This topic provides the following information: mapping between boards and software versions; whether a board is out of production; substitution relationship between boards.

The mapping between boards and version V800R008C01 and later versions are provided in the following table. For the boards supported by a specific version, see Board Overview in the *Product Description* of the version.

### NOTE

- Life cycle status is available until the release date. "EOM" indicates end of marketing. "EOP" indicates end of production. The availability of the boards is subject to the product change notices (PCNs). For the availability of the boards, contact product managers at Huawei representative offices.
- A board housing smaller ports cannot be replaced with a board housing more ports.
- "All the versions" refer to V800R008C01 and later versions.
- Compatible in xx: The board is supported by reverse loading from xx (of the same R version).
- Compatible in xx-xx: The board is supported by reverse loading in these versions.

**Table 3-2** Mapping between boards and software versions

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
<b>Control board (SCU)</b>			
H801SCUB	All the versions	EOM	Replaceable with the H802SCUB board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H802SCUB	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01HP3035(SPC100)</li> <li>● Compatible in V800R008C02HP3035(SPC300)</li> <li>● Compatible in V800R010C00HP1022</li> <li>● Compatible in V800R011C00SPH111</li> <li>● Compatible in V800R012C00SPH108</li> <li>● Compatible in V800R013C00SPH208</li> <li>● Compatible in V800R013C10SPH208</li> <li>● Compatible in V800R015C00SPC102</li> <li>● V800R015C10 and later versions</li> </ul>	N/A	N/A
H801SCUF	All the versions	EOM	N/A
H801SCUH	V800R011C00 and later versions	N/A	N/A
H801SCUL	All the versions	EOM	Replaceable with the H801SCUN/ H802SCUN board
H801SCUN	All the versions	EOM	Replaceable with the H802SCUN board
H802SCUN	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC317(SPC100)</li> <li>● Compatible in V800R010C00SPH116</li> <li>● Compatible in V800R011C00SPC102</li> <li>● V800R012C00 and later versions</li> </ul>	N/A	N/A

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H801SCUK	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC317(SPC100)</li> <li>● Compatible in V800R010C00SPH116</li> <li>● Compatible in V800R011C00SPC102</li> <li>● V800R012C00 and later versions</li> </ul>	N/A	N/A
H801SCUV	V800R013C00 and later versions	N/A	N/A
<b>Control board (MCU)</b>			
H801MCUD	V800R012C00 and later versions	N/A	N/A
H801MCUE	V800R013C00 and later versions	N/A	N/A
H801MCUD1	V800R012C00 and later versions	N/A	N/A
<b>Upstream interface board</b>			
H801GICD	All the versions	N/A	N/A
H801GICE	All the versions	N/A	N/A
H801GICF	All the versions	N/A	Replaceable with the H801X2CS board (supported by V800R011C00 and later versions)
H801GICG	All the versions	N/A	Replaceable with the H801GICF board (supported by V800R013C10SPH217/V800R015C00SPC107 and later patch versions)
H801GICK	All the versions	N/A	Replaceable with the H802GICK board
H802GICK	<ul style="list-style-type: none"> <li>● Compatible in V800R017C10–V800R018C00(supported by loading the corresponding patch file)</li> <li>● V800R018C10 and later versions</li> </ul>	N/A	Replaceable with the H801GICK board
H801GSCA	All the versions	N/A	N/A
H801X1CA	All the versions	EOM	Replaceable with the H801X2CS board
H801X2CA	All the versions	EOM	Replaceable with the H801X2CS board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H801X2CS	All the versions	N/A	Replaceable with the H802X2CS board
H802X2CS	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100–V800R017C10 (supported by loading the corresponding patch file)</li> <li>● V800R018C00 and later versions</li> </ul>	N/A	N/A
H801X2CK	<ul style="list-style-type: none"> <li>● Compatible in V800R017C10–V800R018C00(supported by loading the corresponding patch file)</li> <li>● V800R018C10 and later versions</li> </ul>	N/A	N/A
H802P2CA	All the versions	N/A	N/A
<b>Universal interface board</b>			
H801BIUA	All the versions	EOM	N/A
H801CITA	All the versions	EOP	Replaceable with the H801CITD board
H801CITD	All the versions	N/A	N/A
<b>Power interface board (PRT)</b>			
H801PRTA	All the versions	EOP	Replaceable with the H801PRTE board
H801PRTE	All the versions	N/A	N/A
H801PRTG	All the versions	EOP	Replaceable with the H801PRTE board
<b>Power interface board (MPW)</b>			
H801MPWC	V800R012C00 and later versions	N/A	N/A
H801MPWD	V800R012C00 and later versions	N/A	N/A

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H801MPWE	<ul style="list-style-type: none"> <li>● Compatible in V800R012C00SPH108</li> <li>● Compatible in V800R013C00SPH208</li> <li>● Compatible in V800R013C10SPH208</li> <li>● V800R015C00 and later versions</li> </ul>	N/A	N/A
<b>SPU board</b>			
H801SPUA	All the versions	N/A	N/A
H801SPUB	All the versions	N/A	N/A
H801SPUC	V800R013C10 and later versions	N/A	N/A
H801SPUF	V800R013C00 and later versions	N/A	N/A
<b>Ethernet service access board</b>			
H801ETHA	All the versions	EOP	Replaceable with the H801ETHB board
H801ETHB	All the versions	N/A	N/A
<b>TDM service process board</b>			
H801CSPA	All the versions	EOM	N/A
H801TOPA	All the versions	EOM	Replaceable with the H801TOPB board when configured with STM-1 daughter board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H801TOPB	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPH321+HP3032+HP3035(SPC100)</li> <li>● Compatible in V800R010C00SPH116+HP1025</li> <li>● Compatible in V800R011C00SPH111+HP1027</li> <li>● Compatible in V800R012C00SPC101+HP1011</li> <li>● Compatible in V800R013C00SPH210</li> <li>● Compatible in V800R013C10SPH210</li> <li>● Compatible in V800R015C00SPH105</li> <li>● Compatible in V800R015C10HP1006</li> <li>● V800R016C00 and later versions</li> </ul>	N/A	N/A
<b>GPON interface board</b>			
H801GPBC	All the versions	EOP	Replaceable with the H802GPBD/H805GPBD/H805GPFD/H806GPBH/H807GPBH/H802GPF board
H802GPBD	All the versions	EOM	Replaceable with the H805GPBD/H806GPBH/H807GPBH/H805GPF/H802GPF board
H805GPBD	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100</li> <li>● Compatible in V800R008C02SPC300</li> <li>● V800R009C00 and later versions</li> </ul>	EOM	Replaceable with the H802GPBD/H806GPBH/H807GPBH/H805GPF/H802GPF board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H802GPFD	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC315(SPC100)</li> <li>● Compatible in V800R008C02SPC300</li> <li>● Compatible in V800R009C00</li> <li>● Compatible in V800R010SPC106</li> <li>● Compatible in V800R011C00</li> <li>● V800R012C00 and later versions</li> </ul>	N/A	Replaceable with the H805GPFD board
H805GPFD	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPH321(SPC100)</li> <li>● Compatible in V800R008C02SPC300</li> <li>● Compatible in V800R009C00SPH107</li> <li>● Compatible in V800R010C00SPH111</li> <li>● Compatible in V800R011C00SPH110</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC206</li> <li>● Compatible in V800R013C10SPC205</li> <li>● V800R015C00 and later versions</li> </ul>	N/A	Replaceable with the H802GPFD board
H806GPBH	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC312(SPC100)</li> <li>● Compatible in V800R008C02SPC312(SPC300)</li> <li>● Compatible in V800R009C00–V800R011C00</li> <li>● V800R012C00 and later versions</li> </ul>	N/A	Replaceable with the H807GPBH/H805GPFD/H802GPFD board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H807GPBH	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPH321(SPC100)</li> <li>● Compatible in V800R008C02SPC300</li> <li>● Compatible in V800R009C00SPH107</li> <li>● Compatible in V800R010C00SPH111</li> <li>● Compatible in V800R011C00SPH110</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC206</li> <li>● Compatible in V800R013C10SPC205</li> <li>● V800R015C00 and later versions</li> </ul>	N/A	Replaceable with the H806GPBH/H805GPFD/H802GPFD board
H801GPMD	V800R013C00 and later versions	N/A	N/A
<b>10G GPON interface board</b>			
H802XGBC	<ul style="list-style-type: none"> <li>● Compatible in V800R011C00</li> <li>● V800R012C00 and later versions</li> </ul>	EOM	N/A
H801XGBD	<ul style="list-style-type: none"> <li>● Compatible in V800R011C00SPH110</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC206</li> <li>● Compatible in V800R013C10SPC205</li> <li>● V800R015C00 and later versions</li> </ul>	N/A	N/A
<b>P2P interface board</b>			
H801OPFA	All the versions	EOM	N/A
H802OPGD	All the versions	N/A	N/A



Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H802OPGE	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC317(SPC100)</li> <li>● Compatible in V800R008C02SPC317(SPC300)</li> <li>● Compatible in V800R009C00SPC101</li> <li>● Compatible in V800R010C00SPC101</li> <li>● Compatible in V800R011C00SPC101</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC206</li> <li>● V800R013C10 and later versions</li> </ul>	N/A	N/A
<b>ATM interface board</b>			
H801AIUG	All the versions	EOM	N/A
<b>Combo Board</b>			
H80BCAME	<ul style="list-style-type: none"> <li>● Compatible in V800R008C02SPC300</li> <li>● V800R009C00 and later versions</li> </ul>	EOM	Replaceable with the H806CAME board
H806CAME	<ul style="list-style-type: none"> <li>● Compatible in V800R009C00–V800R015C00</li> <li>● V800R015C10 and later versions</li> </ul>	N/A	N/A
H80BCVME	<ul style="list-style-type: none"> <li>● Compatible in V800R010C00</li> <li>● V800R011C00 and later versions</li> </ul>	N/A	N/A

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H806CCPE	<ul style="list-style-type: none"> <li>● Compatible in V800R010C00SPH116</li> <li>● Compatible in V800R011C00SPH111</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPH210</li> <li>● Compatible in V800R013C10SPH210</li> <li>● V800R015C00 and later versions</li> </ul>	N/A	Replaceable with the H80DCCPE board
H80DCCPE	<ul style="list-style-type: none"> <li>● Compatible in V800R010C00SPC116</li> <li>● Compatible in V800R011C00SPC111</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC210</li> <li>● Compatible in V800R013C10SPC210</li> <li>● Compatible in V800R015C00SPC101</li> <li>● Compatible in V800R015C10SPC101</li> <li>● V800R016C00 and later versions</li> </ul>	N/A	Replaceable with the H806CCPE board
H80DCSPE	<ul style="list-style-type: none"> <li>● Compatible in V800R015C00–V800R018C00</li> <li>● V800R018C10 and later versions</li> </ul>	N/A	N/A
<b>Voice board</b>			
H801ASRB	All the versions	EOP	Replaceable with the H808ASPB board
H801ASPB	All the versions	EOP	Replaceable with the H808ASPB board
H808ASPB	All the versions	N/A	N/A

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H809ASPB	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100–V800R009C00</li> <li>● V800R010C00 and later versions</li> </ul>	N/A	N/A
H80BASPB	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100–V800R016C10</li> <li>● V800R017C00 and later versions</li> </ul>	N/A	N/A
H80CASPB	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100–V800R016C10</li> <li>● V800R017C00 and later versions</li> </ul>	N/A	N/A
H802DSRD	All the versions	N/A	N/A
H802DSRE	All the versions	EOP	N/A
H802EDTB	All the versions	N/A	N/A
H80AATRB	V800R016C10 and later versions	N/A	N/A
<b>ADSL2+ service access board</b>			
H805ADIF	All the versions	EOP	Replaceable with the H802ADQD/H80BVDQM board
H808ADIF	All the versions	EOP	Replaceable with the H802ADQD/H80BVDQM board
H808ADLE	All the versions	EOP	Replaceable with the H80BADPE/H807ADPE board
H805ADLF	All the versions	EOP	Replaceable with the H805ADPD board
H808ADLF	All the versions	EOP	Replaceable with the H805ADPD/H807ADPD board
H802ADPD	All the versions	EOM	Replaceable with the H805ADPD/H807ADPD board
H805ADPD	All the versions	EOM	Replaceable with the H802ADPD/H807ADPD board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H807ADPD	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPH321+HP3032+HP3035(SPC100)</li> <li>● Compatible in V800R008C02SPH321+HP3032+HP3035(SPC300)</li> <li>● Compatible in V800R010C00SPH116+HP1022</li> <li>● Compatible in V800R011C00SPH111</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC101</li> <li>● Compatible in V800R013C10SPC206</li> <li>● Compatible in V800R015C00SPC101</li> <li>● Compatible in V800R015C10SPC101</li> <li>● V800R016C00 and later versions</li> </ul>	N/A	Replaceable with the H802ADPD/H805ADPD board
H802ADQD	All the versions	EOM	Replaceable with the H80BVDQM board
H802ADKM	All the versions	EOM	Replaceable with the H808ADPM/H807ADPM board
H80BADPE	All the versions	EOM	Replaceable with the H807ADPE board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H807ADPE	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPH321+HP3032+HP3035(SPC100)</li> <li>● Compatible in V800R008C02SPH321+HP3032+HP3035(SPC300)</li> <li>● Compatible in V800R010C00SPH116+HP1022</li> <li>● Compatible in V800R011C00SPH111</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC101</li> <li>● Compatible in V800R013C10SPC206</li> <li>● Compatible in V800R015C00SPC101</li> <li>● Compatible in V800R015C10SPC101</li> <li>● V800R016C00 and later versions</li> </ul>	N/A	Replaceable with the H80BADPE board
H808ADPM	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPH313(SPC100)</li> <li>● Compatible in V800R008C02SPH313(SPC300)</li> <li>● Compatible in V800R009C05SPH106</li> <li>● Compatible in V800R010C00</li> <li>● V800R011C00 and later versions</li> </ul>	N/A	Replaceable with the H807ADPM board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H807ADPM	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPH321+HP3032+HP3035(SPC100)</li> <li>● Compatible in V800R008C02SPH321+HP3032+HP3035(SPC300)</li> <li>● Compatible in V800R010C00SPH116+HP1022</li> <li>● Compatible in V800R011C00SPH111</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC101</li> <li>● Compatible in V800R013C10SPC206</li> <li>● Compatible in V800R015C00SPC101</li> <li>● Compatible in V800R015C10SPC101</li> <li>● V800R016C00 and later versions</li> </ul>	N/A	Replaceable with the H808ADPM/H802ADKM board
<b>VDSL2 service access board</b>			
H805VDSA	All the versions	EOP	Replaceable with the H805VDMF/H80AVDPD board
H805VDSF	All the versions	EOP	Replaceable with the H805VDMF/H80AVDPD board
H805VDTF	All the versions	EOP	Replaceable with the H802VDNF/H80BVDQM board
H805VDRD	All the versions	EOM	N/A
H805VDMF	All the versions	EOM	Replaceable with the H80BVDMF/H80DSDMM board
H80BVDMF	<ul style="list-style-type: none"> <li>● Compatible in V800R009C00–V800R017C00</li> <li>● V800R017C10 and later version</li> </ul>	N/A	Replaceable with the H805VDMF board
H802VDNF	All the versions	EOM	Replaceable with the H80BVDQM board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H802VDJM	All the versions	EOM	Replaceable with the H80BVDPM board
H80AVDPD	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100–V800R011C00</li> <li>● V800R012C00 and later versions</li> </ul>	N/A	Replaceable with the H80DVCPD board
H80BVDPE	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100</li> <li>● Compatible in V800R008C02SPC300</li> <li>● V800R009C00 and later versions</li> </ul>	N/A	Replaceable with the H80DVCPE board
H80BVDPM	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100</li> <li>● Compatible in V800R008C02SPC300</li> <li>● V800R009C00 and later versions</li> </ul>	N/A	Replaceable with the H80DVCPM board
H80BVDQM	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC312(SPC100)</li> <li>● Compatible in V800R008C02SPC312(SPC300)</li> <li>● Compatible in V800R009C00–V800R011C00</li> <li>● V800R012C00 and later versions</li> </ul>	N/A	N/A
H80BVCMM	<ul style="list-style-type: none"> <li>● Compatible in V800R010C00</li> <li>● V800R011C00 and later versions</li> </ul>	N/A	Replaceable with the H80DSDMM board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H806VCPE	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPH321(SPC100)</li> <li>● Compatible in V800R008C02SPC300</li> <li>● Compatible in V800R009C00</li> <li>● Compatible in V800R010C00SPH111</li> <li>● Compatible in V800R011C00SPC101</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC206</li> <li>● Compatible in V800R013C10SPC205</li> <li>● V800R015C00 and later versions</li> </ul>	N/A	Replaceable with the H80DVCPE board
H80DVCPE	<ul style="list-style-type: none"> <li>● Compatible in V800R010C00SPC101</li> <li>● Compatible in V800R011C00SPC101</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC209</li> <li>● Compatible in V800R013C10SPC209</li> <li>● Compatible in V800R015C00SPC101</li> <li>● Compatible in V800R015C10SPC101</li> <li>● V800R016C00 and later versions</li> </ul>	N/A	Replaceable with the H806VCPE board



Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H80AVCPD	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100</li> <li>● Compatible in V800R008C02SPC300</li> <li>● Compatible in V800R009C00</li> <li>● Compatible in V800R010C00</li> <li>● Compatible in V800R011C00SPC101</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC206</li> <li>● Compatible in V800R013C10SPC205</li> <li>● V800R015C00 and later versions</li> </ul>	N/A	Replaceable with the H80DVCPD board
H80DVCPD	<ul style="list-style-type: none"> <li>● Compatible in V800R010C00SPC101</li> <li>● Compatible in V800R011C00SPC101</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC209</li> <li>● Compatible in V800R013C10SPC209</li> <li>● Compatible in V800R015C00SPC101</li> <li>● Compatible in V800R015C10SPC101</li> <li>● V800R016C00 and later versions</li> </ul>	N/A	Replaceable with the H80AVCPD board

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H80AVCPM	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100</li> <li>● Compatible in V800R008C02SPC300</li> <li>● Compatible in V800R009C00</li> <li>● Compatible in V800R010C00</li> <li>● Compatible in V800R011C00SPC101</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC206</li> <li>● Compatible in V800R013C10SPC205</li> <li>● V800R015C00 and later versions</li> </ul>	EOM	Replaceable with the H80DVCPM board
H80DVCPM	<ul style="list-style-type: none"> <li>● Compatible in V800R010C00SPC101</li> <li>● Compatible in V800R011C00SPC101</li> <li>● Compatible in V800R012C00SPC101</li> <li>● Compatible in V800R013C00SPC209</li> <li>● Compatible in V800R013C10SPC209</li> <li>● Compatible in V800R015C00SPC101</li> <li>● Compatible in V800R015C10SPC101</li> <li>● V800R016C00 and later versions</li> </ul>	N/A	Replaceable with the H80AVCPM board
H80DSDMM	<ul style="list-style-type: none"> <li>● Compatible in V800R016C00SPC101</li> <li>● V800R016C10 and later versions</li> </ul>	N/A	N/A
H80DSDPM	<ul style="list-style-type: none"> <li>● Compatible in V800R013C00-V800R017C00</li> <li>● V800R017C10 and later versions</li> </ul>	N/A	N/A
<b>Vectoring processing board</b>			

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H806VPEA	<ul style="list-style-type: none"> <li>● Compatible in V800R012C00</li> <li>● V800R013C00 and later versions</li> </ul>	N/A	Replaceable with the H806VPEF board
H806VPEF	<ul style="list-style-type: none"> <li>● Compatible in V800R017C10-V800R018C00</li> <li>● V800R018C10 and later versions</li> </ul>	N/A	N/A
H806VPGA	V800R015C00 and later versions	N/A	N/A
<b>SHDSL service access board</b>			
H803SHDA	All the versions	EOP	Replaceable with the H802SHLB/H80ASHLM board
H802SHLB	All the versions	EOM	Replaceable with the H80ASHLM/H802SHGM board
H80ASHLM	All the versions	EOM	N/A
H802SHGM	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100-V800R013C00</li> <li>● V800R013C10 and later versions</li> </ul>	N/A	N/A
<b>ADSL SPL board</b>			
H801SPLF	All the versions	EOP	Replaceable with the H801SPPF1 board
H801SPLH	All the versions	EOP	Replaceable with the H801SPPHA board
H801SPLL	All the versions	EOP	Replaceable with the H801SPPLA board
H801SPPLA	All the versions	EOM	N/A
H801SPPLB	All the versions	EOM	N/A
H801SPPLC	All the versions	EOM	N/A
H801SPPHA	All the versions	EOM	N/A
H801SPPF1	All the versions	EOM	N/A
H801SPPF	All the versions	EOP	Replaceable with the H801SPPF1 board
<b>VDSL SPL board</b>			

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H801VSTH	All the versions	EOP	Replaceable with the H801VSPHA board
H801VSTL	All the versions	EOP	Replaceable with the H801VSNLA board
H801VSNF	All the versions	EOM	N/A
H801VSNLA	All the versions	EOM	N/A
H801VSPHA	All the versions	EOM	N/A
H801VSPLA	All the versions	N/A	N/A
H801VSPLC	All the versions	N/A	N/A
<b>SHDSL extension board</b>			
H801SHET	All the versions	N/A	N/A
<b>FAN</b>			
H801FCBB	All the versions	EOS	Replaceable with the H801FCBI(ETSI) board
H801FCBC	All the versions	N/A	Replaceable with the H801FCBH board
H801FCBH	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100–V800R009C00</li> <li>● V800R010C00 and later versions</li> </ul>	N/A	N/A
H801FCBI(ETSI)	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100–V800R009C00</li> <li>● V800R010C00 and later versions</li> </ul>	N/A	N/A
H801FCBI(MA5603T)	<ul style="list-style-type: none"> <li>● Compatible in V800R008C01SPC100–V800R009C00</li> <li>● V800R010C00 and later versions</li> </ul>	N/A	N/A
H801FMCA	All the versions	N/A	Replaceable with the H801FCBI(MA5603T) board
H831FCBB	V800R012C00 and later versions	N/A	N/A
<b>Environment monitoring</b>			
H801ESCA	All the versions	N/A	N/A

Board Name	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H801SPDA	All the versions	N/A	N/A

**Table 3-3** Mapping between daughter boards and software versions

Board Name	Board position	Software Versions Supported by This Board	Life Cycle Status	Substitution Relationship
H801CKMC	SCU control board	All the versions	N/A	N/A
H801CKMD	SCU control board	V800R013C10 and later versions	N/A	N/A
H801FLBA	SCU control board	All the versions	N/A	Replaceable with the H801CKMC board
H801M2XA	SCU control board	All the versions	EOM	N/A
H801O2CE	H801TOPA	All the versions	N/A	N/A
H801CSSA	H801TOPA	All the versions	N/A	N/A
H801NH1A	H801TOPA	All the versions	N/A	N/A
H801EH1A	H801TOPA	All the versions	N/A	N/A
H801BITSB	H801CITD	All the versions	N/A	N/A
H806SHUAB	H802SHLB	All the versions	N/A	N/A
H806SHUI	H80ASHLM	All the versions	N/A	N/A
H801CKMA	H801BIUA	All the versions	EOM	N/A
H801O2CS	H801AIUG	All the versions	N/A	N/A

### 3.3 Power Consumption and Maximum Frame Size of Boards

You can query power consumption, maximum frame size, and normal operating temperature of all boards.

**Table 3-4** lists the power consumption and maximum frame size of boards. "-" indicates N/A.

The operating temperature of all the boards is -40°C to +65°C. The lowest board startup temperature is -25°C.

 **NOTE**

- The power consumption of the board is tested in the following conditions:
  - Working voltage: -53.5 V DC.
  - Ambient temperature: 25 °C.
  - Static power consumption: All ports do not carry any loads. Specifically, users under POTS ports hang up phones, xDSL ports are deactivated, and optical modules are not installed on optical ports
  - Maximum power consumption: All ports fully carry loads. However, only 25% users under POTS ports concurrently pick up phones and the feeding current is 20 mA.
- The board power consumption slightly varies with the power module configured for the board and discreteness of components.

**Table 3-4** Power consumption and maximum frame size of boards

Board	Power Consumption	Maximum Frame Size
<b>Control board (SCU)</b>		
H801SCUB	<ul style="list-style-type: none"> <li>● Static: 18.8 W</li> <li>● Maximum: 22 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H802SCUB	<ul style="list-style-type: none"> <li>● Static: 14 W</li> <li>● Maximum: 17 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801SCUF	<ul style="list-style-type: none"> <li>● Static: 22 W</li> <li>● Maximum: 25 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801SCUH	<ul style="list-style-type: none"> <li>● Static: 89 W</li> <li>● Maximum: 111 W (Fully configured with 10GE service board)</li> <li>● Maximum: 134 W (Fully configured with 20GE service board)</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801SCUL	<ul style="list-style-type: none"> <li>● Static: 40.4 W</li> <li>● Maximum: 42.1 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801SCUN	<ul style="list-style-type: none"> <li>● Static: 41 W</li> <li>● Maximum: 62 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H802SCUN	<ul style="list-style-type: none"> <li>● Static: 30 W</li> <li>● Maximum: 50 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801SCUK	<ul style="list-style-type: none"> <li>● Static: 30 W</li> <li>● Maximum: 50 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.

Board	Power Consumption	Maximum Frame Size
H801SCUV	<ul style="list-style-type: none"> <li>● Static: 89 W</li> <li>● Maximum: 111 W (Fully configured with 10GE service board)</li> <li>● Maximum: 134 W (Fully configured with 20GE service board)</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
<b>Control board (MCU)</b>		
H801MCUD	<ul style="list-style-type: none"> <li>● Static: 24 W</li> <li>● Maximum: 26 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801MCUD1	<ul style="list-style-type: none"> <li>● Static: 29 W</li> <li>● Maximum: 33 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801MCUE	<ul style="list-style-type: none"> <li>● Static: 24 W</li> <li>● Maximum: 26 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
<b>Upstream interface board (GIU)</b>		
H801GICD	<ul style="list-style-type: none"> <li>● Static: 5.3 W</li> <li>● Maximum: 5.3 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801GICE	<ul style="list-style-type: none"> <li>● Static: 5.8 W</li> <li>● Maximum: 11.8 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801GICF	<ul style="list-style-type: none"> <li>● Static: 3.9 W</li> <li>● Maximum: 3.9 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801GICG	<ul style="list-style-type: none"> <li>● Static: 6.3 W</li> <li>● Maximum: 9.2 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801GICK	<ul style="list-style-type: none"> <li>● Static: 6.6 W</li> <li>● Maximum: 7 W</li> </ul>	2000 bytes
H802GICK	<ul style="list-style-type: none"> <li>● Static: 7 W</li> <li>● Maximum: 9 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801GSCA	<ul style="list-style-type: none"> <li>● Static: 8 W</li> <li>● Maximum: 10 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.

Board	Power Consumption	Maximum Frame Size
H801X1CA	<ul style="list-style-type: none"> <li>● Static: 11.1 W</li> <li>● Maximum: 11.3 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801X2CA	<ul style="list-style-type: none"> <li>● Static: 20.2 W</li> <li>● Maximum: 20.5 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801X2CS	<ul style="list-style-type: none"> <li>● Static: 17.6 W</li> <li>● Maximum: 18 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H802X2CS	<ul style="list-style-type: none"> <li>● Static: 7 W</li> <li>● Maximum: 9 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801X2CK	<ul style="list-style-type: none"> <li>● Static: 7 W</li> <li>● Maximum: 9 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H802P2CA	<ul style="list-style-type: none"> <li>● Static: 9 W</li> <li>● Maximum: 10 W</li> </ul>	2004 bytes
<b>Universal interface board (GPIO)</b>		
H801BIUA	<ul style="list-style-type: none"> <li>● Static: 5.3 W</li> <li>● Maximum: 5.3 W</li> </ul>	-
H801CITA	<ul style="list-style-type: none"> <li>● Static: 1.9 W</li> <li>● Maximum: 4.3 W</li> </ul>	-
H801CITD	<ul style="list-style-type: none"> <li>● Static: 3.64 W</li> <li>● Maximum: 4.55 W</li> </ul>	-
<b>Power interface board (PRT)</b>		
H801PRTA	<ul style="list-style-type: none"> <li>● Static: 1.5 W</li> <li>● Maximum: 1.5 W</li> </ul>	-
H801PRTE	<ul style="list-style-type: none"> <li>● Static: 1.5 W</li> <li>● Maximum: 1.5 W</li> </ul>	-
H801PRTG	<ul style="list-style-type: none"> <li>● Static: 0.2 W</li> <li>● Maximum: 0.2 W</li> </ul>	-
<b>Power interface board (MPW)</b>		
H801MPWC	<ul style="list-style-type: none"> <li>● Static: 2.5 W</li> <li>● Maximum: 2.5 W</li> </ul>	-



Board	Power Consumption	Maximum Frame Size
H801MPWD	<ul style="list-style-type: none"> <li>● Static: 2 W</li> <li>● Maximum transfer efficiency: 93% (220 V, 100% load, 25°C)</li> </ul>	-
H801MPWE	<ul style="list-style-type: none"> <li>● Static: 1.5 W</li> <li>● Maximum: 1.5 W</li> </ul>	-
<b>SPU board</b>		
H801SPUA	<ul style="list-style-type: none"> <li>● Static: 28 W</li> <li>● Maximum: 35 W</li> </ul>	2004 bytes
H801SPUB	<ul style="list-style-type: none"> <li>● Static: 21 W</li> <li>● Maximum: 24 W</li> </ul>	2004 bytes
H801SPUC	<ul style="list-style-type: none"> <li>● Static: 53 W</li> <li>● Maximum: 90 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801SPUF	<ul style="list-style-type: none"> <li>● Static: 32 W</li> <li>● Maximum: 50 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
<b>Ethernet service access board</b>		
H801ETHA	<ul style="list-style-type: none"> <li>● Static: 19.6 W</li> <li>● Maximum: 27 W</li> </ul>	1600 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H801ETHB	<ul style="list-style-type: none"> <li>● Static: 20 W</li> <li>● Maximum: 21 W</li> </ul>	2052 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
<b>TDM service process board</b>		
H801CSPA	<ul style="list-style-type: none"> <li>● Static: 22 W</li> <li>● Maximum: 23 W</li> </ul>	-

Board	Power Consumption	Maximum Frame Size
H801TOPA	<ul style="list-style-type: none"> <li>● H801NH1A daughter board: <ul style="list-style-type: none"> <li>- Static: 24.2 W</li> <li>- Maximum: 25.3 W</li> </ul> </li> <li>● H801EH1A daughter board: <ul style="list-style-type: none"> <li>- Static: 24.2 W</li> <li>- Maximum: 25.3 W</li> </ul> </li> <li>● H801O2CE daughter board: <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 24.5 W</li> </ul> </li> <li>● H801CSSA daughter board: <ul style="list-style-type: none"> <li>- Static: 25 W</li> <li>- Maximum: 25 W</li> </ul> </li> </ul>	-
H801TOPB	<ul style="list-style-type: none"> <li>● Static: 13 W</li> <li>● Maximum: 16 W</li> </ul>	-
<b>GPON interface board</b>		
H801GPBC	<ul style="list-style-type: none"> <li>● Static: 70.6 W</li> <li>● Maximum: 78 W</li> </ul>	<ul style="list-style-type: none"> <li>● For V800R011C00 and earlier versions: 2000 bytes</li> <li>● For V800R012C00 and later versions: 2004 bytes</li> </ul>
H802GPBD	<ul style="list-style-type: none"> <li>● Static: 45 W</li> <li>● Maximum: 51 W</li> </ul>	<ul style="list-style-type: none"> <li>● For V800R011C00 and earlier versions: 2000 bytes</li> <li>● For V800R012C00 and later versions: 2004 bytes</li> </ul>
H805GPBD	<ul style="list-style-type: none"> <li>● Static: 43 W</li> <li>● Maximum: 49 W</li> </ul>	<ul style="list-style-type: none"> <li>● For V800R011C00 and earlier versions: 2000 bytes</li> <li>● For V800R012C00 and later versions: 2004 bytes</li> </ul>
H802GPFD	<ul style="list-style-type: none"> <li>● Static: 45 W</li> <li>● Maximum: 73 W</li> </ul>	2004 bytes
H805GPFD	<ul style="list-style-type: none"> <li>● Static: 26 W</li> <li>● Maximum: 50 W</li> </ul>	2004 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
H806GPBH	<ul style="list-style-type: none"> <li>● Static: 32 W</li> <li>● Maximum: 46 W</li> </ul>	2004 bytes
H807GPBH	<ul style="list-style-type: none"> <li>● Static: 25 W</li> <li>● Maximum: 38 W</li> </ul>	2004 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.

Board	Power Consumption	Maximum Frame Size
H801GPMD	<ul style="list-style-type: none"> <li>● Static: 32 W</li> <li>● Maximum: 46 W</li> </ul>	2004 bytes
<b>10G GPON interface board</b>		
H802XGBC	<ul style="list-style-type: none"> <li>● Static: 67 W</li> <li>● Maximum: 85 W</li> </ul>	2004 bytes
H801XGBD	<ul style="list-style-type: none"> <li>● Static: 26 W</li> <li>● Maximum: 50 W</li> </ul>	2004 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
<b>P2P interface board</b>		
H801OPFA	<ul style="list-style-type: none"> <li>● Static: 20.2 W</li> <li>● Maximum: 28.5 W</li> </ul>	1800 bytes
H802OPGD	<ul style="list-style-type: none"> <li>● Static: 70 W</li> <li>● Maximum: 100 W</li> </ul>	<ul style="list-style-type: none"> <li>● For V800R011C00 and earlier versions: 1800 bytes</li> <li>● For V800R012C00 and later versions: 2004 bytes</li> </ul>
H802OPGE	<ul style="list-style-type: none"> <li>● Static: 53 W</li> <li>● Maximum: 90 W</li> </ul>	2004 bytes. After the jumbo frame function is enabled, a maximum of 9216 bytes can be supported.
<b>ATM interface board</b>		
H801AIUG	<ul style="list-style-type: none"> <li>● Static: 24.9 W</li> <li>● Maximum: 33.4 W</li> </ul>	-
<b>Combo board</b>		
H80BCAME	<ul style="list-style-type: none"> <li>● Static: 26 W</li> <li>● Maximum: 75 W</li> </ul>	1800 bytes
H806CAME	<ul style="list-style-type: none"> <li>● Static: 22 W</li> <li>● Maximum: 69 W</li> </ul>	1800 bytes
H80BCVME	<ul style="list-style-type: none"> <li>● 17a: <ul style="list-style-type: none"> <li>- Static: 32 W</li> <li>- Maximum: 86 W (the convergence ration is 25%.)</li> </ul> </li> <li>● 8b: <ul style="list-style-type: none"> <li>- Static: 32 W</li> <li>- Maximum: 88 W (the convergence ration is 25%.)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>

Board	Power Consumption	Maximum Frame Size
H806CCPE	<ul style="list-style-type: none"> <li>● 12a/17a: <ul style="list-style-type: none"> <li>- Static: 41 W</li> <li>- Maximum: 97 W (the convergence ration is 25%.)</li> </ul> </li> <li>● 8b: <ul style="list-style-type: none"> <li>- Static: 41 W</li> <li>- Maximum: 103 W (the convergence ration is 25%.)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80DCCPE	<ul style="list-style-type: none"> <li>● 12a: <ul style="list-style-type: none"> <li>- Static: 36 W</li> <li>- Maximum: 91 W (the convergence ration is 25%.)</li> </ul> </li> <li>● 17a: <ul style="list-style-type: none"> <li>- Static: 36 W</li> <li>- Maximum: 92 W (the convergence ration is 25%.)</li> </ul> </li> <li>● 8b: <ul style="list-style-type: none"> <li>- Static: 36 W</li> <li>- Maximum: 98 W (the convergence ration is 25%.)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80DCSPE	<ul style="list-style-type: none"> <li>● 12a: <ul style="list-style-type: none"> <li>- Static: 36 W</li> <li>- Maximum: 99 W (the convergence ration is 25%.)</li> </ul> </li> <li>● 17a: <ul style="list-style-type: none"> <li>- Static: 36 W</li> <li>- Maximum: 100 W (the convergence ration is 25%.)</li> </ul> </li> <li>● 35b: <ul style="list-style-type: none"> <li>- Static: 36 W</li> <li>- Maximum: 103 W (the convergence ration is 25%.)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
<b>Voice board</b>		
H801ASRB	<ul style="list-style-type: none"> <li>● Static: 12 W</li> <li>● Maximum: 37 W</li> </ul>	-
H801ASPB	<ul style="list-style-type: none"> <li>● Static: 15.5 W</li> <li>● Maximum: 64 W</li> </ul>	-

Board	Power Consumption	Maximum Frame Size
H808ASPB	<ul style="list-style-type: none"> <li>● Static: 16 W</li> <li>● Maximum: 31 W (calculated based on the 25% convergence ratio)</li> </ul>	-
H809ASPB	<ul style="list-style-type: none"> <li>● Static: 15 W</li> <li>● Maximum: 31 W (calculated based on the 25% convergence ratio)</li> </ul>	-
H80BASPB	<ul style="list-style-type: none"> <li>● Static: 13 W</li> <li>● Maximum: 29 W</li> </ul>	-
H80CASPB	<ul style="list-style-type: none"> <li>● Static: 13 W</li> <li>● Maximum: 29 W</li> </ul>	-
H802DSRD	<ul style="list-style-type: none"> <li>● Static: 18 W</li> <li>● Maximum: 40 W</li> </ul>	-
H802DSRE	<ul style="list-style-type: none"> <li>● Static: 18 W</li> <li>● Maximum: 40 W</li> </ul>	-
H802EDTB	<ul style="list-style-type: none"> <li>● Static: 32 W</li> <li>● Maximum: 38 W</li> </ul>	-
H80AATRB	<ul style="list-style-type: none"> <li>● Static: 4 W</li> <li>● Maximum: 4 W</li> </ul>	-
<b>ADSL2+ service access board</b>		
H808ADIF	<ul style="list-style-type: none"> <li>● Static: 12 W</li> <li>● Maximum: 49.2 W</li> </ul>	1800 bytes
H808ADLE	<ul style="list-style-type: none"> <li>● Static: 12.4 W</li> <li>● Maximum: 56.8 W</li> </ul>	1800 bytes
H805ADLF	<ul style="list-style-type: none"> <li>● Static: 15 W</li> <li>● Maximum: 46 W</li> </ul>	1800 bytes
H808ADLF	<ul style="list-style-type: none"> <li>● Static: 12 W</li> <li>● Maximum: 50.4 W</li> </ul>	1800 bytes
H802ADPD	<ul style="list-style-type: none"> <li>● Static: 25 W</li> <li>● Maximum: 82.5 W</li> </ul>	1800 bytes
H805ADPD	<ul style="list-style-type: none"> <li>● Static: 12 W</li> <li>● Maximum: 66 W</li> </ul>	1800 bytes
H807ADPD	<ul style="list-style-type: none"> <li>● Static: 20 W</li> <li>● Maximum: 41 W</li> </ul>	1800 bytes

Board	Power Consumption	Maximum Frame Size
H802ADQD	<ul style="list-style-type: none"> <li>● Static: 25 W</li> <li>● Maximum: 82.5 W</li> </ul>	1800 bytes
H802ADKM	<ul style="list-style-type: none"> <li>● Static: 28 W</li> <li>● Maximum: 81 W</li> </ul>	1800 bytes
H80BADPE	<ul style="list-style-type: none"> <li>● Static: 12.4 W</li> <li>● Maximum: 56.8 W</li> </ul>	1800 bytes
H807ADPE	<ul style="list-style-type: none"> <li>● Static: 20 W</li> <li>● Maximum: 41 W</li> </ul>	1800 bytes
H808ADPM	<ul style="list-style-type: none"> <li>● Static: 15 W</li> <li>● Maximum: 62 W</li> </ul>	1800 bytes
H807ADPM	<ul style="list-style-type: none"> <li>● Static: 22 W</li> <li>● Maximum: 43 W</li> </ul>	1800 bytes
<b>VDSL2 service access board</b>		
H805VDSA	<ul style="list-style-type: none"> <li>● Static: 29.4 W</li> <li>● Maximum: 76.5 W</li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1600 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H805VDSF	<ul style="list-style-type: none"> <li>● Static: 27.3 W</li> <li>● Maximum: 57 W</li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1600 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H805VDTF	<ul style="list-style-type: none"> <li>● Static: 25.7 W</li> <li>● Maximum: 60.7 W</li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1600 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H805VDRD	<ul style="list-style-type: none"> <li>● Static: 20 W</li> <li>● Maximum: 55 W</li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1600 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H805VDMF	<ul style="list-style-type: none"> <li>● 17a: <ul style="list-style-type: none"> <li>- Static: 34 W</li> <li>- Maximum: 80 W</li> </ul> </li> <li>● 8b: <ul style="list-style-type: none"> <li>- Static: 34 W</li> <li>- Maximum: 87 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1600 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80BVDMF	<ul style="list-style-type: none"> <li>● 17a: <ul style="list-style-type: none"> <li>- Static: 18 W</li> <li>- Maximum: 57 W</li> </ul> </li> <li>● 8b: <ul style="list-style-type: none"> <li>- Static: 18 W</li> <li>- Maximum: 62 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1800 bytes</li> <li>● ATM: 1800 bytes</li> </ul>

Board	Power Consumption	Maximum Frame Size
H802VDNF	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 35 W</li> <li>- Maximum: 90 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 35.2 W</li> <li>- Maximum: 96 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1536 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H802VDJM	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 33 W</li> <li>- Maximum: 82 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 33 W</li> <li>- Maximum: 99 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1536 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80AVDPD	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 77 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 89 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1518 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80BVDPE	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 79 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 86 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80BVDPM	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 25 W</li> <li>- Maximum: 82 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 25 W</li> <li>- Maximum: 89 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80BVDQM	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 81 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 82 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>

Board	Power Consumption	Maximum Frame Size
H80BVCMM	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 30 W</li> <li>- Maximum: 75 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 30 W</li> <li>- Maximum: 77 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80AVCPD	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 65 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 70 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80DVCPD	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 64 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 70 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80AVCPM	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 26 W</li> <li>- Maximum: 67 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 26 W</li> <li>- Maximum: 72 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80DVCPM	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 26 W</li> <li>- Maximum: 66 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 26 W</li> <li>- Maximum: 72 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H806VCPE	<ul style="list-style-type: none"> <li>● 17a:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 65 W</li> </ul> </li> <li>● 8b:                             <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 70 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>



Board	Power Consumption	Maximum Frame Size
H80DVCPE	<ul style="list-style-type: none"> <li>● 17a:               <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 64 W</li> </ul> </li> <li>● 8b:               <ul style="list-style-type: none"> <li>- Static: 24 W</li> <li>- Maximum: 70 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80DSDMM	<ul style="list-style-type: none"> <li>● 17a:               <ul style="list-style-type: none"> <li>- Static: 26 W</li> <li>- Maximum: 59 W</li> </ul> </li> <li>● 8b:               <ul style="list-style-type: none"> <li>- Static: 26 W</li> <li>- Maximum: 58 W</li> </ul> </li> <li>● 35b:               <ul style="list-style-type: none"> <li>- Static: 26 W</li> <li>- Maximum: 64 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80DSDPM	<ul style="list-style-type: none"> <li>● 17a:               <ul style="list-style-type: none"> <li>- Static: 29 W</li> <li>- Maximum: 73 W</li> </ul> </li> <li>● 8b:               <ul style="list-style-type: none"> <li>- Static: 29 W</li> <li>- Maximum: 72 W</li> </ul> </li> <li>● 35b:               <ul style="list-style-type: none"> <li>- Static: 29 W</li> <li>- Maximum: 78 W</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 2000 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
<b>Vectoring processing board</b>		
H806VPEA	<ul style="list-style-type: none"> <li>● Static: 21 W (not configured with service board)</li> <li>● Maximum: 51 W (fully configured with 6 VCMM boards in vectoring mode)</li> </ul>	-

Board	Power Consumption	Maximum Frame Size
H806VPEF	<ul style="list-style-type: none"> <li>● Static: 52 W (not configured with service board)</li> <li>● Maximum: 75 W (fully configured with 6 VCPM boards in Vectoring mode)</li> <li>● Maximum: 83 W (fully configured with 6 SDMM boards in SuperVector mode)</li> <li>● Maximum: 94 W (fully configured with 6 SDPM boards in SuperVector mode)</li> </ul>	-
H806VPGA	<ul style="list-style-type: none"> <li>● Static: 46 W (not configured with service board)</li> <li>● Maximum: 106 W (fully configured with 12 VCMM boards in vectoring mode)</li> </ul>	-
<b>SHDSL service access board</b>		
H803SHDA	<ul style="list-style-type: none"> <li>● Static: 22 W</li> <li>● Maximum: 26 W</li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1594 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H802SHLB	<ul style="list-style-type: none"> <li>● Static: 16 W</li> <li>● Maximum: 23 W</li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1594 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H80ASHLM	<ul style="list-style-type: none"> <li>● Static: 16 W</li> <li>● Maximum: 21 W</li> </ul>	<ul style="list-style-type: none"> <li>● PTM: 1594 bytes</li> <li>● ATM: 1800 bytes</li> </ul>
H802SHGM	<ul style="list-style-type: none"> <li>● Static: 22 W</li> <li>● Maximum: 29 W</li> </ul>	<ul style="list-style-type: none"> <li>● PTM mode: 2000 bytes</li> <li>● ATM-PTM mode: <ul style="list-style-type: none"> <li>- PTM: 1594 bytes</li> <li>- ATM: 1800 bytes</li> </ul> </li> </ul>
<b>FAN</b>		
H801FCBB	<ul style="list-style-type: none"> <li>● Static: 23 W</li> <li>● Maximum: 65 W</li> </ul>	-
H801FCBC	<ul style="list-style-type: none"> <li>● Static: 17 W</li> <li>● Maximum: 52 W</li> </ul>	-
H801FCBH	<ul style="list-style-type: none"> <li>● Static: 21 W</li> <li>● Maximum: 88 W</li> </ul>	-
H801FCBI (ETSI)	<ul style="list-style-type: none"> <li>● Static: 13 W</li> <li>● Maximum: 67 W</li> </ul>	-

Board	Power Consumption	Maximum Frame Size
H801FCBI (MA5603T)	<ul style="list-style-type: none"> <li>● Static: 16 W</li> <li>● Maximum: 67 W</li> </ul>	-
H801FMCA	<ul style="list-style-type: none"> <li>● Static: 30 W</li> <li>● Maximum: 72 W</li> </ul>	-
H831FCBB	<ul style="list-style-type: none"> <li>● Static: 4 W</li> <li>● Maximum: 39 W</li> </ul>	-
<b>Environment monitoring board</b>		
H801ESCA	<ul style="list-style-type: none"> <li>● Static: 4 W</li> <li>● Maximum: related to the connected sensor</li> </ul>	-
<b>Daughter board</b>		
H801CKMC	<ul style="list-style-type: none"> <li>● Static: 4 W (with H801SCUN)</li> <li>● Maximum: 4 W (with H801SCUN)</li> </ul>	-
H801CKMD	<ul style="list-style-type: none"> <li>● Static: 6 W (with H802SCUN)</li> <li>● Maximum: 7 W (with H802SCUN)</li> </ul>	-
H801FLBA	<ul style="list-style-type: none"> <li>● Static: 3 W (with H801SCUN)</li> <li>● Maximum: 4 W (with H801SCUN)</li> </ul>	-
H801M2XA	<ul style="list-style-type: none"> <li>● Static: 25 W (with H802SCUN)</li> <li>● Maximum: 25 W (with H802SCUN)</li> </ul>	-

### 3.4 Board Configuration(MA5600T/MA5603T)

This topic describes the type, name, slot and mapping of the boards supported by the MA5600T/MA5603T.

#### NOTE

- This manual describes the supply of boards supported by the product. However, the availability of the boards is subject to the PCNs. For the availability of the boards, contact product managers at Huawei representative offices.
- The MA5600T supports two service subracks: ETSI and IEC. The ETSI service subrack has two more slots for service boards than the IEC service subrack, but they two support the same types of boards.
- In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-5** Boards supported by the MA5600T/MA5603T

Board Name	Board Mapping					
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V
<b>Upstream interface board</b>						
H801GICD	Yes	Yes	No	No	Yes	Yes
H801GICE	Yes	Yes	No	No	Yes	Yes
H801GICF	No	No	Yes	Yes	Yes	No
H801GICG	No	No	Yes	Yes	Yes	No
H801GICK	No	Yes	Yes	Yes	Yes	Yes
H802GICK	No	No	Yes	Yes	Yes	Yes
H801GSCA	Yes	Yes	No	No	<ul style="list-style-type: none"> <li>● MA5600 T: Yes</li> <li>● MA5603 T: No</li> </ul>	No
H801X1CA	No	Yes	Yes	Yes	Yes	No
H801X2CA	No	No	Yes	Yes	Yes	No
H801X2CS	No	No	Yes	Yes	Yes	Yes
H802X2CS	No	No	Yes	Yes	Yes	Yes
H801X2CK	No	No	Yes	Yes	Yes	Yes
H802P2CA	Yes	No	No	<ul style="list-style-type: none"> <li>● MA5600T: No</li> <li>● MA5603T: <ul style="list-style-type: none"> <li>- OLT mode: No</li> <li>- MSAN mode(copper-fiber hybrid access): No</li> <li>- MSAN mode(copper access): Yes</li> </ul> </li> </ul>	No	No
<b>Universal interface board</b>						
H801BIUA	<ul style="list-style-type: none"> <li>● MA5600T : Yes</li> <li>● MA5603T : No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	No	No

Board Name	Board Mapping						
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V	
H801CITA	<ul style="list-style-type: none"> <li>● MA5600T : Yes</li> <li>● MA5603T : No</li> </ul>	No	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	No
H801CITD	Yes	Yes	Yes	Yes	Yes	Yes	
<b>Power interface board</b>							
H801PRTA	<ul style="list-style-type: none"> <li>● MA5600T : Yes</li> <li>● MA5603T : No</li> </ul>	No	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	No
H801PRTE	Yes	Yes	Yes	Yes	Yes	Yes	
H801PRTG	Yes	Yes	Yes	Yes	Yes	Yes	
<b>SPU board</b>							
H801SPUA	No	No	Yes	Yes	Yes	No	
H801SPUB	Yes	Yes	Yes	Yes	Yes	Yes	
H801SPUC	No	No	No	Yes	Yes	Yes	
H801SPUF	No	No	No	Yes	Yes	Yes	
<b>Ethernet service access board</b>							
H801ETHA	Yes	Yes	Yes	Yes	Yes	No	
H801ETHB	Yes	Yes	Yes	Yes	Yes	Yes	
<b>TDM service process board</b>							
H801TOPA	No	No	Yes	Yes	Yes	Yes	
H801TOPB	No	No	Yes	Yes	Yes	Yes	
H801CSPA	No	No	Yes	Yes	Yes	No	
<b>GPON interface board</b>							
H801GPBC	Yes (only supported before the version V800R016C10)	No	Yes	Yes	Yes	No	
H802GPBD	No	No	Yes	Yes	Yes	No	

Board Name	Board Mapping					
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V
H805GPBD	No	No	Yes	Yes	Yes	No
H802GPFD	No	No	Yes	Yes	Yes	Yes
H805GPFD	No	No	Yes	Yes	Yes	Yes
H806GPBH	No	No	Yes	Yes	Yes	Yes
H807GPBH	No	No	Yes	Yes	Yes	Yes
H801GPMD	No	No	No	No	No	Yes
<b>10G GPON interface board</b>						
H802XGBC	No	No	No	Yes	Yes	No
H801XGBD	No	No	No	Yes	Yes	No
<b>P2P interface board</b>						
H801OPFA	Yes	Yes	Yes	Yes	Yes	No
H802OPGD	No	No	Yes	Yes	Yes	Yes
H802OPGE	No	No	Yes	Yes	Yes	Yes
<b>ATM interface board</b>						
H801AIUG	Yes	No	No	Yes	No	No
<b>Combo Board</b>						
H80BCAME	Yes	No	No	Yes	Yes (V800R016 C00 and later versions)	No
H806CAME	Yes	No	No	Yes	Yes (V800R016 C00 and later versions)	No
H80BCVME	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No

Board Name	Board Mapping					
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V
H806CCPE	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80DCCPE	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80DCSPE	Yes	Yes	No	Yes	Yes	No
<b>Voice board</b>						
H801ASRB	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H801ASPB	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H808ASPB	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H809ASPB	Yes	No	No	Yes	Yes (V800R016 C00 and later versions)	No
H80BASPB	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No

Board Name	Board Mapping					
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V
H80CASPB	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H802DSRD	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H802DSRE	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H802EDTB	Yes	No	No	Yes	Yes (V800R016 C00 and later versions)	No
H80AATRB	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
<b>ADSL2+ service access board</b>						
H808ADIF	Yes	Yes	No	Yes	No	No
H808ADLE	Yes	Yes	No	Yes	No	No
H805ADLF	<ul style="list-style-type: none"> <li>● MA5600T : Yes</li> <li>● MA5603T : No</li> </ul>	No	No	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	No	No
H808ADLF	Yes	Yes	No	Yes	No	No
H802ADPD	Yes	Yes	No	Yes	No	No
H805ADPD	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No



Board Name	Board Mapping					
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V
H807ADPD	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H802ADQD	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H802ADKM	Yes	No	No	Yes	Yes (V800R016 C00 and later versions)	No
H80BADPE	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H807ADPE	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H808ADPM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H807ADPM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
<b>VDSL2 service access board</b>						
H805VDSA	Yes	Yes	No	Yes	No	No
H805VDSF	Yes	Yes	No	Yes	No	No
H805VDTF	Yes	Yes	No	Yes	No	No

Board Name	Board Mapping					
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V
H805VDRD	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H805VDMF	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80BVDMF	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H802VDNF	Yes	Yes	No	Yes	No	No
H802VDJM	Yes	No	No	Yes	No	No
H80AVDPD	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80BVDPE	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80BVDPM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80BVDQM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No

Board Name	Board Mapping					
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V
H80BVCMM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80AVCPD	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80DVCPD	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80AVCPM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80DVCPM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H806VCPE	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80DVCPE	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H80DSDMM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No

Board Name	Board Mapping					
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V
H80DSDPM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
<b>Vectoring processing board</b>						
H806VPEA	<ul style="list-style-type: none"> <li>● MA5600T : No</li> <li>● MA5603T : Yes</li> </ul>	No	No	<ul style="list-style-type: none"> <li>● MA5600T: No</li> <li>● MA5603T: Yes</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: No</li> <li>● MA5603T: Yes</li> </ul>	No
H806VPEF	<ul style="list-style-type: none"> <li>● MA5600T : No</li> <li>● MA5603T : Yes</li> </ul>	No	No	<ul style="list-style-type: none"> <li>● MA5600T: No</li> <li>● MA5603T: Yes</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: No</li> <li>● MA5603T: Yes</li> </ul>	No
H806VPGA	<ul style="list-style-type: none"> <li>● MA5600T : Yes</li> <li>● MA5603T : No</li> </ul>	No	No	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	No
<b>SHDSL service access board</b>						
H803SHDA	<ul style="list-style-type: none"> <li>● MA5600T : Yes</li> <li>● MA5603T : No</li> </ul>	No	No	<ul style="list-style-type: none"> <li>● MA5600T: Yes</li> <li>● MA5603T: No</li> </ul>	No	No
H802SHLB	Yes	Yes	No	Yes	No	No
H80ASHLM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
H802SHGM	Yes	Yes	No	Yes	Yes (V800R016 C00 and later versions)	No
<b>ADSL SPL board</b>						
H801SPLF	<ul style="list-style-type: none"> <li>● ADSL SPL boards are installed in the MA5600T ETSI service subrack or MA5603T chassis, generally in slots adjacent to corresponding ADSL2+ service access boards. In the</li> </ul>					
H801SPLH						

Board Name	Board Mapping					
	H801SCUB/ H802SCUB	H801SCU F	H801SCU L	H801SCUN/ H802SCUN/ H801SCUK	H801SCU H	H801SCU V
H801SPLL	<p>MA5600T ETSI service subrack, slots available for ADSL SPL boards are slots 1-8 and 11-18. In the MA5603T chassis, slots available for ADSL SPL boards are slots 0-5. ADSL SPL boards and corresponding ADSL2+ service access boards are connected using intra-subrack interconnection cables.</p> <ul style="list-style-type: none"> <li>When in the ETSI SPL subrack, ADSL SPL boards are generally installed in slots directly under corresponding ADSL service boards. In the ETSI SPL subrack, slots available for ADSL SPL boards are slots 1-8 and 11-18. ADSL SPL boards and corresponding ADSL2+ service access boards are connected using inter-subrack interconnection cables.</li> </ul> <p><b>NOTE</b> For details about mapping between ADSL SPL boards and ADSL2+ service access boards, see <a href="#">3.25.1 Differences Between ADSL SPL Boards</a>.</p>					
H801SPPLA						
H801SPPLB						
H801SPPLC						
H801SPPHA						
H801SPPF1						
H801SPPF						
<b>VDSL SPL board</b>						
H801VSTH	<ul style="list-style-type: none"> <li>VDSL SPL boards are installed in the MA5600T ETSI service subrack or MA5603T chassis, generally in slots adjacent to corresponding VDSL2 service access boards. In the MA5600T ETSI service subrack, slots available for VDSL SPL boards are slots 1-8 and 11-18. In the MA5603T chassis, slots available for VDSL SPL boards are slots 0-5. VDSL SPL boards and corresponding VDSL2 service access boards are connected using intra-subrack interconnection cables.</li> <li>When in the ETSI SPL subrack, VDSL SPL boards are generally installed in slots directly under corresponding VDSL service boards. In the ETSI SPL subrack, slots available for VDSL SPL boards are slots 1-8 and 11-18. VDSL SPL boards and corresponding VDSL2 service access boards are connected using inter-subrack interconnection cables.</li> </ul> <p><b>NOTE</b> For details about mapping between VDSL SPL boards and VDSL2 service access boards, see <a href="#">3.26.1 Differences Between VDSL SPL Boards</a>.</p>					
H801VSTL						
H801VSNF						
H801VSNLA						
H801VSPHA						
H801VSPLA						
H801VSPLC						
<b>SHDSL Extension board</b>						
H801SHET	<ul style="list-style-type: none"> <li>SHDSL extension boards are installed in the MA5600T ETSI service subrack or MA5603T chassis, generally in slots adjacent to SHDSL service access boards. In the MA5600T ETSI service subrack, slots available for SHDSL extension boards are slots 1-8 and 11-18. In the MA5603T chassis, slots available for SHDSL extension boards are slots 0-5. SHDSL extension boards and SHDSL service access boards are connected using intra-subrack interconnection cables.</li> <li>When in the ETSI SPL subrack, SHDSL extension boards are generally installed in slots directly under SHDSL service access boards. In the ETSI SPL subrack, slots available for SHDSL extension boards are slots 1-8 and 11-18. SHDSL extension boards and SHDSL service access boards are connected using inter-subrack interconnection cables.</li> </ul>					

## 3.5 Board Configuration(MA5608T)

This topic describes the type, name, slot and mapping of the boards supported by the MA5608T.

 **NOTE**

- This manual describes the supply of boards supported by the product. However, the availability of the boards is subject to the PCNs. For the availability of the boards, contact product managers at Huawei representative offices.
- In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-6** Boards supported by the MA5608T

Board Name	Board Mapping		
	H801MCUD	H801MCUD1	H801MCUE
<b>Control board</b>			
H801MCUD	-	-	-
H801MCUD1	-	-	-
H801MCUE	-	-	-
<b>Power interface board</b>			
H801MPWC	Yes	Yes	Yes
H801MPWD	Yes	Yes	Yes
H801MPWE	Yes	Yes	Yes
<b>ADSL2+ service access board</b>			
H808ADPM	Yes	Yes	No
H807ADPM	Yes	Yes	No
H805ADPD	Yes	Yes	No
H807ADPD	Yes	Yes	No
H80BADPE	Yes	Yes	No
H807ADPE	Yes	Yes	No
<b>Combo board</b>			
H80BCAME	Yes	Yes	No
H806CAME	Yes	Yes	No
H80BCVME	Yes	Yes	No
H806CCPE	Yes	Yes	No
H80DCCPE	Yes	Yes	No
H80DCSPE	Yes	Yes	No
<b>Voice board</b>			
H802DSRD	Yes	Yes	No

Board Name	Board Mapping		
	H801MCUD	H801MCUD1	H801MCUE
H802DSRE	Yes	Yes	No
H808ASPB	Yes	Yes	No
H809ASPB	Yes	Yes	No
H80BASPB	Yes	Yes	No
H80CASPB	Yes	Yes	No
H802EDTB	Yes	Yes	No
H80AATRB	Yes	Yes	No
<b>VDSL2 service access board</b>			
H80AVDPD	Yes	Yes	No
H80BVDQM	Yes	Yes	No
H80BVDPM	Yes	Yes	No
H80BVDPE	Yes	Yes	No
H805VDRD (V800R012C00, V800R013C10 and later versions)	Yes	Yes	No
H806VCPE	Yes	Yes	No
H80DVCPE	Yes	Yes	No
H80AVCPD	Yes	Yes	No
H80DVCPD	Yes	Yes	No
H80AVCPM	Yes	Yes	No
H80DVCPM	Yes	Yes	No
H80DSDMM	Yes	Yes	No
H80BVDMF	Yes	Yes	No
H80DSDPM	Yes	Yes	No
<b>SHDSL service access board</b>			
H80ASHLM	Yes	Yes	No
H802SHGM	Yes	Yes	No
<b>GPON service access board</b>			

Board Name	Board Mapping		
	H801MCUD	H801MCUD1	H801MCUE
H802GPBD (V800R013C10 and later versions)	Yes	Yes	No
H805GPBD	Yes	Yes	No
H802GPDF	Yes	Yes	Yes
H805GPDF	Yes	Yes	Yes
H806GPBH	Yes	Yes	Yes
H807GPBH	Yes	Yes	Yes
H801GPMD	No	No	Yes
<b>10G GPON service access board</b>			
H802XGBC	Yes	Yes	No
H801XGBD	Yes	Yes	Yes
<b>Ethernet service access board</b>			
H801ETHB	Yes	Yes	Yes
<b>SPU board</b>			
H801SPUB	Yes	Yes	Yes
H801SPUF	Yes	Yes	Yes
<b>TDM service process board</b>			
H801TOPA	Yes	Yes	Yes
<b>P2P interface board</b>			
H802OPGD	Yes	Yes	Yes
H802OPGE	Yes	Yes	Yes

## 3.6 Control Board (SCU)

A control board, as the control and management unit of the system, configures, manages, and controls the device and also implements simple routing protocol functions.

### 3.6.1 SCU Boards Comparison

All SCU boards support the functions as below:

- System control and management unit



- Active/standby switchover
- Local and remote maintenance through maintenance serial port CON or maintenance Ethernet port ETH
- Environmental monitoring through environment monitoring serial port ESC

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-7** Major differences between SCU boards

Board	Access Service	Daughter Board	Load sharing	Ethernet synchronization	Temperature querying and high temperature alarming	Built-in 2GB CF card	Centric Management for GE Remote Extended Subracks	D-CC AP
H801SCUB/ H802SCUB	Copper	H801FLBA H801CKMC H801CKMD	No	No	Yes	No	No	No
H801SCUF	Optical and copper	H801FLBA H801CKMC H801CKMD	No	No	Yes	No	No	No
H801SCUL	Optical	H801CKMC H801CKMD	No	No	Yes	No	No	No
H801SCUN	Optical and copper	H801FLBA H801CKMC H801CKMD H801M2XA	Yes (supported in V800 R011C00 and later versions)	No	Yes	No	Yes	No

Board	Access Service	Daughter Board	Load sharing	Ethernet synchronization	Temperature querying and high temperature alarming	Built-in 2GB CF card	Centric Management for GE Remote Extended Subracks	D-CC AP
H802SCUN	Optical and copper	H801F LBA H801C KMC H801C KMD H801M 2XA (version B)	Yes (supported in V800 R011C00 and later versions)	No	Yes	No	Yes	No
H801SCUK	Optical and copper	H801F LBA H801C KMC H801C KMD H801M 2XA (version B)	Yes (supported in V800 R011C00 and later versions)	No	Yes	No	Yes	No
H801SCUH	Optical and copper	No	Yes	Yes	Yes	Yes	No	No
H801SCUV	Optical	No	Yes	Yes	Yes	Yes	No	Yes

 **NOTE**

H801SCUN and H802SCUN are slot compatible.

**Table 3-8** Ports of SCU boards

Board	Panel ports	Internal interfaces			
		Channel to the service board	Channel to the GIU board	Channel to the standby control board	Note
H801S CUB/ H802S CUB	4 GE ports	16 GE channels	<ul style="list-style-type: none"> <li>● Providing four GE ports for upstream transmission using the control board or upstream board, which is controlled by the electronic switch.</li> <li>● Providing four GE ports for upstream transmission using the upstream board. Either the last GE port or VoIP daughter board can be used for upstream transmission, which is controlled by the electronic switch.</li> </ul>	-	-
H801S CUF	4 GE ports	16 GE channels	Provides four GE channels and one 10GE channel for each upstream slot	-	Reserves two 10GE channels (not available currently ) for the MPLS daughter board.

Board	Panel ports	Internal interfaces			
		Channel to the service board	Channel to the GIU board	Channel to the standby control board	Note
H801S CUL	None	16 GE/10GE channels	<ul style="list-style-type: none"> <li>● Providing two GE/10GE ports for upstream transmission using the upstream board.</li> <li>● Providing two GE/10GE ports for upstream transmission using the upstream board. Either the last GE/10GE port or daughter board can be used for upstream transmission, which is controlled by the electronic switch.</li> </ul>	-	-
H801S CUN	4 GE ports	16 GE/10GE channels	Providing two GE/10GE channels for each upstream boards	Providing two 10GE channels for load sharing with the standby H801SCUN board (supported in V800R011C00 and later versions)	-
H802S CUN	4 GE ports	16 GE/10GE channels	Providing two GE/10GE channels for each upstream boards	Providing two 10GE channels for load sharing with the standby H802SCUN board (supported in V800R011C00 and later versions)	-

Board	Panel ports	Internal interfaces			
		Channel to the service board	Channel to the GIU board	Channel to the standby control board	Note
H801S CUK	4 GE ports	16 GE/10GE channels	Providing two GE/10GE channels for each upstream boards	Providing two 10GE channels for load sharing with the standby H801SCUK board (supported in V800R011C00 and later versions)	-
H801S CUH	4 GE/10GE ports, Supporting automatic switching for remote software commissioning using GE upstream transmission.	16 10GE/20GE channels	Providing two 10GE channels for each upstream boards	Providing two 20GE channels for load sharing with the standby H801SCUH board	-

Board	Panel ports	Internal interfaces			
		Channel to the service board	Channel to the GIU board	Channel to the standby control board	Note
H801S CUV	4 GE/10GE ports, Supporting automatic switching for remote software commissioning using GE upstream transmission.	16 10GE/20GE channels	Providing two 10GE channels for each upstream boards	Providing two 20GE channels for load sharing with the standby H801SCUV board	-

### 3.6.2 H801SCUB Board Description

The H801SCUB board is a super control unit board. It is the core of the system control and service switching and aggregation. It can also function as the management and control core of the network management system (NMS). The H801SCUB board communicates with service boards about the key management and control information through the master/slave serial port and inband GE channel. In this way, the H801SCUB configures, manages, and controls the device. The H801SCUB also implements the simple route protocol function.

#### Functional Specifications

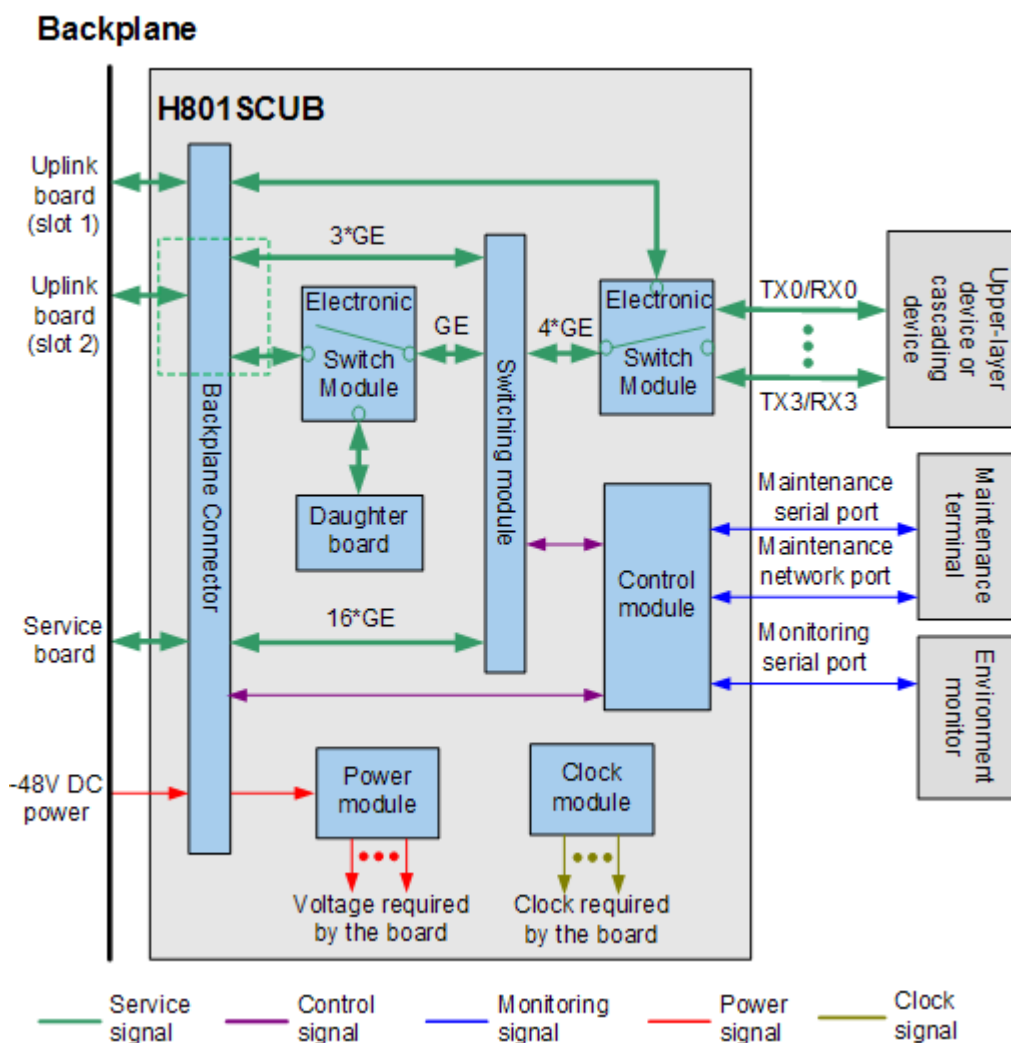
Please refer to "[SCU boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-5 Working principle of the H801SCUB board

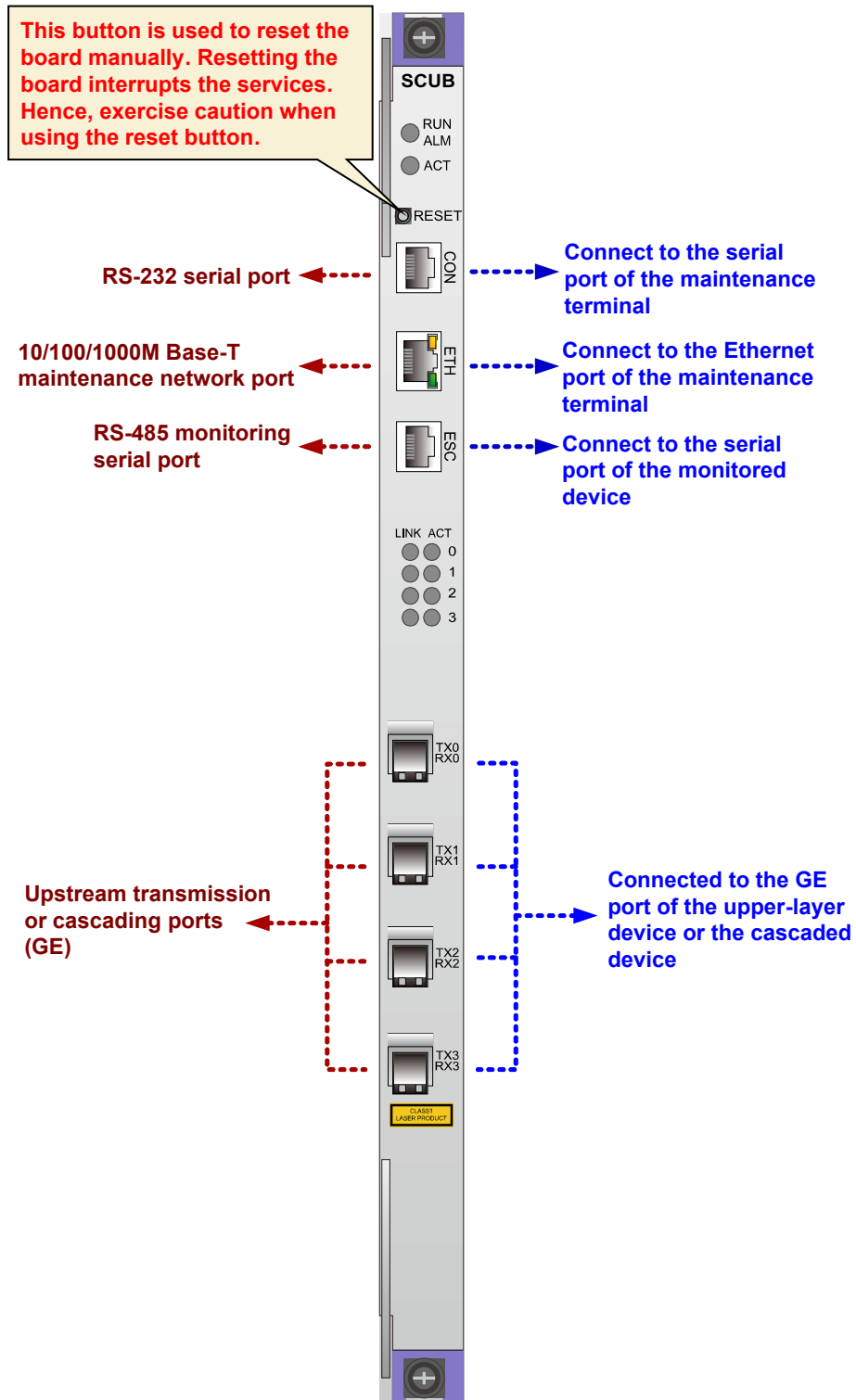


The basic working principle of the H801SCUB board is as follows:

- The control module manages the H801SCUB board and service boards, and communicates with the fan tray through the extended serial port.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing 16 GE ports to implement GE switching on each service board
  - Providing four GE ports for upstream transmission using the control board or upstream board (in the first of the two slots for the upstream board), which is controlled by the electronic switch.
  - Providing four GE ports for upstream transmission using the upstream board (in the second of the two slots for the upstream board). Either the last GE port or VoIP

daughter board can be used for upstream transmission, which is controlled by the electronic switch.

## Front Panel Port



For details about supported optical module or electrical module, see [4.3 GE Optical/Electrical Module](#).



## Indicator

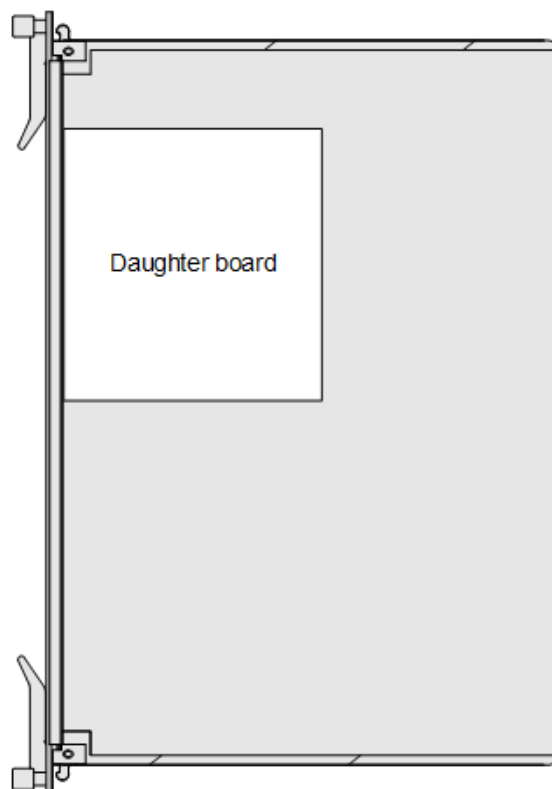
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking (supported in V800R009C00 and later versions)	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	In active/standby mode, the board is active
		-	Off	In active/standby mode, the board is standby
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## Daughter Board

The H801SCUB board can be configured with a matching daughter board. [Figure 3-6](#) shows the position of the daughter board on the H801SCUB board.

For details about the daughter board and functions supports by the H801SCUB board, see [3.6.11 Daughter Board](#).

**Figure 3-6** Position of the daughter board on the H801SCUB board



### 3.6.3 H802SCUB Board Description

The H802SCUB board is a super control unit board. It is the core of the system control and service switching and aggregation. It can also function as the management and control core of the network management system (NMS). The H802SCUB board communicates with service boards about the key management and control information through the master/slave serial port and inband GE channel. In this way, the H802SCUB configures, manages, and controls the device. The H802SCUB also implements the simple route protocol function.

#### Functional Specifications

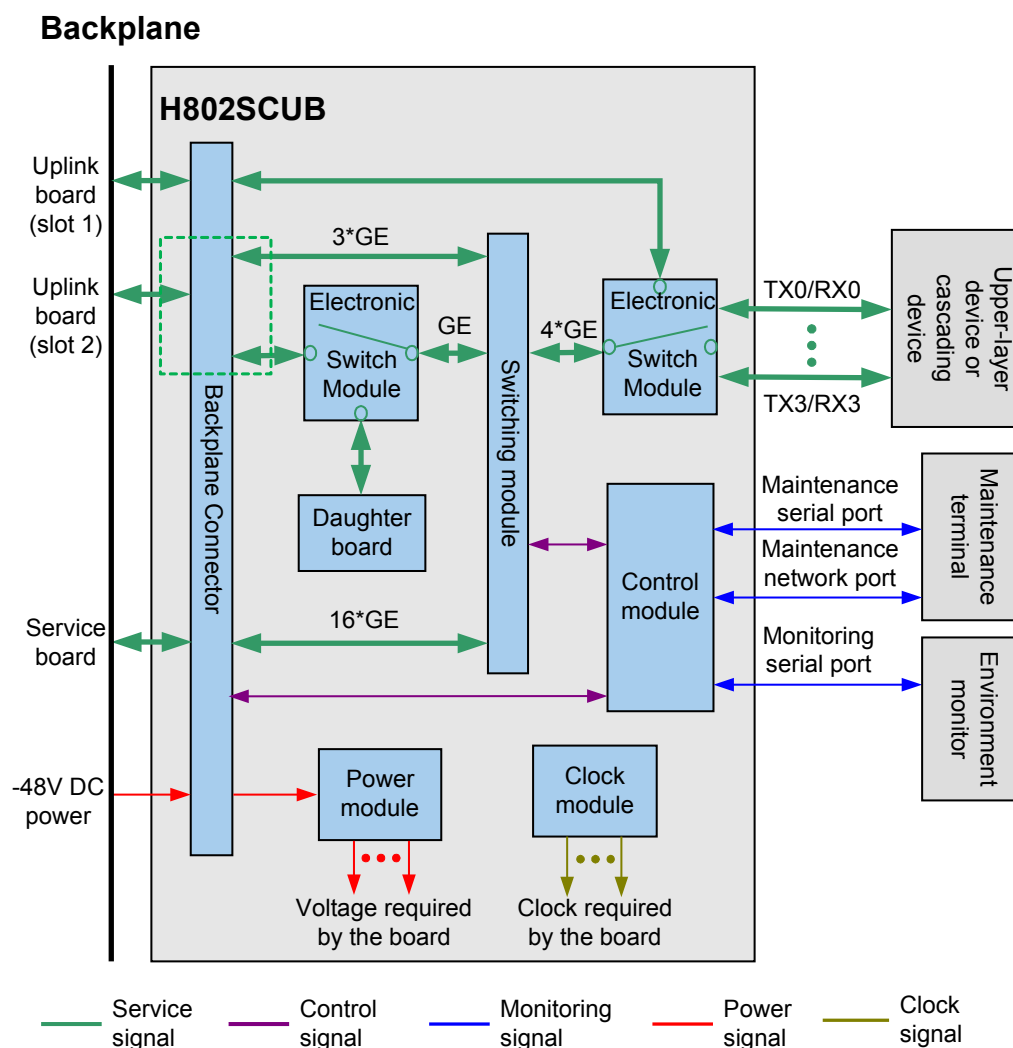
Please refer to "[SCU boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-7 Working principle of the H802SCUB board

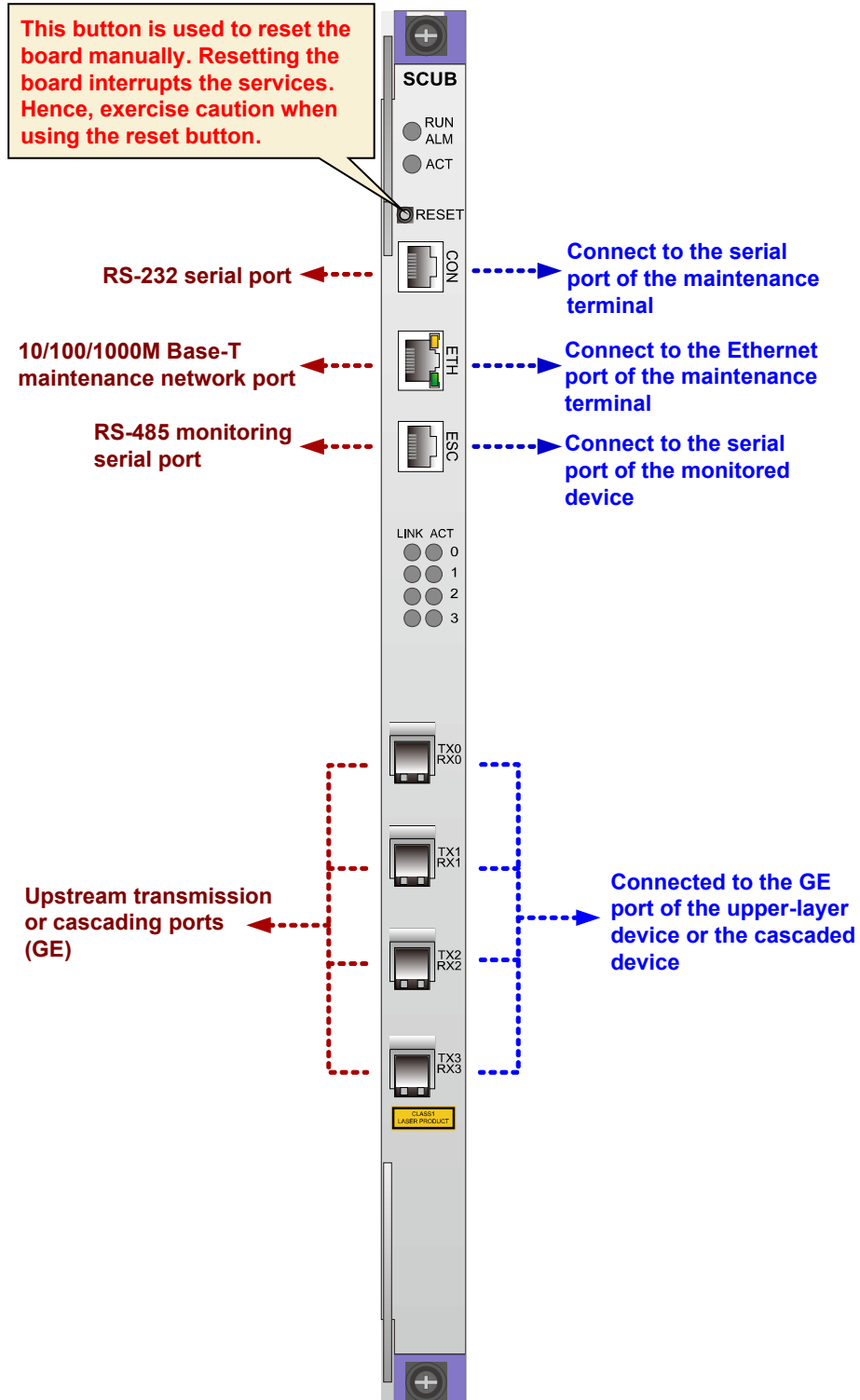


The basic working principle of the H802SCUB board is as follows:

- The control module manages the H802SCUB board and service boards, and communicates with the fan tray through the extended serial port.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing 16 GE ports to implement GE switching on each service board
  - Providing four GE ports for upstream transmission using the control board or upstream board (in the first of the two slots for the upstream board), which is controlled by the electronic switch.
  - Providing four GE ports for upstream transmission using the upstream board (in the second of the two slots for the upstream board). Either the last GE port or VoIP

daughter board can be used for upstream transmission, which is controlled by the electronic switch.

## Front Panel Port



For details about supported optical module or electrical module, see [4.3 GE Optical/Electrical Module](#).

## Indicator

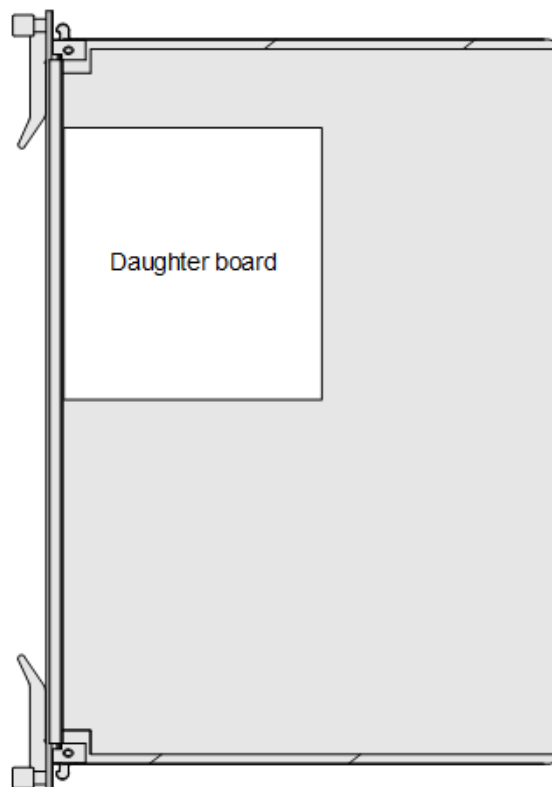
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking (supported in V800R009C00 and later versions)	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	In active/standby mode, the board is active
		-	Off	In active/standby mode, the board is standby
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## Daughter Board

The H802SCUB board can be configured with a matching daughter board. [Figure 3-8](#) shows the position of the daughter board on the H802SCUB board.

For details about the daughter board and functions supports by the H802SCUB board, see [3.6.11 Daughter Board](#).

**Figure 3-8** Position of the daughter board on the H802SCUB board



### 3.6.4 H801SCUF Board Description

The H801SCUF is a super control unit board. It is the core of the system control, service switching, and aggregation. The H801SCUF can also function as the management and control core of the integrated network management system (NMS). The H801SCUF communicates with service boards about the key management and control information through the master/slave serial port and inband GE/10GE channel. In this manner, the H801SCUF configures, manages, and controls the device, and also implements the simple route protocol function.

#### NOTE

The H801SCUF board has the following changes after an upgrade from Ver.A to Ver.B:

- H801SCUF Ver.B reads the power board information directly through the backplane.
- H801SCUF Ver.A needs to work with the universal interface board in slot 0 to obtain the power board information.

### Functional Specifications

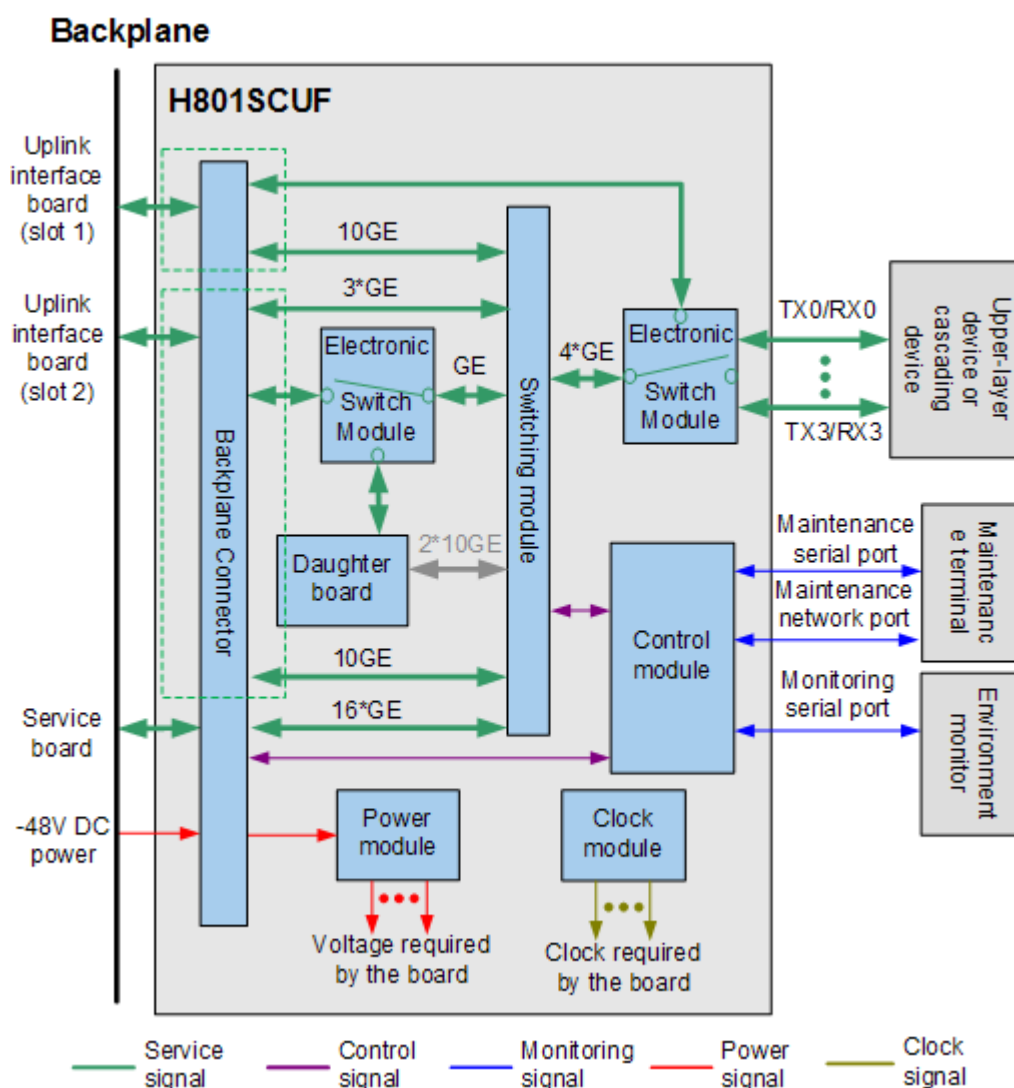
Please refer to "[SCU boards Comparison](#)".

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-9 Working principle of the H801SCUF board



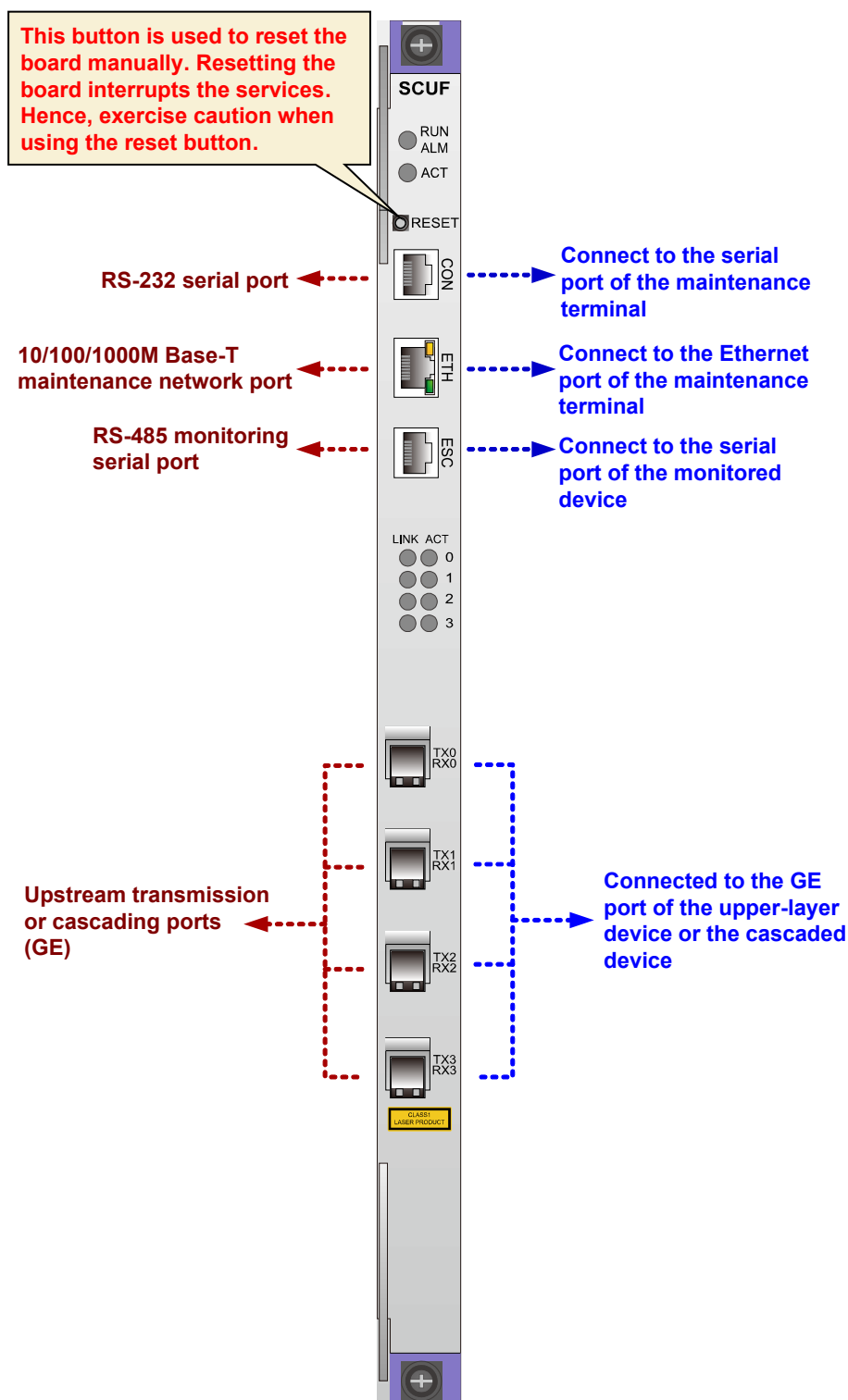
The basic working principle of the H801SCUF board is as follows:

- The control module manages the entire board and the service boards, and communicates with the fan tray through the extended serial port.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE port and the 10GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing 16 GE ports to implement GE switching on each service board
  - The switching module provides four GE channels and one 10GE channel for each upstream slot, generally corresponding to an upstream board with four GE ports (GICD, GICE, or GSCA) or an upstream board with a 10GE port besides the following situations:

- The H801SCUF control board supports the GICK board (an upstream board with two GE ports), but only the first GE port on the GICK board is available. In addition, the GICK board must be a version released later than April 2010.
- The H801SCUF control board does not support the X2CA board.
- Either the four GE ports in the first upstream slot or the GE ports on the H801SCUF control board can be selected through the electronic switch for upstream transmission.
  - On the MA5600T, when the GICD/GICE/GSCA/GICK board is configured in slot 19, the GE ports on these boards cannot be used together with GE Front Panel Port of the H801SCUF control board. For the 10GE upstream board such as X1CA, there is no such restriction. That is, the 10GE ports on these boards can be used together with the GE Front Panel Port of the H801SCUF control board.
  - On the MA5603T, when the GICD/GICE/GSCA/GICK board is configured in slot 8, the GE ports on these boards cannot be used together with the GE Front Panel Port of the SCUF control board. For the 10GE upstream board such as X1CA, there is no such restriction. That is, the 10GE ports on these boards can be used together with the GE Front Panel Port of the SCUF control board.
- Either the last of the four GE ports in the second upstream slot or the daughter board attached to the SCUF control board can be selected through the electronic switch.
  - On the MA5600T, when the GICD/GICE/GSCA board is configured in slot 20, the fourth GE port on these boards cannot be used together with the daughter board attached to the SCUF control board. When the GICK board is configured in slot 20, only the first GE port on the GICK board is available. For the 10GE upstream board such as X1CA there is no such restriction. That is, the 10GE ports on these boards can be used together with the daughter board attached to the SCUF control board.
  - On the MA5603T, when the GICD/GICE/GSCA board is configured in slot 9, the fourth GE port on these boards cannot be used together with the daughter board attached to the SCUF control board. When the GICK board is configured in slot 20, only the first GE port on the GICK board is available. For the 10GE upstream board such as X1CA, there is no such restriction. That is, the 10GE ports on these boards can be used together with the daughter board attached to the SCUF control board.
- Reserves two 10GE channels (not available currently) for the MPLS daughter board.



## Front Panel Port



For details about supported optical module or electrical module, see [4.3 GE Optical/Electrical Module](#).

## Indicator

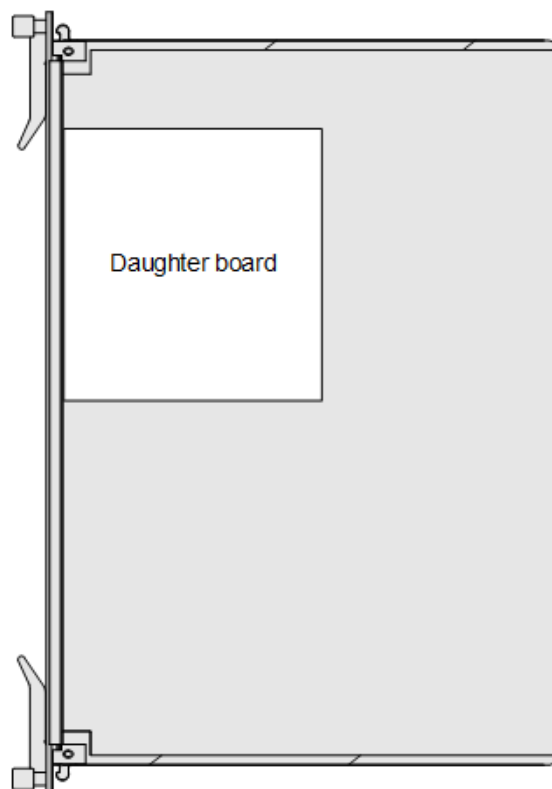
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking (supported in V800R009C00 and later versions)	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	In active/standby mode, the board is active
		-	Off	In active/standby mode, the board is standby
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## Daughter Board

The H801SCUF board can be configured with a matching daughter board. [Figure 3-10](#) shows the position of the daughter board on the H801SCUF board.

For details about the daughter board and functions supported by the H801SCUF board, see [3.6.11 Daughter Board](#).

**Figure 3-10** Position of the daughter board on the H801SCUF board



### 3.6.5 H801SCUH Board Description

The H801SCUH board is a super control unit board. It is the core of the system control and service switching and aggregation. The H801SCUH board can also function as the management and control core of the integrated network management system (NMS). It communicates with service boards about the key management and control information through the master/slave serial port and inband 10GE/20GE channel. In this manner, the H801SCUH board configures, manages, and controls the device, and also implements the simple route protocol functions.

#### Functional Specifications

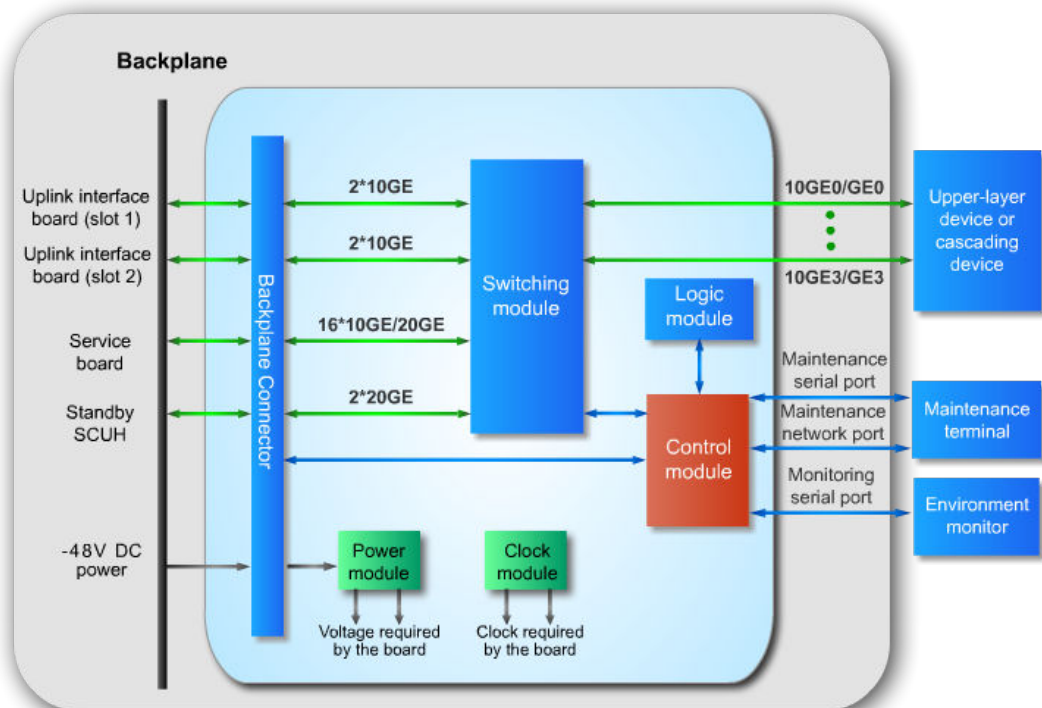
Please refer to "[SCU boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

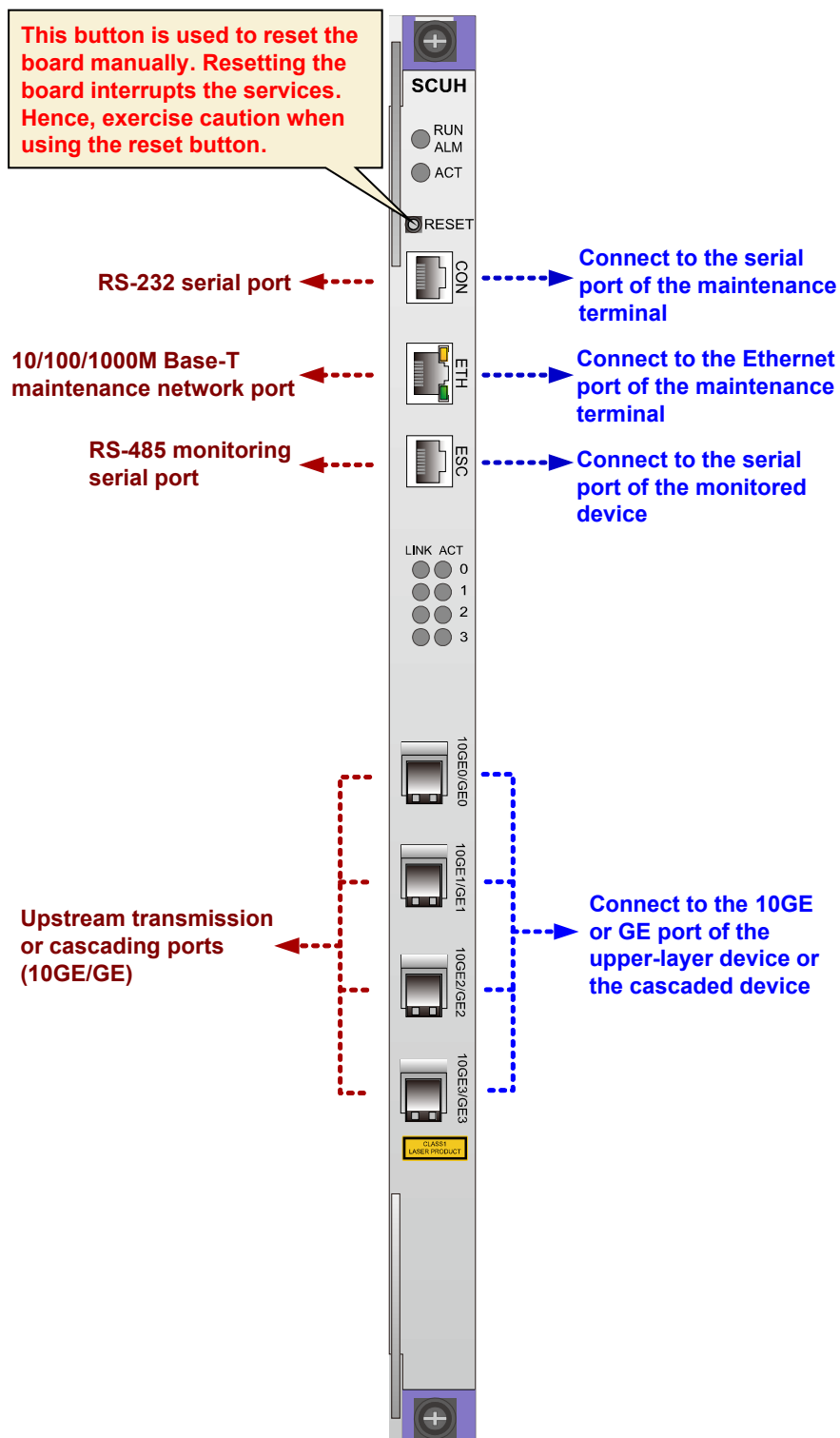
Figure 3-11 Working principle of the H801SCUH board



The basic working principle of the H801SCUH board is as follows:

- The control module manages the entire board and the service boards, and communicates with the fan tray through the extended serial port. In addition, the control module can be configured with a built-in CF card to expand its storage space.
- The logic module implements the logic control and stratum-3 clock functions.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the 10GE port and the 20GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing four 10GE ports for upstream transmission using ports on the front panel
  - Providing two 10GE ports for each upstream boards in upstream transmission
  - Providing 16 10GE/20GE ports for implementing 10GE/20GE switching on each service board
  - Providing two 20GE ports for load sharing with the standby control board

## Front Panel Port



For details about supported optical module, see [4.4 10GE Optical Module](#) and [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	In active/standby mode or load-sharing mode, the board is active
		-	Off	In active/standby mode, the board is standby
		Green	Blinking	In load-sharing mode, the board is standby
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.6.6 H801SCUK Board Description

The H801SCUK board is a super control unit board. It is the core of the system control and service switching and aggregation. The H801SCUK board can also function as the management and control core of the integrated network management system (NMS). It communicates with service boards about the key management and control information through the master/slave serial port and inband GE/10GE channel. In this manner, the H801SCUK board configures, manages, and controls the device, and also implements the simple route protocol functions.

### Functional Specifications

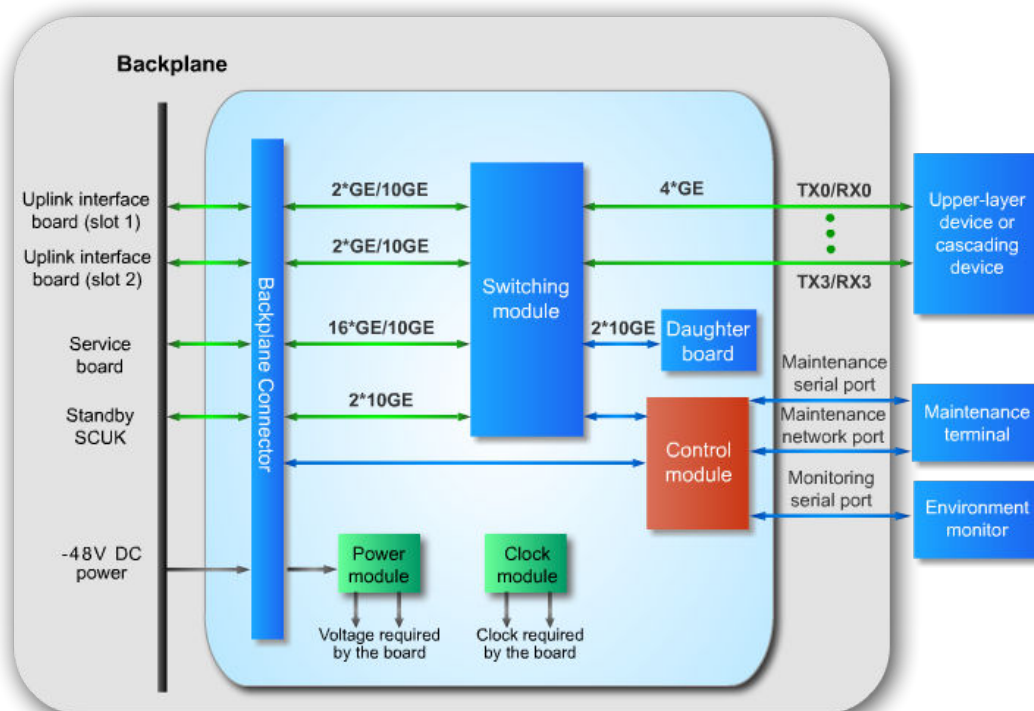
Please refer to "[SCU boards Comparison](#)".

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

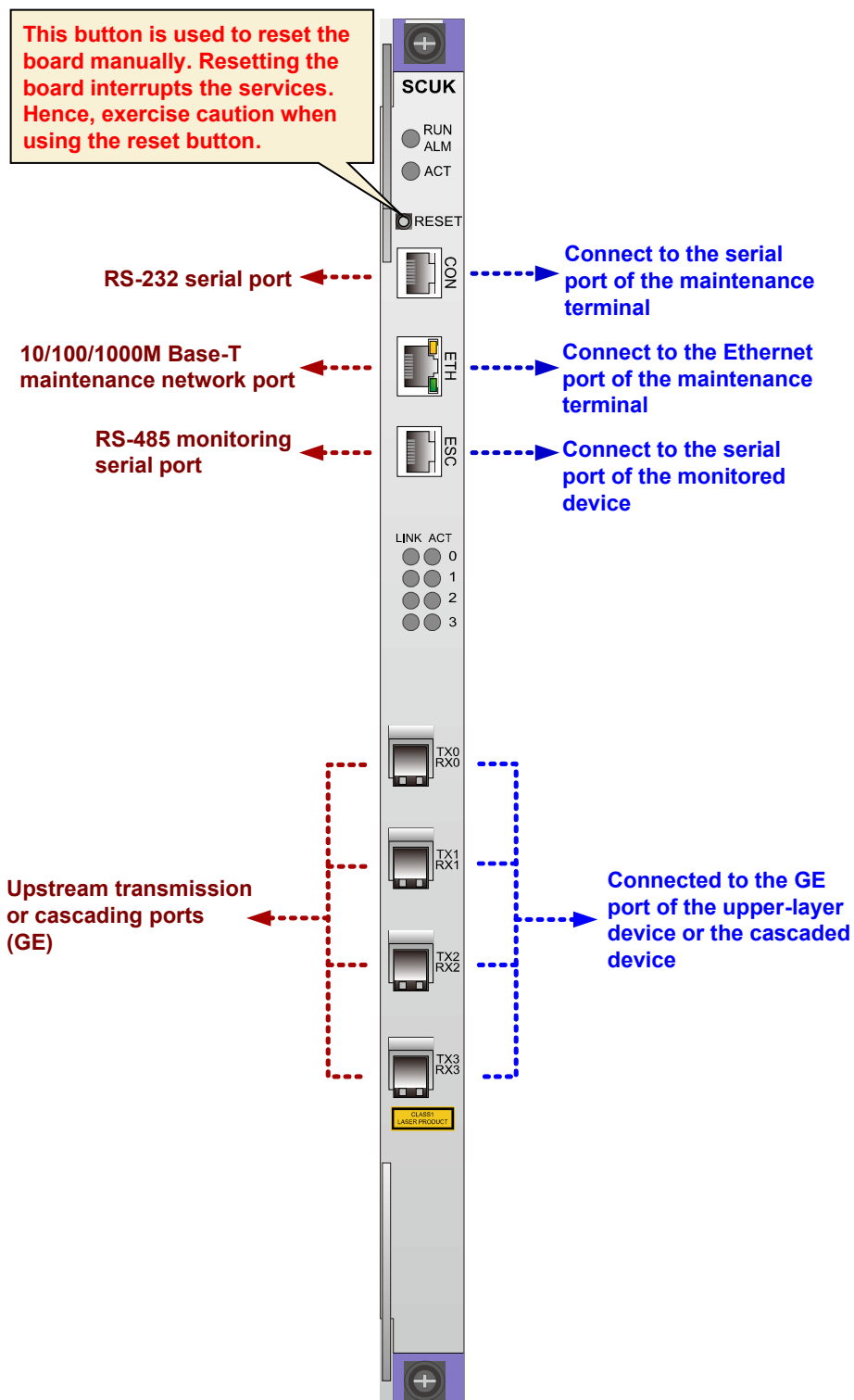
Figure 3-12 Working principle of the H801SCUK board



The basic working principle of the H801SCUK board is as follows:

- The control module manages the entire board and the service boards, and communicates with the fan tray through the extended serial port.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE port and the 10GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing four GE ports for upstream transmission using ports on the front panel
  - Providing two GE/10GE ports for each upstream boards in upstream transmission
  - Providing 16 GE/10GE ports for implementing GE/10GE switching on each service board
  - Providing two 10GE ports for load sharing with the standby control board(supported in V800R011C00 and later versions)

## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).



## Indicator

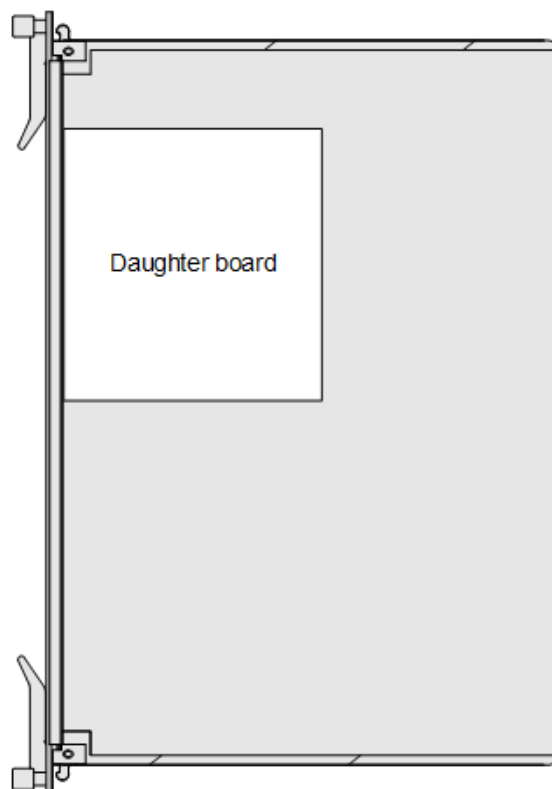
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking (supported in V800R009C00 and later versions)	A high-temperature alarm is generated
		Red	On	The board is faulty
		Red/Green	Blinking between red and green (supported in V800R012C00 and later versions)	The data recovery completes <b>NOTE</b> It is used for the scenario in which this board replaces the H801SCUL control board and then both of them are installed in the same subrack.
ACT	Active indicator	Green	On	In active/standby mode, the board is active
		-	Off	In active/standby mode, the board is standby
		Green	Blinking	In load-sharing mode, the board is standby
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## Daughter Board

The H801SCUK board can be configured with a matching daughter board. [Figure 3-13](#) shows the position of the daughter board on the H801SCUK board.

For details about the daughter board and functions supports by the H801SCUK board, see [3.6.11 Daughter Board](#).

**Figure 3-13** Position of the daughter board on the H801SCUK board



### 3.6.7 H801SCUL Board Description

The H801SCUL board is a super control unit board. It mainly controls the system and processes broadband services. The H801SCUL board communicates with the service boards through the GE channel or the 10GE channel to configure, manage, and control the device. It also implements the simple route protocol functions. The H801SCUL board processes the alarms through the inband NMS. Based on the upper-layer protocol between the H801SCUL board and the service boards, the software of the H801SCUL separates the management information such as alarms from the information reported by the service boards. Then, the H801SCUL board identifies and processes the information.

#### Functional Specifications

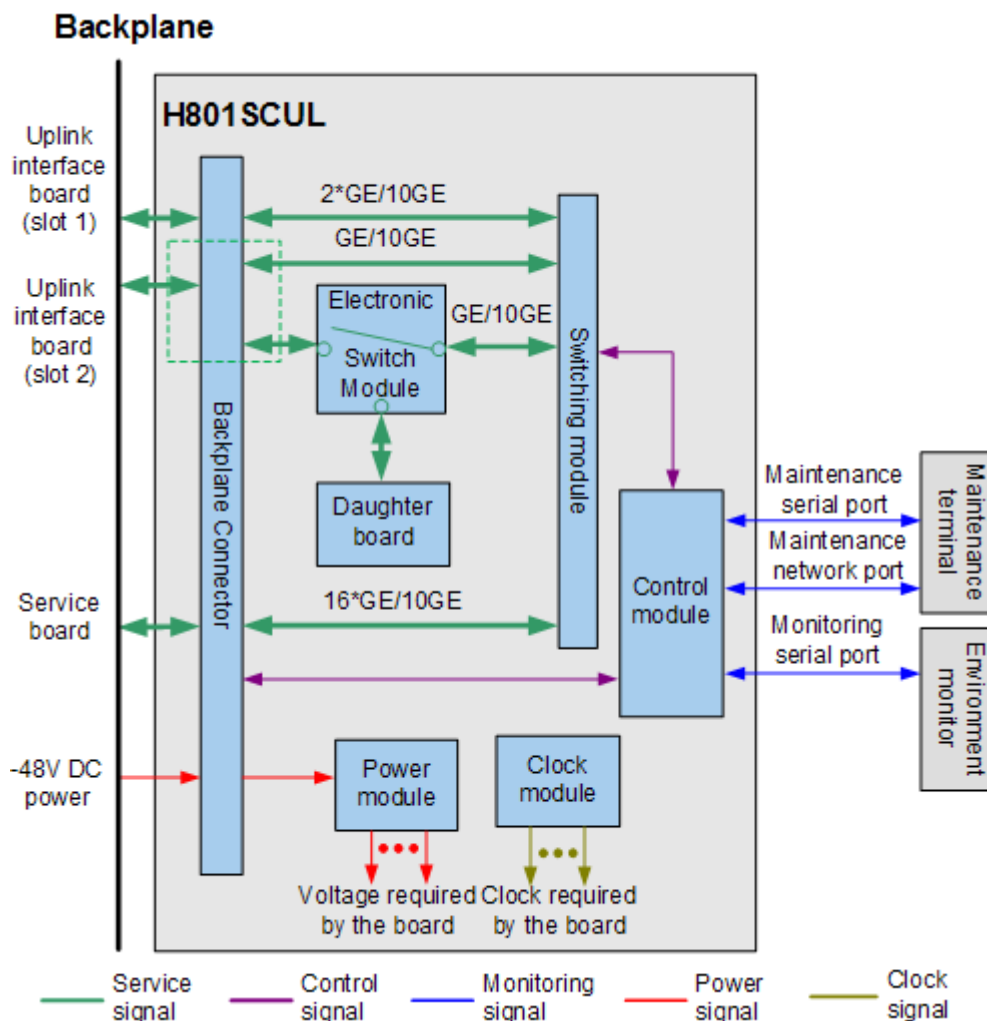
Please refer to "[SCU boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

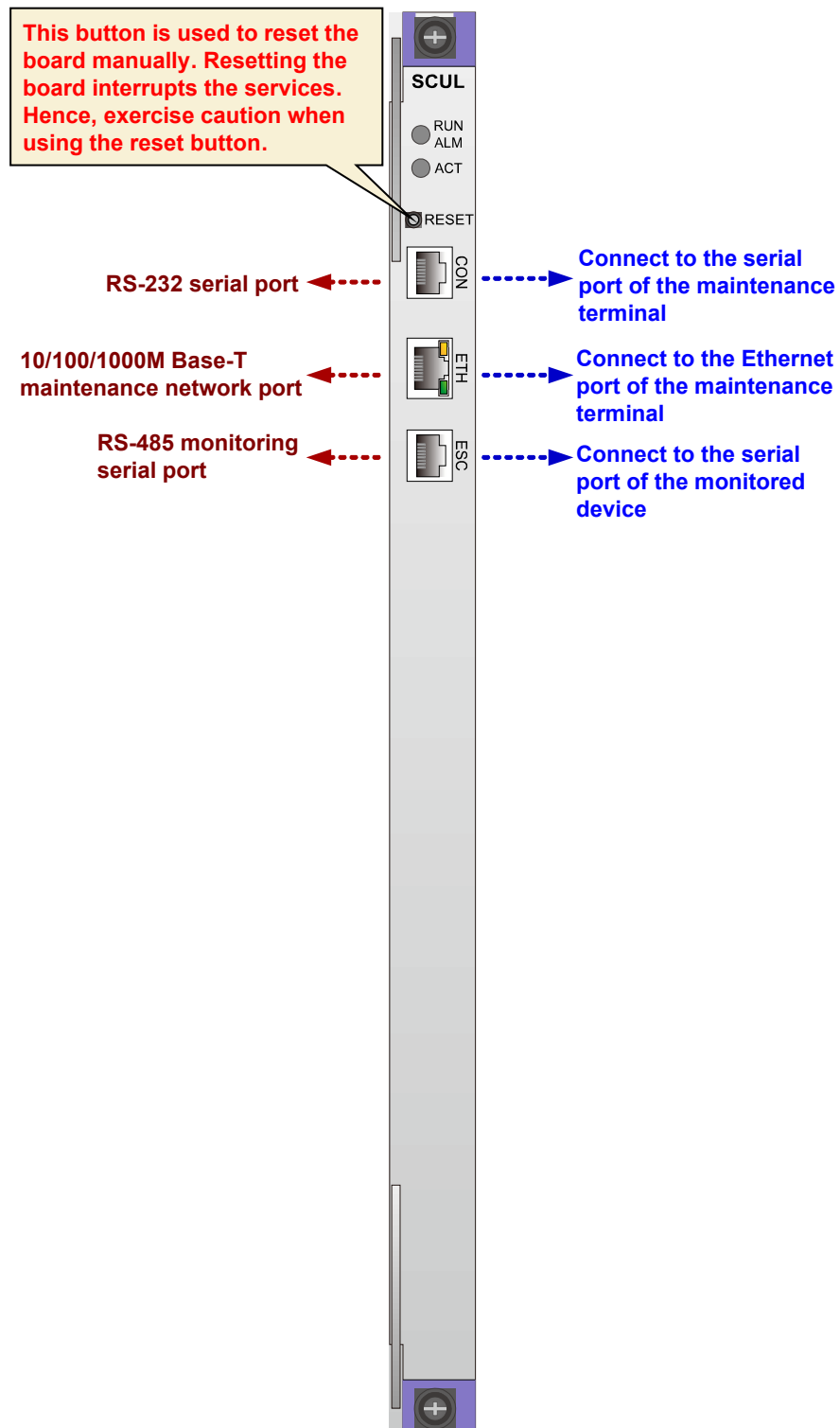
Figure 3-14 Working principle of the H801SCUL board



The basic working principle of the H801SCUL board is as follows:

- The control module manages the H801SCUL board and service boards, and communicates with the fan tray through the extended serial port.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE/10GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing 16 GE/10GE ports to implement GE/10GE switching on each service board
  - Providing two GE/10GE ports for upstream transmission using the upstream board.
  - Providing two GE/10GE ports for upstream transmission using the upstream board (in the second of the two slots for the upstream board). Either the last GE/10GE port or daughter board can be used for upstream transmission, which is controlled by the electronic switch.

## Front Panel Port



## Indicator

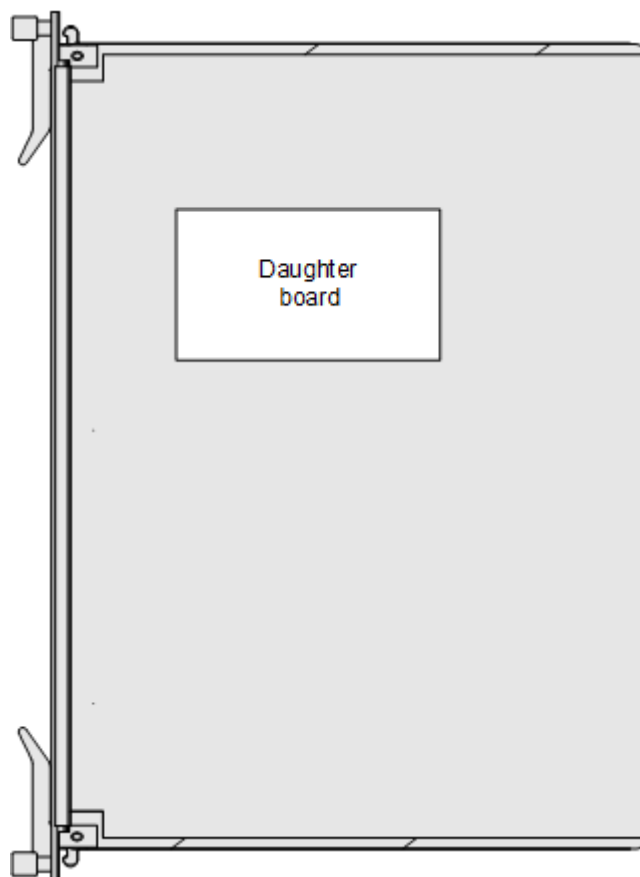
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking (supported in V800R009C00 and later versions)	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	In active/standby mode, the board is active
		-	Off	In active/standby mode, the board is standby

## Daughter Board

The H801SCUL board can be configured with a matching daughter board. [Figure 3-15](#) shows the position of the daughter board on the H801SCUL board.

For details about the daughter board and functions supports by the H801SCUL board, see [3.6.11 Daughter Board..](#)

**Figure 3-15** Position of the daughter board on the H801SCUL board



### 3.6.8 H801SCUN Board Description

The H801SCUN board is a super control unit board. It is the core of the system control and service switching and aggregation. The H801SCUN board can also function as the management and control core of the integrated network management system (NMS). It communicates with service boards about the key management and control information through the master/slave serial port and inband GE/10GE channel. In this manner, the H801SCUN board configures, manages, and controls the device, and also implements the simple route protocol functions.

#### Functional Specifications

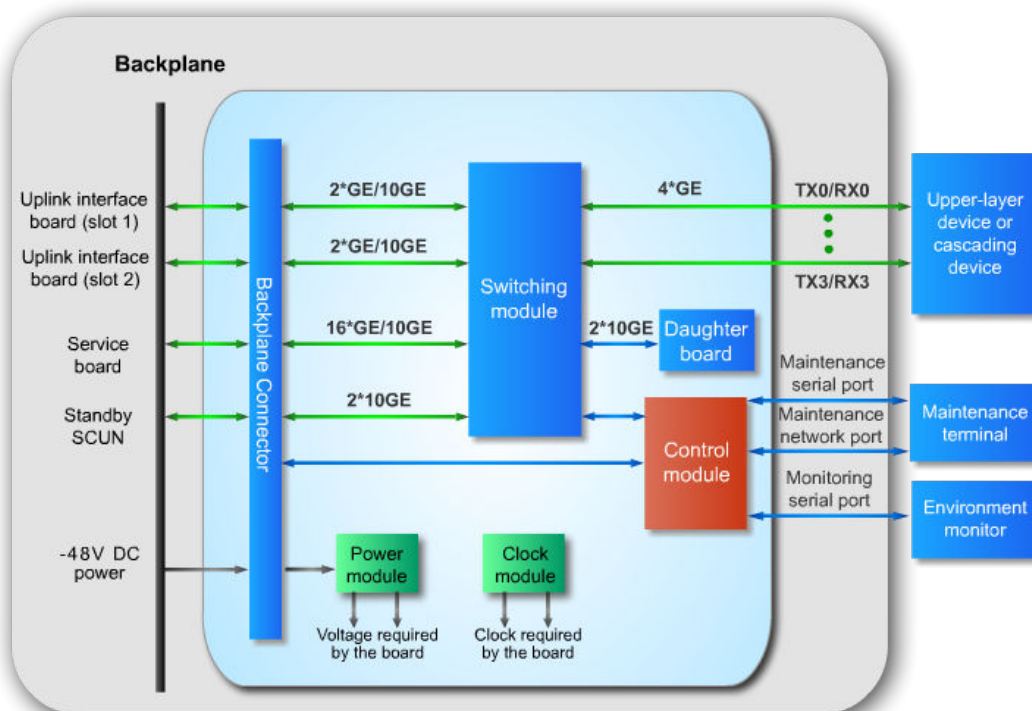
Please refer to "[SCU boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

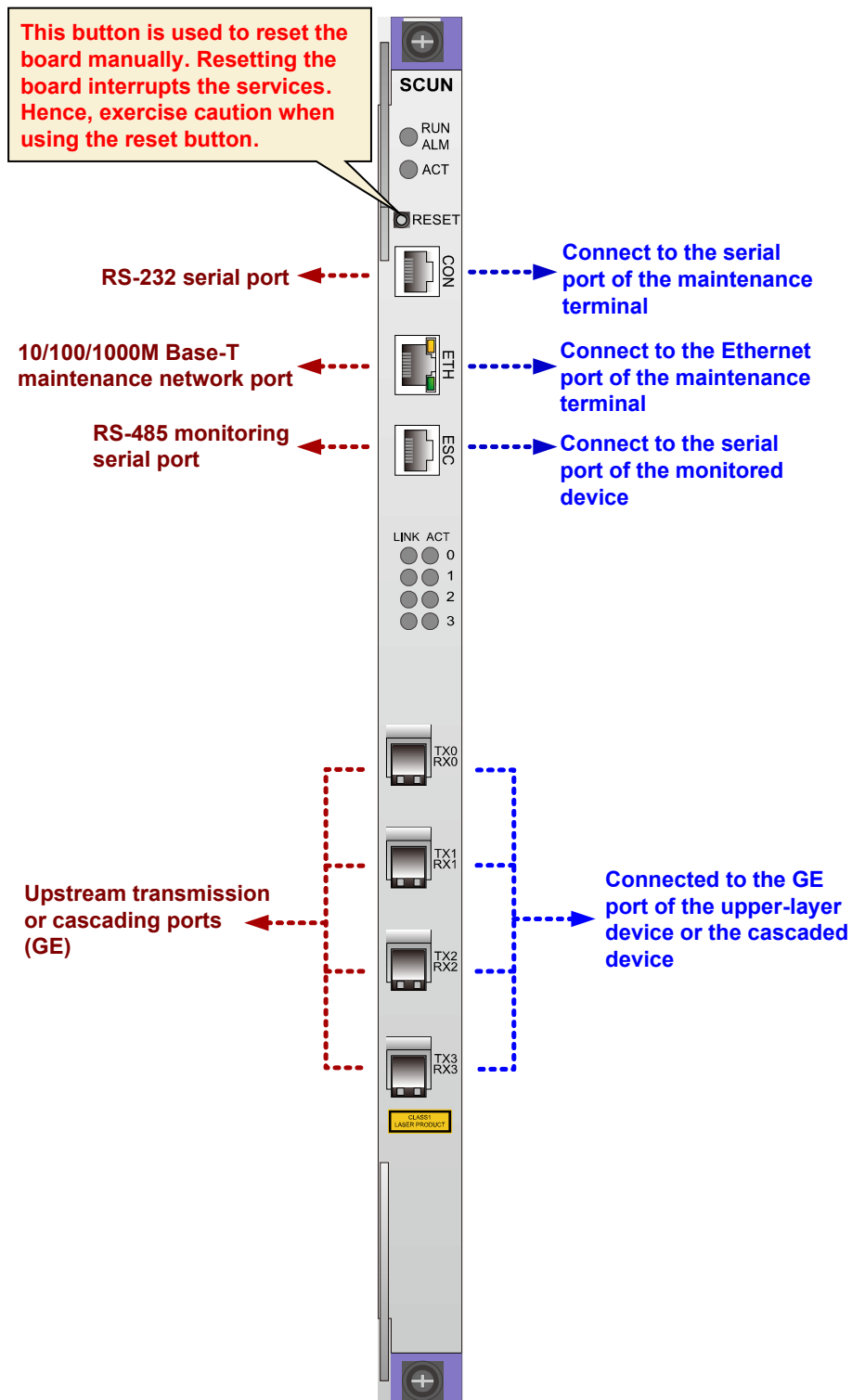
Figure 3-16 Working principle of the H801SCUN board



The basic working principle of the H801SCUN board is as follows:

- The control module manages the entire board and the service boards, and communicates with the fan tray through the extended serial port.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE port and the 10GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing four GE ports for upstream transmission using ports on the front panel
  - Providing two GE/10GE ports for each upstream boards in upstream transmission
  - Providing 16 GE/10GE ports for implementing GE/10GE switching on each service board
  - Providing two 10GE ports for load sharing with the standby control board(supported in V800R011C00 and later versions)

## Front Panel Port



For details about supported optical module or electrical module, see [4.3 GE Optical/Electrical Module](#).



## Indicator

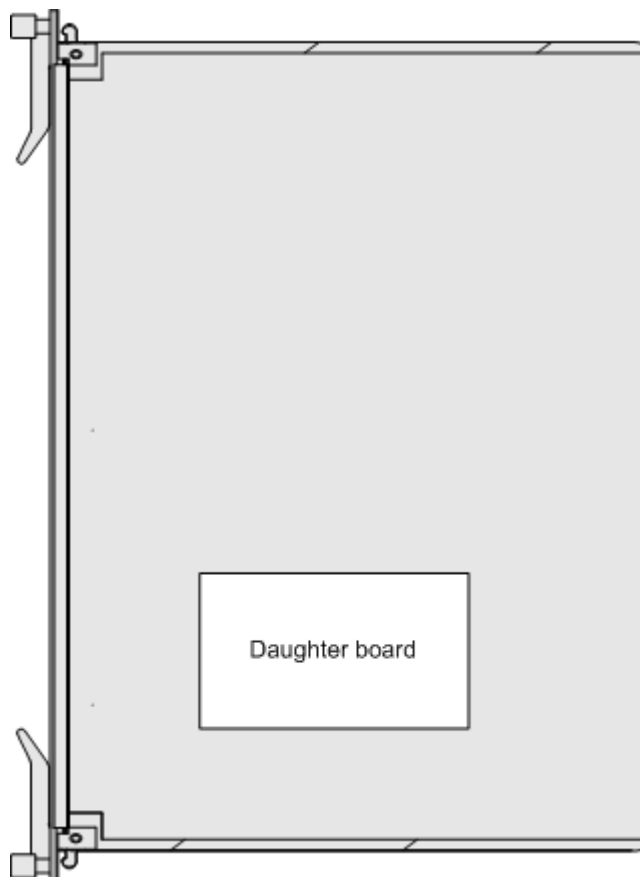
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking (supported in V800R009C00 and later versions)	A high-temperature alarm is generated
		Red	On	The board is faulty
		Red/Green	Blinking between red and green (supported in V800R012C00 and later versions)	The data recovery completes <b>NOTE</b> It is used for the scenario in which this board replaces the H801SCUL control board and then both of them are installed in the same subrack.
ACT	Active indicator	Green	On	In active/standby mode, the board is active
		-	Off	In active/standby mode, the board is standby
		Green	Blinking	In load-sharing mode, the board is standby
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## Daughter Board

The H801SCUN board can be configured with a matching daughter board. [Figure 3-17](#) shows the position of the daughter board on the H801SCUN board.

For details about the daughter board and functions supports by the H801SCUN board, see [3.6.11 Daughter Board..](#)

**Figure 3-17** Position of the daughter board on the H801SCUN board



### 3.6.9 H802SCUN Board Description

The H802SCUN board is a super control unit board. It is the core of the system control and service switching and aggregation. The H802SCUN board can also function as the management and control core of the integrated network management system (NMS). It communicates with service boards about the key management and control information through the master/slave serial port and inband GE/10GE channel. In this manner, the H802SCUN board configures, manages, and controls the device, and also implements the simple route protocol functions.

#### Functional Specifications

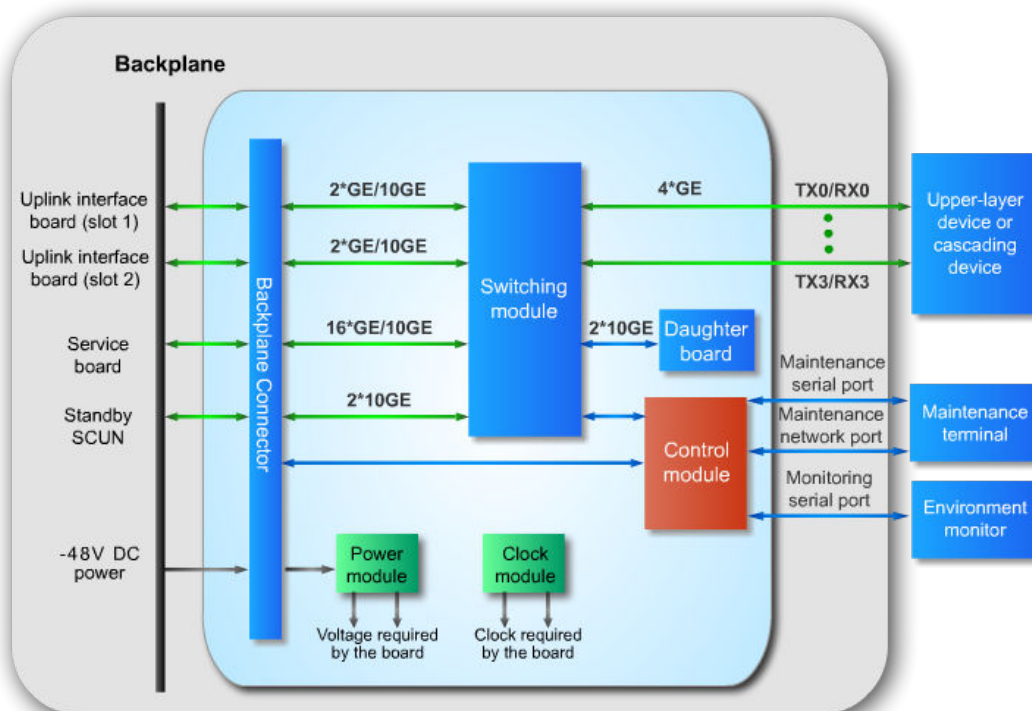
Please refer to "[SCU boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

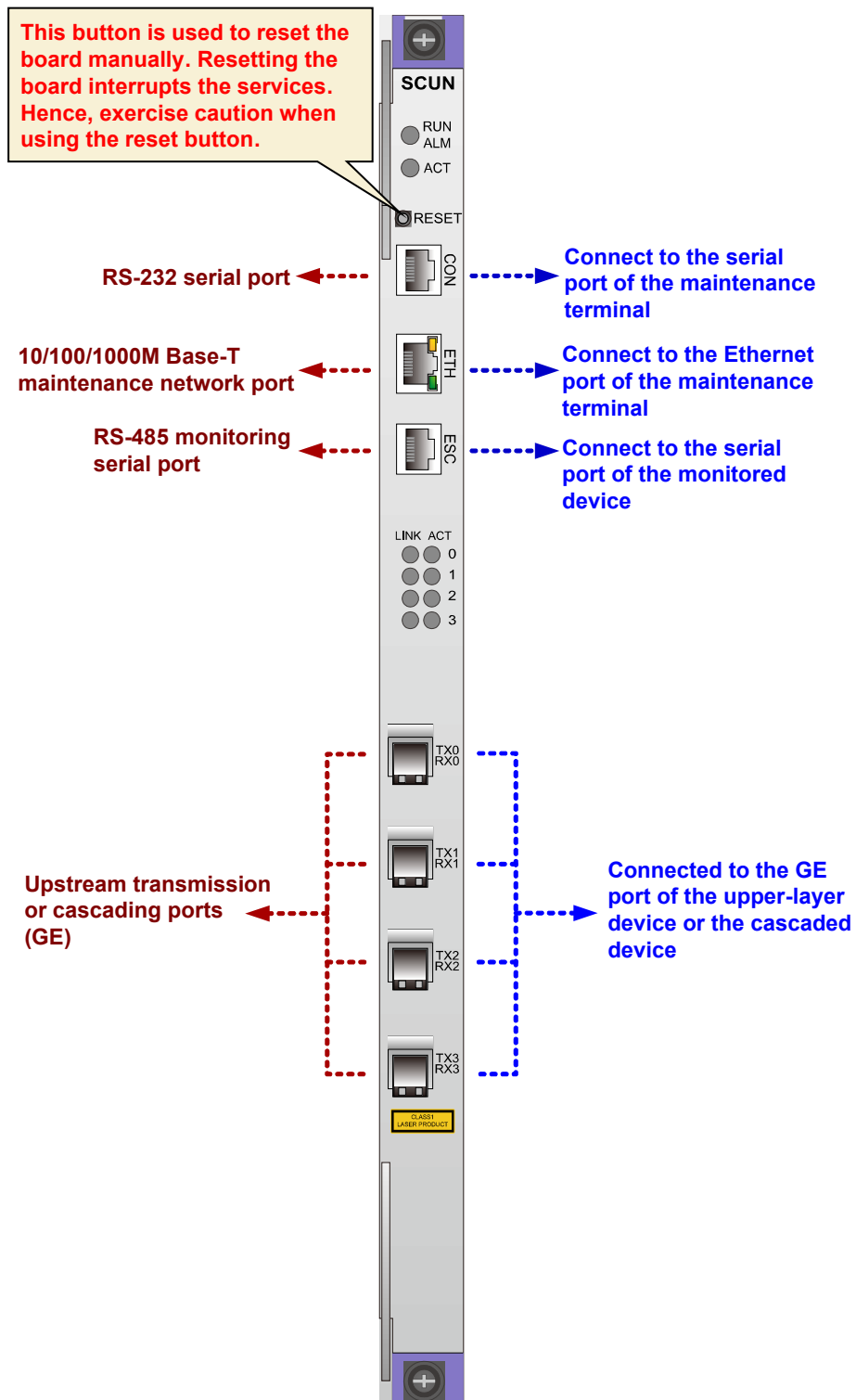
Figure 3-18 Working principle of the H802SCUN board



The basic working principle of the H802SCUN board is as follows:

- The control module manages the entire board and the service boards, and communicates with the fan tray through the extended serial port.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE port and the 10GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing four GE ports for upstream transmission using ports on the front panel
  - Providing two GE/10GE ports for each upstream boards in upstream transmission
  - Providing 16 GE/10GE ports for implementing GE/10GE switching on each service board
  - Providing two 10GE ports for load sharing with the standby control board(supported in V800R011C00 and later versions)

## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).

## Indicator

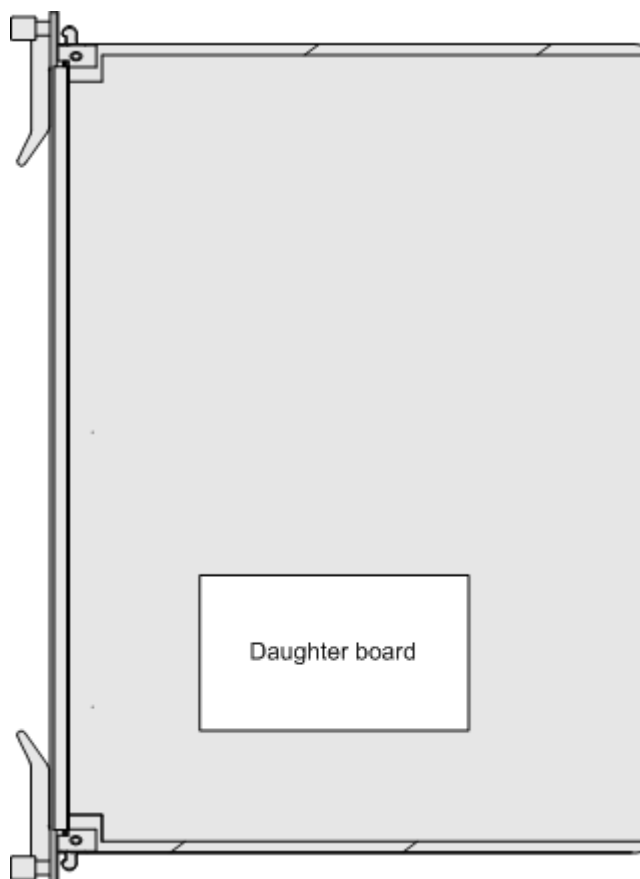
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking (supported in V800R009C00 and later versions)	A high-temperature alarm is generated
		Red	On	The board is faulty
		Red/Green	Blinking between red and green (supported in V800R012C00 and later versions)	The data recovery completes <b>NOTE</b> It is used for the scenario in which this board replaces the H801SCUL control board and then both of them are installed in the same subrack.
ACT	Active indicator	Green	On	In active/standby mode, the board is active
		-	Off	In active/standby mode, the board is standby
		Green	Blinking	In load-sharing mode, the board is standby
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## Daughter Board

The H802SCUN board can be configured with a matching daughter board. [Figure 3-19](#) shows the position of the daughter board on the H802SCUN board.

For details about the daughter board and functions supports by the H802SCUN board, see [3.6.11 Daughter Board](#).

**Figure 3-19** Position of the daughter board on the H802SCUN board



### 3.6.10 H801SCUV Board Description

The H801SCUV board is a super control unit board. It is the core of the system control and service switching and aggregation. The H801SCUV board can also function as the management and control core of the integrated network management system (NMS). It communicates with service boards about the key management and control information through the master/slave serial port and inband 10GE/20GE channel. In this manner, the H801SCUV board configures, manages, and controls the device, and also implements the simple route protocol functions.

#### Functional Specifications

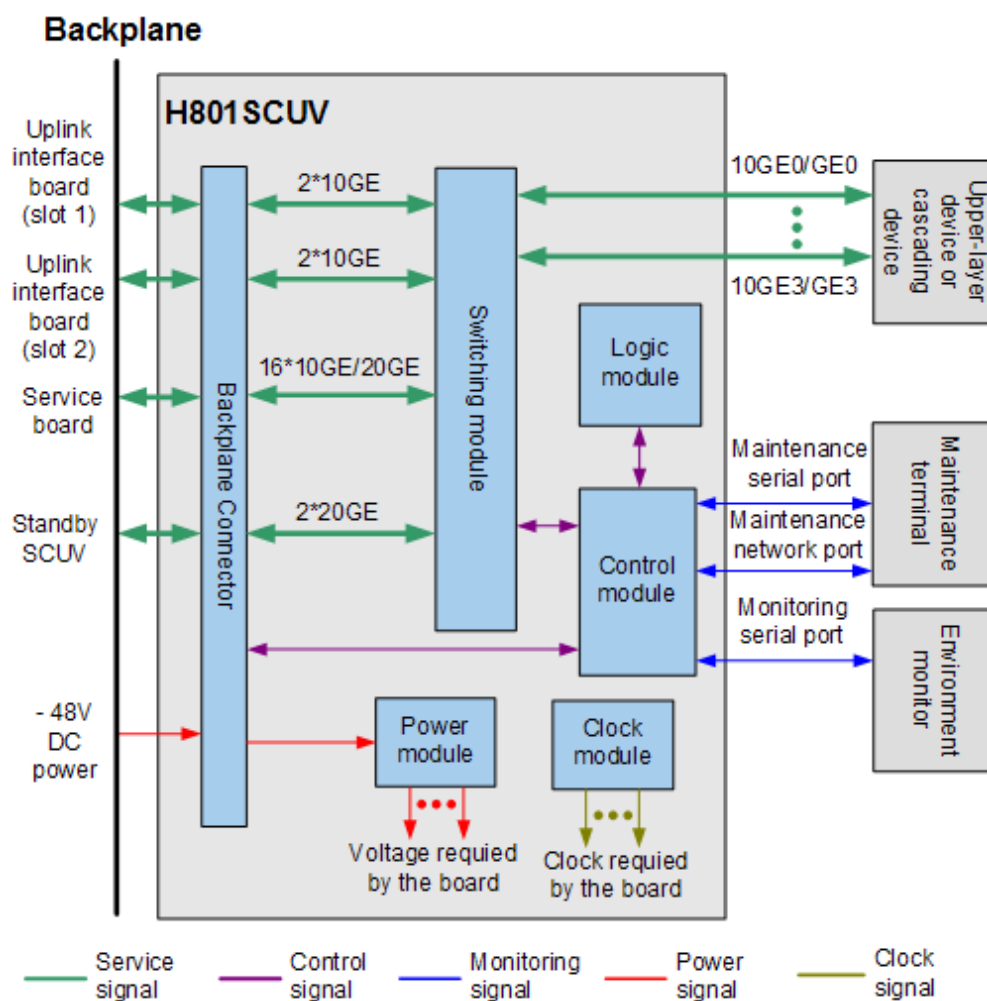
Please refer to "[SCU boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-20 Working principle of the H801SCUV board

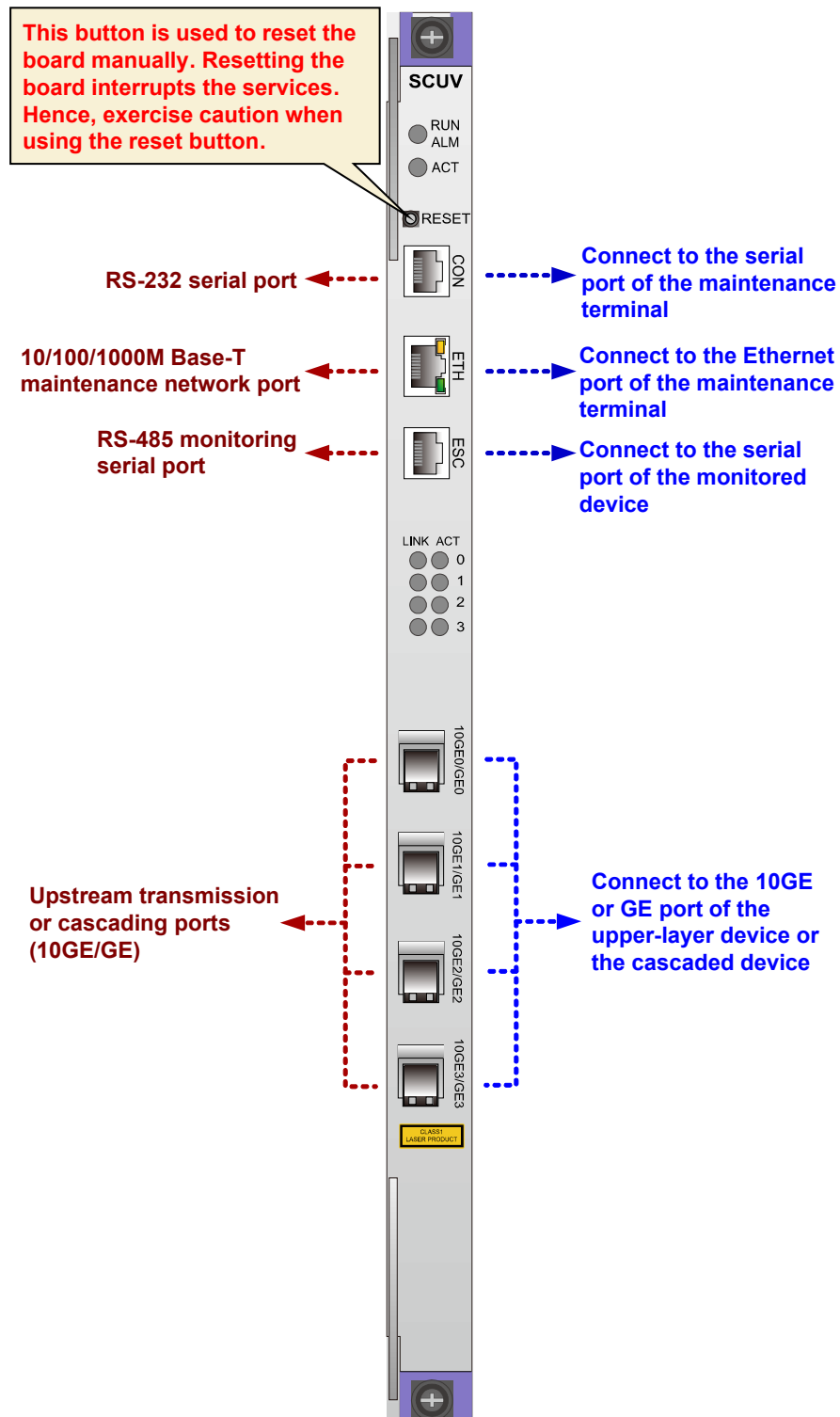


The basic working principle of the H801SCUV board is as follows:

- The control module manages the entire board and the service boards, and communicates with the fan tray through the extended serial port. In addition, the control module can be configured with a built-in CF card to expand its storage space.
- The logic module implements the logic control and stratum-3 clock functions.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the 10GE port and the 20GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing four 10GE ports for upstream transmission using ports on the front panel
  - Providing two 10GE ports for each upstream boards in upstream transmission
  - Providing 16 10GE/20GE ports for implementing 10GE/20GE switching on each service board

- Providing two 20GE ports for load sharing with the standby control board

## Front Panel Port





For details about supported optical module, see [4.4 10GE Optical Module](#) and [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	In active/standby mode or load-sharing mode, the board is active
		-	Off	In active/standby mode, the board is standby
		Green	Blinking	In load-sharing mode, the board is standby
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## 3.6.11 Daughter Board

**Table 3-9** Daughter board list

Daughter Board	Corresponding SCU Board	Function
H801CK MC	H801SCUB H802SCUB H801SCUF H801SCUN H802SCUN H801SCUL H801SCUK	<ul style="list-style-type: none"> <li>● Implements the VoIP logic forwarding function, which is not supported by H801SCUL.</li> <li>● Implements clock processing and provides the stratum-3 clock for the system.</li> <li>● Implements the 1588v2 clock processing function, which is not supported by H801SCUL, H801SCUB, H802SCUB and H801SCUF.</li> <li>● Supports BFD.</li> </ul>
H801CK MD	H801SCUB H802SCUB H801SCUF H801SCUN H802SCUN H801SCUL H801SCUK	<ul style="list-style-type: none"> <li>● Implements the VoIP logic forwarding function, which is not supported by H801SCUL.</li> <li>● Implements clock processing and provides the stratum-3 clock for the system.</li> <li>● Implements the 1588v2 clock processing function, which is not supported by H801SCUL, H801SCUB, H802SCUB and H801SCUF.</li> <li>● Implements the 1588ACR clock processing function, which is not supported by H801SCUL and H801SCUF.</li> <li>● Supports BFD.</li> </ul>
H801FLB A	H801SCUB H802SCUB H801SCUF H801SCUN H802SCUN H801SCUK	<ul style="list-style-type: none"> <li>● Supports the VoIP logic forwarding function.</li> <li>● Supports BFD.</li> </ul>
H801M2X A	H801SCUN H802SCUN H801SCUK <b>NOTE</b> H802SCUN and H801SCUK work together with only H801M2XA version B.	<ul style="list-style-type: none"> <li>● Implements the VoIP logic forwarding function.</li> <li>● Implements the MAC address extension function.</li> <li>● Implements clock processing and provides the stratum-3 clock for the system.</li> <li>● Supports BFD.</li> </ul>

## 3.7 Control Board (MCU)

A control board, as the control and management unit of the system, configures, manages, and controls the device and also implements simple routing protocol functions. The MCU control board is used on the MA5608T.

### 3.7.1 MCU Boards Comparison

All MCU boards support the functions as below:

- System control and management unit
- Active/standby switchover and load sharing
- Local and remote maintenance through maintenance serial port CON or maintenance Ethernet port ETH
- Environmental monitoring
- Synchronization with the Ethernet clock
- Temperature querying and high temperature alarming
- Monitoring and management of the fan tray
- Seven alarm digital inputs (DIs) and one alarm digital output (DO)
- Copper and optical access

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-10** Major differences between MCU boards

Board	One input of BITS clock signals and one output of BITS clock signals	One input of 1PPS+TOD time signals and one output of 1PPS+TOD time signals	Stratum-3 clock	D-CCAP
H801MCUD	No	No	No	No
H801MCUD1	Yes	Yes	Yes	No
H801MCUE	No	No	No	Yes

**Table 3-11** Ports of MCU boards

Board	Panel ports	Internal interfaces	
		Channel to the GIU board	Channel to the standby control board
H801M CUD	4 GE ports	2 GE/10GE ports	Providing one 10GE port for load sharing with the standby H801MCUD board
H801M CUD1	2 GE ports and 2 GE/10 GE ports	2 GE/10GE ports	Providing one 10GE port for load sharing with the standby H801MCUD1 board
H801M CUE	4 GE ports	2 GE/10GE ports	Providing one 10GE port for load sharing with the standby H801MCUE board

## 3.7.2 H801MCUD Board Description

The H801MCUD board is a mini control unit board. It is the core of the system control and service switching and aggregation. The H801MCUD board can also function as the management and control core of the integrated network management system (NMS). It communicates with service boards about the key management and control information through the master/slave serial port and inband GE/10GE channel. In this manner, the H801MCUD board configures, manages, and controls the device, and also implements the simple route protocol functions.

### Functional Specifications

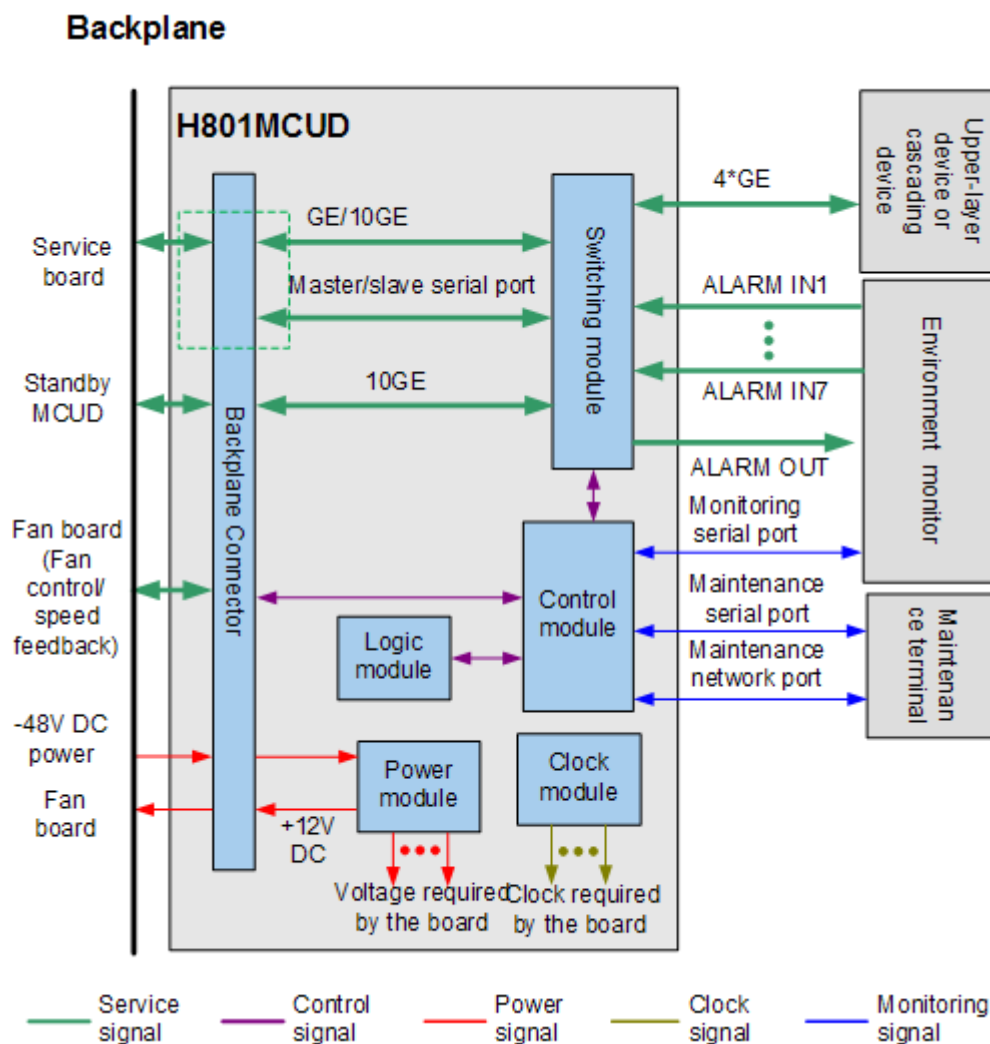
Please refer to "[MCU boards Comparison](#)".

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

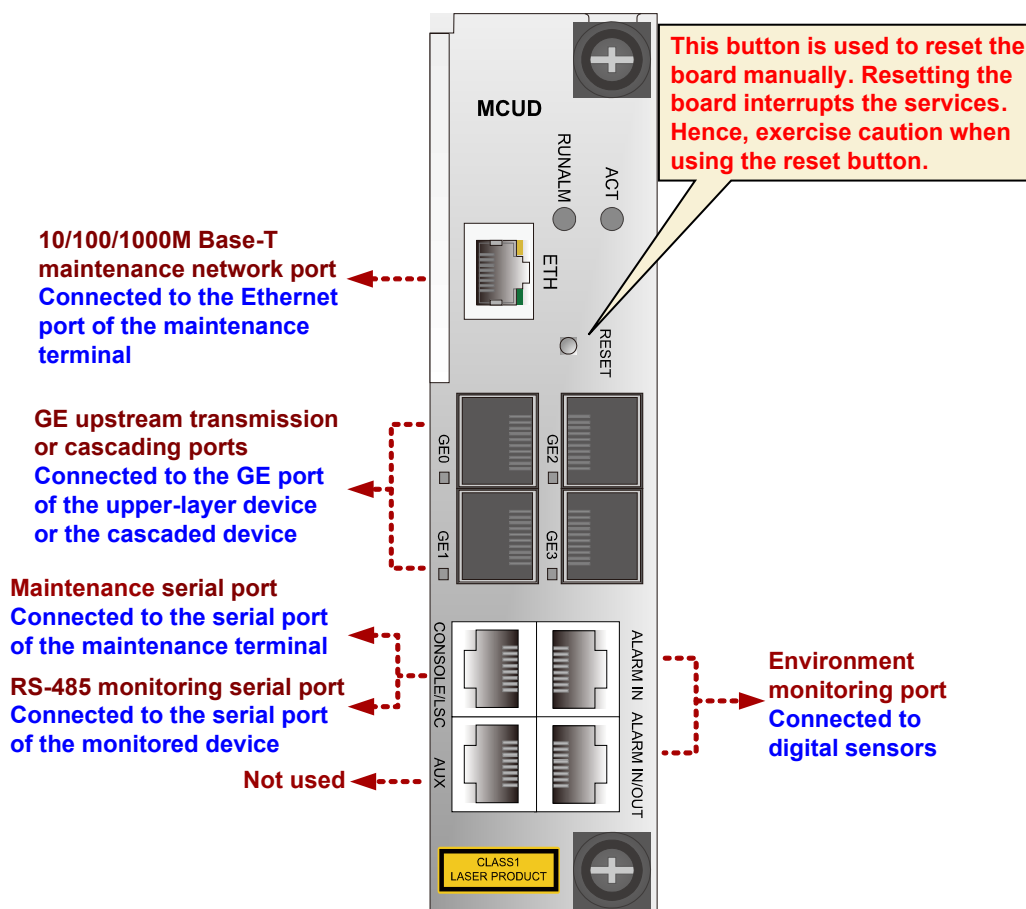
Figure 3-21 Working principle of the H801MCUD board



The basic working principle of the H801MCUD board is as follows:

- The control module manages the entire board and the service boards.
- The logic module implements logic control.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE port and the 10GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing four GE ports for transmitting traffic upstream
  - Providing 2 GE/10GE ports for implementing GE/10GE switching on each service board
  - Providing one 10GE port for load sharing with the standby control board

## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).

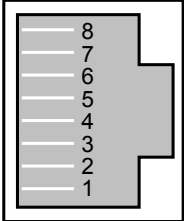
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	In active/standby mode or load-sharing mode, the board is active

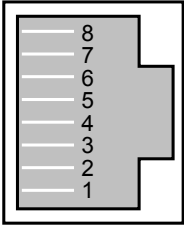
Indicator	Name	Color	Status	Meaning
		Green	Blinking	In load-sharing mode, the board is standby
		-	Off	In active/standby mode, the board is standby
GE0-GE3	Link and Data status indicator	Green	On	A link is set up on the port
		Green	Blinking	Data is being transmitted on the port
		-	Off	No link is set up on the port, or no data is being transmitted on the port

## Meaning of Port Signals

Table 3-12 Meaning of ALARM IN Port Signals

Port	Pin	Signal	Meaning
	1	ALM_RTN	Alarm digital parameter RTN
	2	ALM_IN0	Signal of channel 0 alarm digital parameter
	3	ALM_RTN	Alarm digital parameter RTN
	4	ALM_IN1	Signal of channel 1 alarm digital parameter
	5	ALM_RTN	Alarm digital parameter RTN
	6	ALM_IN2	Signal of channel 2 alarm digital parameter
	7	ALM_RTN	Alarm digital parameter RTN
	8	ALM_IN3	Signal of channel 3 alarm digital parameter

**Table 3-13** Meaning of ALARM IN/OUT Port Signals

Port	Pin	Signal	Meaning
	1	ALM_RTN	Alarm digital parameter RTN
	2	ALM_IN4	Signal of channel 4 alarm digital parameter
	3	ALM_RTN	Alarm digital parameter RTN
	4	ALM_IN5	Signal of channel 5 alarm digital parameter
	5	ALM_RTN	Alarm digital parameter RTN
	6	ALM_IN6	Signal of channel 6 alarm digital parameter
	7	ALM_RTN	Alarm digital parameter RTN
	8	ALM_OUT	Alarm DO

### 3.7.3 H801MCUD1 Board Description

The H801MCUD1 board is a mini control unit board. It is the core of the system control and service switching and aggregation. The H801MCUD1 board can also function as the management and control core of the integrated network management system (NMS). It communicates with service boards about the key management and control information through the master/slave serial port and inband GE/10GE channel. In this manner, the H801MCUD1 board configures, manages, and controls the device, and also implements the simple route protocol functions.

#### Functional Specifications

Please refer to "[MCU boards Comparison](#)".

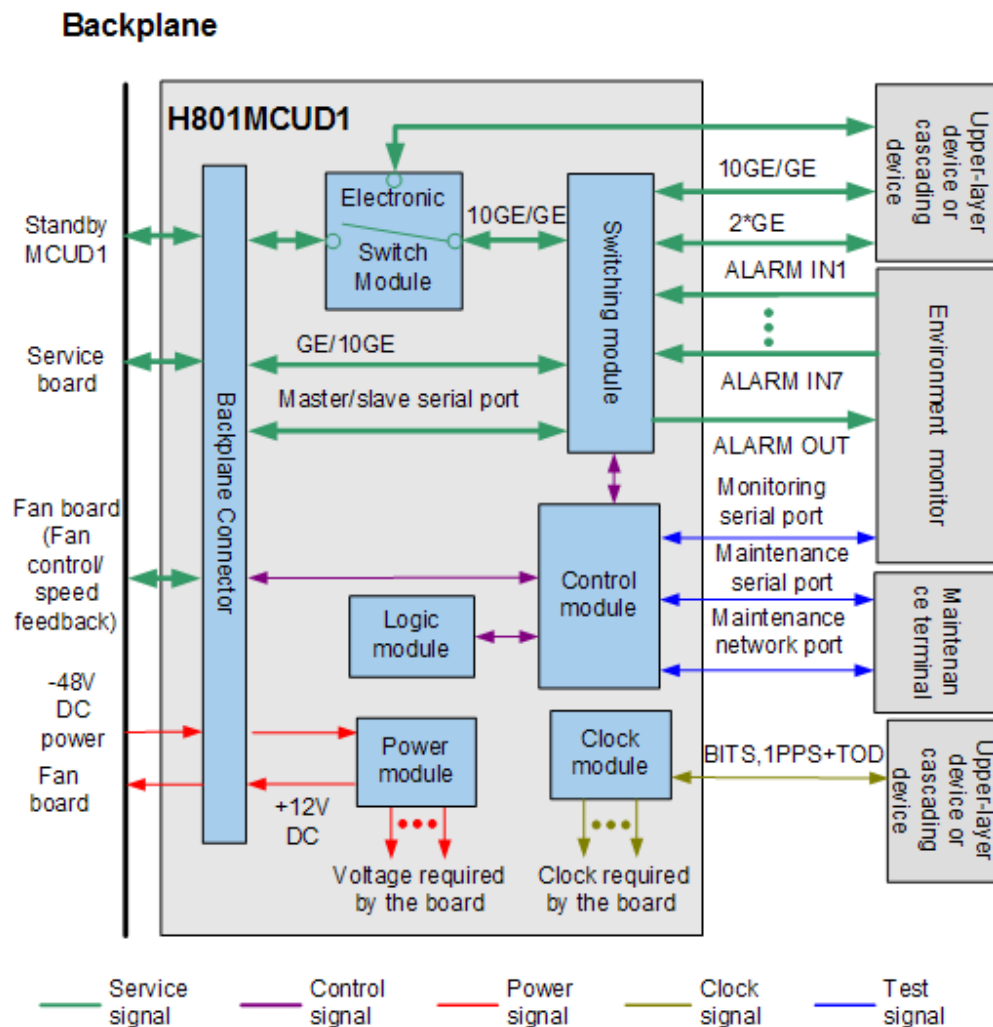
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

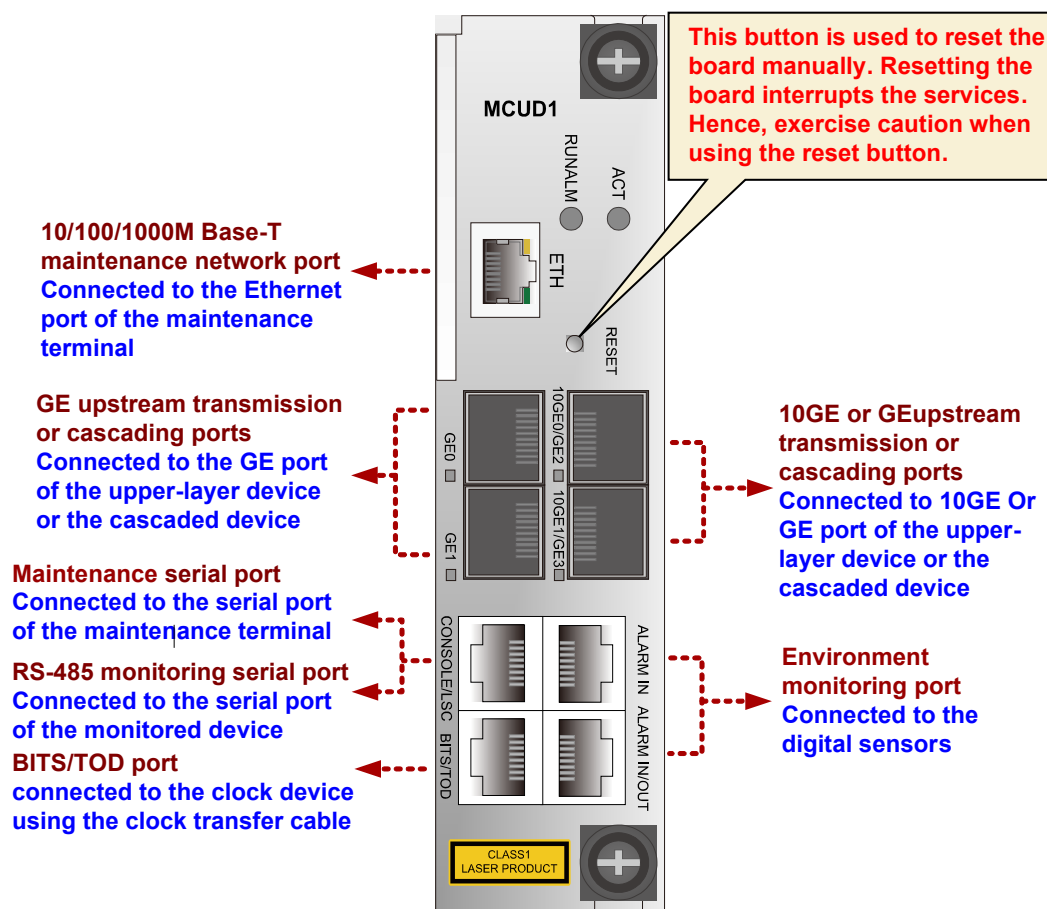
Figure 3-22 Working principle of the H801MCUD1 board



The basic working principles of the H801MCUD1 board are as follows:

- The control module manages the entire board and the service boards.
- The logical module achieves the logical control and stratum-3 clock functions.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE port and the 10GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing two GE/10GE ports or two GE ports for upstream transmission of the upstream port on the front panel
  - Providing two GE/10GE ports for implementing GE/10GE switching on each service board

## Front Panel Port



For details about supported optical module, see [4.4 10GE Optical Module](#) and [4.3 GE Optical/Electrical Module](#).

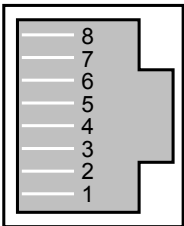
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty

Indicator	Name	Color	Status	Meaning
		Red/Green	Blinking between red and green	The data recovery completes <b>NOTE</b> It is used for the scenario in which this board replaces the H801MCUD control board and then both of them are installed in the same subrack.
ACT	Active indicator	Green	On	In active/standby mode or load-sharing mode, the board is active
		Green	Blinking	In load-sharing mode, the board is standby
		-	Off	In active/standby mode, the board is standby
GE0, GE1, 10GE0/GE2, 10GE1/GE3	Link and Data status indicator	Green	On	A link is set up on the port
		Green	Blinking	Data is being transmitted on the port
		-	Off	No link is set up on the port, or no data is being transmitted on the port

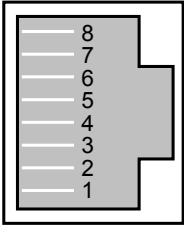
## Pin Assignment

**Table 3-14** Pin assignment of the ALARM IN port

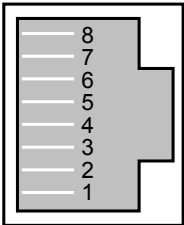
Port	Pin	Signal	Remarks
	1	ALM_RTN	Alarm digital parameter RTN
	2	ALM_IN0	Channel 0 alarm digital parameter signals
	3	ALM_RTN	Alarm digital parameter RTN
	4	ALM_IN1	Channel 1 alarm digital parameter signals
	5	ALM_RTN	Alarm digital parameter RTN
	6	ALM_IN2	Channel 2 alarm digital parameter signals
	7	ALM_RTN	Alarm digital parameter RTN

Port	Pin	Signal	Remarks
	8	ALM_IN3	Channel 3 alarm digital parameter signals

**Table 3-15** Pin assignment of the ALARM IN/OUT port

Port	Pin	Signal	Remarks
	1	ALM_RTN	Alarm digital parameter RTN
	2	ALM_IN4	Channel 4 alarm digital parameter signals
	3	ALM_RTN	Alarm digital parameter RTN
	4	ALM_IN5	Channel 5 alarm digital parameter signals
	5	ALM_RTN	Alarm digital parameter RTN
	6	ALM_IN6	Channel 6 alarm digital parameter signals
	7	ALM_RTN	Alarm digital parameter RTN
	8	ALM_OUT	Alarm signal control output

**Table 3-16** Pin assignment of the BITS/TOD

Port	Pin	Signal	Remarks
	1	BITS_IN_B	Input B of channel BITS clock signals
	2	BITS_IN_A	Input A of channel BITS clock signals
	3	PPS_IN/OUT-	Input or output negative polarity of PPS time signals
	4	BITS_OUT_B	Output B of the BITS clock signals
	5	BITS_OUT_A	Output A of the BITS clock signals
	6	PPS_IN/OUT+	Input or output positive polarity of PPS time signals
	7	TOD_IN/OUT-	Input or output negative polarity of TOD time signals

Port	Pin	Signal	Remarks
	8	TOD_IN/O UT+	Input or output positive polarity of TOD time signals

 **NOTE**

Input and output of PPS and TOD time signals use the same pin. These signals can only be input or output at a time.

## 3.7.4 H801MCUE Board Description

The H801MCUE board is a mini control unit board. It is the core of the system control and service switching and aggregation. The H801MCUE board can also function as the management and control core of the integrated network management system (NMS). It communicates with service boards about the key management and control information through the master/slave serial port and inband GE/10GE channel. In this manner, the H801MCUE board configures, manages, and controls the device, and also implements the simple route protocol functions.

### Functional Specifications

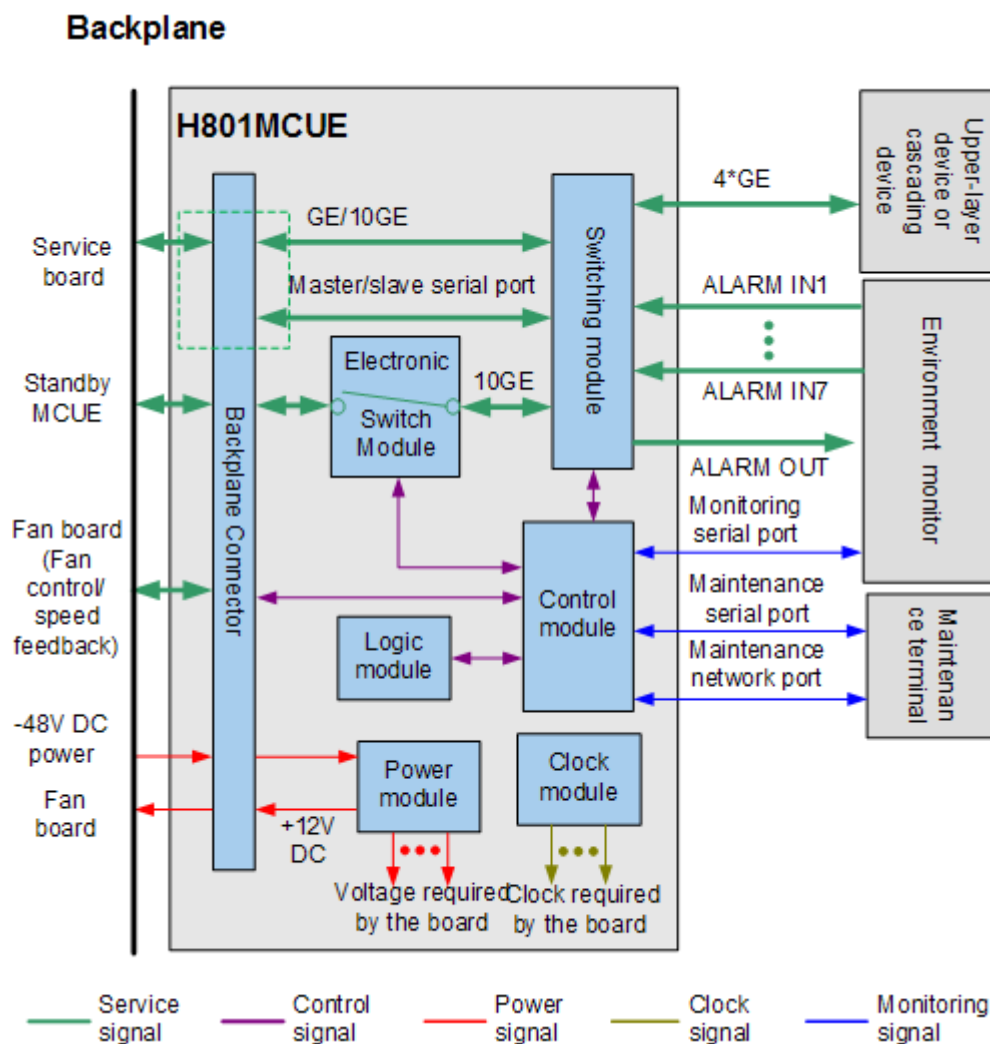
Please refer to "[MCU boards Comparison](#)".

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

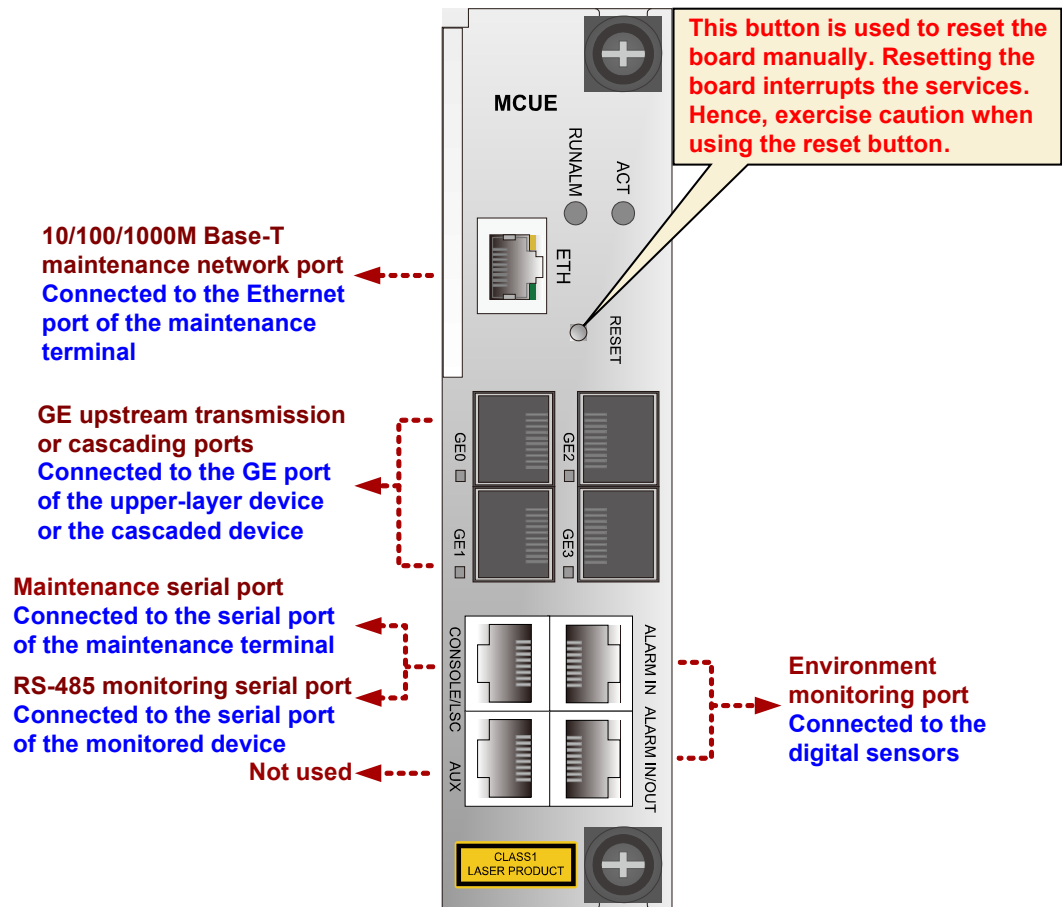
Figure 3-23 Working principle of the H801MCUE board



The basic working principle of the H801MCUE board is as follows:

- The control module manages the entire board and the service boards.
- The logic module implements logic control.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.
- The switching module provides the GE port and the 10GE port to switch and aggregate services at Layer 2 or Layer 3.
  - Providing four GE ports for transmitting traffic upstream
  - Providing 2 GE/10GE ports for implementing GE/10GE switching on each service board
  - Providing one 10GE port for load sharing with the standby control board

## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).

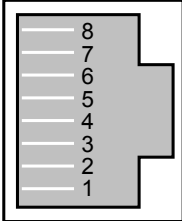
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking	The board functions properly
		Red	Blinking	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	In active/standby mode or load-sharing mode, the board is active

Indicator	Name	Color	Status	Meaning
		Green	Blinking	In load-sharing mode, the board is standby
		-	Off	In active/standby mode, the board is standby
GE0-GE3	Link and Data status indicator	Green	On	A link is set up on the port
		Green	Blinking	Data is being transmitted on the port
		-	Off	No link is set up on the port, or no data is being transmitted on the port

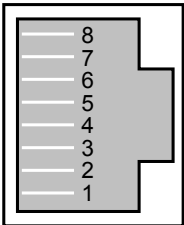
## Meaning of Port Signals

Table 3-17 Meaning of ALARM IN Port Signals

Port	Pin	Signal	Meaning
	1	ALM_RTN	Alarm digital parameter RTN
	2	ALM_IN0	Signal of channel 0 alarm digital parameter
	3	ALM_RTN	Alarm digital parameter RTN
	4	ALM_IN1	Signal of channel 1 alarm digital parameter
	5	ALM_RTN	Alarm digital parameter RTN
	6	ALM_IN2	Signal of channel 2 alarm digital parameter
	7	ALM_RTN	Alarm digital parameter RTN
	8	ALM_IN3	Signal of channel 3 alarm digital parameter



**Table 3-18** Meaning of ALARM IN/OUT Port Signals

Port	Pin	Signal	Meaning
	1	ALM_RTN	Alarm digital parameter RTN
	2	ALM_IN4	Signal of channel 4 alarm digital parameter
	3	ALM_RTN	Alarm digital parameter RTN
	4	ALM_IN5	Signal of channel 5 alarm digital parameter
	5	ALM_RTN	Alarm digital parameter RTN
	6	ALM_IN6	Signal of channel 6 alarm digital parameter
	7	ALM_RTN	Alarm digital parameter RTN
	8	ALM_OUT	Alarm DO

## 3.8 Upstream Interface Board (GIU)

Upstream interface boards provide upstream or cascading ports for the system. GIU is short for general interface unit.

### NOTE

Regardless of which running mode is switched to, once changing the running mode, you need to reset the system and replace the related GIU board.

### 3.8.1 Upstream Interface Boards Comparison

The device supports GE and 10GE upstream interface boards.

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-19** Specifications lists of upstream interface boards

Board	Upstream Transmission (*)	Cascading (*)	Intra-board aggregation and Inter-board aggregation	Clock Feature	Port	Pluggable Optical Module	Pluggable Electrical Module
H801GICD	Yes	Yes	Yes	1588ACR (with CKMD)	Four GE ports	SFP	SFP

Board	Upstream Transmission (*)	Cascading (*)	Intra-board aggregation and Inter-board aggregation	Clock Feature	Port	Pluggable Optical Module	Pluggable Electrical Module
H801GICE	Yes	Yes	Yes	1588ACR (with CKMD)	Four GE electrical ports	No	No
H801GICF	Yes	Yes	Yes	1588ACR (with CKMD)	Two GE ports	SFP	SFP
H801GICG	Yes	Yes	Yes	1588ACR (with CKMD)	Two GE electrical ports	No	No

Board	Upstream Transmission (*)	Cascading (*)	Intra-board aggregation and Inter-board aggregation	Clock Feature	Port	Pluggable Optical Module	Pluggable Electrical Module
H801GI CK	Yes	Yes	Yes	<ul style="list-style-type: none"> <li>● GE synchronous Ethernet (V800 R013 C10 and later versions)</li> <li>● 1588v2 (with CKM C or CKM D, V800 R013 C10 and later versions)</li> <li>● 1588A CR (with CKM D, V800 R013 C10 and later versions)</li> </ul>	Two GE ports	SFP	SFP

Board	Upstream Transmission (*)	Cascading (*)	Intra-board aggregation and Inter-board aggregation	Clock Feature	Port	Pluggable Optical Module	Pluggable Electrical Module
H802GICK	Yes	Yes	Yes	<ul style="list-style-type: none"> <li>● GE synchronous Ethernet (V800 R017 C10 and later versions)</li> <li>● 1588v2 (with CKM C or CKM D, V800 R017 C10 and later versions)</li> <li>● 1588A CR (with CKM D, V800 R017 C10 and later versions)</li> </ul>	Two GE ports	SFP	SFP

Board	Upstream Transmission (*)	Cascading (*)	Intra-board aggregation and Inter-board aggregation	Clock Feature	Port	Pluggable Optical Module	Pluggable Electrical Module
H801GS CA	Yes	Yes	Yes	<ul style="list-style-type: none"> <li>● GE synchronous Ethernet</li> <li>● 1588A CR (with CKMD)</li> </ul>	Four GE ports	SFP	No
H801X1 CA	Yes	Yes	Yes	1588ACR (with CKMD)	One 10GE port	XFP	No
H801X2 CA	Yes	Yes	Yes	1588ACR (with CKMD)	Two 10GE ports	XFP	No
H801X2 CS	Yes	Yes	Yes	<ul style="list-style-type: none"> <li>● 10GE synchronous Ethernet</li> <li>● 1588A CR (with CKMD)</li> </ul>	Two 10GE ports	SFP+	No
H802X2 CS	Yes	Yes	Yes	<ul style="list-style-type: none"> <li>● 10GE/GE synchronous Ethernet</li> <li>● 1588A CR (with CKMD)</li> </ul>	Two 10GE/GE ports	SFP/SFP+	SFP

Board	Upstream Transmission (*)	Cascading (*)	Intra-board aggregation and Inter-board aggregation	Clock Feature	Port	Pluggable Optical Module	Pluggable Electrical Module
H801X2CK	Yes	Yes	Yes	<ul style="list-style-type: none"> <li>● 10GE/GE synchronous Ethernet (V800 R017 C10 and later versions)</li> <li>● 1588v2 (with CKM C or CKM D, V800 R017 C10 and later versions)</li> <li>● 1588A CR (with CKM D, V800 R017 C10 and later versions)</li> </ul>	Two 10GE/GE ports	SFP/SFP+	SFP

Board	Upstream Transmission (*)	Cascading (*)	Intra-board aggregation and Inter-board aggregation	Clock Feature	Port	Pluggable Optical Module	Pluggable Electrical Module
H802P2 CA	Yes	No	No	No	Two GPON port (only TX0/RX0 available)	SFP	No

**Note:** You can run the **network-role** command in the GIU mode to switch the role of a port. Default role is uplink.

## 3.8.2 H801GICD Board Description

The H801GICD board is a 4-port GE optical interface card, providing upstream or cascading optical ports.

### Functional Specifications

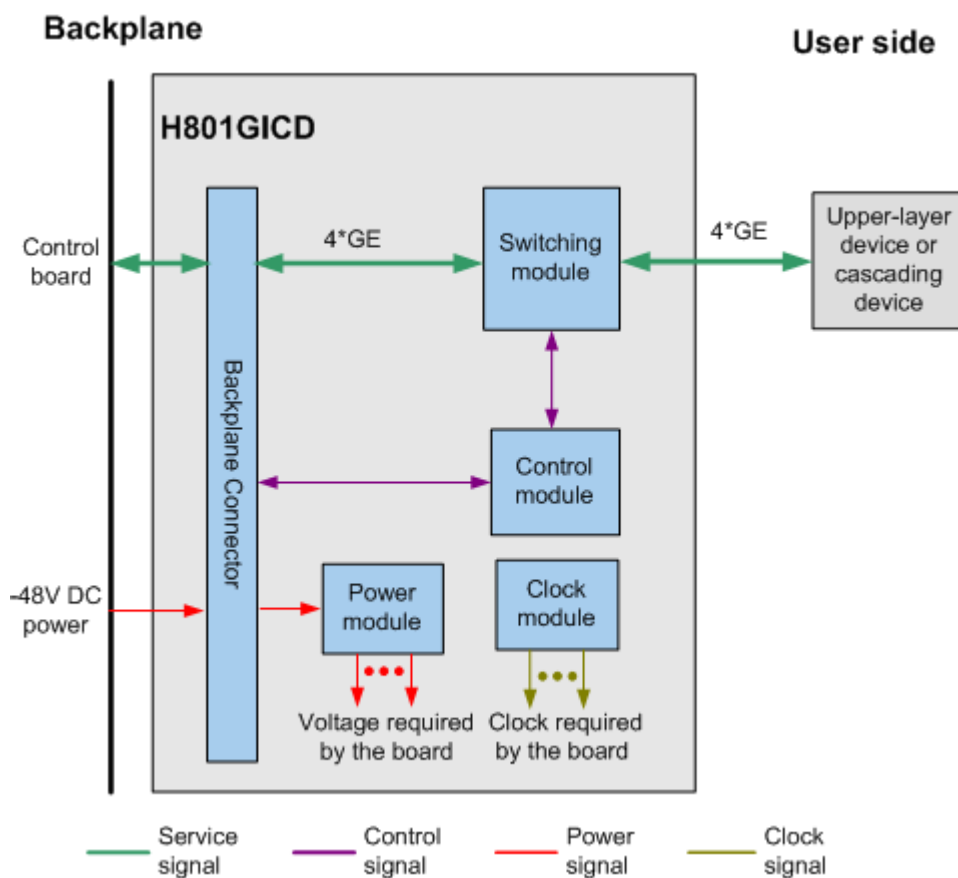
Please refer to "[Upstream Interface Board Comparison](#)".

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-24 Working principle of the H801GICD board

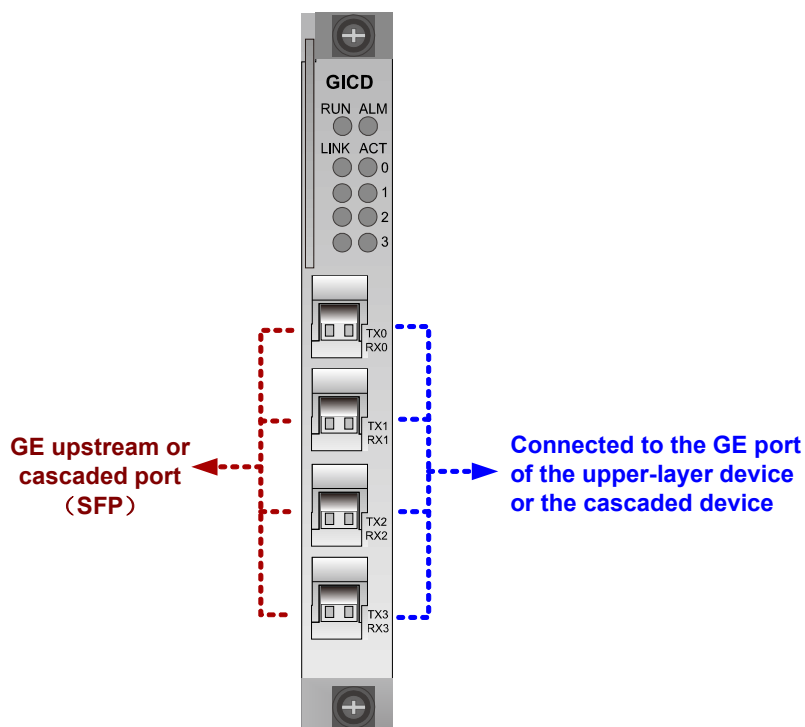


The basic working principle of the H801GICD board is as follows:

- The control module is the control core of the entire board.
- The conversion module supports transparent transmission of the information.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for each functional module of the board.



## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal

Indicator	Name	Color	Status	Meaning
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.3 H801GICE Board Description

The H801GICE board is a 4-port GE electrical interface card, providing upstream or cascading electrical ports.

#### NOTE

As shown in [Figure 3-25](#), the H801GICE board has the following changes after an upgrade from Ver.B to Ver.C:

- The GE port indicators are changed.

**Figure 3-25** Differences in appearance between Ver.B and Ver.C



### Functional Specifications

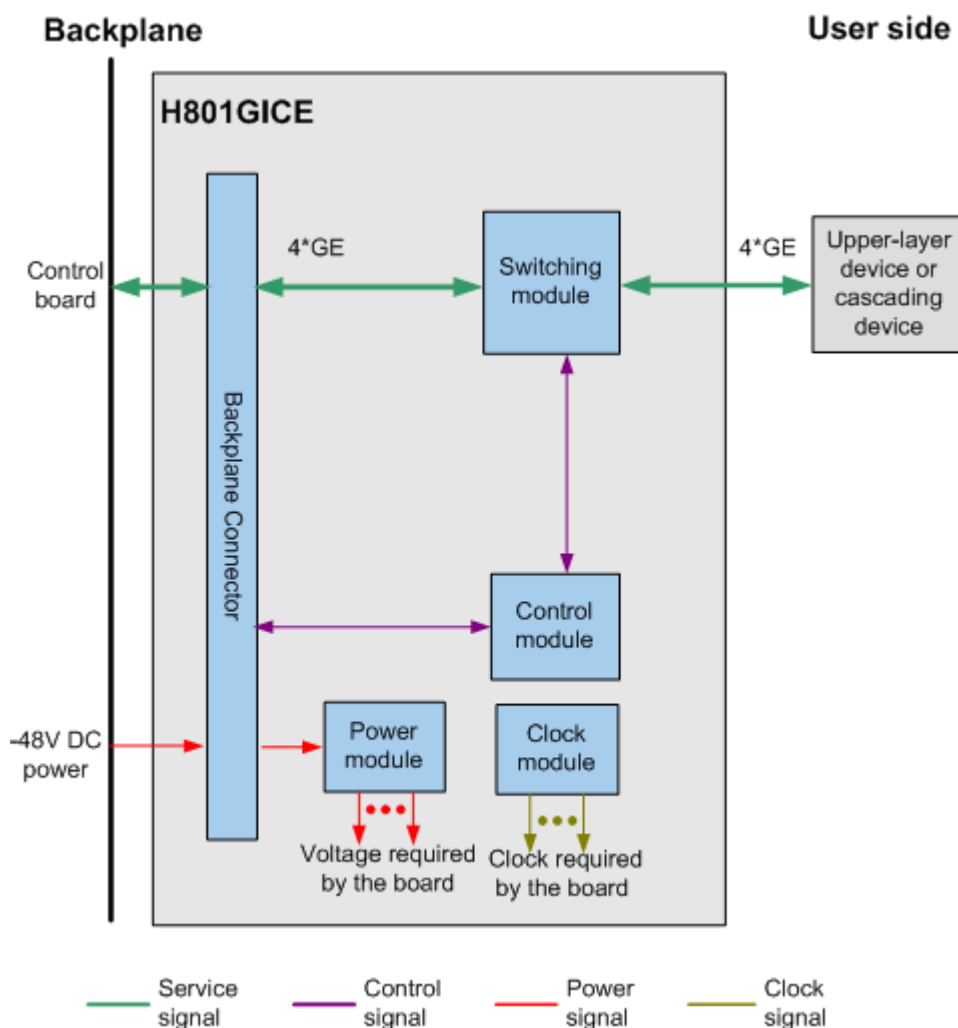
Please refer to "[Upstream Interface Board Comparison](#)".

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

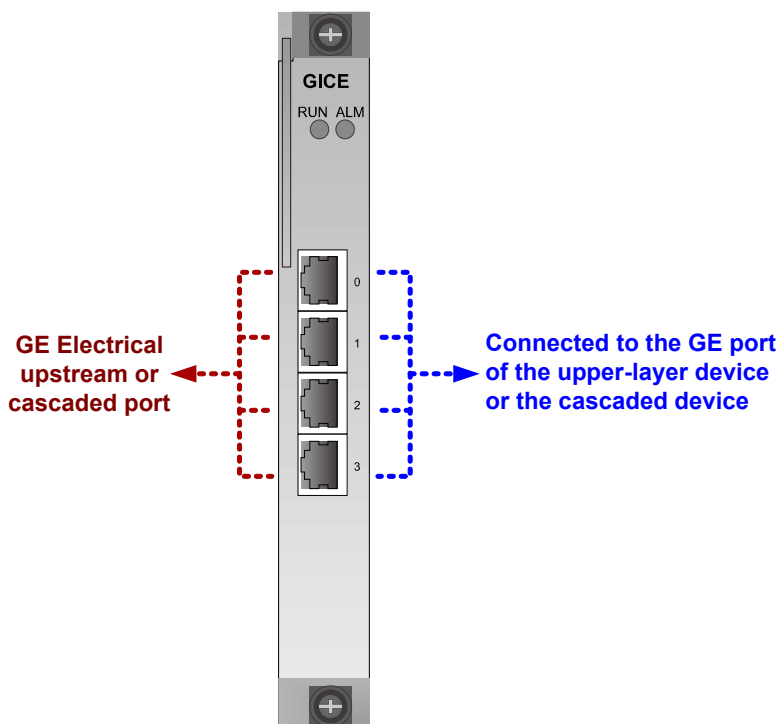
Figure 3-26 Working principle of the H801GICE board



The basic working principle of the H801GICE board is as follows:

- The control module is the control core of the entire board.
- The conversion module supports transparent transmission of the information.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly

### 3.8.4 H801GICF Board Description

The H801GICF board is a 2-port GE optical interface card, providing upstream or cascading optical ports.

## Functional Specifications

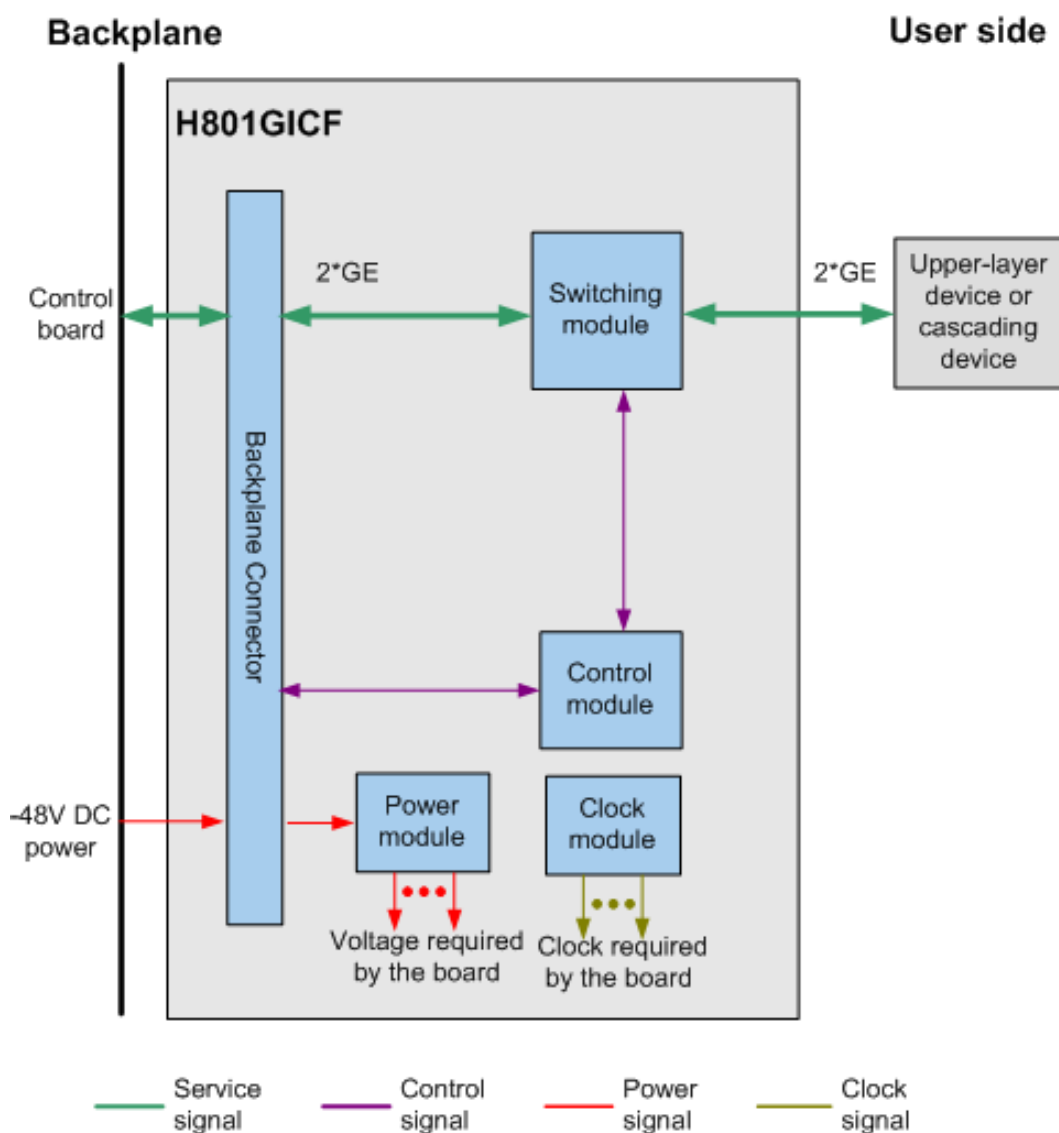
Please refer to "[Upstream Interface Board Comparison](#)".

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-27 Working principle of the H801GICF board

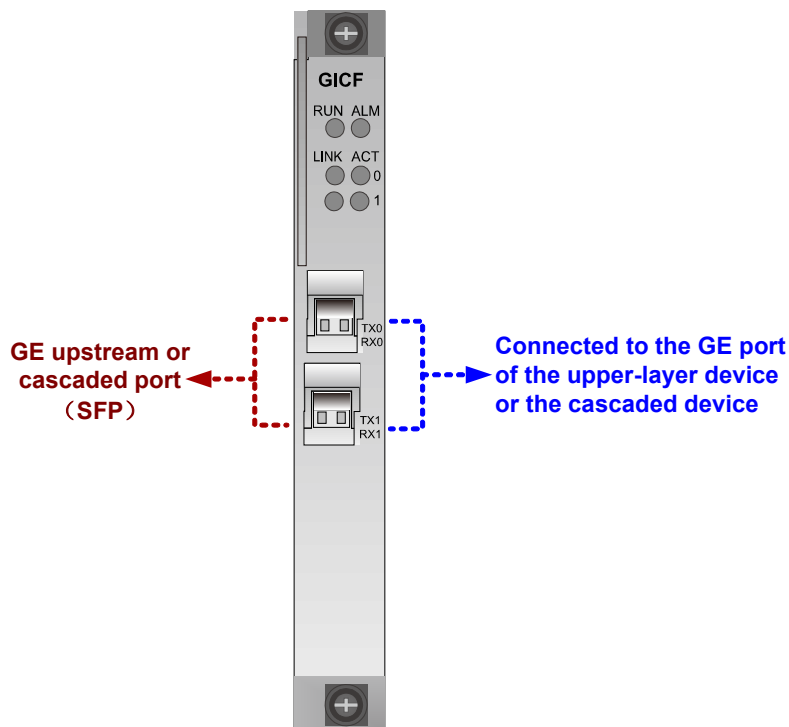


The basic working principle of the H801GICF board is as follows:

- The control module loads the board software, controls the running of the software, and manages the entire board.

- The conversion module supports transparent transmission of the data.
- The power module supplies power to other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly

Indicator	Name	Color	Status	Meaning
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.5 H801GICG Board Description

The H801GICG board is a 2-port GE electrical interface card, providing upstream or cascading electrical ports.

#### Functional Specifications

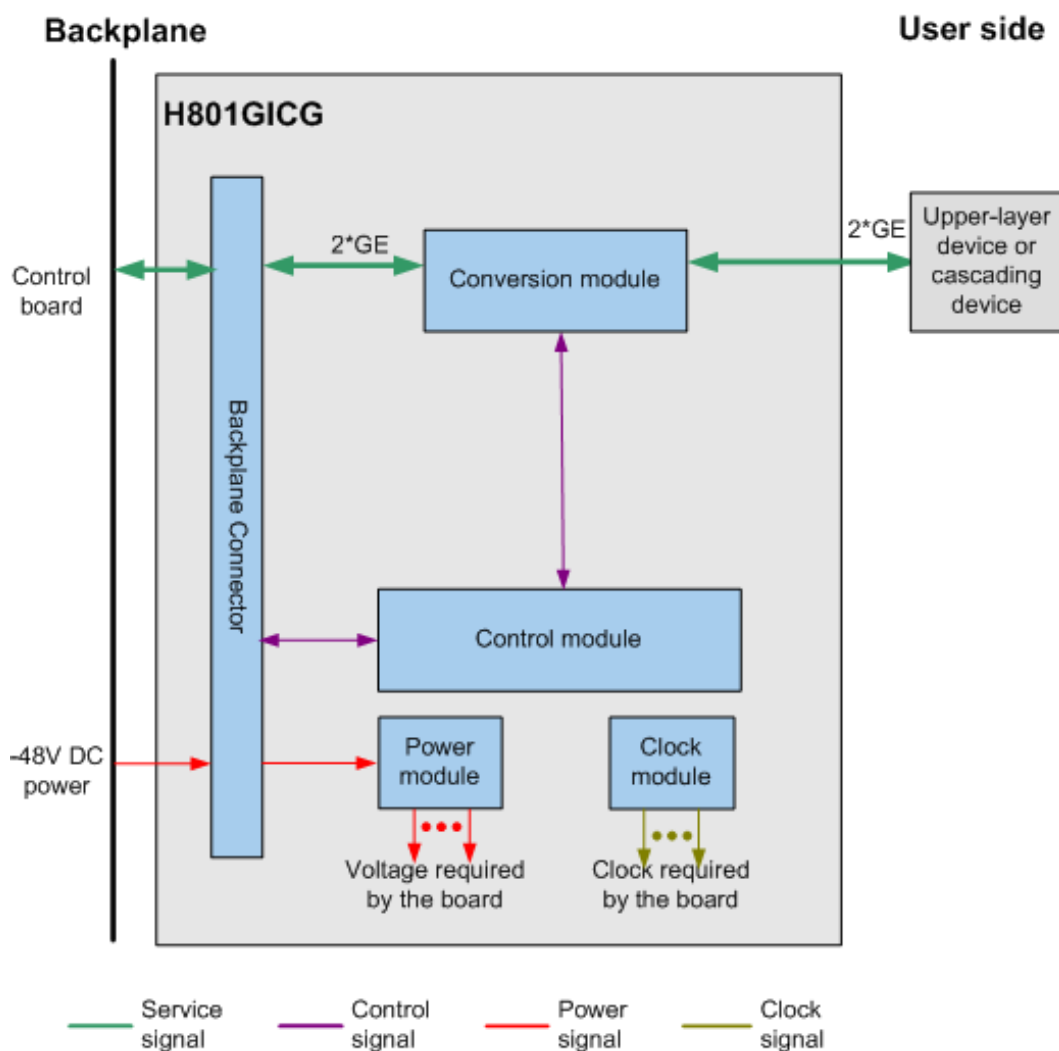
Please refer to "[Upstream Interface Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-28 Working principle of the H801GICG board

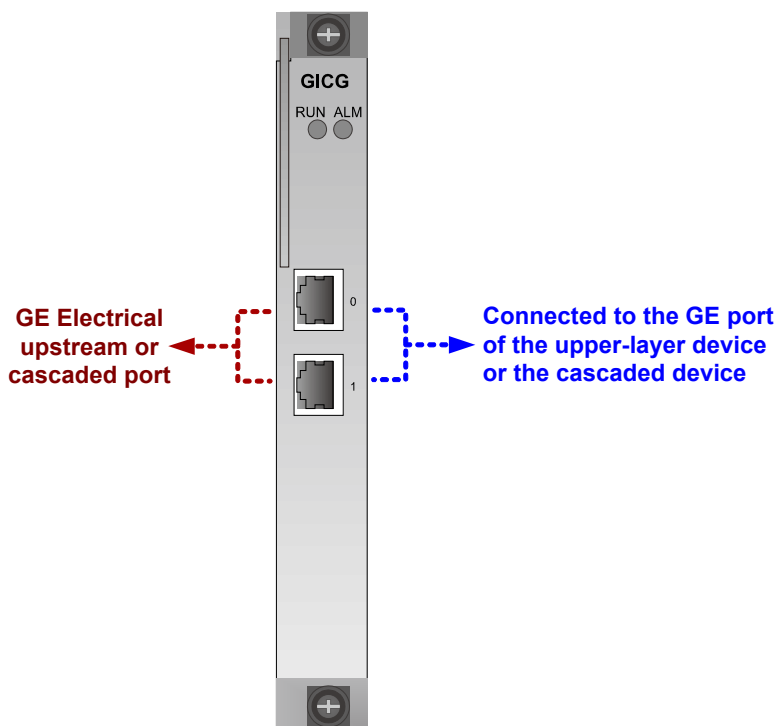


The basic working principle of the H801GICG board is as follows:

- The control module loads the board software, controls the running of the software, and manages the entire board.
- The conversion module supports transparent transmission of the information.
- The power module supplies power to other functional modules of the board.



## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly

### 3.8.6 H801GICK Board Description

The H801GICK board is a 2-port GE optical interface card, providing two upstream or cascading GE optical ports, and it supports the 1588V2 clock signal.

## Functional Specifications

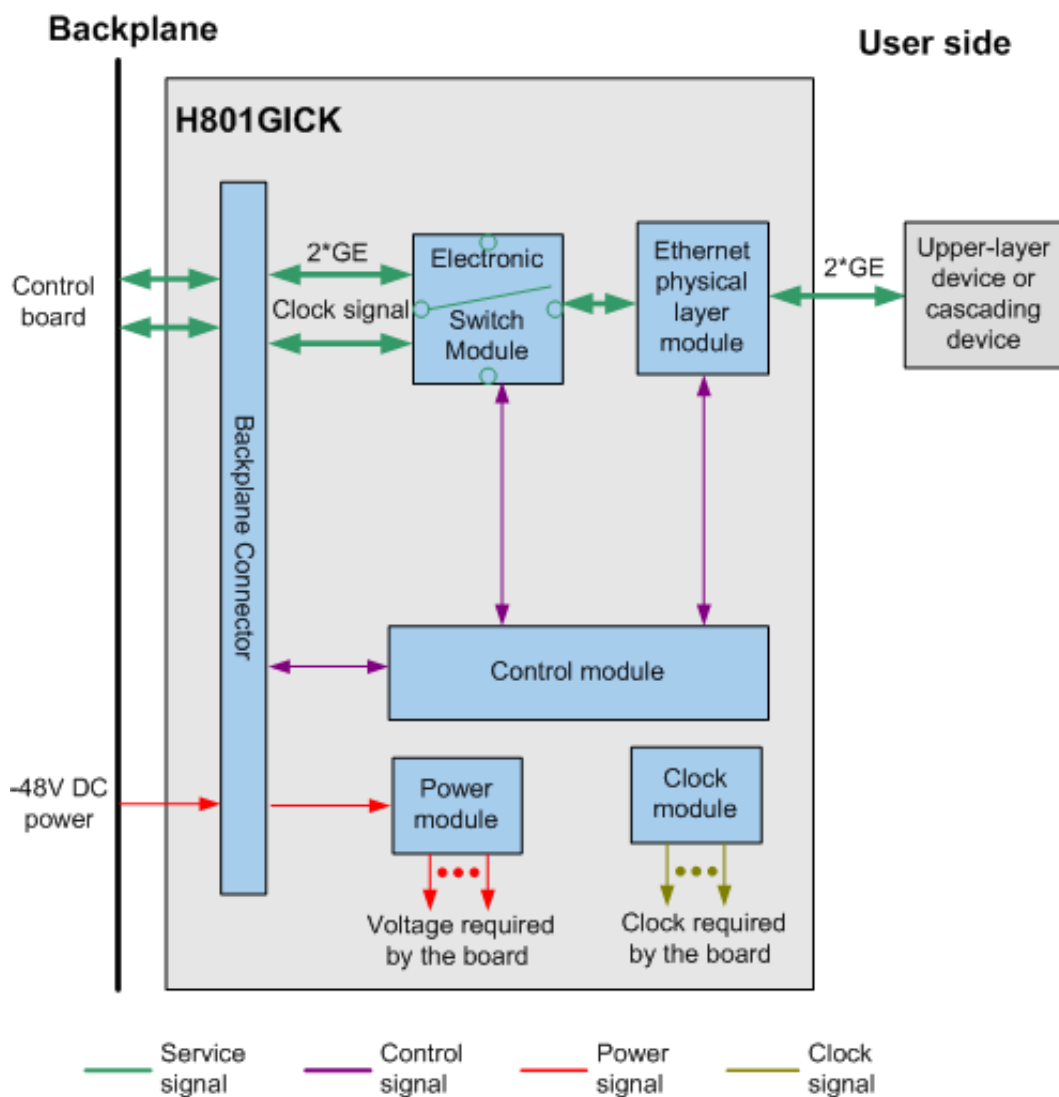
Please refer to "[Upstream Interface Board Comparison](#)".

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-29 Working principle of the H801GICK board

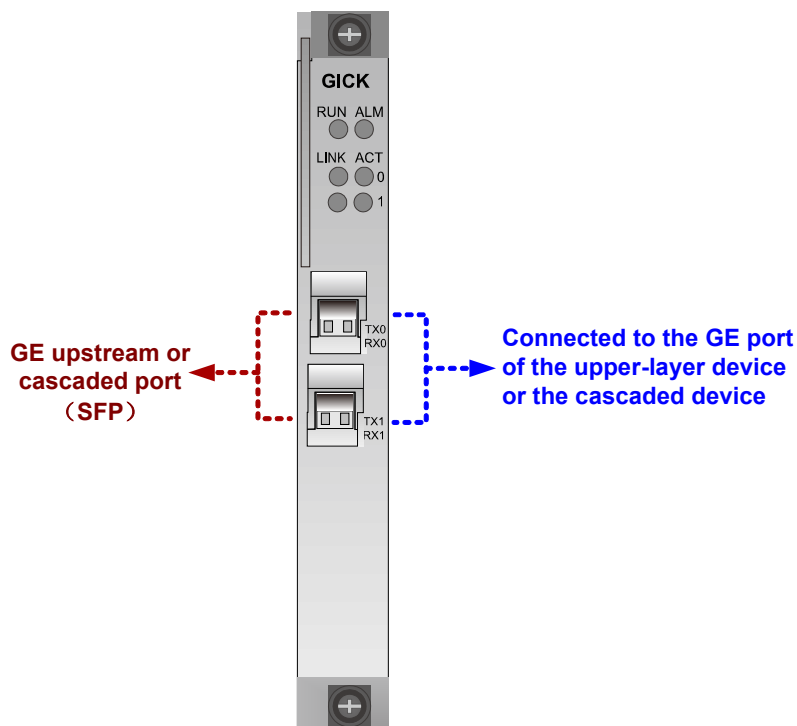


The basic working principle of the H801GICK board is as follows:

- The control module loads the board software, controls the running of the software, and manages the entire board.
- The electronic switch module switches the service signals during the active/standby switchover.

- The Ethernet network physical layer module provides the GE port for extracting the physical layer packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).

### NOTE

If ports on the H801GICK board is used with the electrical module, the restrictions are as follows:

- In forced mode, only 1000 Mbit/s and full-duplex are supported, and other rates and duplex modes are not supported.
- In autonegotiation mode, only 1000 Mbit/s and full-duplex are supported, and other rates and duplex modes are not supported.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly

Indicator	Name	Color	Status	Meaning
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.7 H802GICK Board Description

The H802GICK board is a 2-port GE uplink interface card that provides two GE upstream or cascading optical ports.

#### Functional Specifications

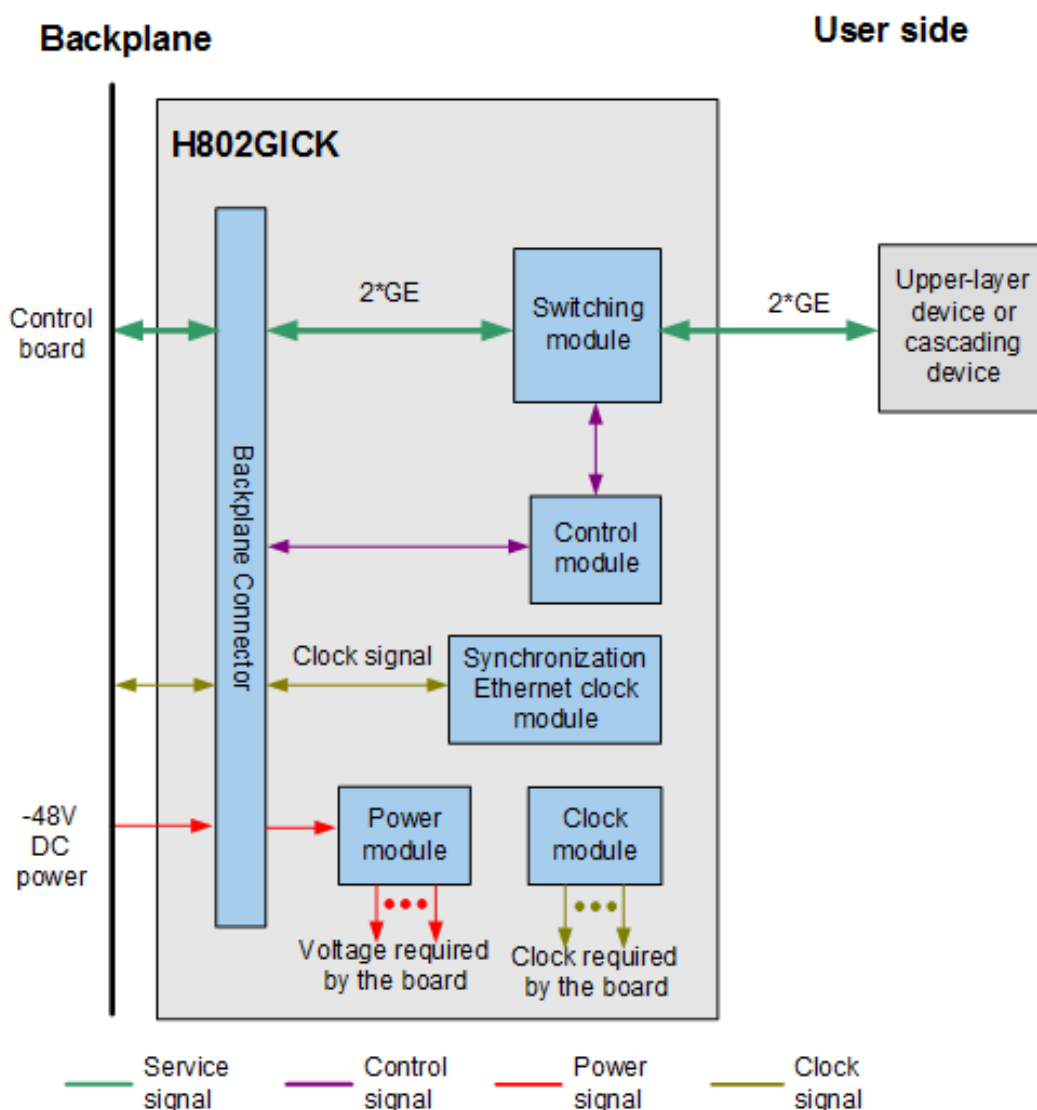
Please refer to "[Upstream Interface Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

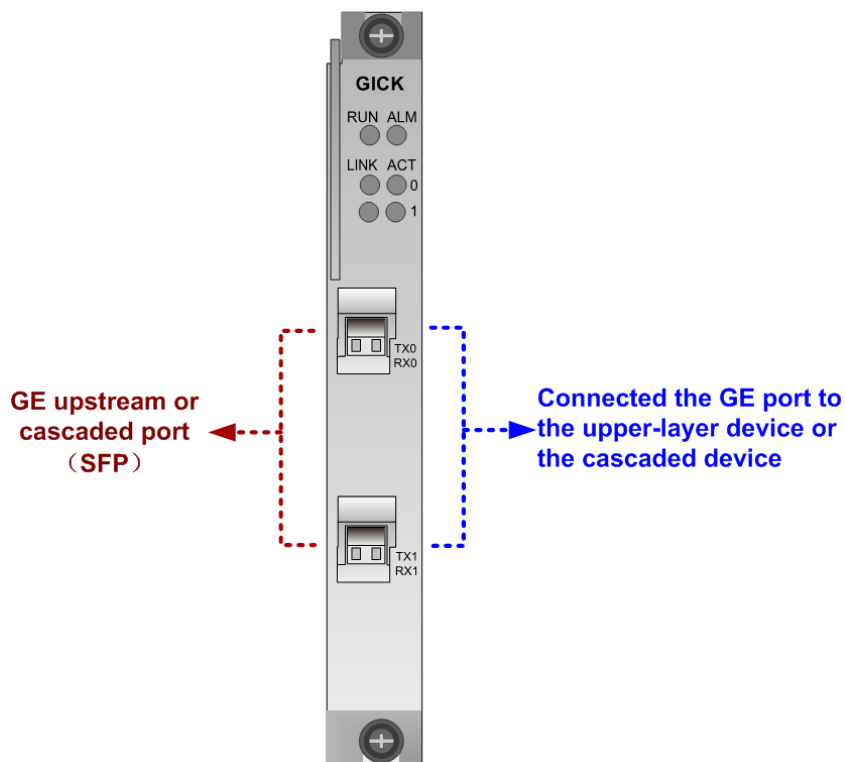
Figure 3-30 Working principle of the H802GICK board



The basic working principle of the H802GICK board is as follows:

- The control module reports the status of and manufacturing information about the board, and provides the interface information. The control module also manages the modules on the board, and processes alarms.
- The interface module provides two GE ports.
- The synchronization Ethernet clock module extracts clock signals from the GE signals, and synchronizes the 8 kHz clock of the control board with the clock signals.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal

Indicator	Name	Color	Status	Meaning
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.8 H801GSCA Board Description

The H801GSCA board is a GE synchronous ethernet interface card. It extracts the clock signals of the line and transmits the synchronized clock signals.

#### Functional Specifications

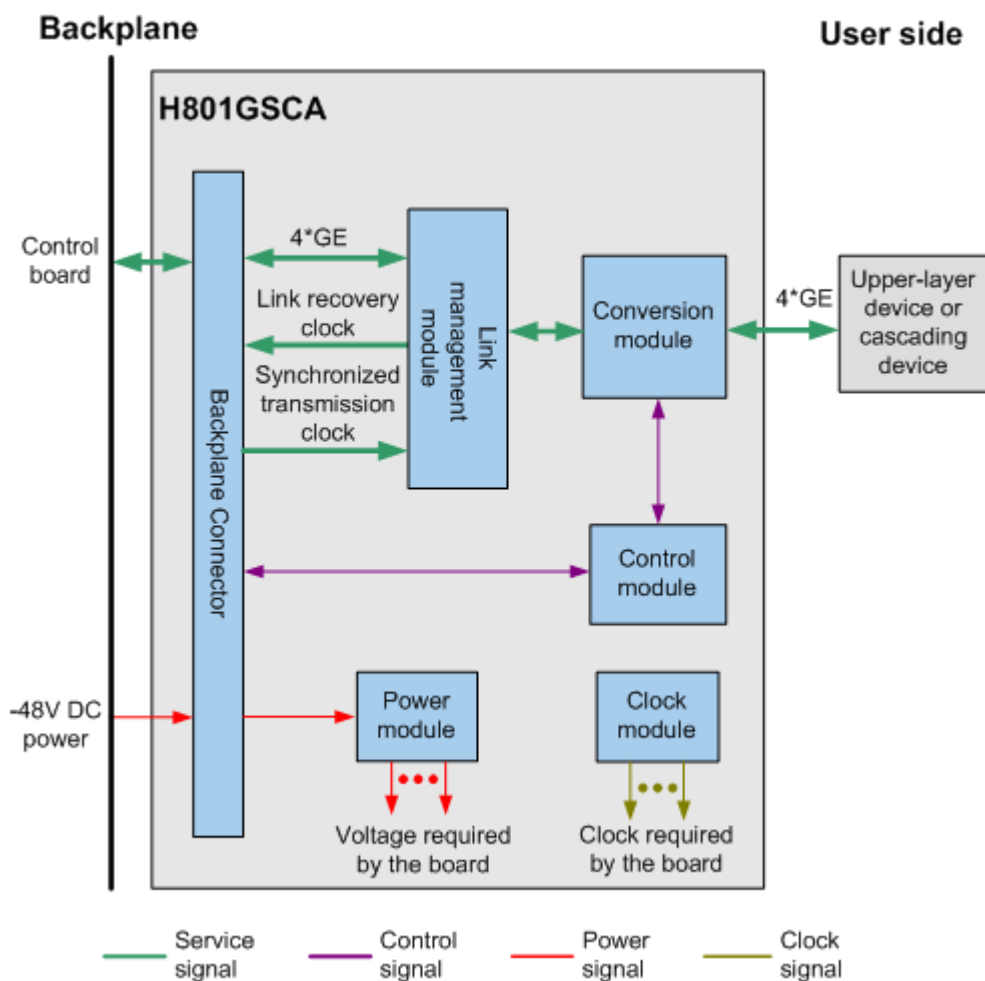
Please refer to "[Upstream Interface Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-31 Working principle of the H801GSCA board

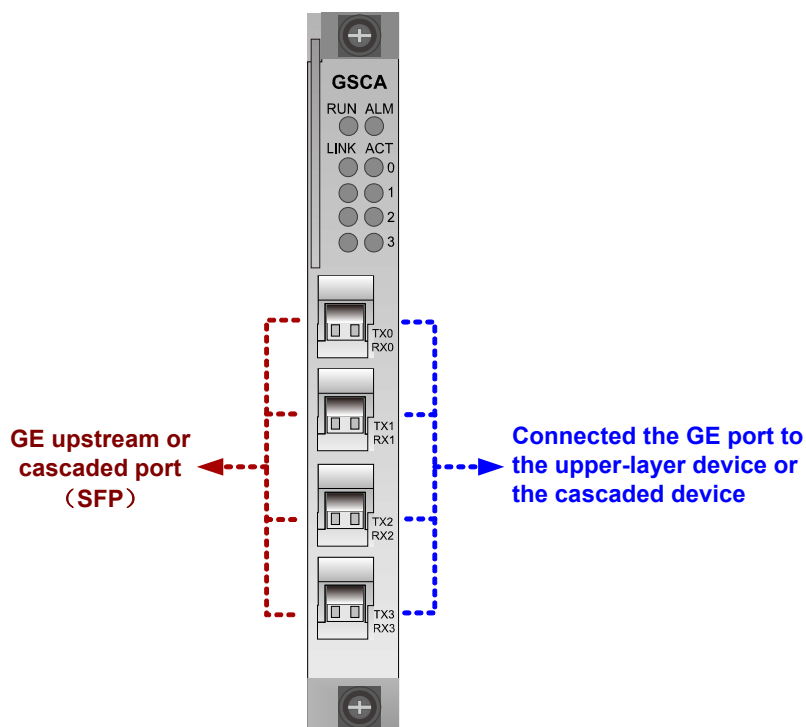


The basic working principle of the H801GSCA board is as follows:

- The control module is the control core of the entire board.
- The conversion module supports transparent transmission of the information.
- The link management module manages the GE links.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.



## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal

Indicator	Name	Color	Status	Meaning
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.9 H801X1CA Board Description

The H801X1CA board is a 1-port 10GE XFP optical interface unit board that provides one 10GE upstream or cascading optical port.

#### Functional Specifications

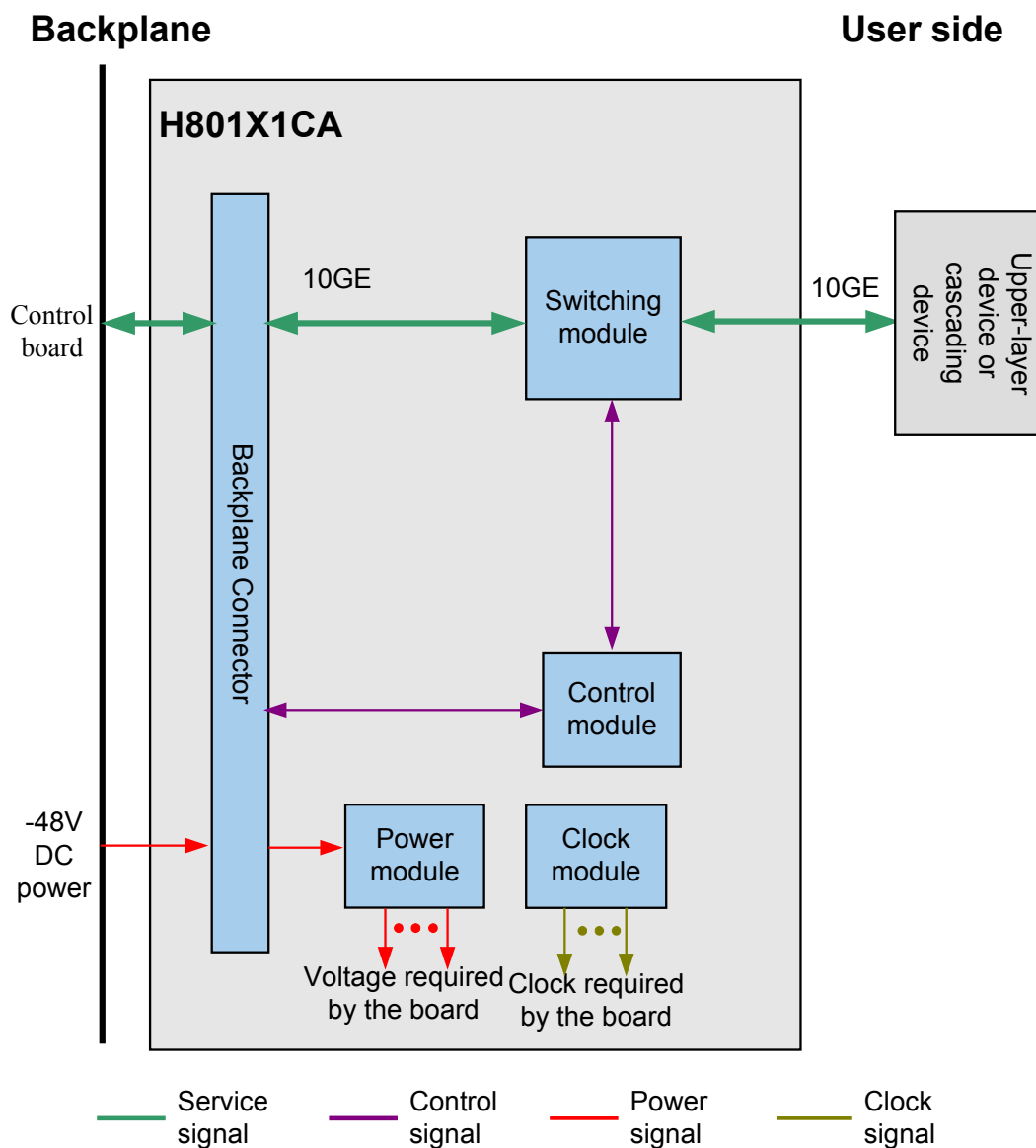
Please refer to "[Upstream Interface Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

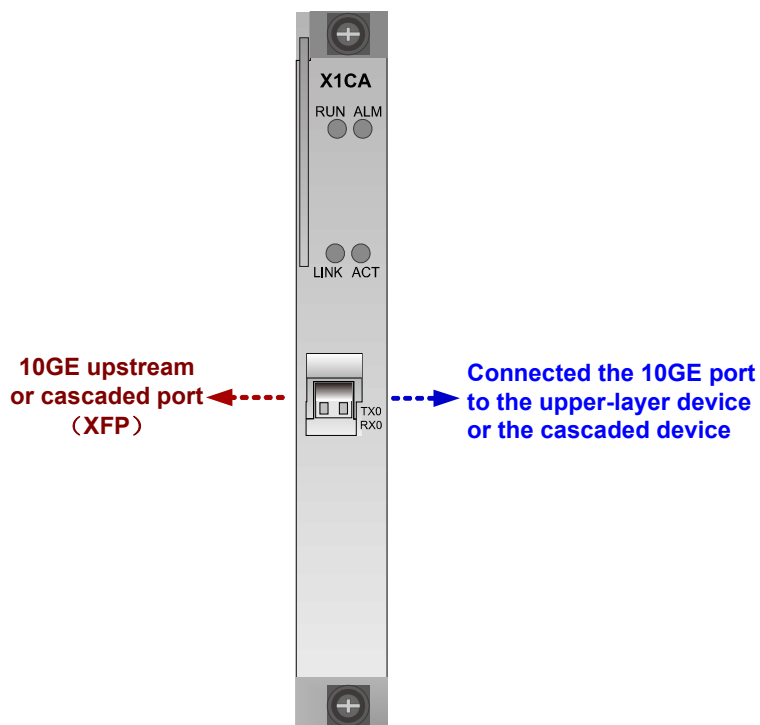
Figure 3-32 Working principle of the H801X1CA board



The basic working principle of the H801X1CA board is as follows:

- The control module reports the status of and manufacturing information about the board, and provides the interface information. In addition, the control module also manages the modules on the board, and processes alarms.
- The interface module provides the 10GE port.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.

## Front Panel Port



For details about supported optical module or electrical module, see [4.4 10GE Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal

Indicator	Name	Color	Status	Meaning
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.10 H801X2CA Board Description

The H801X2CA board is a 2-port 10GE XFP optical interface unit board that provides two 10GE upstream or cascading optical ports.

#### Functional Specifications

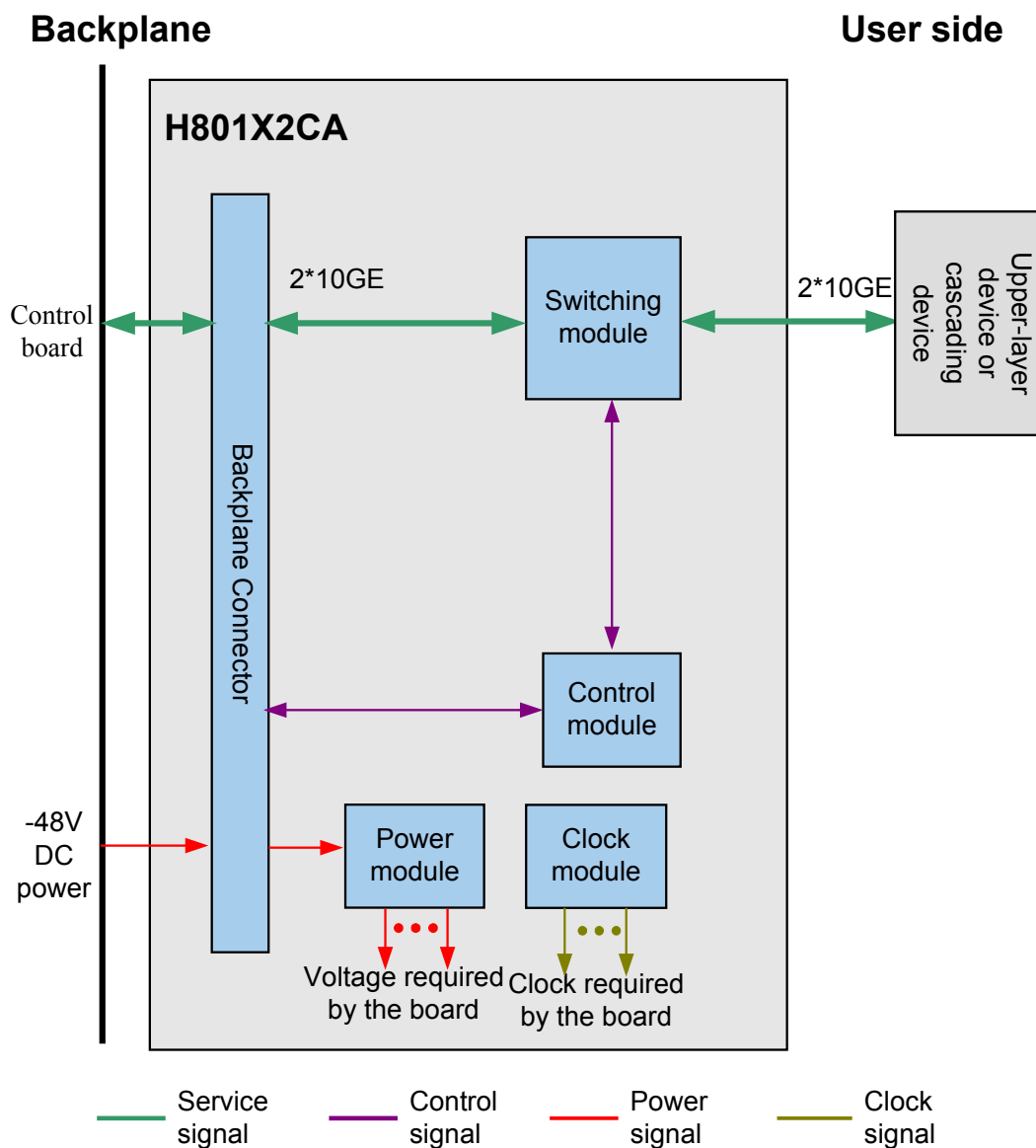
Please refer to "[Upstream Interface Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

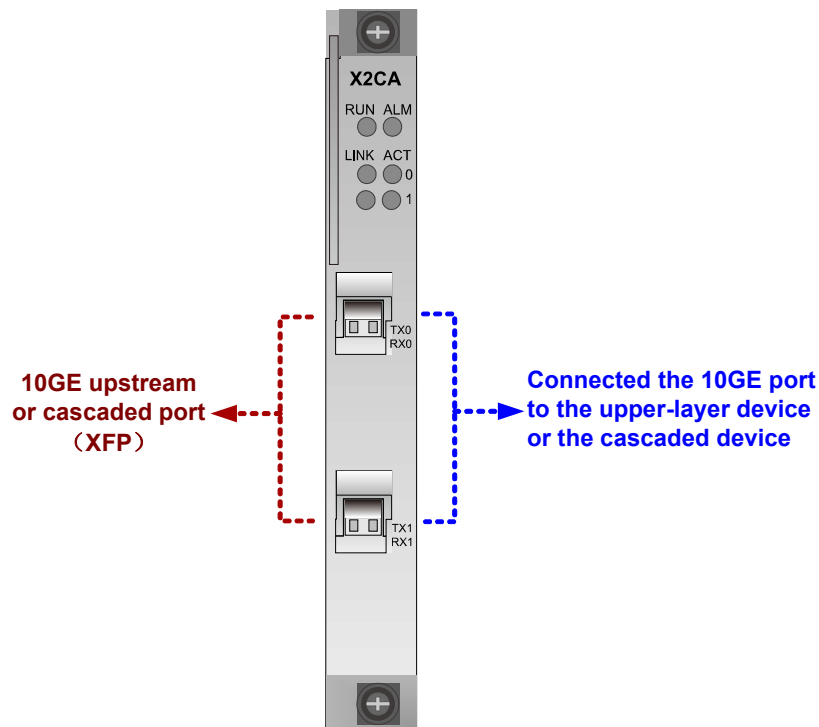
Figure 3-33 Working principle of the H801X2CA board



The basic working principle of the H801X2CA board is as follows:

- The control module reports the status of and manufacturing information about the board, and provides the interface information. In addition, the control module also manages the modules on the board, and processes alarms.
- The interface module provides two 10GE ports.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.

## Front Panel Port



For details about supported optical module or electrical module, see [4.4 10GE Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal

Indicator	Name	Color	Status	Meaning
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.11 H801X2CS Board Description

The H801X2CS board is a 2-port 10GE uplink interface card that provides two 10GE upstream or cascading optical ports.

#### Functional Specifications

Please refer to "[Upstream Interface Board Comparison](#)".

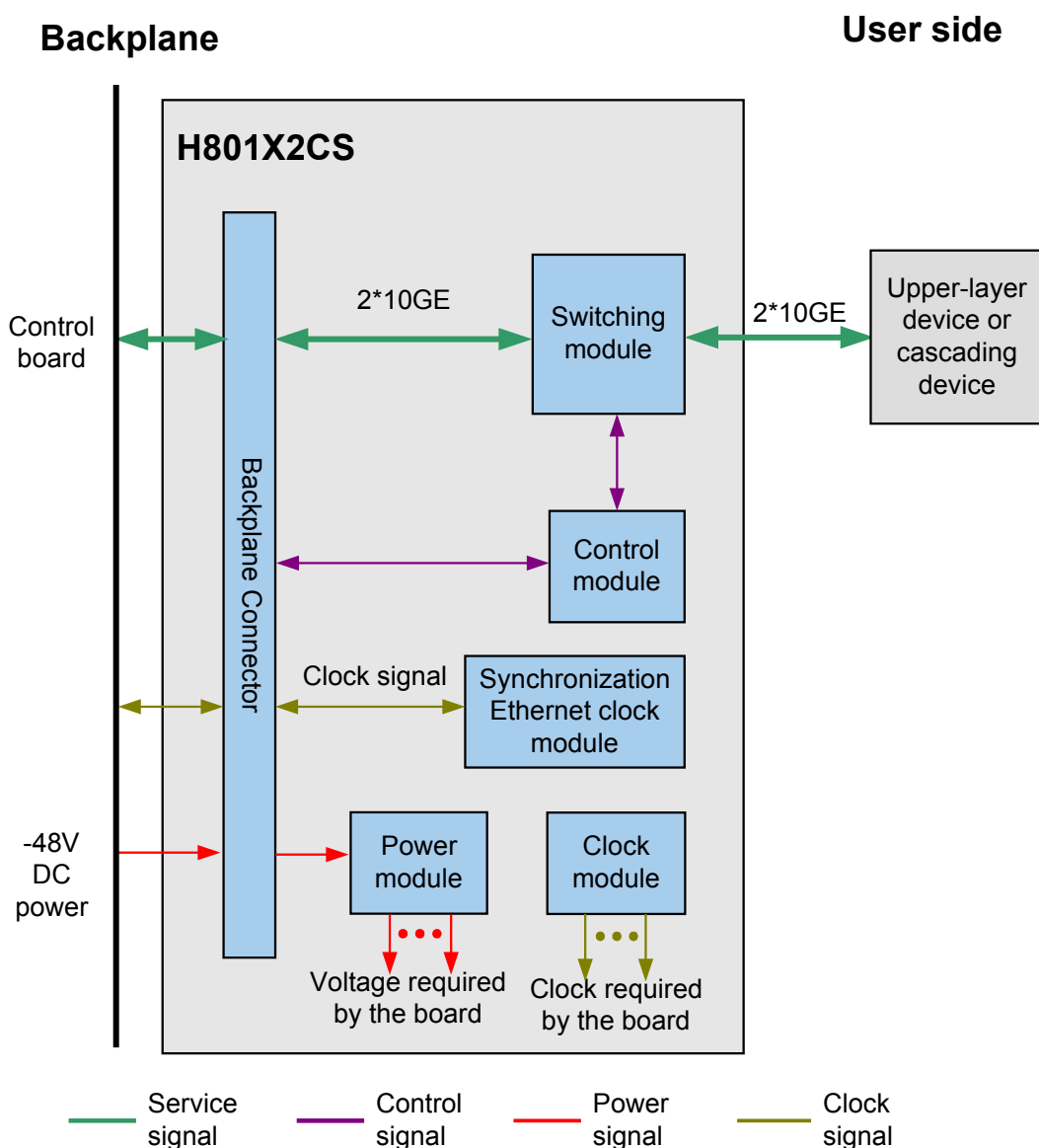
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

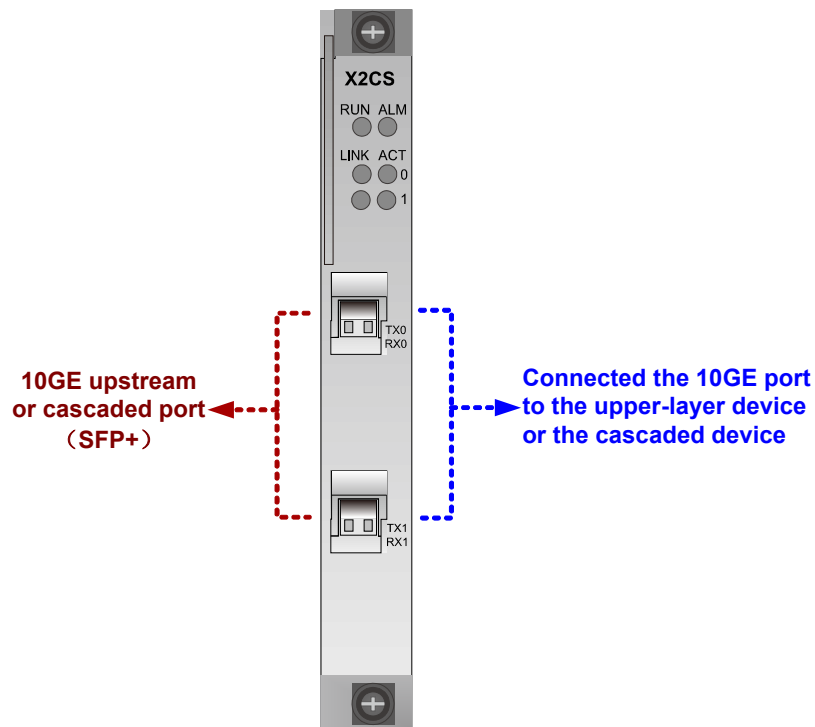
Figure 3-34 Working principle of the H801X2CS board



The basic working principle of the H801X2CS board is as follows:

- The control module reports the status of and manufacturing information about the board, and provides the interface information. The control module also manages the modules on the board, and processes alarms.
- The interface module provides two 10GE ports.
- The synchronization Ethernet clock module extracts clock signals from the 10GE signals, and synchronizes the 8 kHz clock of the control board with the clock signals.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.

## Front Panel Port



For details about supported optical module or electrical module, see [4.4 10GE Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal

Indicator	Name	Color	Status	Meaning
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.12 H802X2CS Board Description

The H802X2CS board is a 2-port 10GE/GE uplink interface card that provides two 10GE/GE upstream or cascading optical ports.

#### Functional Specifications

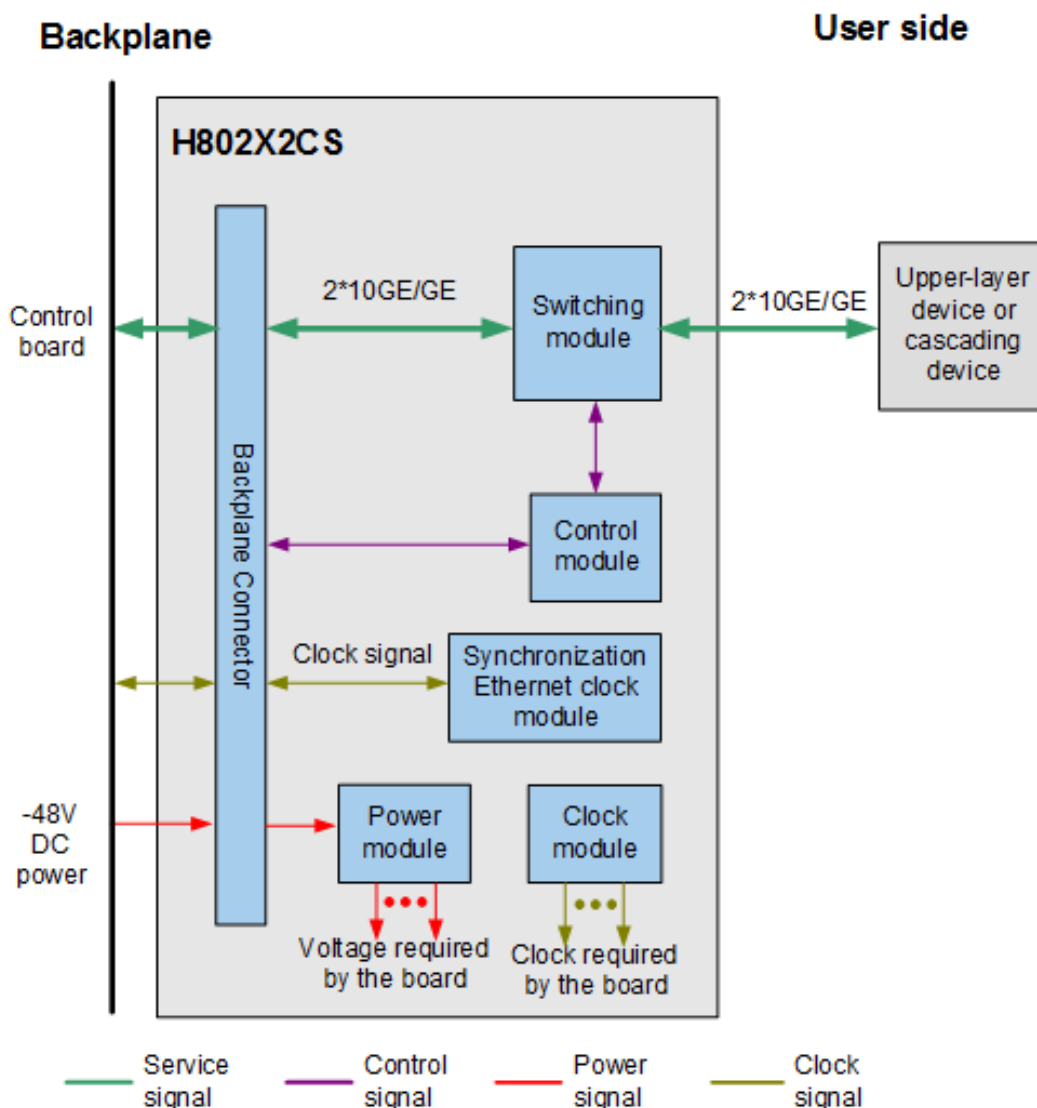
Please refer to "[Upstream Interface Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

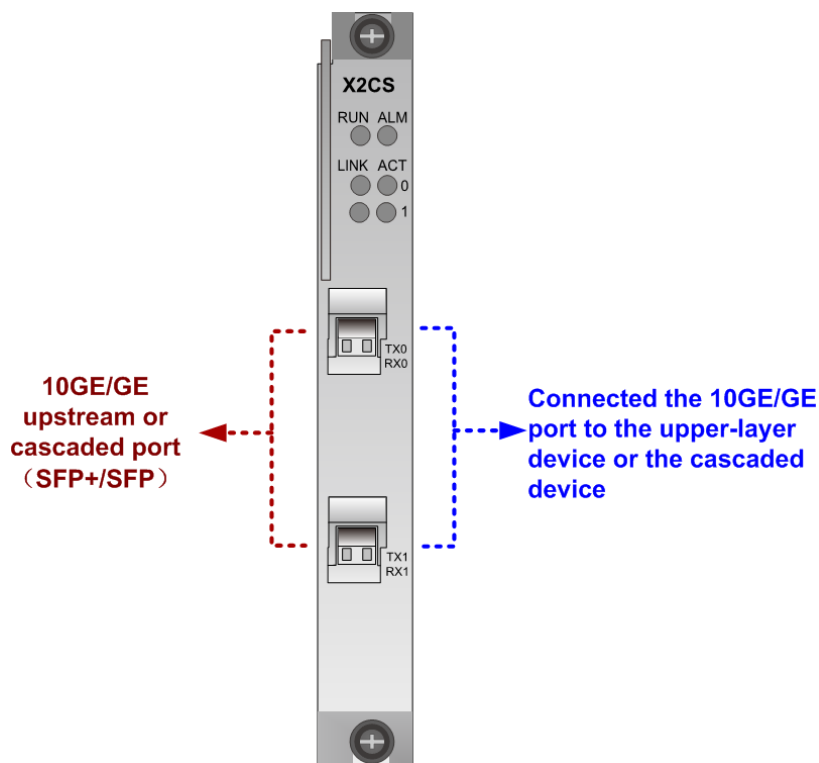
Figure 3-35 Working principle of the H802X2CS board



The basic working principle of the H802X2CS board is as follows:

- The control module reports the status of and manufacturing information about the board, and provides the interface information. The control module also manages the modules on the board, and processes alarms.
- The interface module provides two 10GE/GE ports.
- The synchronization Ethernet clock module extracts clock signals from the 10GE/GE signals, and synchronizes the 8 kHz clock of the control board with the clock signals.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.4 10GE Optical Module](#) and [4.3 GE Optical/Electrical Module](#).

### NOTE

Default transmission rate of the upstream port is 10000 Mbit/s (10GE), which can be set to 1000 Mbit/s (GE) by running the **speed** command.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated

Indicator	Name	Color	Status	Meaning
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.13 H801X2CK Board Description

The H801X2CK board is a 2-port 10GE/GE uplink interface card that provides two 10GE/GE upstream or cascading optical ports.

#### Functional Specifications

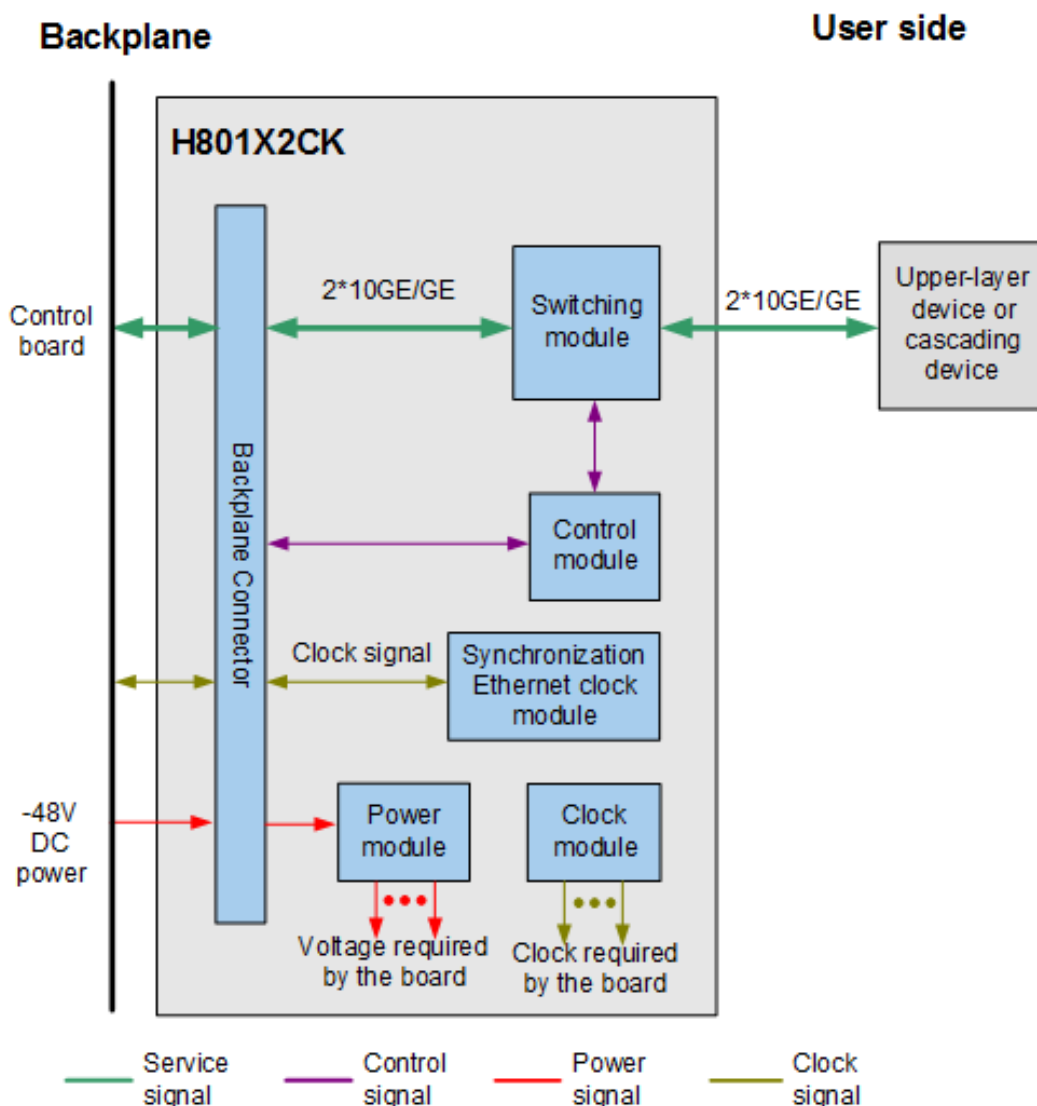
Please refer to "[Upstream Interface Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

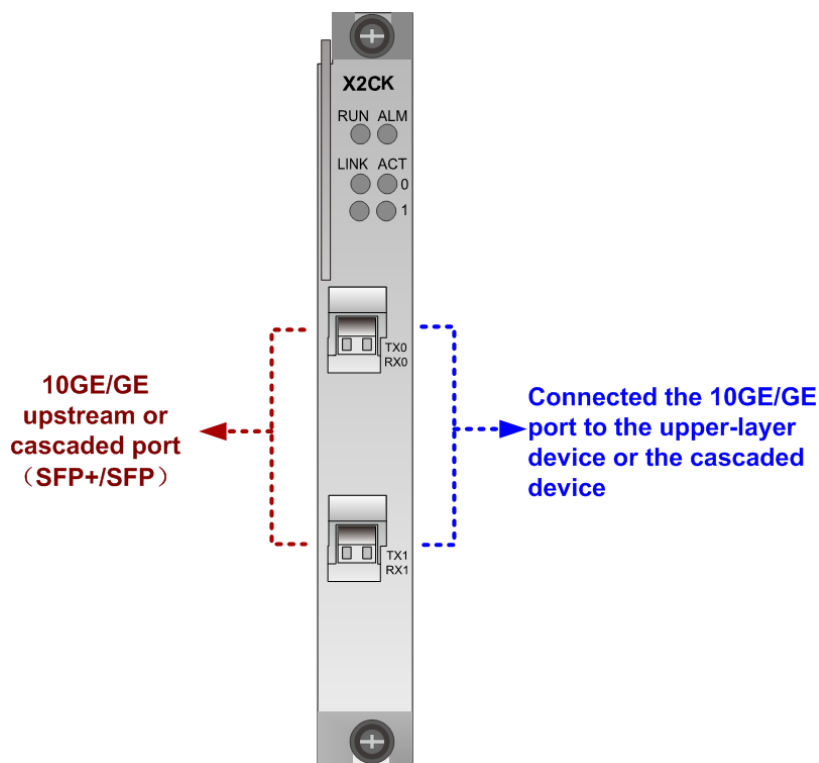
Figure 3-36 Working principle of the H801X2CK board



The basic working principle of the H801X2CK board is as follows:

- The control module reports the status of and manufacturing information about the board, and provides the interface information. The control module also manages the modules on the board, and processes alarms.
- The interface module provides two 10GE/GE ports.
- The synchronization Ethernet clock module extracts clock signals from the 10GE/GE signals, and synchronizes the 8 kHz clock of the control board with the clock signals.
- The power module supplies power to other functional modules of the board.
- The clock module provides clock signals for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.4 10GE Optical Module](#) and [4.3 GE Optical/Electrical Module](#).

### NOTE

Default transmission rate of the upstream port is 10000 Mbit/s (10GE), which can be set to 1000 Mbit/s (GE) by running the **speed** command.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated



Indicator	Name	Color	Status	Meaning
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.8.14 H802P2CA Board Description

The H802P2CA board is 2-port GPON optical interface board. It provides one SFP GPON upstream port (TX0/RX0).

#### Functional Specifications

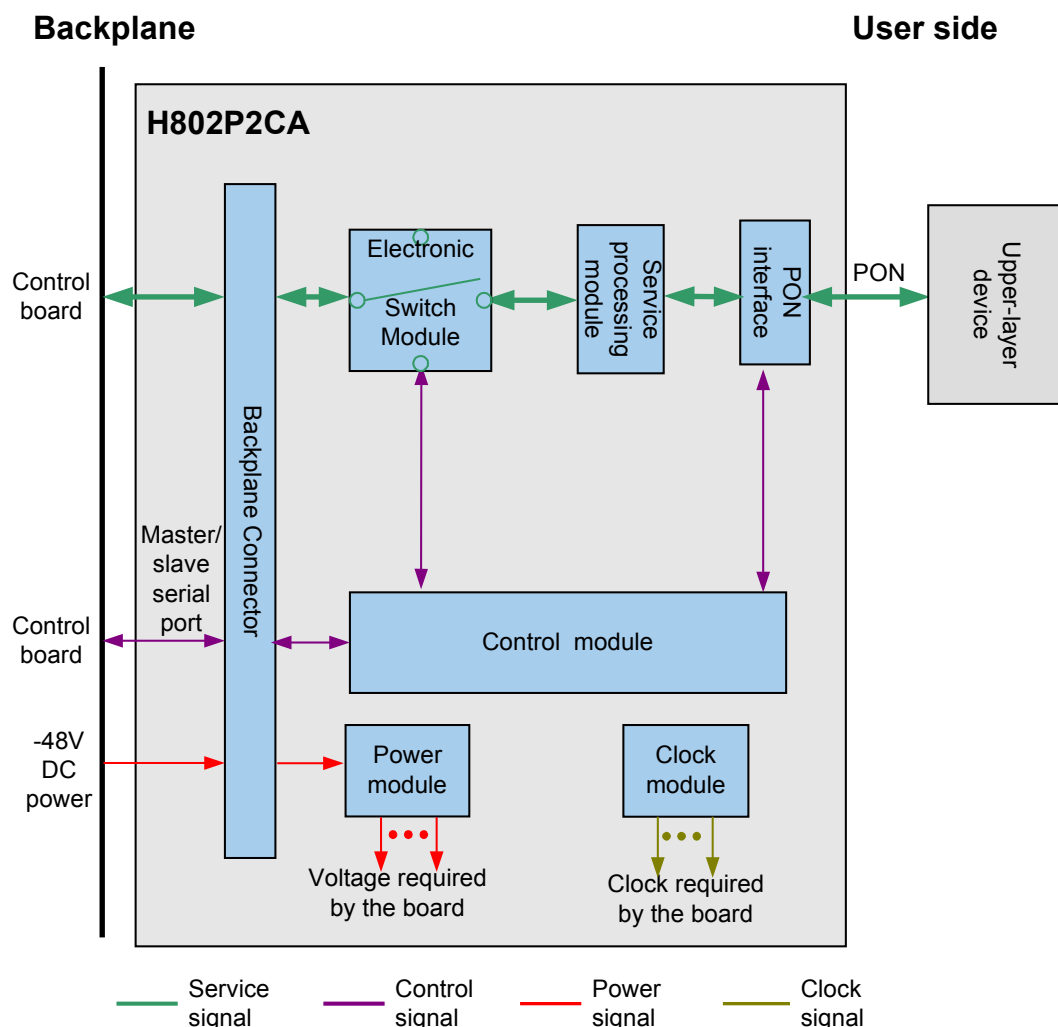
Please refer to "[Upstream Interface Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

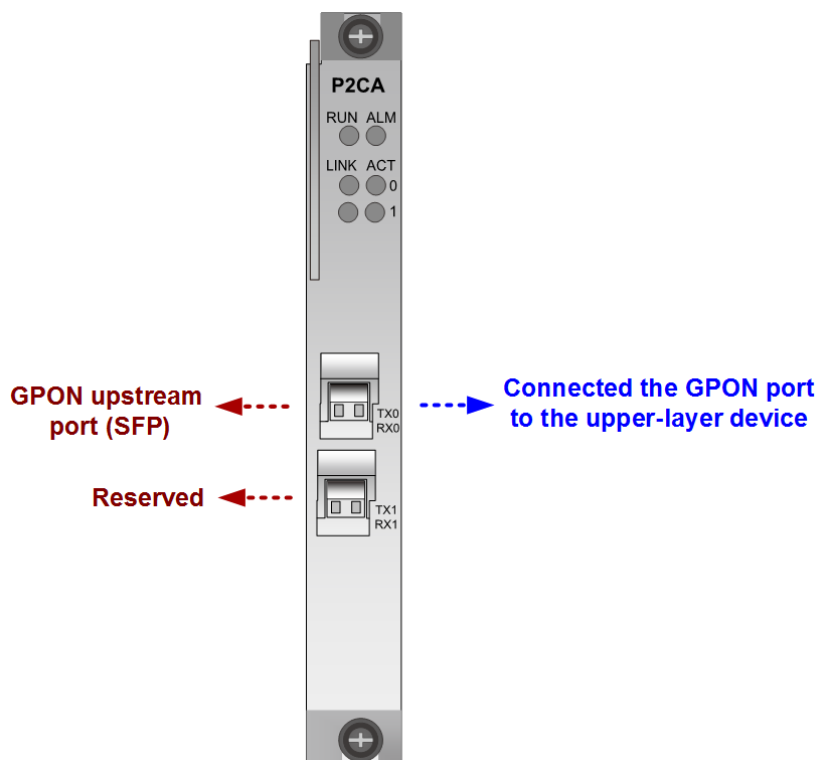
Figure 3-37 Working principle of the H802P2CA board



The basic working principle of the H802P2CA board is as follows:

- The control module controls the board software loading and board running, and manages the board.
- The electronic switch module implements switching of service signals during the active/standby switchover.
- The PON interface module provides SFP GPON port.
- The service process module implements GPON upstream transmission and provides time synchronization, and supports line clock as the system clock.
- The power module supplies power to each functional module of the board.
- The clock module provides the working clock for each functional module of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		-	Off	The board is faulty
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly
LINK	Link status indicator	Green	On	The link is normal
		-	Off	The link is abnormal

Indicator	Name	Color	Status	Meaning
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## 3.9 Universal Interface Board (GPIO)

Universal interface boards (installed in the GPIO slot) receive the clock signals and ESC parameters. GPIO is short for general purpose input/output.

### 3.9.1 GPIO Boards Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-20** Major differences between universal interface boards

Board	BITS Clock	ESC
H801BIUA	<ul style="list-style-type: none"> <li>● Supports two inputs of 2 Mbit/s or 2 MHz BITS clock signals.</li> <li>● Supports one output of 2 Mbit/s or 2 MHz clock signals.</li> <li>● Provides E1 clock ports.</li> </ul>	No
H801CITA	No	Provides an ESC port for receiving and reporting the ESC alarm information to the control board.
H801CITD	<ul style="list-style-type: none"> <li>● Supports two inputs of 2 Mbit/s or 2 MHz BITS clock signals.</li> <li>● Supports two inputs of 1 PPS +TOD time signals.</li> <li>● Supports one output of 2 Mbit/s or 2 MHz clock signals.</li> <li>● Supports one output of 1 PPS +TOD time signals.</li> <li>● Provides RJ45 clock ports.</li> </ul>	Provides seven inputs of alarm digital parameters and one output of alarm digital parameters.

### 3.9.2 H801BIUA Board Description

The H801BIUA board is a BITS interface Unit board, providing BITS input and output functions.

## Functional Specifications

The H801BIUA board supports the following functions:

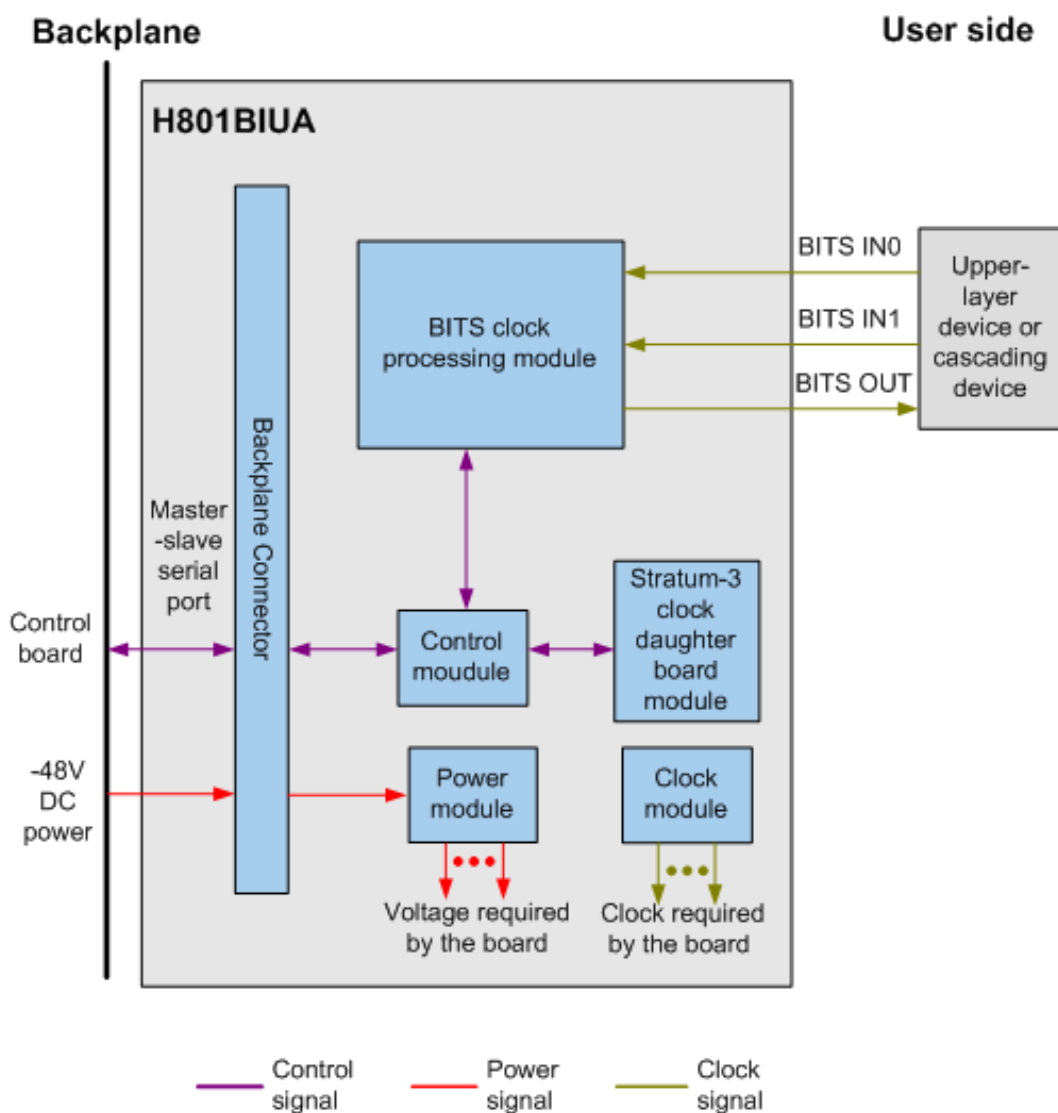
- Two standard BITS clock inputs and one standard BITS clock output
- Input and output of 2 MHz and E1 signals
- Tracing the input clock source of the two channels of BITS clock or tracing the output clock source of the control board
- Multiple working modes, such as tracing, holdover, and free-run

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

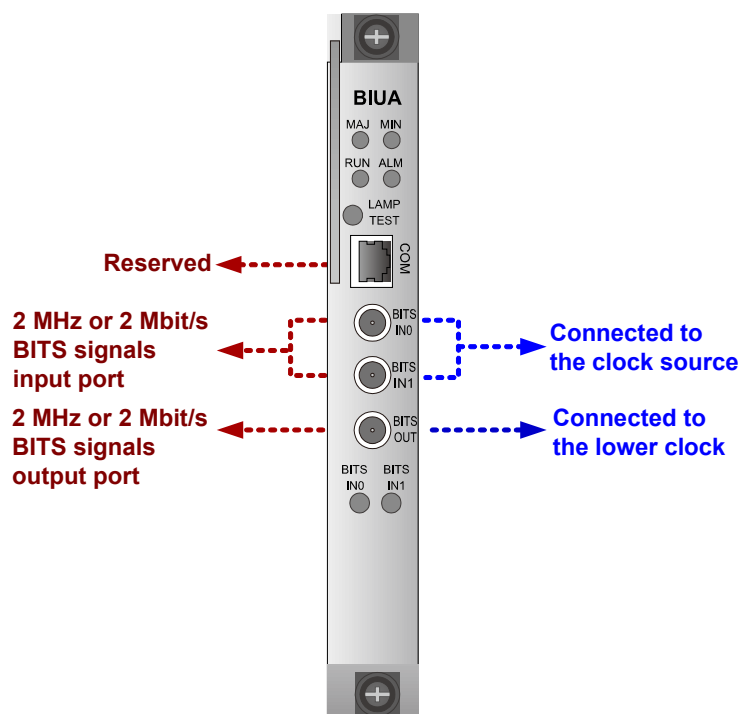
Figure 3-38 Working principle of the H801BIUA board



The basic working principle of the H801BIUA board is as follows:

- The control module loads the board software, controls the running of the software, and manages the entire board.
- The BITS clock processing module selects the mode and separates the two channels of input BITS clock signals, restores the clock for 2 Mbit/s signals, shapes the 2 MHz signals, and outputs one channel of 2 Mbit/s or 2 MHz clock signals.
- The stratum-3 clock daughter board module provides the stratum-3 system clock with the accuracy of  $\pm 4.6$  ppm.
- The clock module provides clock signals for each functional module of the board.
- The power module supplies power to each functional module of the board.

## Front Panel Port



## Indicator

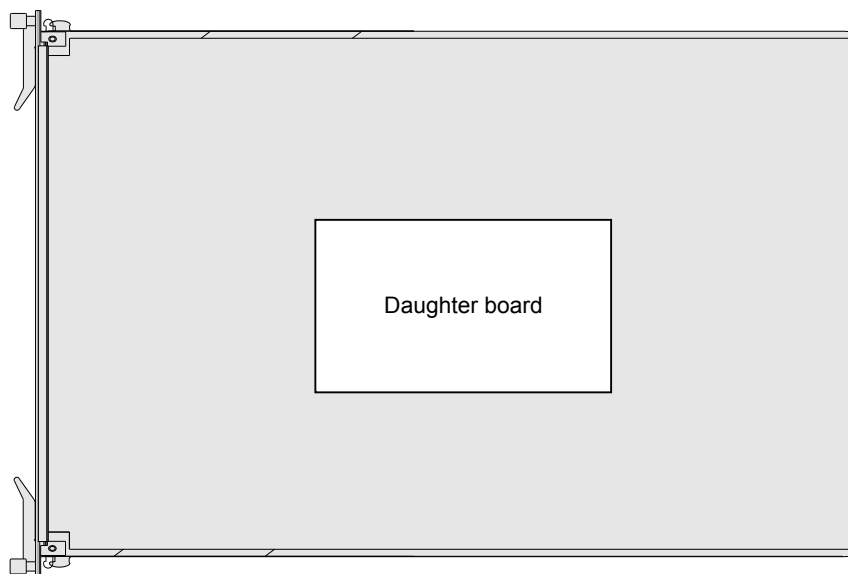
Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up

Indicator	Name	Color	Status	Meaning
		-	Off	The board is faulty or power off
ALM	Alarm indicator	Red	On	The board is faulty or its CPLD software is being updated
		-	Off	The board functions properly
IN0,IN1	Clock input status indicator	Green	On	Clock signals are input
		-	Off	No clock signal is input

## Daughter Board

The H801BIUA board can be installed with one clock daughter board.

**Figure 3-39** Position of the daughter board on the H801BIUA board



**Table 3-21** Daughter board supported by the H801BIUA board

Daughter Board	Function	Remarks
CKMA	Provides 32.768 MHz clock signals. Traces the external reference source (8K signals), and outputs the synchronized 32.768 MHz clock signals.	This daughter board supports three working modes: free-run, tracing, and holdover.

### 3.9.3 H801CITA Board Description

H801CITA is a combo interface Transfer board that provides an ESC port.

#### Functional Specifications

The H801CITA board supports the following functions:

- Provides an ESC port for reporting various monitored information to the control board.
- Provides indicators for system alarms.

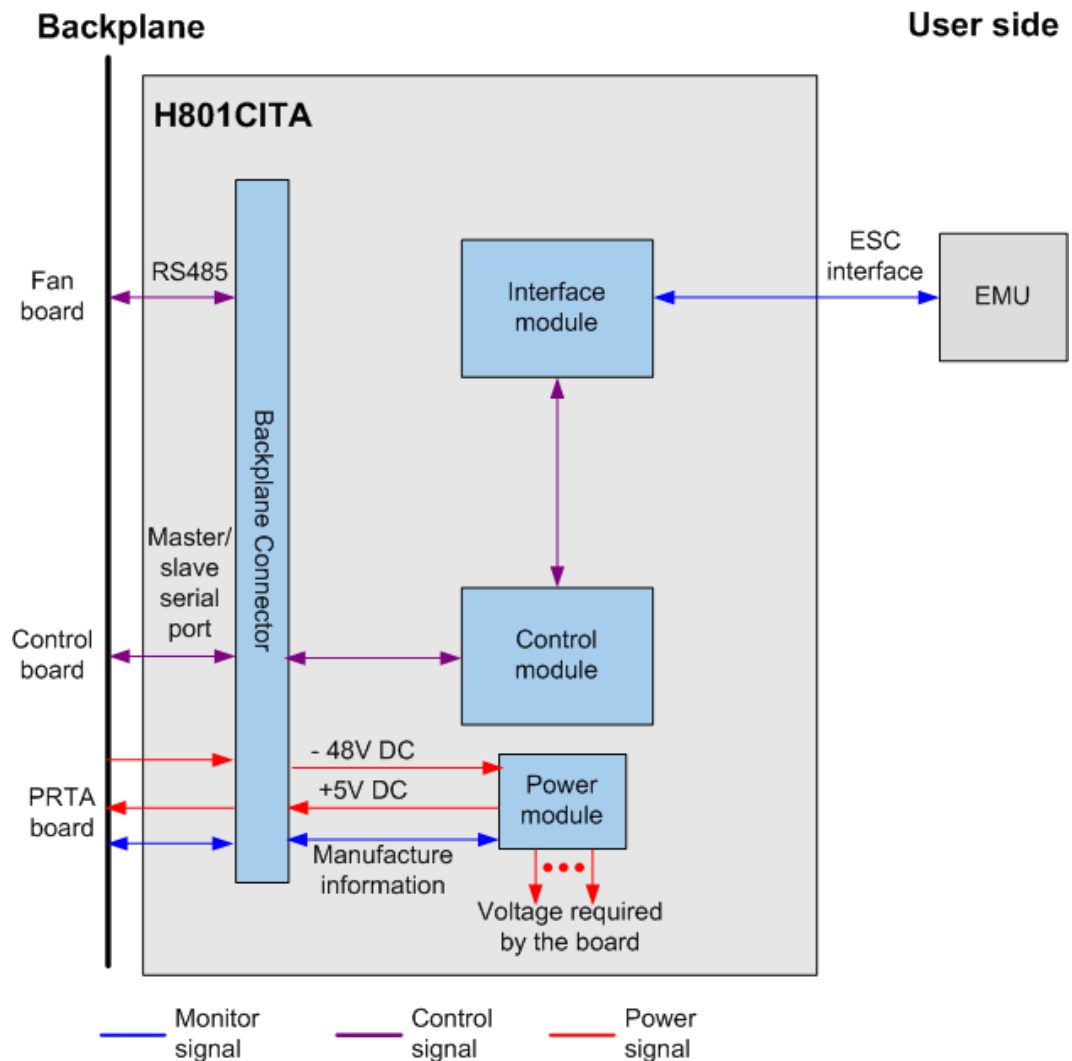
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

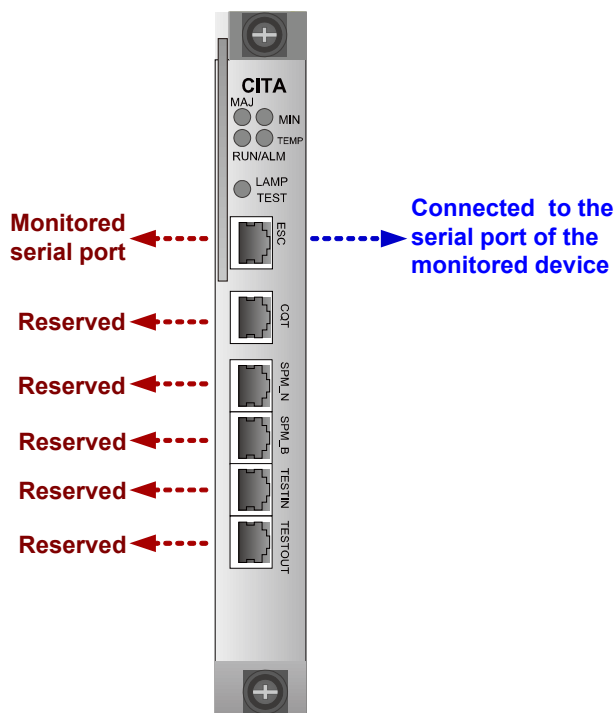
Figure 3-40 Working principle the H801CITA board



The H801CITA board consists of the control module, interface module, and power module. The basic working principle of the H801CITA is as follows:

- The control module controls the collecting and reporting of signals.
- The interface module provides an ESC port.
- The power module supplies power to other function modules of the H801CITA board and also provides +5 V DC to the backplane and power board.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty or its CPLD software is being updated
MAJ	Alarm indicators	Red	On	The system has a major alarm
MIN	Alarm indicators	Red	On	The system has a minor alarm
Temp	Temperature alarm indicator	Red	On	The system temperature exceeds the preset threshold

Indicator	Name	Color	Status	Meaning
		-	Off	The system temperature is within the normal range

### 3.9.4 H801CITD Board Description

The H801CITD board is a combo interface transfer board. It provides the input and output clock source for the system and supports functions such as input and output of alarm digital parameters.

#### NOTE

As shown in [Figure 3-41](#), the H801CITD board has the following changes after an upgrade from Ver.A to Ver.B:

- Ports are adjusted by 180 degrees.
- An ejector lever is added, facilitating board insertion and removal.

**Figure 3-41** Differences in appearance between Ver.A and Ver.B



### Functional Specifications

The H801CITD board supports the following functions:

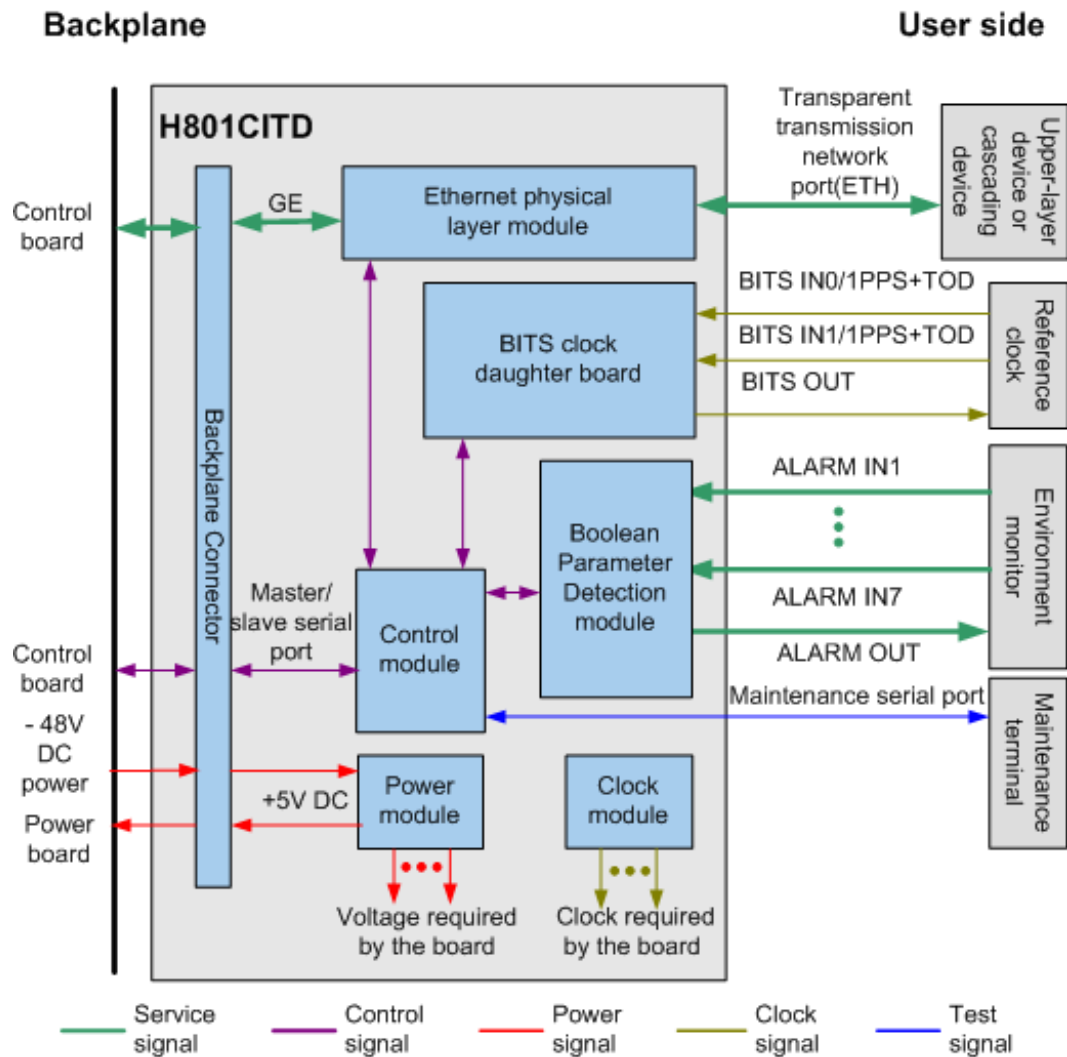
- Seven inputs of alarm digital parameters and one output of digital controlling parameters
- External monitoring Ethernet port to transparently transmit monitored data
- When configured with the BITSB clock daughter board, the CITD board also provides the following functions:
  - Two inputs of 2 Mbit/s or 2 MHz BITS clock signals
  - Two inputs of 1 PPS+TOD time signals(supported in V800R013C10 and later versions)
  - One output of 2 Mbit/s or 2 MHz clock signals
  - One output of 1PPS time signals (supported in V800R013C10 and later versions)

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

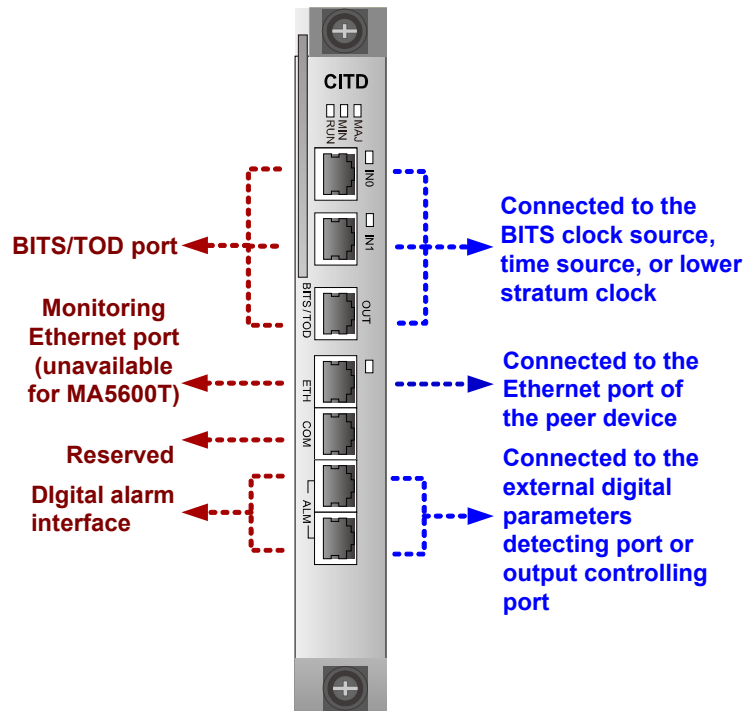
Figure 3-42 Working principle of the H801CITD board



The H801CITD board consists of the control module, interface module, power module, and clock module. The basic working principle of the H801CITD board is as follows:

- The control module controls each functional module of the board and reads the vendor information about the power board, service board, and BITS daughter board.
- The interface module provides the BITS clock port, time port, GE transparent transmission port, and alarm port.
- The BITS clock daughter board recovers the 2 Mbit/s clock signals or shapes the 2 MHz clock signals, which can function as the system clock source.
- The power module supplies power to each functional module of the board and +5 V DC power to the backplane and the power board.
- The clock module provides clock signals for each functional module of the board.

## Front Panel Port



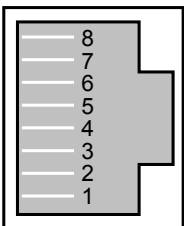
## Indicator

Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is being registered
		Red	On	The board is faulty or its CPLD software is being updated
MAJ	Alarm indicators	Red	On	The system has generated a major alarm
MIN	Alarm indicators	Red	On	The system has generated a minor alarm
IN0,IN1	Signal indicator	Green	On	The signals are correct
		-	Off	There are no signals or the signals are incorrect

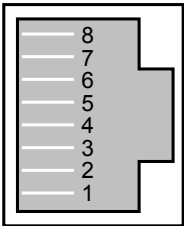
Indicator	Name	Color	Status	Meaning
ETH	ETH indicator	Green	On	The link is normal
		-	Off	The link is abnormal or no data is being transmitted over the link

## Pin Assignments

**Table 3-22** Pin assignments of the BITS/TOD IN0 port

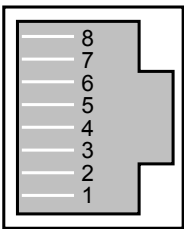
Port	Pin	Signal	Remarks
	1	BITS0_IN_B	Input B of channel 0 BITS clock signals
	2	BITS0_IN_A	Input A of channel 0 BITS clock signals
	3	PPS0_IN-	Negative polarity of channel 0 PPS time signals
	4	TOD0_IN-	Negative polarity of channel 0 TOD time signals
	5	TOD0_IN+	Positive polarity of channel 0 TOD time signals
	6	PPS0_IN+	Positive polarity of channel 0 PPS time signals
	7	-	-
	8	GND	Grounding

**Table 3-23** Pin assignments of the BITS/TOD IN1 port

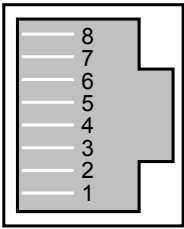
Port	Pin	Signal	Remarks
	1	BITS1_IN_B	Input B of channel 1 BITS clock signals
	2	BITS1_IN_A	Input A of channel 1 BITS clock signals
	3	PPS1_IN-	Negative polarity of channel 1 PPS time signals
	4	TOD1_IN-	Negative polarity of channel 1 TOD time signals
	5	TOD1_IN+	Positive polarity of channel 1 TOD time signals

Port	Pin	Signal	Remarks
	6	PPS1_IN+	Positive polarity of channel 1 PPS time signals
	7	-	-
	8	GND	Grounding

**Table 3-24** Pin assignments of the BITS OUT port

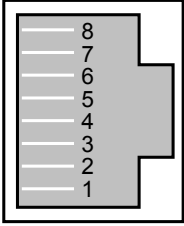
Port	Pin	Signal	Remarks
	1	-	-
	2	-	-
	3	1PPS_N(supported in V800R013C10 and later versions)	Output of the 1PPS time signals
	4	BITS_OUT_B	Output B of the BITS clock signals
	5	BITS_OUT_A	Output A of the BITS clock signals
	6	1PPS_P(supported in V800R013C10 and later versions)	Output of the 1PPS time signals
	7	GND	Grounding
	8	-	-

**Table 3-25** Pin assignments of the ETH port

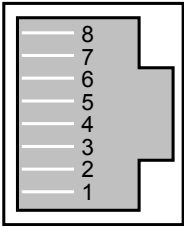
Port	Pin	Signal	Remarks
	1	GE1_MDI_T0+	GE electrical port
	2	GE1_MDI_T0-	
	3	GE1_MDI_T1+	

Port	Pin	Signal	Remarks
	4	GE1_MDI_T 2+	
	5	GE1_MDI_T 2-	
	6	GE1_MDI_T 1-	
	7	GE1_MDI_T 3+	
	8	GE1_MDI_T 3-	

**Table 3-26** Pin assignments of the COM port

Port	Pin	Signal	Remarks
	1	B_SPM_485_ TX+	485 serial port of the control board
	2	B_SPM_485_ TX-	485 serial port of the control board
	3	B_SPM_485_ RX+	485 serial port of the control board
	4	-	-
	5	-	-
	6	B_SPM_485_ RX-	485 serial port of the control board
	7	-	-
	8	-	-

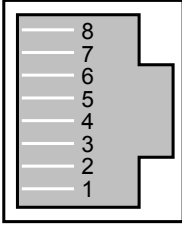
**Table 3-27** Pin assignments of the ALM port (upper)

Port	Pin	Signal	Remarks
	1	ALM_IN0_+	Signal + of channel 0 alarm digital parameter
	2	ALM_IN0_-	Signal - of channel 0 alarm digital parameter
	3	ALM_IN1_+	Signal + of channel 1 alarm digital parameter



Port	Pin	Signal	Remarks
	4	ALM_IN2_+	Signal + of channel 2 alarm digital parameter
	5	ALM_IN2_-	Signal - of channel 2 alarm digital parameter
	6	ALM_IN1_-	Signal - of channel 1 alarm digital parameter
	7	ALM_IN3_+	Signal + of channel 3 alarm digital parameter
	8	ALM_IN3_-	Signal - of channel 3 alarm digital parameter

**Table 3-28** Pin assignments of the ALM port (lower)

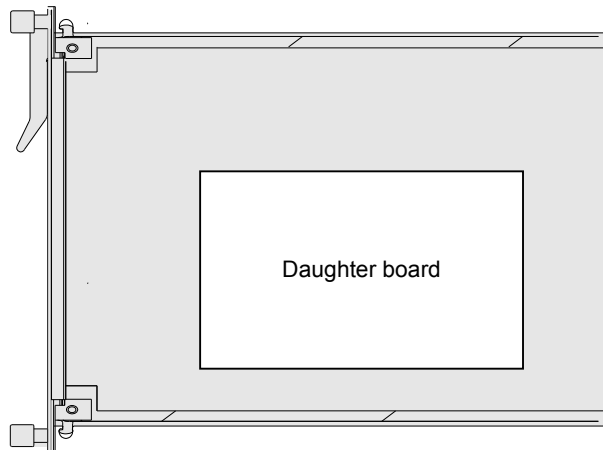
Port	Pin	Signal	Remarks
	1	ALM_IN4_+	Signal + of channel 4 alarm digital parameter
	2	ALM_IN4_-	Signal - of channel 4 alarm digital parameter
	3	ALM_IN5_+	Signal + of channel 5 alarm digital parameter
	4	ALM_IN6_+	Signal + of channel 6 alarm digital parameter
	5	ALM_IN6_-	Signal - of channel 6 alarm digital parameter
	6	ALM_IN5_-	Signal - of channel 5 alarm digital parameter
	7	ALM_OUT_+	Output + of the alarm control signals
	8	ALM_OUT_-	Output - of the alarm control signals

## Daughter Board

The H801CITD board provides a daughter board port and can be configured with the BITSB clock daughter board.

**Figure 3-43** shows the position of the clock daughter board on the H801CITD board.

**Figure 3-43** Position of the daughter board on the H801CITD board



The BITSB daughter board supported by the H801CITD board provides the following functions:

- Two inputs of 2 Mbit/s or 2 MHz BITS clock signals
- Recovers the 2 Mbit/s clock signals or shapes the 2 MHz clock signals, which can be used as the system clock source.
- One output of 2 Mbit/s or 2 MHz clock signals

## 3.10 Power Board (PRT)

Power boards (PRT) lead in DC power for supplying power to the device MA5600T or MA5603T.

### 3.10.1 Power Boards (PRT) Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-29** Differences between power boards (PRT)

Board	Alarm Monitoring	E-label	Indicator
H801PRTE	Yes	Yes	ALARM
H801PRTG	No	No	No
H801PRTA	Yes	Yes	PWR48 (power status indicator) and FUSE_48 (fuse status indicator)

## 3.10.2 H801PRTA Board Description

The H801PRTA board is a power transfer board. It leads in -48 V or -60 V DC power for supplying power to the device.

### Functional Specifications

The H801PRTA board supports the following functions:

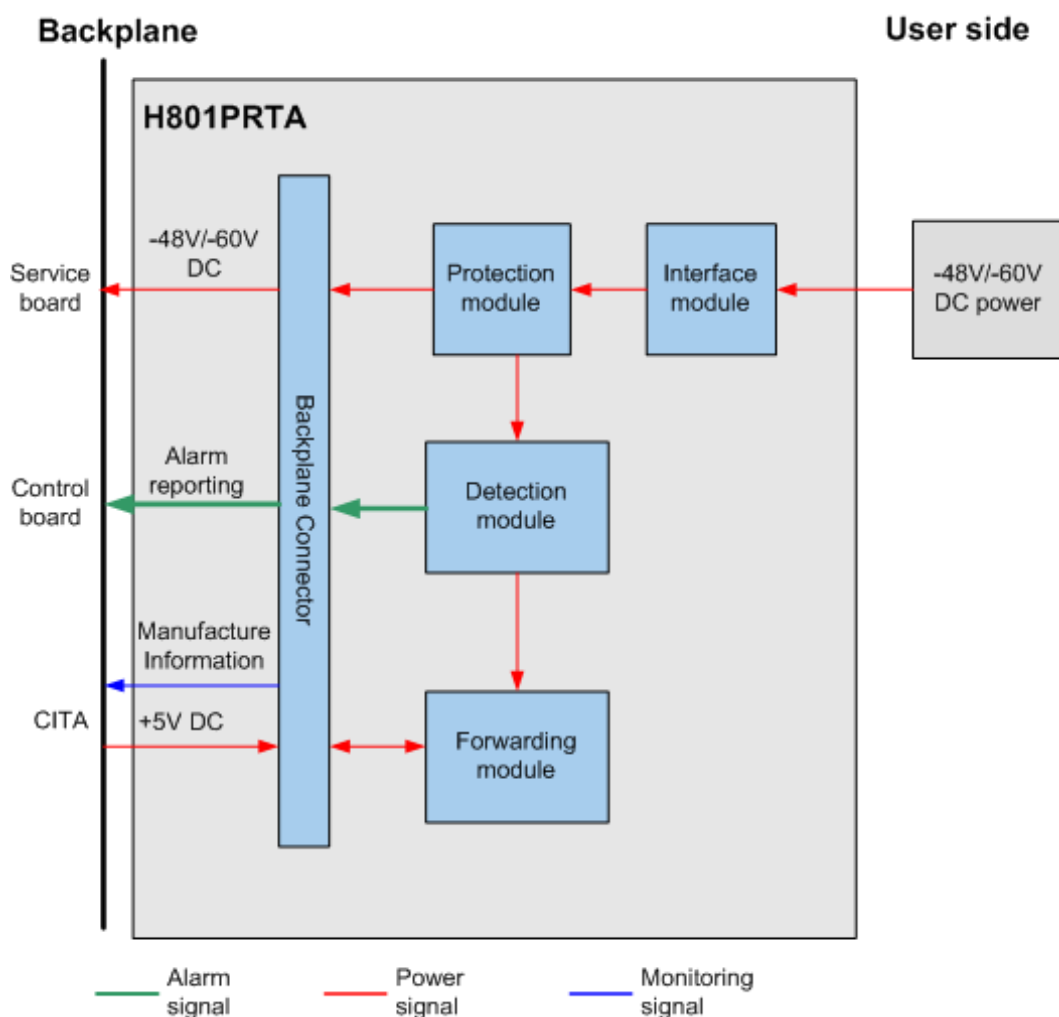
- One -48 V or -60 V DC power input (input voltage range: -38.4 V to -72 V)
- Input undervoltage alarming using the indicator and related information reporting
- Fuse blow alarming using the indicator and related information reporting

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

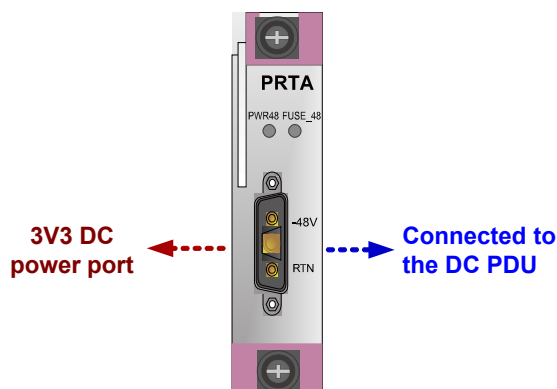
### Working Principle

Figure 3-44 Working principle of the H801PRTA board



The H801PRTA board leads in -48 V or -60 V power supply through the 3V3 power port on its front panel. Using its filter and detection circuit, the H801PRTA board detects various errors of the power supply and reports related information. In addition, the H801PRTA board transmits -48 V or -60 V power supply to the backplane for supplying power to other boards in the service subrack.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
PWR48	Power status indicator	Green	On	The input voltage is within the normal range
		Red	On	The input voltage is abnormal
		-	Off	There is no power input
FUSE_48	Fuse status indicator	Red	On	The fuse blows
		-	Off	The fuse functions properly

### 3.10.3 H801PRTE Board Description

The H801PRTE is a connect power board. It leads in the -48 V or -60 V DC power supply for the device.

## Functional Specifications

The H801PRTE board supports the following functions:

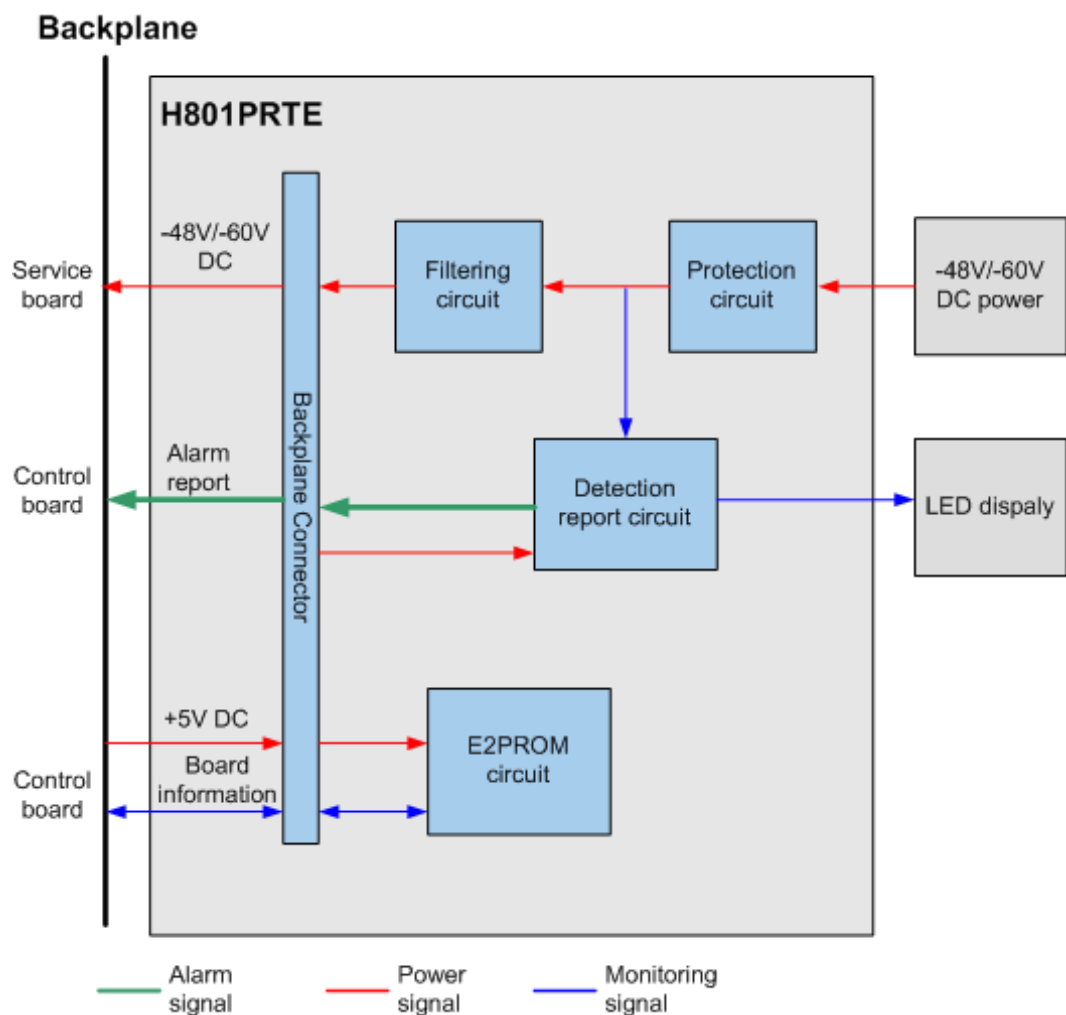
- One -48 V or -60 V DC power input (input voltage range: -38.4 V to -72 V)
- Filtering and current-limiting for the power input port
- Under-voltage detection, detection of whether the input power exists, and fault detection
- Combined reporting of the protection alarm and board online signal
- ALARM indicator

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-45 Working principle of the H801PRTE board

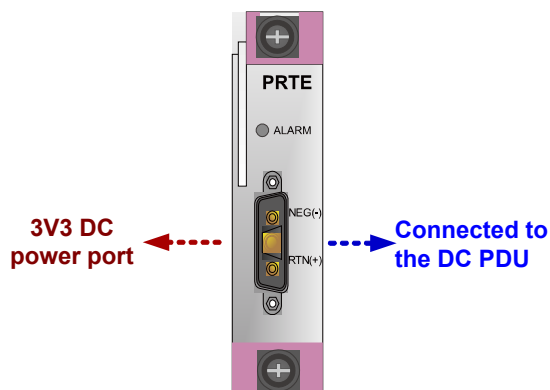


The basic working principle of the H801PRTE board is as follows:

- The H801PRTE board has a 3V3 power connector to lead a channel of -48 V or -60 V power supply. After passing the protection circuit and the filtering circuit, the power supply is output to the backplane and supplies power for other boards in the subrack.

- The detection and report circuit detects fault of the protection fuse. The detected signals and the presence signals of the board are reported to the control board through the same channel. The LED displays the status.
- The detection and report circuit detects under-voltage of the input power and whether there is input power.
- The E2PROM circuit stores the vendor information of the board.
- The 5 V power led from the backplane is used to supply some chips of the board.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
ALARM	Indicator of the protection circuit	Green	On	The protection circuit is normal
		-	Off	The protection circuit is faulty

## 3.10.4 H801PRTG Board Description

The H801PRTG is a connect power board. It leads in the -48 V or -60 V DC power supply for the device.

### Functional Specifications

The H801PRTG board supports the following functions:

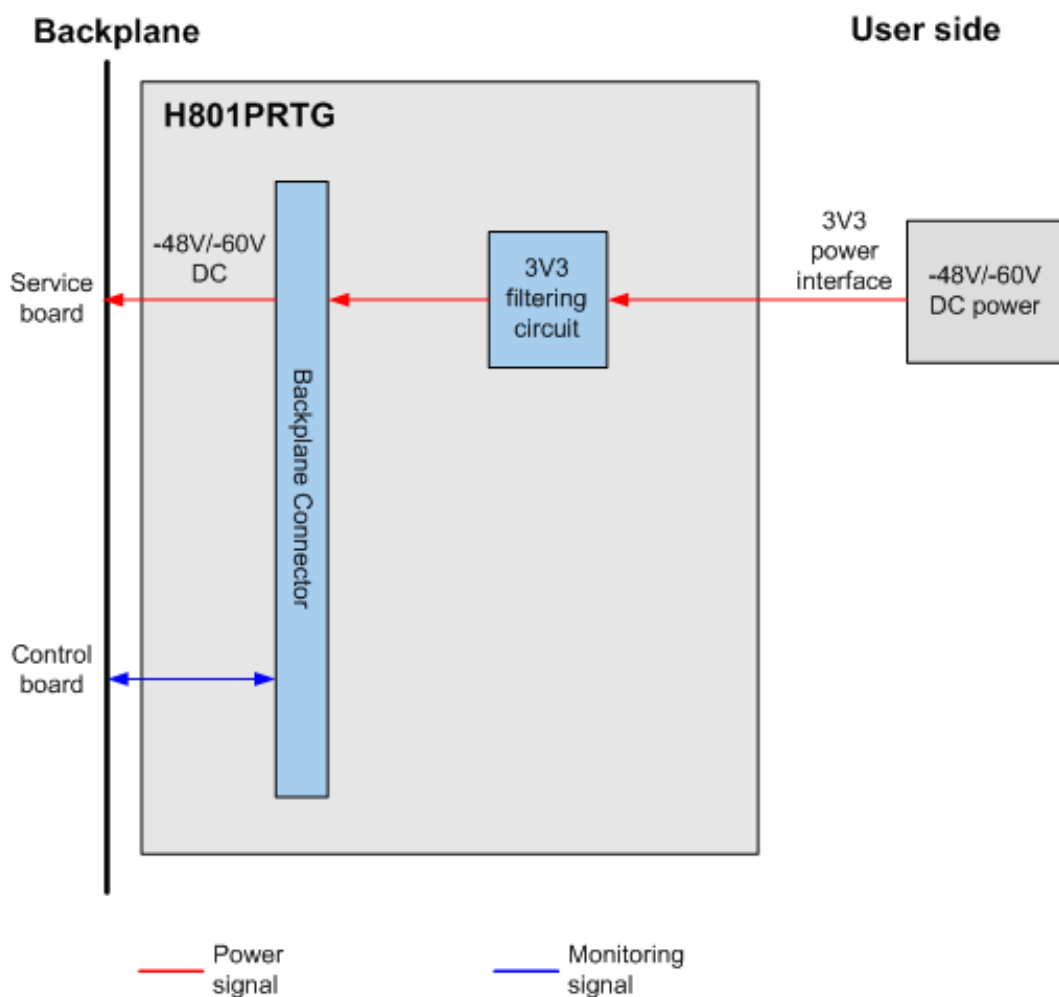
- One -48 V or -60 V DC power input (input voltage range: -38.4 V to -72 V)
- Filtering for the power input port

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

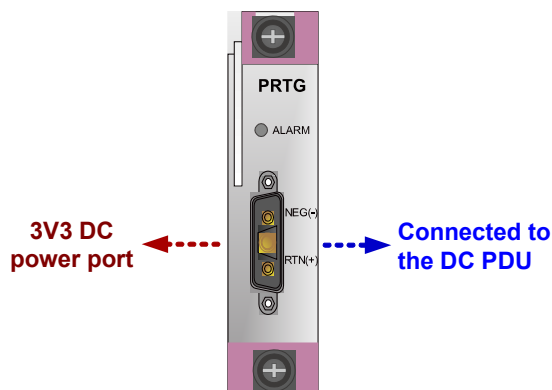
## Working Principle

Figure 3-46 Working principle of the H801PRTG board



The PRTA board leads in -48 V or -60 V power supply through the 3V3 power port on its front panel, and then transmits the -48 V or -60 V power supply through its filter circuit to the backplane for supplying power to other boards in the service subrack.

## Front Panel Port



## 3.11 Power Board (MPW)

Power boards (MPW) lead in DC or AC power for supplying power to the device MA5608T.

### 3.11.1 H801MPWC Board Description

The H801MPWC board is a power board with dual DC power inputs. The H801MPWC board leads in the -48 V or -60 V DC power to the device.

### Functional Specifications

The H801MPWC board supports the following functions:

- Two -48 V or -60 V DC power inputs (input voltage range: -38.4 V to -72 V)
- Filtering and current-limiting for the power input port
- Detection of power supply availability, and power supply faults
- Reporting of the protection alarm
- Indication of power status

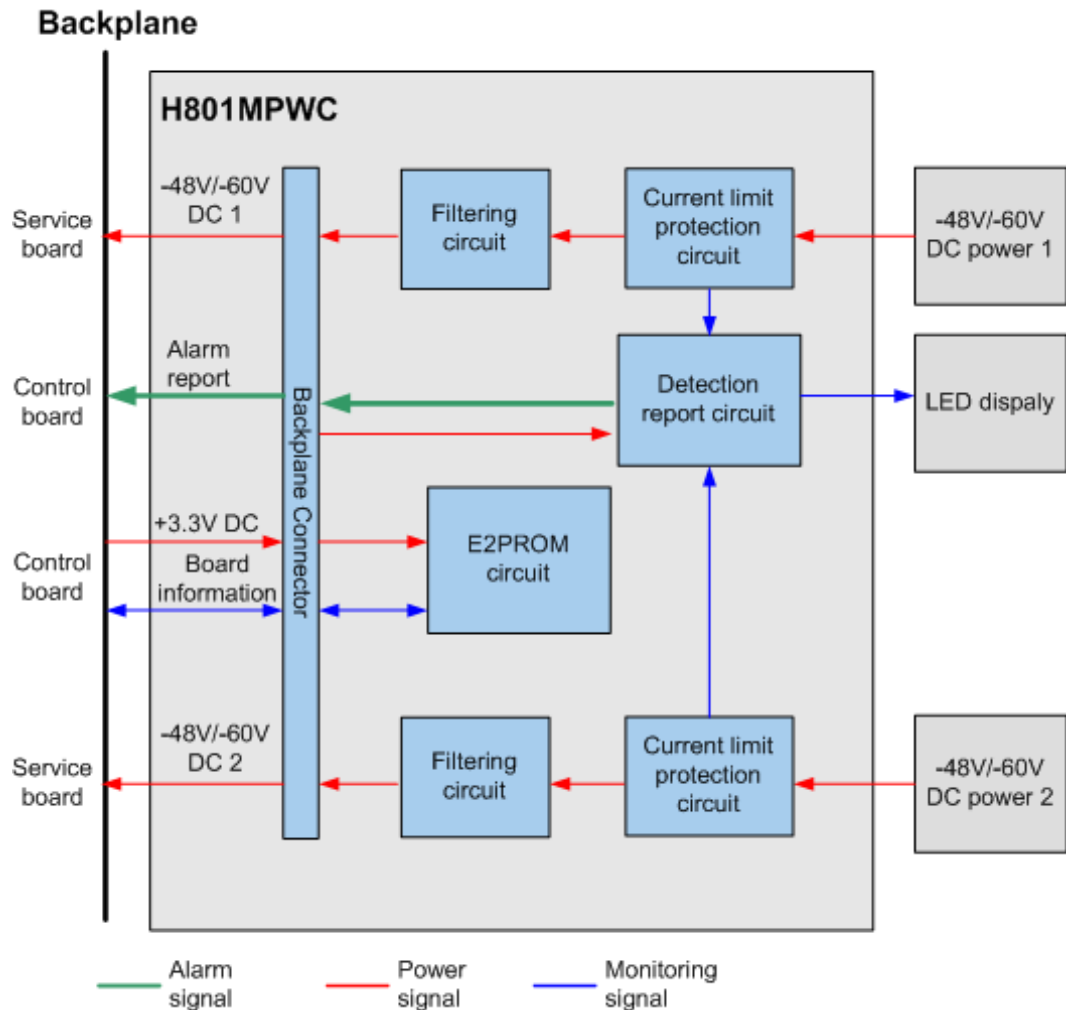
### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

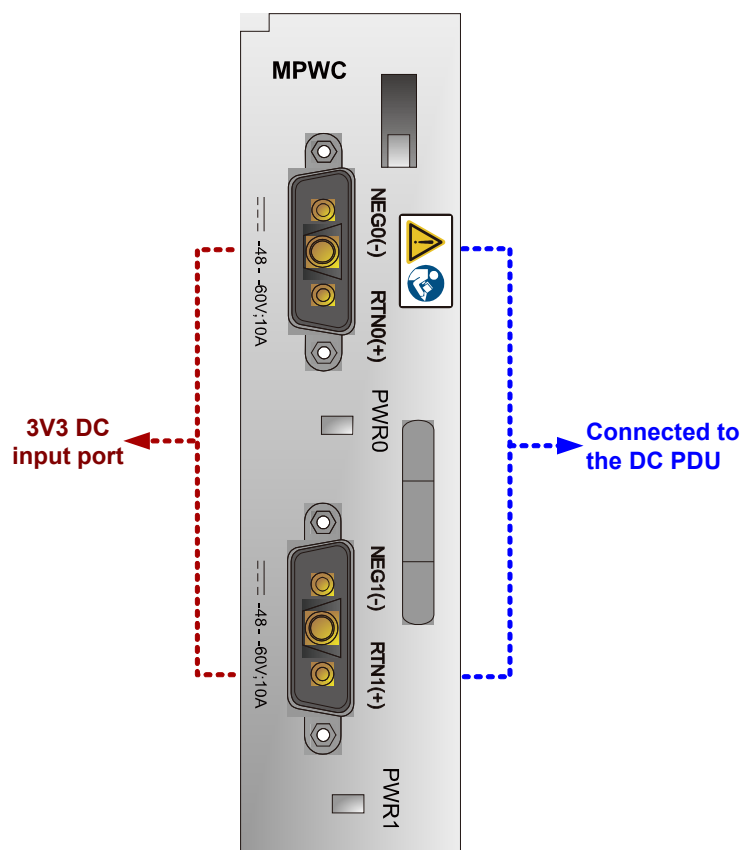
Figure 3-47 Working principle of the H801MPWC board



The basic working principle of the H801MPWC board is as follows:

- The H801MPWC board leads in the -48 V or -60 V power input through the 3V3 power connector, and transfers the power to the current limit protection circuit, then to the filter circuit, and finally to the backplane, supplying power to the subrack and other boards.
- The detection and reporting circuit checks the protection fuse for any faults, and reports the detection signals to the control board. The control board indicates these detection signals through indicators.
- The detection and reporting circuit checks for availability of power supply.
- The E2PROM circuit stores the board manufacture information.
- The H801MPWC board leads in the 3.3 V power from the backplane to power certain internal chips of the board.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
PWR0/ PWR1	The power board indicator	Green	On	The power board works properly
		-	Off	The power board is faulty

### 3.11.2 H801MPWD Board Description

The H801MPWD board is an AC power board, consisting of an AC power unit and a monitoring unit. The board supplies power to the device and supports the lead-acid battery for power backup. The AC power unit provides overcurrent protection, output overvoltage protection, short circuit protection, and over-temperature protection. The monitoring unit provides comprehensive management for the power system and storage battery, and also provides certain environment monitoring functions.

## Functional Specifications

The H801MPWD board supports the following functions and specifications:

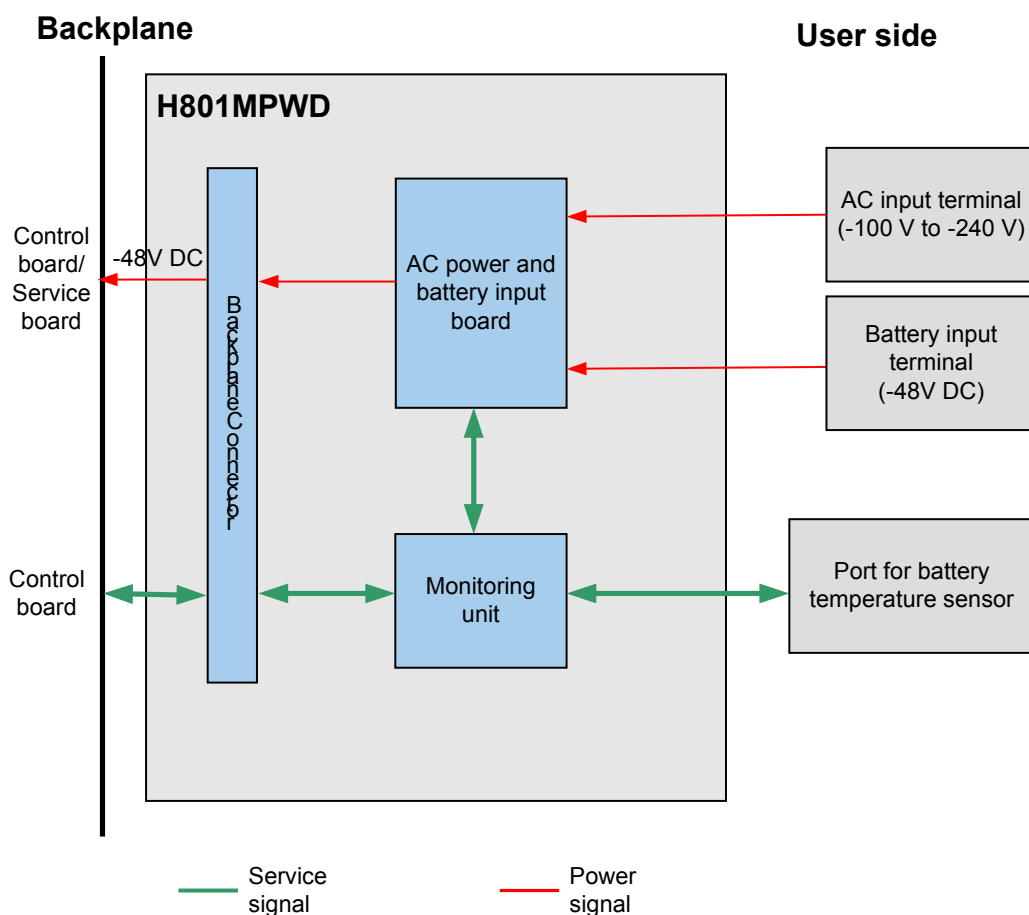
- Input AC voltage: -100 V to -240 V
- Input AC frequency: 50 Hz to 60 Hz
- Single-phase three-wire AC power input
- Connection to battery backup power (-48V DC)
- Rated output power: 400 W
- Alarm monitoring
- Battery low voltage disconnection; charge and discharge management of storage batteries

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

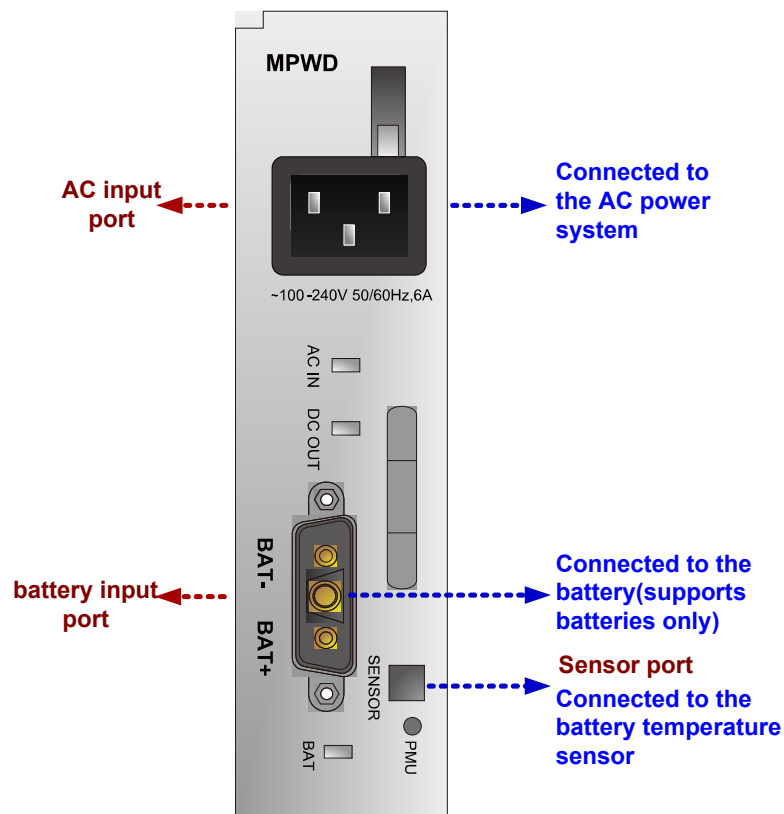
Figure 3-48 Working principle of the H801MPWD board



The basic working principle of the H801MPWD board is as follows:

- AC input power is supplied to the board. After AC/DC conversion, the power is supplied to the system backplane at -48 V (adjustable).
- The board supports battery input. The monitoring unit manages the charging and discharging of batteries.
- The board communicates with the system through the backplane, reporting board hardware and electronic label information to the backplane.
- The board supports communication with the monitoring unit through the 485 protocol to adjust voltage and current and report alarm information.
- The monitoring unit manages lead-acid batteries.
- The optical coupler implements the battery low voltage disconnection function.
- The board provides power distribution checking and alarm reporting functions.

## Front Panel Ports



## Indicator

Indicator	Name	Color	Status	Meaning
AC IN	AC input indicator	Green	On	Indicates that the AC input power is normal

Indicator	Name	Color	Status	Meaning
		-	Off	Indicates that the AC input power is abnormal
DC OUT	DC output indicator	Green	On	Indicates that the DC output power is normal
		-	Off	Indicates that the DC output power is abnormal
BAT	Power board battery connection indicator	Green	On	Indicates that battery connection is normal
		-	Off	Indicates that battery connection is abnormal
PMU	Monitoring board running status indicator	Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	Indicates that program loading is in progress
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	Indicates that the board runs normally
		Red	Blinking	Indicating that the board is starting up
		Red	On	Indicates that a critical alarm is reported
		Orange	Blinking	Indicates that a minor alarm (such as the high temperature alarm) is reported

### 3.11.3 H801MPWE Board Description

The H801MPWE board is a power board with single DC power inputs. The H801MPWE board leads in the -48 V or -60 V DC power to the device.

#### Functional Specifications

The H801MPWE board supports the following functions:

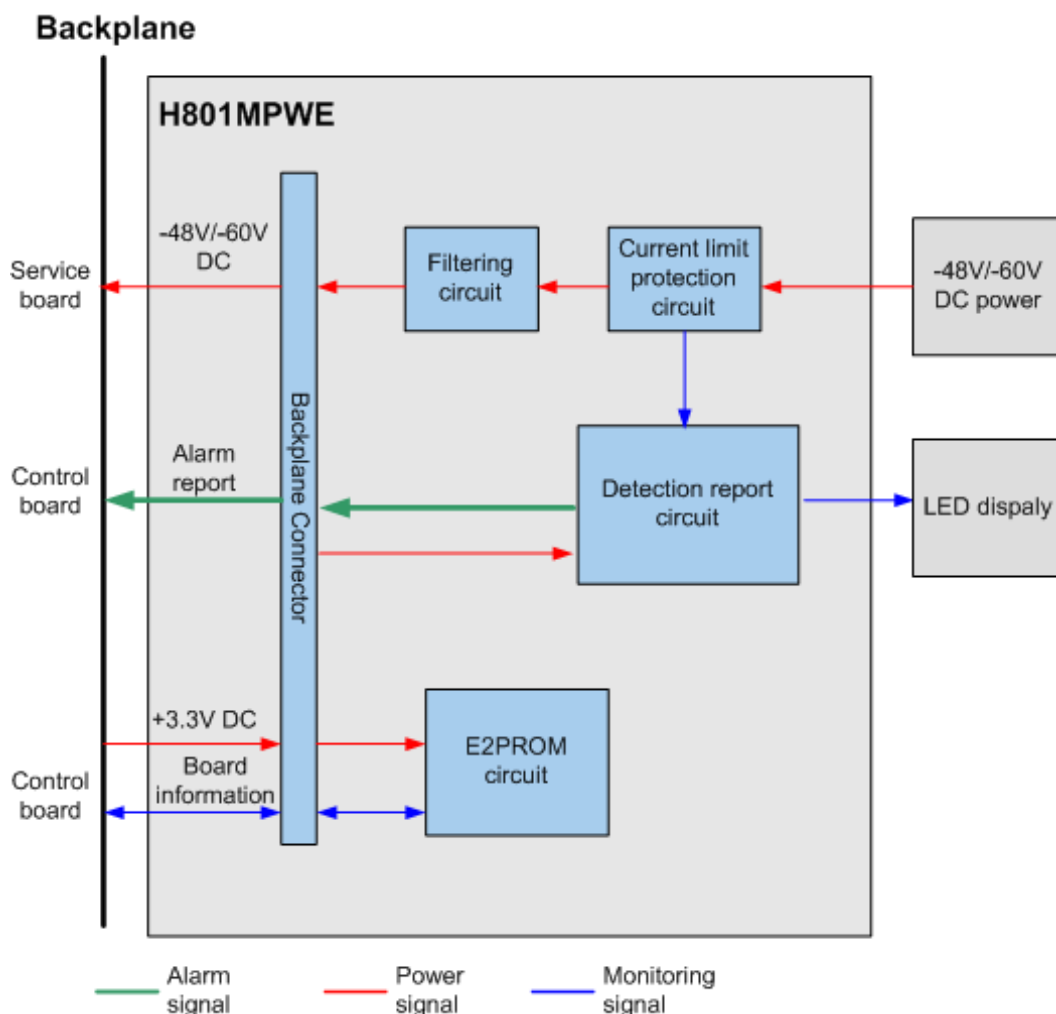
- One -48 V or -60 V DC power inputs (input voltage range: -38.4 V to -72 V)
- Filtering and current-limiting for the power input port
- Detection of power supply availability, and power supply faults
- Reporting of the protection alarm
- Indication of power status
- Backup for the other board

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

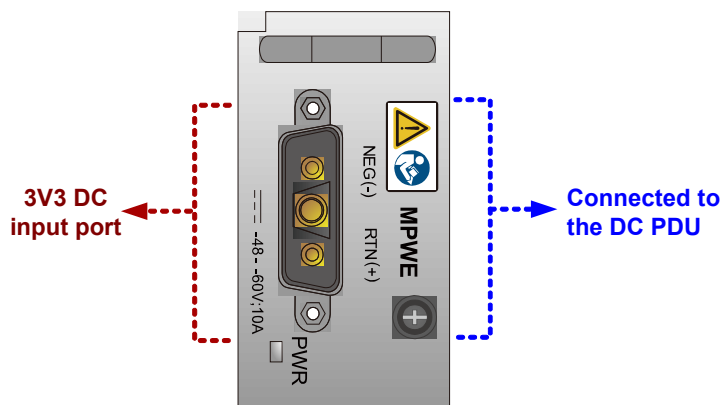
Figure 3-49 Working principle of the H801MPWE board



The basic working principle of the H801MPWE board is as follows:

- The H801MPWE board leads in one -48 V or -60 V power input through one 3V3 power connector, and transfers the power to the current limit protection circuit, then to the filter circuit, and finally to the backplane, supplying power to the subrack and other boards.
- The detection and reporting circuit checks the protection fuse for any faults, and reports the detection signals to the control board. The control board indicates these detection signals through indicators.
- The detection and reporting circuit checks for availability of power supply.
- The E2PROM circuit stores the board manufacture information.
- The H801MPWE board leads in the 3.3 V power from the backplane to power certain internal chips of the board.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
PWR0	The power board indicator	Green	On	The power board works properly
		-	Off	The power board is faulty

## 3.12 SPU Board

SPU is a service processing board.

### 3.12.1 Comparison Between SPU Service Processing Boards

For the functions and specifications supported by the H801SPUB board, see "[H801SPUB-MPLS service processing unit board](#)". The following table lists the functions and specifications supported by other SPU service processing boards.

In the following table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-30** Functions and specifications of SPU service processing boards

Function/ Specification	H801SPUA	H801SPUC	H801SPUF
Application scenario	Used for multi-RSP access in the Open Access scenario and serves as an upstream interface board at the point of interconnection (POI).	Used for multi-RSP access in the Open Access scenario and serves as an upstream interface board at the point of interconnection (POI).	Supports both Layer 2 and Layer 3 forwarding modes. You can run the <b>router mode</b> command to configure the Layer 3 forwarding mode of the system. <ul style="list-style-type: none"> <li>When the basic Layer 3 forwarding mode is used, the H801SPUF board works in Layer 2 forwarding mode. The control board is used as a Layer 3 forwarding board. The H801SPUF board supports 10 GE upstream transmission, 1588v2, and Y.1731.</li> <li>When the enhanced Layer 3 forwarding mode is used, the H801SPUF board works in Layer 3 forwarding mode. The H801SPUF board serves as a Layer 3 forwarding board, and it is used to expand the specifications of the ARP/ND entries and routing entries and to enhance Layer 3 forwarding capability.</li> </ul>
Interfaces and optical module	<ul style="list-style-type: none"> <li>Eight SFP interfaces (GE)</li> <li>Two SFP+ interfaces (10 GE)</li> </ul> Do not support the electrical module.	<ul style="list-style-type: none"> <li>20 SFP interfaces (GE); works with the CSFP optical module to provide 40 GE interfaces</li> <li>Four SFP+ interfaces (10 GE)</li> </ul>	Eight SFP interfaces (GE) or SFP+ interfaces (10 GE) <p>The board port rate supports the preceding three working modes. When switching a mode, modify configurations first. Run the <b>interface eth frameid/slotid</b> command to enter the ETH mode and then run the <b>board speed-mode speed-mode</b> command to set the port rate mode.</p> <ul style="list-style-type: none"> <li>If <i>speed-mode</i> is 0, the working rates of ports 0 - 7 are 1 Gbit/s.</li> <li>If <i>speed-mode</i> is 1, the working rates of ports 0 - 7 are 10 Gbit/s.</li> <li>If <i>speed-mode</i> is 2, the working rates of ports 0 - 3 are 1 Gbit/s and working rates of ports 4 - 7 are 10 Gbit/s.</li> </ul>



Function/ Specification	H801SPUA	H801SPUC	H801SPUF
Switching capability	20 Gbit/s	40 Gbit/s	<ul style="list-style-type: none"> <li>● When serving as a Layer 2 forwarding board, the H801SPUF board supports 40Gbit/s Layer 2 switching capability.</li> <li>● When serving as a Layer 3 forwarding board, the H801SPUF board supports bidirectional 40Gbit/s Layer 3 switching capability.</li> </ul>
MPLS	No	No	<p>Working with the control board, the SPUF board supports MPLS.</p> <p>When services are sent from the control board to SPUF and then back to the control board for upstream transmission through the control board or GUI:</p> <ul style="list-style-type: none"> <li>● When SCUH works in active/standby mode, the SPUF switching capacity is 10 Gbit/s; When SCUH works in load sharing mode, the SPUF switching capacity is 20 Gbit/s.</li> <li>● When SCUN or SCUK works in active/standby mode, the SPUF switching capacity is 5 Gbit/s; When SCUN or SCUK works in load sharing mode, the SPUF switching capacity is 10 Gbit/s.</li> </ul> <p>When services are sent from the control board to SPUF and then directly for upstream transmission:</p> <ul style="list-style-type: none"> <li>● When SCUH works in active/standby mode, the SPUF switching capacity is 20 Gbit/s; When SCUH works in load sharing mode, the SPUF switching capacity is 40 Gbit/s.</li> <li>● When SCUN or SCUK works in active/standby mode, the SPUF switching capacity is 10 Gbit/s; When SCUN or SCUK works in load sharing mode, SPUF the switching capacity is 20 Gbit/s.</li> </ul>
VLAN forwarding mode	<ul style="list-style-type: none"> <li>● VLAN + MAC</li> <li>● S + C</li> </ul>	<ul style="list-style-type: none"> <li>● VLAN + MAC</li> <li>● S + C</li> </ul>	VLAN + MAC

Function/Specification	H801SPUA	H801SPUC	H801SPUF
Ethernet upstream transmission and cascading	<p>Supports upstream transmission and cascading. The network role can only be configured based on board.</p> <p>You need to run the <b>service-port</b> command to create an Ethernet service flow to add the upstream or cascading port into a VLAN. The <b>port vlan</b> command is not supported in the H801SPUA board.</p> <p>If multiple upstream ports are added into a protection group, these ports must be added into an aggregation group. In this way, you only need to create a service flow to add the master port of the protection group into the VLAN so that all the member ports of the protection group will be added into the VLAN.</p>	<p>Supports upstream transmission and cascading. The network role can only be configured based on board.</p> <p>You need to run the <b>service-port</b> command to create an Ethernet service flow to add the upstream or cascading port into a VLAN. The <b>port vlan</b> command is not supported in the H801SPUC board.</p> <p>If multiple upstream ports are added into a protection group, these ports must be added into an aggregation group. In this way, you only need to create a service flow to add the master port of the protection group into the VLAN so that all the member ports of the protection group will be added into the VLAN.</p>	<p>Supports upstream transmission and cascading. The network role can only be configured based on board.</p> <ul style="list-style-type: none"> <li>● The Layer 3 forwarding mode supports only the upstream role.</li> <li>● The Layer 2 forwarding mode supports both the upstream and cascade roles.</li> </ul> <p>You need to run the <b>port vlan</b> command to add the upstream or cascading port into the VLAN.</p>
Ethernet link aggregation	Support intra-board link aggregation and inter-board link aggregation	Support intra-board link aggregation and inter-board link aggregation	Support intra-board link aggregation and inter-board link aggregation
Packet capture	Identifying and capturing DHCP and PPPoE packets with 3 tags (V800R013C00 and later versions)	Identifying and capturing DHCP and PPPoE packets with 3 tags	Identifying and capturing DHCP and PPPoE packets with 3 tags

Function/ Specification	H801SPUA	H801SPUC	H801SPUF
Load sharing	Yes	Yes	Yes A maximum of 2 H801SPUF boards can be configured as Layer 3 forwarding boards and work in load-sharing mode.
Automatic power shutdown in case of a high temperature	Yes	Yes	Yes
Temperature query and high-temperature alarm	Yes	Yes	Yes
HQoS	Yes	Yes	No
IEEE1588 V2 time synchronization	No	No	Yes
1588 ACR	Yes	Yes	Yes
Synchronous Ethernet clock	Yes	Yes	Yes
Y.1731	No	Yes	Yes
TPID configuration based on port	Yes	Yes	No

Function/Specification	H801SPUA	H801SPUC	H801SPUF
Limitation	None	None	<p>Does not support the MSAN VoIP service.</p> <p>When the system works in enhanced Layer 3 forwarding mode:</p> <ul style="list-style-type: none"> <li>● The H801SPUF and H801SPUB boards cannot be configured concurrently.</li> <li>● Does not support BFD configurations. The BFD configurations will be lost after the basic Layer 3 forwarding mode is switched to the enhanced Layer 3 forwarding mode.</li> <li>● Cannot be deleted if it is specified as a Layer 3 forwarding board.</li> <li>● If the H801SPUF board working as a Layer 3 forwarding board is modified using CLI, the original and new H801SPUF boards need to be reset.</li> <li>● If the specified H801SPUF board is bound to another H801SPUF board, these two boards are used as Layer 3 forwarding boards. Each subrack supports a maximum of 2 H801SPUF boards working in Layer 3 forwarding mode and these two boards must be installed in the specified slots. Otherwise, the second SPUF board cannot be switched to the Layer 3 forwarding mode.</li> </ul>

### 3.12.2 H801SPUA Board Description

The H801SPUA board is a service processing board, it supports upstream transmission and cascading.

#### Functional Specifications

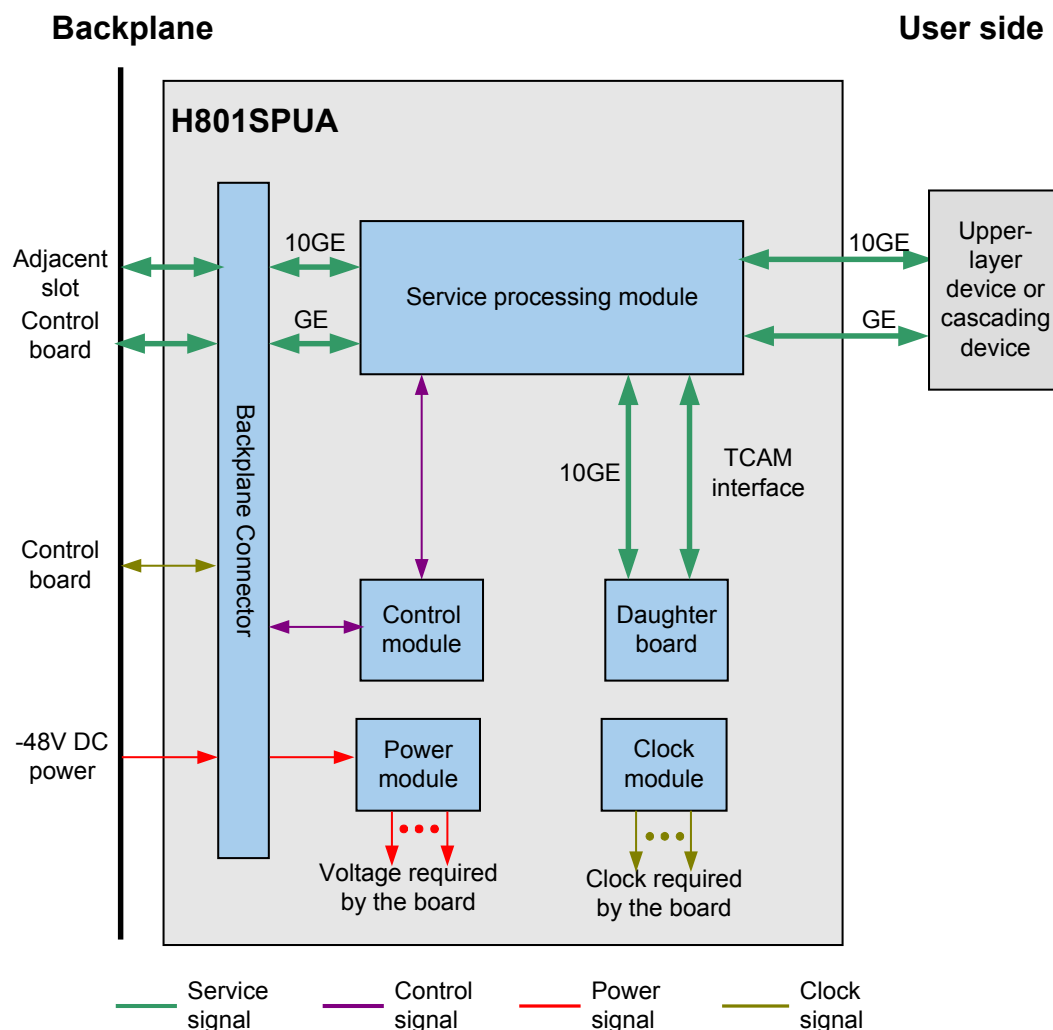
Please refer to "[SPU Service Process Boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

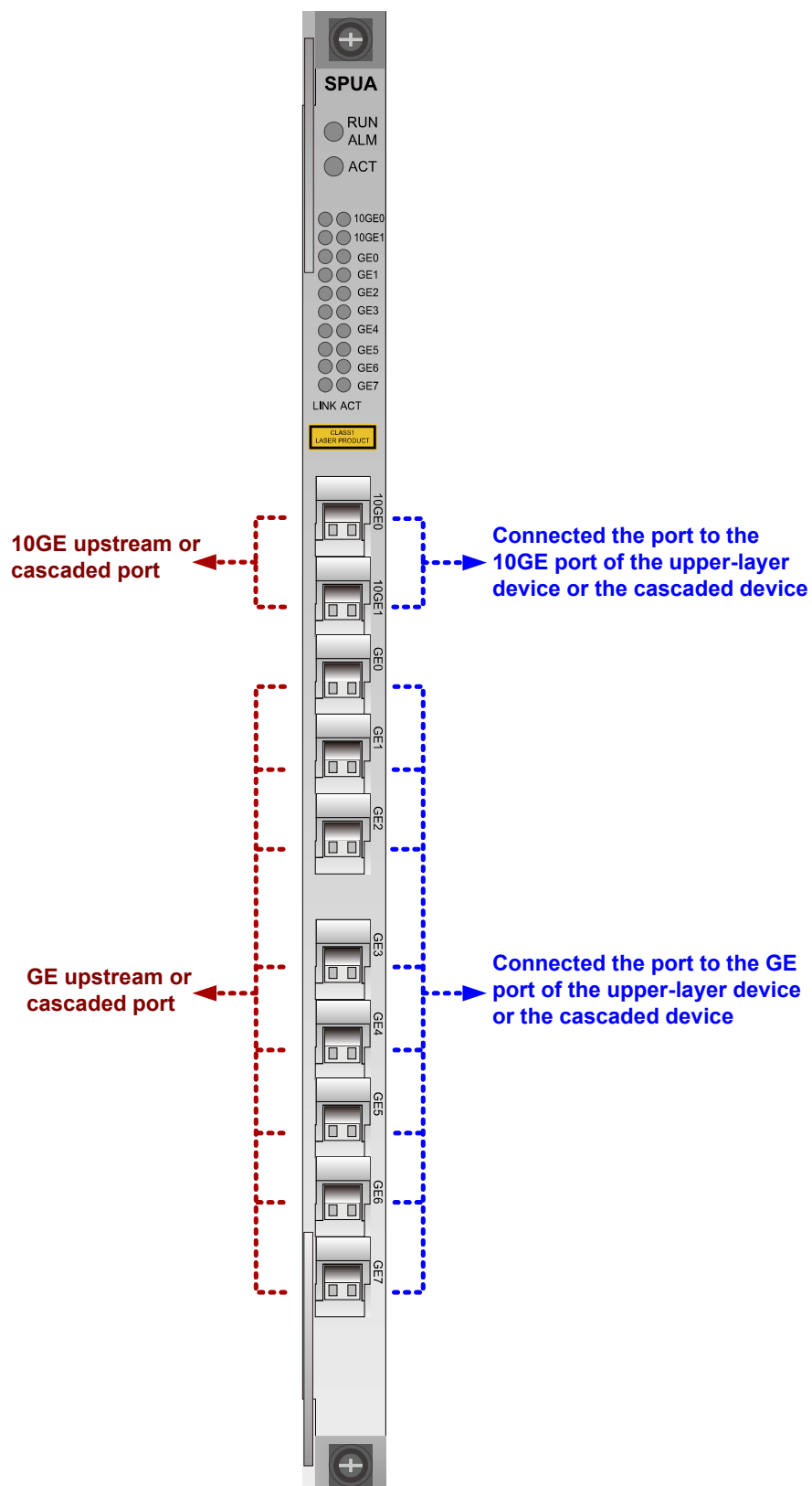
Figure 3-50 Working principle of the H801SPUA board



The basic working principle of the H801SPUA board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The service processing module processes the upstream services and data packets of the services.
- The daughter board module supports the route table query, multi-level traffic management, and hierarchical scheduling.
- The power module draws -48 V power from the backplane and converts the power into working power for each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

## Front Panel Port



For details about supported optical module, see [4.4 10GE Optical Module](#) and [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	This board is active
		Yellow	On	This board works in the load-balancing mode
		-	Off	This board is standby
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

### 3.12.3 H801SPUB Board Description

The H801SPUB board is a MPLS service processing unit board.

#### Functional Specifications

- 10 Gbit/s MPLS switching capability
  - Unidirectional 10 Gbit/s, bidirectional 5 Gbit/s when only one control board (SCUx) is working
  - Bidirectional 10 Gbit/s when two control boards (SCUx) are working in load sharing mode (V800R011C00 and later versions)
- Active/standby switchover of the control boards

- Board power-off in case of a high temperature
- Temperature query and high-temperature alarm

**NOTE**

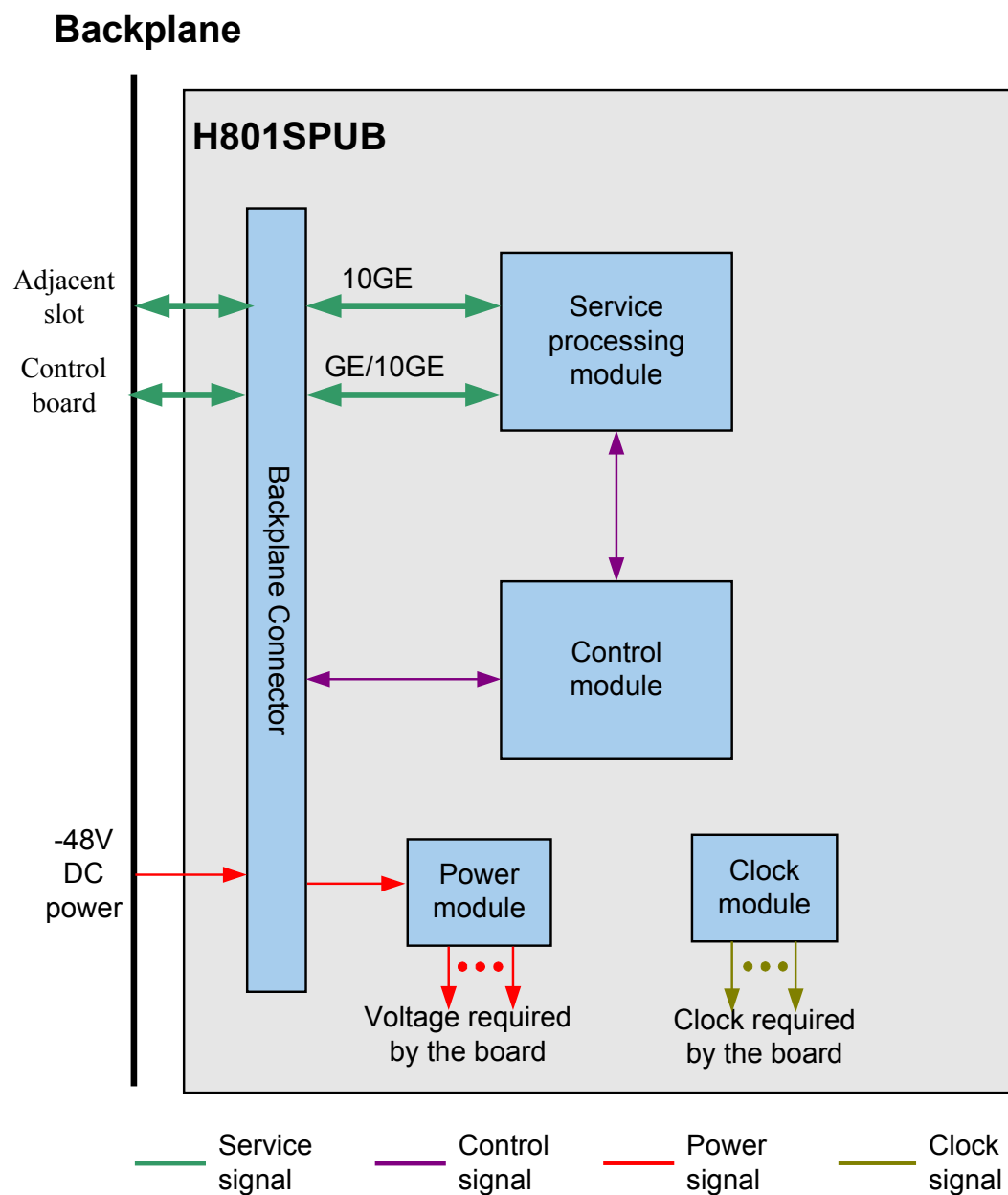
Only two SPUB boards can be installed in the system at the same time. And if two SPUB boards are in use, both of them must be located side by side in the shelf.

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-51 Working principle of the H801SPUB board





The basic working principle of the H801SPUB board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The service processing module processes the MPLS packets and the service data packets, and forwards the service data packets.
- The power module draws -48 V power from the backplane and converts the power into working power for each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
ACT	Active indicator	Green	On	This board is active
		Yellow	On	This board works in the load-balancing mode
		-	Off	This board is standby

### 3.12.4 H801SPUC Board Description

The H801SPUC board is a service processing board, and it implements extended functions of the OLT upstream interface. This board is mainly used in the Open Access scenario and is used as an upstream interface board.

#### Functional Specifications

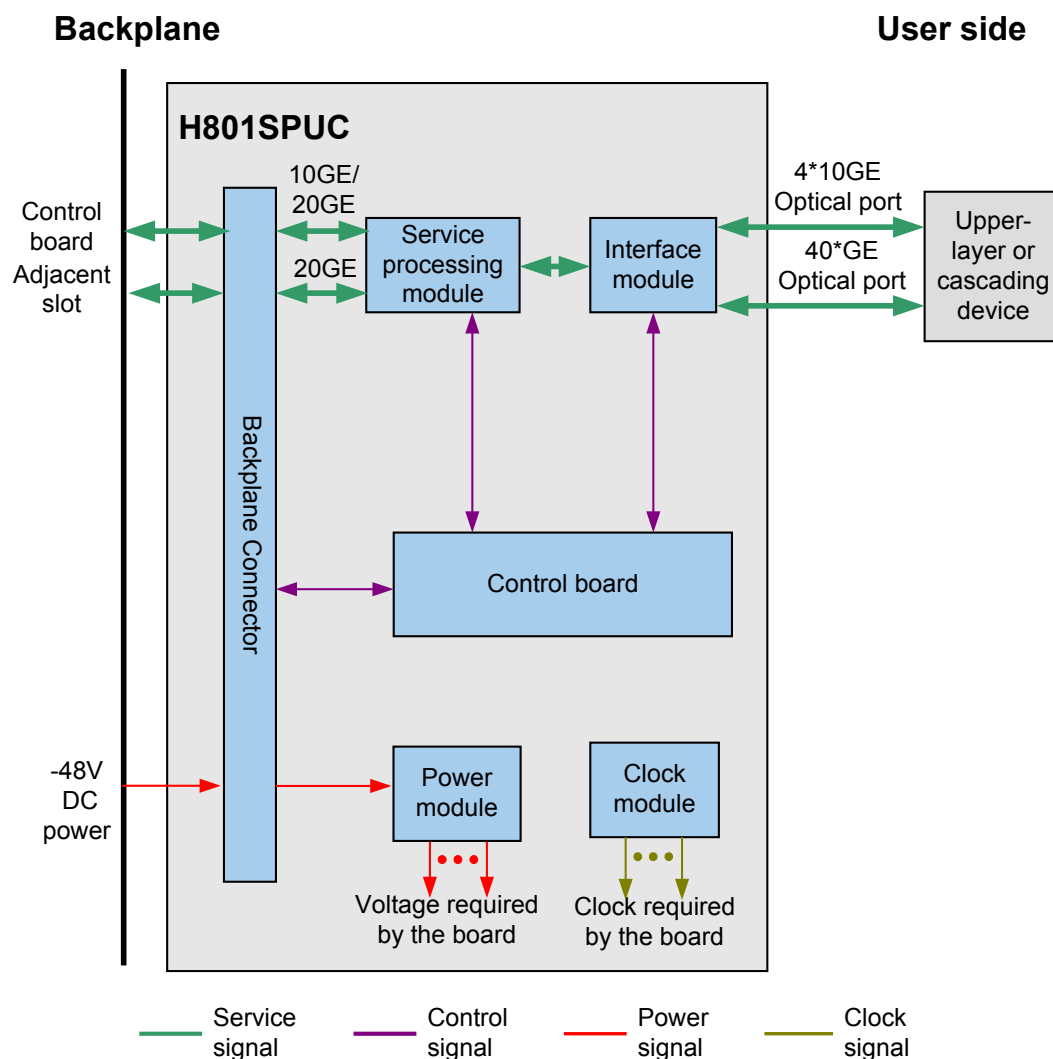
Please refer to "[SPU Service Process Boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

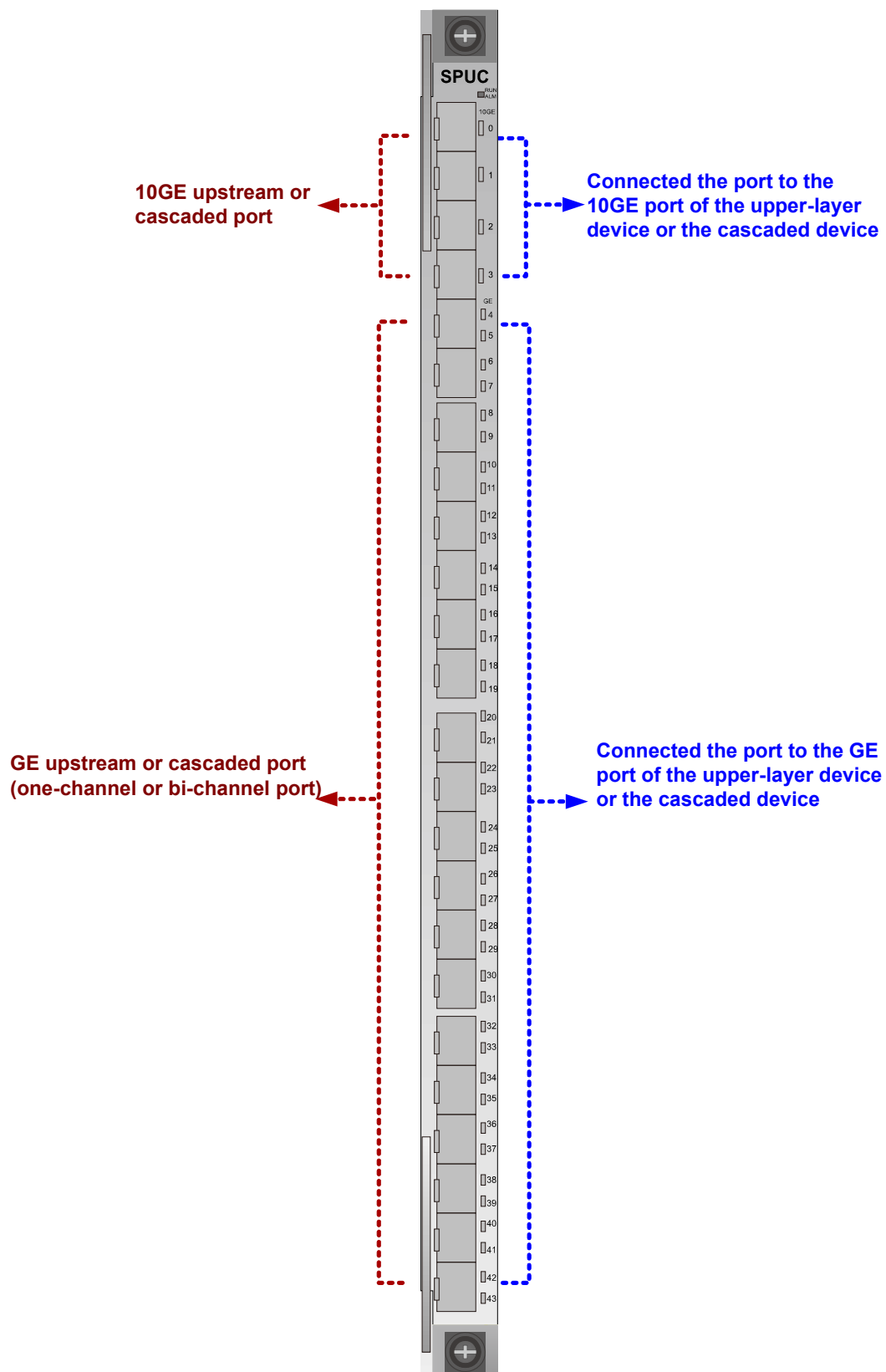
Figure 3-52 Working principle of the H801SPUC board



The basic working principle of the H801SPUC board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The interface module receives signals and then transmits the signals.
- The service processing module processes Ethernet packets, processes and forwards service data packets, and implements service flow management.
- The power module draws -48 V power from the backplane and converts the power into working power for each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

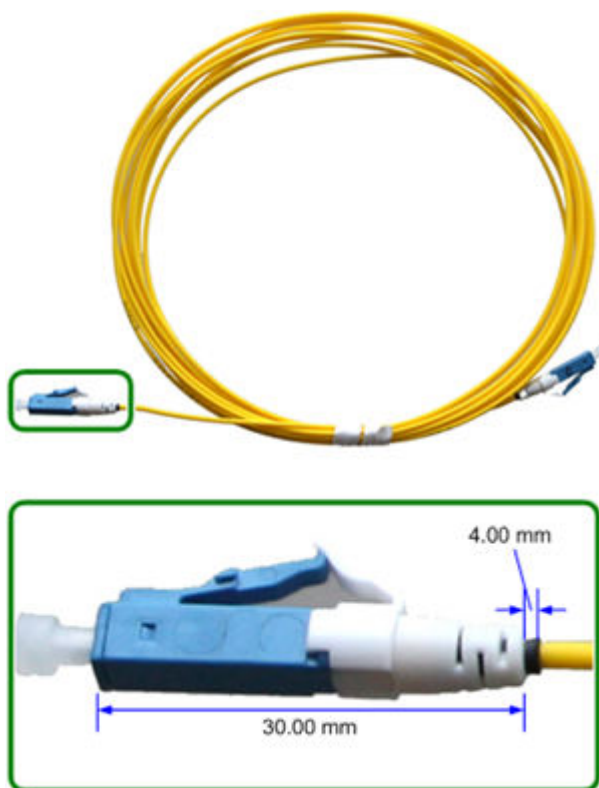
## Front Panel Port



For details about supported optical module, see [4.4 10GE Optical Module](#) and [4.3 GE Optical/Electrical Module](#).

## Cable

The LC optical connector used in H801SPUC is shorter than the average LC optical connector.



For details about supported optical module, see [4.4 10GE Optical Module](#) and [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty

Indicator	Name	Color	Status	Meaning
10GE(0-3),GE(4-43)	Link status indicator	Green	On	A connection is set up on the port
		Green	Blinking	Data is being transmitted on the port
		-	Off	No connection is set up on the port

### 3.12.5 H801SPUF Board Description

The H801SPUF board is a multifunctional service processing board, expanding ARP and ND entries and route entries and enhancing Layer 3 forwarding capabilities.

#### Functional Specifications

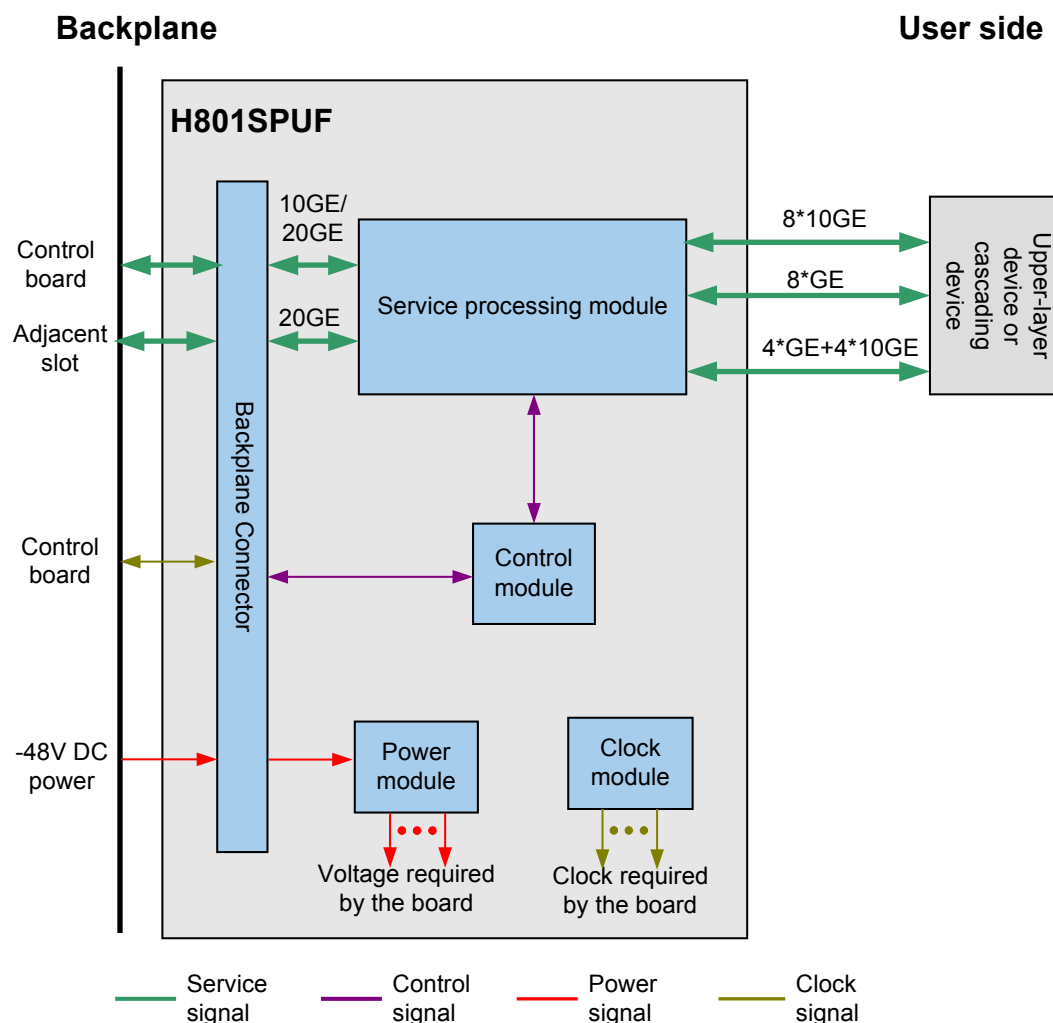
Please refer to "[SPU Service Process Boards Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-53 Working principle of the H801SPUF board

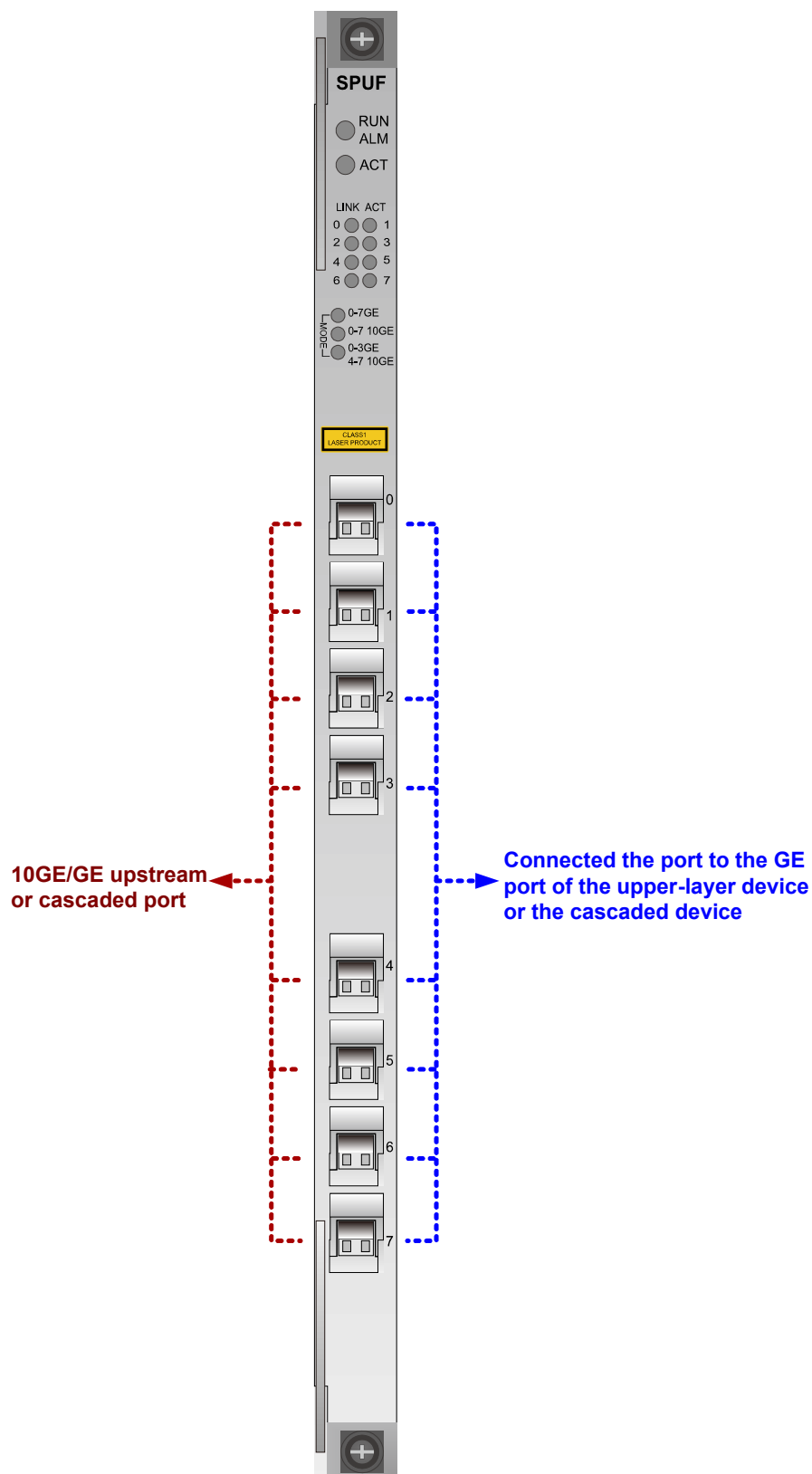


The basic working principle of the H801SPUF board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The service processing module processes the upstream services and data packets of the services.
- The power module draws -48 V power from the backplane and converts the power into working power for each functional module of the board.
- The clock module provides clock signals for each functional module of the board.



## Front Panel Port



For details about supported optical module, see [4.4 10GE Optical Module](#) and [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	The board generates a recoverable alarms, for example, a high-temperature alarm
		Red	On	The board is faulty
ACT	Active indicator	Green	On	This board is active
		Green	Blinking	This board works in the load-balancing mode
		-	Off	This board is standby
LINK/A CT	Optical port indicator	Green	On	A connection is set up on the port
		Green	Blinking	Data is being transmitted
		-	Off	No connection is set up on the port
MODE	Optical port mode indicator	Green	On	Port is working in the appropriate mode
		-	Off	Port is not working in the appropriate mode

## 3.13 Ethernet Service Access Board (ETH)

Ethernet service access boards provide Ethernet service cascading or upstream transmission, which does not support user access and user management.

### 3.13.1 Ethernet Service Access Boards Comparison

Ethernet service access boards include H801ETHA and H801ETHB.

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-31** Specifications of Ethernet service access boards

Specification	H801ETHA	H801ETHB
Number of interfaces	8	8
Optical module	SFP GE optical module	SFP GE optical module or electrical module
Ethernet cascading	Yes	Yes
Ethernet upstream transmission	No	Yes
Within-board self switching (the board serving as an upstream board to support interworking between upstream ports)	No	Yes
GE remote extended subrack cascading	No	Yes (supported in V800R01200 and later versions)
1588ACR	Yes	Yes
Intra-board aggregation	No	Yes
Inter-board aggregation	No	Yes
User access and management	No	No

### 3.13.2 H801ETHA Board Description

This topic covers the working principle, front panel, port, daughter board, and specifications of the H801ETHA board.

#### Functional Specifications

Please refer to "[Ethernet Service Access Boards Comparison](#)".

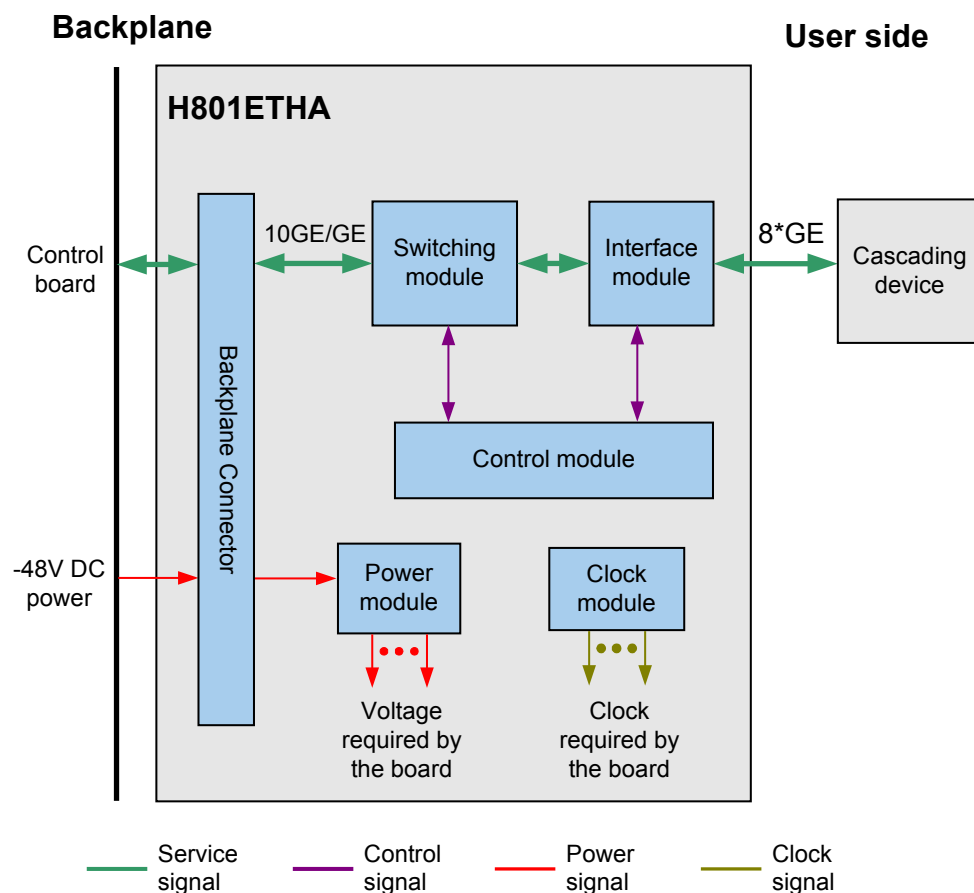
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

[Figure 3-54](#) illustrates the working principle of the H801ETHA board.

Figure 3-54 Working principle of the H801ETHA board



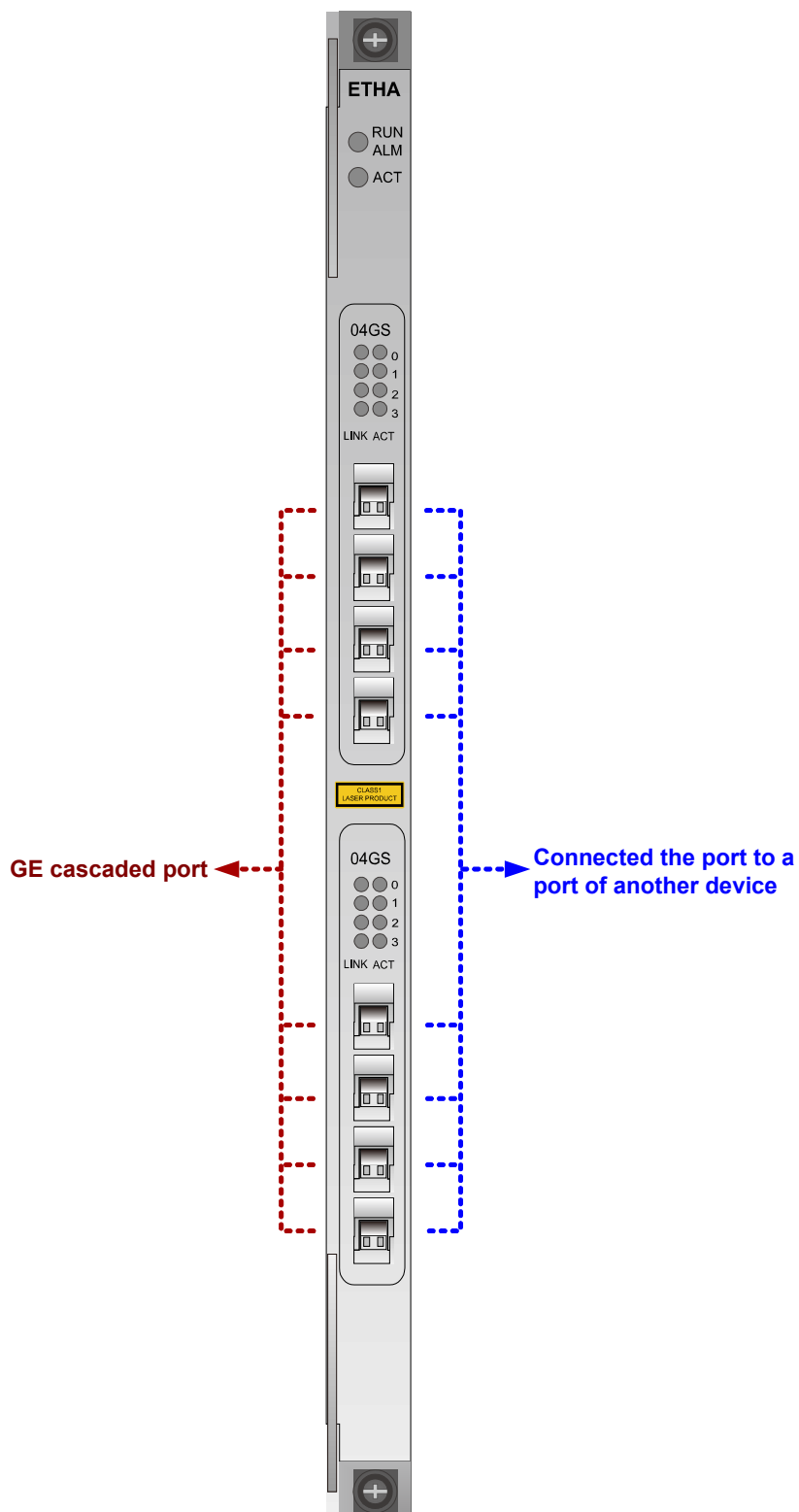
The basic working principle of the H801ETHA board is as follows:

- The control module loads board software, manages and controls board running, and reads information such as slot ID, version number, and board type.
- The interface module includes the daughter board connector and provides eight GE ports.
- The switching module completes line rate switching for Ethernet packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides working clock for functional modules on the board.

The service processing is as follows:

- In the downstream direction, the control board sends service data through the backplane connector to the switching module for line-rate switching of the Ethernet packets. The daughter board then implements service cascading.
- In the upstream direction, service data is sent to the switching module through the daughter board, and then to the control board through the backplane.

## Front Panel Port



For details about supported optical module, see [4.3 GE Optical/Electrical Module](#).

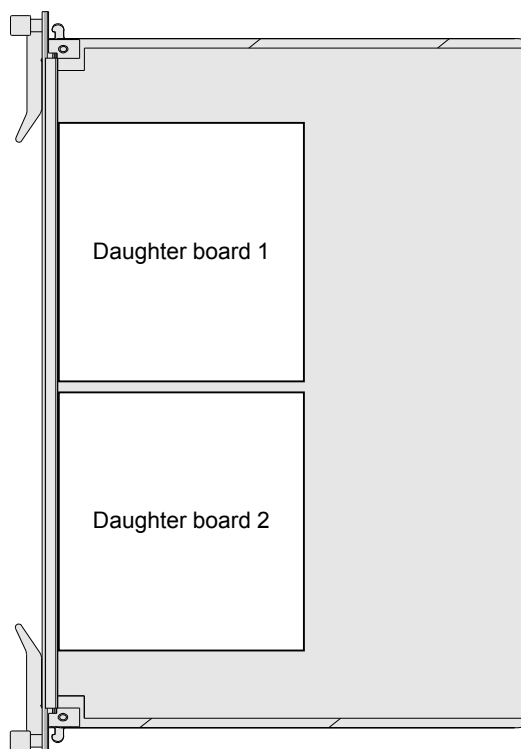
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
ACT	Active/ standby status indicator	Green	On	The ACT indicator has no significant indication until it is assigned
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## Daughter Board

The H801ETHA board provides two slots for daughter boards. [Figure 3-55](#) shows the positions of daughter boards on the H801ETHA board.

**Figure 3-55** Positions of daughter boards on the H801ETHA board



**Table 3-32** describes the daughter board supported by the H801ETHA board.

**Table 3-32** Daughter board supported by the H801ETHA board

Daughter Board	Port	Position
O4GS	Four GE optical ports	Position for daughter board 1 or position for daughter board 2

### 3.13.3 H801ETHB Board Description

This topic covers the working principle, application, front panel, port, and specifications of the H801ETHB board.

#### Functional Specifications

Please refer to "[Ethernet Service Access Boards Comparison](#)".

#### Technical Specifications

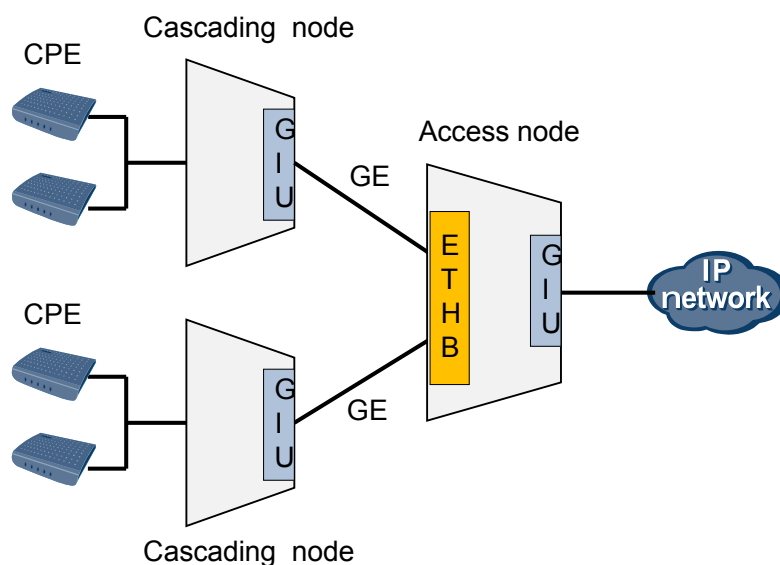
Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Application

The H801ETHB board supports Ethernet cascading, Ethernet upstream transmission, and aggregation management for remote GE extended subracks.

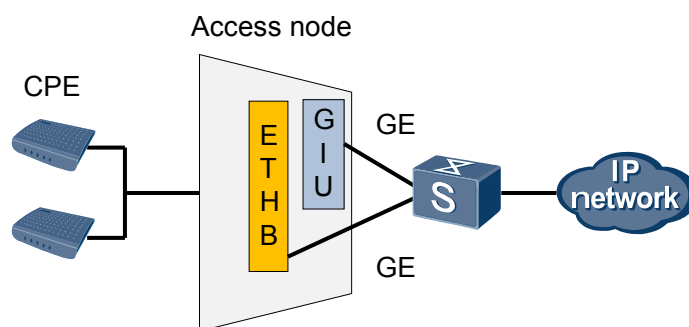
- The H801ETHB board is mainly used for Ethernet cascading, which saves the upstream fiber resources of access nodes.

**Figure 3-56** H801ETHB used for Ethernet cascading



- When the upstream ports on the control board and GIU board are insufficient, the H801ETHB board can be used for Ethernet upstream transmission.

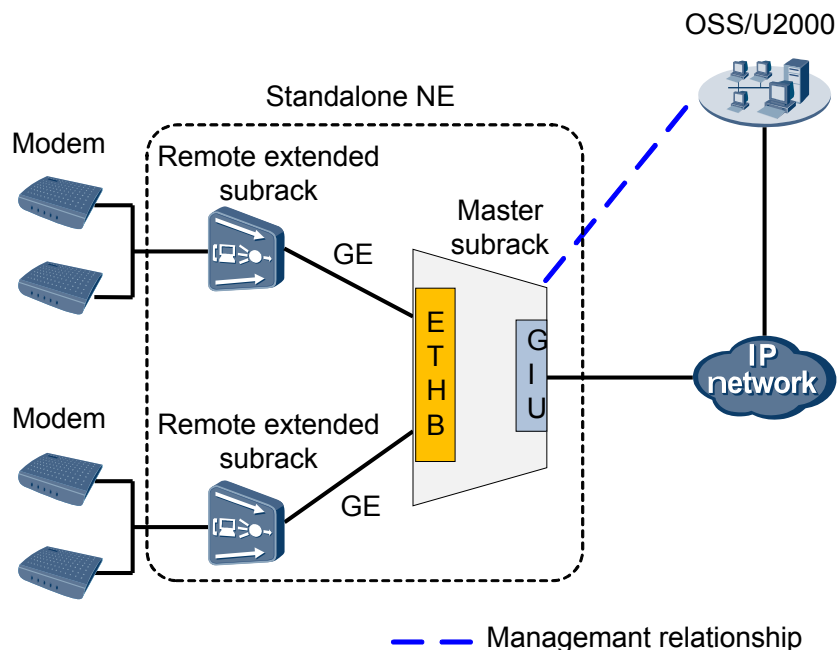
**Figure 3-57** H801ETHB used for Ethernet upstream transmission



- The H801ETHB board can be cascaded to remote GE extended subracks (for example, MA5623AR), achieving aggregation management for remote GE extended subracks.



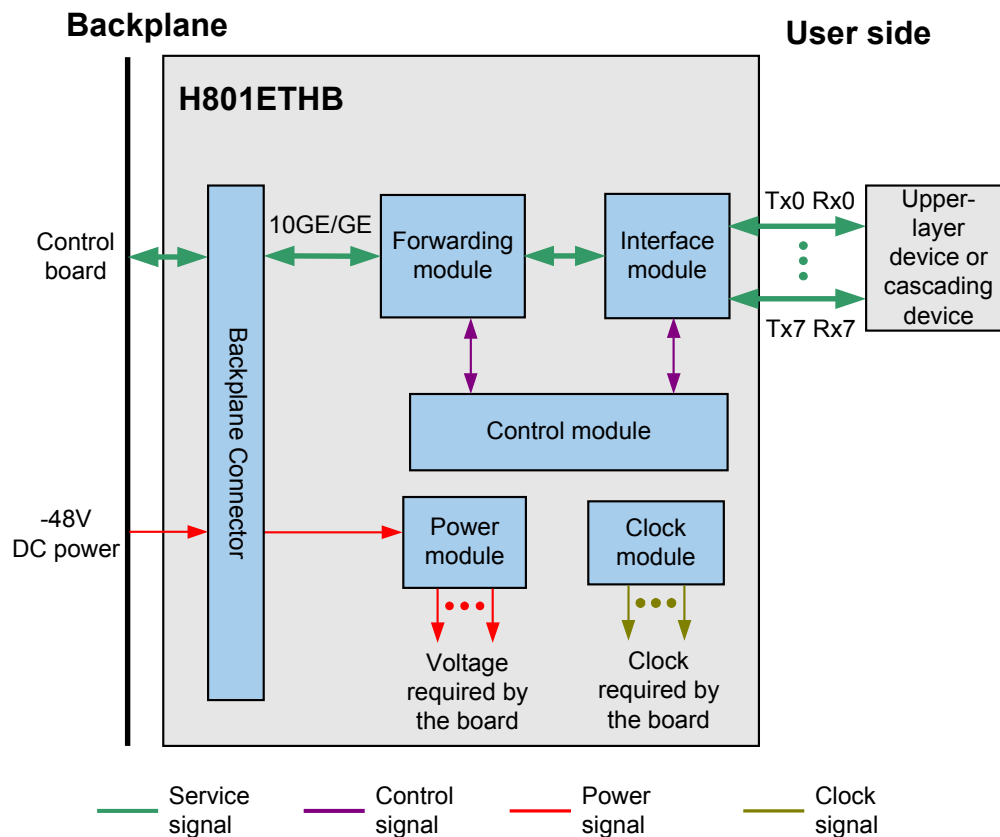
**Figure 3-58** H801ETHB managing remote GE extended subracks



## Working Principle

**Figure 3-59** illustrates the working principle of the H801ETHB board.

**Figure 3-59** Working principle of the H801ETHB board



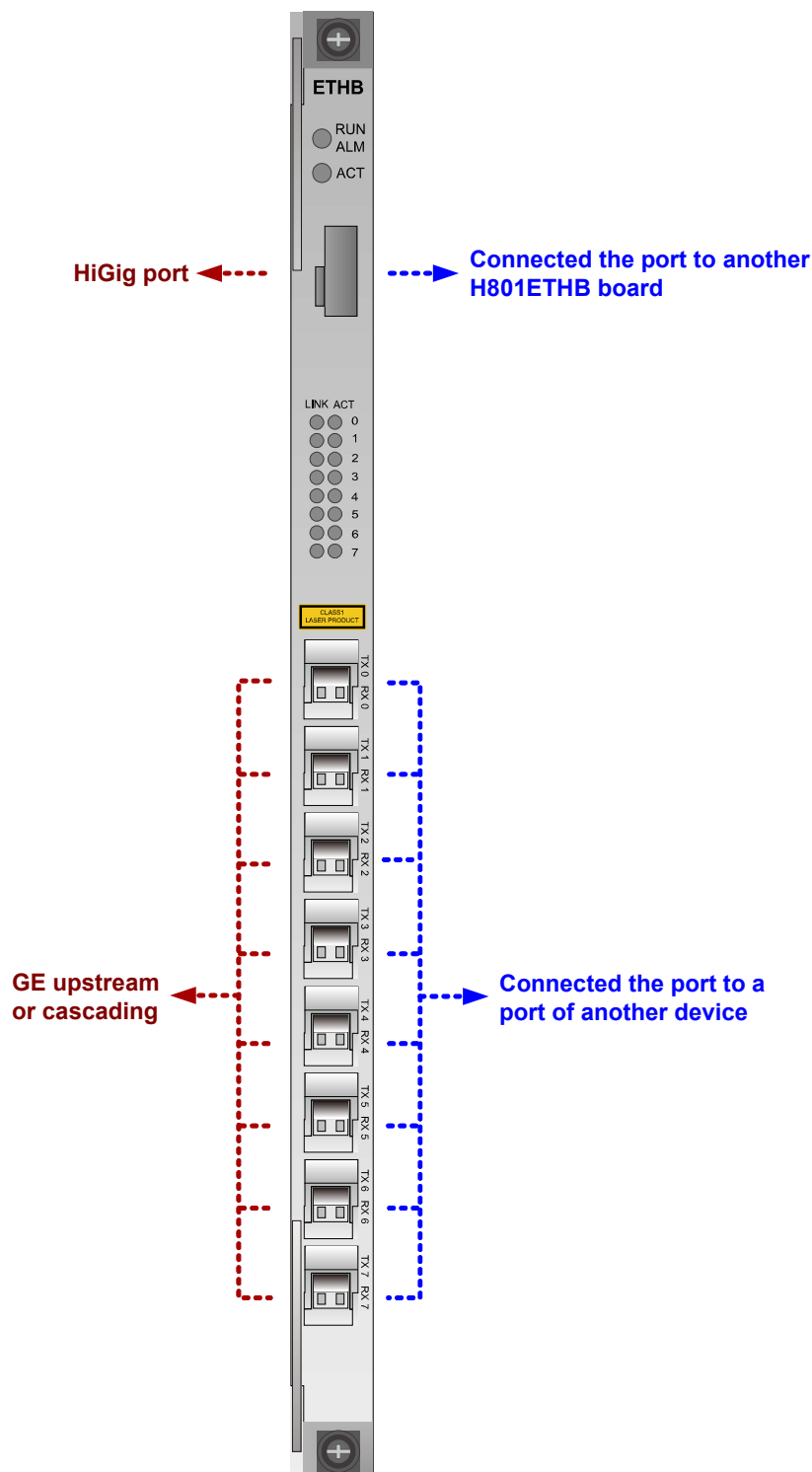
The basic working principle of the H801ETHB board is as follows:

- The control module loads the board software, manages and controls the running of the board, and reads the slot ID, version and type of the board.
- The interface module provides eight GE ports.
- The switching module implements the load sharing and the redundancy protection through the inter-board aggregation.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, service data is transmitted from the control board to the switching module through the backplane connector. The switching module performs the line rate switching of the Ethernet packets and supports service cascading and upstream transmission.
- In the downstream direction, service data is transmitted to the switching module through the daughter board and then to the control board through the backplane.

## Front Panel Port



For details about supported optical module or electrical module, see [4.3 GE Optical/Electrical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
ACT	Active/ standby status indicator	Green	On	The ACT indicator has no significant indication until it is assigned
LINK	Link status indicator	Green	On	A connection is set up on the port
		-	Off	No connection is set up on the port
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## 3.14 TDM Service Processing Board

TDM service processing boards include H801TOPA, H801TOPB and H801CSPA.

### 3.14.1 H801TOPA Board Description

The H801TOPA is a TDM traffic over PSN board. It uses the daughter board to transmit services upstream.

#### Functional Specifications

The H801TOPA board supports the following functions:

- Native TDM function (when the NH1A/O2CE daughter board is configured)
- CESoP function (when the EH1A/CSSA daughter board is configured)
- TDM signal upstream transmission through the 16 channels of E1 port (when the NH1A/EH1A daughter board is configured)

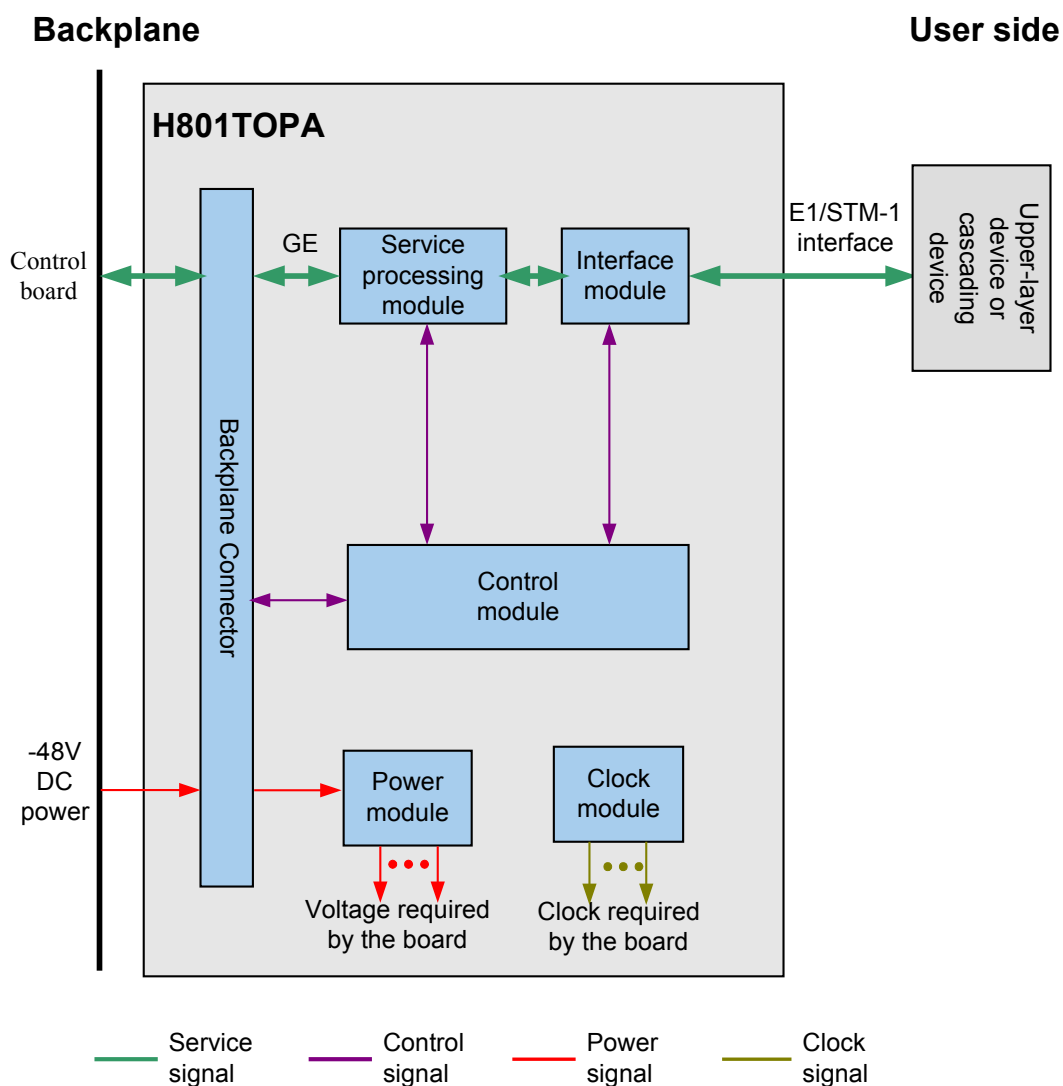
- TDM signal upstream transmission through the 2 channels of STM-1 optical port (when the O2CE/CSSA daughter board is configured, )

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-60 Working principle of the H801TOPA board



The basic working principle of the H801TOPA board is as follows:

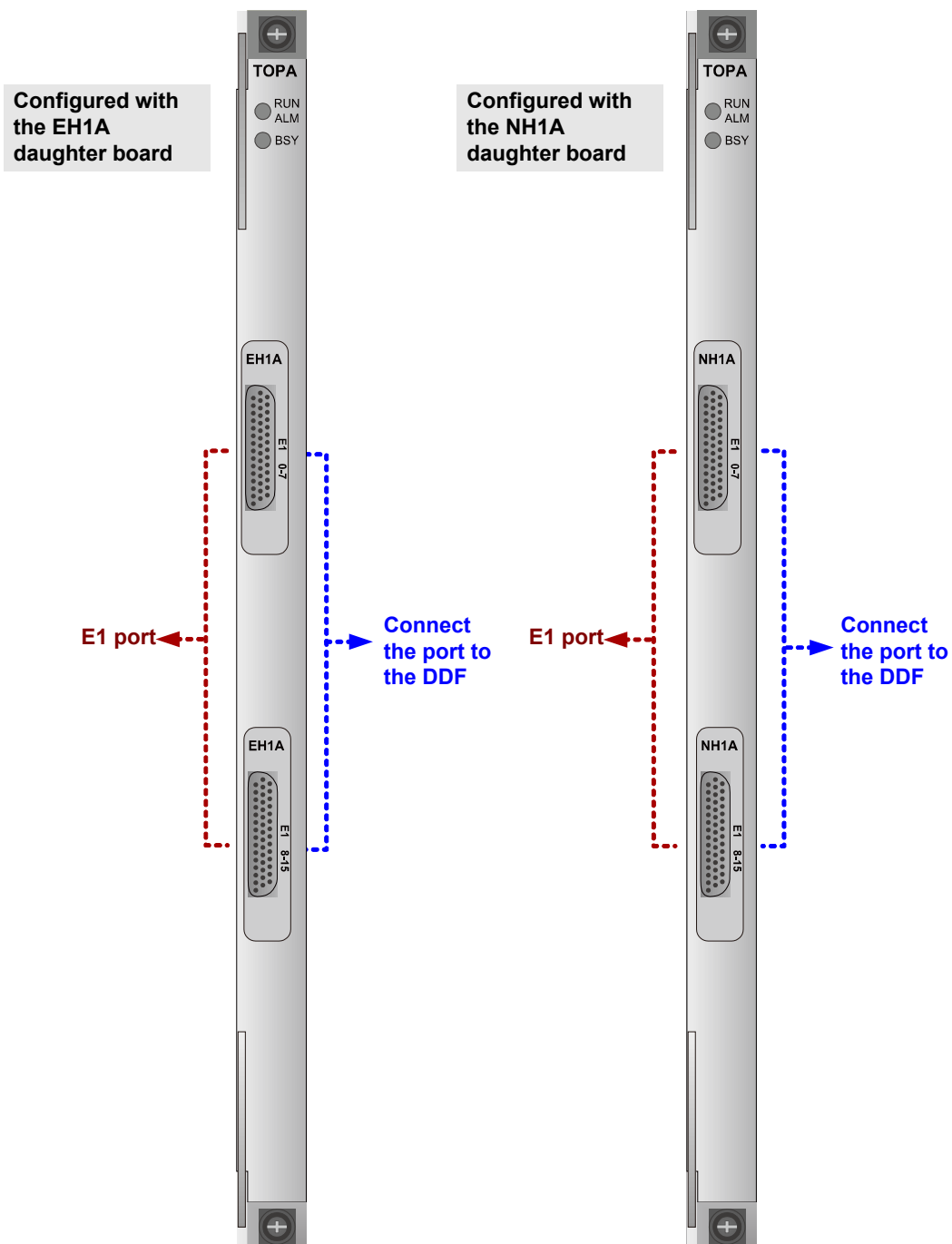
- The control module loads the board software, controls, and manages the entire board.
- The service processing module allocates the GE bus of the backplane and processes signals.
- The interface module converts signals.

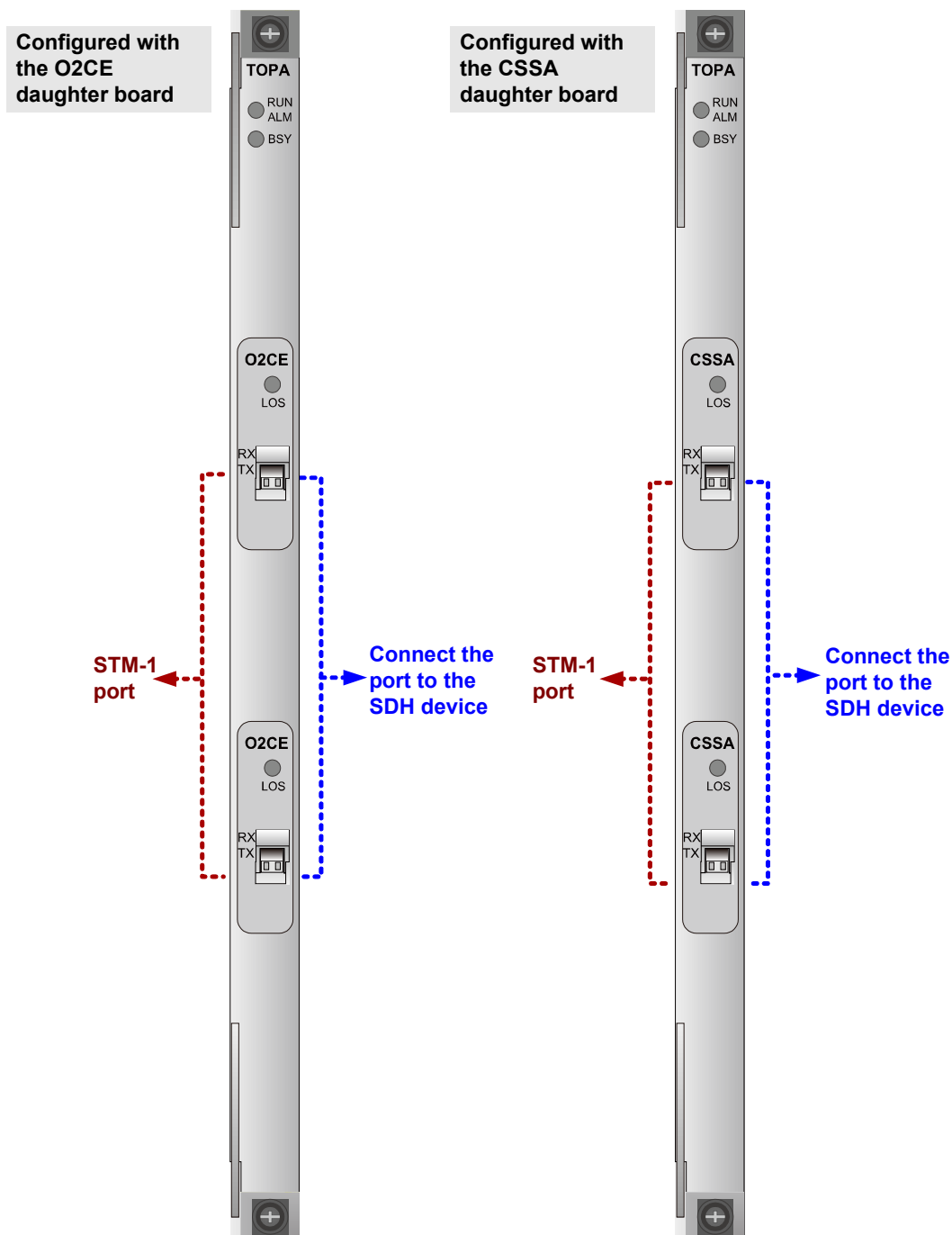
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, after passing the interface module, the GE signals from the backplane are converted into the TDM frames. Then, the TDM frames are transmitted upstream.
- In the downstream direction, the interface module receives the signals from the TDM line, and converts and encapsulates the signals into GE packets. After being transmitted to the backplane bus through the service processing module, the GE packets are transmitted to the control board. Then, the control board forwards the GE packets to the related service boards.

## Front Panel Port





For details about supported optical module, see [4.7 STM-1 Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the phase of communication with the control board during its startup



Indicator	Name	Color	Status	Meaning
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the APP start phase during the board startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On (supported in V800R012C00 and earlier versions)	At least one service port is activated
		Green	Blinking (supported in V800R013C00 and earlier versions)	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments of the NH1A Daughter Board

**Table 3-33** describes the pin assignments of the E1 port on the front panel of the H801TOPA board.

**Table 3-33** Pin assignments of the E1 port

Pin	Signal	Port	Pin	Signal
30	TT0		8	TR7
15	TR0		37	RR1
44	PGND		22	RT1
29	TT1		7	TT7
14	TR1		36	RR2
43	PGND		21	RT2
28	TT2		6	PGND
13	TR2		35	RR3
42	PGND		20	RT3
27	TT3		5	PGND
12	TR3		34	RR4
41	PGND		19	RT4
26	TT4		4	PGND
11	TR4		33	RR5
40	PGND		18	RT5
25	TT5		3	PGND
10	TR5		32	RR6
39	PGND		17	RT6
24	TT6		2	PGND
9	TR6		31	RR7
38	RR0		16	RT7
23	RT0		1	PGND

**NOTE**

- In **Table 3-33**, the first letter "R" or "T" in each cell of the signal column refers to "Receive" or "Transmit" of E1 signals.
- In **Table 3-33**, the second letter "R" or "T" in each cell of the signal column refers to "ring" or "tip" of the 75-ohm E1 signal cable, or refers to sign + or – of the 120-ohm E1 signal cable.

## Jumper Settings for the NH1A Daughter Board

Whether the cable is grounded on the NH1A daughter board can be set through the jumpers. The NH1A daughter board has four sets of jumpers: J7, J8, J9, and J10. The four sets of

jumpers should be set to function at the same time. **Table 3-34** describes the settings of J7, J8, J9, and J10.

**Table 3-34** Jumper settings for the NH1A daughter board

Status	Description
ON (jumper caps are installed)	The jumper caps should be installed (which means grounded) if the transmit and receive resistance is 75 ohms.
OFF (jumper caps are removed)	The jumper caps should be removed (which means ungrounded) if the transmit and receive resistance is 120 ohms.

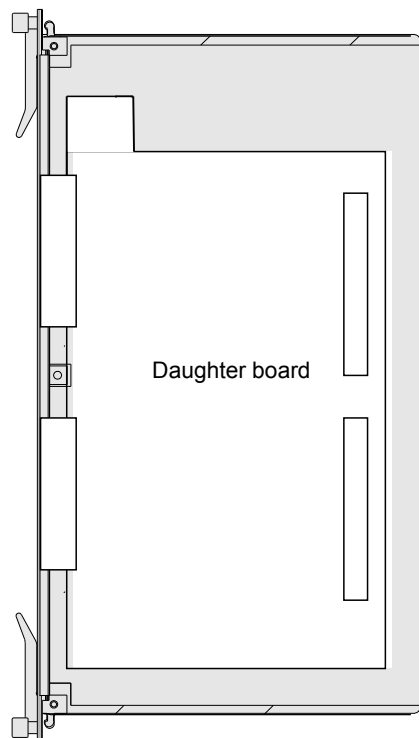
**NOTE**

Generally, the coaxial cables connected to the E1 port are unbalanced cables with the resistance of 75 ohms; the twisted pairs connected to the E1 port are balanced cables with the resistance of 120 ohms. The interference source can affect the transmission of analog signals to a great extent. Therefore, the connection mode and grounding mode must be correct and reliable; otherwise, bit error or error message about signal loss may occur.

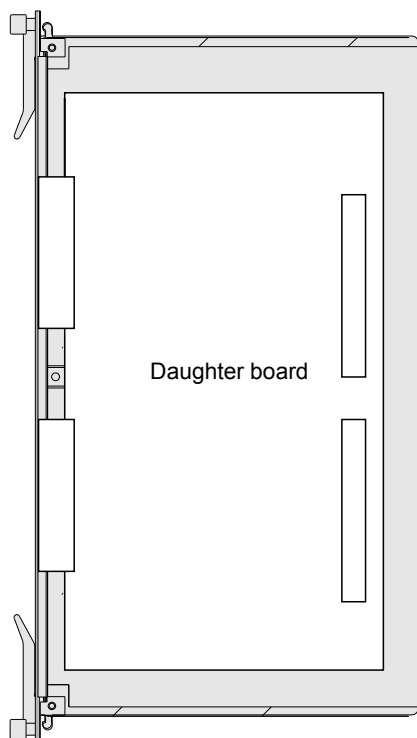
## Daughter Board

To provide the related functions, the H801TOPA board must be configured with a matching daughter board. **Figure 3-61** shows the position of the daughter board (NH1A and EH1A) on the H801TOPA board. **Figure 3-62** shows the position of the daughter board (O2CE and CSSA) on the H801TOPA board.

**Figure 3-61** Position of the daughter board (NH1A and EH1A) on the H801TOPA board



**Figure 3-62** Position of the daughter board (O2CE and CSSA) on the H801TOPA board



**Table 3-35** describes the daughter board supported by the H801TOPA board.

**Table 3-35** Daughter board supported by the H801TOPA board

Daughter board	Function
NH1A	<ul style="list-style-type: none"> <li>● Transmits TDM signals upstream through the E1 port.</li> <li>● Implements the Native TDM function</li> </ul>
EH1A	<ul style="list-style-type: none"> <li>● Transmits TDM signals upstream through the E1 port.</li> <li>● Implements the CESoP function.</li> </ul>
O2CE	<ul style="list-style-type: none"> <li>● Transmits TDM signals upstream through the STM-1 port.</li> <li>● Implements the Native TDM function</li> </ul>
CSSA	<ul style="list-style-type: none"> <li>● Transmits TDM signals upstream through the STM-1 port.</li> <li>● Implements the CESoP function.</li> </ul>

## 3.14.2 H801TOPB Board Description

The H801TOPB is a TDM traffic over PSN board. It provides two STM-1 ports for transmitting TDM services to the upstream.

### Functional Specifications

The H801TOPB board supports the following functions:

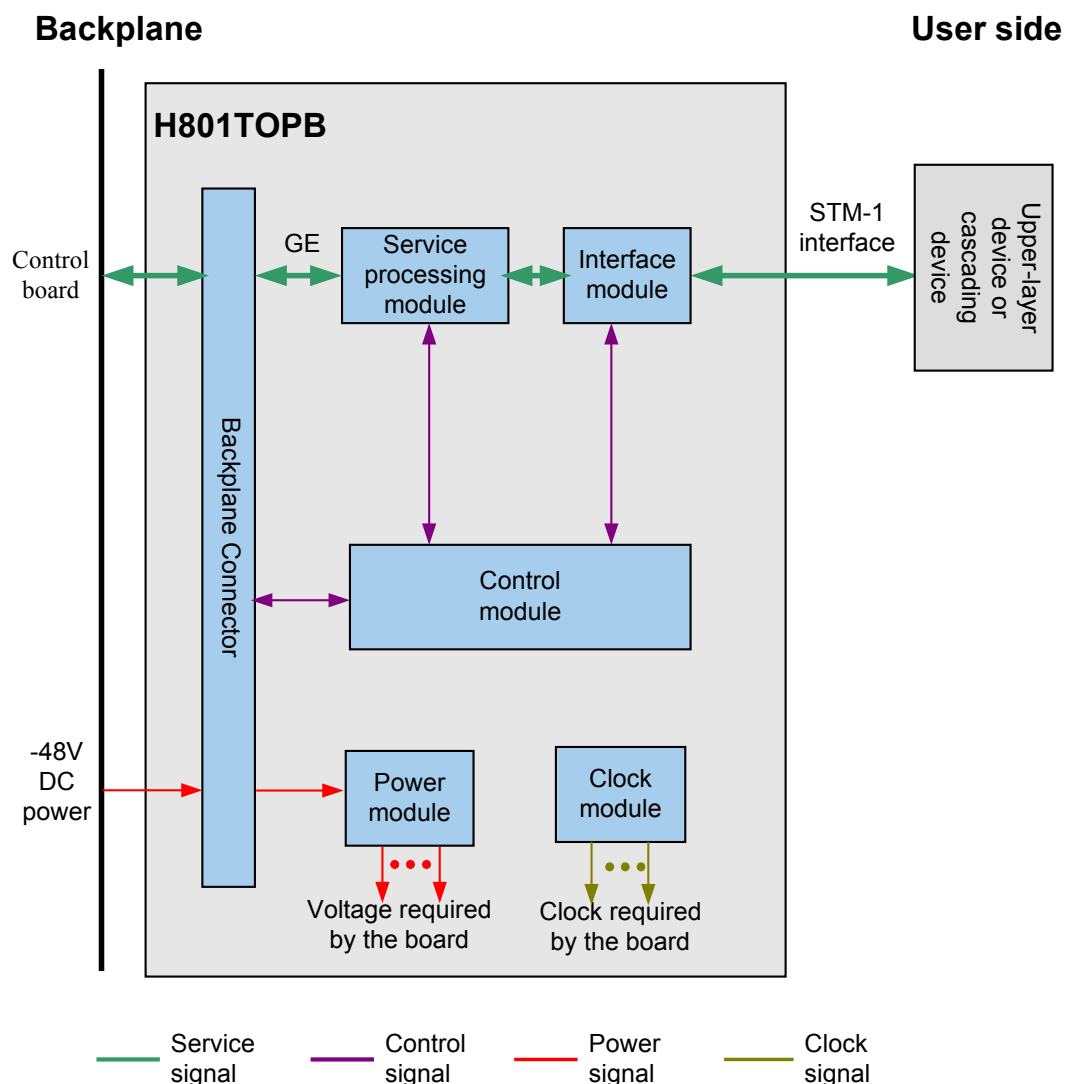
- Native TDM function
- CESoP function
- TDM signal upstream transmission through two STM-1 optical ports
- Intra-board and inter-board 1+1 port protection
- Automatic shutdown in times of high temperatures

### Technical Specifications

For details, see [Power Consumption and Maximum Frame Size of Boards](#).

## Working Principle

Figure 3-63 Working principle of the H801TOPB board



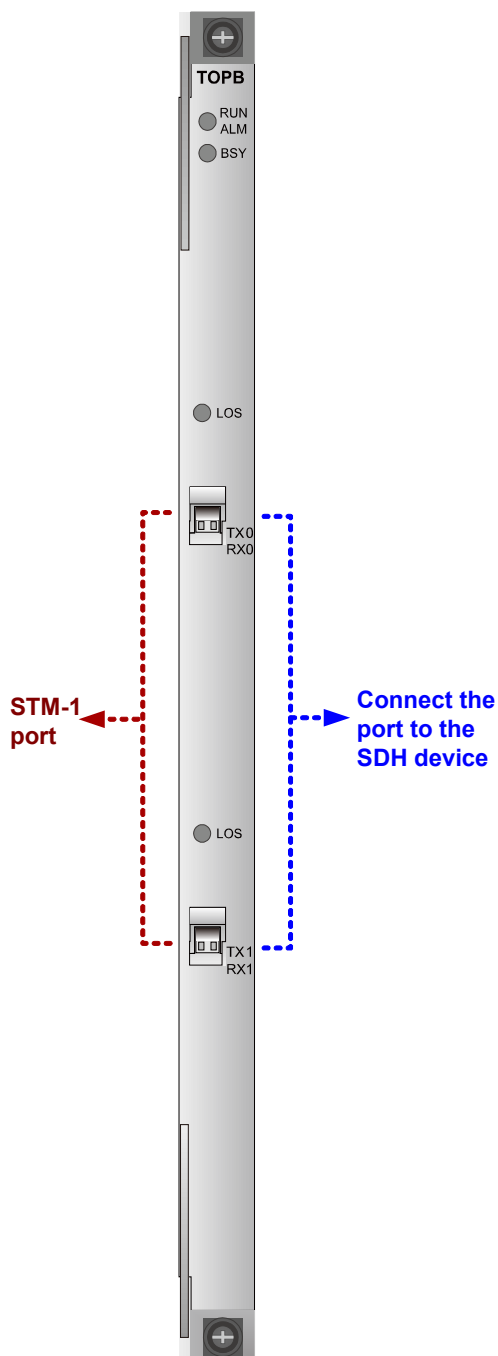
The basic working principles of the H801TOPB board are as follows:

- The control module loads the board software, and controls and manages the entire board.
- The service processing module allocates the GE bus of the backplane and processes signals.
- The interface module converts signals.
- The power module supplies power to other function modules of the board.
- The clock module provides the working clock signals for other function modules of the board.

The service processing procedure of the H801TOPB board is as follows:

- In the upstream direction, GE signals from the backplane travel through the interface module and are converted into the TDM frames. Then the TDM frames are transmitted upstream.
- In the downstream direction, the interface module receives signals from the TDM line and converts the signals into the GE packets. Then the service processing module processes the GE packets and forwards them to the backplane bus. The backplane bus transmits the GE packets to the control board and then the control board allocates the GE packets to respective service boards.

## Ports on the Front Panel



For details about supported optical module, see [4.7 STM-1 Optical Module](#).

## Indicators

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the phase of communication with the control board during its startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the APP start phase during the board startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	At least one service port is activated
		-	Off	No service port is activated

### 3.14.3 H801CSPA Board Description

The H801CSPA is a CESoP service processing board. It supports the structure-agnostic TDM over packet (SAToP) processing of 64 channels of E1 signals.

#### Functional Specifications

The H801CSPA board supports the following functions:

- SAToP processing of 64 channels of E1 signals
- 8 kHz clock channel from the H801CSPA board to the backplane, which is used to transmit the clock signals recovered from the service to the control board
- Automatic power shutdown in case of a high temperature

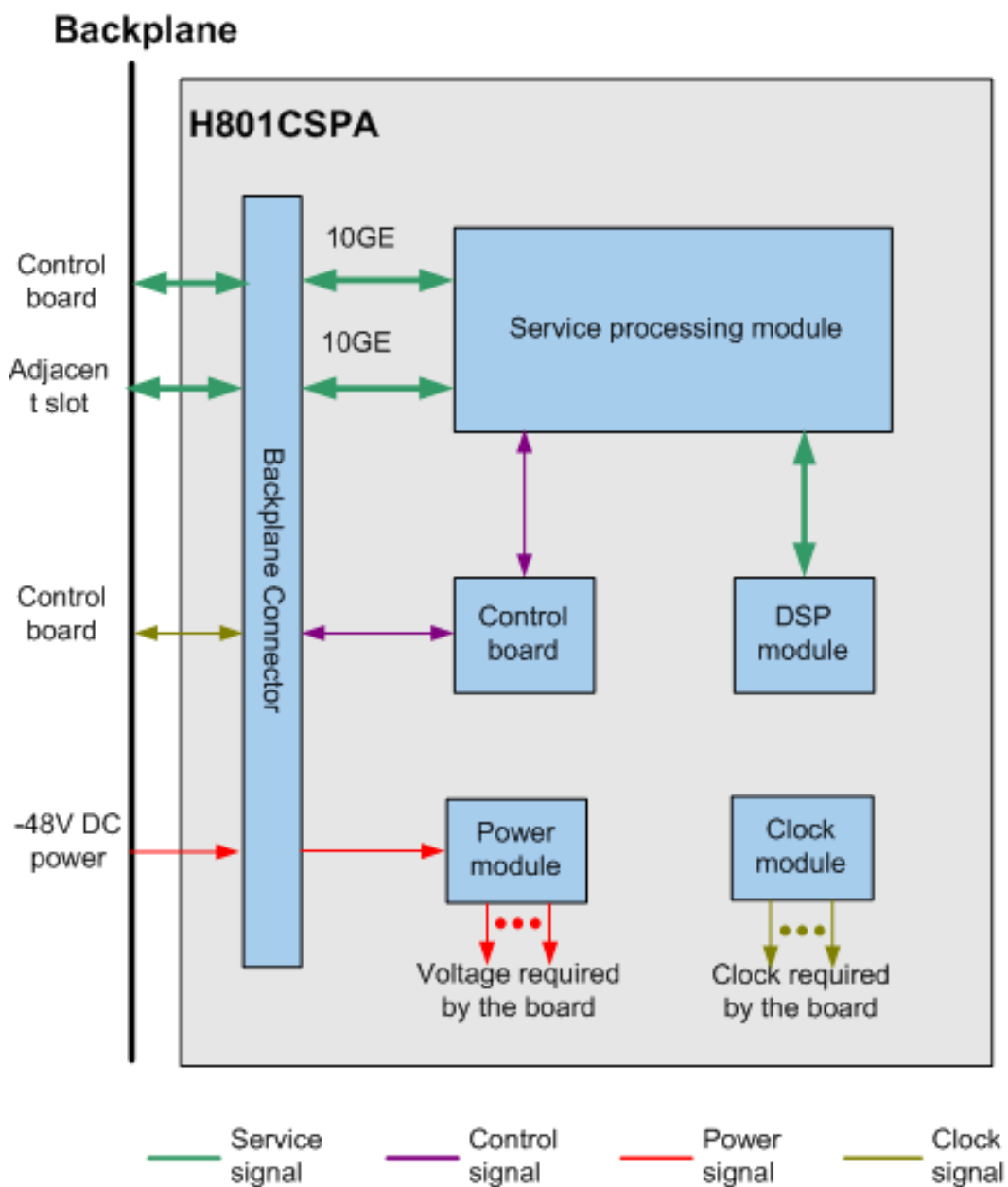
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

Figure 3-64 Working principle of the H801CSPA board



The basic working principle of the H801CSPA board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The service processing module implements the switching of the services.
- The DSP module implements the SAToP algorithm function.
- The power module draws -48 V power from the backplane and converts the power into working power for each functional module of the board.

- The clock module provides clock signals for each functional module of the board.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board starts up and is being loaded with software
		Orange	Blinking	The board starts up and is being loaded with software
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Yellow	Blinking	The board generates an alarm, but the services are not affected
		Red	On	The board is faulty
ACT	Active indicator	Green	On	This board is active
		Yellow	On	This board works in the load-balancing mode
		-	Off	This board is standby

## 3.15 GPON Service Board

GPON service boards work with ONUs to provide GPON access service.

### 3.15.1 GPON Service Board Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-36** Specifications lists of GPON service board

Specification	H801GP BC	H802GP BD	H805GP BD	H802GPF D/ H805GPF D	H806GP BH/ H807GP BH	H801GP MD
<b>Port quantity</b>	4	8	8	16	8	8
<b>MAX Split ratio (Class B +)</b>	1: 64	1: 64	1: 64	1: 64	1: 64	1: 64

Specification	H801GP BC	H802GP BD	H805GP BD	H802GPF D/ H805GPF D	H806GP BH/ H807GP BH	H801GP MD
<b>MAX Split ratio (Class C +/Class C ++)</b>	Not support	1: 128	1: 128	1: 128	1: 128	1: 128
<b>D-CCAP</b>	No	No	No	No	No	Yes
<b>ONU-based shaping</b>	No	No	Yes	Yes	Yes	Yes
<b>Optical performance monitor</b>	Yes (querying Rx optical power is not supported)	Yes	Yes	Yes	Yes	Yes
<b>Controlled optical signal transmission of the optical module</b>	No	Yes	Yes	Yes	Yes	Yes
<b>ONU-based rate limitation</b>	×	√	√	√	√	√
<b>CAR group</b>	×	√	√	√	√	√
<b>Temperature query and high temperature alarm</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Automatic power shutdown in case of a high temperature</b>	No	Yes	Yes	Yes	Yes	Yes

Specification	H801GP BC	H802GP BD	H805GP BD	H802GPF D/ H805GPF D	H806GP BH/ H807GP BH	H801GP MD
<b>Maximum differential fiber distance (km)</b>	20	20	20	40	40	40
<b>Maximum Number of Service Flows Supported by the Board</b>	8184	8184	8184	16368	8184	6144
<b>Maximum Number of MAC address Supported by the Board</b>	4096	8192	8192	16384	16384	16384
<b>Available DBA bandwidth (based on single port) (kbit/s)</b>	1238400	1238784	1238784	1238784	1238784	1238784
<b>Number of T-CONT supported by each GPON port</b>	256	1024	1024	1024	1024	1024
<b>Board supporting downstream FEC</b>	Yes	Yes	Yes	Yes	Yes	Yes

Specification	H801GP BC	H802GP BD	H805GP BD	H802GPF D/ H805GPF D	H806GP BH/ H807GP BH	H801GP MD
<b>Board supporting upstream FEC</b>	No	Yes	Yes	Yes	Yes	Yes
<b>Rogue ONT detection</b>	No	Yes	Yes	Yes	Yes	Yes
<b>Number of ONUs supported by a GPON port</b>	64	128	128	128	128	128
<b>Number of GEM ports supported by each board</b>	8192	8192	8192	16384	8192	8192
<b>Number of GEM ports supported by each GPON port</b>	3872	3872	3872	3872	3872	3872
<b>Number of service ports supported by each GEM port</b>	8	8	8184	8184	8184	7168
<b>HQoS (four levels)</b>	×	×	×	<ul style="list-style-type: none"> <li>● H802G PFD: ×</li> <li>● H805G PFD: √</li> </ul>	<ul style="list-style-type: none"> <li>● H806G PBH: ×</li> <li>● H807G PBH: √</li> </ul>	×

Specification	H801GP BC	H802GP BD	H805GP BD	H802GPF D/ H805GPF D	H806GP BH/ H807GP BH	H801GP MD
<b>9216-byte Jumbo frames</b>	×	×	×	<ul style="list-style-type: none"> <li>● H802G PFD: ×</li> <li>● H805G PFD: √</li> </ul>	<ul style="list-style-type: none"> <li>● H806G PBH: ×</li> <li>● H807G PBH: √</li> </ul>	×
<b>1588v2</b>	×	×	√	√	√	×
<b>Power budget supported by a GPON port</b>	Class B+ (28.5 dB, mostly used)	<ul style="list-style-type: none"> <li>● Class B+ (28.5 dB, mostly used),</li> <li>● Class C+ (32 dB long reach transmission)</li> <li>● Class C++: 35 dB</li> </ul>				
<b>Minimum bandwidth supported by a T-CONT</b>	512kbps	<ul style="list-style-type: none"> <li>● 1 Mbit/s (in the minimum delay mode)</li> <li>● 128 kbit/s (in the maximum bandwidth usage mode)</li> </ul>				

### 3.15.2 H801GPBC Board Description

The H801GPBC is a 4-port GPON OLT interface board. It works together with the optical network unit (ONU) to provide GPON access services.

#### Functional Specifications

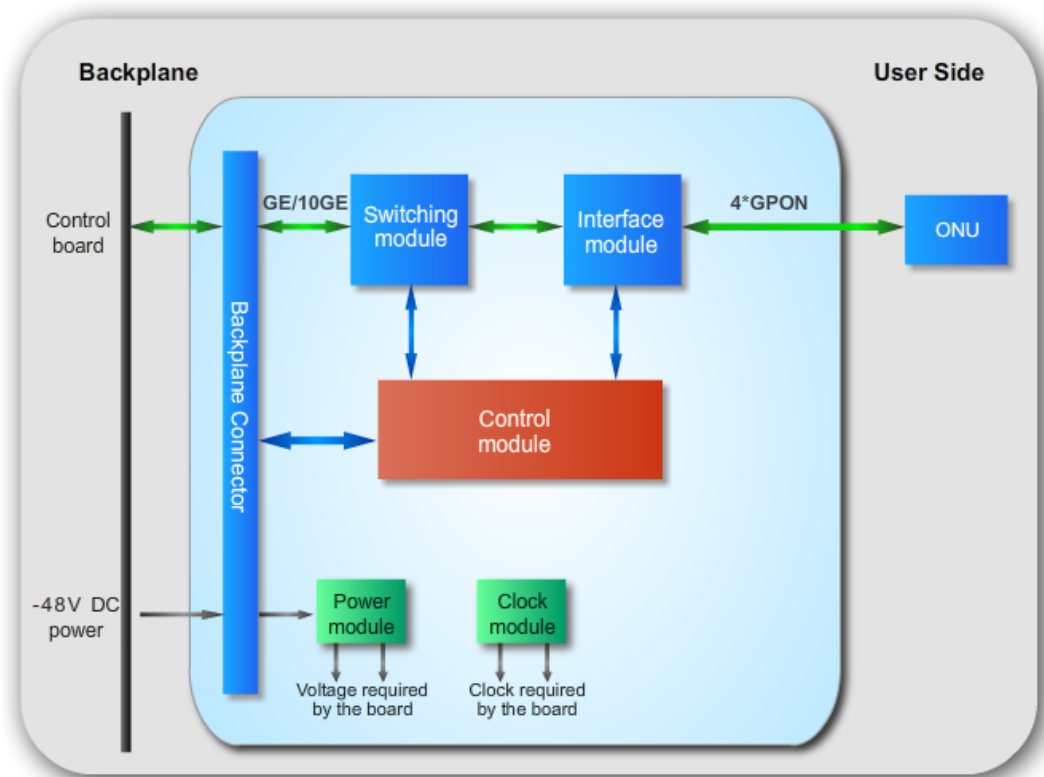
Please refer to "[GPON Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-65 Working principle of the H801GPBC board

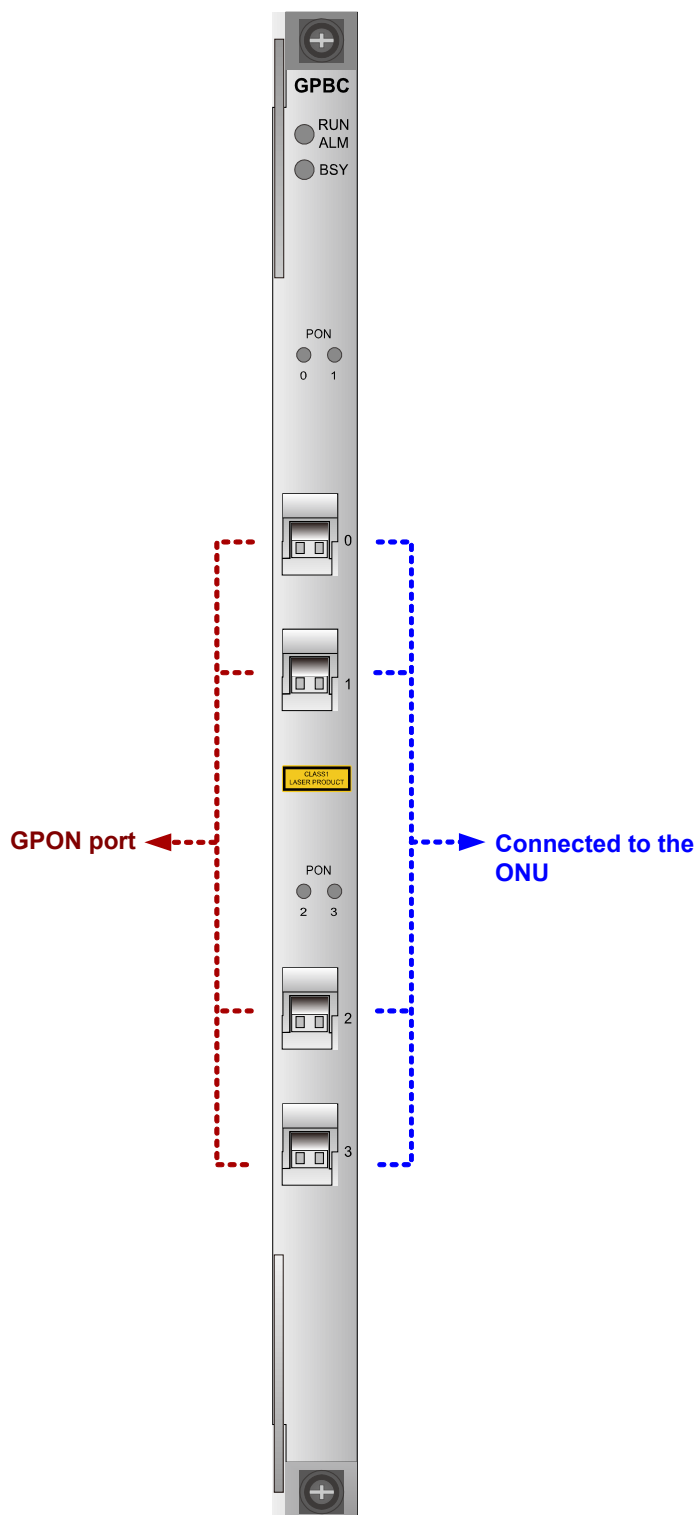


The basic working principle of the H801GPBC board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The switching module aggregates the signals from four GPON ports.
- The interface module performs conversion between GPON optical signals and Ethernet packets.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.



## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0,1,2,3	PON port indicator	Green	On	The ONT of the related PON port is online
		-	Off	The ONT of the related PON port is offline

### 3.15.3 H802GPBD Board Description

The H802GPBD is an 8-port GPON OLT interface board. It works together with the optical network unit (ONU) to provide GPON access services.

#### Functional Specifications

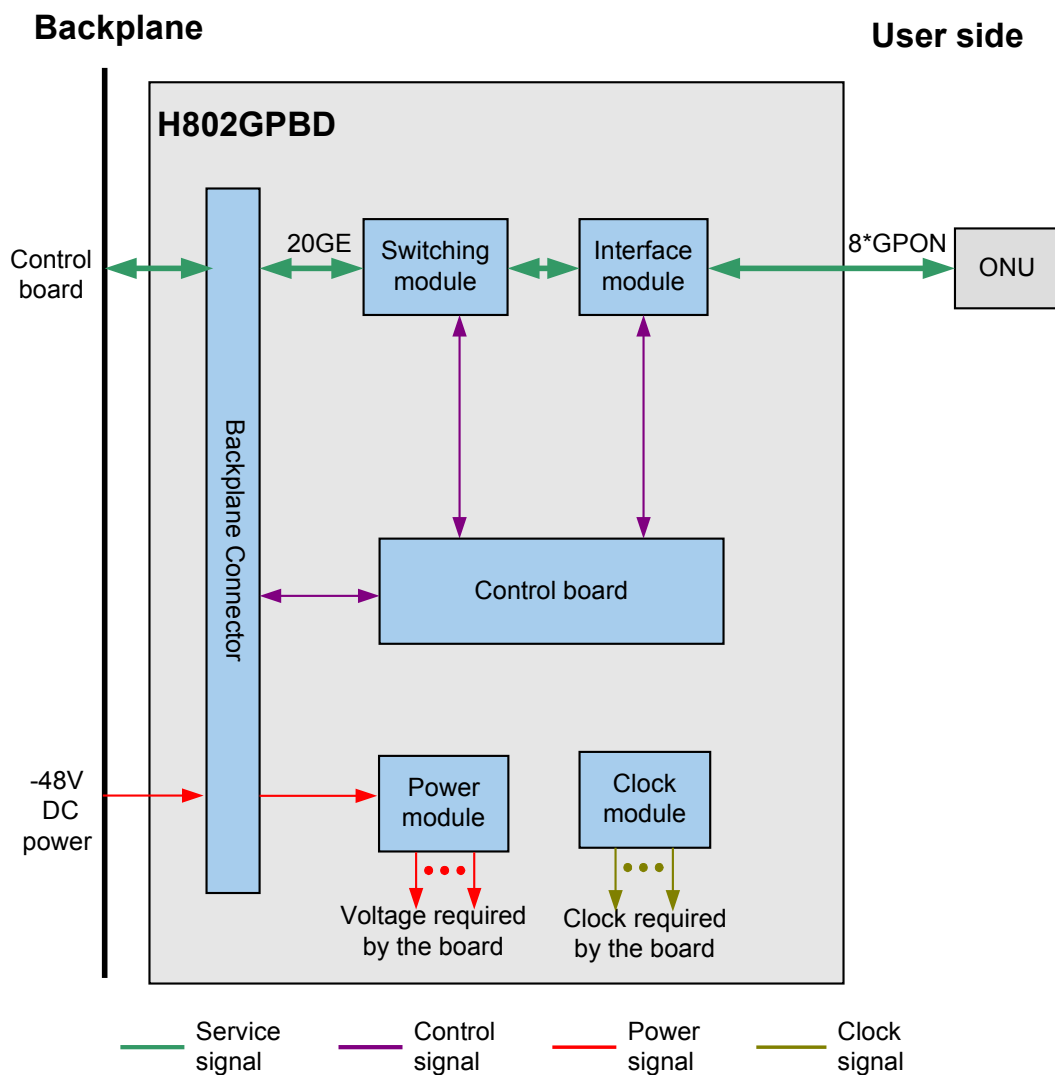
Please refer to "[GPON Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

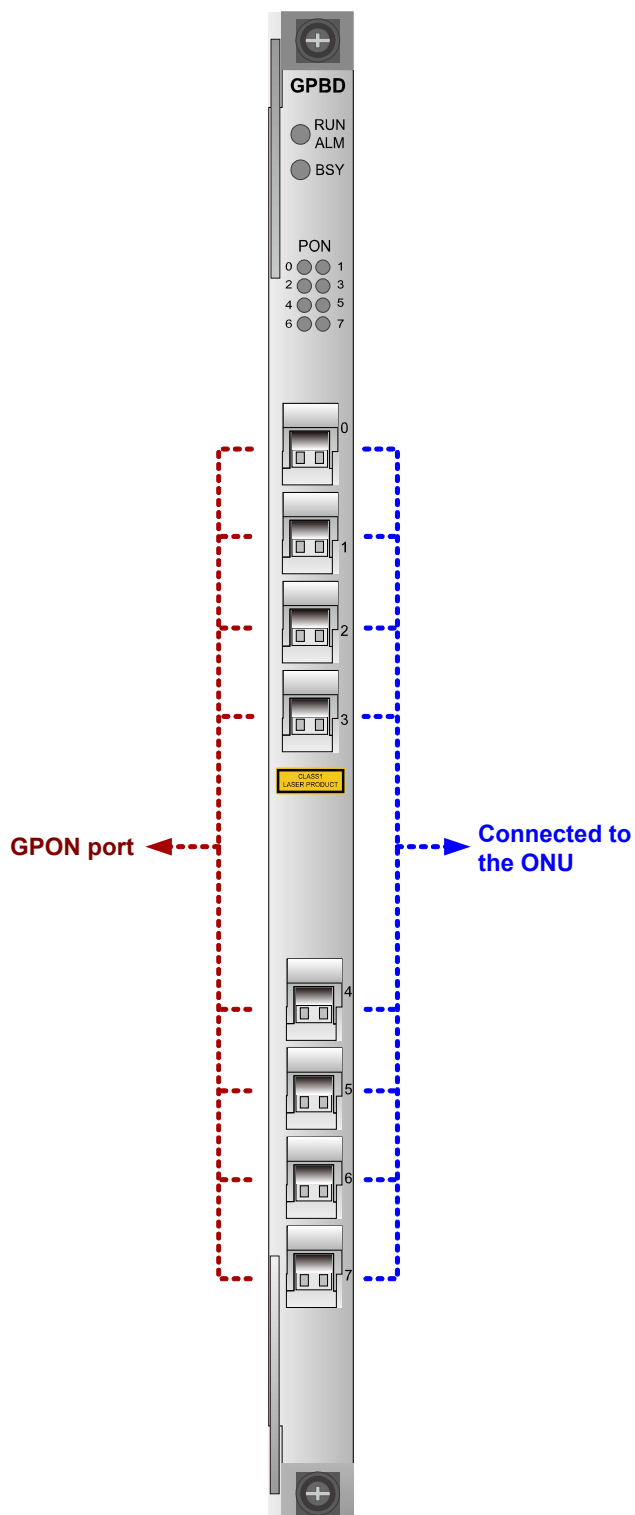
Figure 3-66 Working principle of the H802GPBD board



The basic working principle of the H802GPBD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The switching module aggregates the signals from eight GPON ports.
- The interface module performs conversion between GPON optical signals and Ethernet packets.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0, 1, 2 ...	PON port indicator	Green	On	The ONT of the related PON port is online
		Green	Blinking	The optical module does not take effect
		-	Off	The ONT of the related PON port is offline

### 3.15.4 H805GPBD Board Description

The H805GPBD is an 8-port GPON OLT interface board. It works with the optical network unit (ONU) to provide GPON access service.

#### Functional Specifications

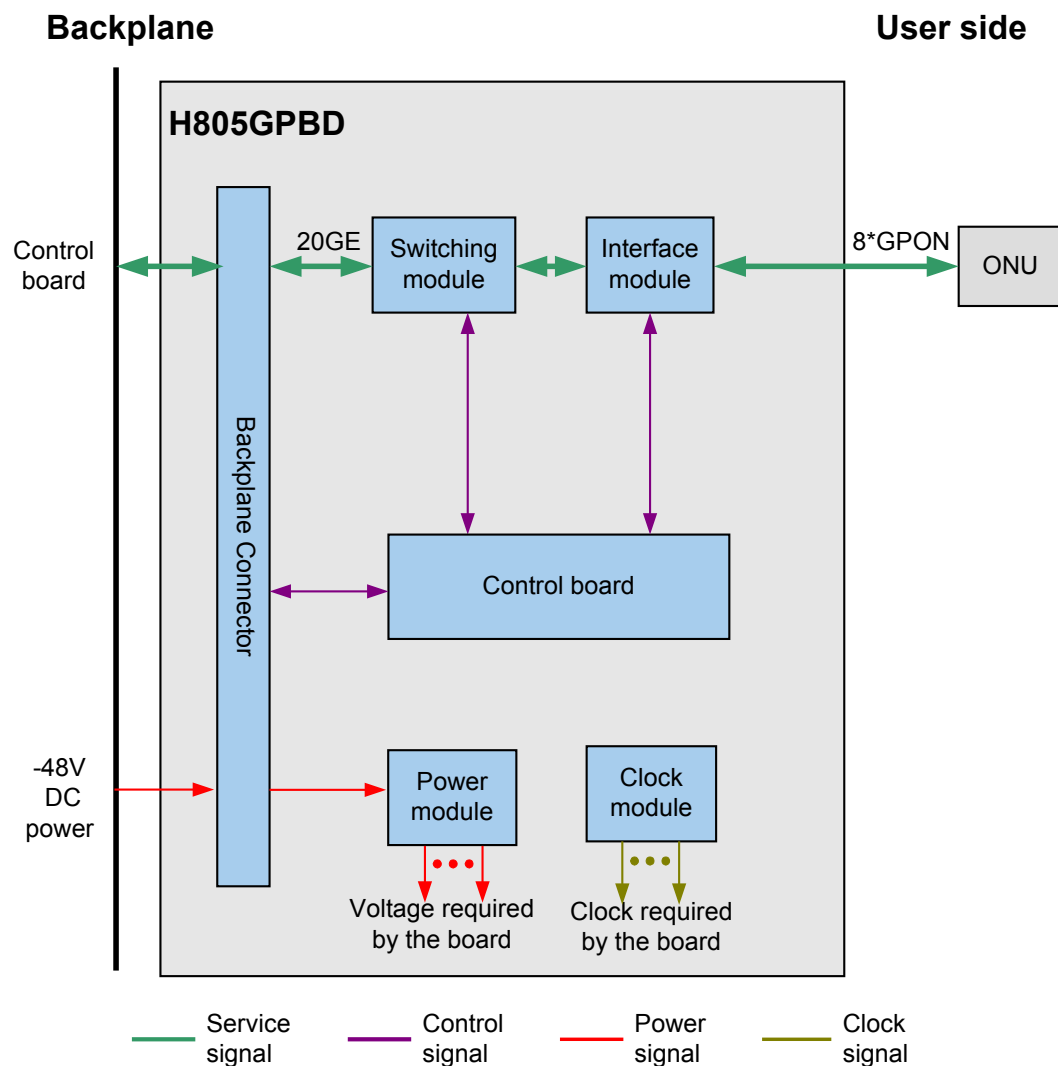
Please refer to "[GPON Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

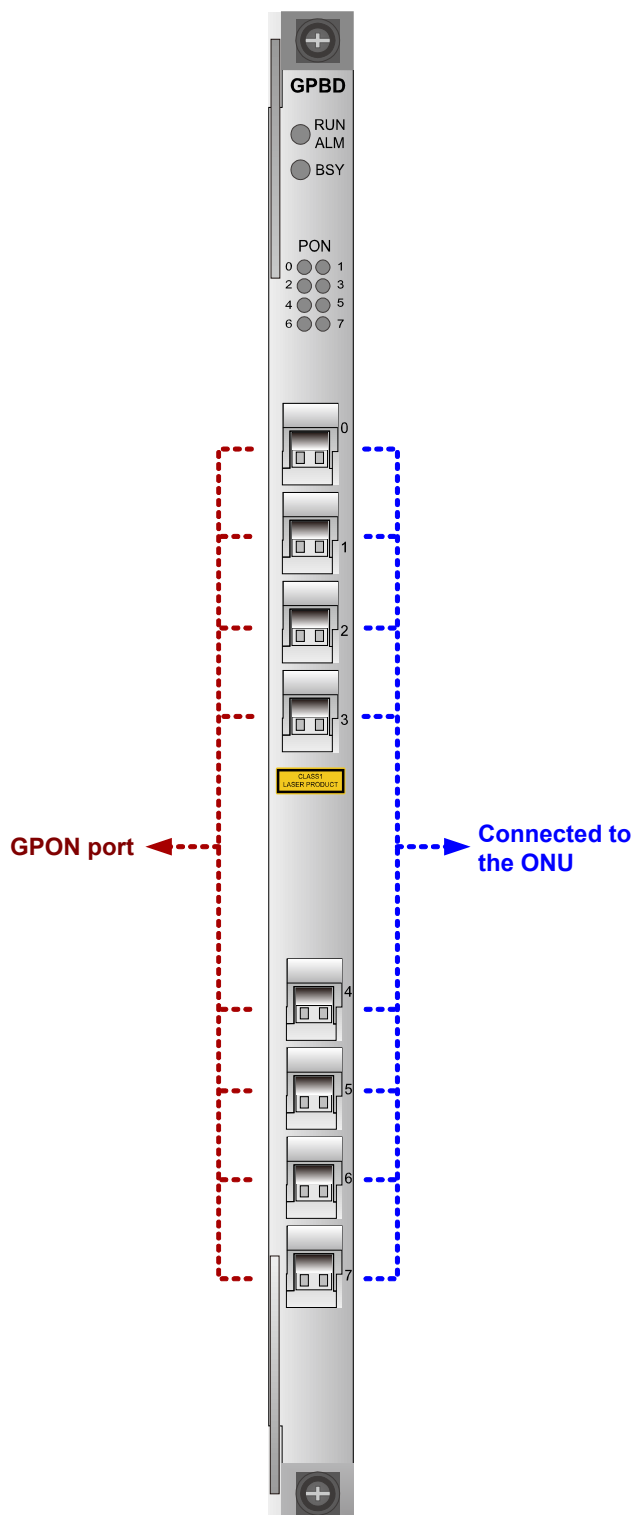
Figure 3-67 Working principle of the H805GPBD board



The basic working principle of the H805GPBD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The switching module aggregates the signals from eight GPON ports.
- The interface module converts between GPON signals and Ethernet packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0, 1, 2 ...	PON port indicator	Green	On	The ONT of the related PON port is online
		Green	Blinking	The optical module does not take effect
		-	Off	The ONT of the related PON port is offline

### 3.15.5 H806GPBH Board Description

H806GPBH is a 8-port GPON OLT interface board. It works with the optical network unit (ONU) to provide GPON access service.

#### Functional Specifications

Please refer to "[GPON Service Board Comparison](#)".

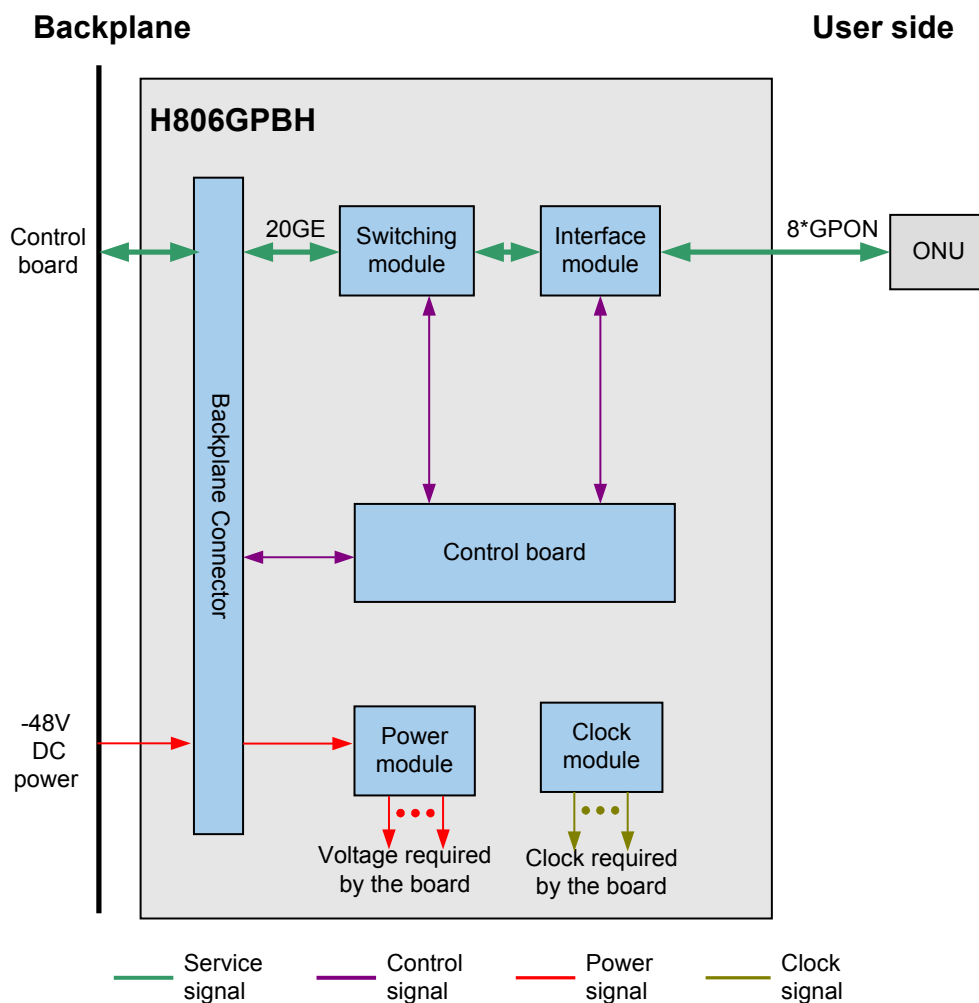
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

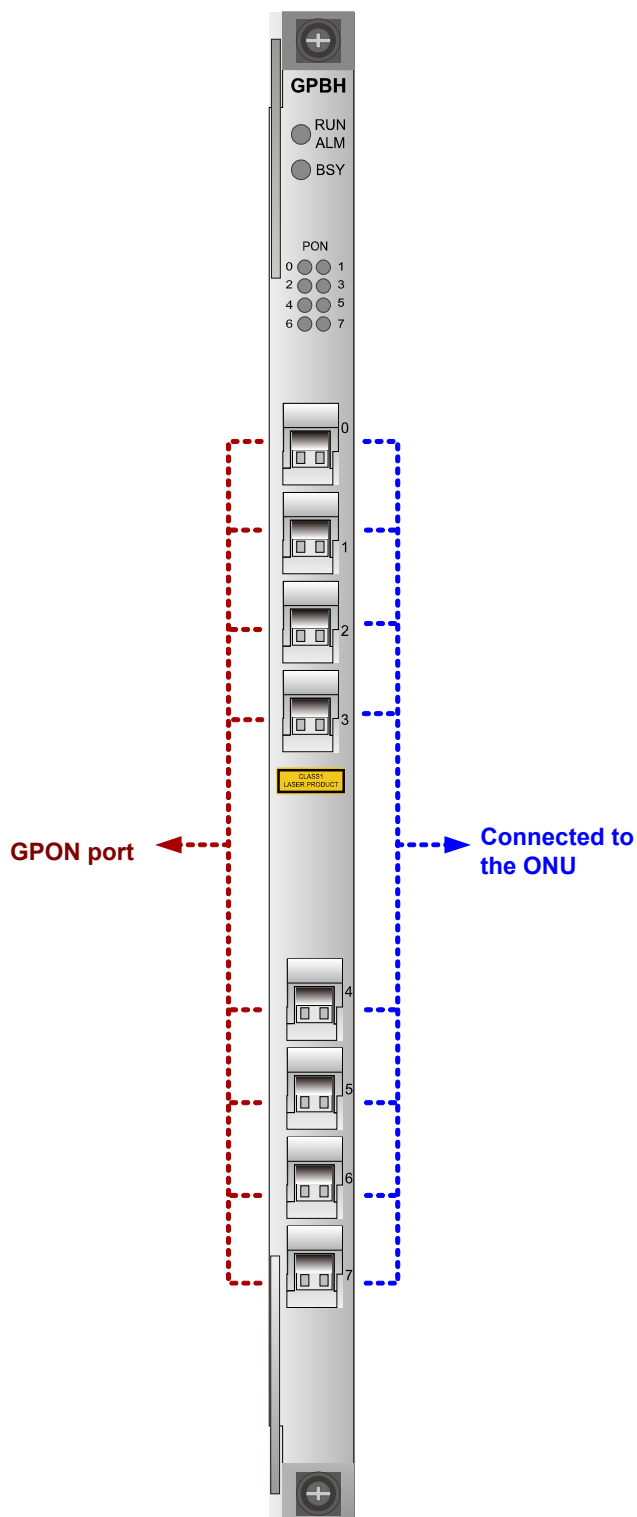
Figure 3-68 Working principle of the H806GPBH board



The basic working principle of the H806GPBH board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The switching module aggregates the signals from eight GPON ports.
- The interface module converts between GPON signals and Ethernet packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0, 1, 2 ...	PON port indicator	Green	On	The ONT of the related PON port is online
		Green	Blinking	The optical module does not take effect
		-	Off	The ONT of the related PON port is offline

### 3.15.6 H807GPBH Board Description

H807GPBH is a 8-port GPON OLT interface board. It works with the optical network unit (ONU) to provide GPON access service.

#### Functional Specifications

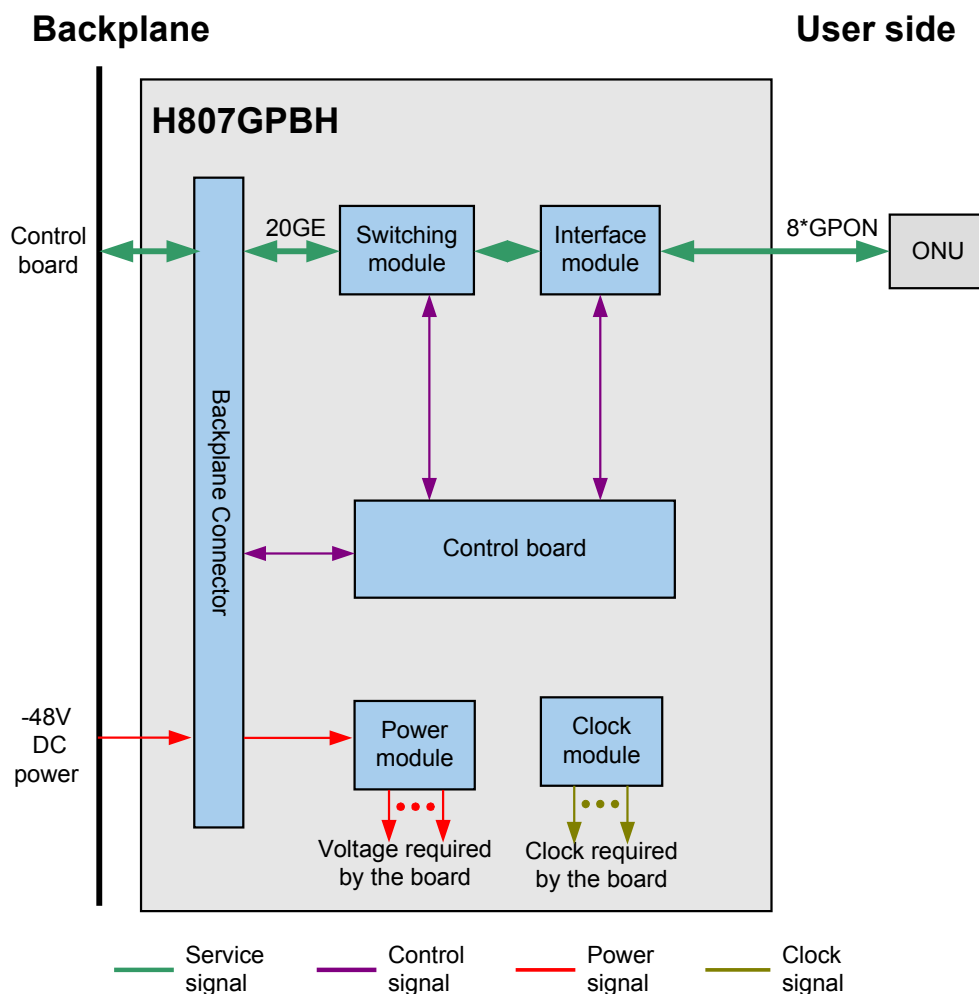
Please refer to "[GPON Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

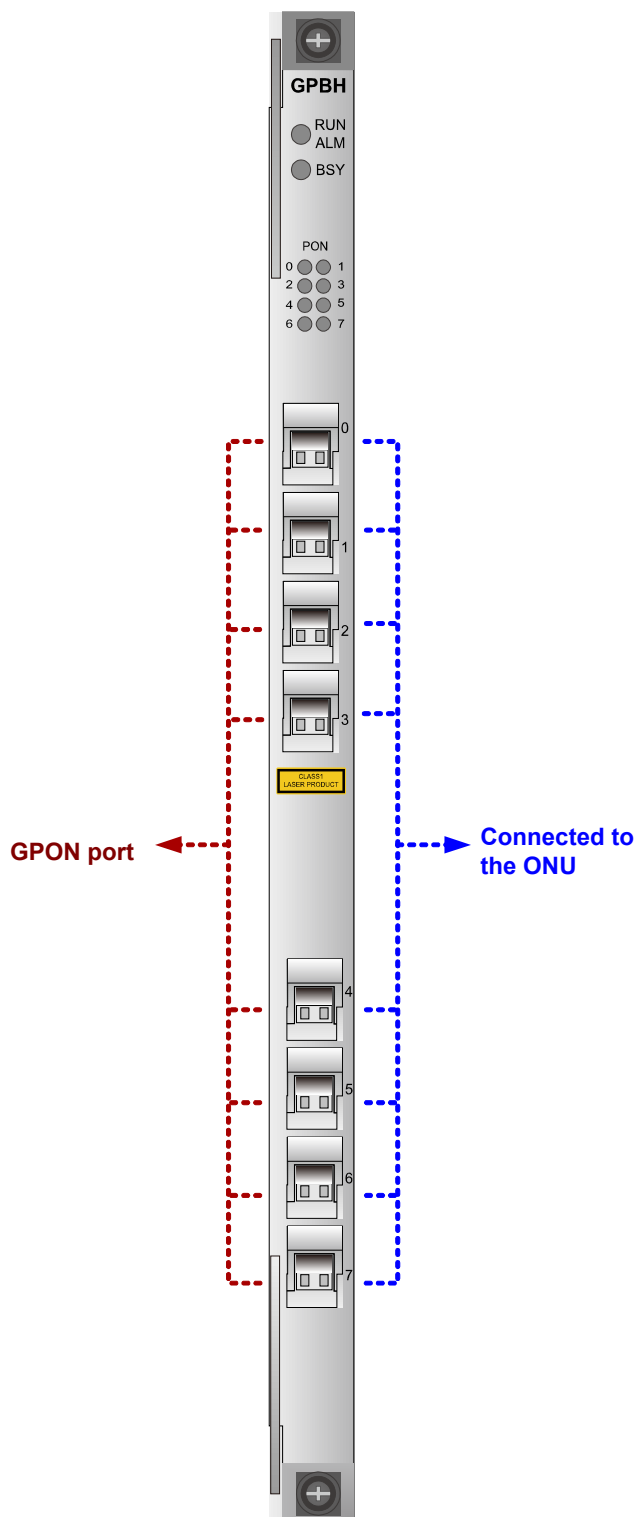
Figure 3-69 Working principle of the H807GPBH board



The basic working principle of the H807GPBH board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The switching module aggregates the signals from eight GPON ports.
- The interface module converts between GPON signals and Ethernet packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0, 1, 2 ...	PON port indicator	Green	On	The ONT of the related PON port is online
		Green	Blinking	The optical module does not take effect
		-	Off	The ONT of the related PON port is offline

### 3.15.7 H802GPFD Board Description

H802GPFD is a 16-port GPON OLT interface board. It works with the optical network unit (ONU) to provide GPON access service.

#### Functional Specifications

Please refer to "[GPON Service Board Comparison](#)".

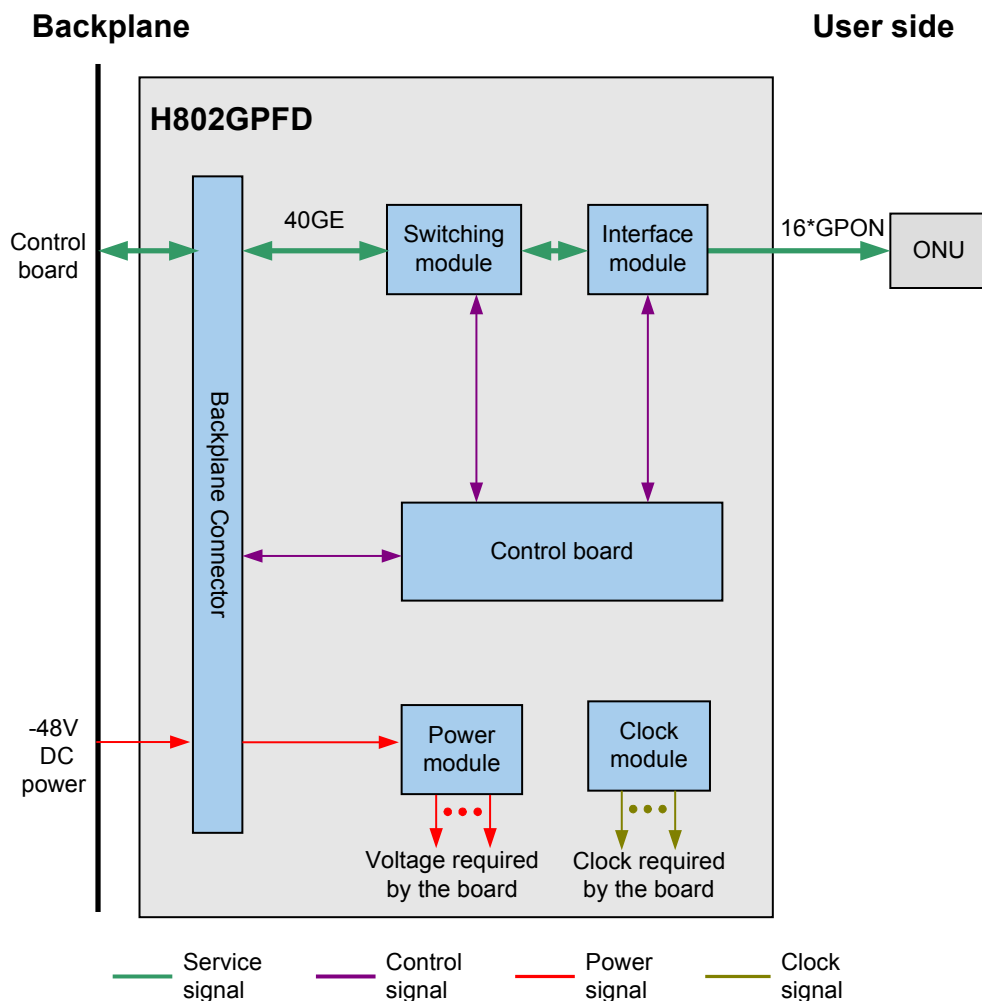
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

[Figure 3-70](#) illustrates the working principle of the H802GPFD board.

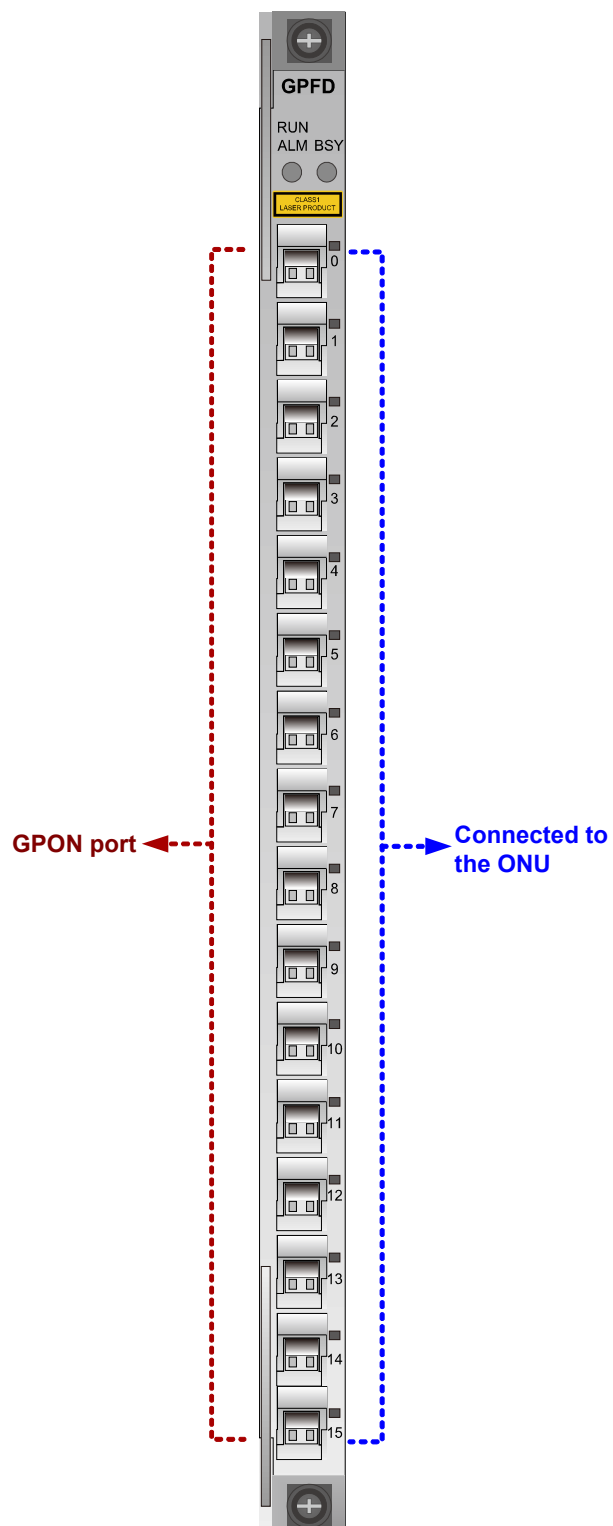
Figure 3-70 Working principle of the H802GPFD board



The basic working principle of the H802GPFD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The switching module aggregates the signals from sixteen GPON ports.
- The interface module converts between GPON signals and Ethernet packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0, 1, 2 ...	PON port indicator	Green	On	The ONT of the related PON port is online
		Green	Blinking	The optical module does not take effect
		-	Off	The ONT of the related PON port is offline

### 3.15.8 H805GPFD Board Description

H805GPFD is a 16-port GPON OLT interface board. It works with the optical network unit (ONU) to provide GPON access service.

#### Functional Specifications

Please refer to "[GPON Service Board Comparison](#)".

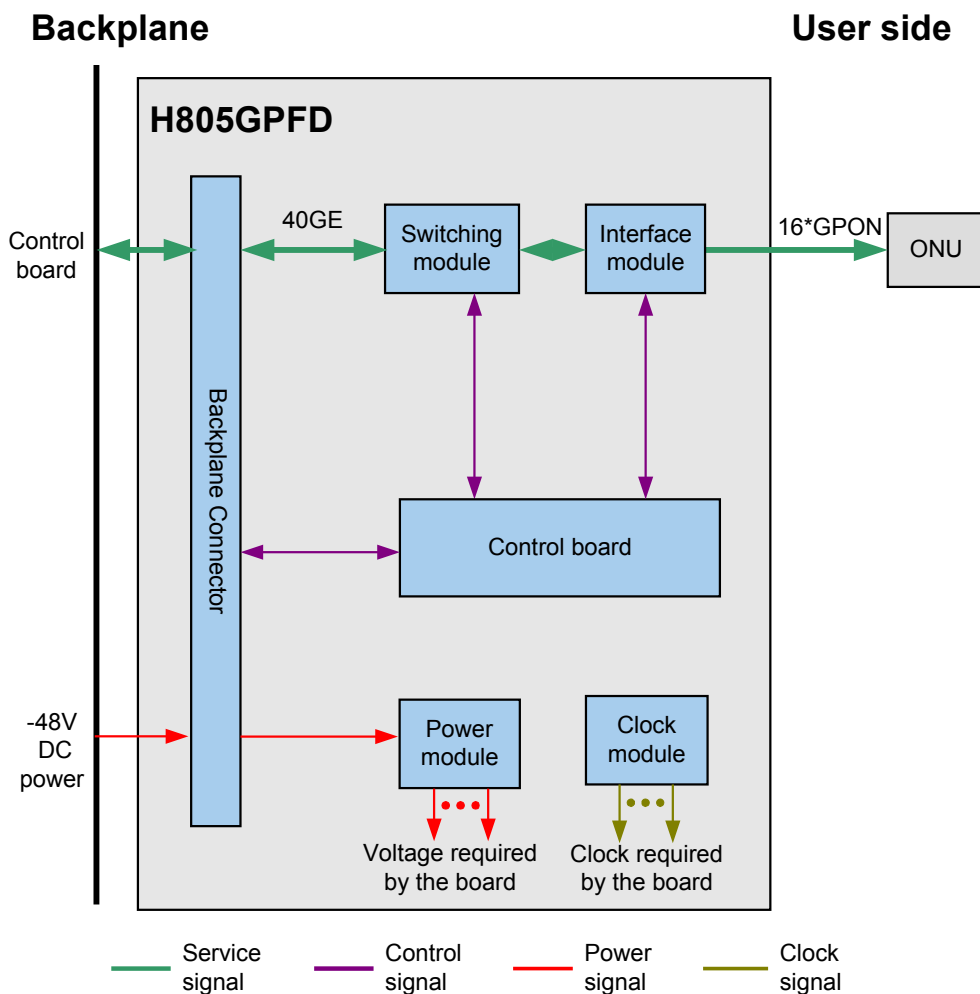
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

[Figure 3-71](#) illustrates the working principle of the H805GPFD board.

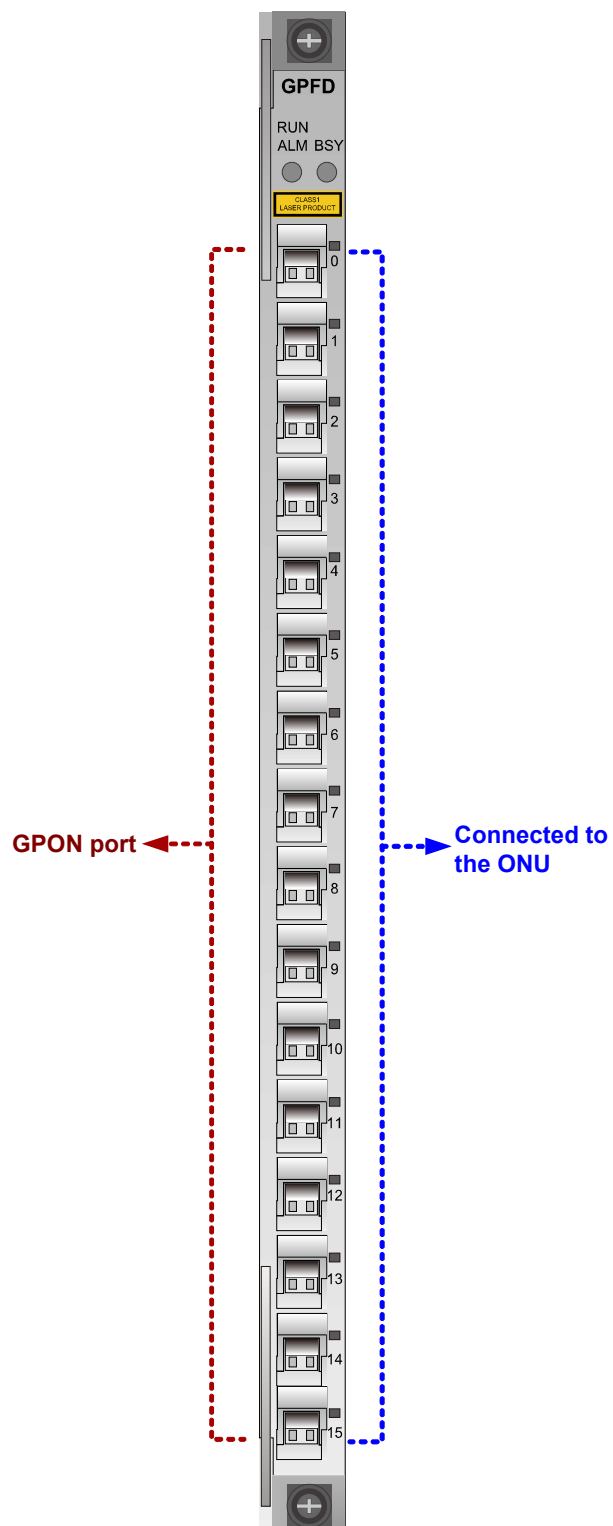
Figure 3-71 Working principle of the H805GPFD board



The basic working principle of the H805GPFD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The switching module aggregates the signals from sixteen GPON ports.
- The interface module converts between GPON signals and Ethernet packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0, 1, 2 ...	PON port indicator	Green	On	The ONT of the related PON port is online
		Green	Blinking	The optical module does not take effect
		-	Off	The ONT of the related PON port is offline

### 3.15.9 H801GPMD Board Description

H801GPMD is a 8-port GPON OLT interface board. It works with the optical network unit (ONU) to provide GPON access service.

#### Functional Specifications

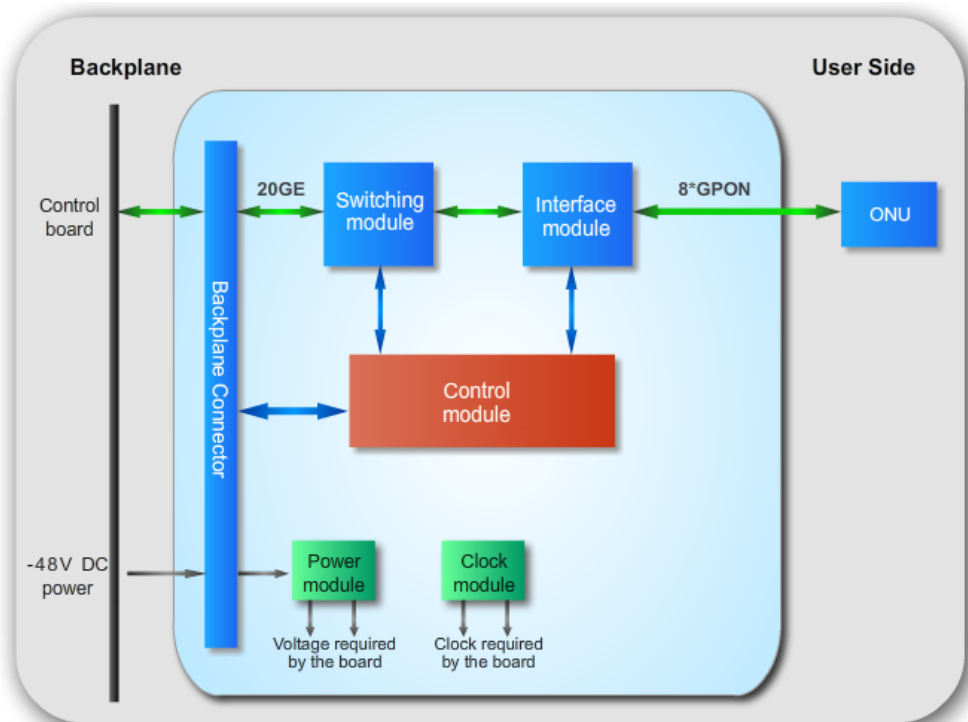
Please refer to "[GPON Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

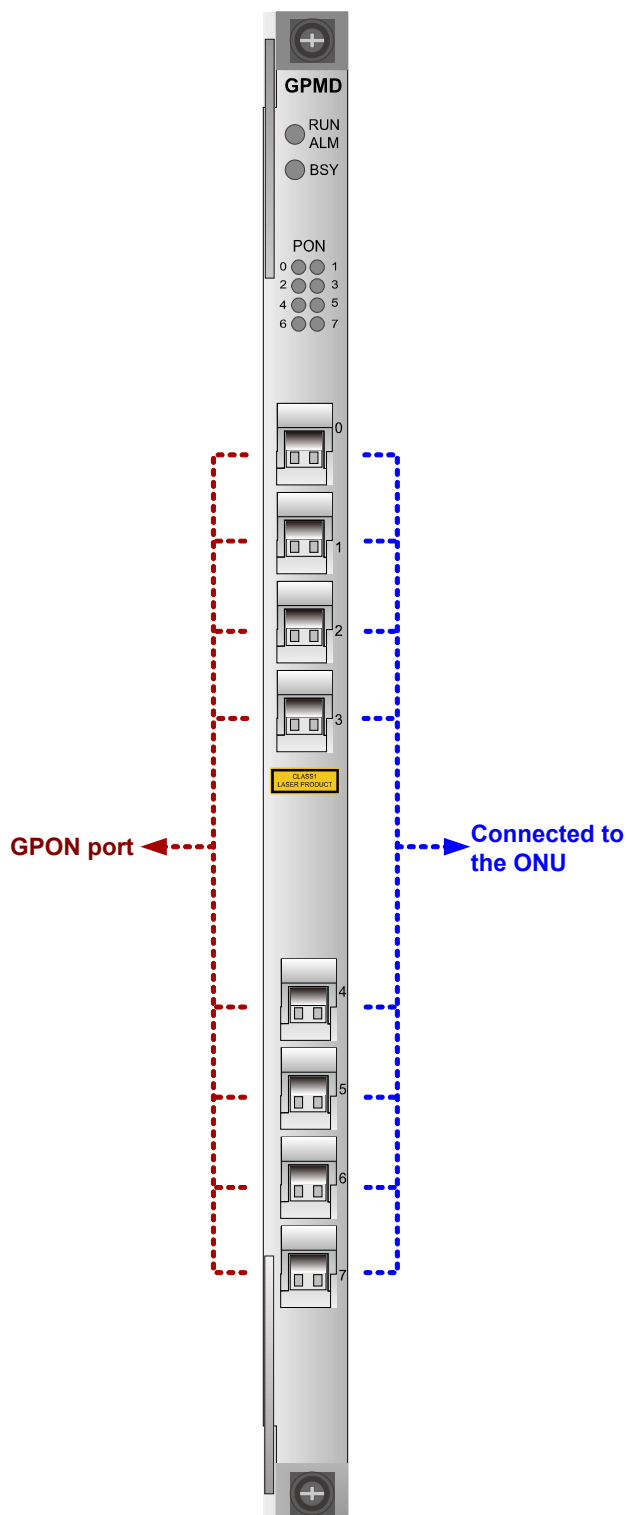
Figure 3-72 Working principle of the H801GPMD board



The basic working principle of the H801GPMD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The switching module aggregates the signals from eight GPON ports.
- The interface module converts between GPON signals and Ethernet packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0, 1, 2 ...	PON port indicator	Green	On	The ONT of the related PON port is online
		Green	Blinking	The optical module does not take effect
		-	Off	The ONT of the related PON port is offline

## 3.16 10G GPON Service Board

10G GPON service boards work with ONUs to provide 10G GPON access service.

### 3.16.1 10G GPON Service Board Comparison

**Table 3-37** Specifications lists of 10G GPON service board

Service Board	H802XGBC	H801XGBD
Number of 10G GPON ports supported by each board	4	8
Port mode	XFP	SFP+

<b>Number of GEM Port supported by each port</b>	3872	3872
<b>Number of T-CONT supported by each port</b>	2048	2048
<b>Split ratio</b>	Supports a maximum of 1:128 split ratio. <b>NOTE</b> The actual split ratio is determined according to the model of optical modules and the distance of optical fibers.	Supports a maximum of 1:256 split ratio. <b>NOTE</b> The actual split ratio is determined according to the model of optical modules and the distance of optical fibers.
<b>Outputs 1588V2 time to the downstream device</b>	Not support	Support
<b>Received signal strength indicator (RSSI) detection and controlled optical signal transmission of the optical module</b>	Support	Support
<b>Temperature query and alarm in case of a high temperature</b>	Support	Support
<b>Board power-off in case of a high temperature</b>	Support	Support

### 3.16.2 H802XGBC Board Description

H802XGBC is a 4-port 10G GPON OLT interface board. It works with the 10G GPON optical network unit (ONU) to provide 10G GPON access service.

#### Functional Specifications

Please refer to "[10G GPON Service Board Comparison](#)".

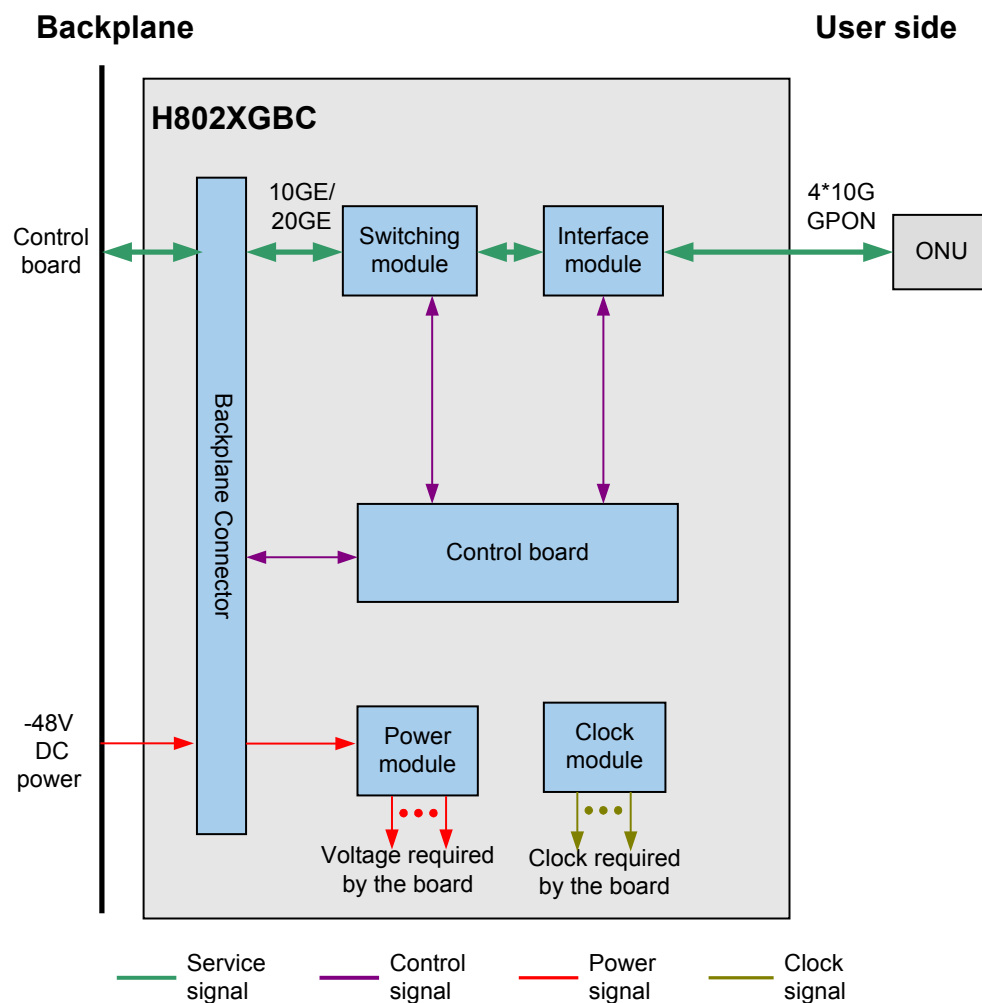
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

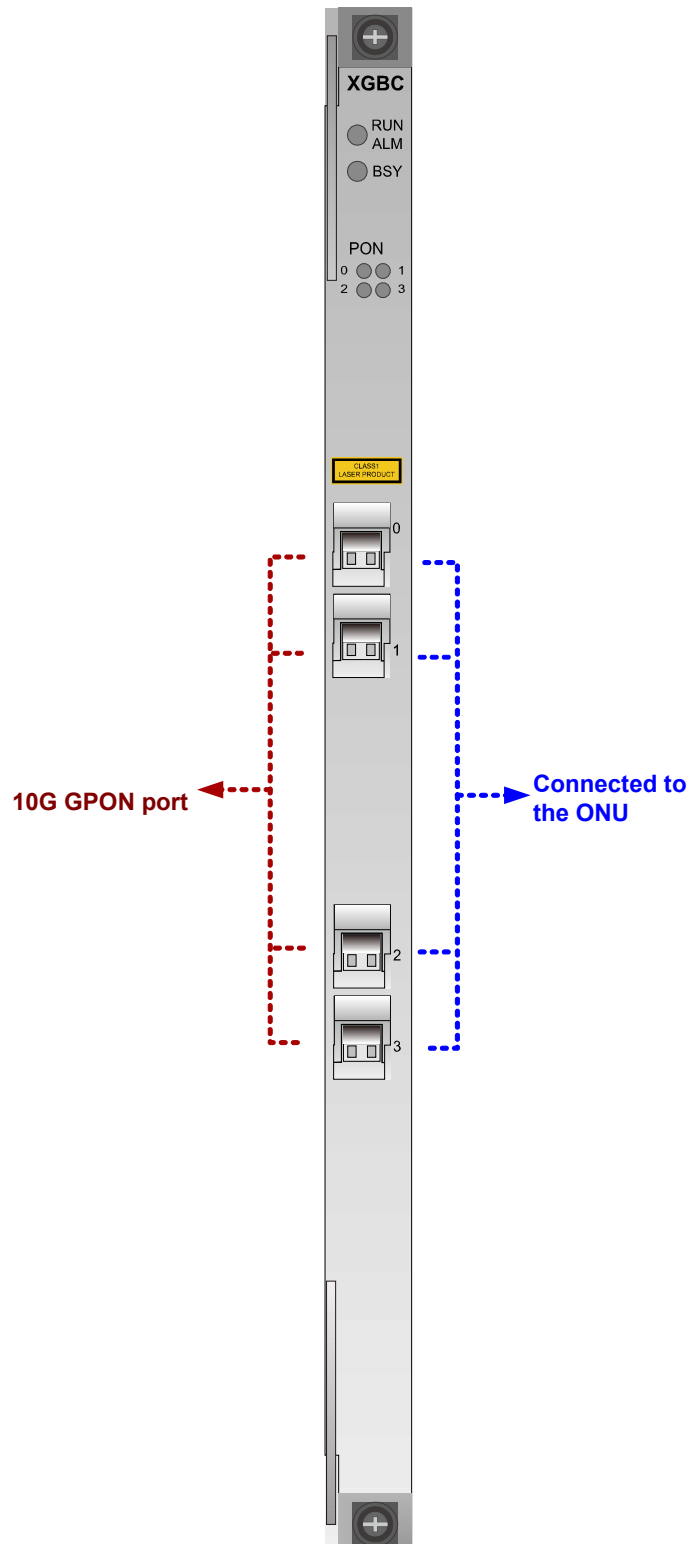
Figure 3-73 Working principle of the H802XGBC board



The basic working principle of the H802XGBC board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The switching module aggregates the signals from four 10G GPON ports.
- The interface module converts between 10G GPON signals and Ethernet packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0, 1, 2 ...	PON port indicator	Green	On	The ONT of the related PON port is online
		Green	Blinking	The optical module does not take effect
		-	Off	The ONT of the related PON port is offline

### 3.16.3 H801XGBD Board Description

H801XGBD is a 8-port 10G GPON OLT interface board. It works with the 10G GPON optical network unit (ONU) to provide 10G GPON access service.

#### Functional Specifications

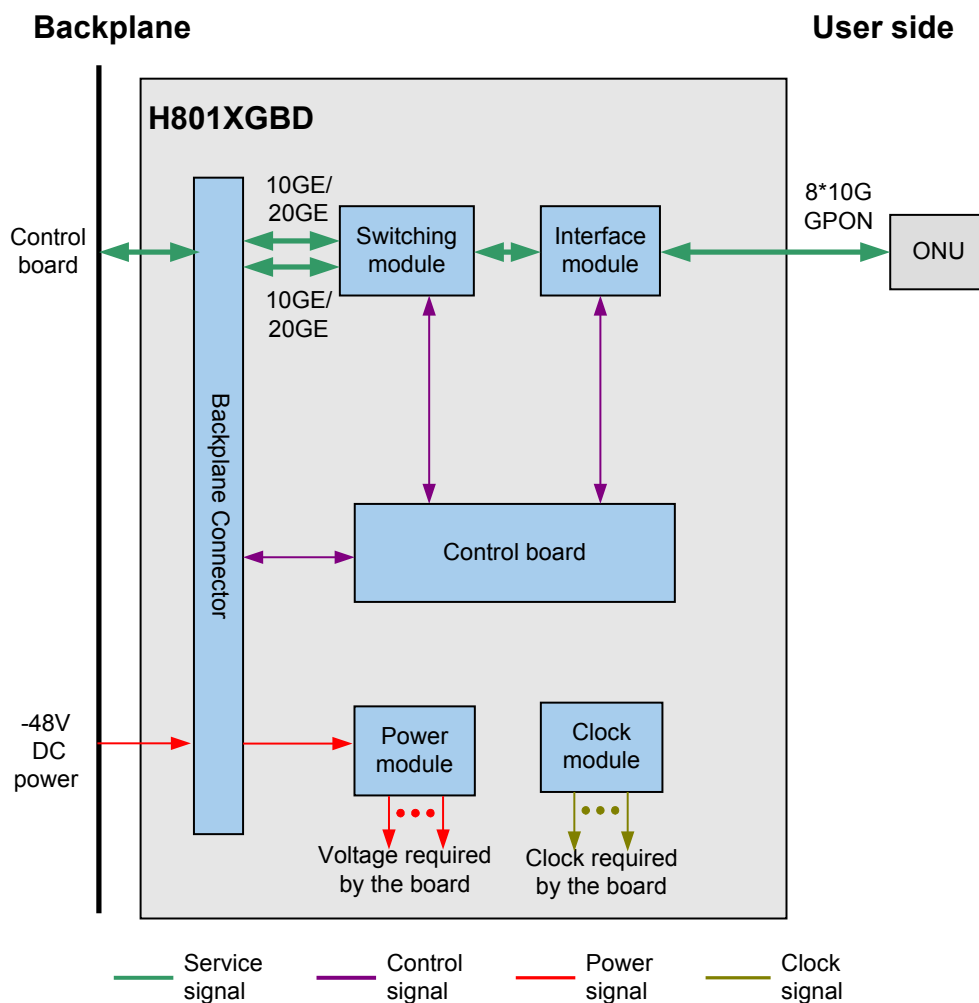
Please refer to "[10G GPON Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

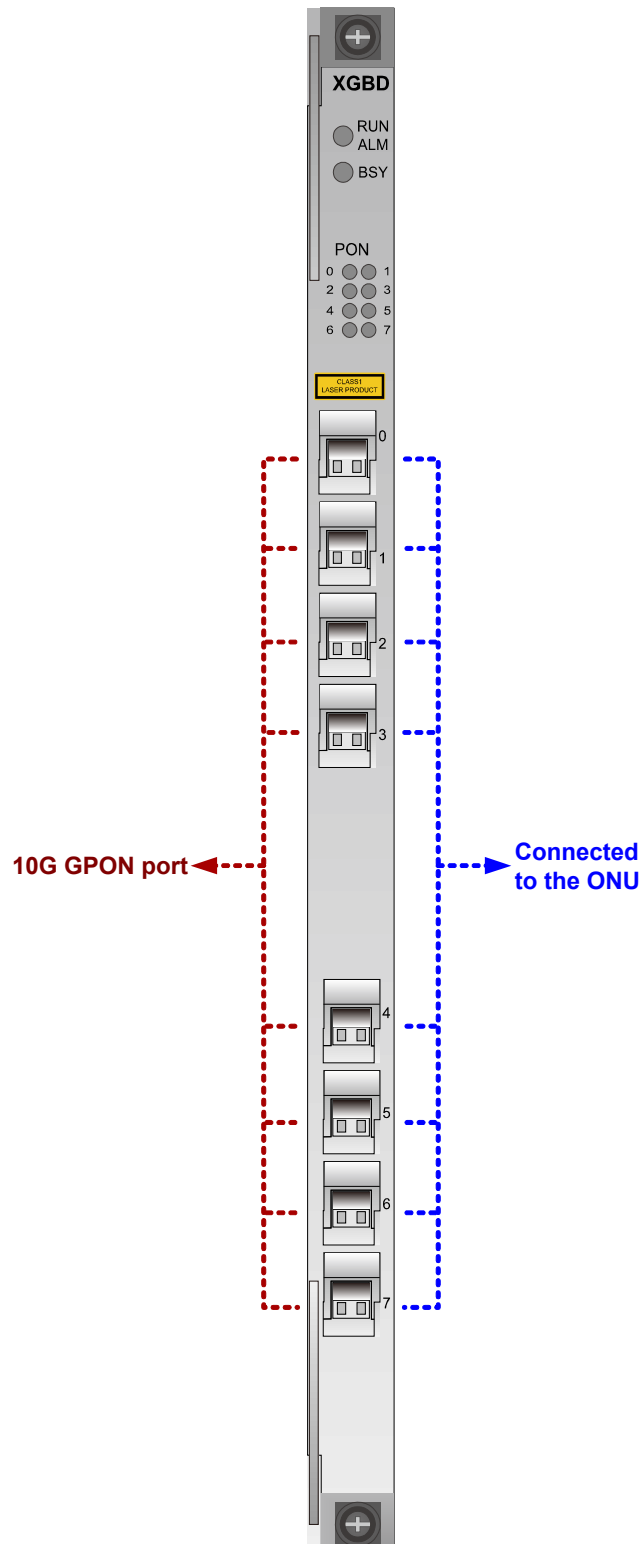
Figure 3-74 Working principle of the H801XGBD board



The basic working principle of the H801XGBD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The switching module aggregates the signals from eight 10G GPON ports.
- The interface module converts between 10G GPON signals and Ethernet packets.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port



For details about supported optical module, see [4.2 PON Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	Blinking	The board carries services
		-	Off	The board carries no service
0, 1, 2 ...	PON port indicator	Green	On	The ONT of the related PON port is online
		Green	Blinking	The optical module does not take effect
		-	Off	The ONT of the related PON port is offline

## 3.17 P2P Interface Board

Point-to-point (P2P) interface boards work with Ethernet optical network terminals (for example the ONT supporting GE upstream, MxU and lanswitch) to provide P2P optical access services for users.

### 3.17.1 P2P Interface Board Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-38** Specifications lists of P2P interface boards

Specification	H801OPFA	H802OPGD	H802OPGE
Port Quantity	16	24/48	24/48

Specification	H801OPFA	H802OPGD	H802OPGE
<b>Optical Module</b>	eSFF FE	CSFP (48-channel) or SFP (24-channel) GE/FE	CSFP (48-channel) or SFP (24-channel) GE/FE
<b>Limit on the Traffic Classification Parameters</b>	N/A	<ul style="list-style-type: none"> <li>The user VLAN ID ranges from 1 to 4093, but cannot be set to 4094 or 4095.</li> <li>The user VLAN packets cannot be priority-tagged.</li> </ul>	<ul style="list-style-type: none"> <li>The user VLAN ID ranges from 1 to 4093, but cannot be set to 4094 or 4095.</li> <li>The user VLAN packets cannot be priority-tagged.</li> </ul>
<b>Cascading and aggregation of DSLAMs or MDUs</b>	No	Yes <b>NOTE</b> You can run the <b>network-role</b> command in the opg mode to switch the board role. Default board role is user.	Yes <b>NOTE</b> You can run the <b>network-role</b> command in the opg mode to switch the board role. Default board role is user.
<b>Synchronous Ethernet clock issuing</b>	Yes <b>NOTE</b> The H801OPFA board only issues synchronous Ethernet clock signals (line recovered clock signals using the interface board), which cannot be used as the system clock source.	Yes	Yes
<b>1588v2 clock issuing</b>	No	No	Yes
<b>Inter-board aggregation and load sharing</b>	No	Yes	Yes
<b>9216-byte jumbo frames</b>	No	No	Yes
<b>Temperature query</b>	Yes	Yes	Yes
<b>Automatic power shutdown in case of a high temperature</b>	No	Yes	Yes

## 3.17.2 H801OPFA Board Description

The H801OPFA board is a FE P2P optical interface board, providing 16 channels of FE optical signals.

### NOTE

The H801OPFA board is upgraded from VER.B to VER.C, wherein the function of synchronous Ethernet clocks issuing is added.

## Functional Specifications

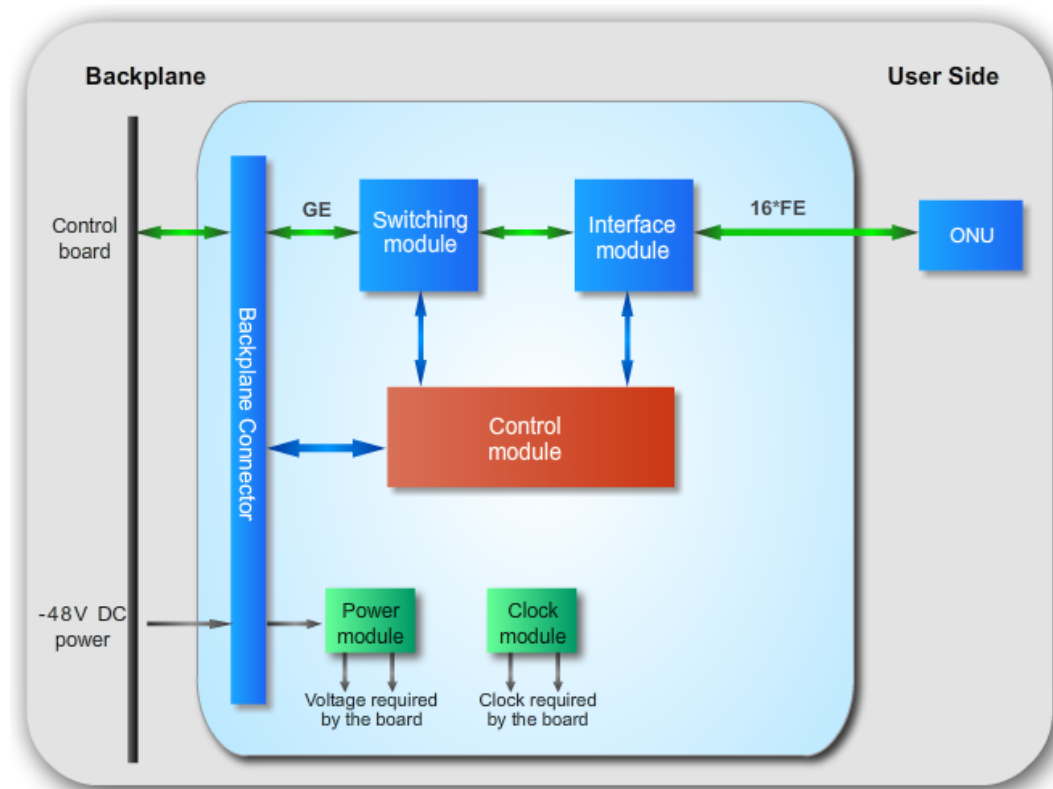
Please refer to "[P2P Interface Board Comparison](#)".

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-75 Working principle of the H801OPFA board



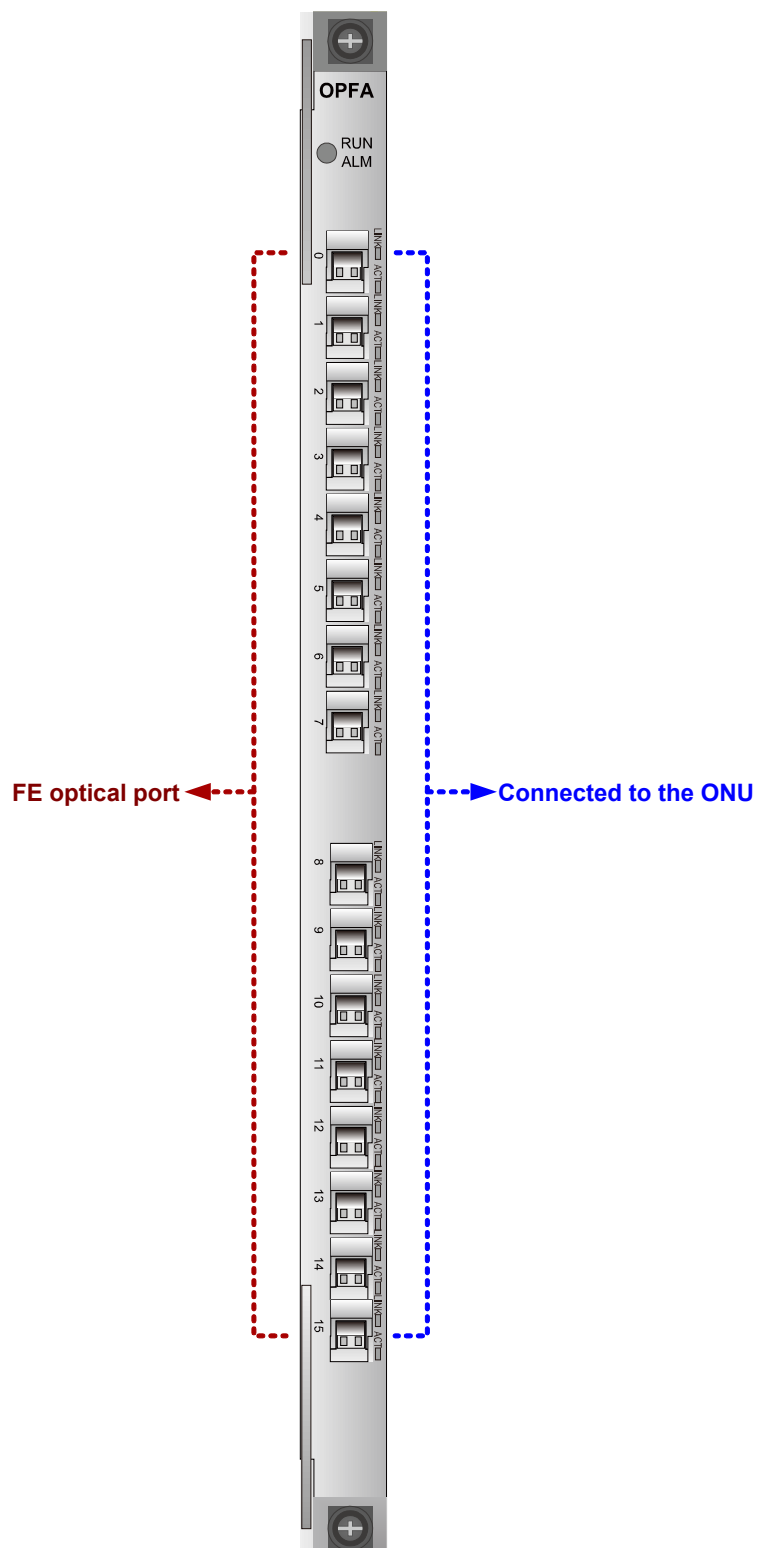
The basic working principle of the H801OPFA board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The interface module receives signals and then transmits the signals.



- The switching module aggregates and forwards signals, and transmits the signals to the control board through the GE bus of the backplane.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board, supports the base station backhaul, and transmits the synchronous Ethernet clock signals.

## Front Panel Port



For details about supported optical module, see [4.5 FE Optical Module](#).

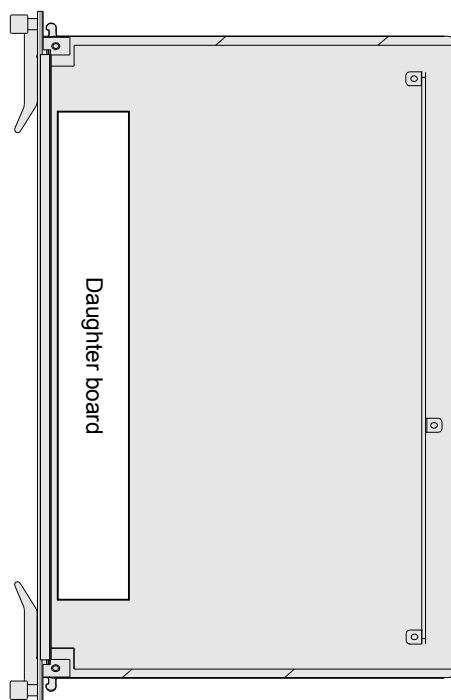
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
LINK	Link status indicator	Green	On	The connection is successful
		-	Off	The connection fails
ACT	Data status indicator	Yellow	Blinking	Data is being transmitted
		-	Off	No data is being transmitted

## Daughter Board

The H801OPFA board is installed with one LEDA daughter board to control the LEDs on the front panel. **Figure 3-76** shows the position of the daughter board on the H801OPFA board.

**Figure 3-76** Position of the daughter board on the H801OPFA board



### 3.17.3 H802OPGD Board Description

The H802OPGD board is a 48-port GE/FE Optical interface board, providing Ethernet optical access and cascading. It supports up to 48 channels of GE/FE P2P access services.

#### Functional Specifications

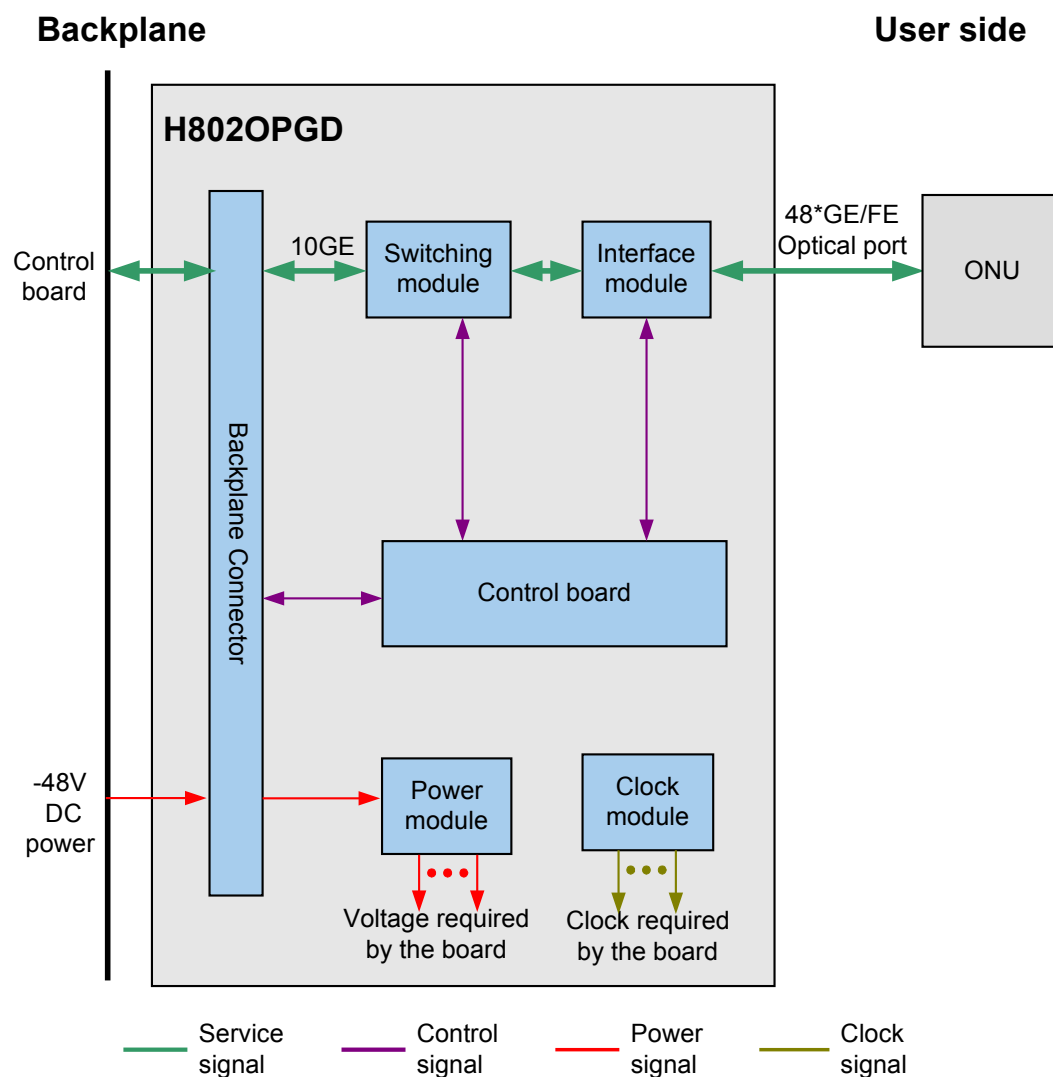
Please refer to "[P2P Interface Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

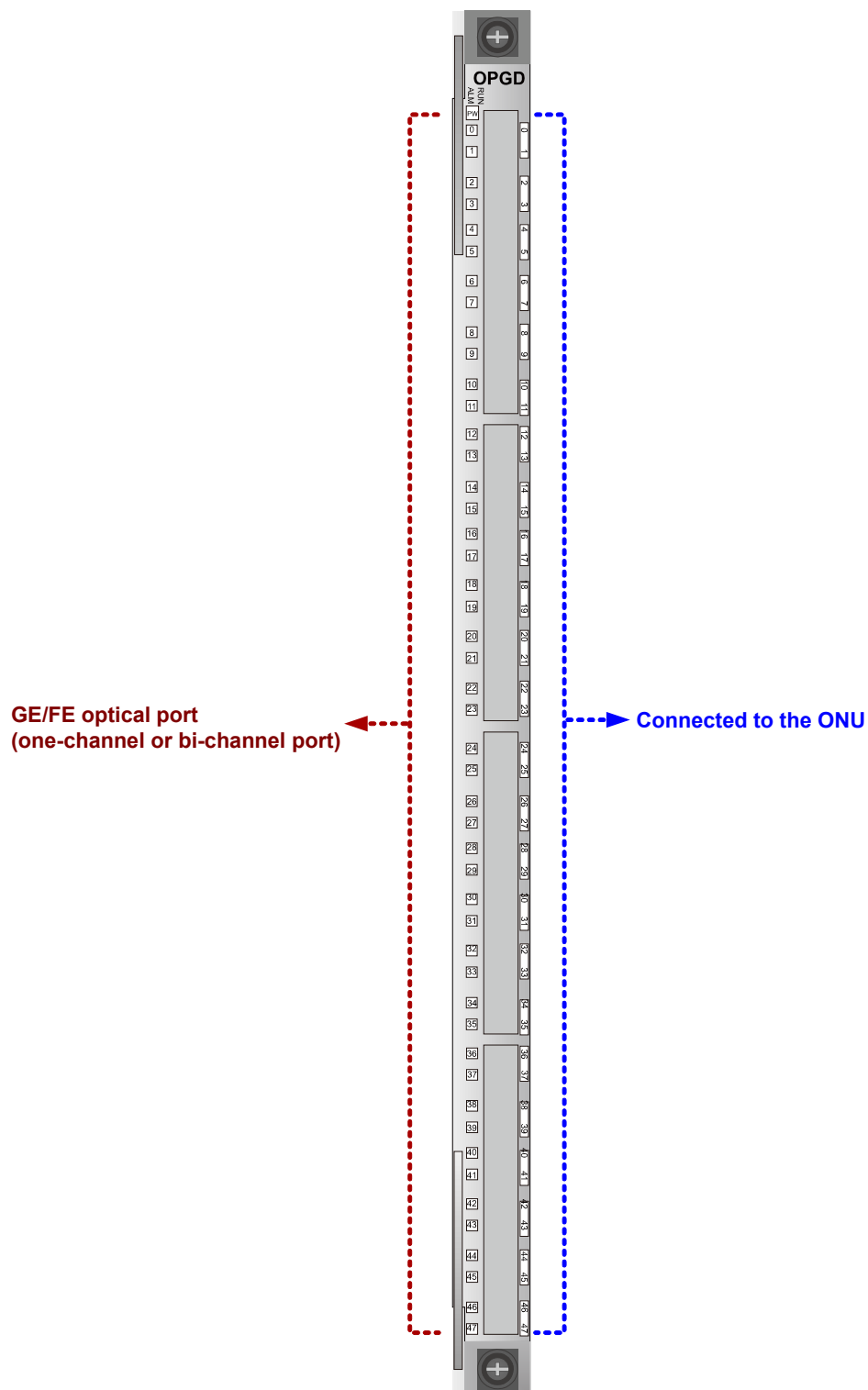
Figure 3-77 Working principle of the H802OPGD board



The basic working principle of the H802OPGD board is as follows:

- The control module controls the board software loading and board running, and manages the board.
- The interface module transmits and receives signals.
- The switching module aggregates and forwards signals, and then transmits the signals to the control board through the XAUI bus of the backplane.
- The power module supplies power to each functional module of the board.
- The clock module provides the working clock for each functional module of the board, and supports synchronous clock issuing.

## Front Panel Port



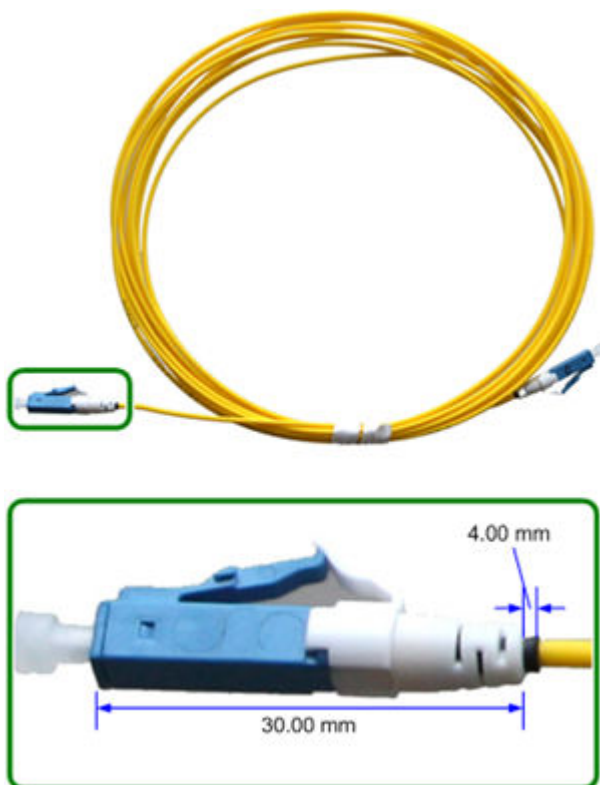
For details about supported optical module or electrical module, see [4.3 GE Optical/Electrical Module](#), [4.5 FE Optical Module](#), and [4.6 FE/GE Adaptive Optical Module](#).

 **NOTE**

- When working with the one-channel modules, it provides 24-channel GE/FE optical access.
- When working with the bi-channel optical modules, it provides 48-channel GE/FE optical access.

## Cable

The LC optical connector used in H802OPGE is shorter than the average LC optical connector.



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated

Indicator	Name	Color	Status	Meaning
		Red	On	The board is faulty
0-47 NOTE Only LEDs with the even IDs are valid when the port is connected to a one-channel optical module.	Link status indicator	Green	On	The connection is successful
		-	Off	The connection fails
		Green	Blinking	Data is being transmitted

### 3.17.4 H802OPGE Board Description

The H802OPGE board is a 48-port GE/FE Optical interface board, providing Ethernet optical access and cascading. It supports up to 48 channels of GE/FE P2P access services.

#### Functional Specifications

Please refer to "[P2P Interface Board Comparison](#)".

When you use H802OPGE boards to replace H802OPGD boards that are bound together, pay attention to the following items:

- For V800R013C00 or earlier versions, you need to remove the 2 H802OPGD boards that are bound together and then replace them with H802OPGE boards. Note that the H802OPGD board and the H802OPGE board cannot be installed in the 2 slots (that are bound together) at the same time.
- For V800R013C10 or later versions, you need to remove one of the 2 H802OPGD boards (that are bound together) and then install 1 H802OPGE board. After the H802OPGE board starts up and functions normally, replace another H802OPGD board.

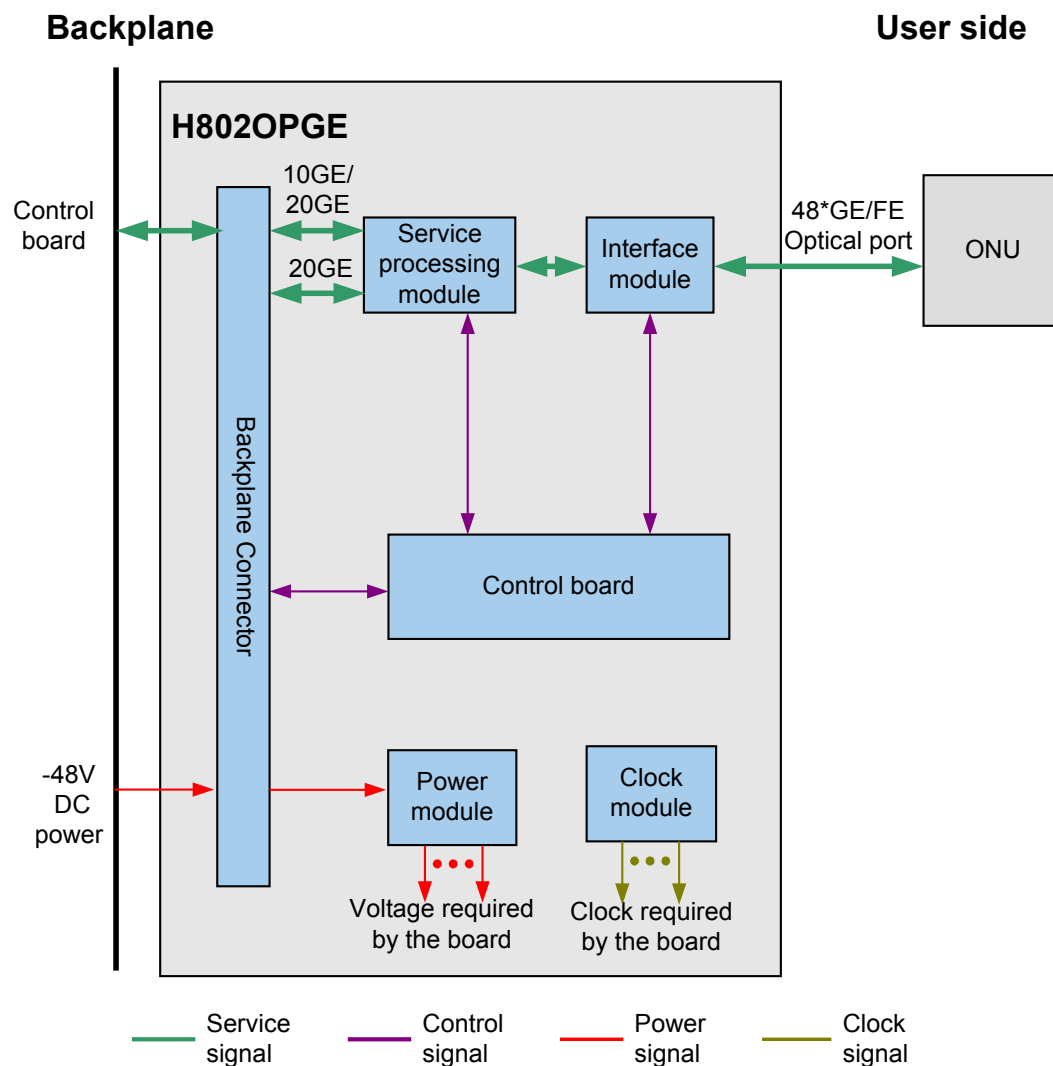
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

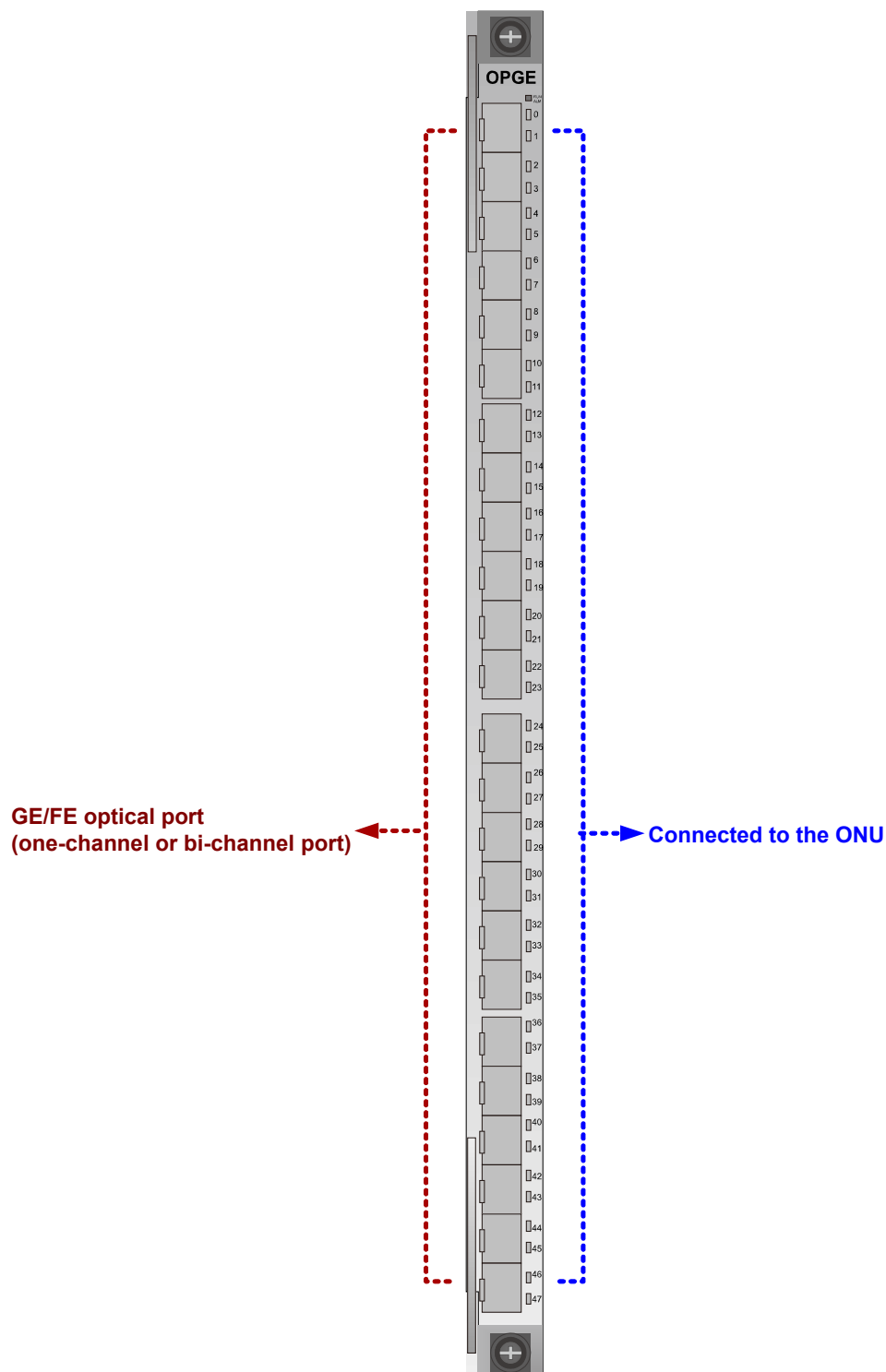
Figure 3-78 Working principle of the H802OPGE board



The basic working principle of the H802OPGE board is as follows:

- The control module controls the board software loading and board running, and manages the board.
- The interface module transmits and receives signals.
- The service processing module processes Ethernet packets, processes and forwards service data packets, and implements service flow management.
- The power module supplies power to each functional module of the board.
- The clock module provides the working clock for each functional module of the board, and supports synchronous clock issuing.

## Front Panel Port



For details about supported optical module or electrical module, see [4.3 GE Optical/Electrical Module](#), [4.5 FE Optical Module](#), and [4.6 FE/GE Adaptive Optical Module](#).

## Cable

The LC optical connector used in H802OPGE is shorter than the average LC optical connector.



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
0-47	Link status indicator	Green	On	The connection is successful
		-	Off	The connection fails

Indicator	Name	Color	Status	Meaning
NOTE Only LEDs with the even IDs are valid when the port is connected to a one-channel optical module.		Green	Blinking	Data is being transmitted

## 3.18 ATM Interface Board

The ATM interface board includes H801AIUG.

### 3.18.1 H801AIUG Board Description

The H801AIUG board is an ATM interface init board. The board connects to the ATM-DSLAM devices in the downstream direction, and also provides the ATM private services.

#### Functional Specifications

The H801AIUG board supports the following functions:

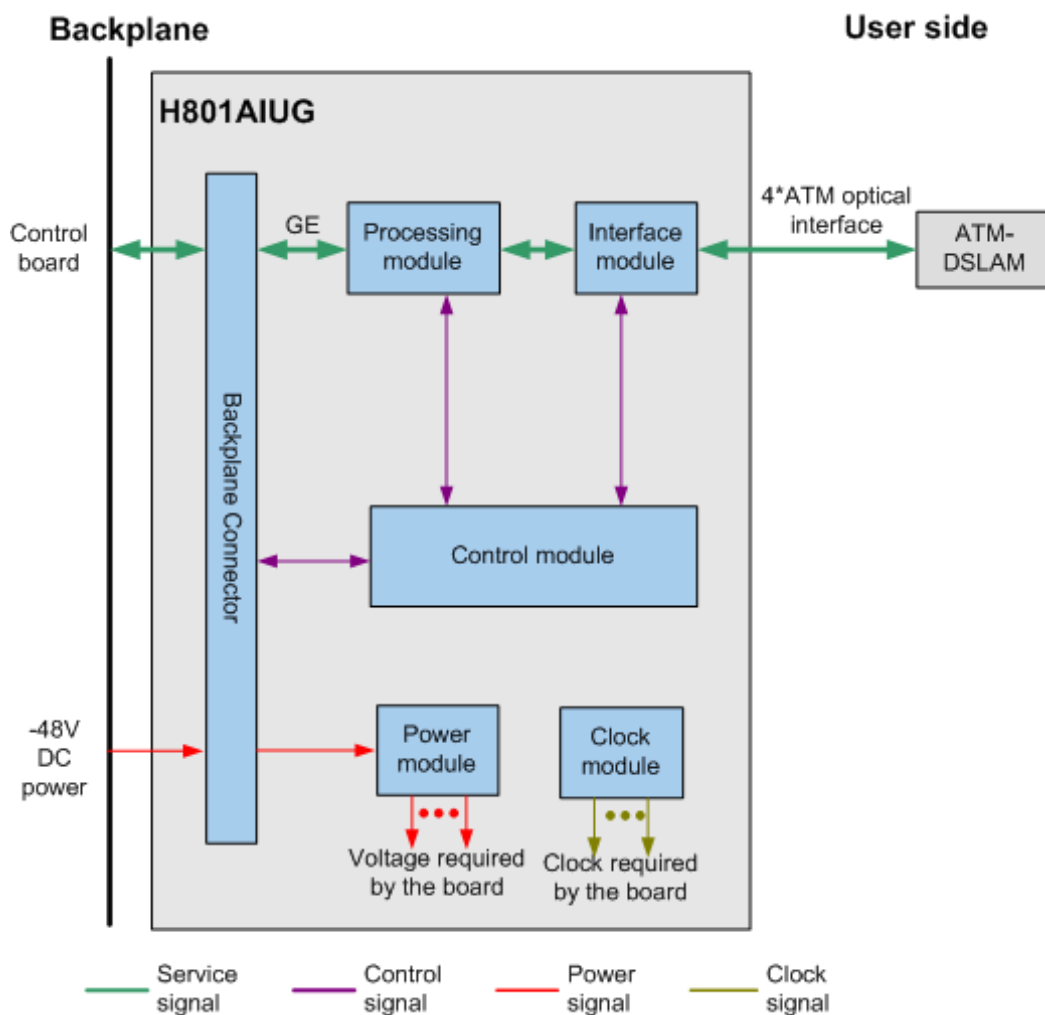
- Four ATM optical ports (STM-1)
- ATM cascading upstream transmission (ATM PWE3) through a private line

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-79 Working principle of the H801AIUG board



The basic working principle of the H801AIUG board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The processing module controls the interconnection between the high speed backplane bus and the interface module.
- The interface module manages the connections, resources, and ATM switching of the ATM layer. The interface module also provides external ports.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

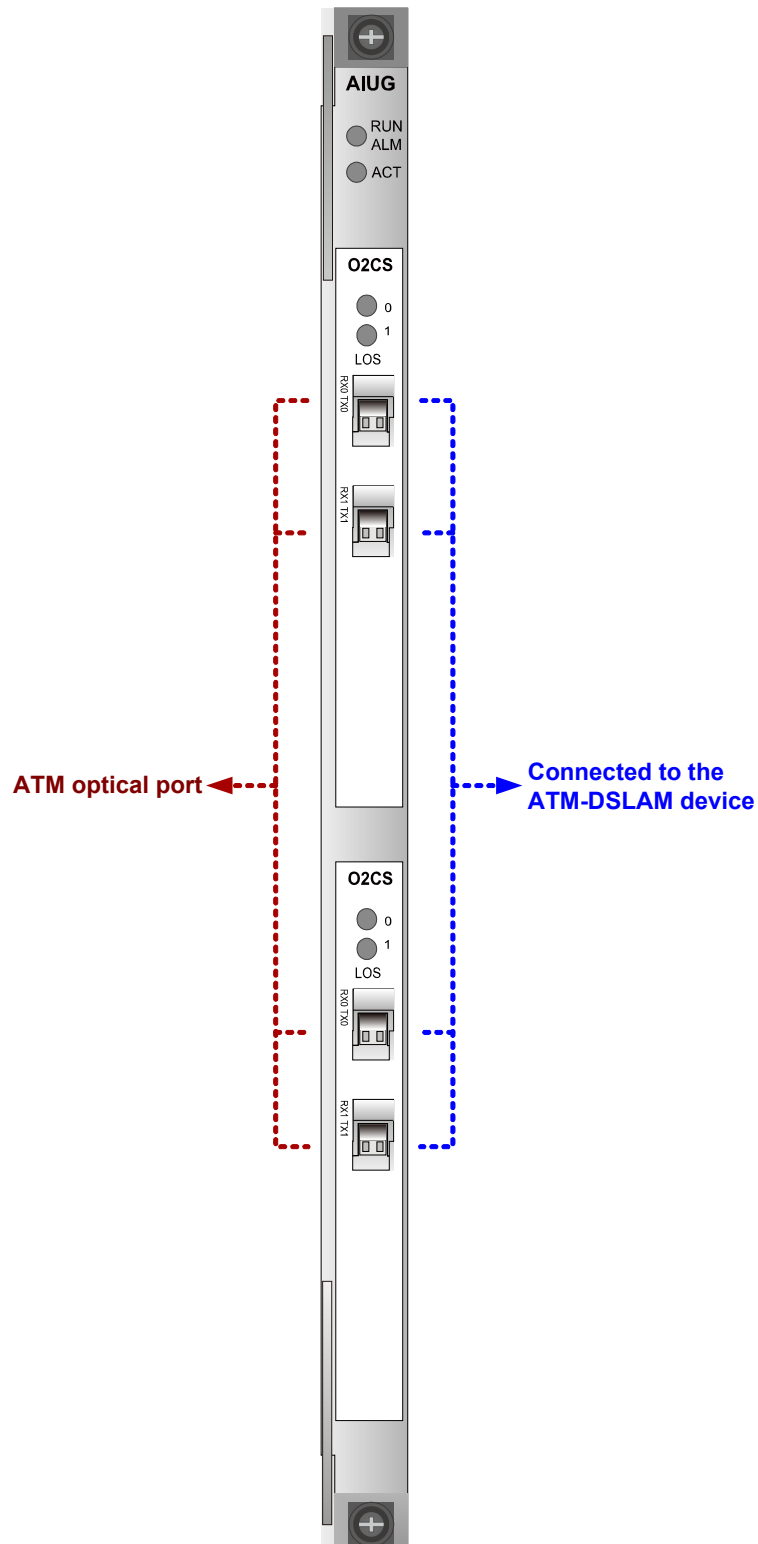
The service process is as follows:

- In the upstream direction, the daughter board transmits the service data from the ATM network to the interface module. The interface module performs ATM switching, that is, VPI/VCI conversion, and then transmits the service data to the processing module. The

processing module performs conversion from ATM to IP, that is, encapsulates ATM packets into MAC frames. Then, the backplane connector transmits the MAC frames to the control board. After the control board processes the MAC frames, the frames are transmitted to the upper level device through the optical or electrical port.

- In the downstream direction, the processing module converts the IP packets from the backplane into ATM cells and then transmits the ATM cells to the interface module. The interface module performs ATM switching and then transmits the ATM cells to the ATM network through the daughter board.

## Front Panel Port



For details about supported optical module, see [4.7 STM-1 Optical Module](#).

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Red	On	The board is faulty
ACT	Active indicator	Green	On	This has no indication
LOS	Current connection status indicator	Red	On	The connection fails or is not activated. The board generates an alarm
		-	Off	The connection is successful. No alarm is generated on the board

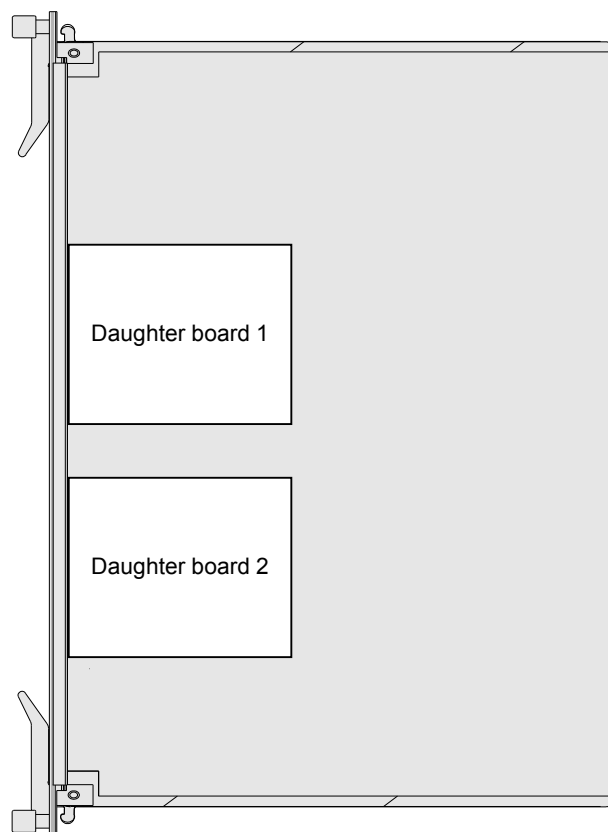
## Daughter Board

The H801AIUG board provides two daughter board ports to hold two daughter boards.

[Figure 3-80](#) shows the positions of the daughter boards on the H801AIUG board.



**Figure 3-80** Positions of the daughter boards on the H801AIUG board



**Table 3-39** describes the daughter board supported by the H801AIUG board.

**Table 3-39** Daughter board supported by the H801AIUG board

Daughter Board	Port	Connection
O2CS	Two ATM optical ports	When only one daughter board is installed, install the daughter board in the upper position daughter board 1.

## 3.19 DSL&POTS Combo Board

The DSL&POTS combo board is a broadband and narrowband combo service board and provides three application modes: combo mode, broadband mode, and narrowband mode. In combo mode, the combo board supports both broadband and voice services.

### 3.19.1 ADSL2&POTS Combo Board Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

## ADSL2+ Specifications Comparison

**Table 3-40** Specifications lists of 48-channel ADSL2+ service boards

Specifications	H80BCAME	H806CAME
<b>Applicable Line</b>	ADSL2+ over POTS	ADSL2+ over POTS
<b>Physical Layer Retransmission (G.INP)</b>	Yes (Supported by V800R009C00 and later)	No
<b>ADSL2+ Bonding</b>	Yes	No
<b>INM</b>	Yes	No
<b>SELT</b>	Yes	Yes
<b>xDSL MELT</b>	No	No
<b>Annex Type</b>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M (EU32-EU64)</li> <li>● G.992.5 Annex A/M (EU32-EU64)</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M (EU32-EU64)</li> <li>● G.992.5 Annex A/M (EU32-EU64)</li> </ul>
<b>Flexible Configuration Modes</b>	Supports RFC2662, RFC4706, and TR165. (Users with a super user account can log in to the system and run the <b>switch adsl mode to</b> command in diagnose mode to switch between the configuration modes. The default configuration mode is RFC2662. Considering the current development trend, it is recommended that you use TR165, which is more flexible than the others)	Supports RFC2662, RFC4706, and TR165. (Users with a super user account can log in to the system and run the <b>switch adsl mode to</b> command in diagnose mode to switch between the configuration modes. The default configuration mode is RFC2662. Considering the current development trend, it is recommended that you use TR165, which is more flexible than the others)
<b>Connector</b>	Delander 64-pin	Delander 64-pin
<b>Built-in Splitter</b>	Yes	Yes
<b>Temperature Query and High-temperature Alarm</b>	Yes	Yes
<b>Automatic Power Shutdown in Case of a High Temperature</b>	Yes	Yes

## POTS Specifications Comparison

**Table 3-41** POTS Specifications lists of Combo boards

Specification	H80BCAME/H806CAME
Connector	Delander 64-pin
DSP channel (G.711)	48
Codec	G.711A G.711U G.729 G.723 G.726
POTS MELT	Yes
MELT precision	High
High temperature automatic shutdown	Yes
Short loop	Yes
Polarity of wires a and b	a+ b-
16/12 KC	No
Powering on/off by command	Yes
Polarity reversal	Yes
Power supply at high voltage (for a long distance)	Yes
Port current	20 mA/25 mA/30 mA

### 3.19.2 VDSL2&POTS Combo Board Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

#### VDSL2 Specifications Comparison

**Table 3-42** VDSL2 Specifications lists of Combo boards

Specification	H80BCVME	H806CCPE	H80DCCPE	H80DCSPE
Applicable Lines	VDSL2 and POTS	VDSL2 and POTS	VDSL2 and POTS	VDSL2 and POTS
Number of ports	48	64	64	64

Specification	H80BCVME	H806CCPE	H80DCCPE	H80DCSPE
<b>G.INP</b>	Yes	Yes	Yes	Yes
<b>VDSL2 PTM Bonding</b>	Yes (two-pair, only the port with an even number can be specified as the master port. n and m are integers, such as 0, 1, and 2.)	Yes (Supports a maximum of 4-pair bonding of any ports on the same board)	Yes (Supports a maximum of 4-pair bonding of any ports on the same board, supports 8-pair bonding when being connected to the MA5694)	Yes (Supports a maximum of 8-pair bonding of any ports on the same board)
<b>INM</b>	Yes	Yes	Yes	Yes
<b>SELT</b>	Yes	Yes	Yes	Yes
<b>VDSL MELT</b>	No	No	No	No
<b>Spectrum Parameter Profile</b>	Supports 8a, 8b, 8c, 8d, 12a, 12b, and 17a	Supports 8a, 8b, 8c, 8d, 12a, 12b, and 17a	Supports 8a, 8b, 8c, 8d, 12a, 12b, and 17a	Supports 8a, 8b, 8c, 8d, 12a, 12b, 17a, and 35b
<b>Annex Type</b>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M</li> <li>● G.992.5 Annex A/M</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M</li> <li>● G.992.5 Annex A/M</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M</li> <li>● G.992.5 Annex A/M</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M</li> <li>● G.992.5 Annex A/M</li> <li>● G.993.2 Annex A/B</li> </ul>
<b>Flexible Configuration Modes</b>	Supports TR129 and TR165.	Supports TR129 and TR165.	Supports TR129 and TR165.	Supports TR129 and TR165.
<b>Built-in Splitter</b>	Yes	Yes	Yes	Yes
<b>Temperature Query and High-temperature Alarm</b>	Yes	Yes	Yes	Yes

Specification	H80BCVME	H806CCPE	H80DCCPE	H80DCSPE
<b>Automatic Power Shutdown in the Event of a High Temperature</b>	Yes	Yes	Yes	Yes
<b>Connector</b>	Delander 64-pin	Delander 64-pin	Delander 64-pin	Delander 64-pin

## POTS Specifications Comparison

Table 3-43 POTS Specifications lists of Combo boards

Specification	H80BCVME	H806CCPE	H80DCCPE	H80DCSPE
<b>Connector</b>	Delander 64-pin	Delander 64-pin	Delander 64-pin	Delander 64-pin
<b>DSP channel (G.711)</b>	48	64	64	64
<b>Codec</b>	G.711A G.711U G.729 G.723 G.726	G.711A G.711U G.729 G.723 G.726	G.711A G.711U G.729 G.723 G.726	G.711A G.711U G.729 G.723 G.726
<b>POTS MELT</b>	Yes	Yes	Yes	Yes
<b>MELT precision</b>	High	High	High	High
<b>High temperature automatic shutdown</b>	Yes	Yes	Yes	Yes
<b>Short loop</b>	√	Yes	Yes	Yes
<b>Polarity of wires a and b</b>	a+ b-	a+ b-	a+ b-	a+ b-
<b>16/12 KC</b>	No	No	No	No
<b>Powering on/off by command</b>	Yes	Yes	Yes	Yes
<b>Polarity reversal</b>	Yes	Yes	Yes	Yes

Specification	H80BCVME	H806CCPE	H80DCCPE	H80DCSPE
Power supply at high voltage (for a long distance)	Yes	Yes	Yes	Yes
Port current	20 mA/25 mA/30 mA	20 mA/25 mA/30 mA	20 mA/25 mA/30 mA/35 mA/40 mA	20 mA/25 mA/30 mA/35 mA/40 mA

### 3.19.3 H80BCAME Board Description

H80BCAME is a 48-port ADSL2+&POTS combo board with built-in splitter, providing 48 channels of ADSL2+ and POTS access services.

#### Feature and Specifications

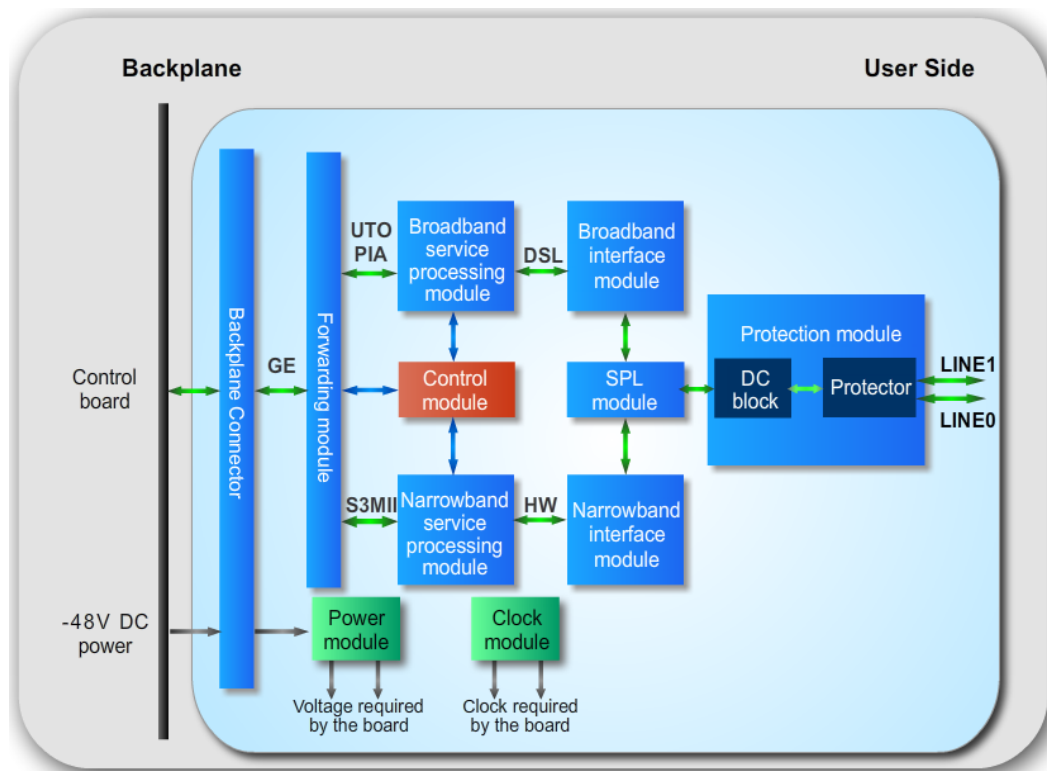
Please refer to "[ADSL2&POTS Combo Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

Figure 3-81 Working principle of the H80BCAME board



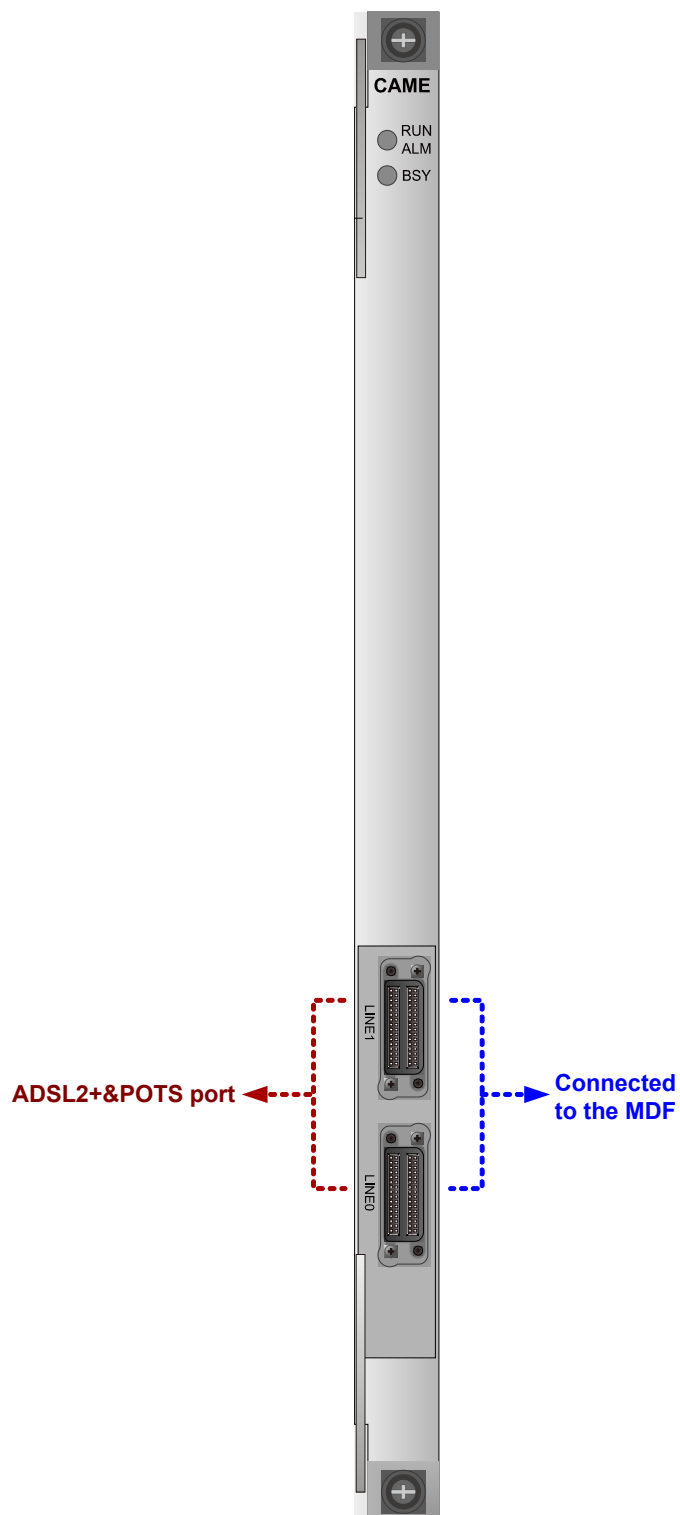
 **NOTE**

- UTOPIA is a universal test and operations PHY interface for asynchronous transfer mode (ATM).
- S3MII is a source synchronous serial media independent interface.

The basic working principle of the H80BCAME board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes.
- The splitter module separates POTS signals from ADSL2+ signals over the subscriber line.
- The broadband interface module converts the ADSL2+ line signals into cell flows.
- The broadband service processing module implements functions such as encoding/decoding, analog-to-digital conversion, and line drive for ADSL2+ services. It then sends ADSL2+ services to the forwarding module through the UTOPIA interface.
- The narrowband interface module provides access to 48-channel narrowband service.
- The narrowband service processing module encodes and decodes narrowband voice services and converts analog signals into digital signals. It then sends narrowband voice services to the forwarding module through the S3MII interface.
- The forwarding module converts broadband signals and narrowband signals into GE signals for upstream transmission through the backplane.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port







## NOTICE

- When cables from the LINE ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking (on for 1 s and off for 1 s repeatedly)	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Service online status indicator	Green	On	At least one subscriber port is activated
		-	Off	None of the subscriber ports are activated

## Pin Assignments

**Table 3-44** describes the pin assignments of the LINE0 port on the front panel of the H80BCAME board, and **Table 3-45** describes the pin assignments of the LINE1 port on the front panel of the H80BCAME board.

**Table 3-44** Pin assignments of the LINE0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	7	17	A	15	33	A	23	49	A	-
2	B		18	B		34	B		50	B	
3	A	6	19	A	14	35	A	22	51	A	-
4	B		20	B		36	B		52	B	
5	A	5	21	A	13	37	A	21	53	A	-
6	B		22	B		38	B		54	B	
7	A	4	23	A	12	39	A	20	55	A	-
8	B		24	B		40	B		56	B	
9	A	3	25	A	11	41	A	19	57	A	-
10	B		26	B		42	B		58	B	
11	A	2	27	A	10	43	A	18	59	A	-
12	B		28	B		44	B		60	B	
13	A	1	29	A	9	45	A	17	61	A	-
14	B		30	B		46	B		62	B	
15	A	0	31	A	8	47	A	16	63	A	-
16	B		32	B		48	B		64	B	

**Table 3-45** Pin assignments of the LINE1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	3	17	A	39	33	A	47	49	A	-
2	B	1	18	B		34	B		50	B	
3	A	3	19	A	38	35	A	46	51	A	-
4	B	0	20	B		36	B		52	B	
5	A	2	21	A	37	37	A	45	53	A	-
6	B	9	22	B		38	B		54	B	
7	A	2	23	A	36	39	A	44	55	A	-
8	B	8	24	B		40	B		56	B	
9	A	2	25	A	35	41	A	43	57	A	-
10	B	7	26	B		42	B		58	B	

Pin	Signal		Pin	Signal		Port	Pin	Signal		Pin	Signal	
11	A	2	27	A	34		43	A	42	59	A	-
12	B	6		28				B		60	B	-
13	A	2	29	A	33		45	A	41	61	A	-
14	B	5		30				B		62	B	-
15	A	2	31	A	32		47	A	40	63	A	-
16	B	4		32				B		64	B	-

### 3.19.4 H806CAME Board Description

H806CAME is a 48-port ADSL2+&POTS combo board with built-in splitter, providing 48 channels of ADSL2+ and POTS access services.

#### Functional Specifications

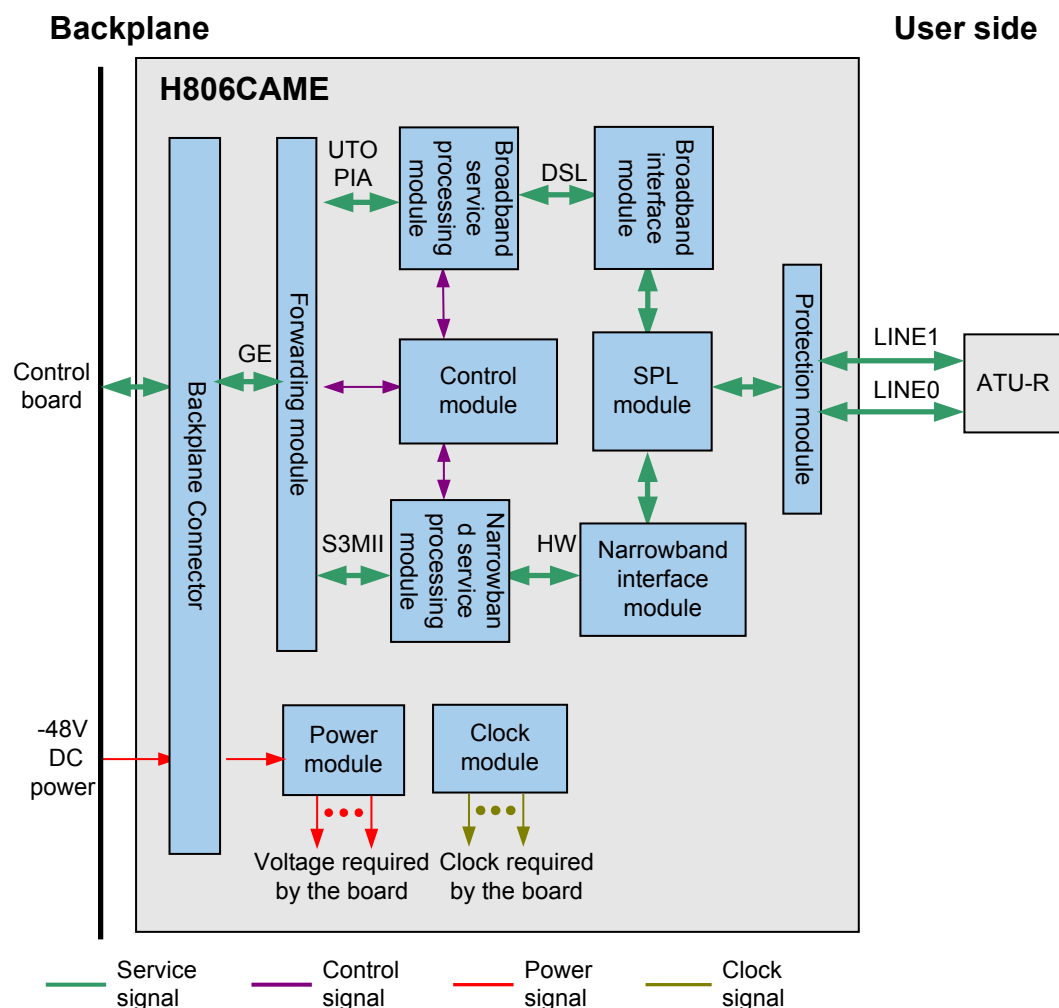
Please refer to "[ADSL2&POTS Combo Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-82 Working principle of the H806CAME board



### NOTE

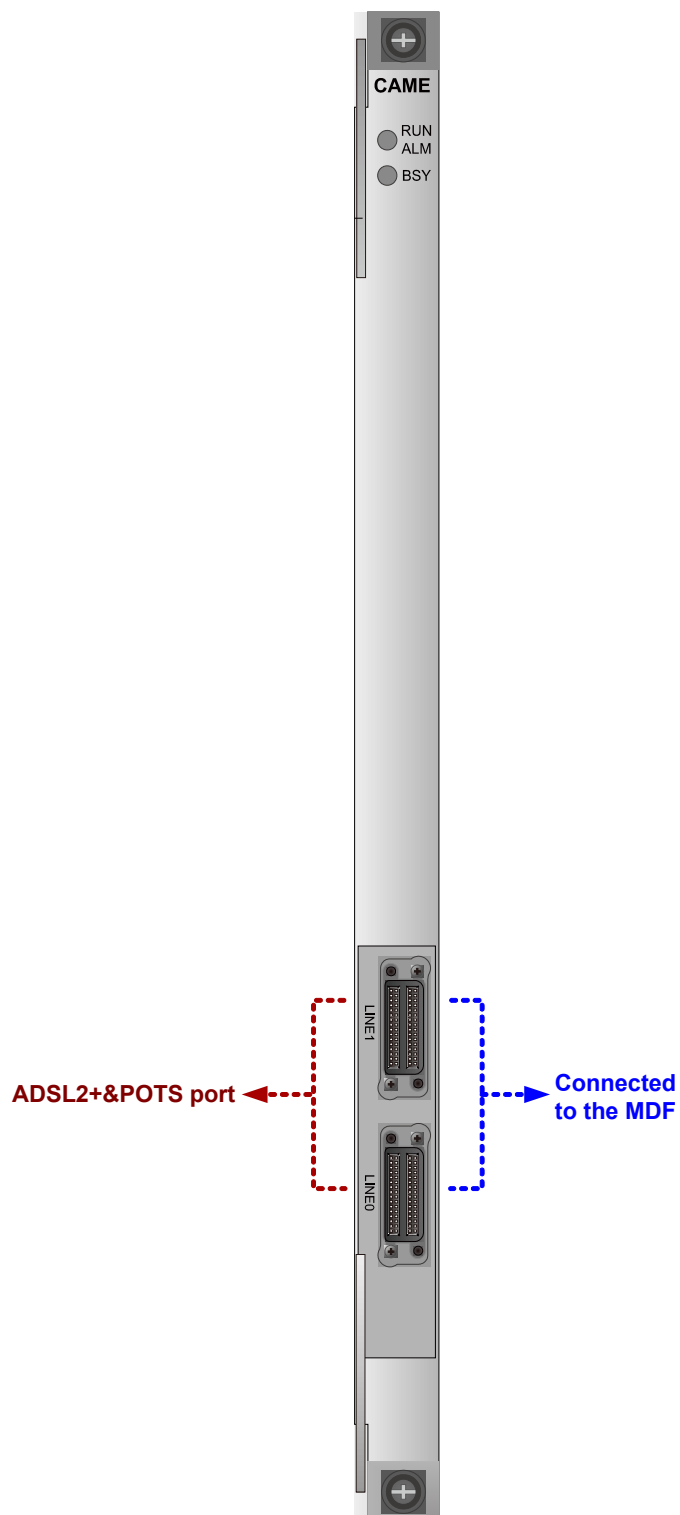
- UTOPIA is a universal test and operations PHY interface for asynchronous transfer mode (ATM).
- S3MII is a source synchronous serial media independent interface.

The basic working principle of the H806CAME board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes.
- The splitter module separates POTS signals from ADSL2+ signals over the subscriber line.
- The broadband interface module converts the ADSL2+ line signals into cell flows.
- The broadband service processing module implements functions such as encoding/decoding, analog-to-digital conversion, and line drive for ADSL2+ services. It then sends ADSL2+ services to the forwarding module through the UTOPIA interface.

- The narrowband interface module provides access to 48-channel narrowband service.
- The narrowband service processing module encodes and decodes narrowband voice services and converts analog signals into digital signals. It then sends narrowband voice services to the forwarding module through the S3MII interface.
- The forwarding module converts broadband signals and narrowband signals into GE signals for upstream transmission through the backplane.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

## Front Panel Port



## NOTICE

- When cables from the LINE ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking (on for 1 s and off for 1 s repeatedly)	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Service online status indicator	Green	On	At least one subscriber port is activated
		-	Off	None of the subscriber ports are activated

## Pin Assignments

**Table 3-46** describes the pin assignments of the LINE0 port on the front panel of the H806CAME board, and **Table 3-47** describes the pin assignments of the LINE1 port on the front panel of the H806CAME board.

**Table 3-46** Pin assignments of the LINE0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	7	17	A	15	33	A	23	49	A	-
2	B		18	B		34	B		50	B	
3	A	6	19	A	14	35	A	22	51	A	-
4	B		20	B		36	B		52	B	
5	A	5	21	A	13	37	A	21	53	A	-
6	B		22	B		38	B		54	B	
7	A	4	23	A	12	39	A	20	55	A	-
8	B		24	B		40	B		56	B	
9	A	3	25	A	11	41	A	19	57	A	-
10	B		26	B		42	B		58	B	
11	A	2	27	A	10	43	A	18	59	A	-
12	B		28	B		44	B		60	B	
13	A	1	29	A	9	45	A	17	61	A	-
14	B		30	B		46	B		62	B	
15	A	0	31	A	8	47	A	16	63	A	-
16	B		32	B		48	B		64	B	

**Table 3-47** Pin assignments of the LINE1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	3	17	A	39	33	A	47	49	A	-
2	B	1	18	B		34	B		50	B	
3	A	3	19	A	38	35	A	46	51	A	-
4	B	0	20	B		36	B		52	B	
5	A	2	21	A	37	37	A	45	53	A	-
6	B	9	22	B		38	B		54	B	
7	A	2	23	A	36	39	A	44	55	A	-
8	B	8	24	B		40	B		56	B	
9	A	2	25	A	35	41	A	43	57	A	-
10	B	7	26	B		42	B		58	B	



Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal		
11	A	26	27	A	43	A	42	59	A	-
12	B		28	B		44		B	60	
13	A	25	29	A	45	A	41	61	A	-
14	B		30	B		46		B	62	
15	A	24	31	A	47	A	40	63	A	-
16	B		32	B		48		B	64	

### 3.19.5 H80BCVME Board Description

H80BCVME is a 48-port VDSL2&POTS combo board with built-in splitter, providing 48 channels of VDSL2 and POTS access services.

#### Functional Specifications

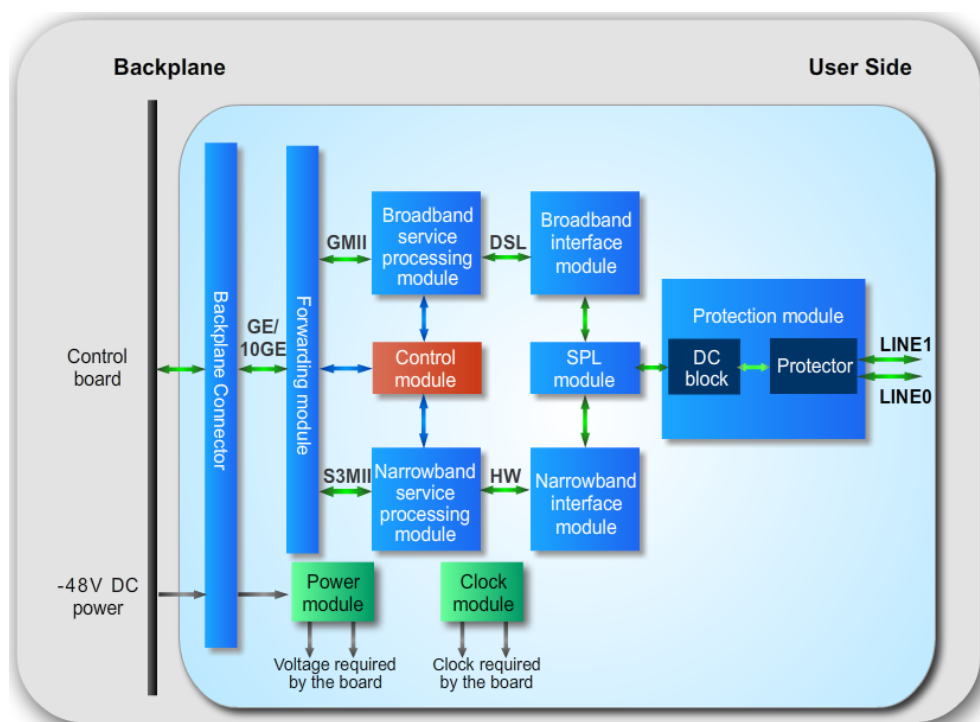
Please refer to "[VDSL2&POTS Combo Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

Figure 3-83 Working principle of the H80BCVME board



 **NOTE**

- GMII is a gigabit media independent interface.
- S3MII is a source synchronous serial media independent interface.

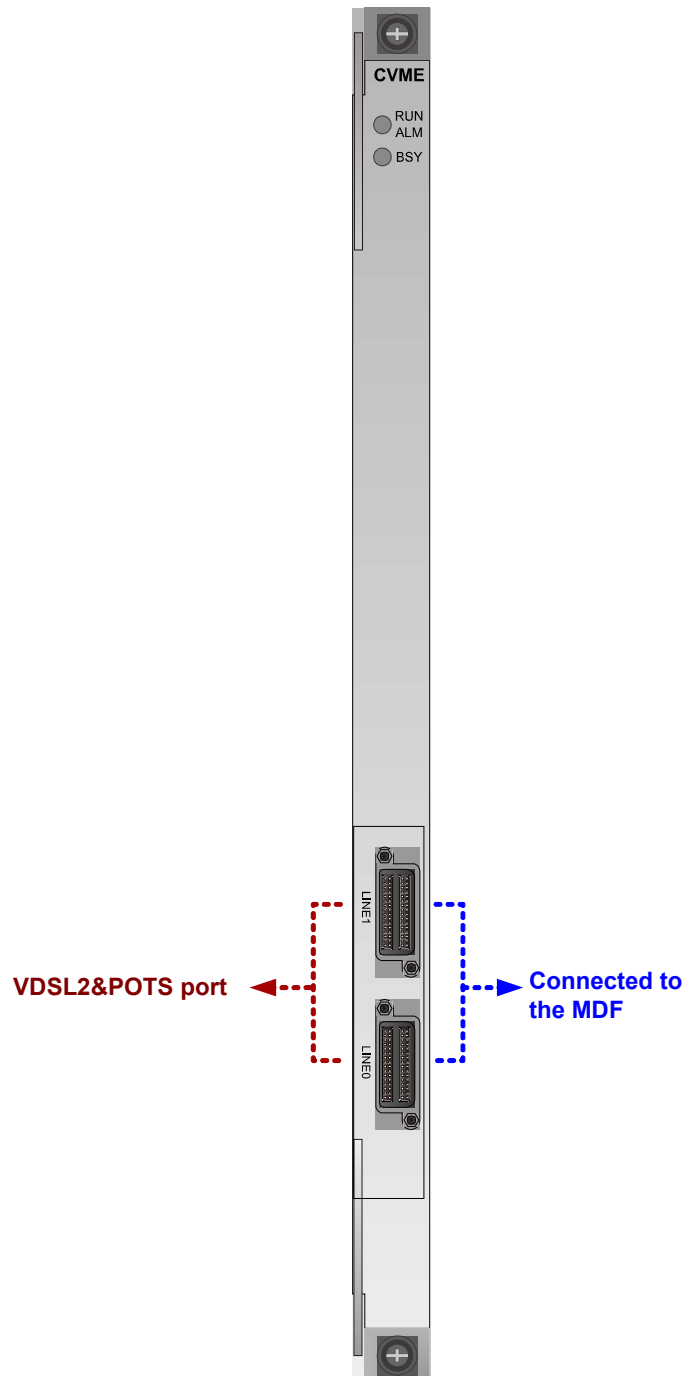
The basic working principle of the H80BCVME board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes.
- The splitter module separates POTS signals from VDSL2 signals over the subscriber line.
- The broadband interface module converts the VDSL2 line signals into cell flows.
- The broadband service processing module implements functions such as encoding/decoding, analog-to-digital conversion, and line drive for VDSL2 services. It then sends VDSL2 services to the forwarding module through the GMII interface.
- The narrowband interface module provides access to 48-channel narrowband service.
- The narrowband service processing module encodes and decodes narrowband voice services and converts analog signals into digital signals. It then sends narrowband voice services to the forwarding module through the S3MII interface.
- The forwarding module converts broadband signals and narrowband signals into 10GE/GE signals for upstream transmission through the backplane.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

The service processing is as follows:

- In the upstream direction, the splitter module separates signals over the subscriber line into POTS signals and VDSL2 signals. The broadband interface module then sends VDSL2 signals to the broadband service processing module, and the narrowband interface module sends POTS signals to the narrowband service processing module. After that, signals from the broadband and narrowband service processing modules are aggregated to the forwarding module. The forwarding module reassembles the cell flow into PTM packets, encapsulates the PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logic switch, the IP packets are transmitted to the backplane bus through the backplane GE or 10GE interface.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits them to the broadband and narrowband service processing modules. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line through the splitter module.

## Front Panel Port



### NOTICE

- When cables from the LINE ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

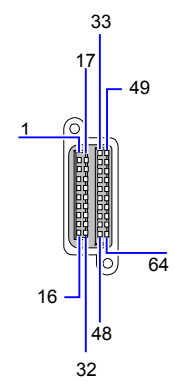
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking (on for 1 s and off for 1 s repeatedly)	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Service online status indicator	Green	On	At least one subscriber port is activated
		-	Off	None of the subscriber ports are activated

## Pin Assignments

**Table 3-48** describes the pin assignments of the LINE0 port on the front panel of the H80BCVME board, and **Table 3-49** describes the pin assignments of the LINE1 port on the front panel of the H80BCVME board.

**Table 3-48** Pin assignments of the LINE0 port

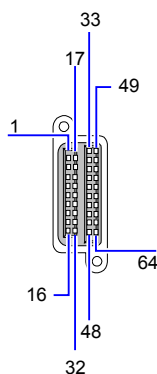
Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	7	17	A	15	33	A	23	49	A	-
2	B		18	B		17	B		50	B	
3	A	6	19	A	14	49	A	22	51	A	-
4	B		20	B		16	B		52	B	
5	A	5	21	A	13	64	A	21	53	A	-
6	B		22	B		48	B		54	B	
7	A	4	23	A	12	32	A	20	55	A	-
8	B		24	B		1	B		56	B	



Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
9	A	3	25	A	11	41	A	19	57	A	-
10	B		26	B		42	B		58	B	
11	A	2	27	A	10	43	A	18	59	A	-
12	B		28	B		44	B		60	B	
13	A	1	29	A	9	45	A	17	61	A	-
14	B		30	B		46	B		62	B	
15	A	0	31	A	8	47	A	16	63	A	-
16	B		32	B		48	B		64	B	

Table 3-49 Pin assignments of the LINE1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	3	17	A	39	33	A	47	49	A	-
2	B	1	18	B		34	B		50	B	
3	A	3	19	A	38	35	A	46	51	A	-
4	B	0	20	B		36	B		52	B	
5	A	2	21	A	37	37	A	45	53	A	-
6	B	9	22	B		38	B		54	B	
7	A	2	23	A	36	39	A	44	55	A	-
8	B	8	24	B		40	B		56	B	
9	A	2	25	A	35	41	A	43	57	A	-
10	B	7	26	B		42	B		58	B	
11	A	2	27	A	34	43	A	42	59	A	-
12	B	6	28	B		44	B		60	B	
13	A	2	29	A	33	45	A	41	61	A	-
14	B	5	30	B		46	B		62	B	
15	A	2	31	A	32	47	A	40	63	A	-
16	B	4	32	B		48	B		64	B	



### 3.19.6 H806CCPE Board Description

H806CCPE is a 64-port VDSL2&POTS combo board with built-in splitter, providing 64 channels of VDSL2 and POTS access services.

#### Functional Specifications

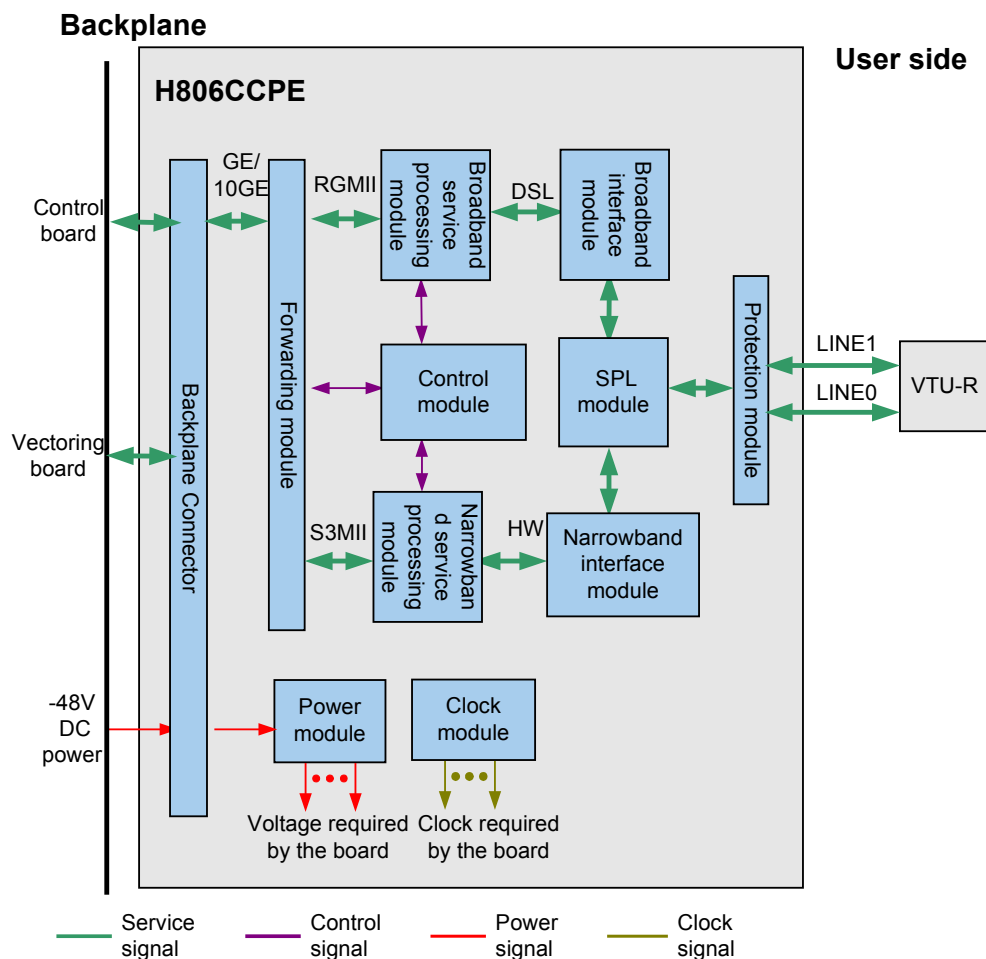
Please refer to "[VDSL2&POTS Combo Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

Figure 3-84 Working principle of the H806CCPE board



#### NOTE

- RGMI is a gigabit media independent interface.
- S3MII is a source synchronous serial media independent interface.

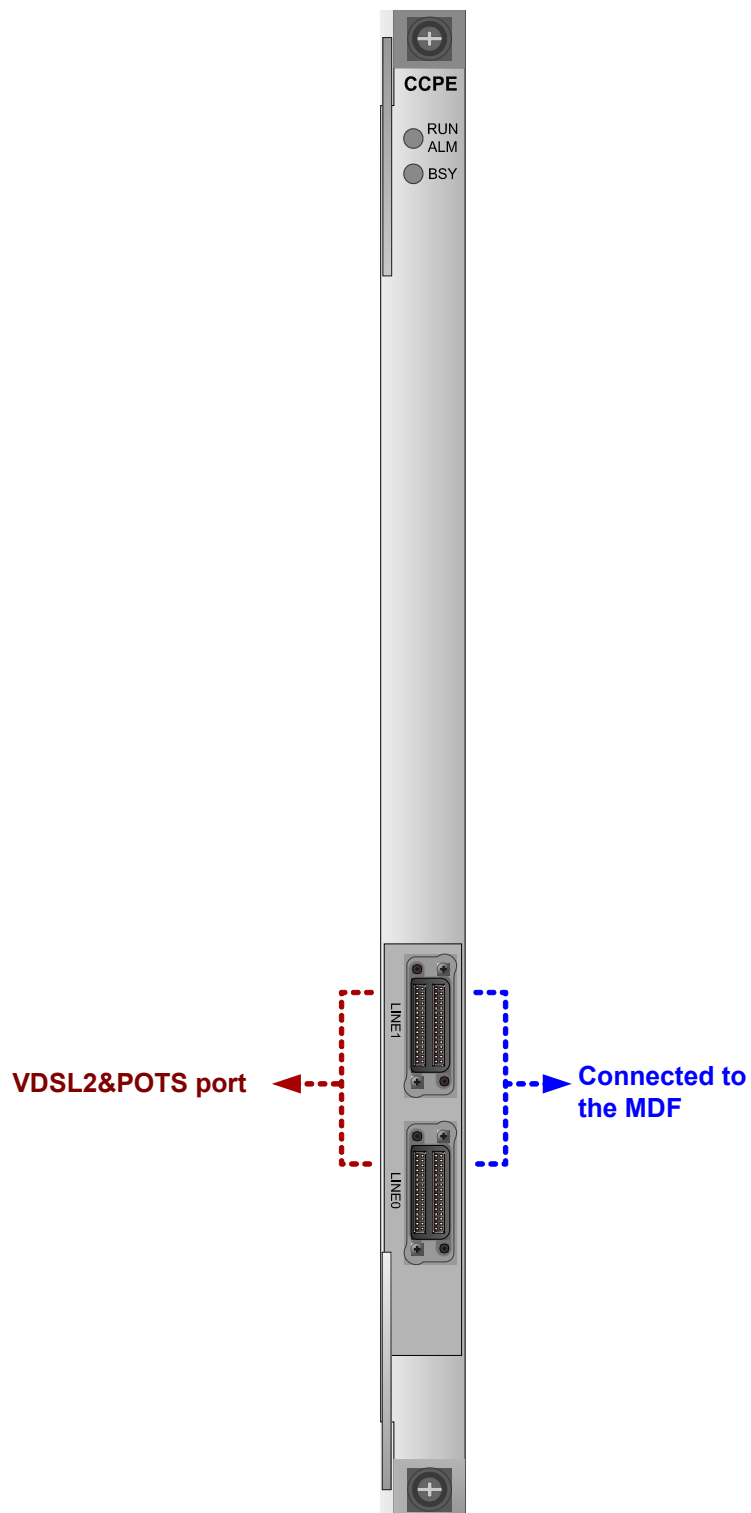
The basic working principle of the H806CCPE board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes.
- The splitter module separates POTS signals from VDSL2 signals over the subscriber line.
- The broadband interface module converts the VDSL2 line signals into cell flows.
- The broadband service processing module implements functions such as encoding/decoding, analog-to-digital conversion, and line drive for VDSL2 services. It then sends VDSL2 services to the forwarding module through the RGMII interface.
- The narrowband interface module provides access to 64-channel narrowband service.
- The narrowband service processing module encodes and decodes narrowband voice services and converts analog signals into digital signals. It then sends narrowband voice services to the forwarding module through the S3MII interface.
- The forwarding module converts broadband signals and narrowband signals into 10GE/GE signals for upstream transmission through the backplane.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

The service processing is as follows:

- In the upstream direction, the splitter module separates signals over the subscriber line into POTS signals and VDSL2 signals. The broadband interface module then sends VDSL2 signals to the broadband service processing module, and the narrowband interface module sends POTS signals to the narrowband service processing module. After that, signals from the broadband and narrowband service processing modules are aggregated to the forwarding module. The forwarding module reassembles the cell flow into PTM packets, encapsulates the PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logic switch, the IP packets are transmitted to the backplane bus through the backplane GE or 10GE interface.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits them to the broadband and narrowband service processing modules. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line through the splitter module.

## Front Panel Port





## NOTICE

- When cables from the LINE ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking (on for 1 s and off for 1 s repeatedly)	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Service online status indicator	Green	On	At least one subscriber port is activated
		-	Off	None of the subscriber ports are activated

## Pin Assignments

**Table 3-50** describes the pin assignments of the LINE0 port on the front panel of the H806CCPE board, and **Table 3-51** describes the pin assignments of the LINE1 port on the front panel of the H806CCPE board.

**Table 3-50** Pin assignments of the LINE0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	7	17	A	15	33	A	23	49	A	31
2	B		18	B		34	B		50	B	
3	A	6	19	A	14	35	A	22	51	A	30
4	B		20	B		36	B		52	B	
5	A	5	21	A	13	37	A	21	53	A	29
6	B		22	B		38	B		54	B	
7	A	4	23	A	12	39	A	20	55	A	28
8	B		24	B		40	B		56	B	
9	A	3	25	A	11	41	A	19	57	A	27
10	B		26	B		42	B		58	B	
11	A	2	27	A	10	43	A	18	59	A	26
12	B		28	B		44	B		60	B	
13	A	1	29	A	9	45	A	17	61	A	25
14	B		30	B		46	B		62	B	
15	A	0	31	A	8	47	A	16	63	A	24
16	B		32	B		48	B		64	B	

**Table 3-51** Pin assignments of the LINE1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	3	17	A	47	33	A	47	49	A	63
2	B	9	18	B		34	B		50	B	
3	A	3	19	A	46	35	A	46	51	A	62
4	B	8	20	B		36	B		52	B	
5	A	3	21	A	45	37	A	45	53	A	61
6	B	7	22	B		38	B		54	B	
7	A	3	23	A	44	39	A	44	55	A	60
8	B	6	24	B		40	B		56	B	
9	A	3	25	A	43	41	A	43	57	A	59
10	B	5	26	B		42	B		58	B	

Pin	Signal		Pin	Signal	Port	Pin	Signal		Pin	Signal		
11	A	3	27	A	42		43	A	42	59	A	58
12	B	4	28	B			44	B		60	B	
13	A	3	29	A	41		45	A	41	61	A	57
14	B	3	30	B			46	B		62	B	
15	A	3	31	A	40		47	A	40	63	A	56
16	B	2	32	B			48	B		64	B	

### 3.19.7 H80DCCPE Board Description

H80DCCPE is a 64-port VDSL2&POTS Combo Board with built-in splitter, providing 64 channels of VDSL2 and POTS access services and supporting Vectoring.

#### Feature and Specifications

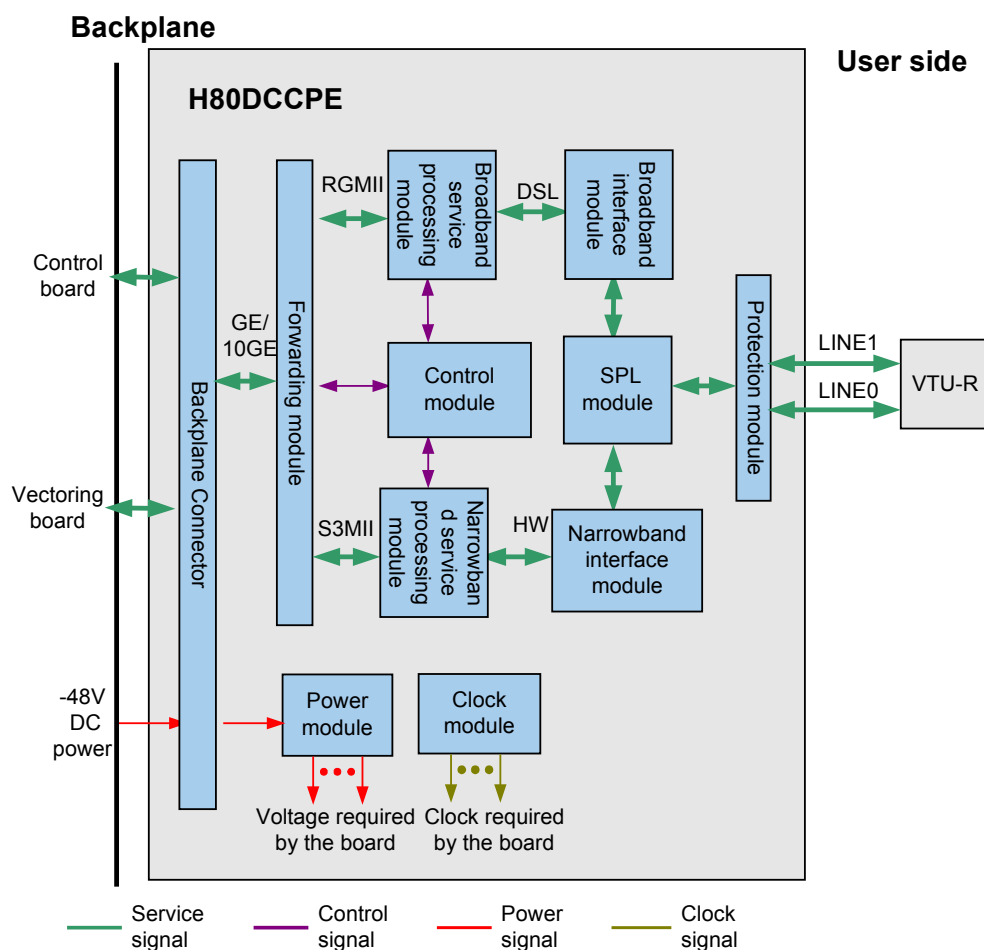
Please refer to "[VDSL2&POTS Combo Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-85 Working principle of the H80DCCPE board



### NOTE

- RGMII is a gigabit media independent interface.
- S3MII is a source synchronous serial media independent interface.

The basic working principle of the H80DCCPE board is as follows:

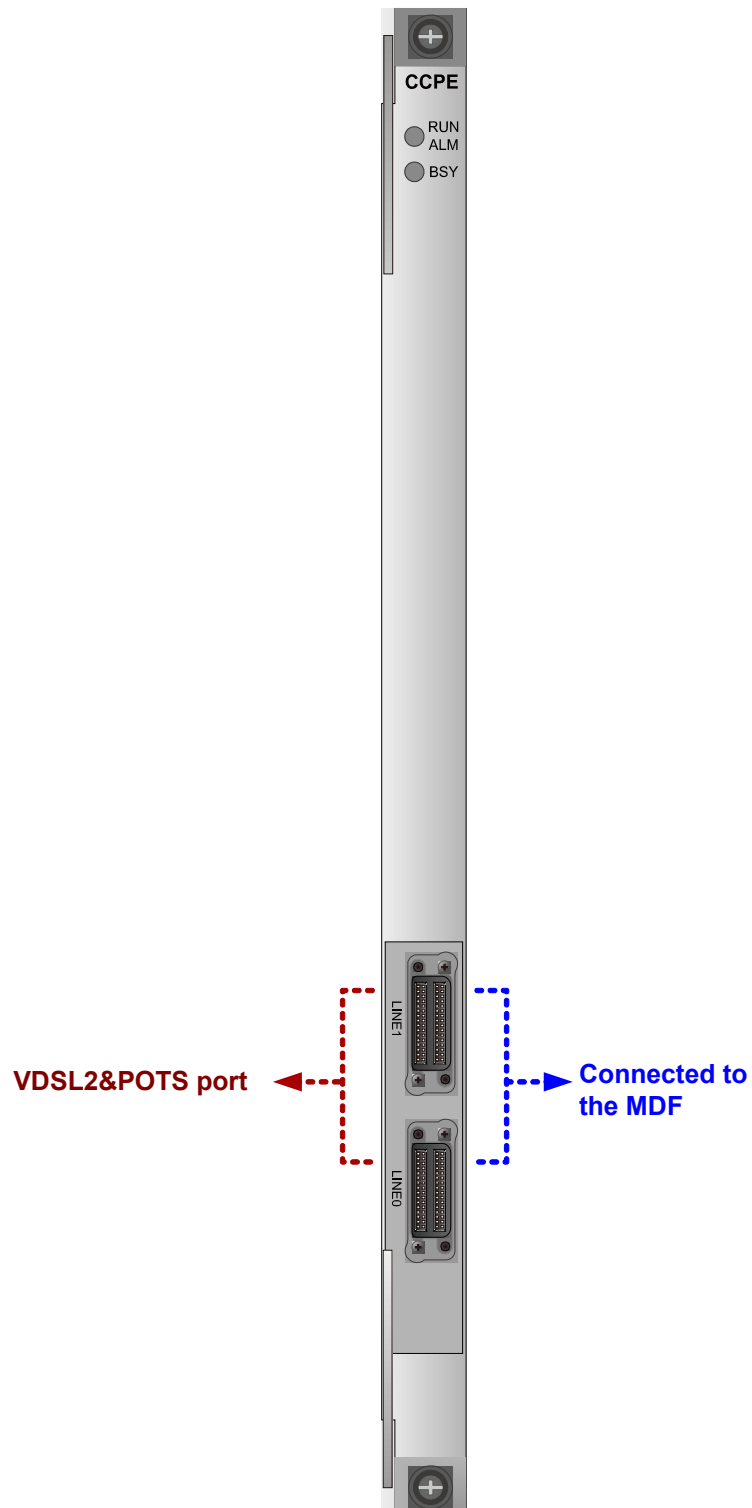
- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes.
- The splitter module separates POTS signals from VDSL2 signals over the subscriber line.
- The broadband interface module converts the VDSL2 line signals into cell flows.
- The broadband service processing module implements functions such as encoding/decoding, analog-to-digital conversion, and line drive for VDSL2 services. It then sends VDSL2 services to the forwarding module through the RGMII interface.
- The narrowband interface module provides access to 64-channel narrowband service.

- The narrowband service processing module encodes and decodes narrowband voice services and converts analog signals into digital signals. It then sends narrowband voice services to the forwarding module through the S3MII interface.
- The forwarding module converts broadband signals and narrowband signals into 10GE/GE signals for upstream transmission through the backplane.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

The service processing is as follows:

- In the upstream direction, the splitter module separates signals over the subscriber line into POTS signals and VDSL2 signals. The broadband interface module then sends VDSL2 signals to the broadband service processing module, and the narrowband interface module sends POTS signals to the narrowband service processing module. After that, signals from the broadband and narrowband service processing modules are aggregated to the forwarding module. The forwarding module reassembles the cell flow into PTM packets, encapsulates the PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logic switch, the IP packets are transmitted to the backplane bus through the backplane GE or 10GE interface.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits them to the broadband and narrowband service processing modules. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line through the splitter module.

## Front Panel Port





## NOTICE

- When cables from the LINE ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking (on for 1 s and off for 1 s repeatedly)	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Service online status indicator	Green	On	At least one subscriber port is activated
		-	Off	None of the subscriber ports are activated

## Pin Assignments

**Table 3-52** describes the pin assignments of the LINE0 port on the front panel of the H80DCCPE board, and **Table 3-53** describes the pin assignments of the LINE1 port on the front panel of the H80DCCPE board.

**Table 3-52** Pin assignments of the LINE0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	7	17	A	15	33	A	23	49	A	31
2	B		18	B		34	B		50	B	
3	A	6	19	A	14	35	A	22	51	A	30
4	B		20	B		36	B		52	B	
5	A	5	21	A	13	37	A	21	53	A	29
6	B		22	B		38	B		54	B	
7	A	4	23	A	12	39	A	20	55	A	28
8	B		24	B		40	B		56	B	
9	A	3	25	A	11	41	A	19	57	A	27
10	B		26	B		42	B		58	B	
11	A	2	27	A	10	43	A	18	59	A	26
12	B		28	B		44	B		60	B	
13	A	1	29	A	9	45	A	17	61	A	25
14	B		30	B		46	B		62	B	
15	A	0	31	A	8	47	A	16	63	A	24
16	B		32	B		48	B		64	B	

**Table 3-53** Pin assignments of the LINE1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	3	17	A	47	33	A	47	49	A	63
2	B	9	18	B		34	B		50	B	
3	A	3	19	A	46	35	A	46	51	A	62
4	B	8	20	B		36	B		52	B	
5	A	3	21	A	45	37	A	45	53	A	61
6	B	7	22	B		38	B		54	B	
7	A	3	23	A	44	39	A	44	55	A	60
8	B	6	24	B		40	B		56	B	
9	A	3	25	A	43	41	A	43	57	A	59
10	B	5	26	B		42	B		58	B	



Pin	Signal		Pin	Signal	Port	Pin	Signal		Pin	Signal		
11	A	3	27	A	42		43	A	42	59	A	58
12	B	4	28	B			44	B		60	B	
13	A	3	29	A	41		45	A	41	61	A	57
14	B	3	30	B			46	B		62	B	
15	A	3	31	A	40		47	A	40	63	A	56
16	B	2	32	B			48	B		64	B	

### 3.19.8 H80DCSPE Board Description

H80DCSPE is a 64-port VDSL2&POTS Combo Board with built-in splitter, providing 64 channels of VDSL2 and POTS access services and supporting SuperVector.

#### Functional Specifications

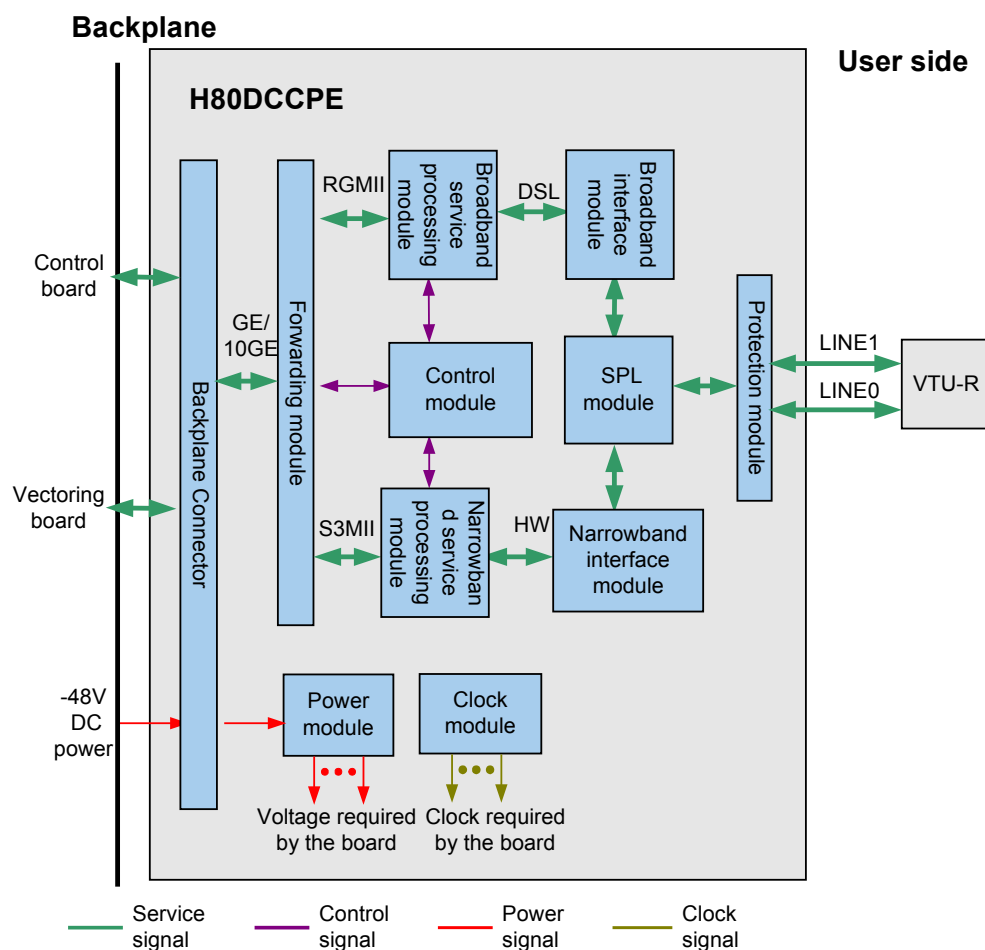
Please refer to "[VDSL2&POTS Combo Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-86 Working principle of the H80DCSPE board



### NOTE

- RGMII is a gigabit media independent interface.
- S3MII is a source synchronous serial media independent interface.

The basic working principle of the H80DCSPE board is as follows:

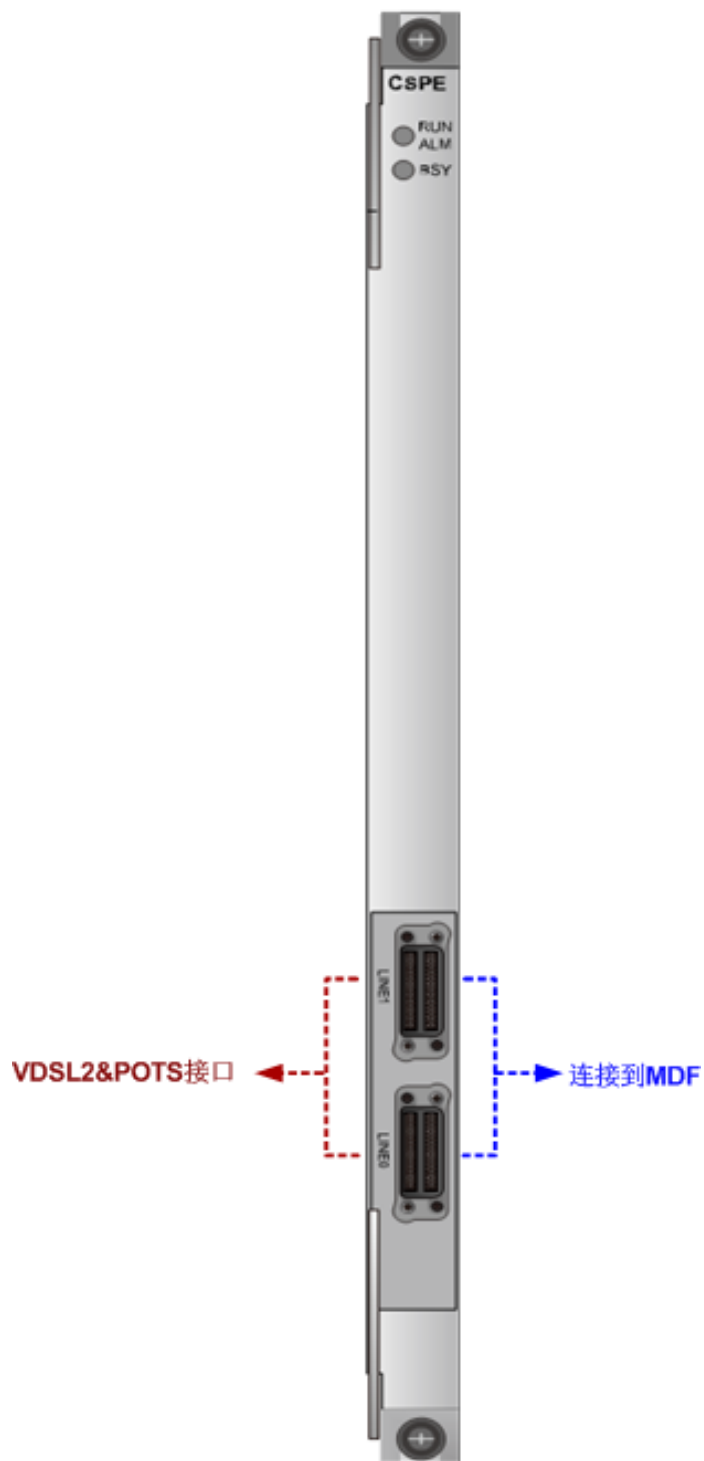
- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes.
- The splitter module separates POTS signals from VDSL2 signals over the subscriber line.
- The broadband interface module converts the VDSL2 line signals into cell flows.
- The broadband service processing module implements functions such as encoding/decoding, analog-to-digital conversion, and line drive for VDSL2 services. It then sends VDSL2 services to the forwarding module through the RGMII interface.
- The narrowband interface module provides access to 64-channel narrowband service.

- The narrowband service processing module encodes and decodes narrowband voice services and converts analog signals into digital signals. It then sends narrowband voice services to the forwarding module through the S3MII interface.
- The forwarding module converts broadband signals and narrowband signals into 10GE/GE signals for upstream transmission through the backplane.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

The service processing is as follows:

- In the upstream direction, the splitter module separates signals over the subscriber line into POTS signals and VDSL2 signals. The broadband interface module then sends VDSL2 signals to the broadband service processing module, and the narrowband interface module sends POTS signals to the narrowband service processing module. After that, signals from the broadband and narrowband service processing modules are aggregated to the forwarding module. The forwarding module reassembles the cell flow into PTM packets, encapsulates the PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logic switch, the IP packets are transmitted to the backplane bus through the backplane GE or 10GE interface.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits them to the broadband and narrowband service processing modules. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line through the splitter module.

## Front Panel Port



## NOTICE

- When cables from the LINE ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking (on for 1 s and off for 1 s repeatedly)	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Service online status indicator	Green	On	At least one subscriber port is activated
		-	Off	None of the subscriber ports are activated

## Pin Assignments

**Table 3-54** describes the pin assignments of the LINE0 port on the front panel of the H80DCSPE board, and **Table 3-55** describes the pin assignments of the LINE1 port on the front panel of the H80DCSPE board.

**Table 3-54** Pin assignments of the LINE0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	7	17	A	15	33	A	23	49	A	31
2	B		18	B		34	B		50	B	
3	A	6	19	A	14	35	A	22	51	A	30
4	B		20	B		36	B		52	B	
5	A	5	21	A	13	37	A	21	53	A	29
6	B		22	B		38	B		54	B	
7	A	4	23	A	12	39	A	20	55	A	28
8	B		24	B		40	B		56	B	
9	A	3	25	A	11	41	A	19	57	A	27
10	B		26	B		42	B		58	B	
11	A	2	27	A	10	43	A	18	59	A	26
12	B		28	B		44	B		60	B	
13	A	1	29	A	9	45	A	17	61	A	25
14	B		30	B		46	B		62	B	
15	A	0	31	A	8	47	A	16	63	A	24
16	B		32	B		48	B		64	B	

**Table 3-55** Pin assignments of the LINE1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal			
1	A	3	17	A	47	33	A	47	49	A	63
2	B	9	18	B		34	B		50	B	
3	A	3	19	A	46	35	A	46	51	A	62
4	B	8	20	B		36	B		52	B	
5	A	3	21	A	45	37	A	45	53	A	61
6	B	7	22	B		38	B		54	B	
7	A	3	23	A	44	39	A	44	55	A	60
8	B	6	24	B		40	B		56	B	
9	A	3	25	A	43	41	A	43	57	A	59
10	B	5	26	B		42	B		58	B	

Pin	Signal		Pin	Signal		Port	Pin	Signal		Pin	Signal	
11	A	3	27	A	42		43	A	42	59	A	58
12	B	4	28	B			44	B		60	B	
13	A	3	29	A	41		45	A	41	61	A	57
14	B	3	30	B			46	B		62	B	
15	A	3	31	A	40		47	A	40	63	A	56
16	B	2	32	B			48	B		64	B	

## 3.20 Voice Board

Voice boards support VoIP POTS, ISDN BRA, and ISDN PRA services.

### NOTE

When voice boards are used, the control board must be configured with a daughter board that supports VoIP logic forwarding.

### 3.20.1 Voice Boards Comparison

Voice boards support three types of services: POTS , BRA , and PRA .

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-56** Specifications of POTS Voice Service Boards

Specification	H801AS RB	H801AS PB	H808AS PB	H809AS PB	H80BA SPB	H80CA SPB
Connector	Champ 64-pin	Champ 64-pin	Champ 64-pin	Delander 64-pin	Champ 64-pin	Delander 64-pin
DSP channel (G.711)	32	64	64	64	64	64
Codec	G.711A G.711U G.729 G.723 G.726	G.711A G.711U G.729 G.723 G.726	G.711A G.711U G.729 G.723 G.726	G.711A G.711U G.729 G.723 G.726	G.711A G.711U G.729 G.723 G.726	G.711A G.711U G.729 G.723 G.726
POTS MELT	Yes	Yes	Yes	Yes	Yes	Yes
MELT precision	Low	Low	High	High	High	High
Automatic shutdown at high temperature	No	Yes	Yes	Yes	Yes	Yes

Specification	H801AS RB	H801AS PB	H808AS PB	H809AS PB	H80BA SPB	H80CA SPB
Short loop	No	No	Yes	Yes	Yes	Yes
Polarity of wires a and b	a+ b-	a- b+	a- b+	a+ b-	a- b+	a+ b-
16/12 KC	Yes	Yes	Yes	Yes	Yes	Yes
Powering on/off by CLI	Yes	Yes	Yes	Yes	Yes	Yes
Polarity reversal function	Yes	Yes	Yes	Yes	Yes	Yes
Power supply at high voltage (for a long distance)	Yes	Yes	Yes	Yes	Yes	Yes
Port current	20mA/ 25mA/ 30mA	20mA/ 25mA/ 30mA	20mA/ 25mA/ 30mA	20mA/ 25mA/ 30mA	20mA/ 25mA/ 30mA	20mA/ 25mA/ 30mA

**Table 3-57** Specifications of ISDN Voice Service Boards

Specification	H802DSRD	H802DSRE	H802EDTB
Types of services	BRA	BRA	PRA
Connector	Champ 64-pin	Champ 64-pin	Champ 64-pin
DSP channel (G.711)	64	64	420 (packetization interval: 20 ms)
Coding mode	2B1Q	4B3T	E1 mode: HDB3/AMI T1 mode: B8ZS/AMI
Automatic shutdown at high temperature	Yes	Yes	Yes

## 3.20.2 H801ASRB Board Description

The H801ASRB board is a 32-port analog subscriber board, providing 32 channels of VoIP POTS services.

### Feature and Specifications

Please refer to "[Voice Board Comparison](#)".



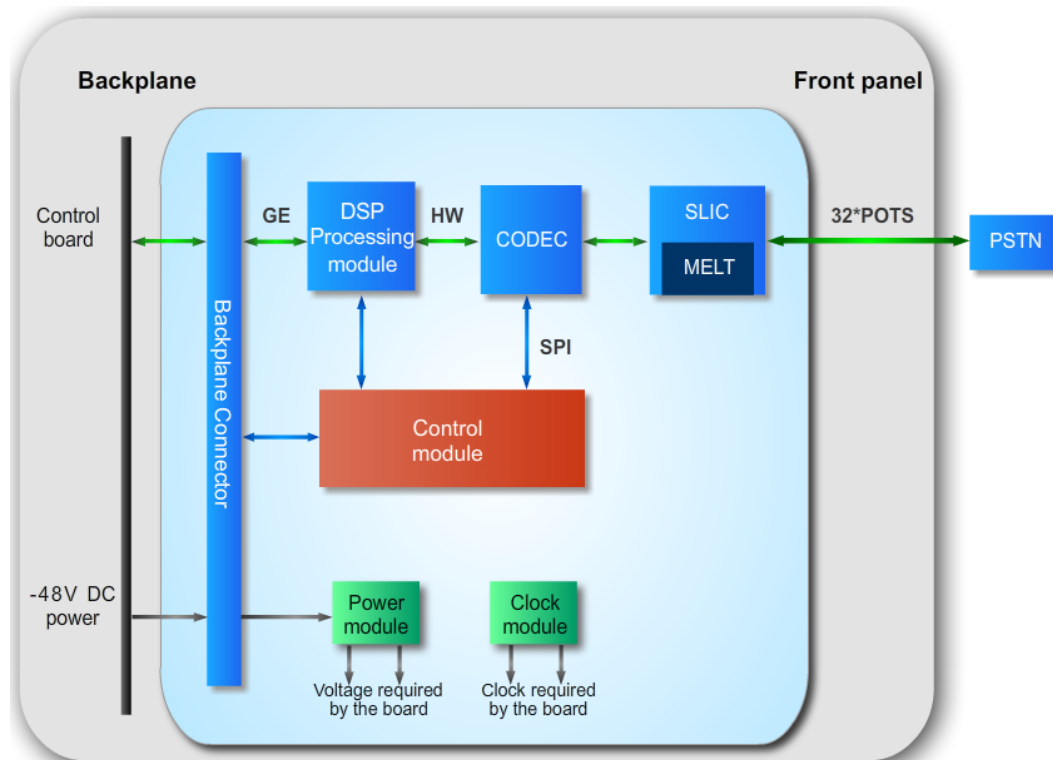
## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

[Figure 3-87](#) illustrates the working principle of the H801ASRB board.

**Figure 3-87** Working principle of the H801ASRB board



The basic working principle of the H801ASRB board is as follows:

- The control module processes the high-level protocol between the H801ASRB board and the control board, manages the service ports of the H801ASRB board, controls the DSP module, and controls the GE interface module.
- The subscriber line interface module provides 32 channels of the POTS service.
- The processing module converts the pulse code modulation (PCM) data into IP voice packets, and supports the decoding/encoding and the echo suppression functions.
- The GE interface module supports the GE communication between the H801ASRB board and the control board.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

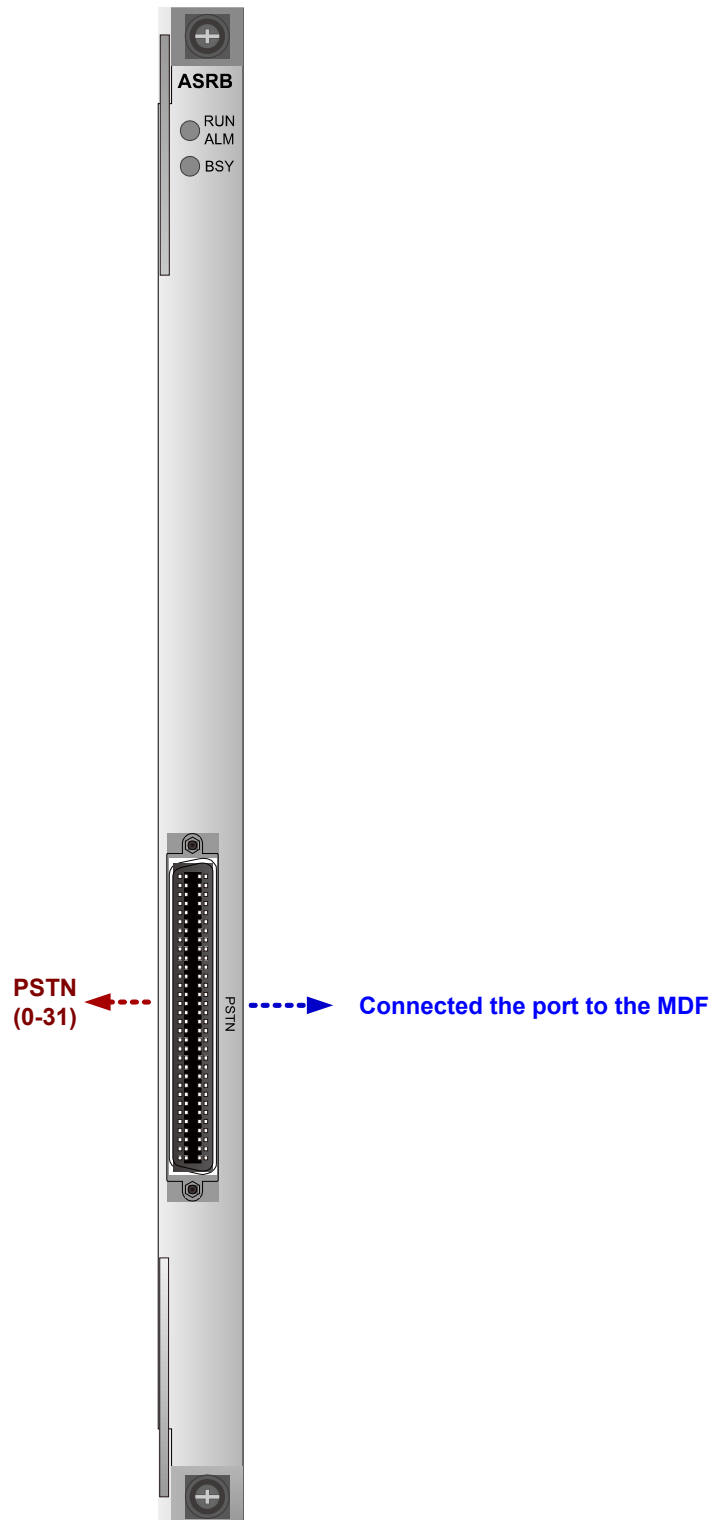
The service process is as follows:

- In the upstream direction, service data is transmitted to the H801ASRB board through the POTS port. After being processed by the processing module, the service data is

transmitted to the backplane bus through the interface module, and then transmitted upstream through the optical or electrical port of the control board.

- In the downstream direction, the service data is transmitted to the control board through the optical or electrical port. The service data is transmitted to the processing module through the backplane bus and the interface module. After being processed by the processing module, the service data is transmitted to the subscriber through the POTS port.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-58** describes the pin assignments of the PSTN port on the front panel of the H801ASRB board.

**Table 3-58** Pin assignments of the LINE port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28

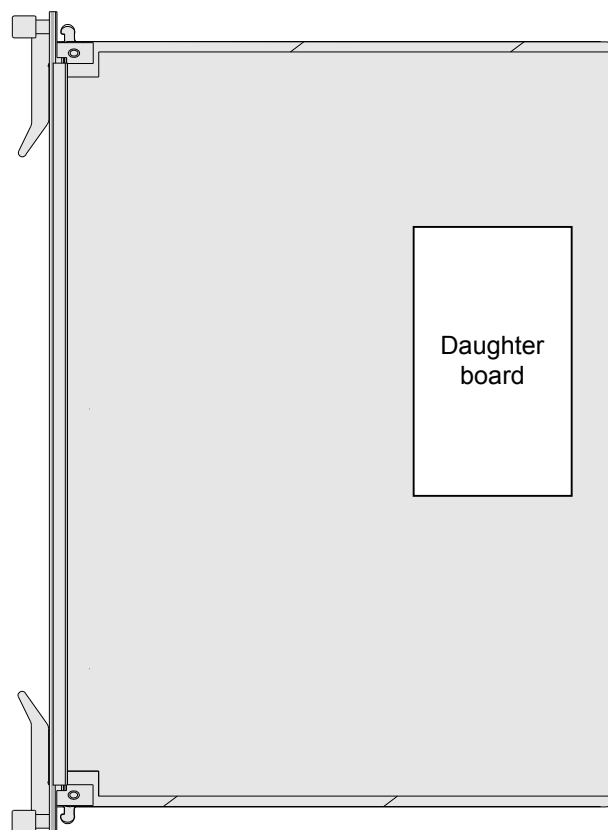
Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

## Daughter Board

The H801ASRB board supports a daughter board port, which can be installed with the H806ASDA daughter board.

**Figure 3-88** shows the position of the daughter board on the H801ASRB board.

**Figure 3-88** Position of the daughter board on the H801ASRB board



**Table 3-59** describes the daughter board supported by the H801ASRB board.

**Table 3-59** Daughter board supported by the H801ASRB board

Daughter Board	Function	Remarks
H806ASDA	Supports the VoIP function.	Mandatory

### 3.20.3 H801ASPB Board Description

The H801ASPB board is a 64-port VOIP subscriber board, providing 64 channels of VoIP POTS access services.

#### Feature and Specifications

Please refer to "[Voice Board Comparison](#)".

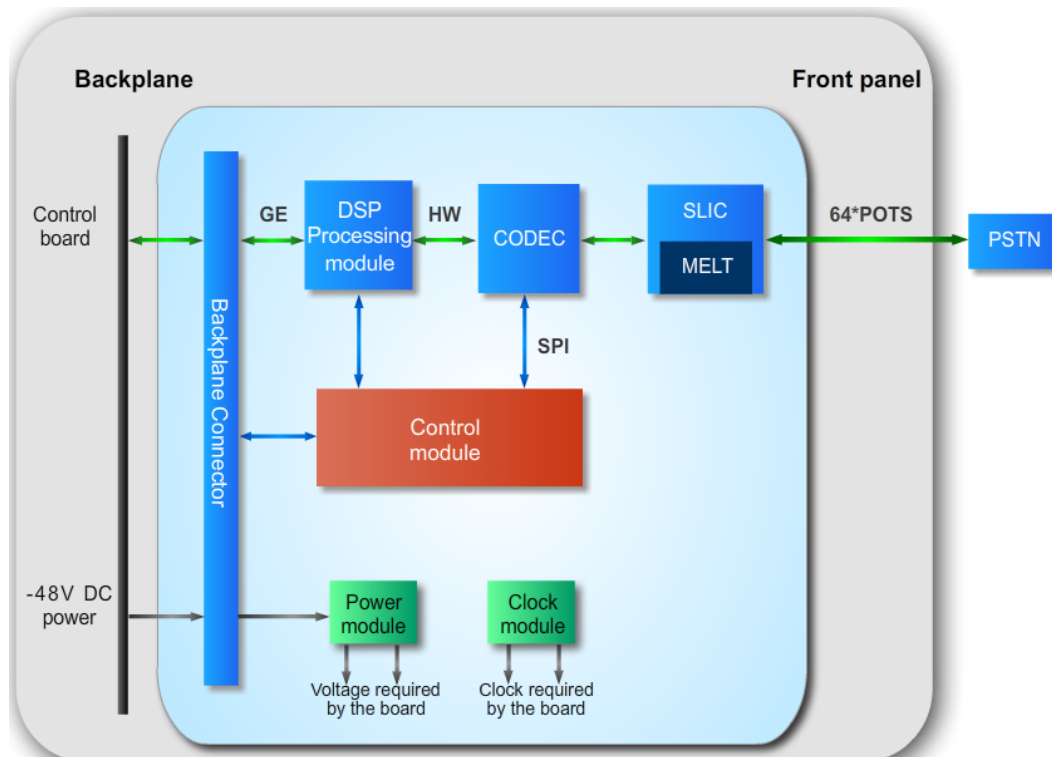
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

**Figure 3-89** illustrates the working principle of the H801ASPB board.

**Figure 3-89** Working principle of the H801ASPB board



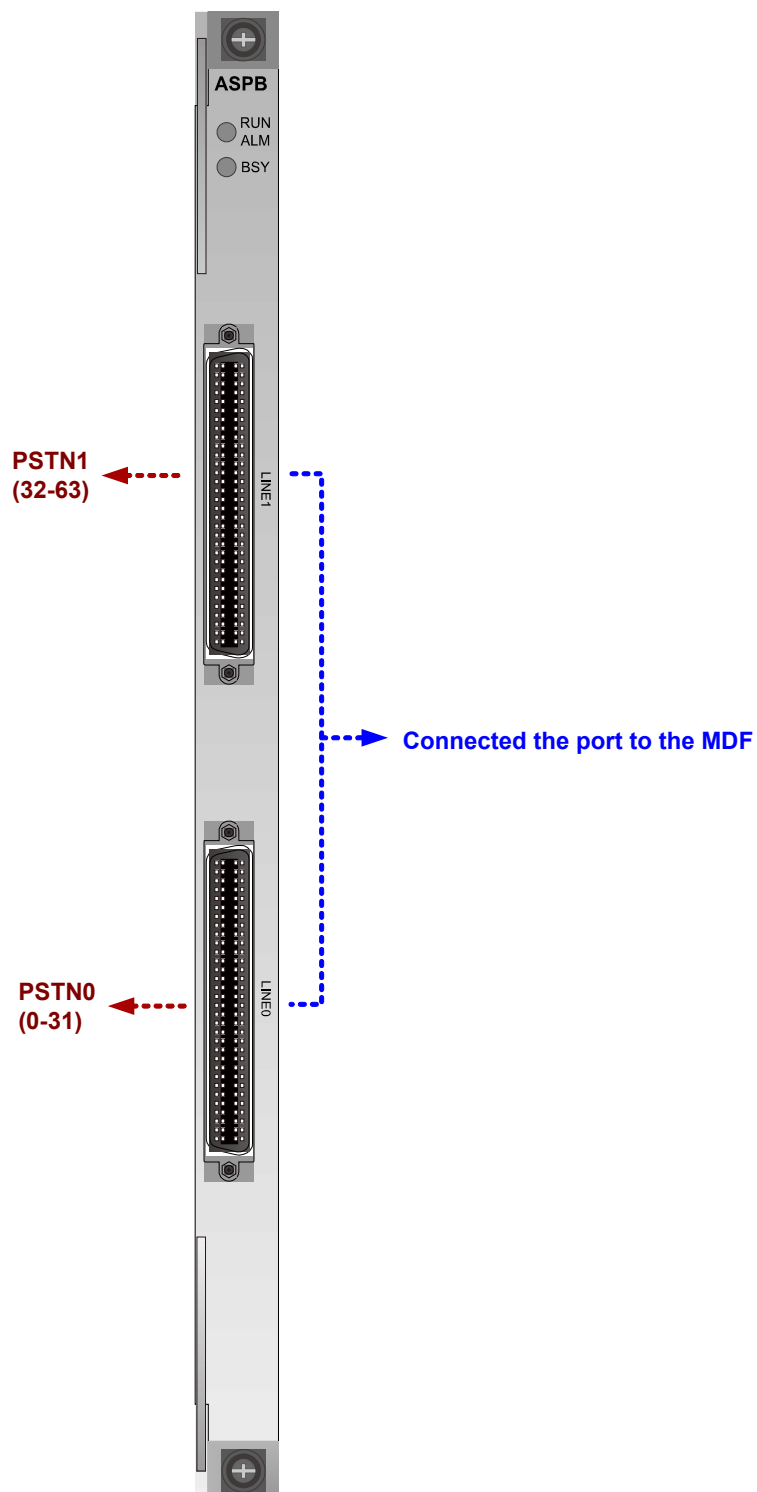
The basic working principle of the H801ASPB board is as follows:

- The control module processes the high-level protocol between the H801ASPB board and the control board, manages the service ports of the H801ASPB board, controls the DSP module, and controls the GE interface module.
- The subscriber line interface module provides 64 channels of the POTS service.
- The processing module converts the pulse code modulation (PCM) data into IP voice packets, and supports the decoding/encoding and the echo suppression functions.
- The GE interface module supports the GE communication between the H801ASPB board and the control board.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the service data is transmitted to the H801ASPB board through the POTS port. After being processed by the TDM processing module and the VoIP service processing module, the service data is transmitted to the control board through the backplane and then to the upstream direction.
- In the downstream direction, the service data is transmitted from the control board to the TDM processing module and the VoIP service processing module through the backplane bus and the interface module. After being processed by the TDM processing module and the VoIP service processing module, the service data is transmitted to the subscriber through the POTS port.

## Front Panel Port





## Indicator

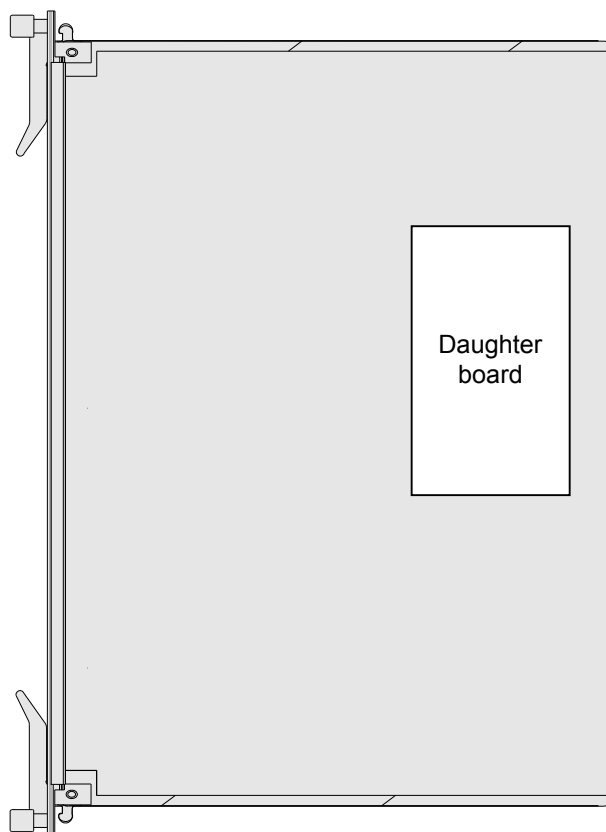
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Daughter Board

The H801ASPB board supports a daughter board port, which can be installed with the H806ASDB daughter board.

**Figure 3-90** shows the position of the daughter board on the H801ASPB board.

**Figure 3-90** Position of the daughter board on the H801ASPB board



**Table 3-60** describes the daughter board supported by the H801ASPB board.

**Table 3-60** Daughter board supported by the H801ASPB board

Daughter Board	Function	Remarks
H806ASDB	Supports the VoIP function.	Mandatory

## Pin Assignments

For pin assignment of the LINE0 port, see [Table 3-61](#); For pin assignment of the LINE1 port, see [Table 3-62](#);

**Table 3-61** Pin assignments of the LINE0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

**Table 3-62** Pin assignments of the LINE1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP47	48	TIP39		32	TIP48	16	TIP56
63	RING 47	47	RING 39		31	RING 48	15	RING 56
62	TIP46	46	TIP38		30	TIP49	14	TIP57
61	RING 46	45	RING 38		29	RING 49	13	RING 57
60	TIP45	44	TIP37		28	TIP50	12	TIP58
59	RING 45	43	RING 37		27	RING 50	11	RING 58
58	TIP44	42	TIP36		26	TIP51	10	TIP59
57	RING 44	41	RING 36		25	RING 51	9	RING 59
56	TIP43	40	TIP35		24	TIP52	8	TIP60
55	RING 43	39	RING 35		23	RING 52	7	RING 60
54	TIP42	38	TIP34		22	TIP53	6	TIP61
53	RING 42	37	RING 34		21	RING 53	5	RING 61
52	TIP41	36	TIP33		20	TIP54	4	TIP62
51	RING 41	35	RING 33		19	RING 54	3	RING 62
50	TIP40	34	TIP32		18	TIP55	2	TIP63
49	RING 40	33	RING 32		17	RING 55	1	RING 63

### 3.20.4 H808ASPB Board Description

The H808ASPB board is a 64-port VOIP subscriber board, providing 64 channels of VoIP POTS access services.

#### Feature and Specifications

Please refer to "[Voice Board Comparison](#)".

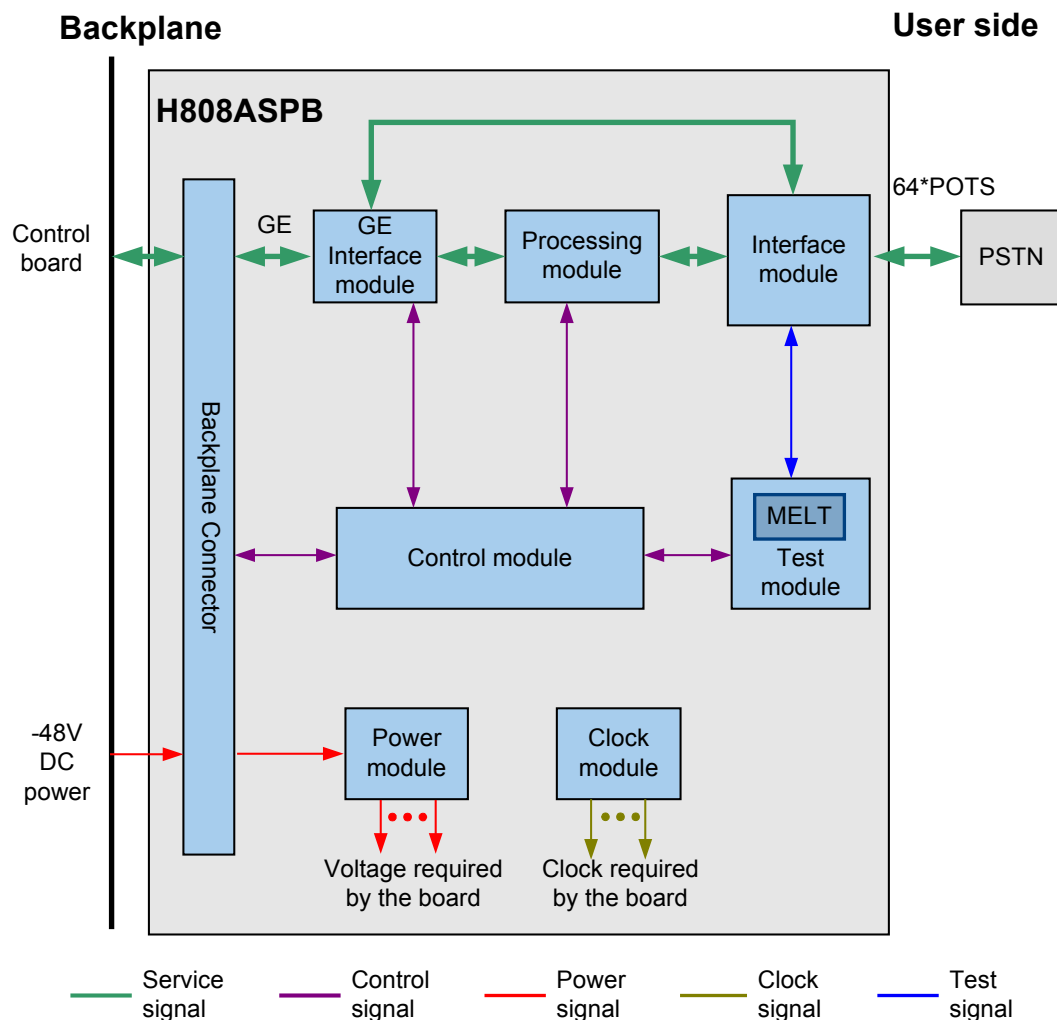
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-91 illustrates the working principle of the H808ASPB board.

Figure 3-91 Working principle of the H808ASPB board



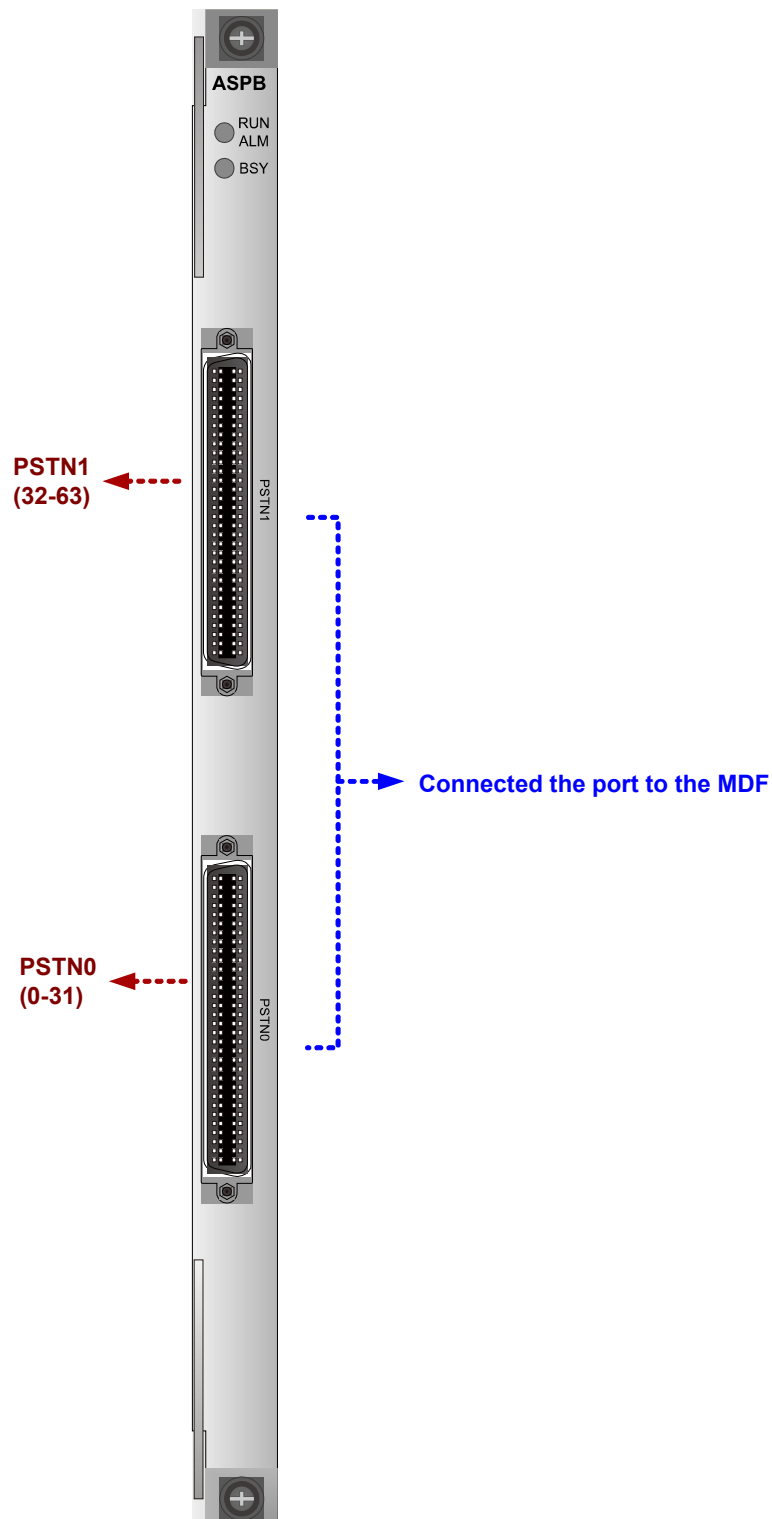
The basic working principle of the H808ASPB board is as follows:

- The control module processes the high-level protocol between the H808ASPB board and the control board, manages the service ports of the H808ASPB board, controls the DSP module, and controls the GE interface module.
- The subscriber line interface module provides 64 channels of the POTS service.
- The processing module converts the pulse code modulation (PCM) data into IP voice packets, and supports the decoding/encoding and the echo suppression functions.
- The GE interface module supports the GE communication between the H808ASPB board and the control board.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the service data is transmitted to the H808ASPB board through the POTS port. After being processed by the TDM processing module and the VoIP service processing module, the service data is transmitted to the control board through the backplane and then to the upstream direction.
- In the downstream direction, the service data is transmitted from the control board to the TDM processing module and the VoIP service processing module through the backplane bus and the interface module. After being processed by the TDM processing module and the VoIP service processing module, the service data is transmitted to the subscriber through the POTS port.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the PSTN0 port, see [Table 3-63](#); For pin assignment of the PSTN1 port, see [Table 3-64](#);



**Table 3-63** Pin assignments of the PSTN0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

**Table 3-64** Pin assignments of the PSTN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP47	48	TIP39		32	TIP48	16	TIP56
63	RING 47	47	RING 39		31	RING 48	15	RING 56
62	TIP46	46	TIP38		30	TIP49	14	TIP57
61	RING 46	45	RING 38		29	RING 49	13	RING 57
60	TIP45	44	TIP37		28	TIP50	12	TIP58
59	RING 45	43	RING 37		27	RING 50	11	RING 58
58	TIP44	42	TIP36		26	TIP51	10	TIP59
57	RING 44	41	RING 36		25	RING 51	9	RING 59
56	TIP43	40	TIP35		24	TIP52	8	TIP60
55	RING 43	39	RING 35		23	RING 52	7	RING 60
54	TIP42	38	TIP34		22	TIP53	6	TIP61
53	RING 42	37	RING 34		21	RING 53	5	RING 61
52	TIP41	36	TIP33		20	TIP54	4	TIP62
51	RING 41	35	RING 33		19	RING 54	3	RING 62
50	TIP40	34	TIP32		18	TIP55	2	TIP63
49	RING 40	33	RING 32		17	RING 55	1	RING 63

### 3.20.5 H809ASPB Board Description

The H809ASPB board is a 64-port VOIP subscriber board, providing 64 channels of VoIP POTS access services.

#### Feature and Specifications

Please refer to "[Voice Board Comparison](#)".

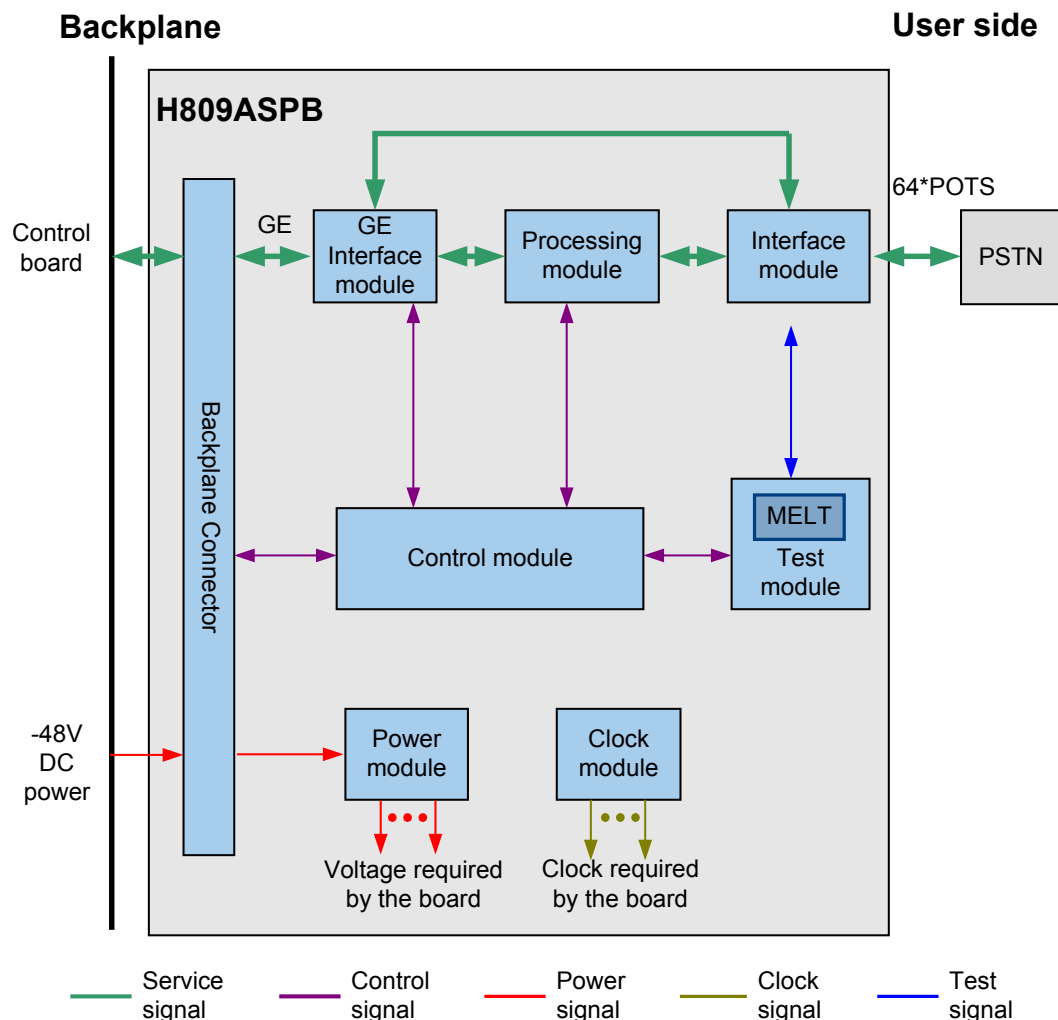
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-92 illustrates the working principle of the H809ASPB board.

Figure 3-92 Working principle of the H809ASPB board



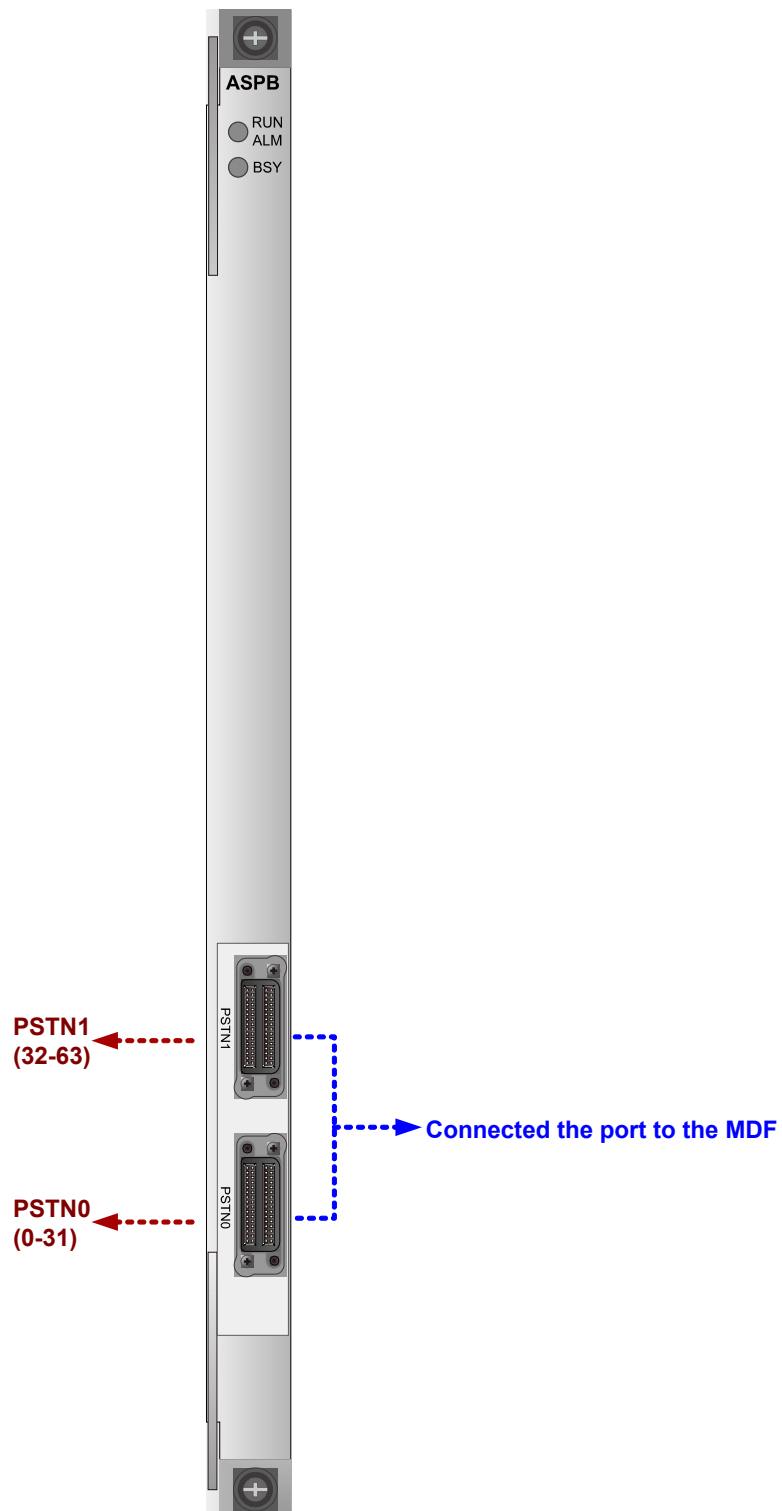
The basic working principle of the H809ASPB board is as follows:

- The control module processes the high-level protocol between the H809ASPB board and the control board, manages the service ports of the H809ASPB board, controls the DSP module, and controls the GE interface module.
- The subscriber line interface module provides 64 channels of the POTS service.
- The processing module converts the pulse code modulation (PCM) data into IP voice packets, and supports the decoding/encoding and the echo suppression functions.
- The GE interface module supports the GE communication between the H809ASPB board and the control board.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the service data is transmitted to the H809ASPB board through the POTS port. After being processed by the TDM processing module and the VoIP service processing module, the service data is transmitted to the control board through the backplane and then to the upstream direction.
- In the downstream direction, the service data is transmitted from the control board to the TDM processing module and the VoIP service processing module through the backplane bus and the interface module. After being processed by the TDM processing module and the VoIP service processing module, the service data is transmitted to the subscriber through the POTS port.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the PSTN0 port, see [Table 3-65](#); For pin assignment of the PSTN1 port, see [Table 3-66](#);

**Table 3-65** Pin assignments of the PSTN0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	TIP7	17	TIP15		33	TIP23	49	TIP31
2	RING 7	18	RING 15		34	RING 23	50	RING 31
3	TIP6	19	TIP14		35	TIP22	51	TIP30
4	RING 6	20	RING 14		36	RING 22	52	RING 30
5	TIP5	21	TIP13		37	TIP21	53	TIP29
6	RING 5	22	RING 13		38	RING 21	54	RING 29
7	TIP4	23	TIP12		39	TIP20	55	TIP28

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
8	RING 4	24	RING 12		40	RING 20	56	RING 28
9	TIP3	25	TIP11		41	TIP19	57	TIP27
10	RING 3	26	RING 11		42	RING 19	58	RING 27
11	TIP2	27	TIP10		43	TIP18	59	TIP26
12	RING 2	28	RING 10		44	RING 18	60	RING 26
13	TIP1	29	TIP9		45	TIP17	61	TIP25
14	RING 1	30	RING 9		46	RING 17	62	RING 25
15	TIP0	31	TIP8		47	TIP16	63	TIP24
16	RING 0	32	RING 8	48	RING 16	64	RING 24	

**Table 3-66** Pin assignments of the PSTN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	TIP39	17	TIP47		33	TIP55	49	TIP63
2	RING 39	18	RING 47		34	RING 55	50	RING 63
3	TIP38	19	TIP46		35	TIP54	51	TIP62
4	RING 38	20	RING 46		36	RING 54	52	RING 62
5	TIP37	21	TIP45		37	TIP53	53	TIP61
6	RING 37	22	RING 45		38	RING 53	54	RING 61
7	TIP36	23	TIP44		39	TIP52	55	TIP60
8	RING 36	24	RING 44		40	RING 52	56	RING 60
9	TIP35	25	TIP43		41	TIP51	57	TIP59
10	RING 35	26	RING 43		42	RING 51	58	RING 59

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
11	TIP34	27	TIP42		43	TIP50	59	TIP58
12	RING 34	28	RING 42		44	RING 50	60	RING 58
13	TIP33	29	TIP41		45	TIP49	61	TIP57
14	RING 33	30	RING 41		46	RING 49	62	RING 57
15	TIP32	31	TIP40		47	TIP48	63	TIP56
16	RING 32	32	RING 40		48	RING 48	64	RING 56

### 3.20.6 H80BASP Board Description

The H80BASP board is a 64-port VOIP subscriber board, providing 64 channels of VoIP POTS access services.

#### Feature and Specifications

Please refer to "[Voice Board Comparison](#)".

#### Technical Specifications

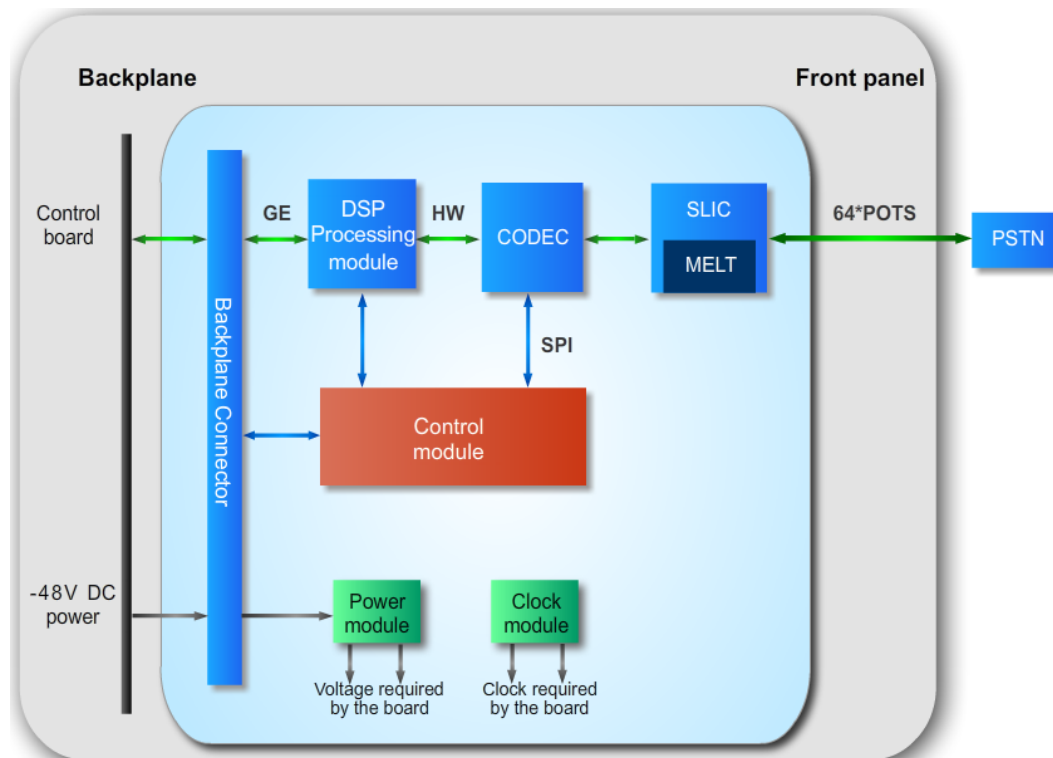
Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

[Figure 3-93](#) illustrates the working principle of the H80BASP board.



Figure 3-93 Working principle of the H80BASPb board



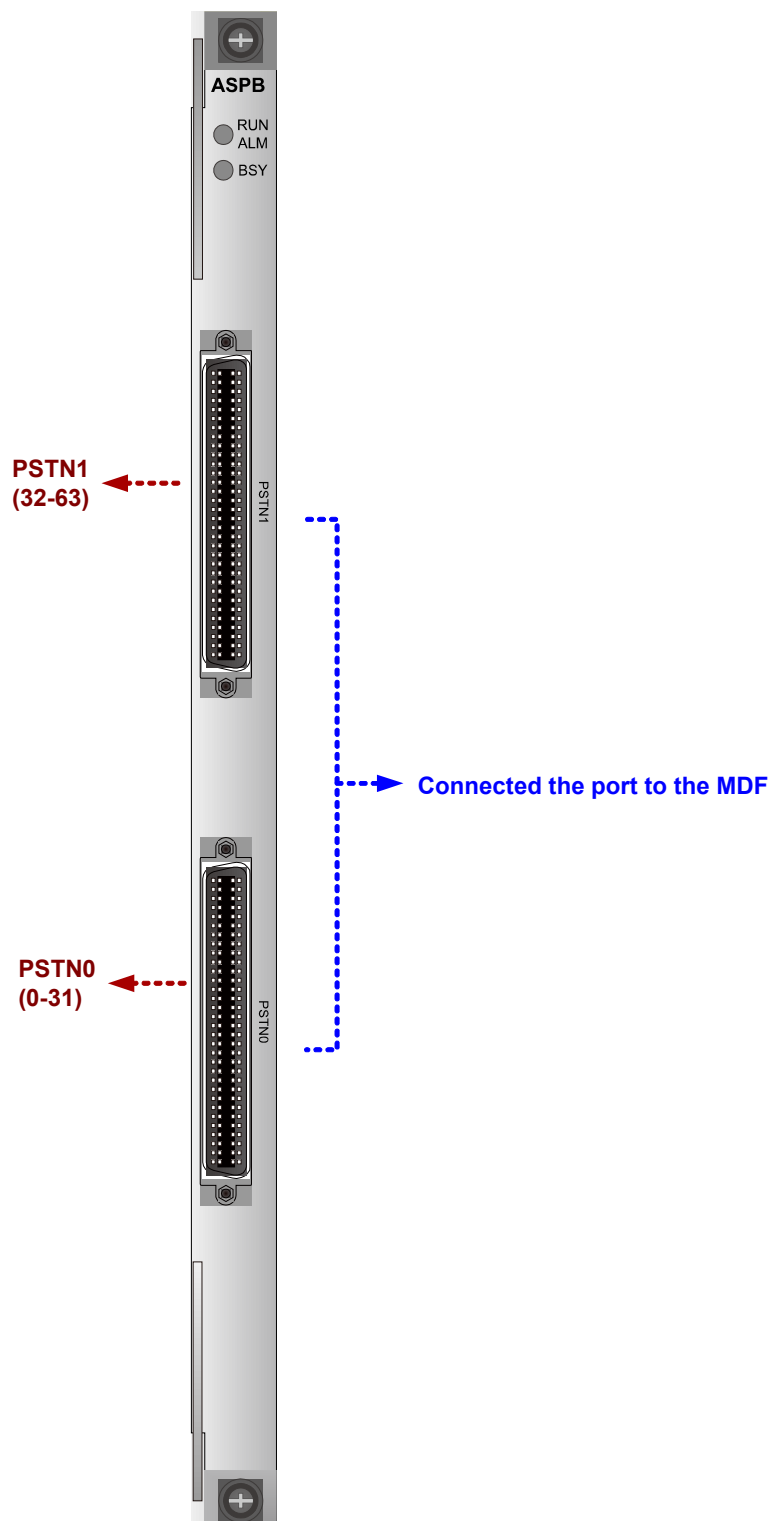
The basic working principle of the H80BASPb board is as follows:

- The control module processes the high-level protocol between the H80BASPb board and the control board, manages the service ports of the H80BASPb board, controls the DSP module, and controls the GE interface module.
- The subscriber line interface module provides 64 channels of the POTS service.
- The processing module converts the pulse code modulation (PCM) data into IP voice packets, and supports the decoding/encoding and the echo suppression functions.
- The GE interface module supports the GE communication between the H80BASPb board and the control board.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the service data is transmitted to the H80BASPb board through the POTS port. After being processed by the TDM processing module and the VoIP service processing module, the service data is transmitted to the control board through the backplane and then to the upstream direction.
- In the downstream direction, the service data is transmitted from the control board to the TDM processing module and the VoIP service processing module through the backplane bus and the interface module. After being processed by the TDM processing module and the VoIP service processing module, the service data is transmitted to the subscriber through the POTS port.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the PSTN0 port, see [Table 3-67](#); For pin assignment of the PSTN1 port, see [Table 3-68](#);

**Table 3-67** Pin assignments of the PSTN0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

**Table 3-68** Pin assignments of the PSTN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP47	48	TIP39		32	TIP48	16	TIP56
63	RING 47	47	RING 39		31	RING 48	15	RING 56
62	TIP46	46	TIP38		30	TIP49	14	TIP57
61	RING 46	45	RING 38		29	RING 49	13	RING 57
60	TIP45	44	TIP37		28	TIP50	12	TIP58
59	RING 45	43	RING 37		27	RING 50	11	RING 58
58	TIP44	42	TIP36		26	TIP51	10	TIP59
57	RING 44	41	RING 36		25	RING 51	9	RING 59
56	TIP43	40	TIP35		24	TIP52	8	TIP60
55	RING 43	39	RING 35		23	RING 52	7	RING 60
54	TIP42	38	TIP34		22	TIP53	6	TIP61
53	RING 42	37	RING 34		21	RING 53	5	RING 61
52	TIP41	36	TIP33		20	TIP54	4	TIP62
51	RING 41	35	RING 33		19	RING 54	3	RING 62
50	TIP40	34	TIP32		18	TIP55	2	TIP63
49	RING 40	33	RING 32		17	RING 55	1	RING 63

### 3.20.7 H80CASPB Board Description

The H80CASPB board is a 64-port VOIP subscriber board, providing 64 channels of VoIP POTS access services.

#### Feature and Specifications

Please refer to "[Voice Board Comparison](#)".

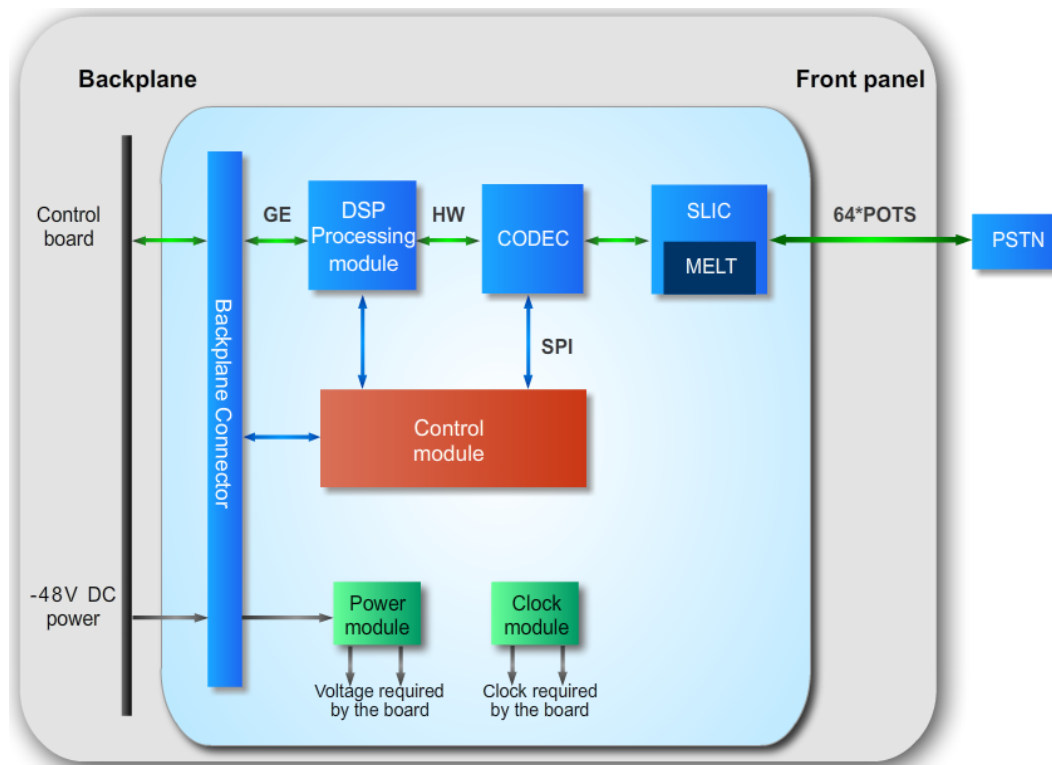
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-94 illustrates the working principle of the H80CASPB board.

Figure 3-94 Working principle of the H80CASPB board



The basic working principle of the H80CASPB board is as follows:

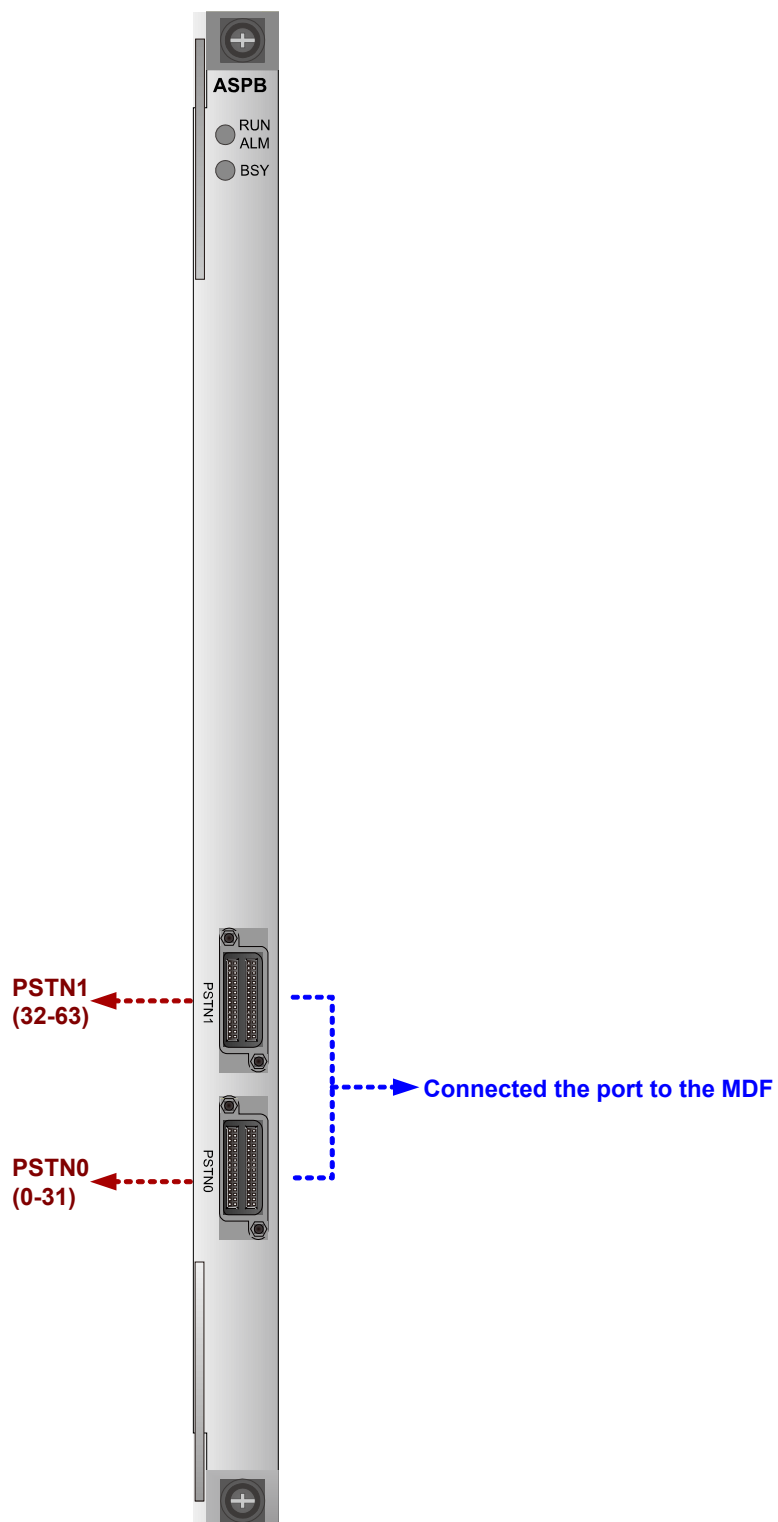
- The control module processes the high-level protocol between the H80CASPB board and the control board, manages the service ports of the H80CASPB board, controls the DSP module, and controls the GE interface module.
- The subscriber line interface module provides 64 channels of the POTS service.
- The processing module converts the pulse code modulation (PCM) data into IP voice packets, and supports the decoding/encoding and the echo suppression functions.
- The GE interface module supports the GE communication between the H80CASPB board and the control board.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the service data is transmitted to the H80CASPB board through the POTS port. After being processed by the TDM processing module and the VoIP service processing module, the service data is transmitted to the control board through the backplane and then to the upstream direction.
- In the downstream direction, the service data is transmitted from the control board to the TDM processing module and the VoIP service processing module through the backplane bus and the interface module. After being processed by the TDM processing module and

the VoIP service processing module, the service data is transmitted to the subscriber through the POTS port.

## Front Panel Port



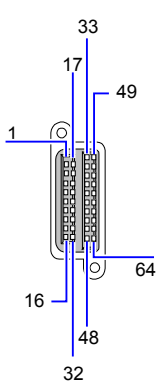
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the PSTN0 port, see [Table 3-69](#); For pin assignment of the PSTN1 port, see [Table 3-70](#);

**Table 3-69** Pin assignments of the PSTN0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	TIP7	17	TIP15		33	TIP23	49	TIP31
2	RING 7	18	RING 15		34	RING 23	50	RING 31
3	TIP6	19	TIP14		35	TIP22	51	TIP30
4	RING 6	20	RING 14		36	RING 22	52	RING 30
5	TIP5	21	TIP13		37	TIP21	53	TIP29
6	RING 5	22	RING 13		38	RING 21	54	RING 29
7	TIP4	23	TIP12		39	TIP20	55	TIP28



Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
8	RING 4	24	RING 12		40	RING 20	56	RING 28
9	TIP3	25	TIP11		41	TIP19	57	TIP27
10	RING 3	26	RING 11		42	RING 19	58	RING 27
11	TIP2	27	TIP10		43	TIP18	59	TIP26
12	RING 2	28	RING 10		44	RING 18	60	RING 26
13	TIP1	29	TIP9		45	TIP17	61	TIP25
14	RING 1	30	RING 9		46	RING 17	62	RING 25
15	TIP0	31	TIP8		47	TIP16	63	TIP24
16	RING 0	32	RING 8	48	RING 16	64	RING 24	

**Table 3-70** Pin assignments of the PSTN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	TIP39	17	TIP47		33	TIP55	49	TIP63
2	RING 39	18	RING 47		34	RING 55	50	RING 63
3	TIP38	19	TIP46		35	TIP54	51	TIP62
4	RING 38	20	RING 46		36	RING 54	52	RING 62
5	TIP37	21	TIP45		37	TIP53	53	TIP61
6	RING 37	22	RING 45		38	RING 53	54	RING 61
7	TIP36	23	TIP44		39	TIP52	55	TIP60
8	RING 36	24	RING 44		40	RING 52	56	RING 60
9	TIP35	25	TIP43		41	TIP51	57	TIP59
10	RING 35	26	RING 43		42	RING 51	58	RING 59

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
11	TIP34	27	TIP42		43	TIP50	59	TIP58
12	RING 34	28	RING 42		44	RING 50	60	RING 58
13	TIP33	29	TIP41		45	TIP49	61	TIP57
14	RING 33	30	RING 41		46	RING 49	62	RING 57
15	TIP32	31	TIP40		47	TIP48	63	TIP56
16	RING 32	32	RING 40		48	RING 48	64	RING 56

### 3.20.8 H802DSRD Board Description

The H802DSRD board is a 32-port ISDN digital subscriber board, providing 32 channels of ISDN access services.

#### Feature and Specifications

Please refer to "[Voice Board Comparison](#)".

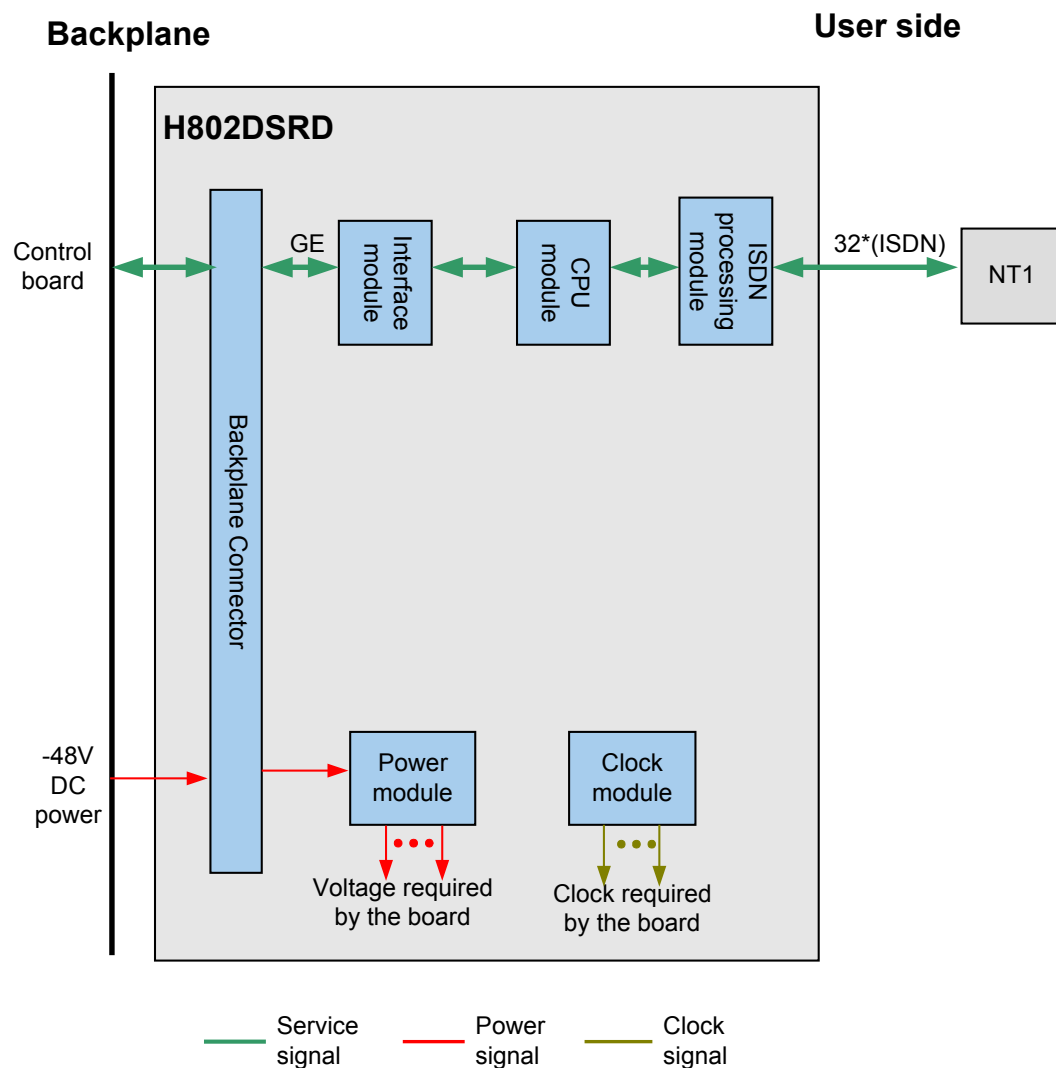
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

[Figure 3-95](#) illustrates the working principle of the H802DSRD board.

Figure 3-95 Working principle of the H802DSRD board



The basic working principle of the H802DSRD board is as follows:

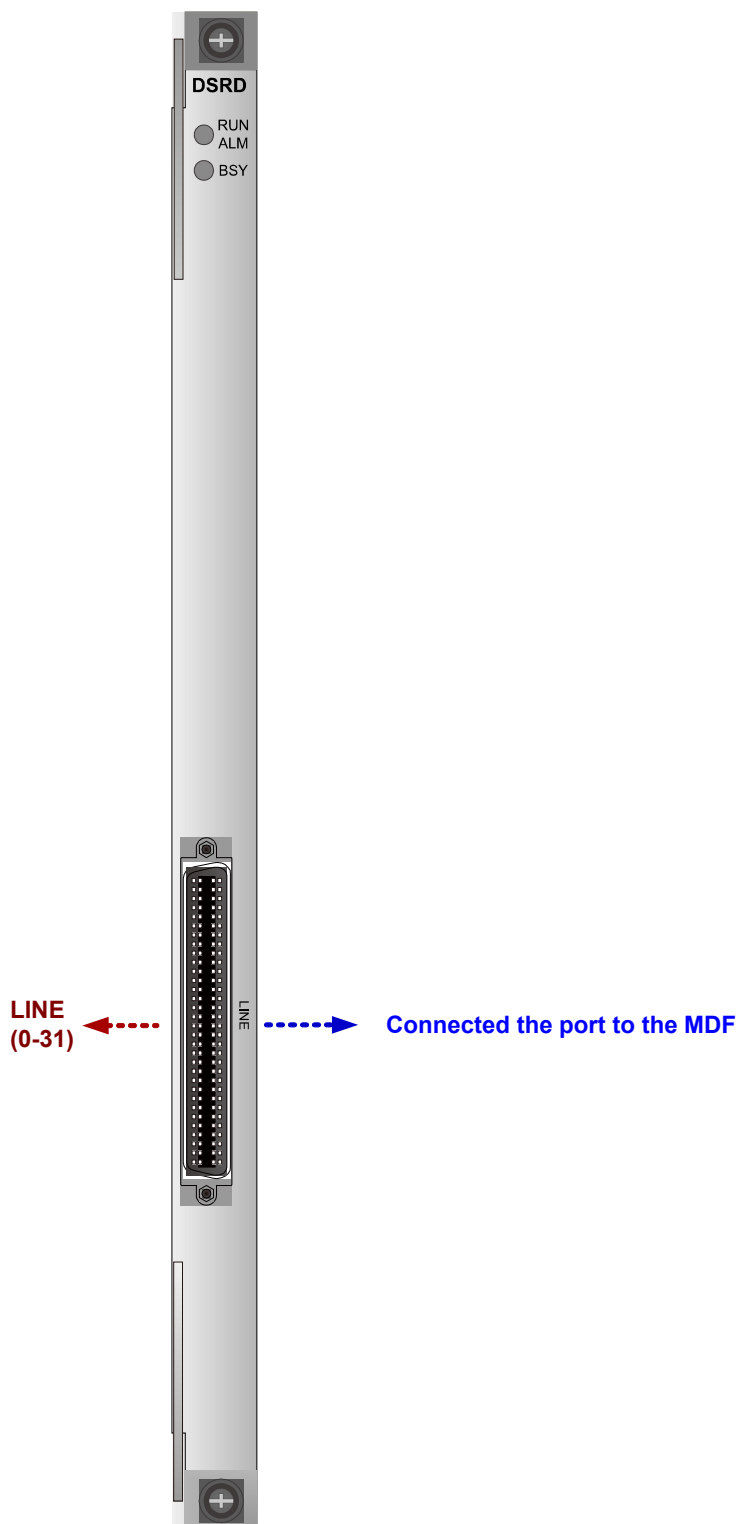
- The CPU module controls calls, processes call protocols, and packages voice data.
- The ISDN service processing module processes the ISDN service of the board, including extracting signaling and switching data.
- The interface module converts between the media independent interface (MII) interface and the GE interface.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, service data is transmitted to the board through the ISDN service processing module and is packaged by the CPU module. The interface module converts the packaged data into GE packets and transmits the packets to the control board through the GE bus of the board. Then, the packets are transmitted upstream.

- In the downstream direction, GE packets are transmitted from the control board to the interface module of the H802DSRD board through the backplane bus. The GE packets are decapsulated by the CPU module, processed by the ISDN service processing module, and then converted into service data. The service data is transmitted to the subscriber through the interface module.

## Front Panel Port



## Indicator

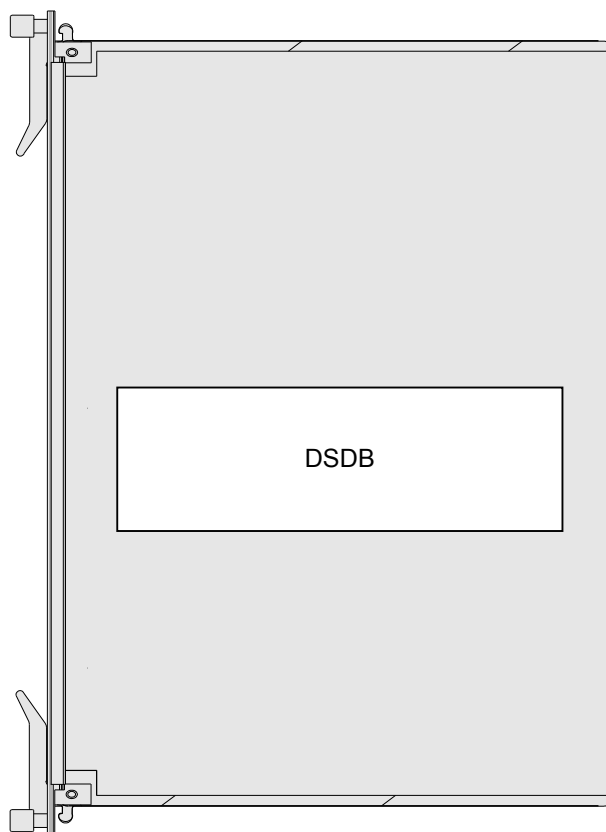
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Daughter Board

The H802DSRD board supports a daughter board port, which can be installed with the H806DSDB daughter board.

**Figure 3-96** shows the position of the daughter board on the H802DSRD board.

**Figure 3-96** Position of the daughter board on the H802DSRD board



**Table 3-71** describes the daughter board supported by the H802DSRD board.

**Table 3-71** Daughter board supported by the H802DSRD board

Daughter board	Function	Remarks
H806DSDB	Supports the VoIP function.	Mandatory

## Pin Assignments

**Table 3-72** describes the pin assignments of the LINE port on the front panel of the H802DSRD board.

**Table 3-72** Pin assignments of the LINE port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

### 3.20.9 H802DSRE Board Description

The H802DSRE board is a 32-channel ISDN service board, providing 32 channels of ISDN access services.

#### Feature and Specifications

Please refer to "[Voice Board Comparison](#)".

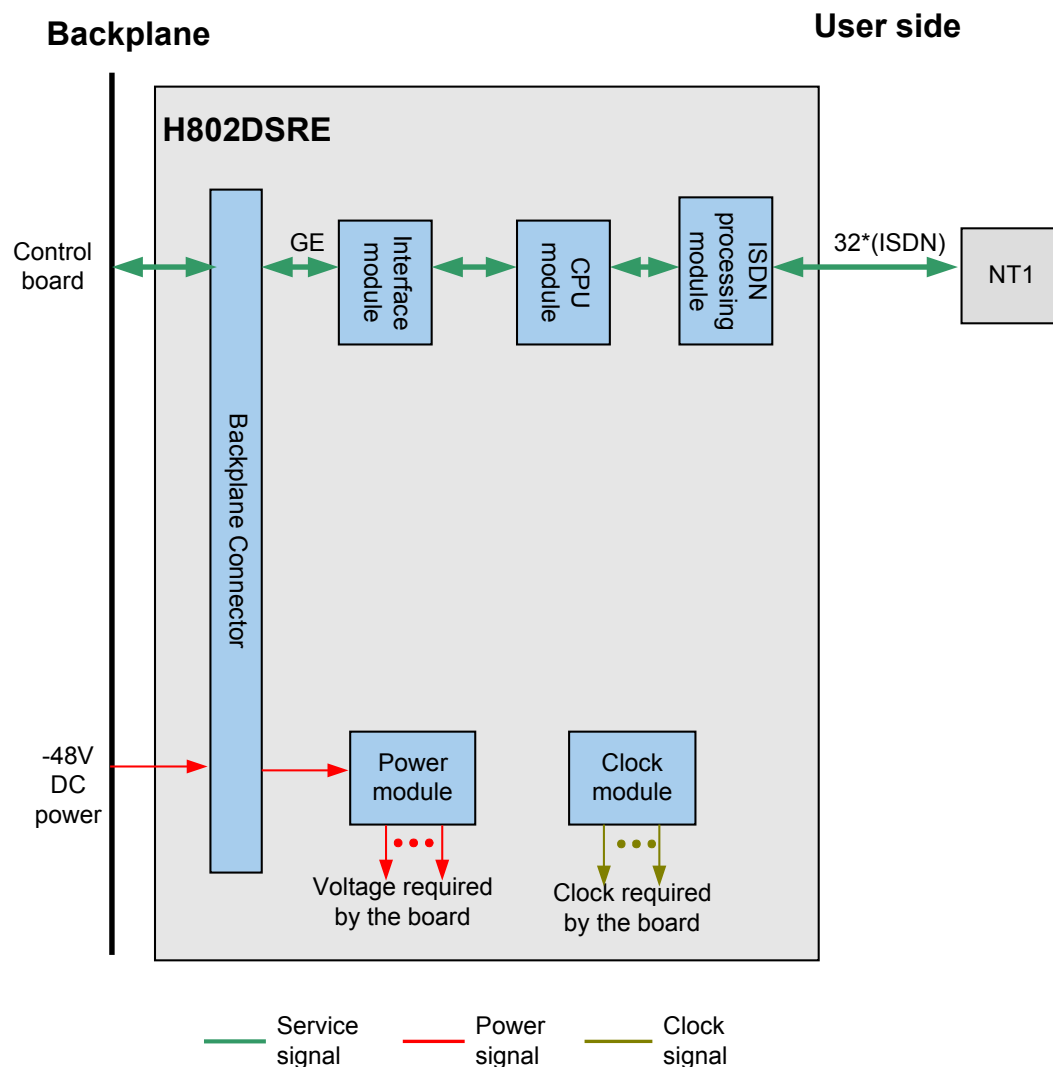
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-97 illustrates the working principle of the H802DSRE board.

Figure 3-97 Working principle of the H802DSRE board



The basic working principle of the H802DSRE board is as follows:

- The CPU module controls calls, processes call protocols, and packages voice data.
- The ISDN service processing module processes the ISDN service of the board, including extracting signaling and switching data.
- The interface module converts between the media independent interface (MII) interface and the GE interface.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

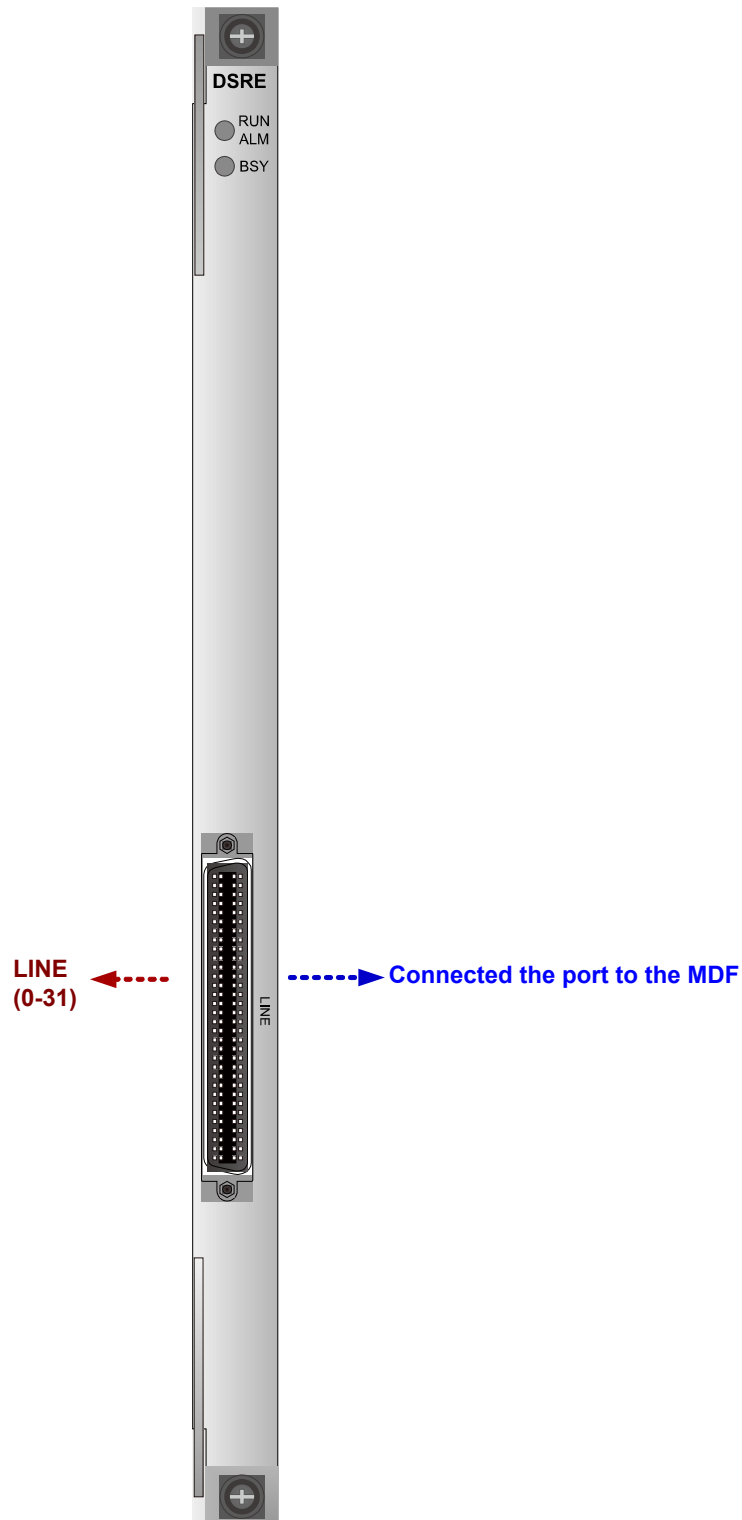
- In the upstream direction, service data is transmitted to the board through the ISDN service processing module and is packaged by the CPU module. The interface module



converts the packaged data into GE packets and transmits the packets to the control board through the GE bus of the board. Then, the packets are transmitted upstream.

- In the downstream direction, GE packets are transmitted from the control board to the interface module of the H802DSRE board through the backplane bus. The GE packets are decapsulated by the CPU module, processed by the ISDN service processing module, and then converted into service data. The service data is transmitted to the subscriber through the interface module.

## Front Panel Port



## Indicator

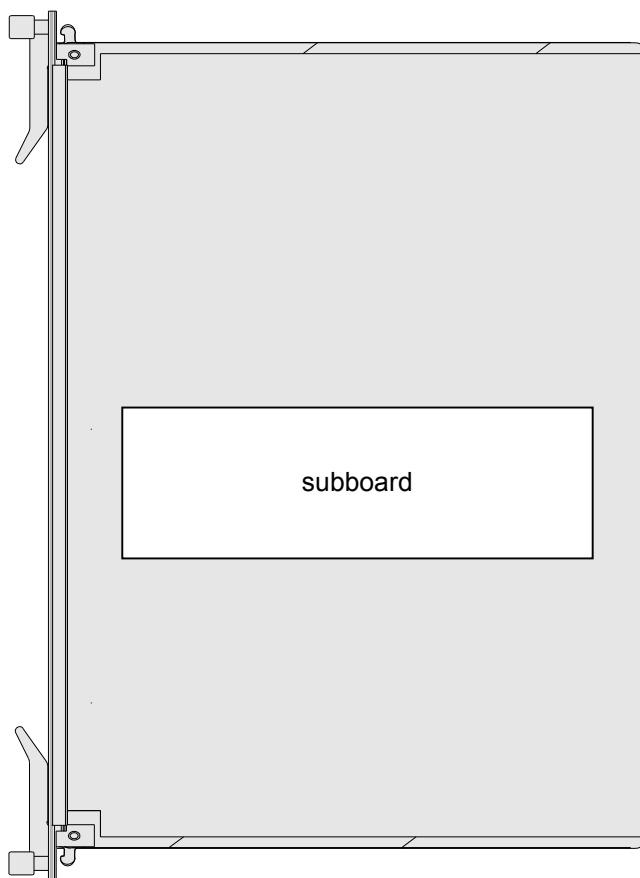
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Daughter Board

The H802DSRE board supports a daughter board port, which can be installed with the H806DSDB daughter board.

**Figure 3-98** shows the position of the daughter board on the H802DSRE board.

**Figure 3-98** Position of the daughter board on the H802DSRE board



**Table 3-73** describes the daughter board supported by the H802DSRE board.

**Table 3-73** Daughter board supported by the H802DSRE board

Daughter board	Function	Remarks
H806DSDB	Supports the VoIP function.	Mandatory

## Pin Assignments

**Table 3-74** describes the pin assignments of the LINE port on the front panel of the H802DSRE board.

**Table 3-74** Pin assignments of the LINE port of the H802DSRE board

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING15	47	RING7		31	RING16	15	RING24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING14	45	RING6		29	RING17	13	RING25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING13	43	RING5		27	RING18	11	RING26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING12	41	RING4		25	RING19	9	RING27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING11	39	RING3		23	RING20	7	RING28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING10	37	RING2		21	RING21	5	RING29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING9	35	RING1		19	RING22	3	RING30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING8	33	RING0		17	RING23	1	RING31

### 3.20.10 H802EDTB Board Description

The H802EDTB board is a 16 port SHDSL and 16 port E1 service board. It provides 16 channels of TDM SHDSL access services and 16 channels of E1 and V.35 access services. The H802EDTB board supports E1 services over SHDSL lines and achieves transparent transmission and convergence for services from E1 ports to SHDSL ports.

**NOTE**

After the H802EDTB board is upgraded from VER.B to VER.C, all functions remain unchanged.

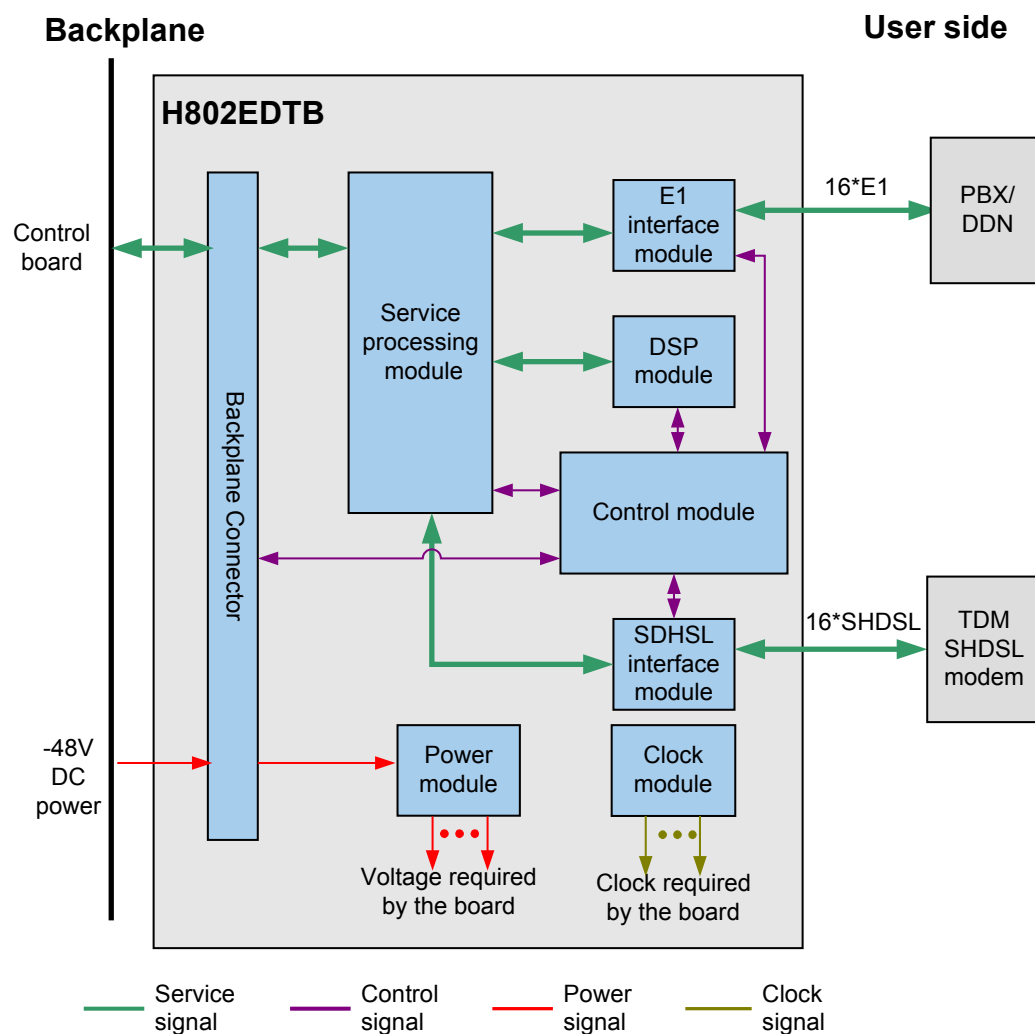
## Feature and Specifications

Please refer to "[Voice Board Comparison](#)".

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

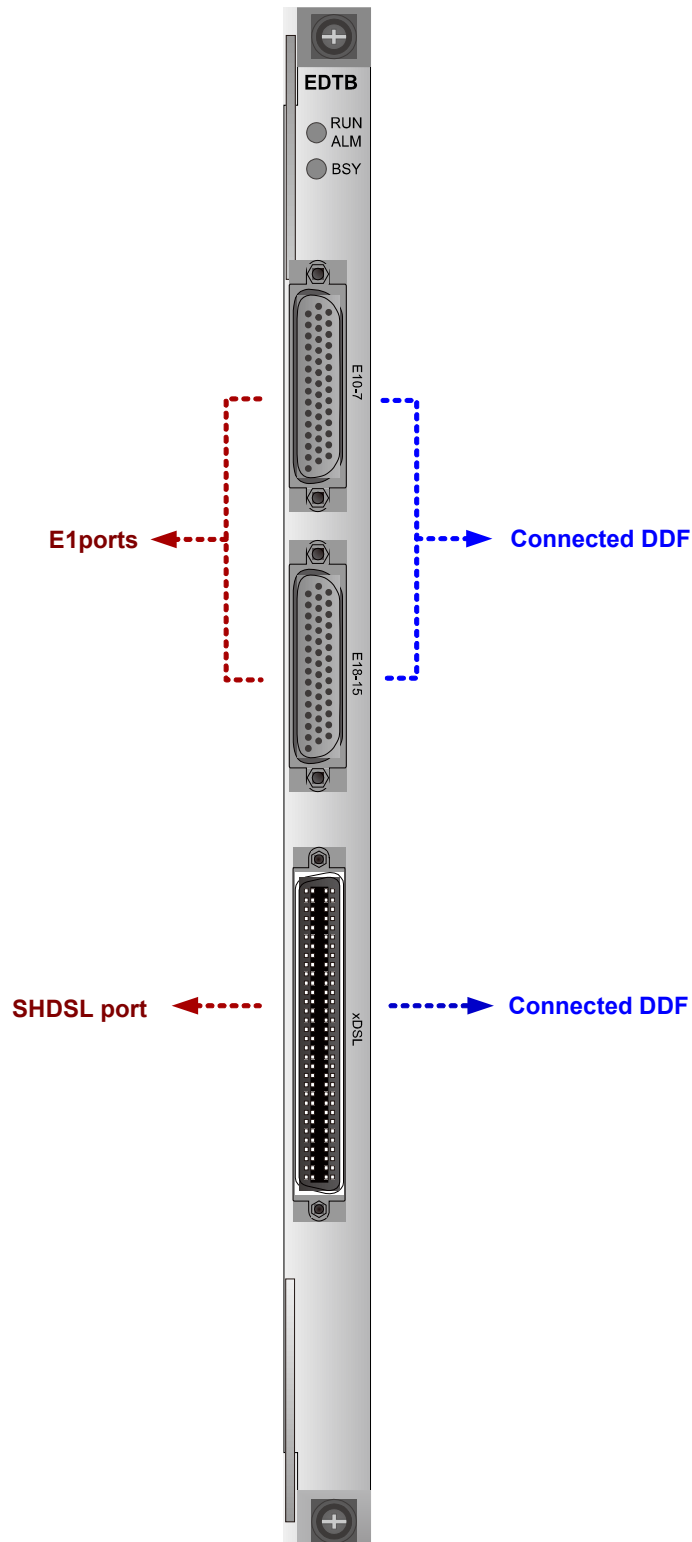


The H802EDTB board provides two 8-channel E1 ports and one 16-channel SHDSL port and its basic working principle is as follows:

- The control module controls the board, and loads and configures the service processing logic. The LocalBus and MII interfaces are for the service processing module.
- The service processing module implements switching of the time division multiplexing (TDM) timeslots and IP packets distribution inside the board, configures and controls the E1 ports, and provides the HDLC channel for its communication with the control board. In addition, the service processing module supports packet filtering, traffic control, and encryption.
- The E1 interface module provides 16 channels of E1 access services and signal conversion.

- The DSP module supports processing of 420-channel DSP packet voice services to implement the connection of VoIP service to the broadband IP network, and also supports the processing of the IP voice protocols such as H.248 and MGCP.
- The SHDSL module provides 16 channels of TDM SHDSL services to extend the transmission distance of 16 channels of E1 services. In addition, the SHDSL module can be connected to the PRA PBX.
- The power module supplies power to each functional module of the board.
- The clock module extracts the clock signals and generates the clock signals required by the system.
- The clock module provides working clock for the board chip.

## Front Panel Port





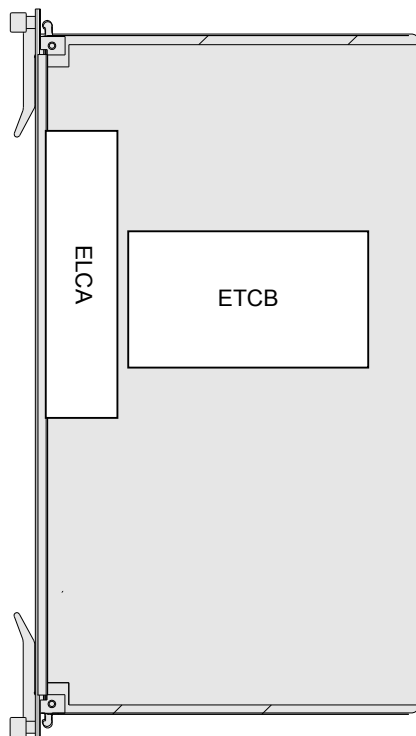
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Red	Blinking	The board is in the APP startup phase
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Daughter Board

To provide relevant functions, the H802EDTB board must be configured with a matched daughter board. [Figure 3-99](#) shows the position of the daughter board on the H802EDTB board.

**Figure 3-99** Position of the daughter board on the H802EDTB board



**Table 3-75** lists the daughter boards that are supported by the H802EDTB board.

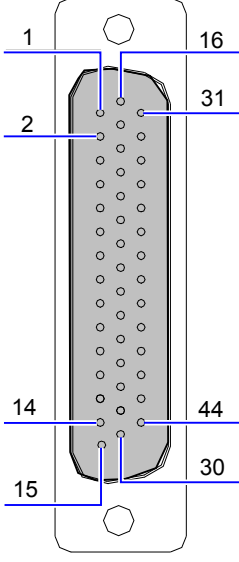
**Table 3-75** Daughter boards supported by the H802EDTB board

Daughter board	Port	Function
H602ETCB	HW port and MII port	Processes the algorithm of VoIP compression and decompression.
H802ELCA	E1 port	Supports the E1 port.

## Pin Assignments

**Table 3-76** describes the pin assignments of the E1 port on the front panel of the H802EDTB board.

**Table 3-76** Pin assignments of the E1 port

Pin	Signal	Port	Pin	Signal
30	TT0		8	TR7
15	TR0		37	RR1
44	PGND		22	RT1
29	TT1		7	TT7
14	TR1		36	RR2
43	PGND		21	RT2
28	TT2		6	PGND
13	TR2		35	RR3
42	PGND		20	RT3
27	TT3		5	PGND
12	TR3		34	RR4
41	PGND		19	RT4
26	TT4		4	PGND
11	TR4		33	RR5
40	PGND		18	RT5
25	TT5		3	PGND
10	TR5		32	RR6
39	PGND		17	RT6
24	TT6		2	PGND
9	TR6		31	RR7
38	RR0		16	RT7
23	RT0		1	PGND

**NOTE**

- In **Table 3-76**, the first letter "R" or "T" in each cell of the signal column refer to "Receive" or "Transmit" of E1 signals.
- In **Table 3-76**, the second letter "R" or "T" in each cell of the signal column refers to "ring" or "tip" of the 75-ohm E1 signal cable, or refers to sign + or – of the 120-ohm E1 signal cable.

**Table 3-77** describes the pin assignments of the xDSL port on the front panel of the H802EDTB board.

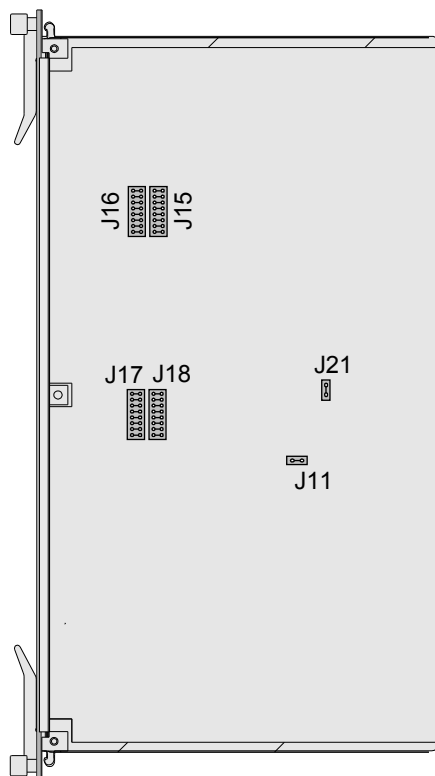
**Table 3-77** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	-	16	-
63		47			31		15	
62	14	46	6		30	-	14	-
61		45			29		13	
60	13	44	5		28	-	12	-
59		43			27		11	
58	12	42	4		26	-	10	-
57		41			25		9	
56	11	40	3		24	-	8	-
55		39			23		7	
54	10	38	2		22	-	6	-
53		37			21		5	
52	9	36	1		20	-	4	-
51		35			19		3	
50	8	34	0		18	-	2	-
49		33			17		1	

## Jumper Settings

The H802EDTB board provides five sets of jumpers, as shown in [Figure 3-100](#).

**Figure 3-100** Layout of the jumpers on the H802EDTB board



The jumpers support the following functions:

- Jumpers J15, J16, J17, and J18 are used to set whether to ground the shield layer of the E1 port.
  - The jumper caps should be removed (which means ungrounded) if the transmit and receive resistance is 120 ohms.
  - The jumper caps should be installed (which means grounded) if the transmit and receive resistance is 75 ohms.
- Jumpers J11 and J21 are used to query through software whether the shield layer of the E1 port is grounded. The setting of jumper J11 must be the same as that of jumper J21.
- It is recommended that the settings of jumpers J15, J16, J17, and J18 be the same as those of jumpers J11 and J21.

**Table 3-78** describes the jumper settings for the H802EDTB board.

**Table 3-78** Jumper settings of the H802EDTB board

Jumper	Setting	Indication	Default Setting
J15, J16, J17, and J18	Connected	The shield layer of the E1 port is grounded.	Connected
	Disconnected	The shield layer of the E1 port is not grounded.	

Jumper	Setting	Indication	Default Setting
J11 and J21	Connected	The shield layer of the E1 cable is grounded.	Connected
	Disconnected	The shield layer of the E1 cable is not grounded.	

**Table 3-79** describes the mapping between jumpers J15, J16, J17, J18, and the E1 port.

**Table 3-79** Mapping between jumpers J15, J16, J17, J18, and the E1 port

Jumper	Pin	End of E1 Channel	Jumper	Pin	End of E1 Channel
J15	1-2	Tx end of the first E1 channel	J17	1-2	Tx end of the 9th E1 channel
	3-4	Rx end of the first E1 channel		3-4	Rx end of the 9th E1 channel
	5-6	Tx end of the 2nd E1 channel		5-6	Tx end of the 10th E1 channel
	7-8	Rx end of the 2nd E1 channel		7-8	Rx end of the 10th E1 channel
	9-10	Tx end of the 3rd E1 channel		9-10	Tx end of the 11th E1 channel
	11-12	Rx end of the 3rd E1 channel		11-12	Rx end of the 11th E1 channel
	13-14	Tx end of the 4th E1 channel		13-14	Tx end of the 12th E1 channel
	15-16	Rx end of the 4th E1 channel		15-16	Rx end of the 12th E1 channel
J16	1-2	Tx end of the 5th E1 channel	J18	1-2	Tx end of the 13th E1 channel
	3-4	Rx end of the 5th E1 channel		3-4	Rx end of the 13th E1 channel
	5-6	Tx end of the 6th E1 channel		5-6	Tx end of the 14th E1 channel
	7-8	Rx end of the 6th E1 channel		7-8	Rx end of the 14th E1 channel
	9-10	Tx end of the 7th E1 channel		9-10	Tx end of the 15th E1 channel

Jumper	Pin	End of E1 Channel	Jumper	Pin	End of E1 Channel
	11-12	Rx end of the 7th E1 channel		11-12	Rx end of the 15th E1 channel
	13-14	Tx end of the 8th E1 channel		13-14	Tx end of the 16th E1 channel
	15-16	Rx end of the 8th E1 channel		15-16	Rx end of the 16th E1 channel

**Table 3-80** describes the software query (a reserved function) supported by jumper J11 and J21.

**Table 3-80** Software query (a reserved function) supported through jumpers J11 and J21

Jumper	Contents Queried Through the Software
J11	Whether the shield layer of the E1 transmit end is grounded
J21	Whether the shield layer of the E1 receive end is grounded

### 3.20.11 H80AATRB Board Description

H80AATRB is a 32-channel foreign exchange office (FXO) service board, providing direct access services.

#### Functional Specifications

Specification	Supported or Not
Ringing detection	Yes
Overcurrent protection	Yes
CID	Yes
G.711A/u	Yes
Pulse dialing	Yes
DTMF dialing	Yes
Configurable port impedance	Yes
Hookflash function	Yes
ITU K.20; K.45	Yes

Specification	Supported or Not
EMC complying with Class A	Yes
Temperature query and high-temperature alarm	Yes
Automatic shutdown at high temperature	Yes
Polarity reversal detection	Yes

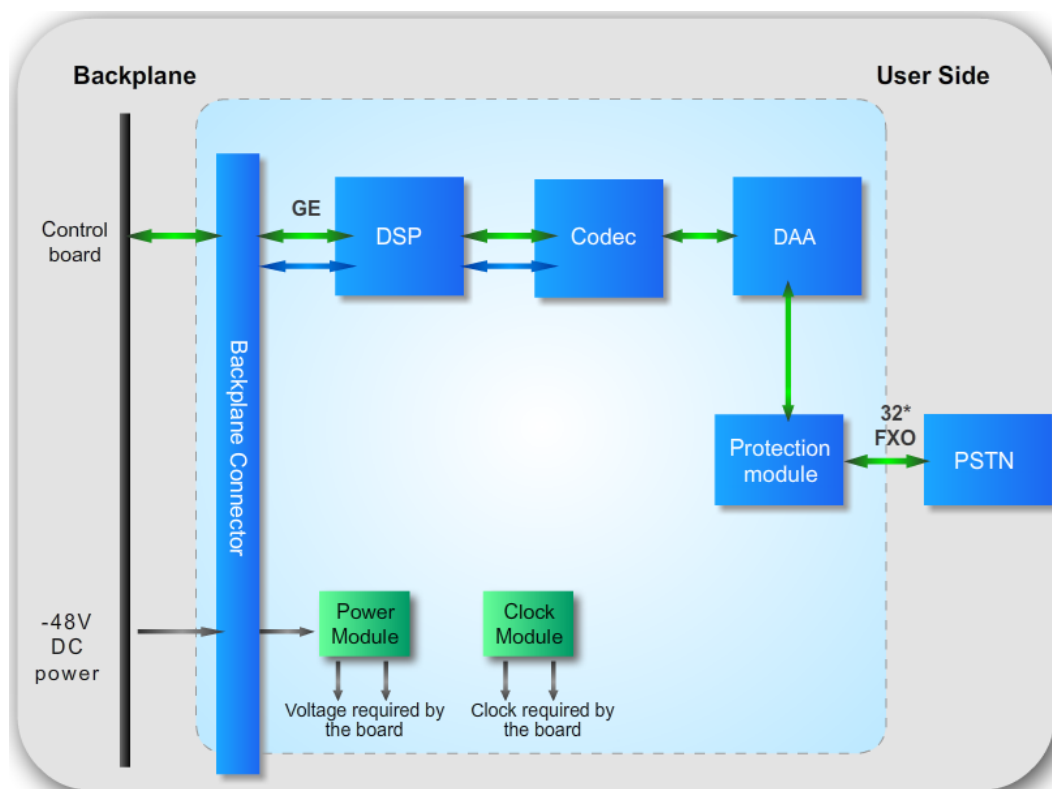
## Technical Specifications

See "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

The working principle of the H80AATRB board is shown in [Figure 3-101](#).

**Figure 3-101** Working principle of the H80AATRB board



The functions of all modules of the H80AATRB board are as follows:

- The digital signal processing (DSP) module performs the functions of voice compression and decompression, IP packet packing and unpacking.

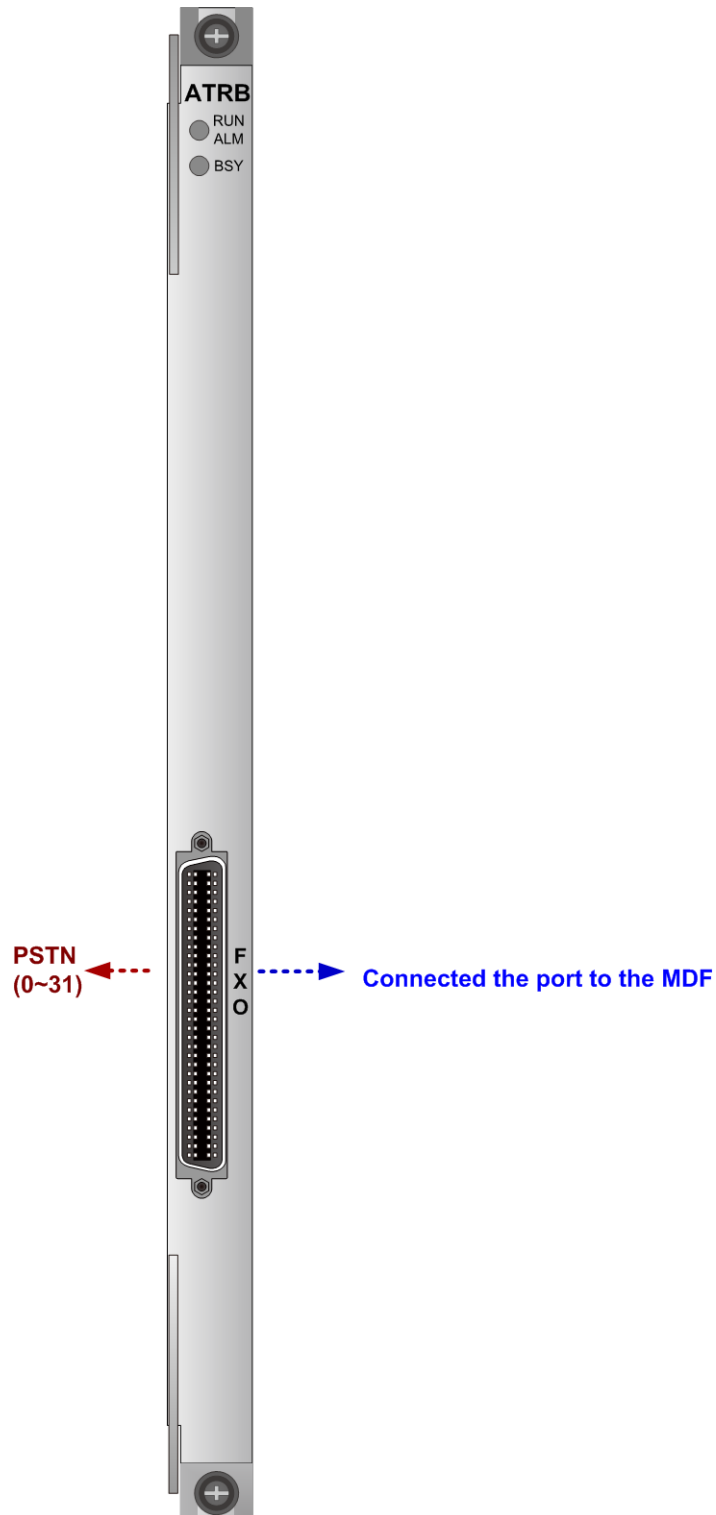


- The integrated CPU performs the functions of software loading, running control, and management.
- DSP manages the voice chipset through the SPI interface, and transmits the voice media stream through the HW interface.
- The voice chipset codec performs the functions of the data access arrangement (DAA) chip control, power supply, and HW interface conversion.
- The DAA chip performs the functions of ringing current detection, line polarity detection, onhook, offhook, and conversion between analog voice signals and digital signals.
- The protection module provides a protection capacity of 1.5 kV in differential mode.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process of the H80AATRB board is as follows:

- In the upstream direction, the service data is transmitted to the H80AATRB board through the FXO interface. After being processed by the DAA module, the codec module, and the DSP module, the service data is transmitted to the control board through the backplane and then to the upstream device.
- In the downstream direction, the service data is transmitted from the control board to the DSP module, the codec module, and the DAA module through the backplane bus and the interface module. After being processed, the service data is transmitted to the subscriber through the FXO interface.

## Front Panel Port



## Pin Assignments

For pin assignments of the FXO interface on the H80AATR board, see [Table 3-81](#).

**Table 3-81** Pin assignments of the FXO port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

## 3.21 ADSL2+ Service Board

ADSL2+ service boards provide ADSL2+ access services using their broadband ports.

### 3.21.1 32-Channel ADSL2+ Service Board Comparison

The 32-channel ADSL2+ service boards support ADSL2+ over POTS, ADSL2+ over ISDN, or ADSL2+ access services.

**Table 3-82** Specifications lists of 32-channel ADSL2+ service boards

Specifications	H808ADIF	H808ADLE	H805ADLF	H808ADLF
<b>Applicable Line</b>	ADSL2+ over ISDN	ADSL2+ over POTS	ADSL2+ over POTS	ADSL2+ over POTS
<b>Physical Layer Retransmission (G.INP)</b>	No	No	No	No
<b>ADSL2+ Bonding</b>	No	No	No	No
<b>INM</b>	No	No	No	No
<b>SELT</b>	Yes	Yes	Yes	Yes
<b>MELT</b>	No	No	No	No
<b>Annex Type</b>	<ul style="list-style-type: none"> <li>● G.992.1 Annex B/J</li> <li>● G.992.3 Annex B/J</li> <li>● G.992.5 Annex B/J</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M (EU32-EU64)</li> <li>● G.992.5 Annex A/M (EU32-EU64)</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M (EU32-EU64)</li> <li>● G.992.5 Annex A/M (EU32-EU64)</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M (EU32-EU64)</li> <li>● G.992.5 Annex A/M (EU32-EU64)</li> </ul>
<b>Flexible Configuration Modes</b>	Supports RFC2662 and RFC4706. (Users with a super user account can log in to the system and run the <b>switch adsl mode to</b> command in diagnose mode to switch between the configuration modes. The default configuration mode is RFC2662)			
<b>Connector</b>	Champ 64-pin	Champ 64-pin	Champ 64-pin	Champ 64-pin
<b>Built-in Splitter</b>	No	Yes (600-ohm pure impedance splitter)	No	No
<b>Temperature Query and High-temperature Alarm</b>	Yes	Yes	Yes	Yes
<b>Automatic Power Shutdown in Case of a High Temperature</b>	No	Yes (Supported by V800R009C00 and later)	No	Yes (Supported by V800R009C00 and later)

### 3.21.2 64-Channel ADSL2+ Service Board Comparison

The 64-channel ADSL2+ service boards support ADSL2+ over POTS, ADSL2+ over ISDN, or ADSL2+ access services.

**Table 3-83** Specifications lists of 64-channel ADSL2+ service boards

Specifications	H802ADPD	H805ADPD/ H807ADPD	H802ADQD	H802ADKM	H80BADPE/ H807ADPE	H808ADPM/ H807ADPM
<b>Applicable Line</b>	ADSL2+ over POTS	ADSL2+ over POTS	ADSL2+ over ISDN	ADSL2+	ADSL2+ over POTS	ADSL2+ over POTS
<b>Physical Layer Retransmission (G.INP)</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>ADSL2+ Bonding</b>	Yes (Supported by V800R011C00 and later)	Yes (Supported by V800R009C00 and later)	No	Yes (Supported by V800R011C00 and later)	Yes (Supported by V800R010C00 and later)	Yes (Supported by V800R010C00 and later)
<b>INM</b>	Yes	Yes	No	No	Yes	Yes
<b>SELT</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>MELT</b>	No	No	No	Yes	No	Yes
<b>Annex Type</b>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M (EU32-EU64)</li> <li>● G.992.5 Annex A/M (EU32-EU64)</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M (EU32-EU64)</li> <li>● G.992.5 Annex A/M (EU32-EU64)</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.3 Annex B</li> <li>● G.992.5 Annex B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.3 Annex B/J</li> <li>● G.992.5 Annex B/J</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M (EU32-EU64)</li> <li>● G.992.5 Annex A/M (EU32-EU64)</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M/J (EU32-EU64)</li> <li>● G.992.5 Annex A/M/J (EU32-EU64)</li> </ul>
<b>Flexible Configuration Modes</b>	Supports RFC2662, RFC4706, and TR165. (Users with a super user account can log in to the system and run the <b>switch adsl mode to</b> command in diagnose mode to switch between the configuration modes. The default configuration mode is RFC2662. Considering the current development trend, it is recommended that you use TR165, which is more flexible than the others)					
<b>Connector</b>	Champ 64-pin	Champ 64-pin	Champ 64-pin	Champ 64-pin	Delander 64-pin	Champ 64-pin

Specifications	H802ADPD	H805ADPD/ H807ADPD	H802ADQD	H802ADKM	H80BADPE/ H807ADPE	H808ADPM/ H807ADPM
<b>Built-in Splitter</b>	No	No	No	No	Yes (600-ohm pure impedance splitter)	No
<b>Temperature Query and High-temperature Alarm</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Automatic Power Shutdown in Case of a High Temperature</b>	Yes	Yes	Yes	Yes	Yes	Yes

### 3.21.3 H805ADIF Board Description

The H805ADIF board is a 32-port ADSL2+ over ISDN service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to provide 32 channels of ADSL2+ signals.

#### Functional Specifications

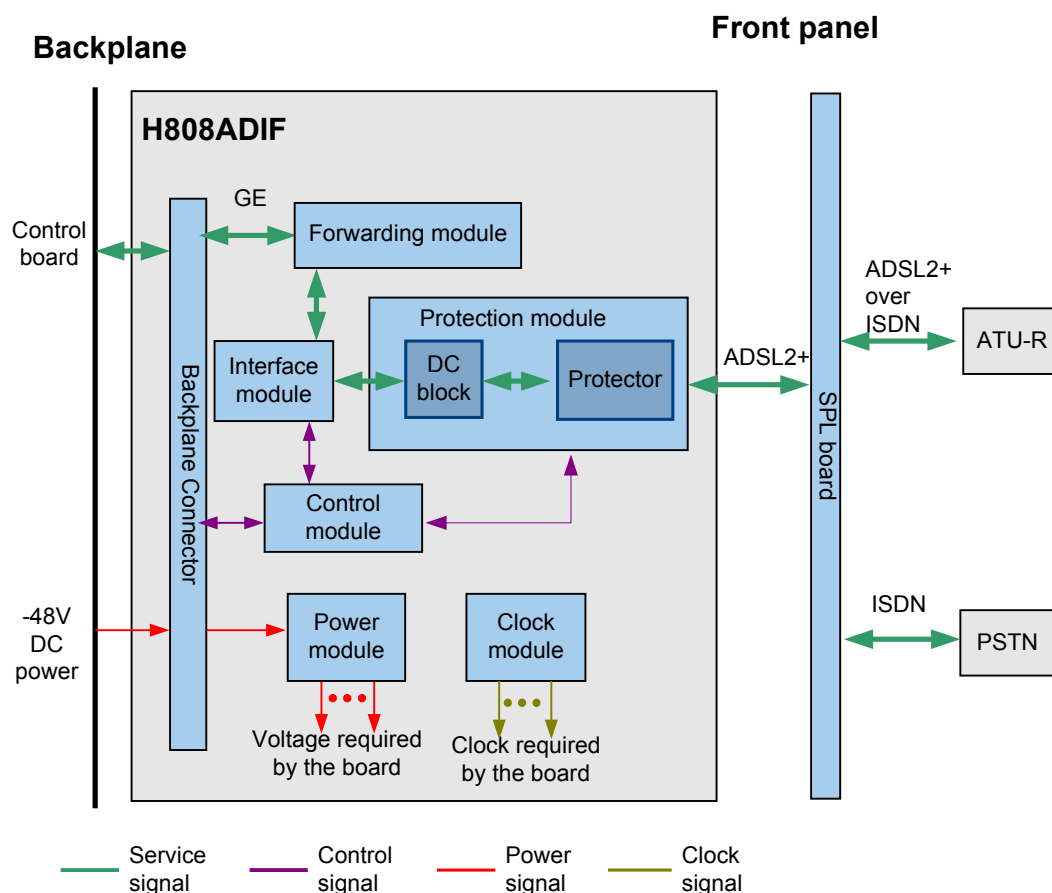
Please refer to "[32-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-102 Working principle of the H805ADIF board



The basic working principle of the H805ADIF board is as follows:

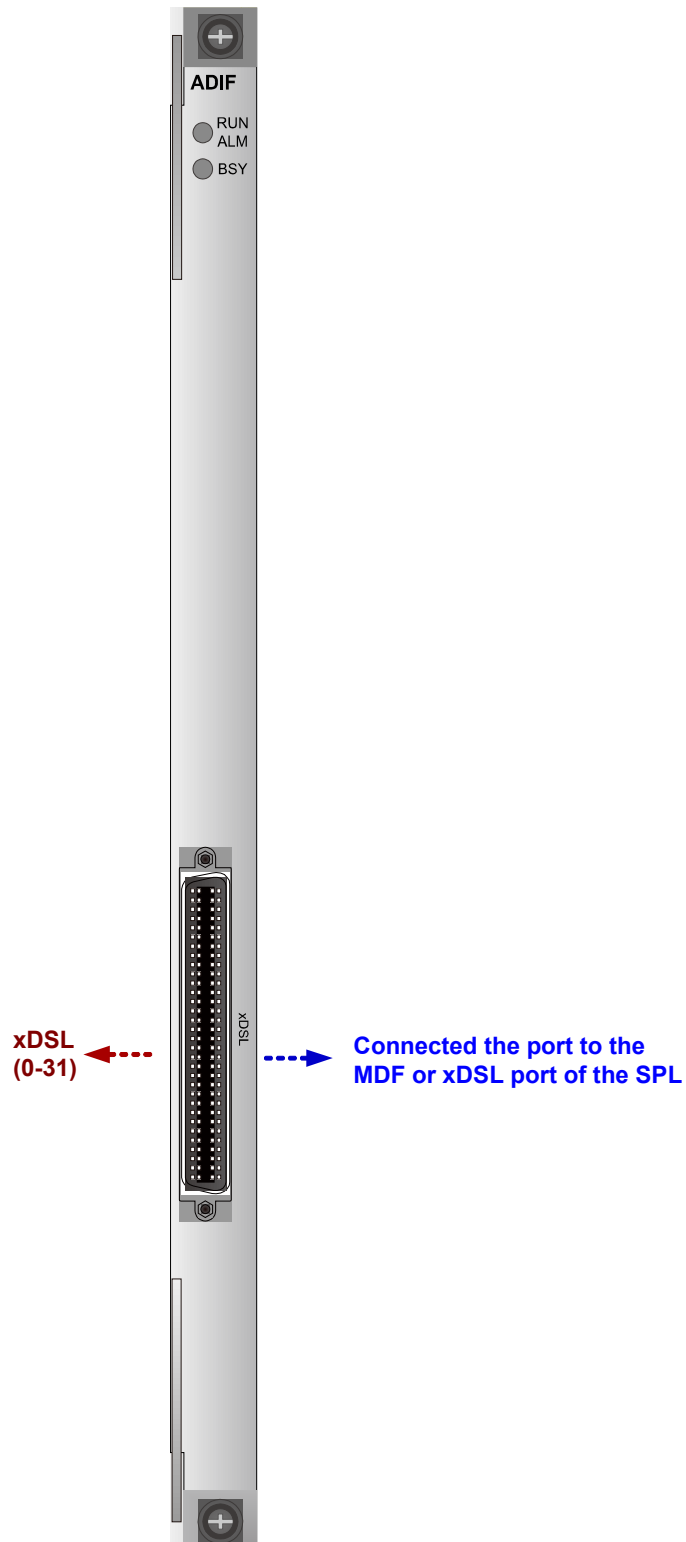
- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the packets into analog signals and transmits the signals to subscriber lines.



## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-84** describes the pin assignments of the xDSL port on the front panel of the H805ADIF board.

**Table 3-84** Pin assignments of the xDSL port on the front panel of the H805ADIF board

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
48	15	40	7		49	16	57	24
16		8			17		25	
47	14	39	6		50	17	58	25
15		7			18		26	
46	13	38	5		51	18	59	26
14		6			19		27	
45	12	37	4		52	19	60	27
13		5			20		28	
44	11	36	3		53	20	61	28
12		4			21		29	
43	10	35	2		54	21	62	29
11		3			22		30	
42	9	34	1		55	22	63	30
10		2			23		31	
41	8	33	0		56	23	64	31
9		1			24		32	

### 3.21.4 H808ADIF Board Description

The H808ADIF board is a 32-port ADSL2+ over ISDN service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to provide 32 channels of ADSL2+ signals.

#### Functional Specifications

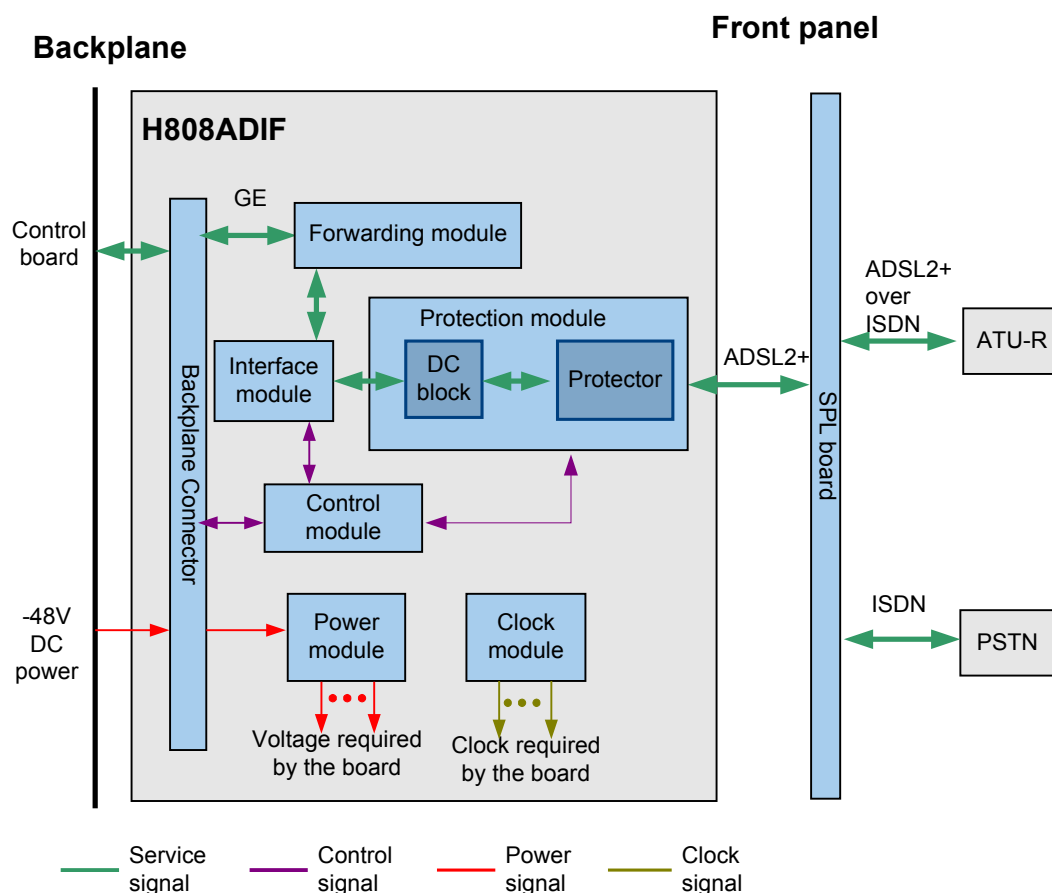
Please refer to "[32-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-103 Working principle of the H808ADIF board



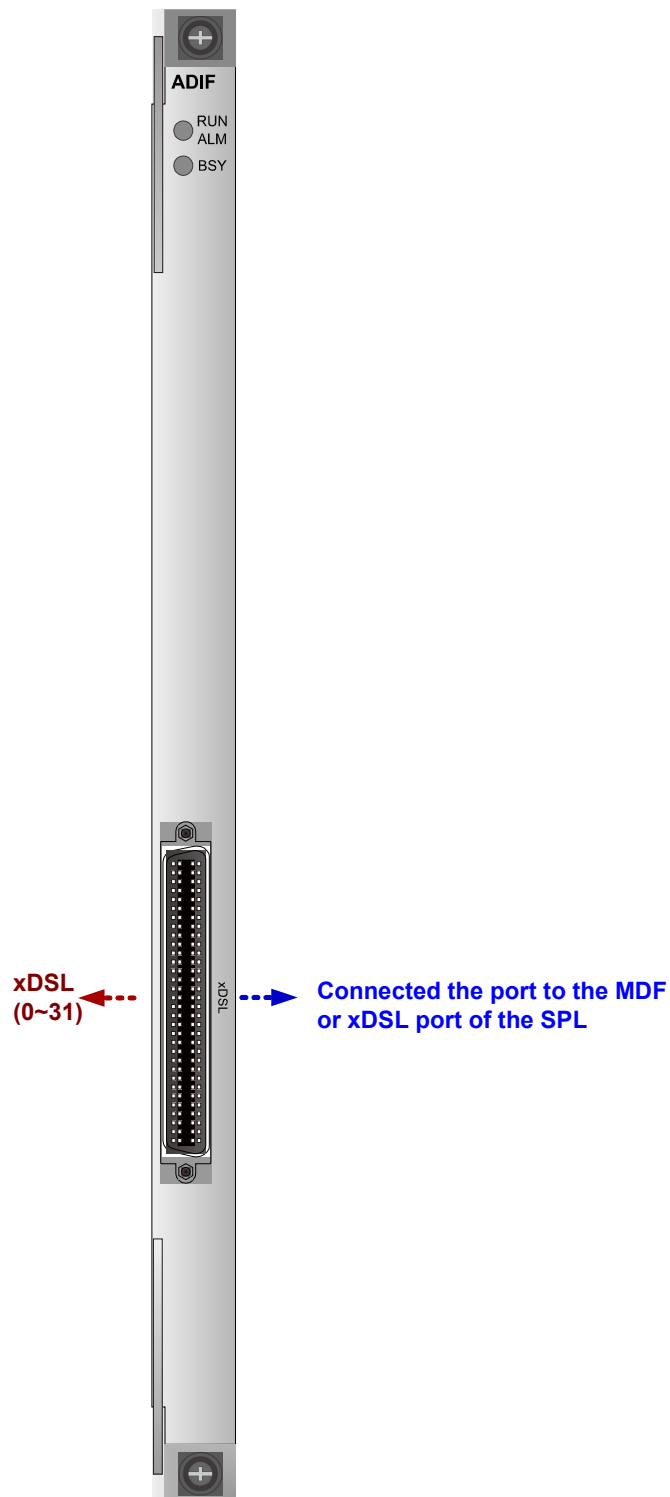
The basic working principle of the H808ADIF board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-85** describes the pin assignments of the xDSL port on the front panel of the H808ADIF board.

**Table 3-85** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

### 3.21.5 H808ADLE Board Description

H808ADLE is a 32-port ADSL2+ over POTS service board. Using its ADSL2+ port, the H808ADLE board works with the ADSL transceiver unit, remote terminal end (ATU-R) to provide 32 channels of ADSL2+ access services.

#### Functional Specifications

Please refer to "[32-Channel ADSL2+ Service Board Comparison](#)".

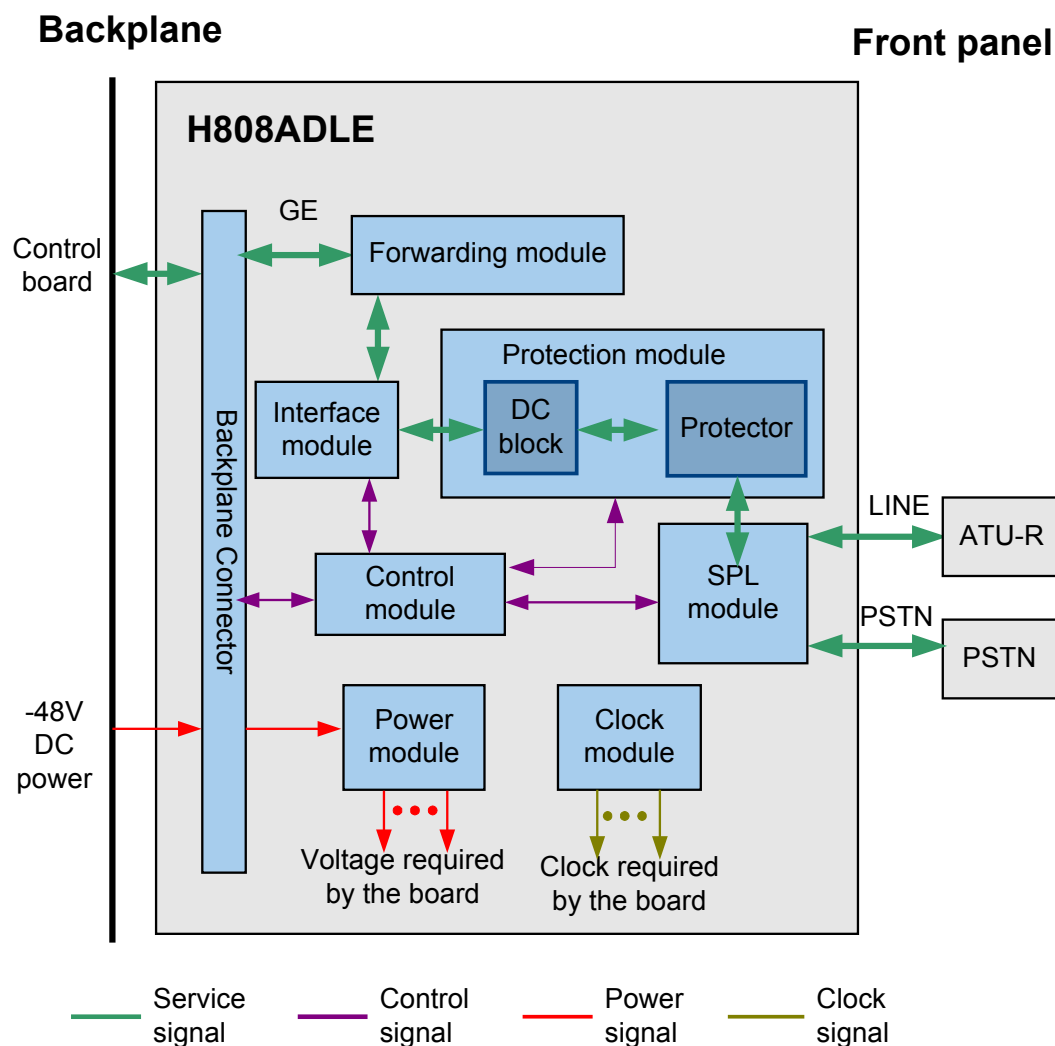
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

Figure 3-104 Working principle of the H808ADLE board



The basic working principle of the H808ADLE board is as follows:

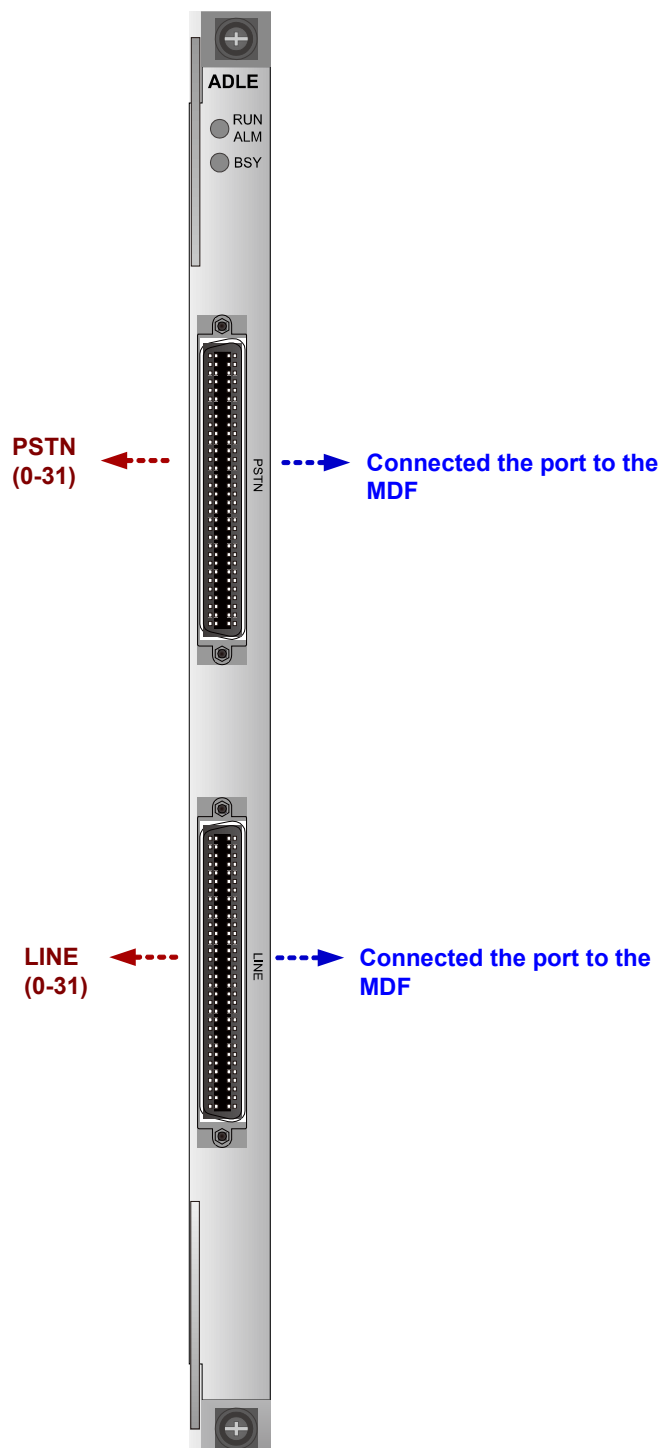
- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The splitter in the interface module separates ADSL2+ signals and POTS signals from ADSL2+ over POTS signals sent by the ATU-R. The interface module converts ADSL2+ signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into ATM packets. The POTS signals are transmitted to the PSTN device through the PSTN port. In the opposite direction, the splitter in the interface module combines the ADSL2+ signals from the forwarding module and the POTS signals from the PSTN device into ADSL2+ over POTS signals. Such signals are transmitted to the ATU-R through the LINE port.

- The forwarding module processes and sends the input information to the backplane bus through the backplane interface.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits line signals to the forwarding module. The forwarding module reassembles the cell flows into ATM packets, converts the ATM packets into Ethernet packets, and performs CAR on the Ethernet packets. The Ethernet packets are transmitted to the control switch and then to the backplane bus through the backplane interface.
- In the downstream, the forwarding module reassembles the Ethernet packets from the backplane bus into ATM packets, and then transmits the ATM packets to the interface module. The interface module then converts the ATM packets into analog signals, and transmits the analog signals over the subscriber line.

## Front Panel Port



 **NOTICE**

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

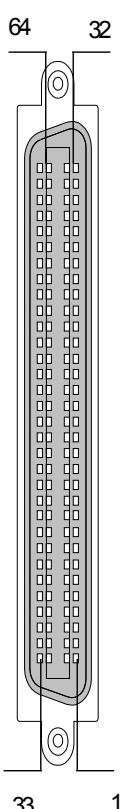
**Indicator**

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

**Pin Assignments**

**Table 3-86** describes the pin assignments of the LINE/PSTN port on the front panel of the H808ADLE board.

**Table 3-86** Pin assignments of the LINE/PSTN port on the front panel of the H808ADLE board

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

### 3.21.6 H805ADLF Board Description

The H805ADLF board is a 32-port ADSL2+ over POTS service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to provide 32 channels of ADSL2+ signals.

#### Functional Specifications

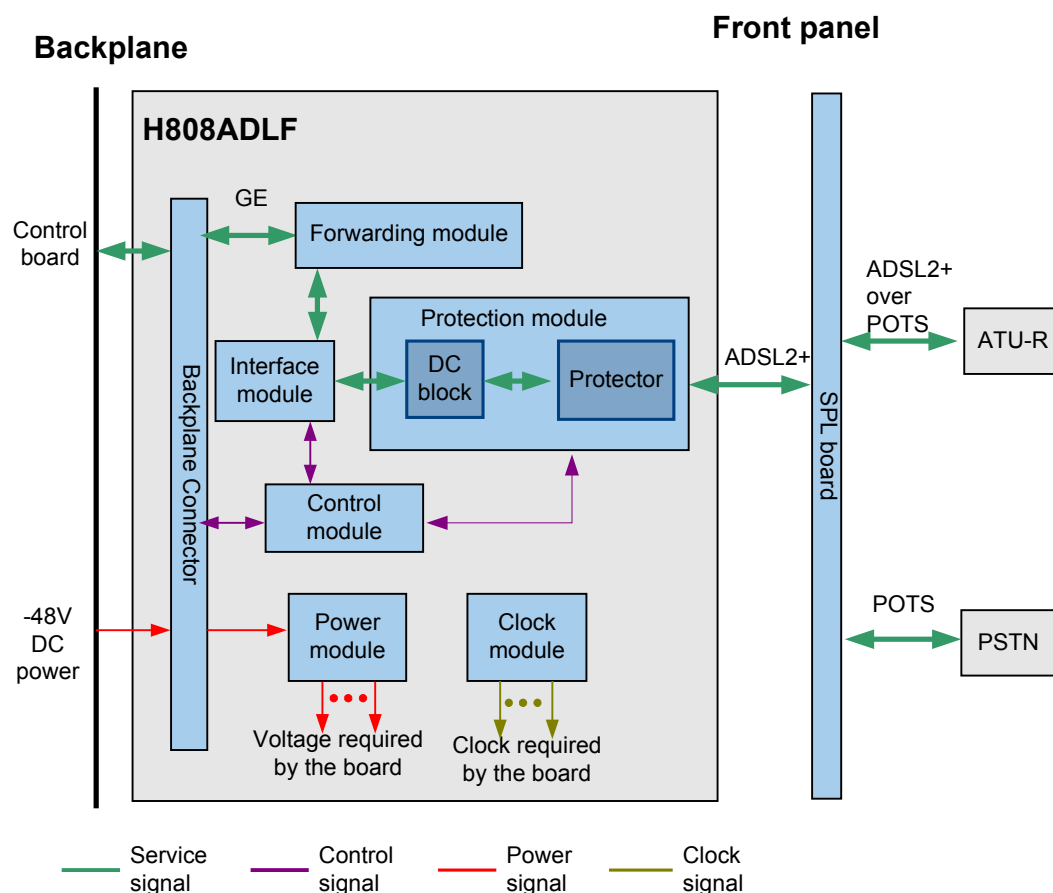
Please refer to "[32-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-105 Working principle of the H805ADLF board



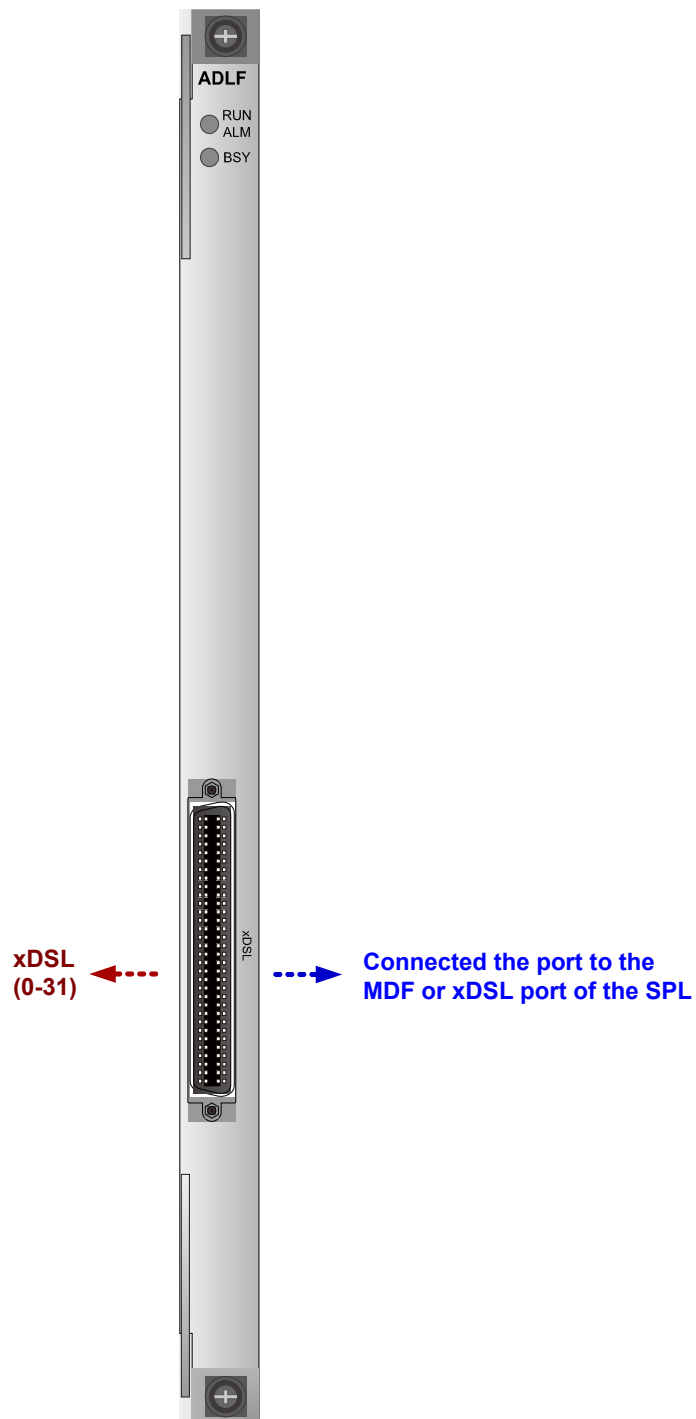
The basic working principle of the H805ADLF board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port





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## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.
- 

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-87** describes the pin assignments of the xDSL port on the front panel of the H805ADLF board.

**Table 3-87** Pin assignments of the xDSL port on the front panel of the H805ADLF board

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
48	15	40	7		49	16	57	24
16		8			17		25	
47	14	39	6		50	17	58	25
15		7			18		26	
46	13	38	5		51	18	59	26
14		6			19		27	
45	12	37	4		52	19	60	27
13		5			20		28	
44	11	36	3		53	20	61	28
12		4			21		29	
43	10	35	2		54	21	62	29
11		3			22		30	
42	9	34	1		55	22	63	30
10		2			23		31	
41	8	33	0		56	23	64	31
9		1			24		32	

### 3.21.7 H808ADLF Board Description

The H808ADLF board is a 32-port ADSL2+ over POTS service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to provide 32 channels of ADSL2+ signals.

#### Functional Specifications

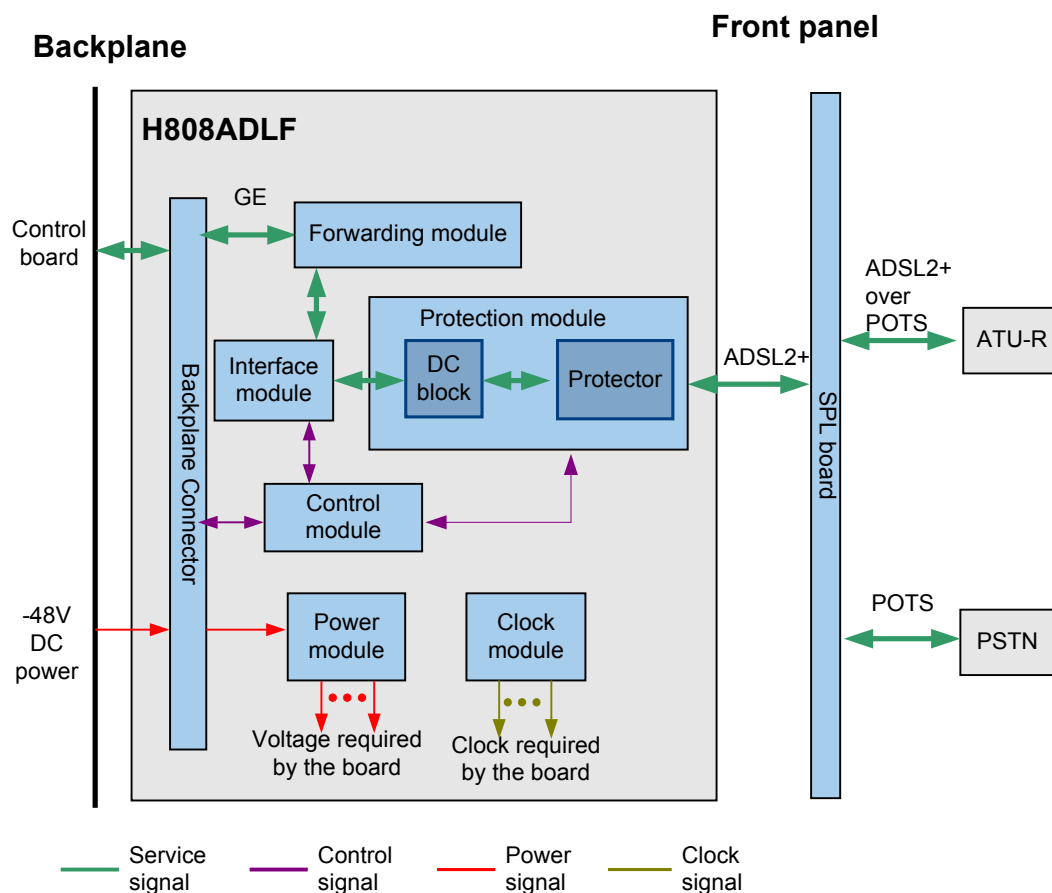
Please refer to "[32-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

[Figure 3-106](#) shows the working principle of the H808ADLF board.

Figure 3-106 Working principle of the H808ADLF board



The basic working principle of the H808ADLF board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

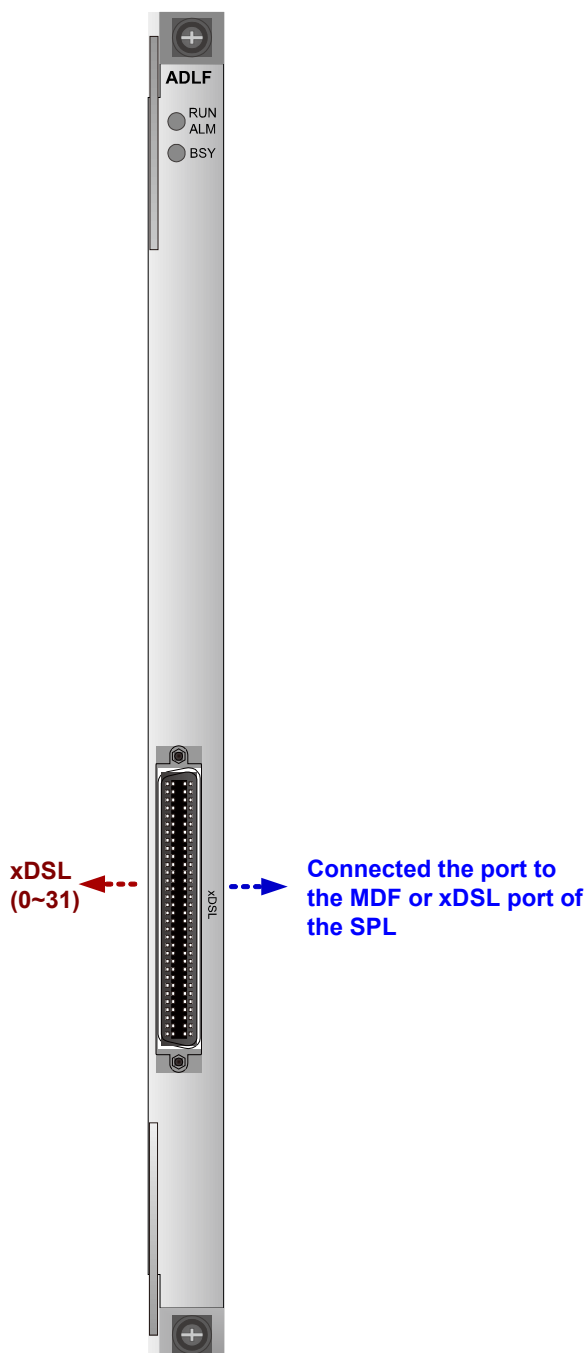
The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets.

Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.

- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-88** describes the pin assignments of the xDSL port on the front panel of the H808ADLF board.

**Table 3-88** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

### 3.21.8 H802ADPD Board Description

The H802ADPD board is a 64-port ADSL2+ over POTS service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to access 64 channels of ADSL2+ service.

#### Functional Specifications

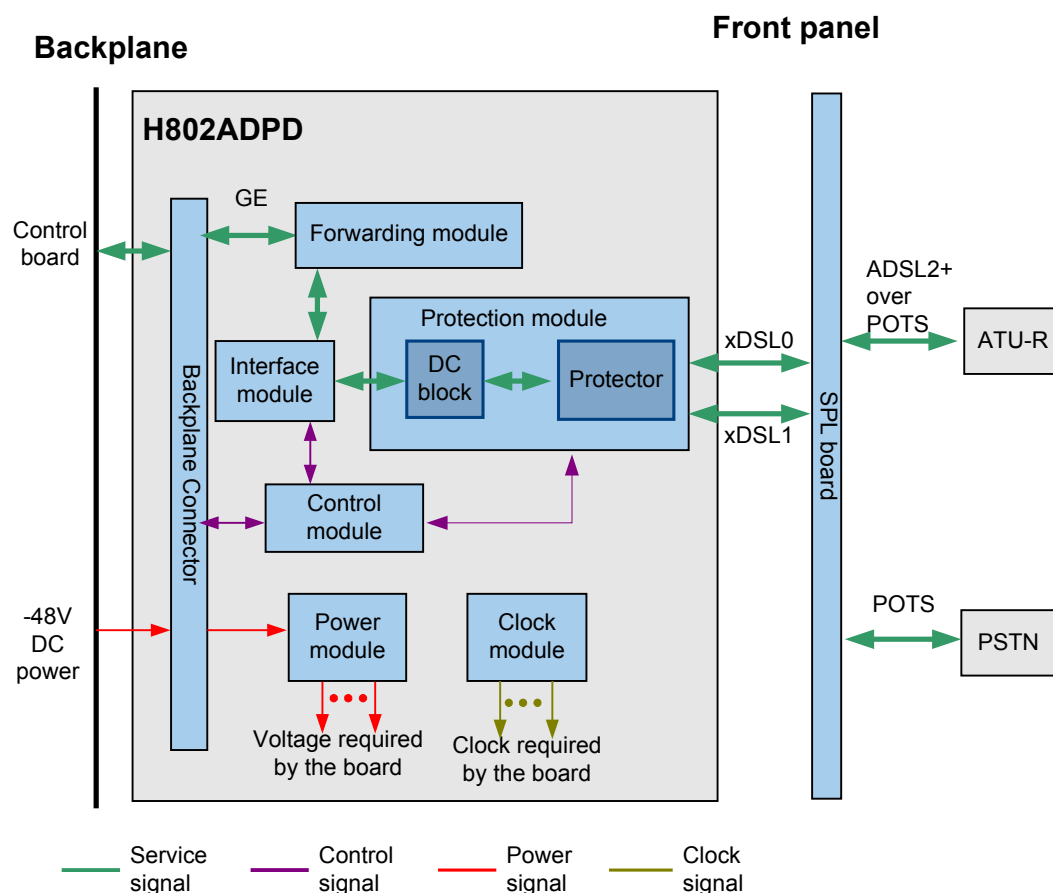
Please refer to "[64-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-107 Working principle of the H802ADPD board



The basic working principle of the H802ADPD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the ATM packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port

### xDSL1 (32-63)



### NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-89](#); For pin assignment of the xDSL1 port, see [Table 3-90](#);



**Table 3-89** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-90** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.21.9 H805ADPD Board Description

The H805ADPD board is a 64-port ADSL2+ over POTS service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to access 64 channels of ADSL2+ service.

#### Functional Specifications

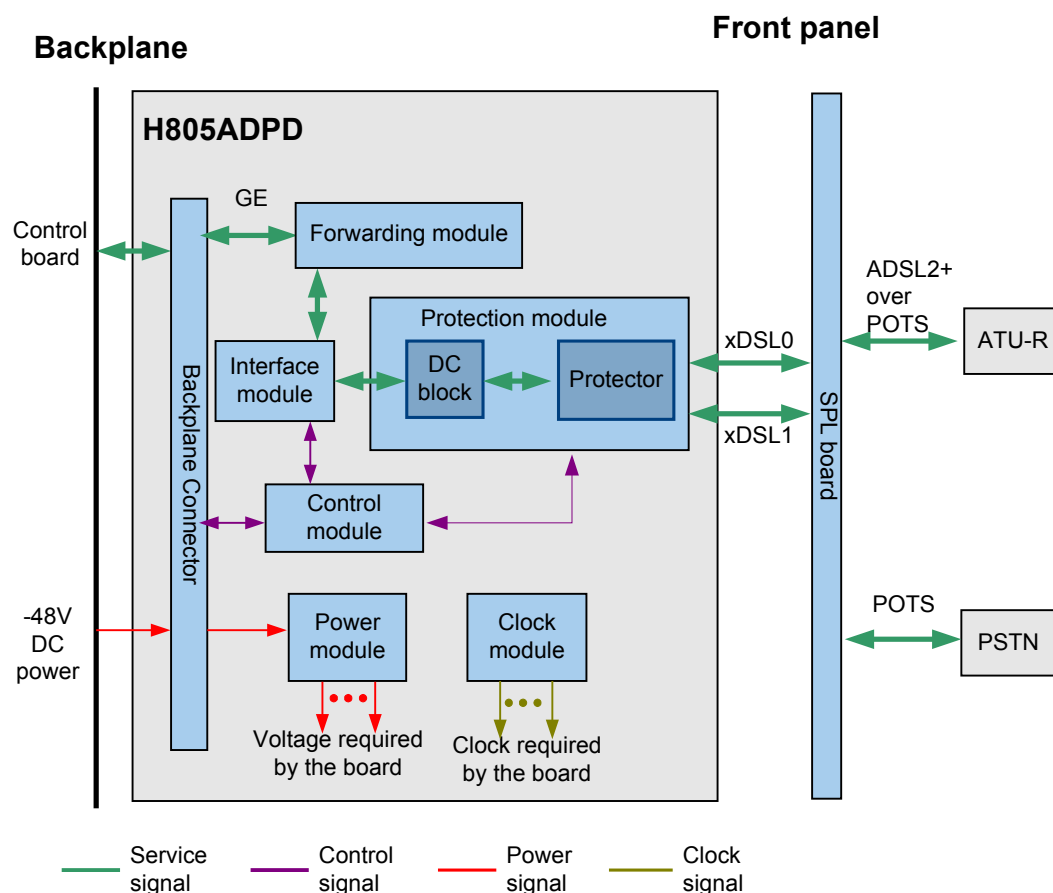
Please refer to "[64-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-108 Working principle of the H805ADPD board



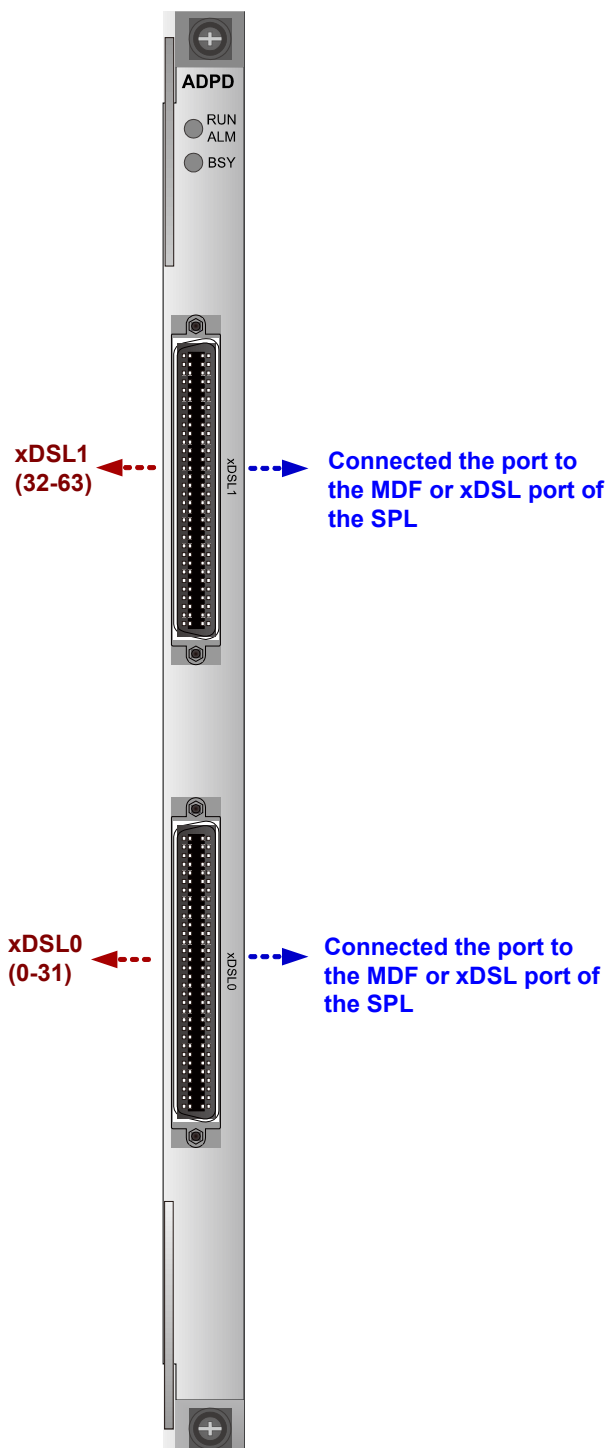
The basic working principle of the H805ADPD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the ATM packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-91](#); For pin assignment of the xDSL1 port, see [Table 3-92](#);

**Table 3-91** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-92** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.21.10 H80BADPE Board Description

The H80BADPE board is an 64-port ADSL2+ over POTS service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to access 64 channels of ADSL2+ service.

#### Functional Specifications

Please refer to "[64-Channel ADSL2+ Service Board Comparison](#)".

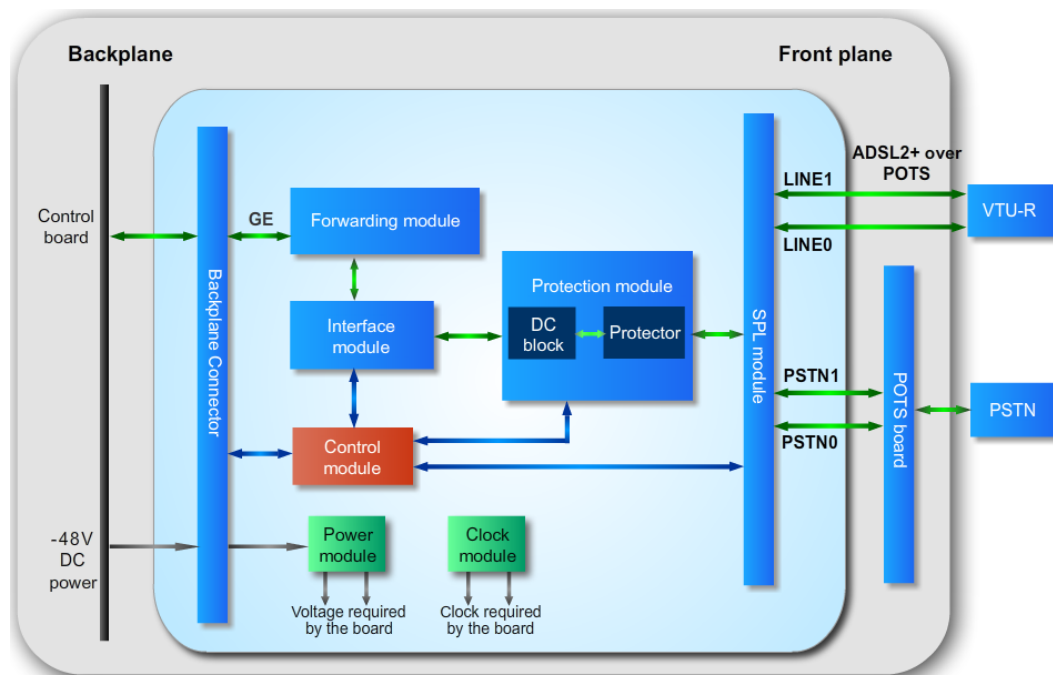
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

Figure 3-109 Working principle of the H80BADPE board



The basic working principle of the H80BADPE board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The splitter module separates POTS signals from ADSL2+ signals over the subscriber line.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

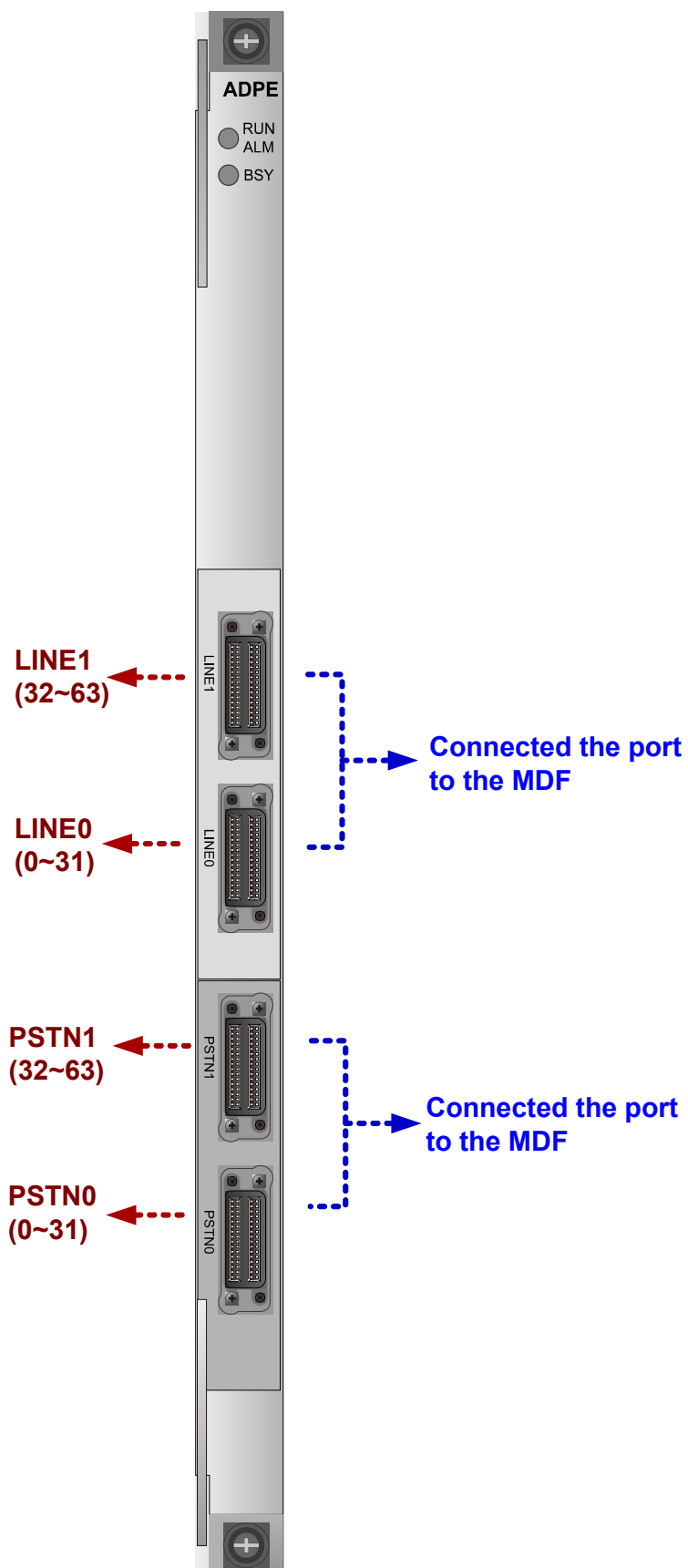
The service process is as follows:

- In the upstream direction, the splitter module separates POTS signals from ADSL2+ signals over the subscriber cable, and then the interface module transmits such signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and then performs CAR on the IP

packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.

- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and then transmits the ATM packets to the interface module. The interface module converts the ATM packets into analog signals and transmits the signals to the subscriber line through the splitter module.

## Front Panel Port



## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

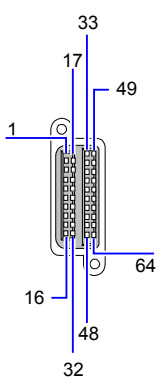
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

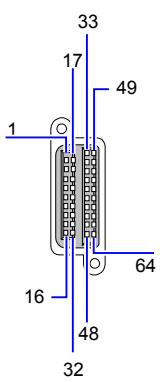
## Pin Assignments

The pin assignment of the LINE port and that of the PSTN port on the H80BADPE board are the same. For pin assignment of the PSTN0 port, see [Table 3-93](#); for pin assignment of the PSTN1 port, see [Table 3-94](#).

**Table 3-93** Pin assignments of the PSTN0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			52			
5	5	21	13		37	21	53	29
6		22			54			
7	4	23	12		39	20	55	28
8		24			56			
9	3	25	11		41	19	57	27
10		26			58			
11	2	27	10		43	18	59	26
12		28			60			
13	1	29	9		45	17	61	25
14		30			62			
15	0	31	8		47	16	63	24
16		32			64			

**Table 3-94** Pin assignments of the PSTN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			52			
5	37	21	45		37	53	53	61
6		22			54			
7	36	23	44		39	52	55	60
8		24			56			
9	35	25	43		41	51	57	59

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.21.11 H808ADPM Board Description

The H808ADPM board is a 64-port ADSL2+ over POTS service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to access 64 channels of ADSL2+ service.

#### Functional Specifications

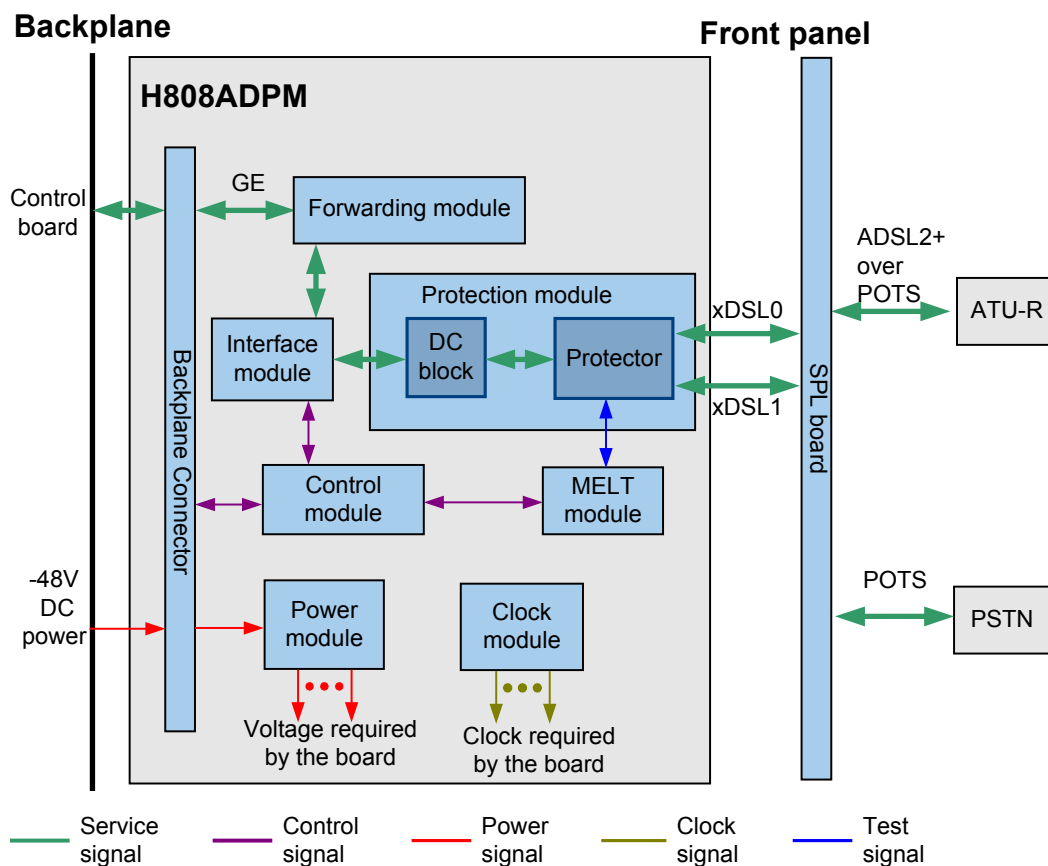
Please refer to "[64-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-110 Working principle of the H808ADPM board



The basic working principle of the H808ADPM board is as follows:

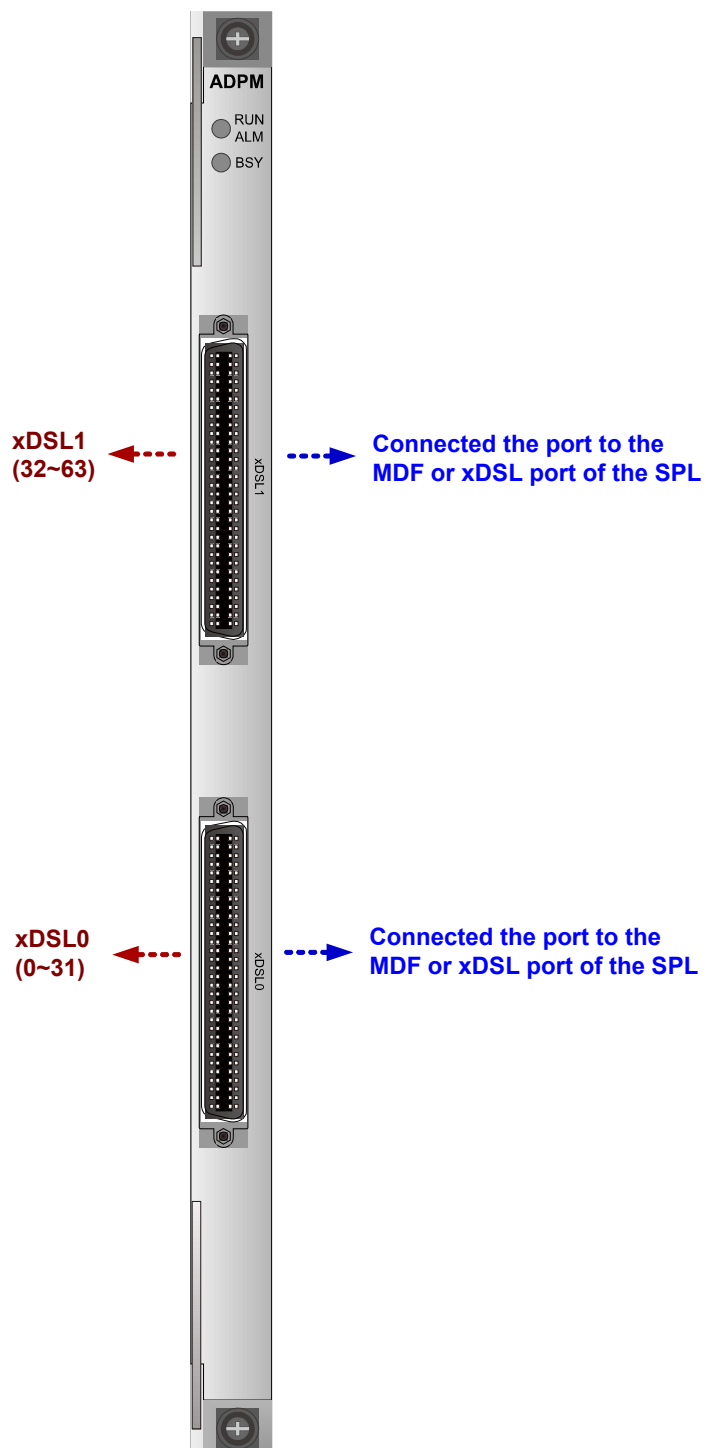
- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.
- The MELT module provides the MELT test function for digital subscriber lines.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the IP packets into analog signals and transmits the signals to subscriber lines.



## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-95](#); For pin assignment of the xDSL1 port, see [Table 3-96](#);

**Table 3-95** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-96** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.21.12 H802ADQD Board Description

The H802ADQD board is a 64-port ADSL2+ over ISDN service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to access 64 channels of ADSL2+ service.

#### Functional Specifications

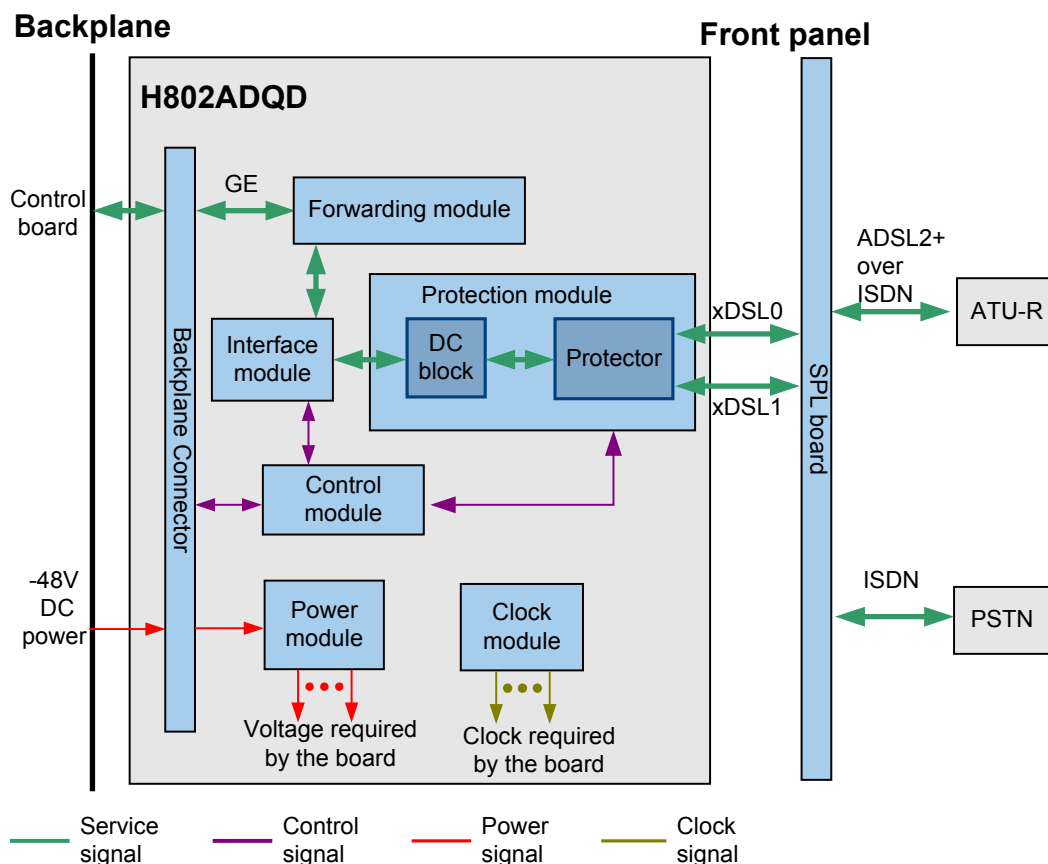
Please refer to "[64-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-111 Working principle of the H802ADQD board



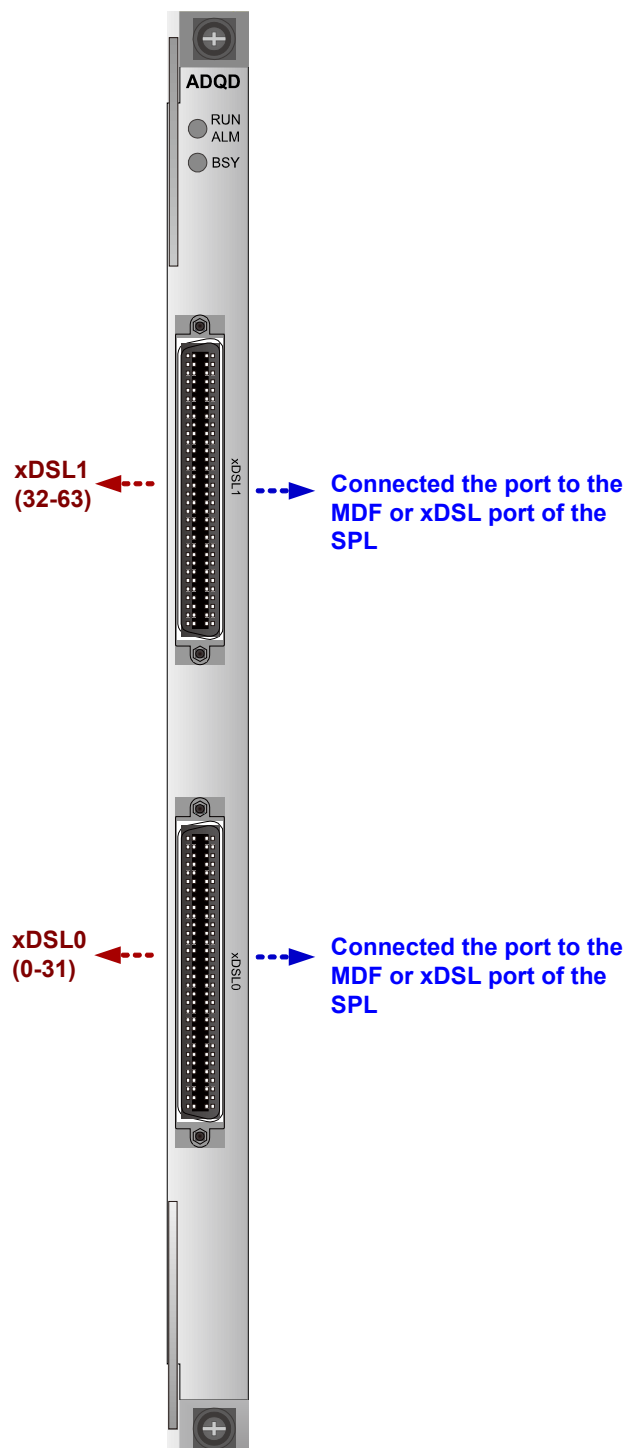
The basic working principle of the H802ADQD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the ATM packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-97](#); For pin assignment of the xDSL1 port, see [Table 3-98](#);



**Table 3-97** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-98** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.21.13 H802ADKM Board Description

The H802ADKM board is a 64-port ADSL2+ service board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to access 64 channels of ADSL2+ service.

#### Functional Specifications

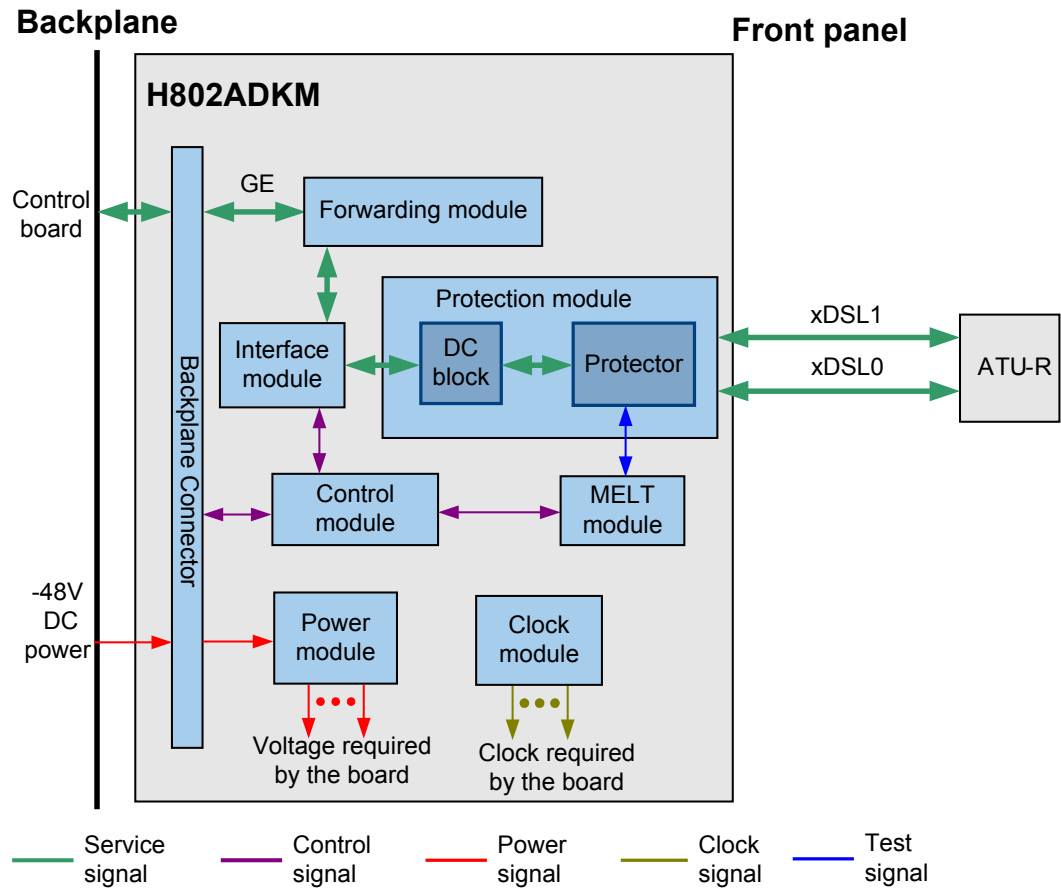
Please refer to "[64-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-112 Working principle of the H802ADKM board



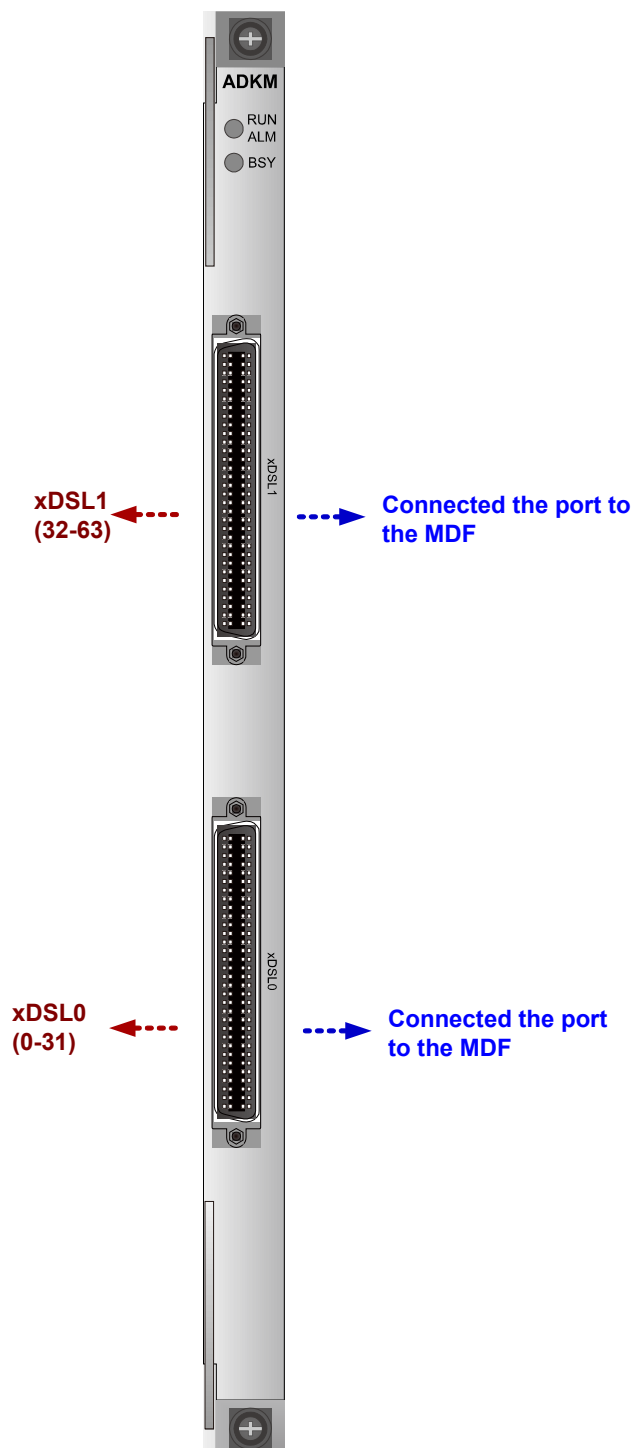
The basic working principle of the H802ADKM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.
- The MELT module provides the MELT test function for digital subscriber lines.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the ATM packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-99](#); For pin assignment of the xDSL1 port, see [Table 3-100](#);

**Table 3-99** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-100** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.21.14 H807ADPD Board Description

The H807ADPD board is a 64-port ADSL2+ over POTS Service Board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to access 64 channels of ADSL2+ service.

#### Functional Specifications

Please refer to "[64-Channel ADSL2+ Service Board Comparison](#)".

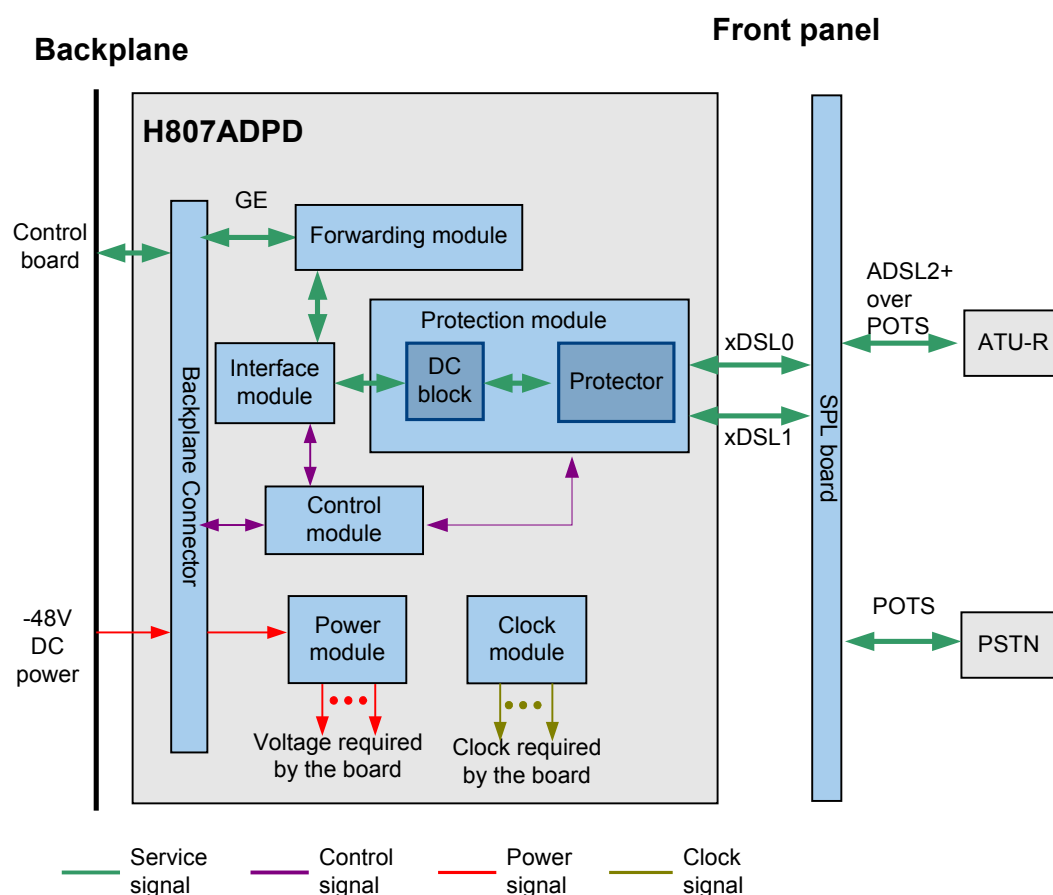
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

Figure 3-113 Working principle of the H807ADPD board



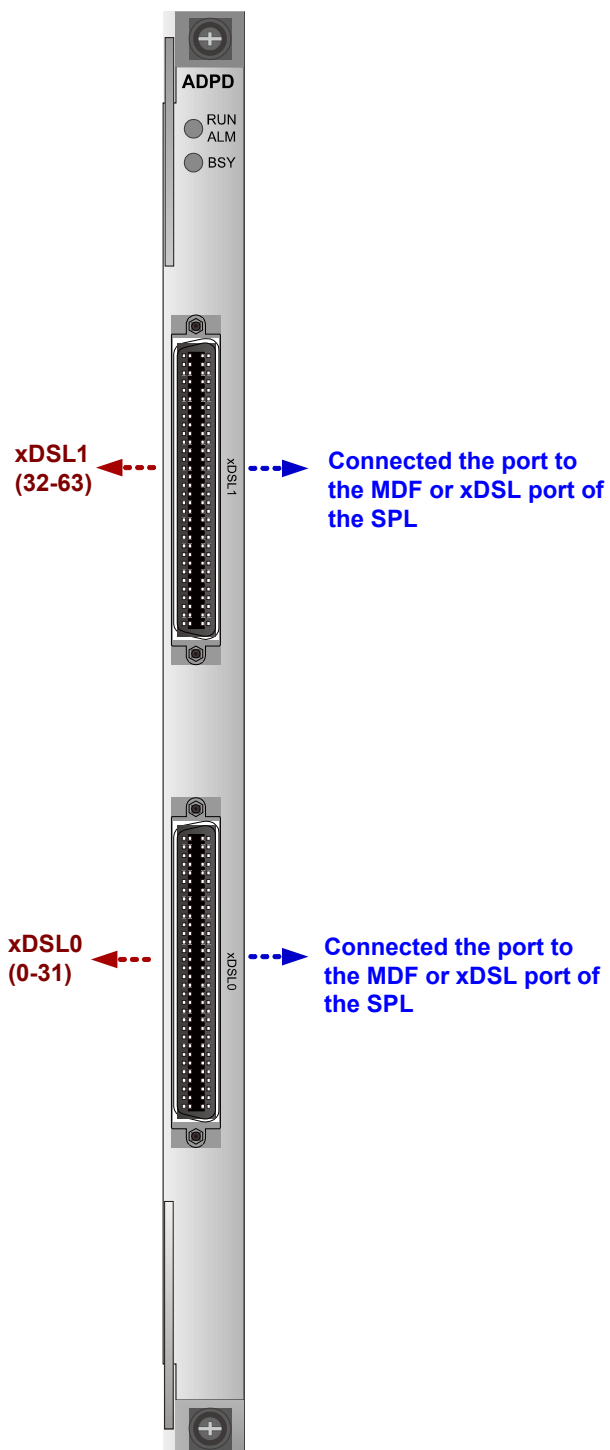
The basic working principle of the H807ADPD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the ATM packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-101](#); For pin assignment of the xDSL1 port, see [Table 3-102](#);

**Table 3-101** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-102** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.21.15 H807ADPE Board Description

The H807ADPE board is an 64-port ADSL2+ over POTS Service Board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to access 64 channels of ADSL2+ service.

#### Functional Specifications

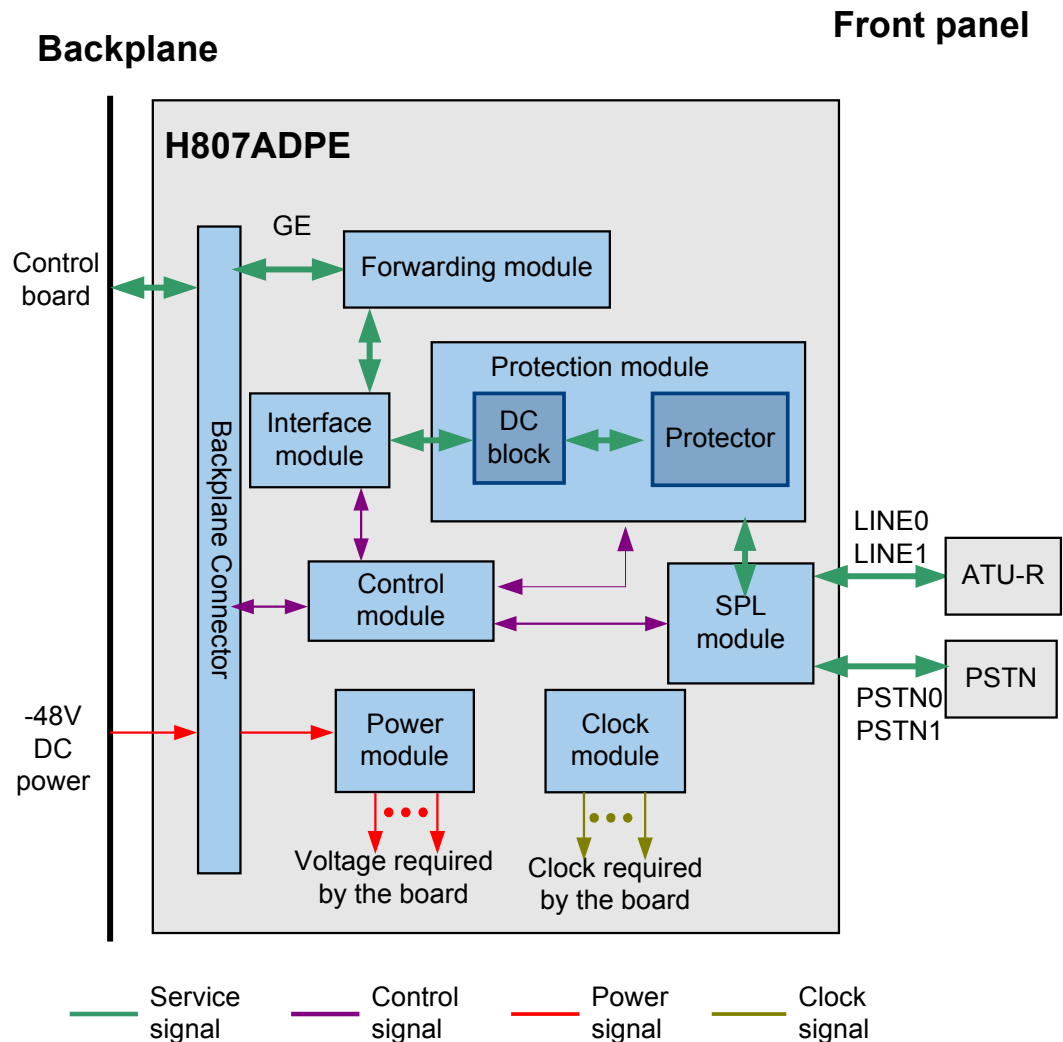
Please refer to "[64-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-114 Working principle of the H807ADPE board



The basic working principle of the H807ADPE board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The splitter module separates POTS signals from ADSL2+ signals over the subscriber line.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.

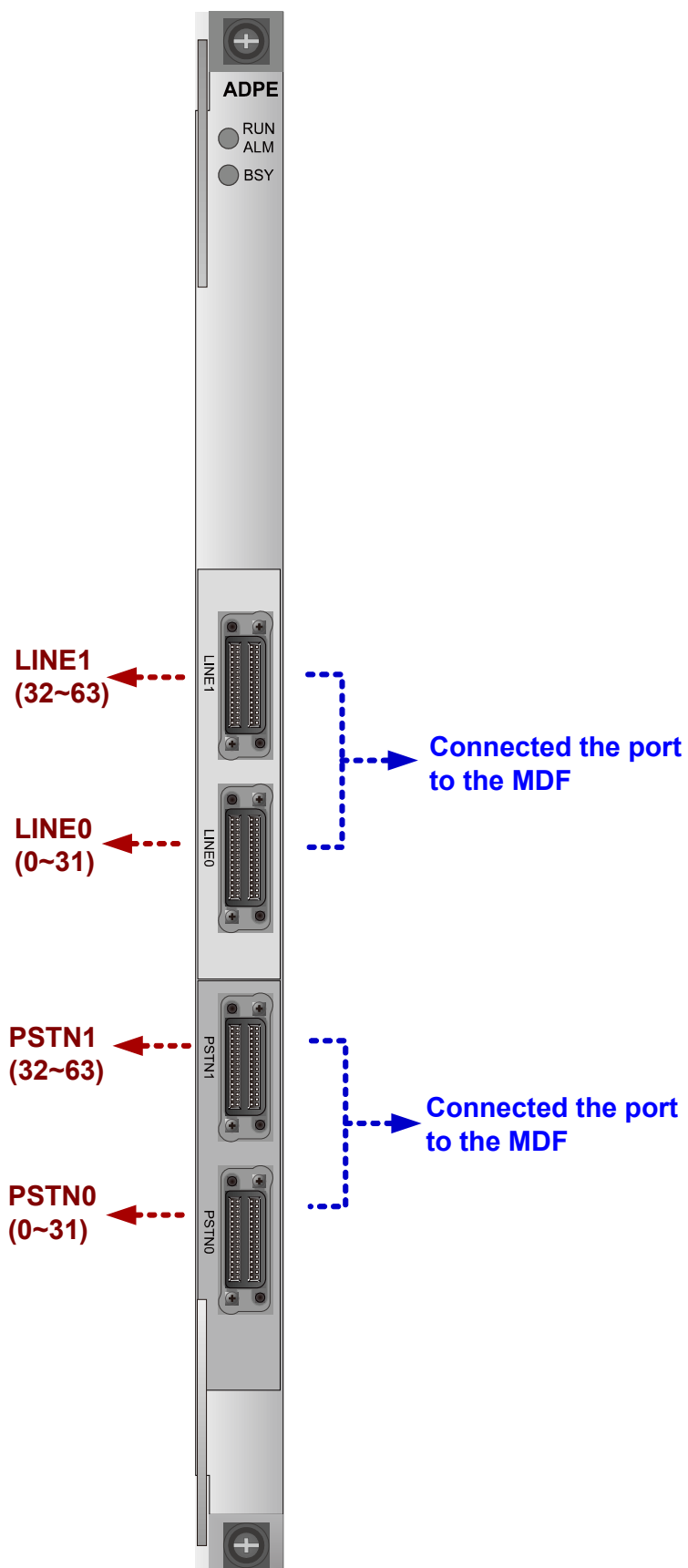
- In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the splitter module separates POTS signals from ADSL2+ signals over the subscriber cable, and then the interface module transmits such signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and then performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and then transmits the ATM packets to the interface module. The interface module converts the ATM packets into analog signals and transmits the signals to the subscriber line through the splitter module.



## Front Panel Port





## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

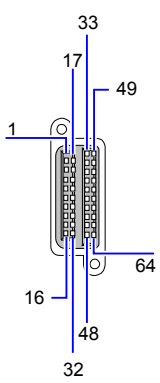
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

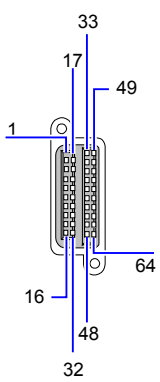
## Pin Assignments

The pin assignment of the LINE port and that of the PSTN port on the H807ADPE board are the same. For pin assignment of the PSTN0 port, see [Table 3-103](#); for pin assignment of the PSTN1 port, see [Table 3-104](#).

**Table 3-103** Pin assignments of the PSTN0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			52			
5	5	21	13		37	21	53	29
6		22			54			
7	4	23	12		39	20	55	28
8		24			56			
9	3	25	11		41	19	57	27
10		26			58			
11	2	27	10		43	18	59	26
12		28			60			
13	1	29	9		45	17	61	25
14		30			62			
15	0	31	8		47	16	63	24
16		32			64			

**Table 3-104** Pin assignments of the PSTN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			52			
5	37	21	45		37	53	53	61
6		22			54			
7	36	23	44		39	52	55	60
8		24			56			
9	35	25	43		41	51	57	59

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.21.16 H807ADPM Board Description

The H807ADPM board is a 64-port ADSL2+ over POTS Service Board. It works with the ADSL terminal unit-remote end (ATU-R) through the ADSL2+ port to access 64 channels of ADSL2+ service.

#### Functional Specifications

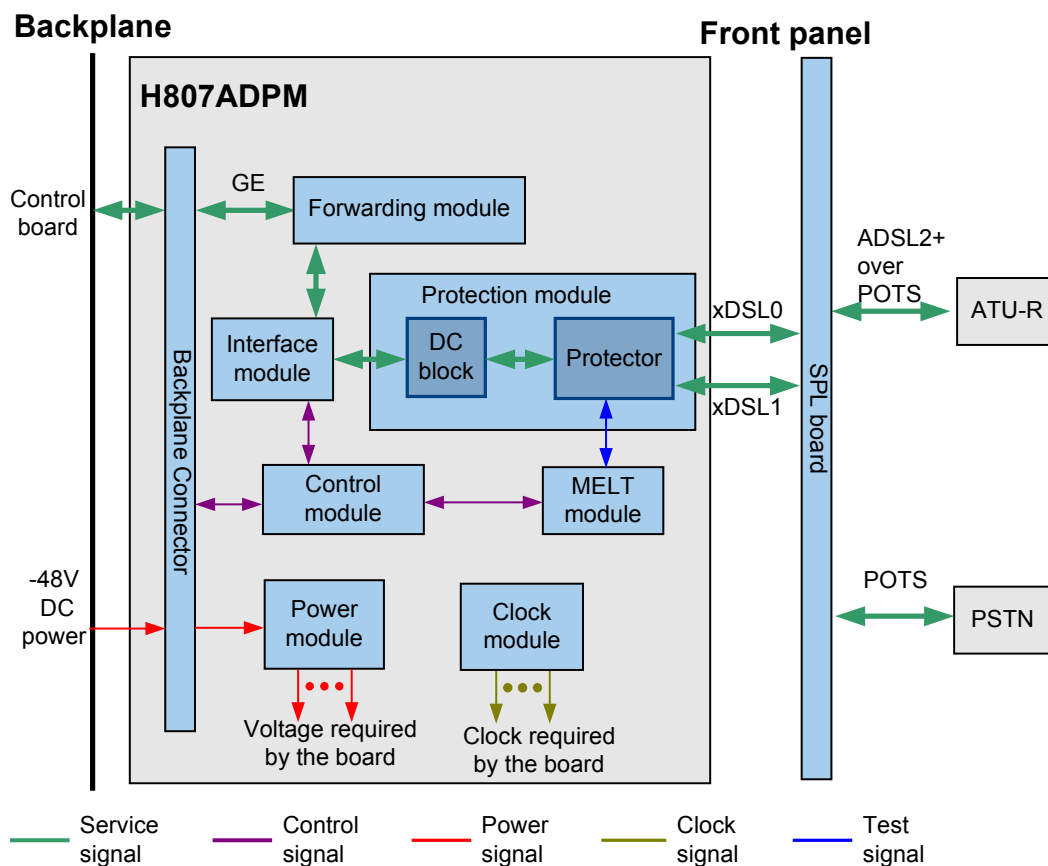
Please refer to "[64-Channel ADSL2+ Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-115 Working principle of the H807ADPM board



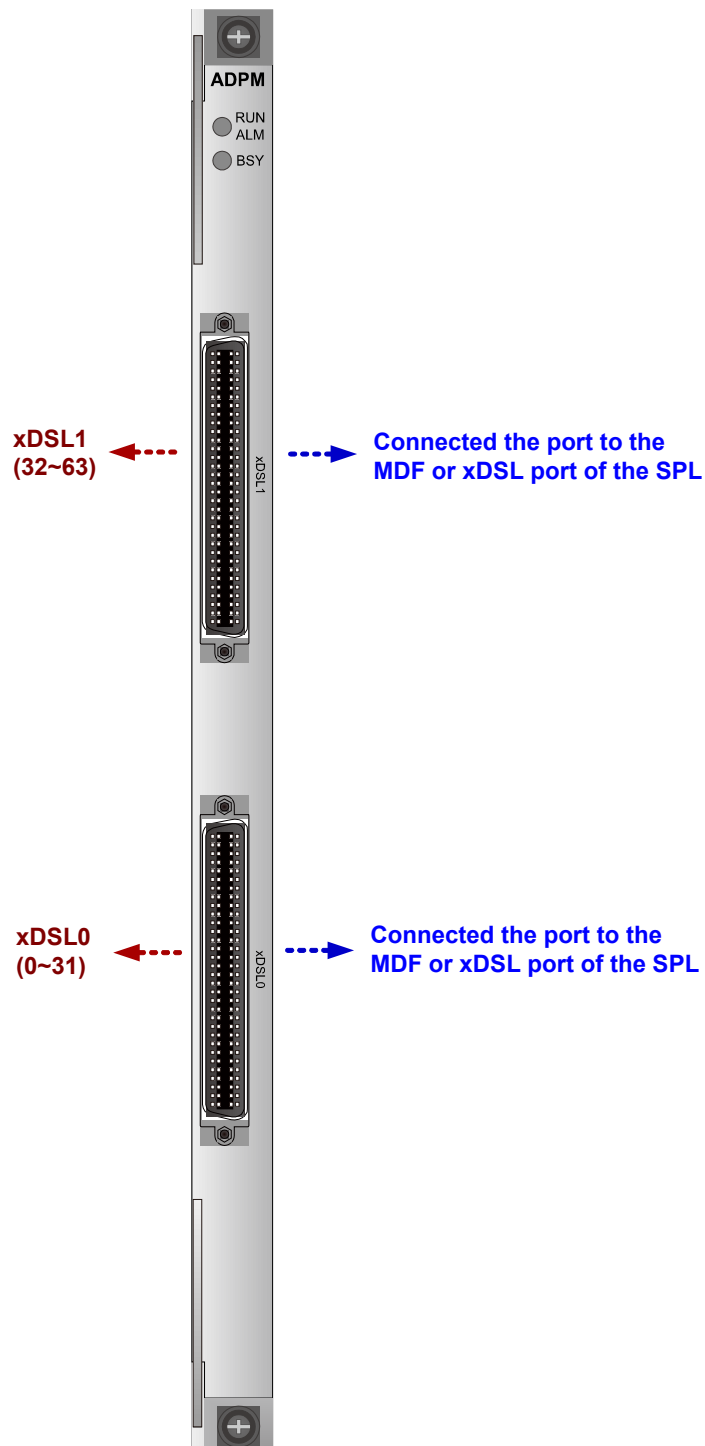
The basic working principle of the H807ADPM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module supports two functions:
  - In the upstream direction, the interface module converts line signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the flow into ATM packets.
  - In the downstream direction, the forwarding module transmits the ATM cell flow to the interface module. Then, the interface module converts the flow into downstream line signals.
- The forwarding module processes services. The detailed process is described later.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.
- The MELT module provides the MELT test function for digital subscriber lines.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM packets, encapsulates the ATM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM packets, and transmits the ATM packets to the interface module. The interface module converts the IP packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-105](#); For pin assignment of the xDSL1 port, see [Table 3-106](#);



**Table 3-105** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-106** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

## 3.22 VDSL2 Service Board

VDSL2 service boards provide VDSL2 access services using their broadband ports.

### 3.22.1 24-Channel VDSL2 Service Board Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-107** Specifications lists of 24-channel VDSL2 service boards

Specifications	H805VDSA	H805VDSF	H805VDTF	H805VDRD
Applicable Line	VDSL2 over POTS	VDSL2 over POTS	VDSL2 over ISDN	VDSL2 over POTS
G.INP	No	No	No	Yes

Specifications	H805VDSA	H805VDSF	H805VDTF	H805VDRD
<b>VDSL2 PTM Bonding</b>	No	No	No	Yes (Two-pair, adjacent ports (port IDs: 2n and 2n+1); either port can be specified as the master port. n values 0, 1, 2, and so on.)
<b>INM</b>	No	No	No	Yes
<b>SELT</b>	Yes			
<b>MELT</b>	No	No	No	No
<b>Spectrum Parameter Profile</b>	Supports 8b and 17a, and is compatible with 8a, 8c, 8d, 12a, and 12b.	Supports 8c, 8d, 12a, 12b, and 17a	Supports 8a, 8c, 8d, 12a, 12b, and 17a	Supports 8a, 8b, 8c, 8d, 12a, 12b, 17a, and 30a
<b>Annex Type</b>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M</li> <li>● G.992.5 Annex A/M</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M</li> <li>● G.992.5 Annex A/M</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex B</li> <li>● G.992.3 Annex B/J</li> <li>● G.992.5 Annex B/J</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M</li> <li>● G.992.5 Annex A/M</li> <li>● G.993.2 Annex A/B</li> </ul>
<b>Flexible Configuration Modes</b>	Supports TR129 and TI.			Supports TR129, TI, and TR-165/TR-252.
<b>Built-in Splitter</b>	No	No	No	No
<b>Temperature Query and High-temperature Alarm</b>	Yes			
<b>Automatic Power Shutdown in Case of a High Temperature</b>	Yes	Yes	Yes	Yes
<b>Connector</b>	Champ 64-pin	Champ 64-pin	Champ 64-pin	Champ 64-pin

### 3.22.2 48-Channel VDSL2 Service Board Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-108** Specifications lists of 48-channel VDSL2 service boards

Specific ations	H805VD MF	H802VD NF	H802VDJ M	H80BVCM M	H80BVDM F	H80BCVM E	H80DSDM M
<b>Applica ble Line</b>	VDSL2 over POTS	VDSL2 over ISDN	VDSL2 over ISDN	VDSL2	VDSL2 over POTS	VDSL2 and POTS Combo	VDSL2
<b>G.INP</b>	Yes	No	Yes	Yes	Yes	Yes	Yes
<b>VDSL2 PTM Bonding</b>	Yes (Two- pair, adjacent ports (port IDs: 2n and 2n+1); either port can be specified as the master port. n values 0, 1, 2, and so on.)	No	No	Yes (Two- pair, any ports (port IDs: 2n and 2m+1); only the port with an even- number ID can be specified as the master port. n and m value 0, 1, 2, and so on.)	Yes (Four- pair any ports)	Yes (Two- pair, any ports (port IDs: 2n and 2m+1); only the port with an even- number ID can be specified as the master port. n and m value 0, 1, 2, and so on.)	Yes (Supports a maximum of 4-pair bonding of any ports on the same board, supports 8- pair bonding when being connected to the MA5694)
<b>INM</b>	Yes	No	No	Yes	Yes	Yes	Yes
<b>SELT</b>	Yes						
<b>MELT</b>	No	No	Yes	Yes	No	Yes (POTS MELT)	Yes
<b>Spectru m Paramet er Profile</b>	Supports 8a, 8b, 8c, 8d, 12a, 12b, and 17a						Supports 8a, 8b, 8c, 8d, 12a, 12b, 17a, and 35b

Specific ations	H805VD MF	H802VD NF	H802VDJ M	H80BVCM M	H80BVDM F	H80BCVM E	H80DSDM M
<b>Annex Type</b>	<ul style="list-style-type: none"> <li>● G. 992.1 Annex A</li> <li>● G. 992.3 Annex A/B/L/M</li> <li>● G. 992.5 Annex A/B/M</li> <li>● G. 993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G. 992.3 Annex B</li> <li>● G. 992.5 Annex B</li> <li>● G. 993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.3 Annex B/J</li> <li>● G.992.5 Annex B/J</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/B/J/L/M</li> <li>● G.992.5 Annex A/B/J/M</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/B/J/L/M</li> <li>● G.992.5 Annex A/B/J/M</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/L/M</li> <li>● G.992.5 Annex A/M</li> <li>● G.993.2 Annex A/B</li> </ul>	<ul style="list-style-type: none"> <li>● G.992.1 Annex A</li> <li>● G.992.3 Annex A/B/J/L/M</li> <li>● G.992.5 Annex A/B/J/M</li> <li>● G.993.2 Annex A/B</li> </ul>
<b>Flexible Configu ration Modes</b>	Supports TR129, TI, and TR-165/TR-252.						
<b>Built-in Splitter</b>	No	No	No	No	No	Yes	No
<b>Tempera ture Query and High- tempera ture Alarm</b>	Yes						
<b>Automat ic Power Shutdow n in Case of a High Tempera ture</b>	Yes						
<b>Connect or</b>	Champ 64-pin	Champ 64-pin	Champ 64- pin	Champ 64- pin	Champ 64- pin	Delander 64-pin	Champ 64- pin

### 3.22.3 64-Channel VDSL2 Service Board Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-109** Specifications lists of 64-channel VDSL2 service boards

Specifications	H80 BV DPE	H80 BV DPM	H80 BVD QM	H80 AV DPD	H80 6VC PE	H80 AVC PD	H80 AVC PM	H80 6CC PE	H80 DV CPE	H80 DV CPD	H80 DV CPM	H80 DCC PE	H80 DSD PM
<b>Applicable Line</b>	VDSL2 over POT S	VDSL2 over POT S	VDSL2 over ISDN	VDSL2 over POT S	VDSL2 over POT S	VDSL2 over POT S	VDSL2 over POT S	VDSL2 and POT S Combo	VDSL2 over POT S	VDSL2 over POT S	VDSL2 over POT S	VDSL2 and POT S Combo	VDSL2 over POT S
<b>G.INP</b>	Yes			Yes (Supports only downstream G.INP)	Yes								
<b>VDSL2 PTM Bonding</b>	Yes (Two-pair, any ports (port IDs: 2 n and 2 m + 1); only the port with an even-number ID can be specified as the master port. n and m value 0, 1, 2, and so on.)			Yes (Supports a maximum of 4-pair bonding of any ports on the same board, supports 8-pair bonding when being connected to the MA5694)								Yes (Supports a maximum of 8-pair bonding of any ports on the same board)	
<b>INM</b>	Yes												
<b>SELT</b>	Yes												

Specifications	H80 BV DPE	H80 BV DPM	H80 BVD QM	H80 AV DPD	H80 6VC PE	H80 AVC PD	H80 AVC PM	H80 6CC PE	H80 DV CPE	H80 DV CPD	H80 DV CPM	H80 DCC PE	H80 DSD PM
<b>MELT</b>	No	Yes	Yes	No	No	No	Yes	Yes (POTS MELT)	No	No	Yes	Yes (POTS MELT)	Yes
<b>Spectrum Parameter Profile</b>	Supports 8a, 8b, 8c, 8d, 12a, 12b, and 17a											Supports 8a, 8b, 8c, 8d, 12a, 12b, 17a and 35b	

Specifications	H80 BV DPE	H80 BV DPM	H80 BVD QM	H80 AV DPD	H80 6VC PE	H80 AVC PD	H80 AVC PM	H80 6CC PE	H80 DV CPE	H80 DV CPD	H80 DV CPM	H80 DCC PE	H80 DSD PM
Annex Type	● G .9 9 2.1 A n n e x A	● G .9 9 2.1 A n n e x A	● G. 99 2.1 A n n n ● G. 99 2.3 A n n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M	● G .9 9 2.1 A n n e x A /L / M
	● G .9 9 2.3 A n n e x A /L / M	● G .9 9 2.3 A n n e x A /L / M	● G. 99 2.5 A n n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M	● G .9 9 2.5 A n n e x A /L / M



Specifications	H80 BV DPE	H80 BV DPM	H80 BVD QM	H80 AV DPD	H80 6VC PE	H80 AVC PD	H80 AVC PM	H80 6CC PE	H80 DV CPE	H80 DV CPD	H80 DV CPM	H80 DCC PE	H80 DSD PM
	2 A n n e x A / B	● G . 9 9 3. 2 A n n e x A / B		2 A n n e x A / B	2 A n n e x A / B	2 A n n e x A / B	2 A n n e x A / B	2 A n n e x A / B	2 A n n e x A / B	● G . 9 9 3. 2 A n n e x A / B	● G . 9 9 3. 2 A n n e x A / B	2 A n n e x A / B	● G . 9 9 3. 2 A n n e x A / B
<b>Flexible Configuration Modes</b>	Supports TR129, TI and TR165 <sup>1</sup> .				Supports TR129 and TR165 <sup>1</sup> .				Supports TR129, TI and TR165 <sup>1</sup> .				Supports TR129, TI and TR165 <sup>1</sup> .
<b>Built-in Splitter</b>	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No	Yes	No
<b>Temperature Query and High-temperature Alarm</b>	Yes												

Specifications	H80 BV DPE	H80 BV DPM	H80 BVD QM	H80 AV DPD	H80 6VC PE	H80 AVC PD	H80 AVC PM	H80 6CC PE	H80 DV CPE	H80 DV CPD	H80 DV CPM	H80 DCC PE	H80 DSD PM
Automatic Power Shutdown in the Event of a High Temperature	Yes												
Connector	Delimiter 64-pin	Channel 64-pin	Channel 64-pin	Channel 64-pin	Delimiter 64-pin	Channel 64-pin	Channel 64-pin	Delimiter 64-pin	Delimiter 64-pin	Channel 64-pin	Channel 64-pin	Delimiter 64-pin	Channel 64-pin

### 3.22.4 H805VDSA Board Description

The H805VDSA is a 24-Port VDSL2 over POTS service board. It works with the VDSL transceiver unit-remote end (VTU-R) through the VDSL port to support the VDSL2 service.

#### Functional Specifications

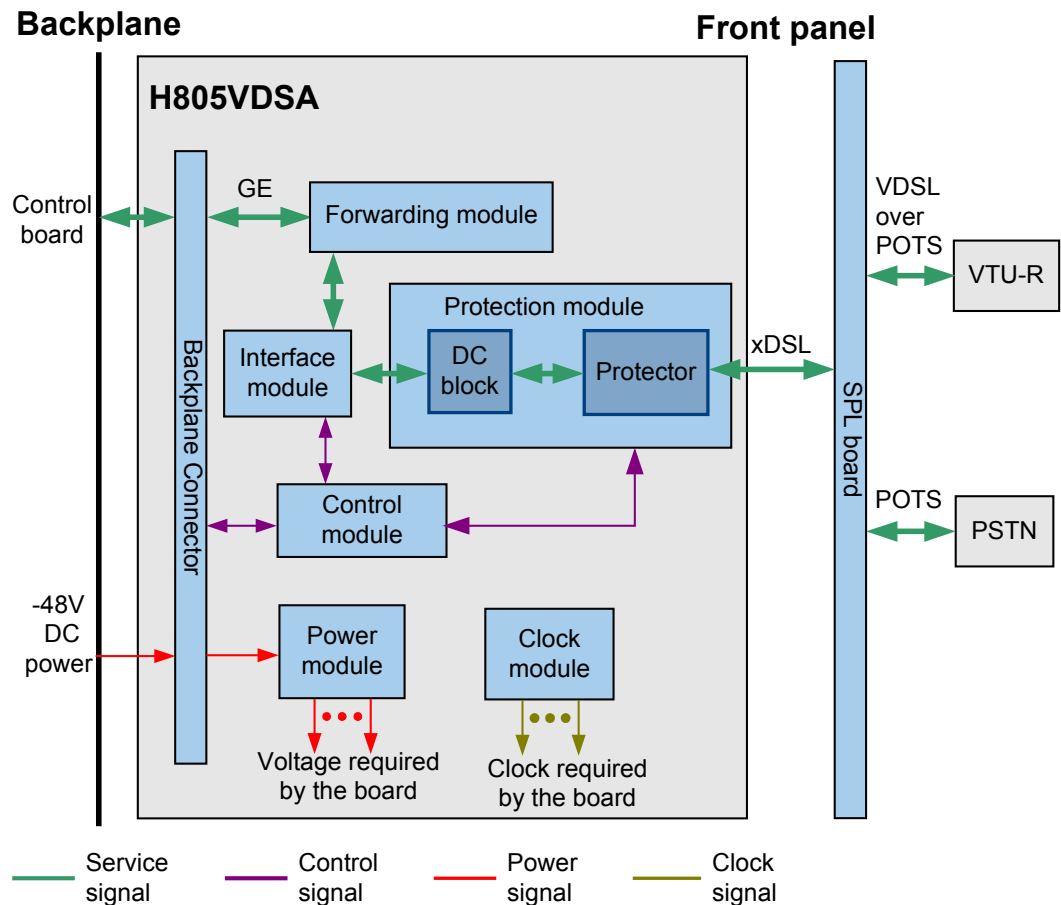
Please refer to "[24-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-116 Working principle of the H805VDSA board



The basic working principle of the H805VDSA board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between ATM/PTM services and IP services, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

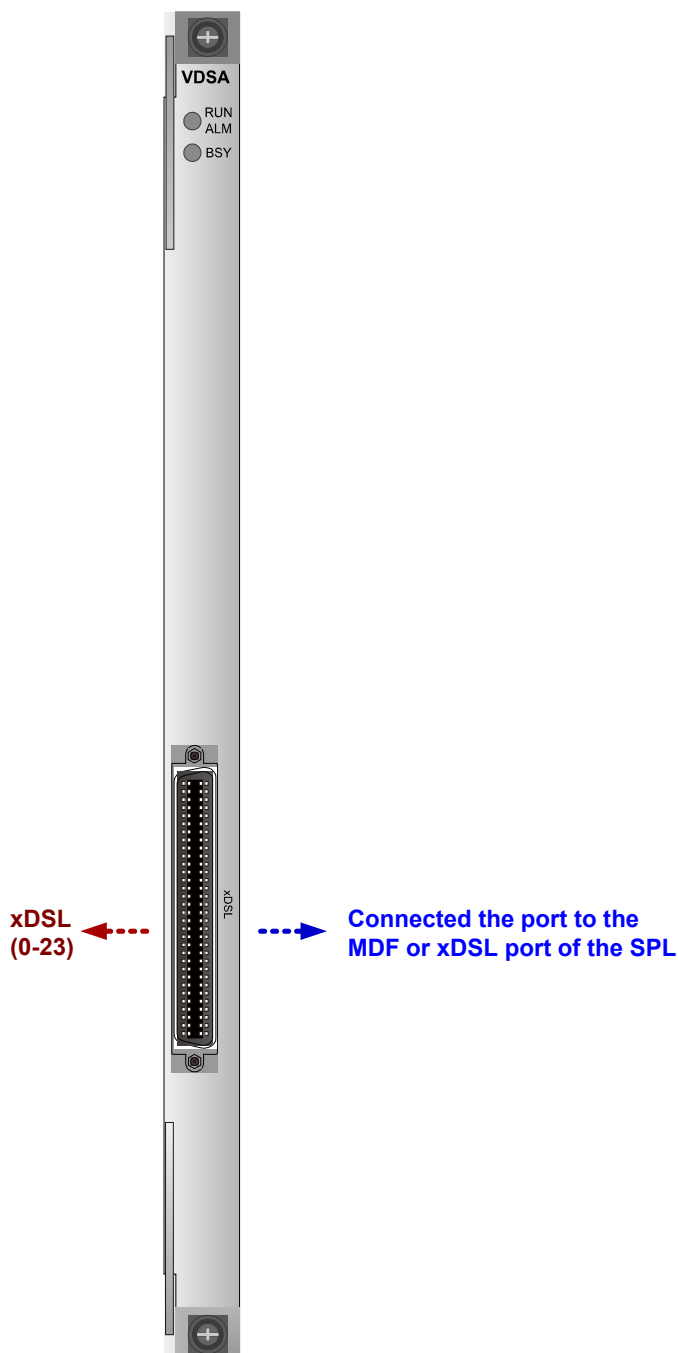
The service process is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets into IP packets and performs CAR on the IP packets. The IP packets are transmitted to the backplane bus through the backplane port and then to the control

board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.

- In the downstream direction, the forwarding logical decapsulates the IP packets from the Ethernet, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port



## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-110** describes the pin assignments of the xDSL port of the H805VDSA board. The H805VDSA board uses only the first 24 channels of signals.

**Table 3-110** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		47			31		15	
62	14	46	6		30	17	14	-
61		45			29		13	
60	13	44	5		28	18	12	-
59		43			27		11	
58	12	42	4		26	19	10	-
57		41			25		9	
56	11	40	3		24	20	8	-
55		39			23		7	
54	10	38	2		22	21	6	-
53		37			21		5	
52	9	36	1		20	22	4	-
51		35			19		3	
50	8	34	0		18	23	2	-
49		33			17		1	

### 3.22.5 H805VDSF Board Description

The H805VDSF is a 24-Port VDSL2 over POTS service board. It works with the VDSL transceiver unit-remote end (VTU-R) through the VDSL port to support the VDSL2 service.

#### Functional Specifications

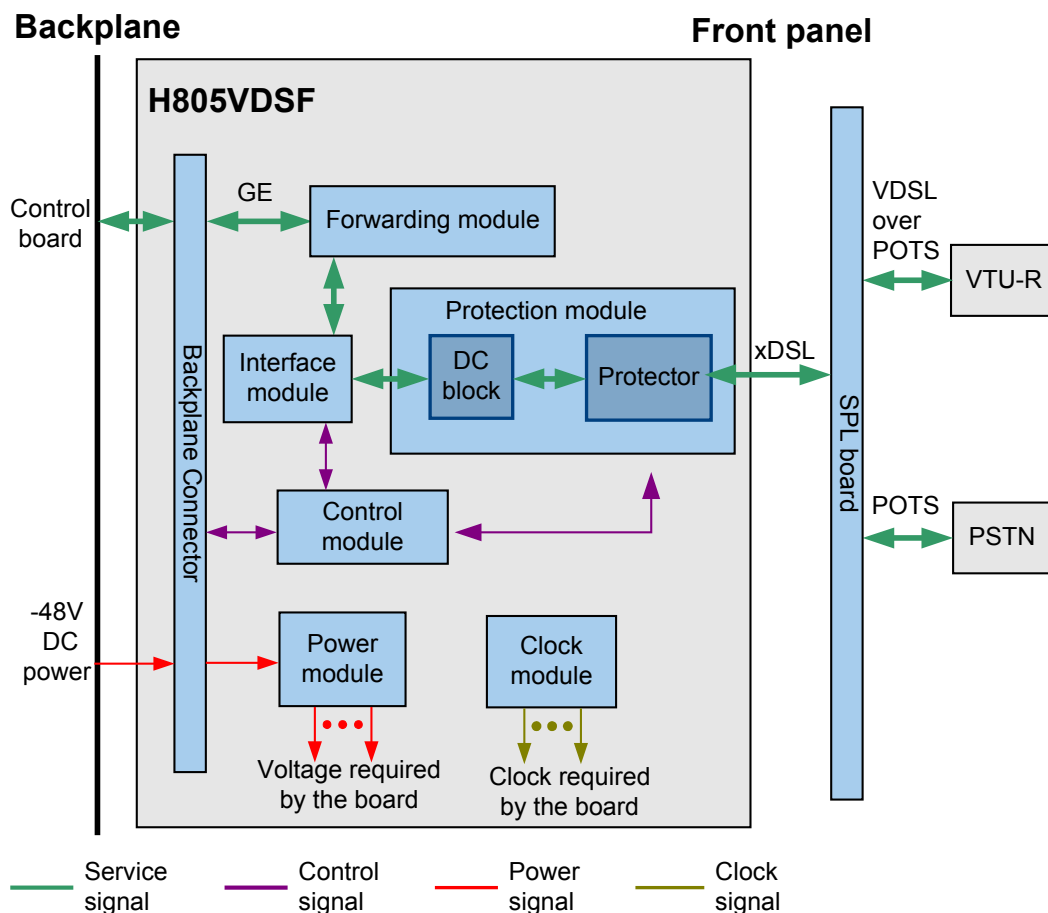
Please refer to "[24-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Principles

Figure 3-117 Working principle of the H805VDSF board



The H805VDSF board mainly consists of these functional modules: control module, forwarding module, interface module, power module, and clock module. The basic principles are described as follows:

- The control module loads the board software, controls the running, and manages the whole board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module supports conversion between ATM/PTM services and IP services, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service processing flow is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized

ATM/PTM packets into IP packets and performs CAR on the IP packets. The IP packets are transmitted to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.

- In the downstream direction, the forwarding logical decapsulates the IP packets from the Ethernet, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and transmits the signals to subscriber lines.

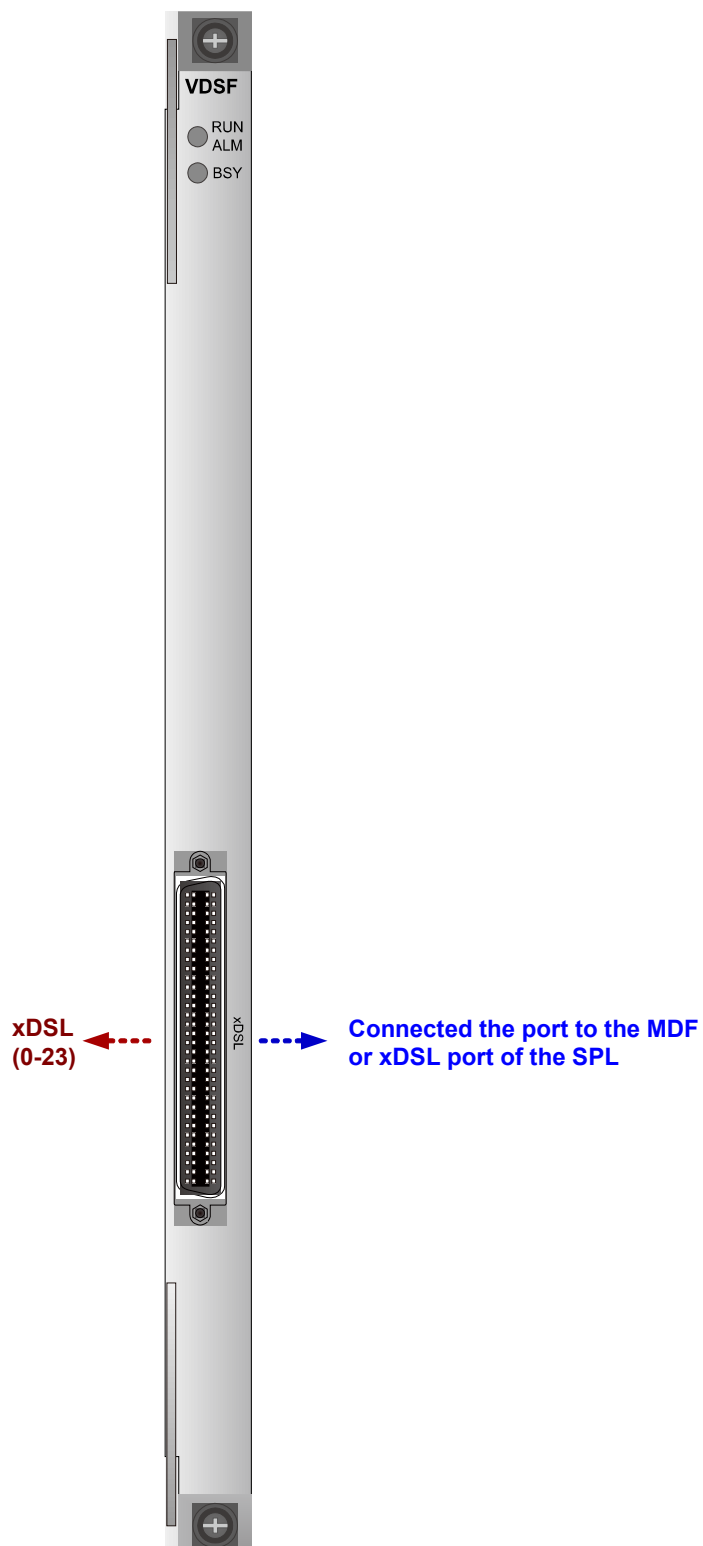
## Port

**Table 3-111** Port of the H805VDSF board

Port	Function	Connection
xDSL	Supports 0-23 channels of VDSL2 services.	Use the <b>5.2.4 32-Channel Inter-Subrack Interconnection Cable (for 32/24-Channel Board)</b> or <b>5.2.1 32-Channel Intra-Subrack Interconnection Cable (for 32/24-Channel Board)</b> to connect the port to the xDSL port of the SPL board, or use the <b>VDSL subscriber cable</b> to connect the port to the MDF.



## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-112** describes the pin assignments for the xDSL port of the H805VDSF board. The H805VDSF board uses only the first 24 channels of signals.

**Table 3-112** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		47			31		15	
62	14	46	6		30	17	14	-
61		45			29		13	
60	13	44	5		28	18	12	-
59		43			27		11	
58	12	42	4		26	19	10	-
57		41			25		9	
56	11	40	3		24	20	8	-
55		39			23		7	
54	10	38	2		22	21	6	-
53		37			21		5	
52	9	36	1		20	22	4	-
51		35			19		3	
50	8	34	0		18	23	2	-
49		33			17		1	

### 3.22.6 H805VDTF Board Description

The H805VDTF is a 24-port VDSL2 over ISDN service board. It works with the VDSL transceiver unit-remote end (VTU-R) through the VDSL port to support the VDSL2 service.

#### Functional Specifications

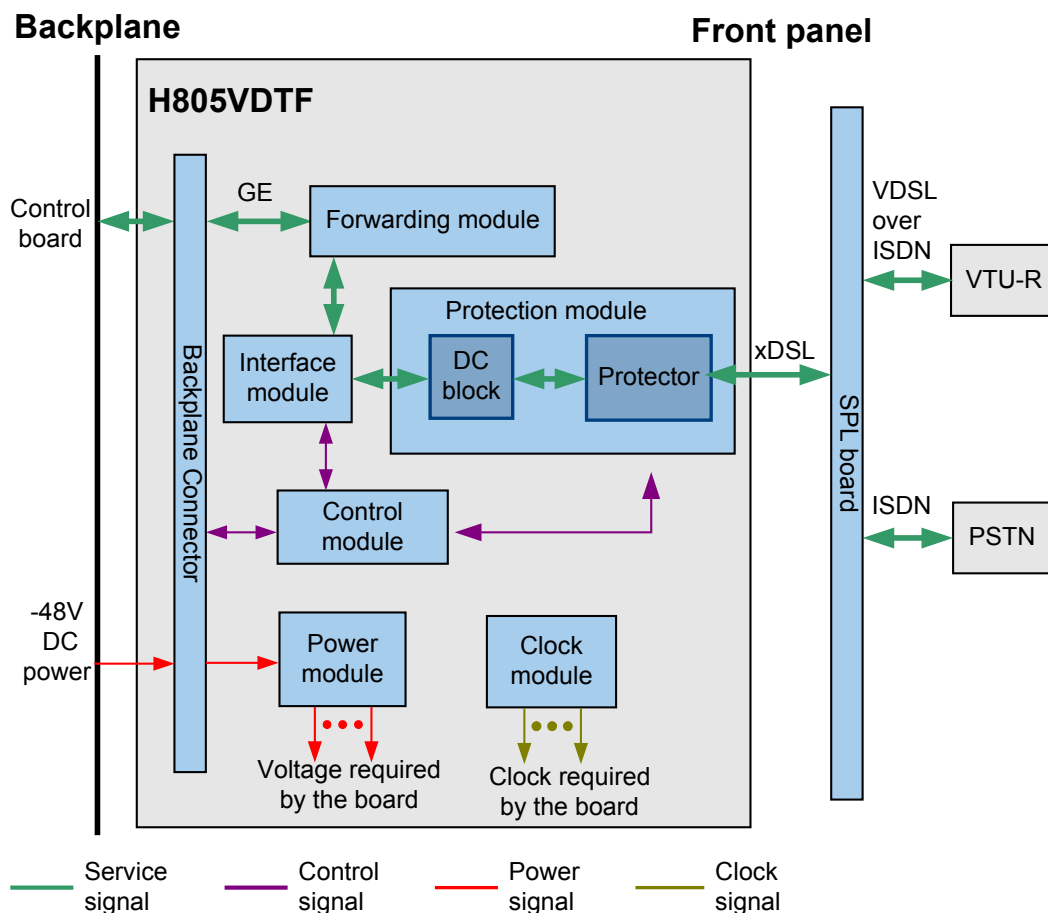
Please refer to "[24-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-118 Working principle of the H805VDTF board



The basic working principle of the H805VDTF board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between ATM/PTM services and IP services, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

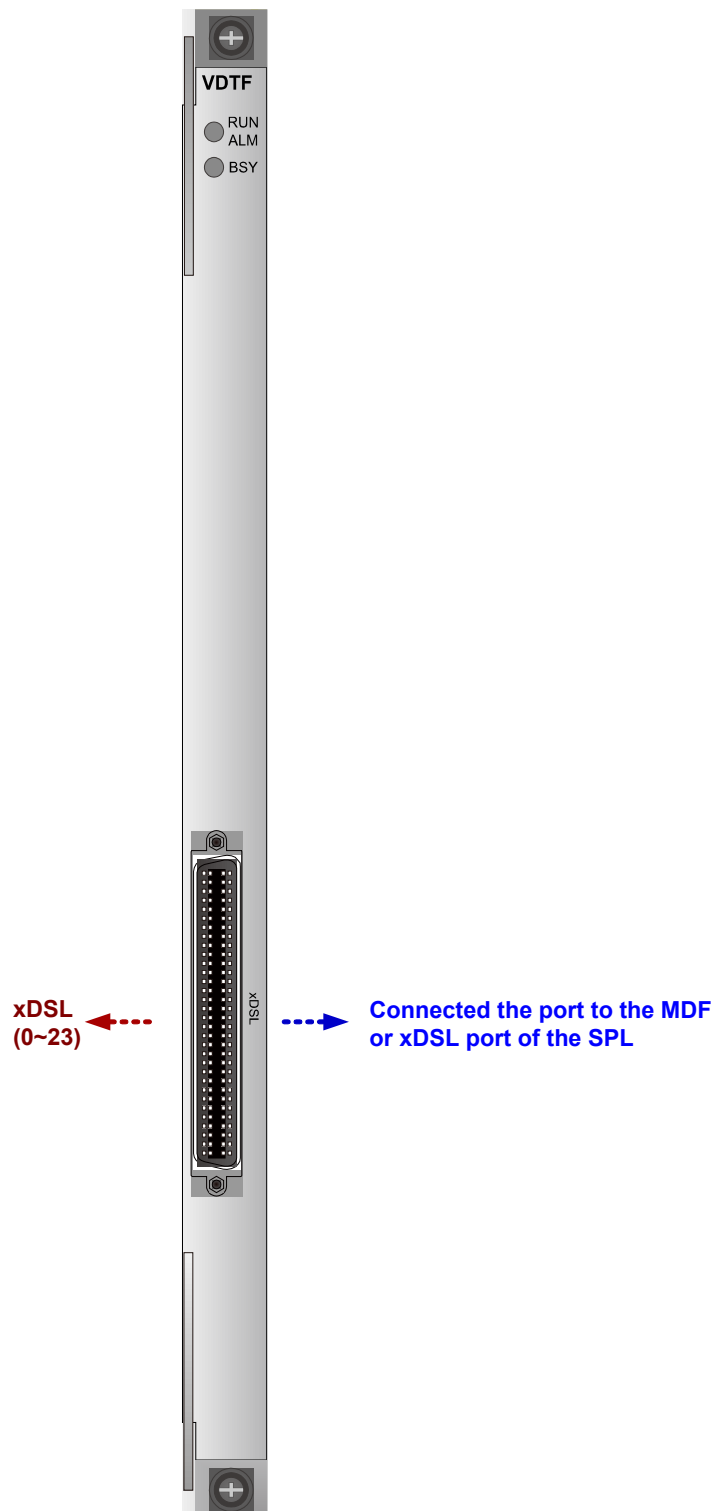
The service process is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets into IP packets and performs CAR on the IP packets. The IP packets are transmitted to the backplane bus through the backplane port and then to the control

board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.

- In the downstream direction, the forwarding logical decapsulates the IP packets from the Ethernet, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-113** describes the pin assignments of the xDSL port of the H805VDTF board. The H805VDTF board uses only the first 24 channels of signals.

**Table 3-113** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		47			31		15	
62	14	46	6		30	17	14	-
61		45			29		13	
60	13	44	5		28	18	12	-
59		43			27		11	
58	12	42	4		26	19	10	-
57		41			25		9	
56	11	40	3		24	20	8	-
55		39			23		7	
54	10	38	2		22	21	6	-
53		37			21		5	
52	9	36	1		20	22	4	-
51		35			19		3	
50	8	34	0		18	23	2	-
49		33			17		1	

### 3.22.7 H805VDRD Board Description

The H805VDRD board is a 24-Port VDSL2 over POTS service board. It works with the VDSL transceiver unit-remote end (VTU-R) through the VDSL port to support the VDSL2 service.

#### Functional Specifications

Please refer to "[24-Channel VDSL2 Service Board Comparison](#)".

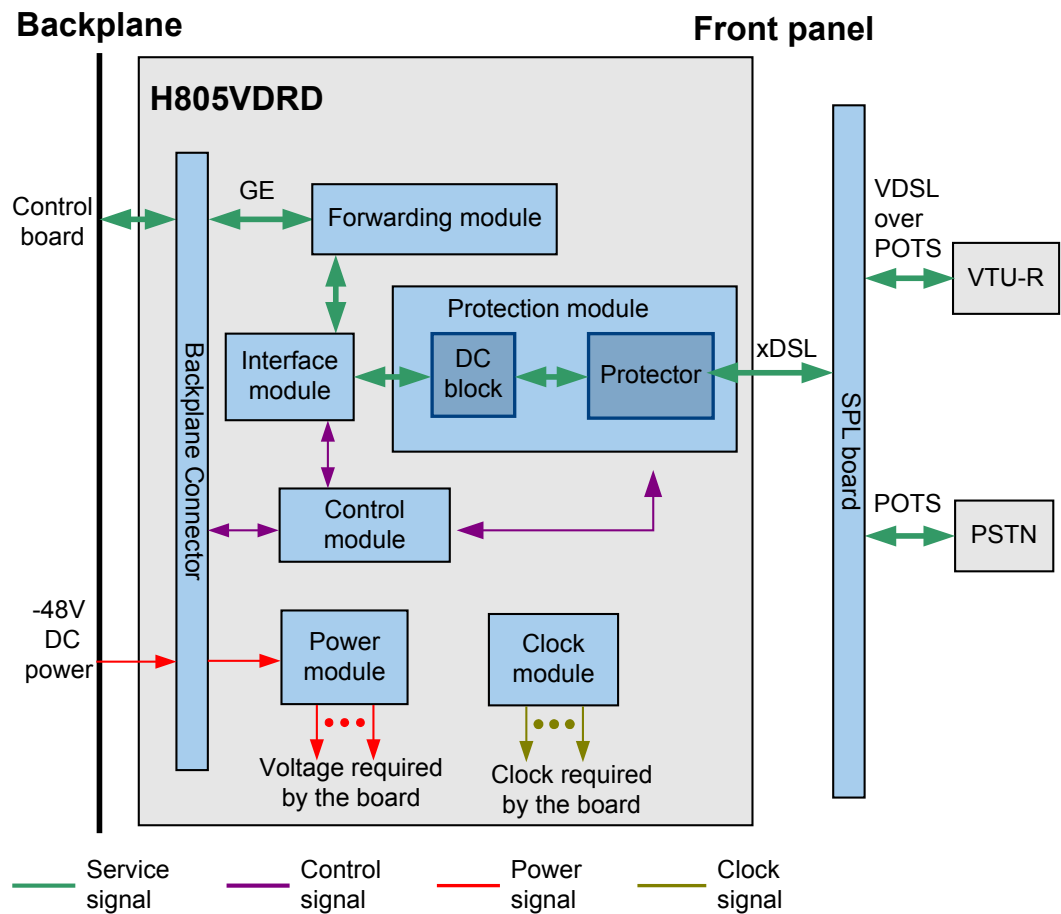
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

Figure 3-119 Working principle of the H805VDRD board



The basic working principle of the H805VDRD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

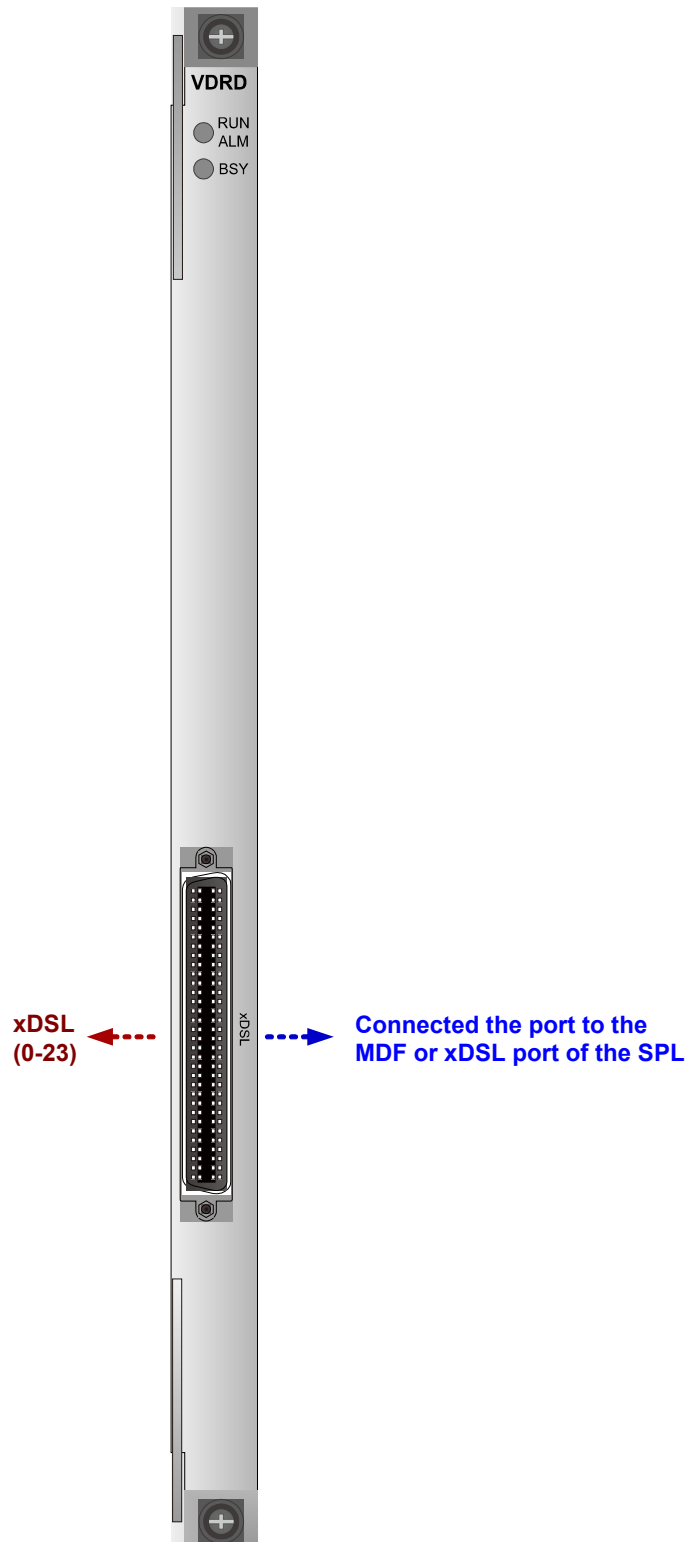
The service process is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets into IP packets and performs CAR on the IP packets. The IP packets are transmitted to the backplane bus through the backplane port and then to the control

board. After being processed by the control board, the IP packets are transmitted to the upper level device through the optical or electrical port.

- In the downstream direction, the forwarding logic decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and then transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board is in the APP startup phase
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-114** describes the pin assignments of the xDSL port on the front panel of the H805VDRD board.

**Table 3-114** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		47			31		15	
62	14	46	6		30	17	14	-
61		45			29		13	
60	13	44	5		28	18	12	-
59		43			27		11	
58	12	42	4		26	19	10	-
57		41			25		9	
56	11	40	3		24	20	8	-
55		39			23		7	
54	10	38	2		22	21	6	-
53		37			21		5	
52	9	36	1		20	22	4	-
51		35			19		3	
50	8	34	0		18	23	2	-
49		33			17		1	

### 3.22.8 H80BVDMF Board Description

The H80BVDMF is a 48-port VDSL2 over POTS service board. It works with the VDSL transceiver unit-remote end (VTU-R) through the VDSL port to support the VDSL2 service.

#### Functional Specifications

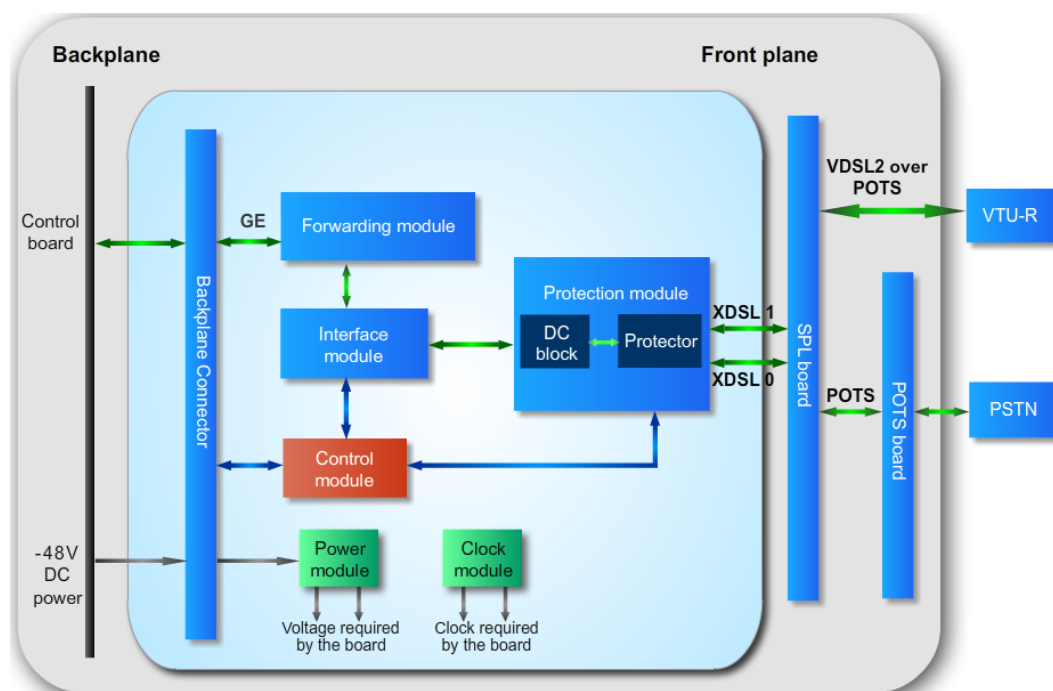
Please refer to "[48-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-120 Working principle of the H80BVDMF board



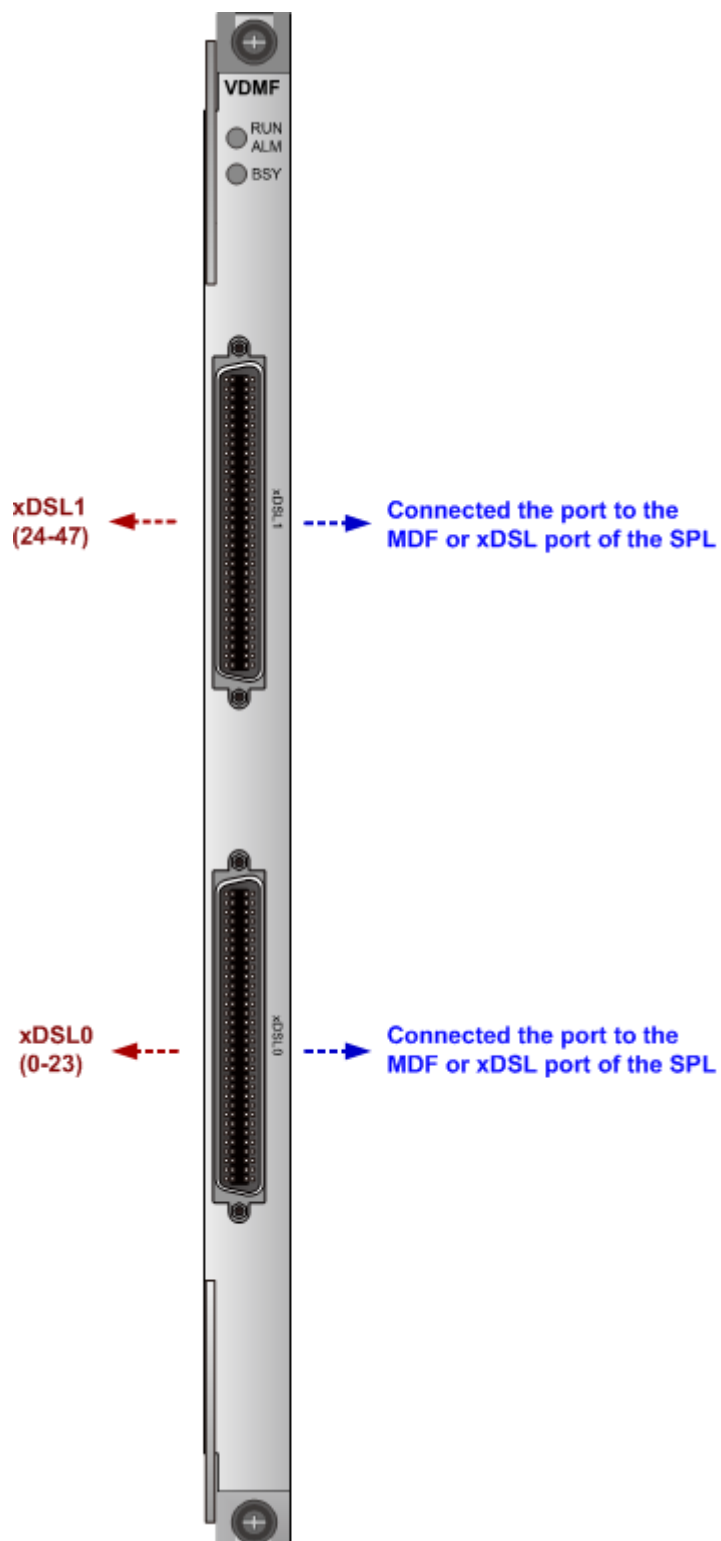
The basic working principle of the H805VDMF board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets and performs CAR on the ATM/PTM packets to convert them into IP packets. The IP packets are transmitted to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.
- In the downstream direction, the forwarding logic decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and then transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-115](#); For pin assignment of the xDSL1 port, see [Table 3-116](#);



**Table 3-115** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		47			31		15	
62	14	46	6		30	17	14	-
61		45			29		13	
60	13	44	5		28	18	12	-
59		43			27		11	
58	12	42	4		26	19	10	-
57		41			25		9	
56	11	40	3		24	20	8	-
55		39			23		7	
54	10	38	2		22	21	6	-
53		37			21		5	
52	9	36	1		20	22	4	-
51		35			19		3	
50	8	34	0		18	23	2	-
49		33			17		1	

**Table 3-116** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	39	48	31		32	40	16	-
63		47			31		15	
62	38	46	30		30	41	14	-
61		45			29		13	
60	37	44	29		28	42	12	-
59		43			27		11	
58	36	42	28		26	43	10	-
57		41			25		9	
56	35	40	27		24	44	8	-
55		39			23		7	
54	34	38	26		22	45	6	-
53		37			21		5	
52	33	36	25		20	46	4	-
51		35			19		3	
50	32	34	24		18	47	2	-
49		33			17		1	

### 3.22.9 H805VDMF Board Description

The H805VDMF is a 48-port VDSL2 over POTS service board. It works with the VDSL transceiver unit-remote end (VTU-R) through the VDSL port to support the VDSL2 service.

#### Functional Specifications

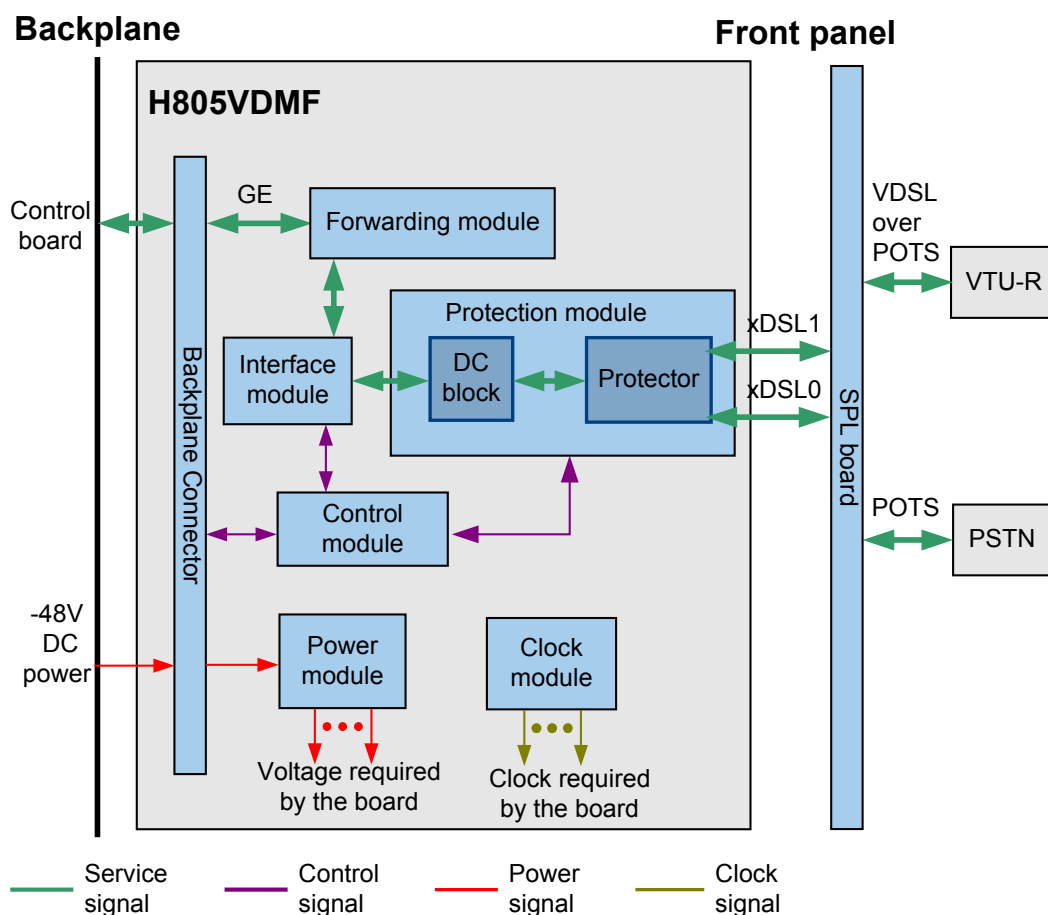
Please refer to "[48-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-121 Working principle of the H805VDMF board



The basic working principle of the H805VDMF board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

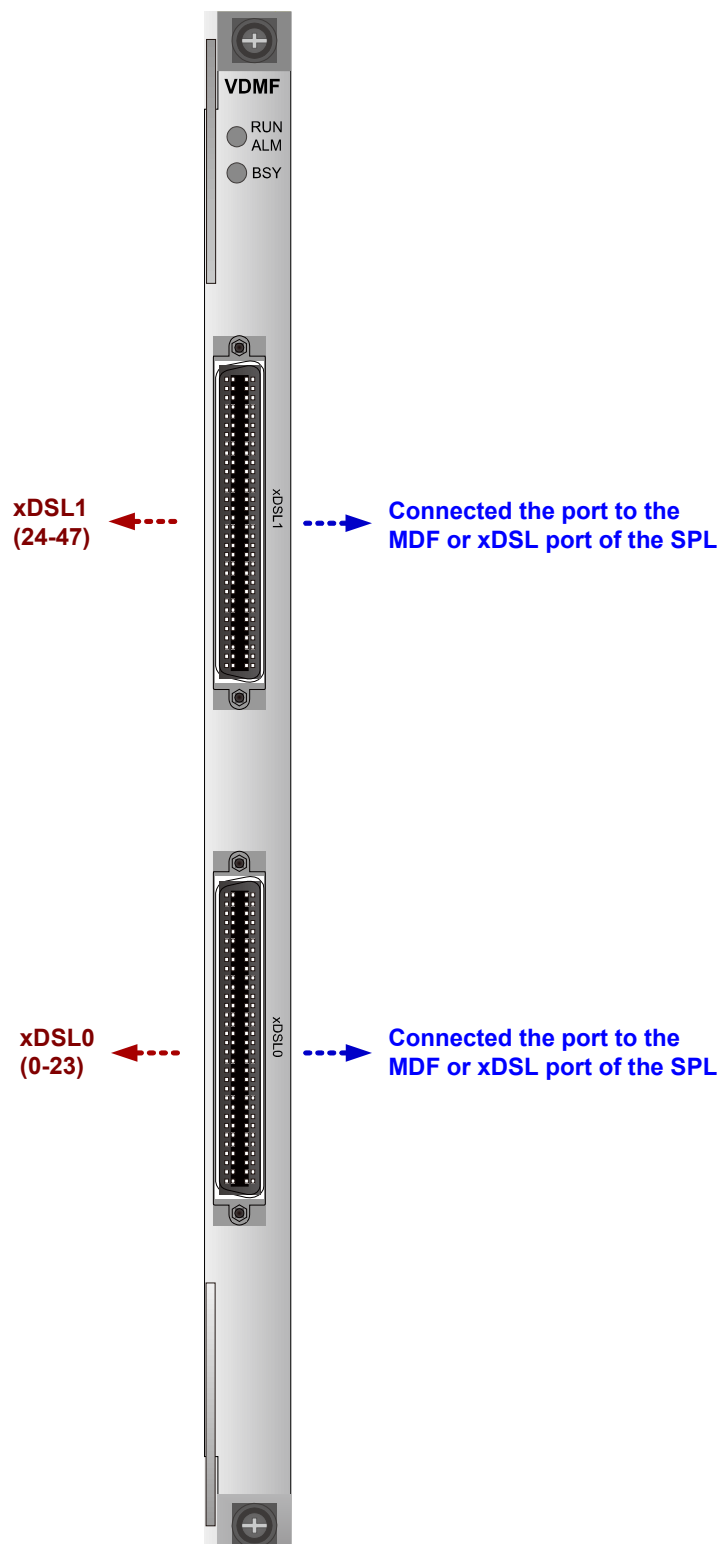
The service process is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets and performs CAR on the ATM/PTM packets to convert them into IP packets. The IP packets are transmitted to the backplane bus through the backplane port

and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.

- In the downstream direction, the forwarding logic decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and then transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-117](#); For pin assignment of the xDSL1 port, see [Table 3-118](#);

**Table 3-117** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		47			31		15	
62	14	46	6		30	17	14	-
61		45			29		13	
60	13	44	5		28	18	12	-
59		43			27		11	
58	12	42	4		26	19	10	-
57		41			25		9	
56	11	40	3		24	20	8	-
55		39			23		7	
54	10	38	2		22	21	6	-
53		37			21		5	
52	9	36	1		20	22	4	-
51		35			19		3	
50	8	34	0		18	23	2	-
49		33			17		1	

**Table 3-118** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	39	48	31		32	40	16	-
63		47			31		15	
62	38	46	30		30	41	14	-
61		45			29		13	
60	37	44	29		28	42	12	-
59		43			27		11	
58	36	42	28		26	43	10	-
57		41			25		9	
56	35	40	27		24	44	8	-
55		39			23		7	
54	34	38	26		22	45	6	-
53		37			21		5	
52	33	36	25		20	46	4	-
51		35			19		3	
50	32	34	24		18	47	2	-
49		33			17		1	

### 3.22.10 H80BVCMM Board Description

The H80BVCMM is a 48-port VDSL2 over POTS service board. It works with the VDSL transceiver unit-remote end (VTU-R) through the VDSL port to support the VDSL2 service and supporting vectoring.

#### Functional Specifications

Please refer to "[48-Channel VDSL2 Service Board Comparison](#)".

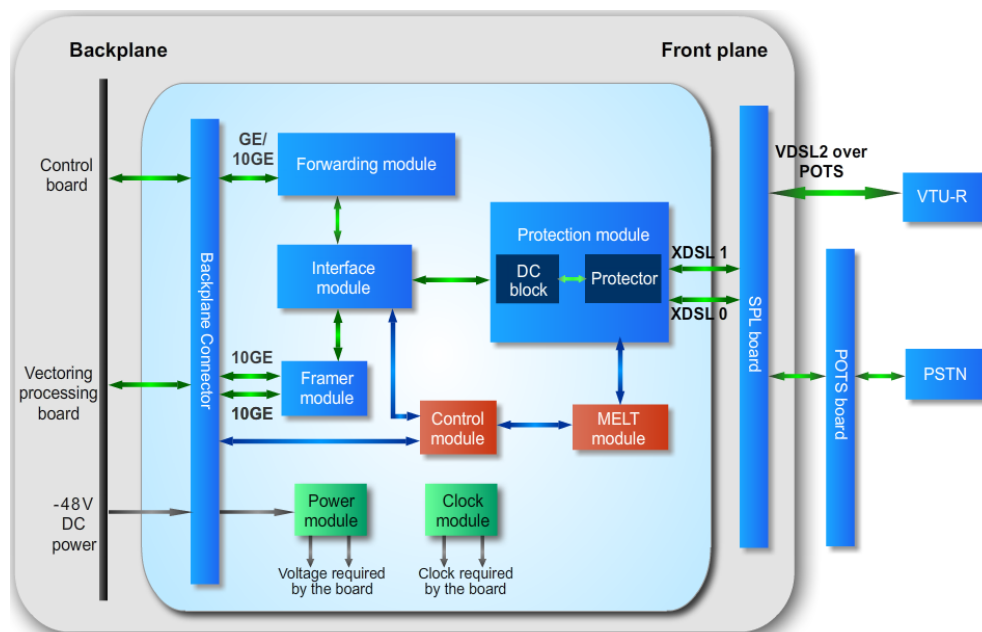
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

Figure 3-122 Working principle of the H80BVCMM board



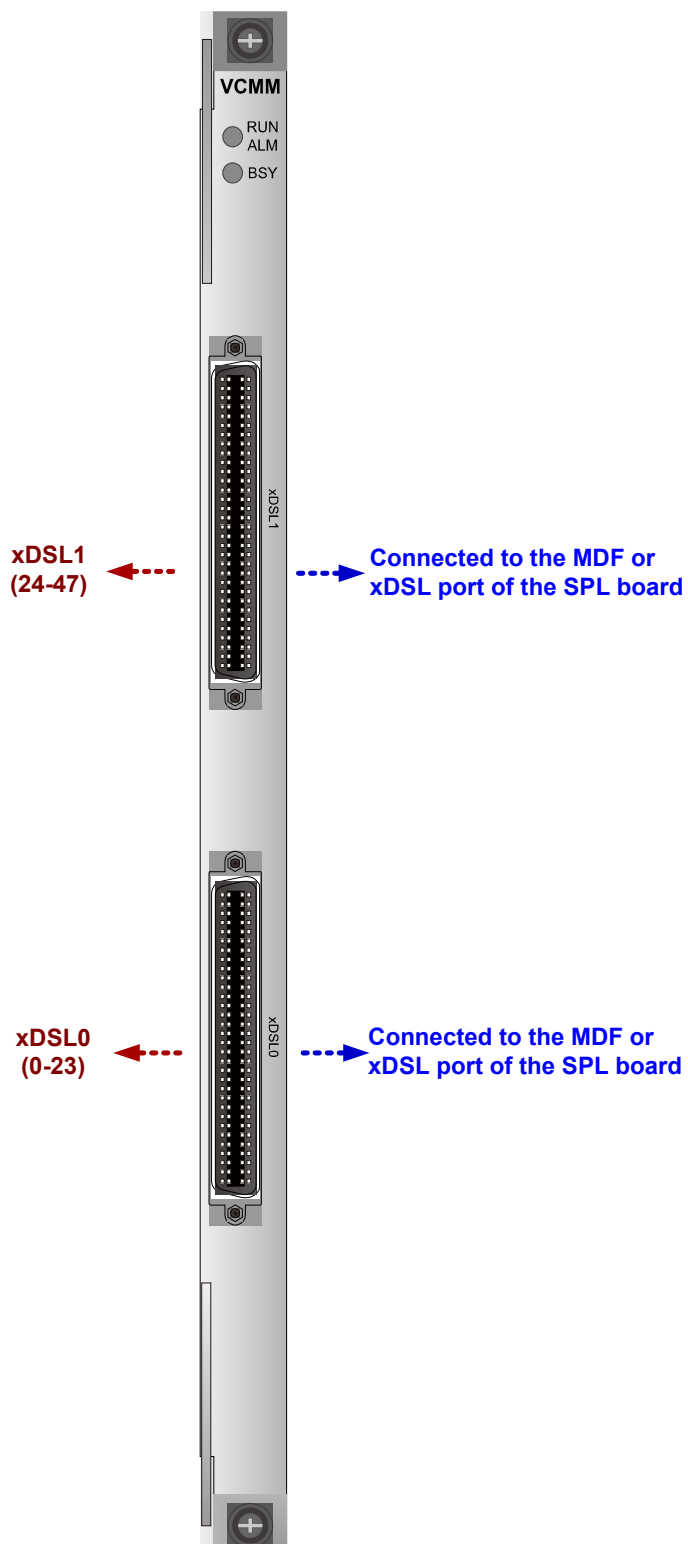
The basic working principle of the H80BVCMM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The framer module forwards vectoring data.
- The interface module provides the ports for information exchange.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets and performs CAR on the ATM/PTM packets to convert them into IP packets. The IP packets are transmitted to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.
- In the downstream direction, the forwarding logic decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and then transmits the signals to subscriber lines.

## Front Panel Port



## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-119](#); For pin assignment of the xDSL1 port, see [Table 3-120](#);

**Table 3-119** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		47			31		15	
62	14	46	6		30	17	14	-
61		45			29		13	
60	13	44	5		28	18	12	-
59		43			27		11	
58	12	42	4		26	19	10	-
57		41			25		9	
56	11	40	3		24	20	8	-
55		39			23		7	
54	10	38	2		22	21	6	-
53		37			21		5	
52	9	36	1		20	22	4	-
51		35			19		3	
50	8	34	0		18	23	2	-
49		33			17		1	

**Table 3-120** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	39	48	31		32	40	16	-
63		47			31		15	
62	38	46	30		30	41	14	-
61		45			29		13	
60	37	44	29		28	42	12	-
59		43			27		11	
58	36	42	28		26	43	10	-
57		41			25		9	
56	35	40	27		24	44	8	-
55		39			23		7	
54	34	38	26		22	45	6	-
53		37			21		5	
52	33	36	25		20	46	4	-
51		35			19		3	
50	32	34	24		18	47	2	-
49		33			17		1	

### 3.22.11 H80DSDMM Board Description

The H80DSDMM is a 48-port VDSL2 over POTS service board. It works with the VDSL transceiver unit-remote end (VTU-R) through the VDSL port to provide VDSL2 access service and support SuperVector.

#### Functional Specifications

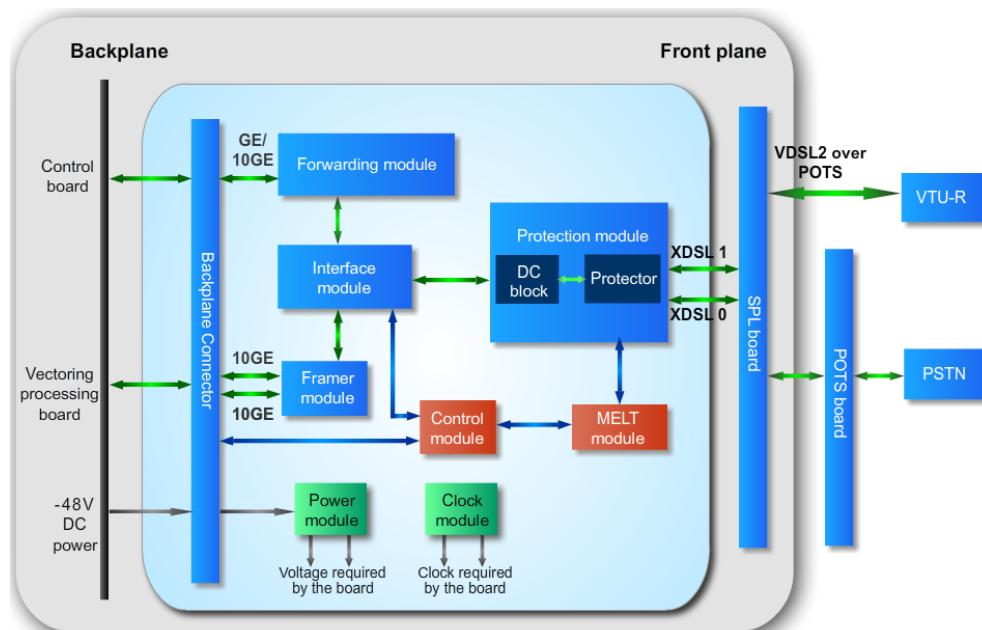
Please refer to "[48-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-123 Working principle of the H80DSDMM board



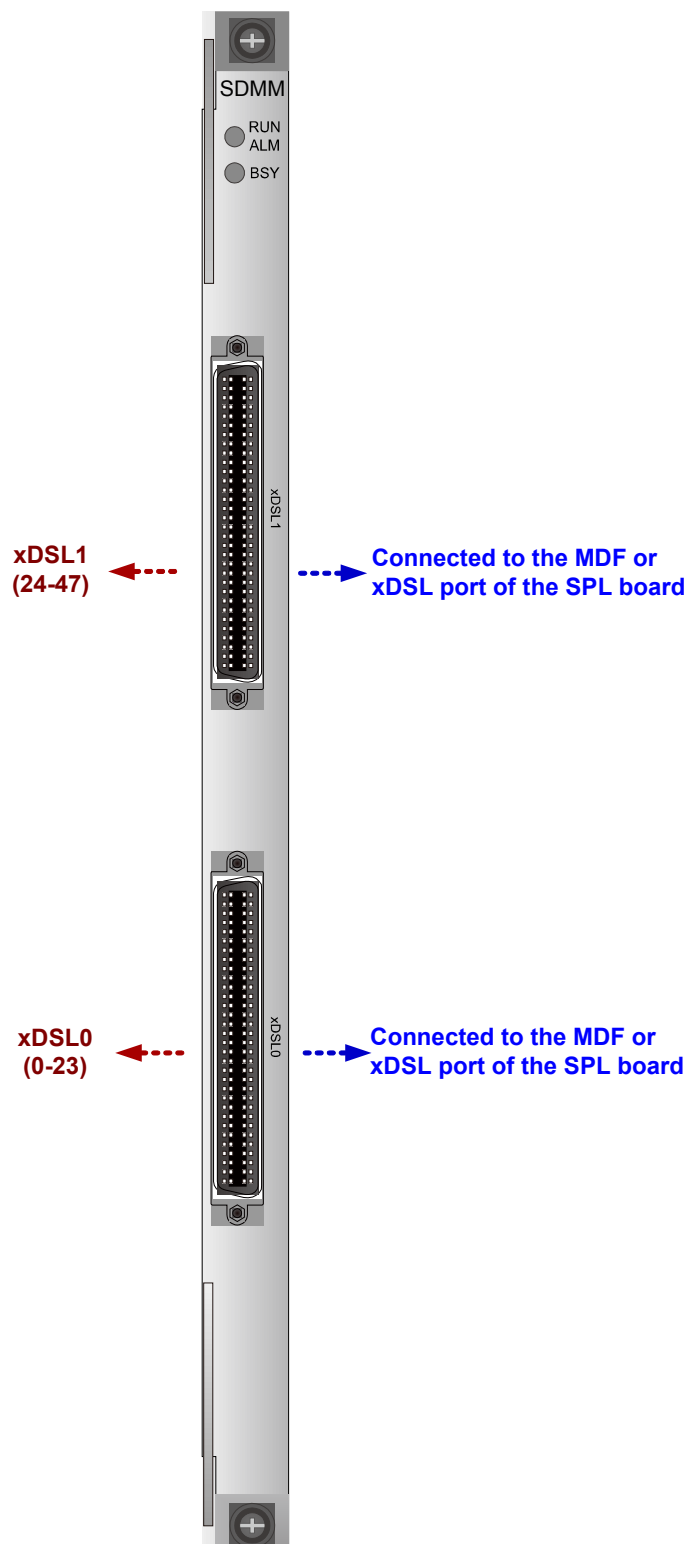
The basic working principle of the H80DSDMM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The framer module forwards vectoring data.
- The interface module provides the ports for information exchange.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets and performs CAR on the ATM/PTM packets to convert them into IP packets. The IP packets are transmitted to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.
- In the downstream direction, the forwarding logic decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and then transmits the signals to subscriber lines.

## Front Panel Port



## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-121](#); For pin assignment of the xDSL1 port, see [Table 3-122](#);



**Table 3-121** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		31			15		-	
62	14	46	6		30	17	14	-
61		29			13		-	
60	13	44	5		28	18	12	-
59		27			11		-	
58	12	42	4		26	19	10	-
57		25			9		-	
56	11	40	3		24	20	8	-
55		23			7		-	
54	10	38	2		22	21	6	-
53		21			5		-	
52	9	36	1		20	22	4	-
51		19			3		-	
50	8	34	0		18	23	2	-
49		17			1		-	

**Table 3-122** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	39	48	31		32	40	16	-
63		47			31		15	
62	38	46	30		30	41	14	-
61		45			29		13	
60	37	44	29		28	42	12	-
59		43			27		11	
58	36	42	28		26	43	10	-
57		41			25		9	
56	35	40	27		24	44	8	-
55		39			23		7	
54	34	38	26		22	45	6	-
53		37			21		5	
52	33	36	25		20	46	4	-
51		35			19		3	
50	32	34	24		18	47	2	-
49		33			17		1	

### 3.22.12 H802VDFN Board Description

The H802VDFN board is a 48-port VDSL2 over ISDN Service board. It works with the VDSL transceiver unit-remote end (VTU-R) through the VDSL port to support the VDSL2 service.

#### Functional Specifications

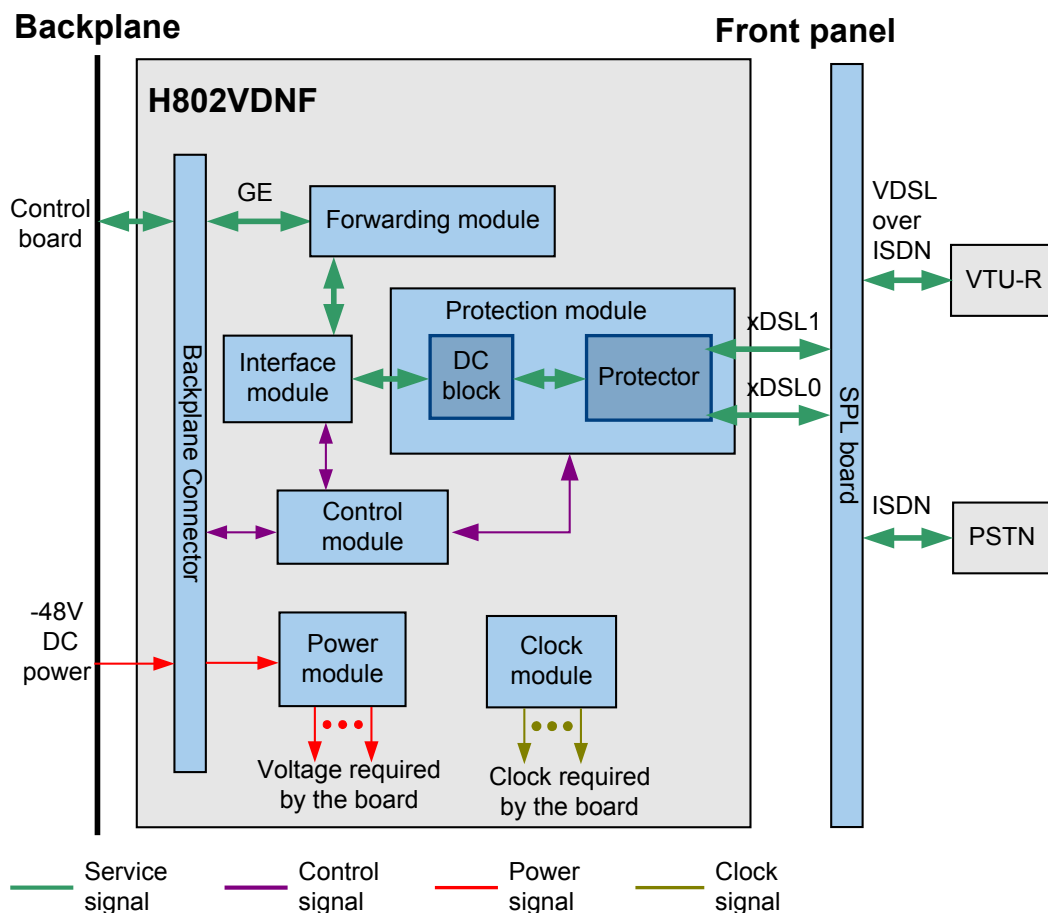
Please refer to "[48-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-124 Working principle of the H802VDFN board



The basic working principle of the H802VDFN board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The interface module supports modulation and demodulation of the VDSL2 service.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

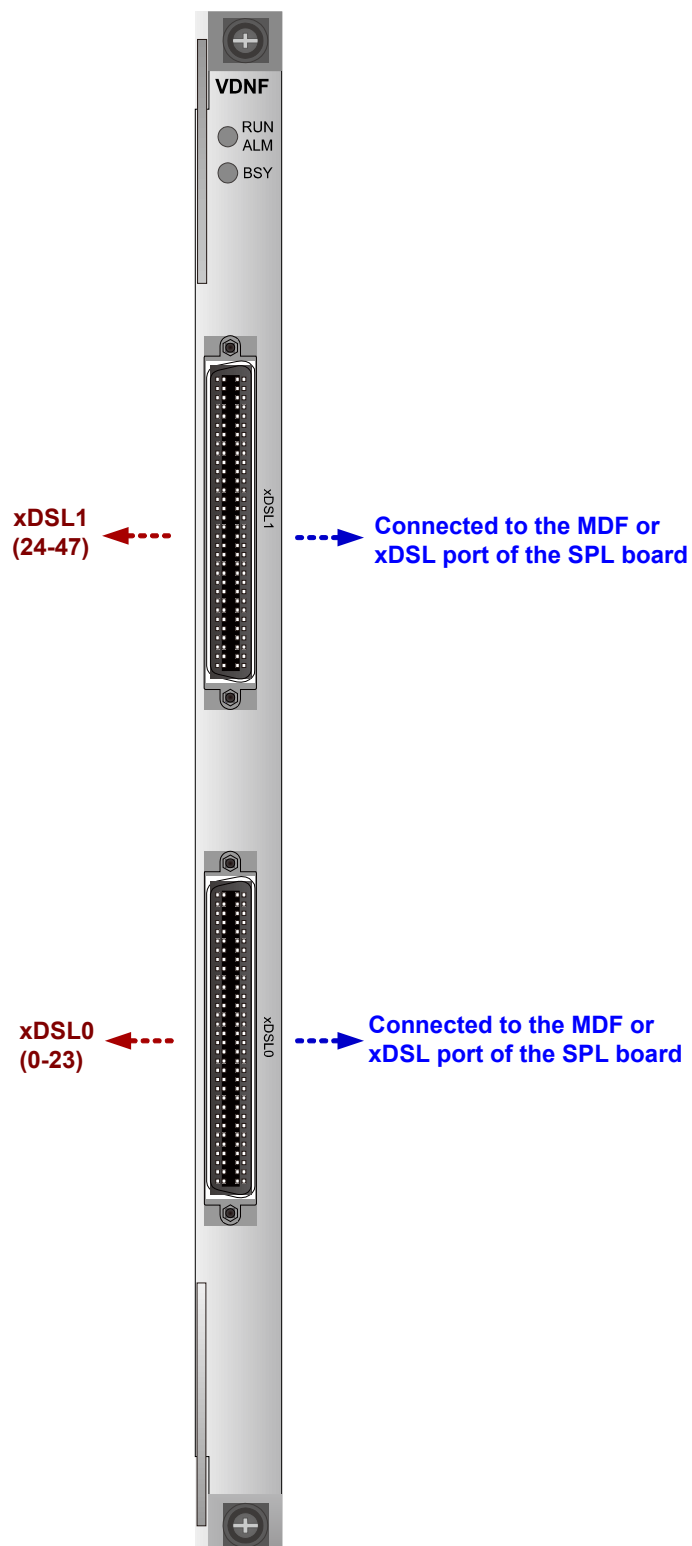
The service process is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets and performs CAR on the ATM/PTM packets to convert them into IP packets. The IP packets are transmitted to the backplane bus through the backplane port

and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.

- In the downstream direction, the forwarding logic decapsulates the IP packets from the backplane, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and then transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-123](#); For pin assignment of the xDSL1 port, see [Table 3-124](#);

**Table 3-123** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		47			31		15	
62	14	46	6		30	17	14	-
61		45			29		13	
60	13	44	5		28	18	12	-
59		43			27		11	
58	12	42	4		26	19	10	-
57		41			25		9	
56	11	40	3		24	20	8	-
55		39			23		7	
54	10	38	2		22	21	6	-
53		37			21		5	
52	9	36	1		20	22	4	-
51		35			19		3	
50	8	34	0		18	23	2	-
49		33			17		1	

**Table 3-124** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	39	48	31		32	40	16	-
63		47			31		15	
62	38	46	30		30	41	14	-
61		45			29		13	
60	37	44	29		28	42	12	-
59		43			27		11	
58	36	42	28		26	43	10	-
57		41			25		9	
56	35	40	27		24	44	8	-
55		39			23		7	
54	34	38	26		22	45	6	-
53		37			21		5	
52	33	36	25		20	46	4	-
51		35			19		3	
50	32	34	24		18	47	2	-
49		33			17		1	

### 3.22.13 H802VDJM Board Description

The H802VDJM board is 48-port VDSL2 over ISDN service board. It works with the VDSL Transceiver Unit-Remote end (VTU-R) through the VDSL port to provide 48 channels of broadband VDSL2 access services.

#### Functional Specifications

Please refer to "[48-Channel VDSL2 Service Board Comparison](#)".

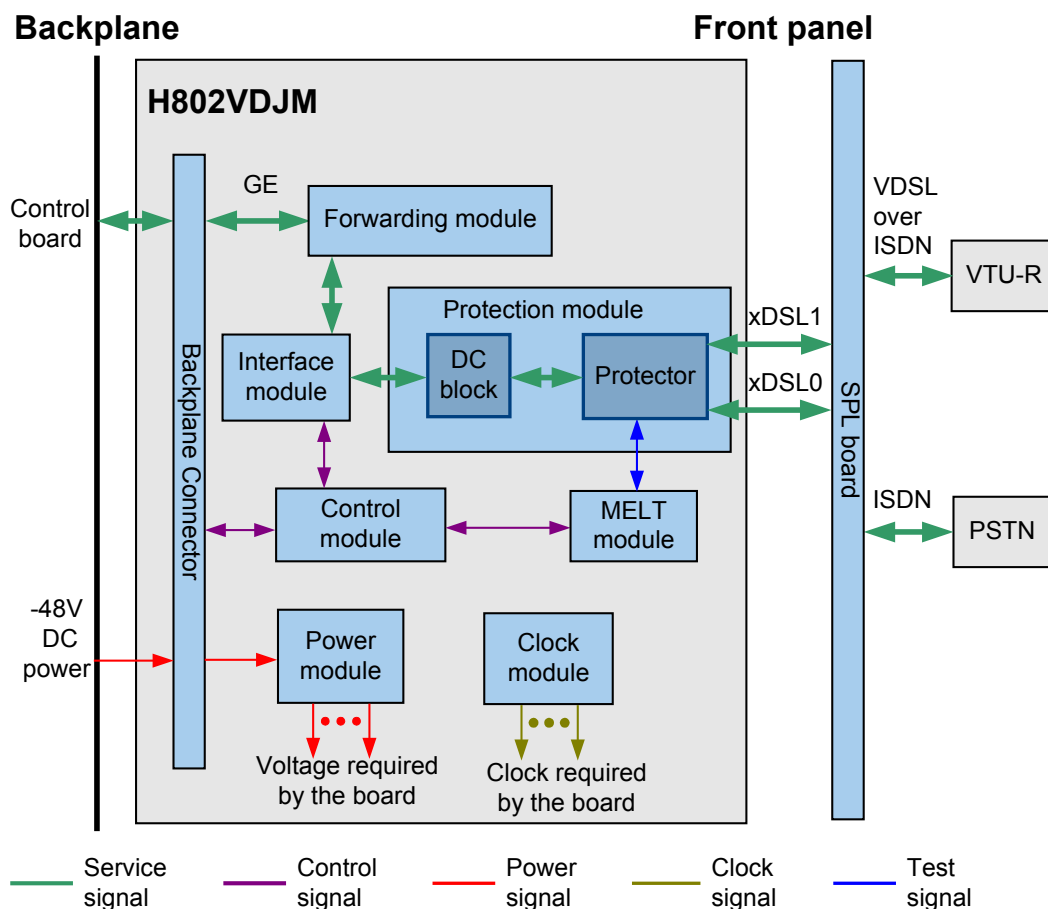
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

Figure 3-125 Working principle of the H802VDJM board



The basic working principle of the H802VDJM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The interface module supports modulation and demodulation of the VDSL2 service.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.
- The MELT module provides the MELT test function for digital subscriber lines.

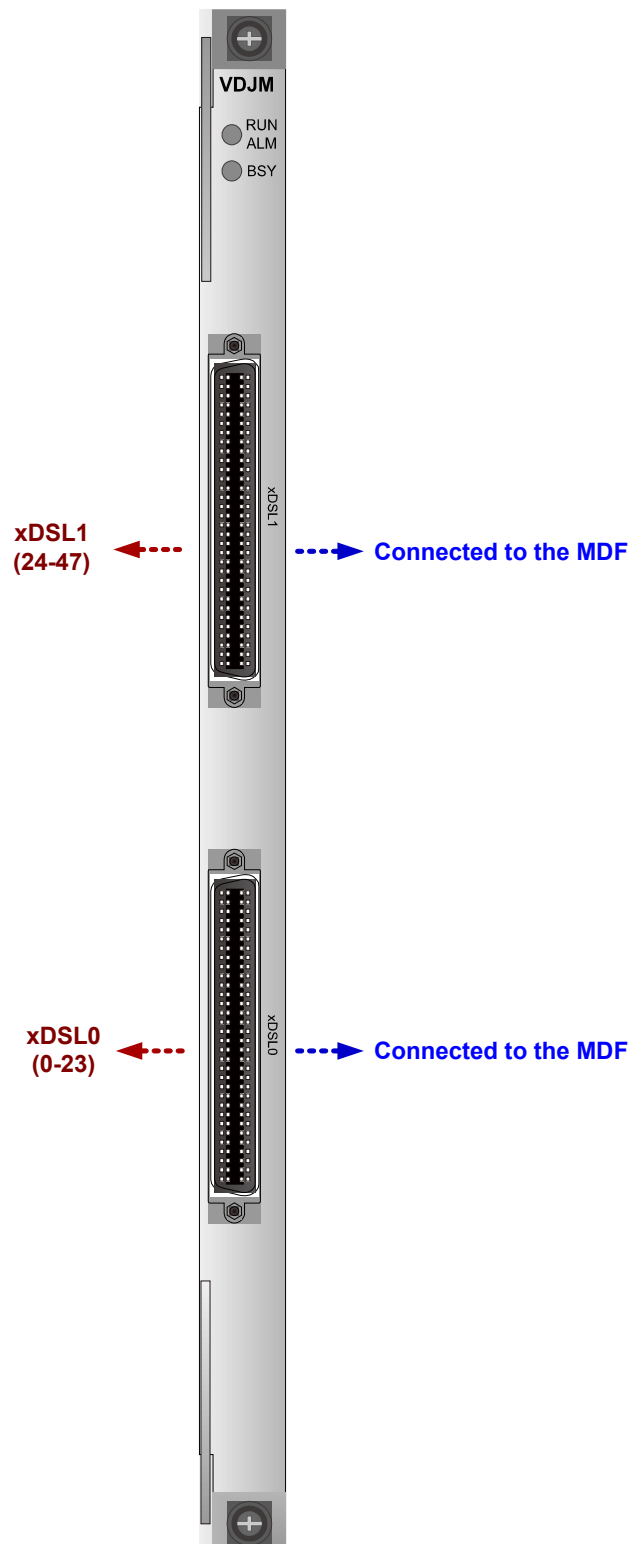
The service process is as follows:

- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets and performs CAR on the ATM/PTM packets to convert them into IP

packets. The IP packets are transmitted to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.

- In the downstream direction, the forwarding logic decapsulates the IP packets from the backplane, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and then transmits the signals to subscriber lines.

## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-125](#); For pin assignment of the xDSL1 port, see [Table 3-126](#);

**Table 3-125** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	-
63		47			31		15	
62	14	46	6		30	17	14	-
61		45			29		13	
60	13	44	5		28	18	12	-
59		43			27		11	
58	12	42	4		26	19	10	-
57		41			25		9	
56	11	40	3		24	20	8	-
55		39			23		7	
54	10	38	2		22	21	6	-
53		37			21		5	
52	9	36	1		20	22	4	-
51		35			19		3	
50	8	34	0		18	23	2	-
49		33			17		1	

**Table 3-126** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	39	48	31		32	40	16	-
63		47			31		15	
62	38	46	30		30	41	14	-
61		45			29		13	
60	37	44	29		28	42	12	-
59		43			27		11	
58	36	42	28		26	43	10	-
57		41			25		9	
56	35	40	27		24	44	8	-
55		39			23		7	
54	34	38	26		22	45	6	-
53		37			21		5	
52	33	36	25		20	46	4	-
51		35			19		3	
50	32	34	24		18	47	2	-
49		33			17		1	

### 3.2.2.14 H80AVCPD Board Description

H80AVCPD is a 64-port VDSL2 over POTS service board. Using its VDSL2 port, the H80AVCPD board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access service. In addition.

#### Feature and Specifications

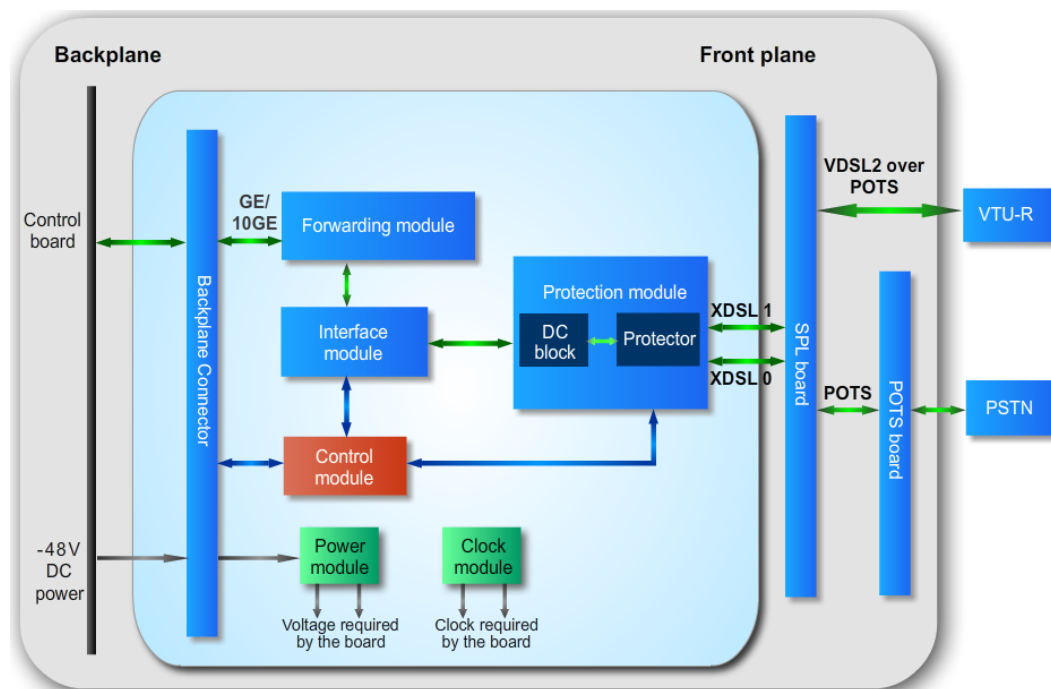
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-126 Working principle of the H80AVCPD board



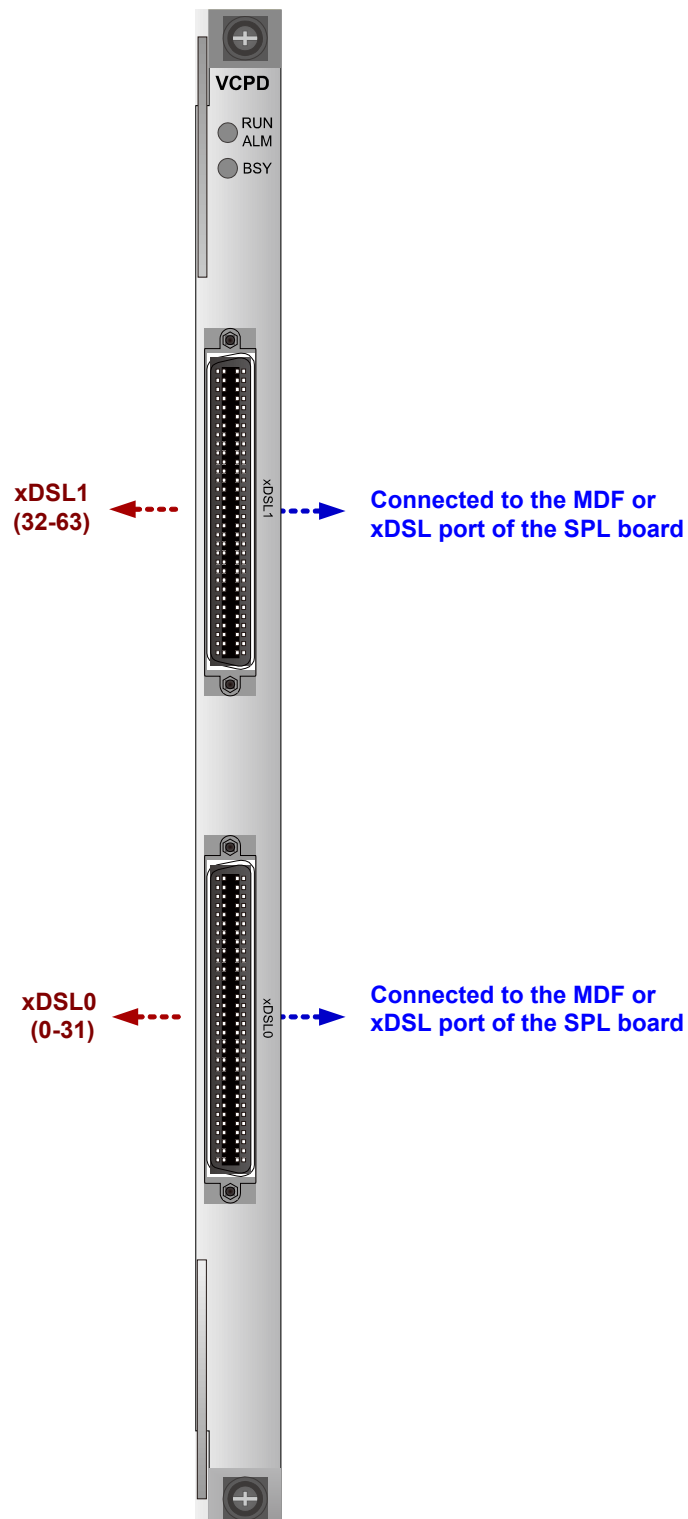
The basic working principle of the H80AVCPD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The protection module protects and isolates the board from lightning strikes.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service processing is as follows:

- In the upstream direction, the interface module converts the VDSL2 line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into PTM packets. The forwarding module encapsulates the reassembled PTM packets into IP packets, performs CAR on the IP packets, and then sends the IP packets to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper-level device through the optical or electrical port.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits the PTM packets to the interface module. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line.

## Front Panel Port







## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-127** describes the pin assignments of the xDSL0 port on the front panel of the H80AVCPD board, and **Table 3-128** describes the pin assignments of the xDSL1 port on the front panel of the H80AVCPD board.

**Table 3-127** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-128** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.2.2.15 H80AVCPM Board Description

H80AVCPM is a 64-port VDSL2 over POTS service board. Using its VDSL2 port, the H80AVCPM board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access service.

#### Feature and Specifications

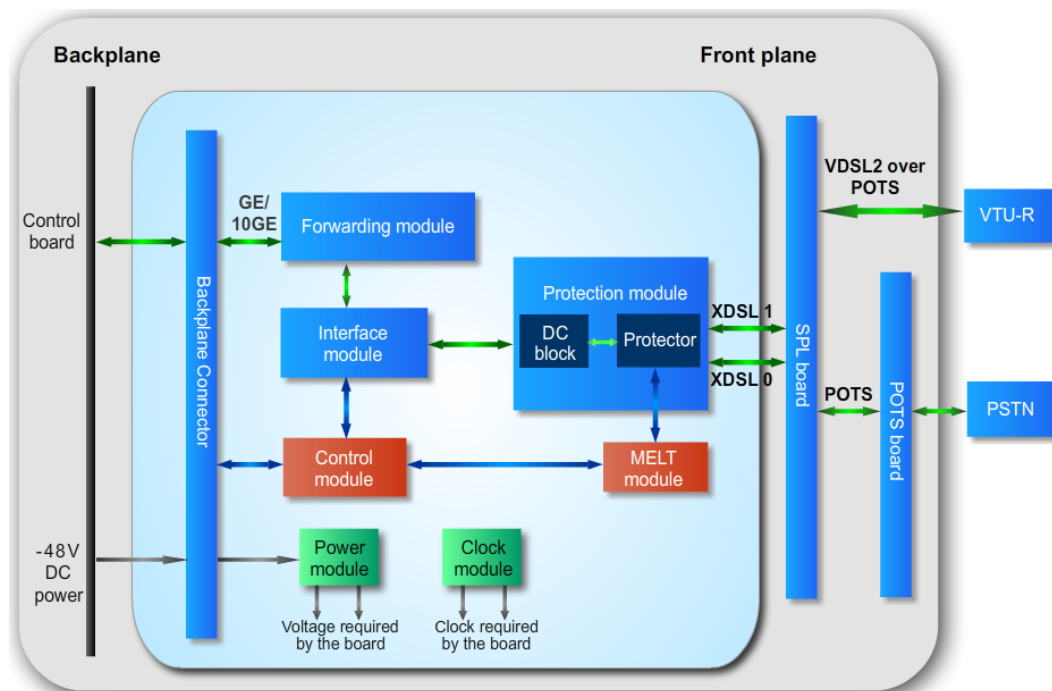
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-127 Working principle of the H80AVCPM board



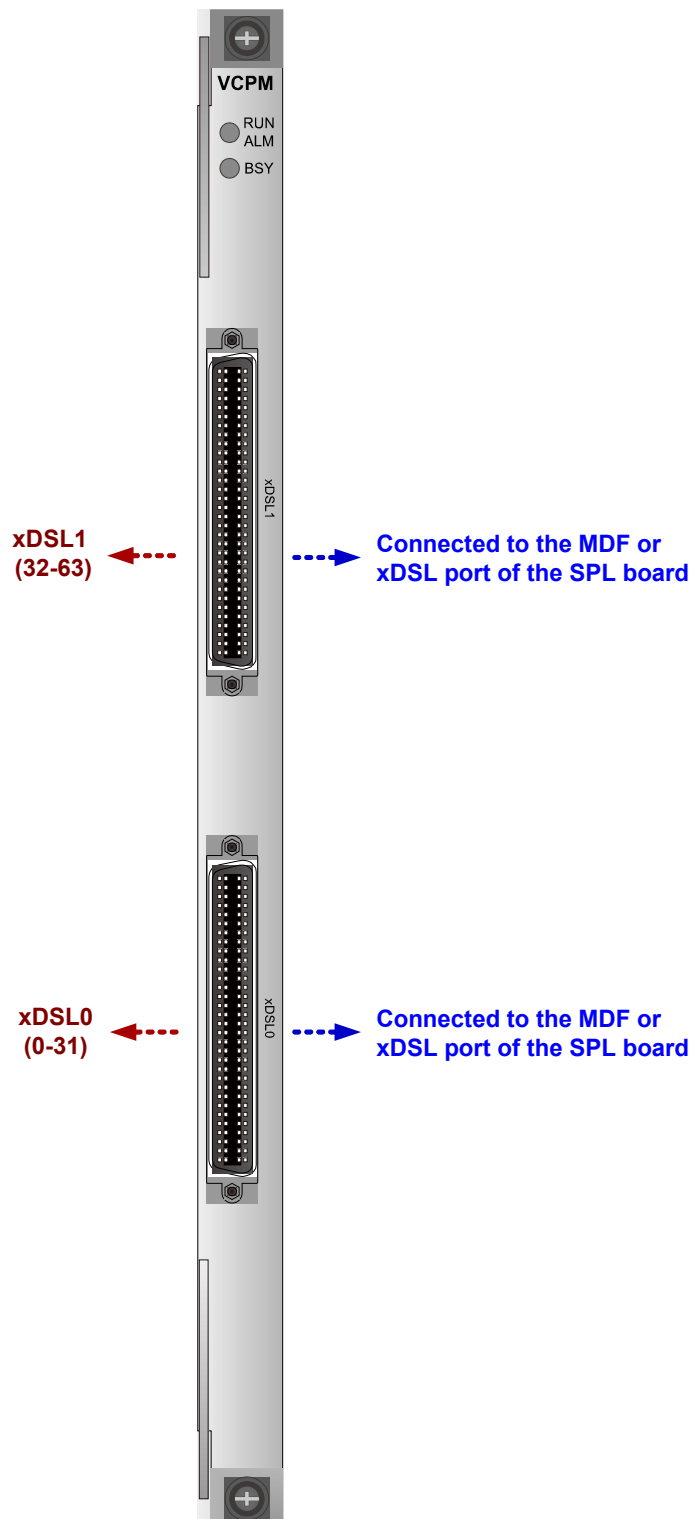
The basic working principle of the H80AVCPM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The protection module protects and isolates the board from lightning strikes.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service processing is as follows:

- In the upstream direction, the interface module converts the VDSL2 line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into PTM packets. The forwarding module encapsulates the reassembled PTM packets into IP packets, performs CAR on the IP packets, and then sends the IP packets to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper-level device through the optical or electrical port.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits the PTM packets to the interface module. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line.

## Front Panel Port



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## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.
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## NOTICE

The device supports protection specification 1500 V (the basic standard is ITU-T K.20). If the device is placed in the scenario where the supported protection specification is higher than 1500 V, a protective unit needs to be configured on the MDF.

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## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

[Table 3-129](#) describes the pin assignments of the xDSL0 port on the front panel of the H80AVCPM board, and [Table 3-130](#) describes the pin assignments of the xDSL1 port on the front panel of the H80AVCPM board.

**Table 3-129** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-130** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.2.2.16 H806VCPE Board Description

H806VCPE is a 64-port VDSL2 over POTS service board with built-in splitter. Using its VDSL2 port, the H806VCPE board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access services.

#### Feature and Specifications

Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

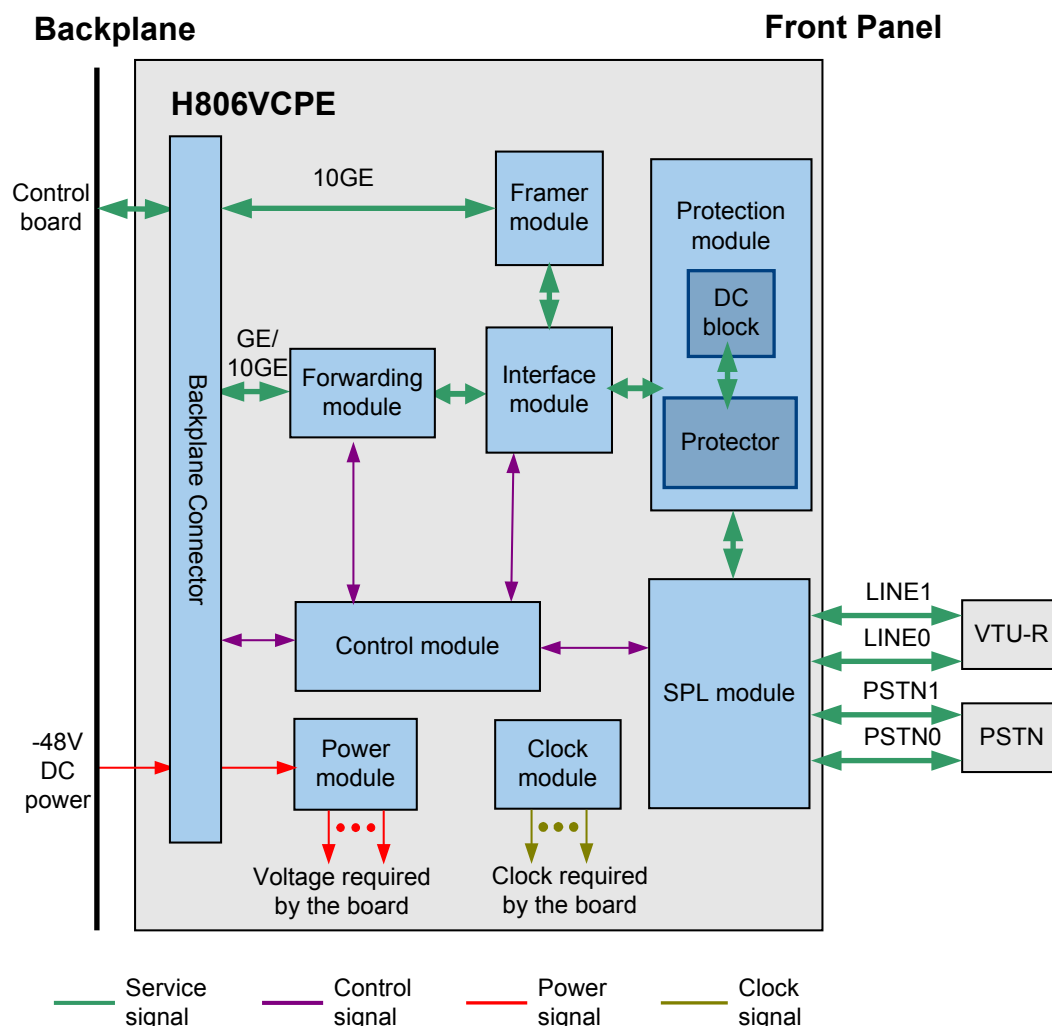
#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".



## Working Principle

Figure 3-128 Working principle of the H806VCPE board



The basic working principle of the H806VCPE board is as follows:

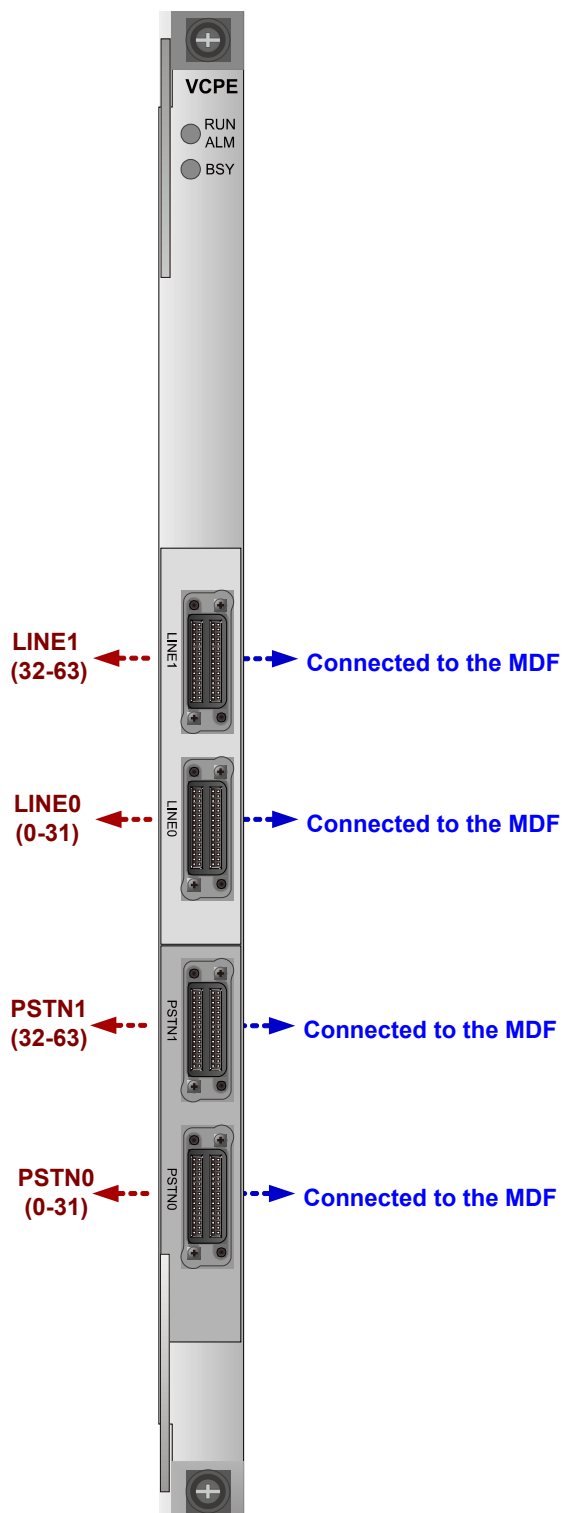
- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The splitter module separates POTS signals from VDSL2 signals over the subscriber line.
- The interface module provides two functions:
  - In the upstream direction, the interface module converts line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into ATM/PTM packets.
  - In the downstream direction, the interface module converts the ATM/PTM cell flows sent from the forwarding module into line signals that are transmitted downstream.

- The forwarding module processes services. For details, see the description of service processing.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

The service processing is as follows:

- In the upstream direction, the splitter module separates LINE signals over the subscriber line into POTS signals and VDSL2 signals, and then the interface module transmits these signals to the forwarding module. The forwarding module reassembles the cell flow into ATM/PTM packets, encapsulates the ATM/PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logic switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, perform CAR on the packets, reassembles the packets into ATM/PTM packets, and then transmits the ATM/PTM packets to the interface module. The interface module then converts the ATM/PTM packets into analog signals, and transmits the analog signals to the subscriber line through the splitter module.

## Front Panel Port





## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

The pin assignments of LINE ports are the same as those of the PSTN ports. [Table 3-131](#) describes the pin assignments of the PSTN0 port, and [Table 3-132](#) describes the pin assignments of the PSTN1 port.

**Table 3-131** Pin assignments of the PSTN0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-132** Pin assignments of the PSTN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.2.2.17 H80AVDPD Board Description

H80AVDPD is a 64-port VDSL2 over POTS service board. Using its VDSL2 port, the H80AVDPD board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access service.

#### Feature and Specifications

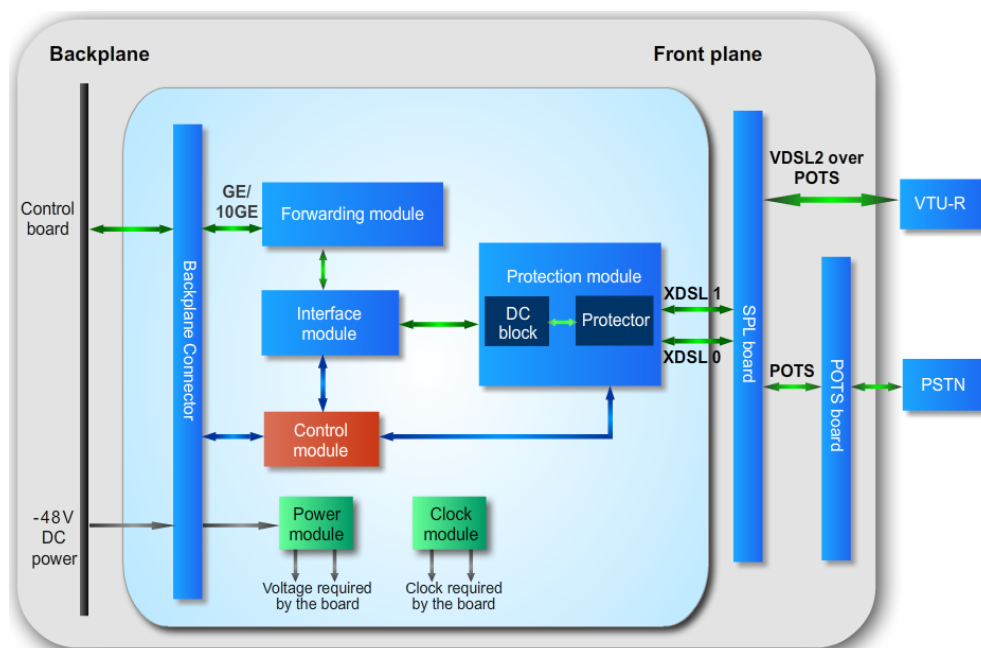
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

Figure 3-129 Working principle of the H80AVDPD board



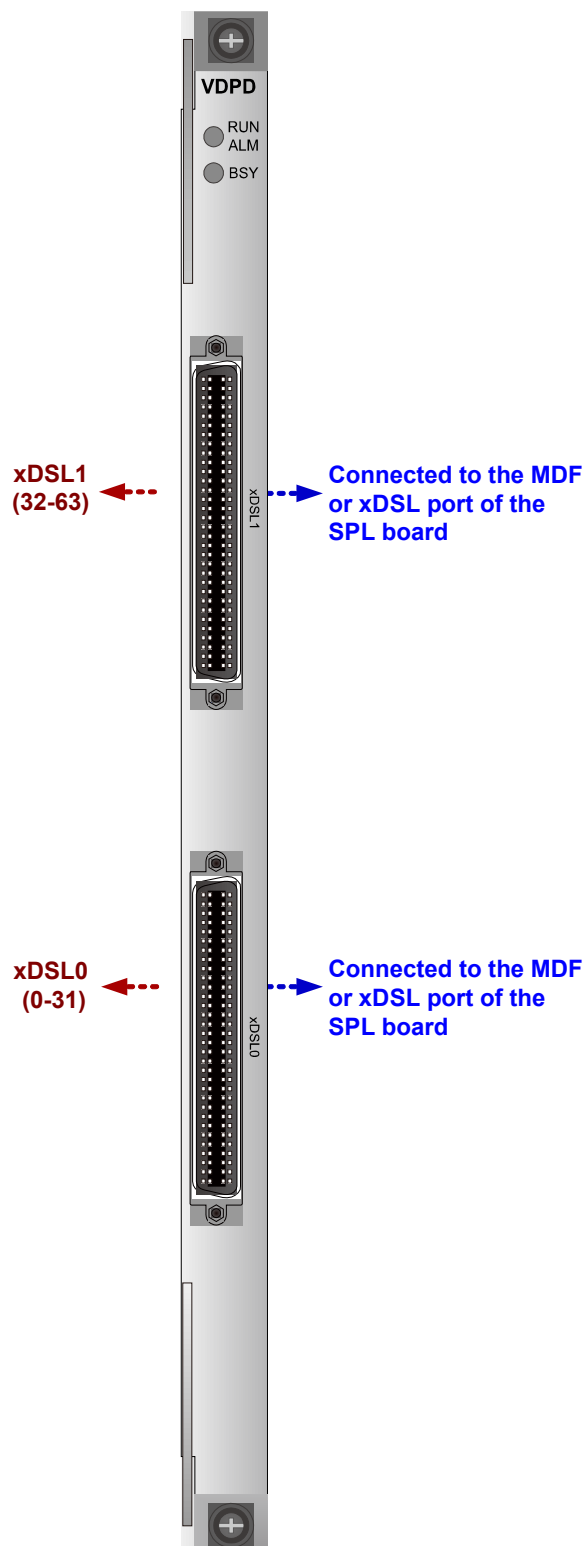
The basic working principle of the H80AVDPD board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes.
- The interface module provides two functions:
  - In the upstream direction, the interface module converts line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into PTM packets.
  - In the downstream direction, the interface module converts the PTM cell flows sent from the forwarding module into line signals that are transmitted downstream.
- The forwarding module processes services. For details, see the description of service processing.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

The service processing is as follows:

- In the upstream direction, the interface module converts the VDSL2 line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into PTM packets. The forwarding module encapsulates the reassembled PTM packets into IP packets, performs CAR on the IP packets, and then sends the IP packets to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper-level device through the optical or electrical port.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits the PTM packets to the interface module. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line.

## Front Panel Port







## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-133** describes the pin assignments of the xDSL0 port on the front panel of the H80AVDPD board, and **Table 3-134** describes the pin assignments of the xDSL1 port on the front panel of the H80AVDPD board.

**Table 3-133** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-134** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.2.2.18 H80BVDPE Board Description

H80BVDPE is a 64-port VDSL2 over POTS service board with built-in splitter. Using its VDSL2 port, the H80BVDPE board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access services.

#### Feature and Specifications

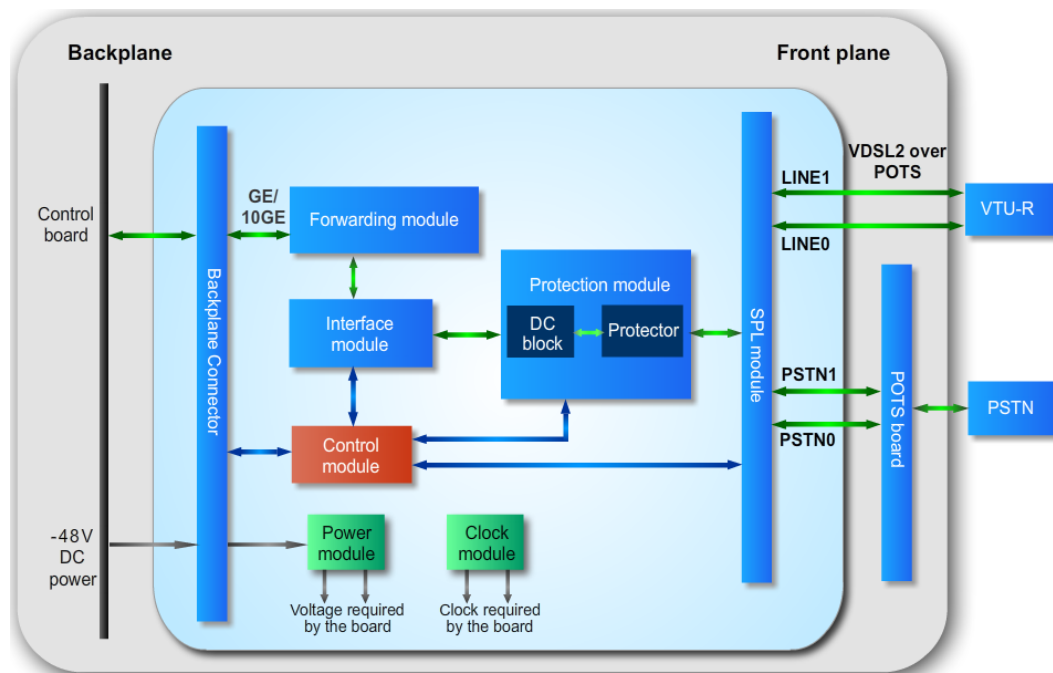
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-130 Working principle of the H80BVDPE board



The basic working principle of the H80BVDPE board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The splitter module separates POTS signals from VDSL2 signals over the subscriber line.
- The interface module provides two functions:
  - In the upstream direction, the interface module converts line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into ATM/PTM packets.
  - In the downstream direction, the interface module converts the ATM/PTM cell flows sent from the forwarding module into line signals that are transmitted downstream.
- The forwarding module processes services. For details, see the description of service processing.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

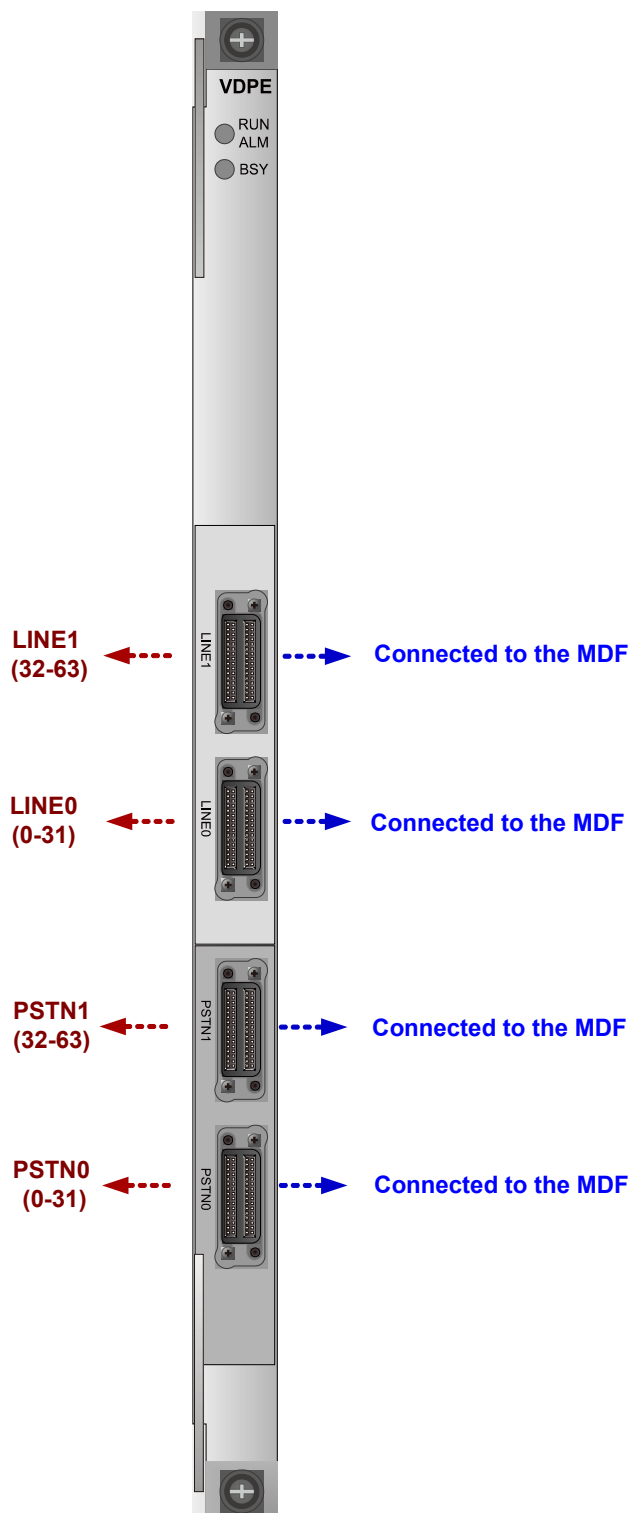
The service processing is as follows:

- In the upstream direction, the splitter module separates LINE signals over the subscriber line into POTS signals and VDSL2 signals, and then the interface module transmits these signals to the forwarding module. The forwarding module reassembles the cell flow into

ATM/PTM packets, encapsulates the ATM/PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logic switch, the IP packets are transmitted to the backplane bus through the backplane interface.

- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, perform CAR on the packets, reassembles the packets into ATM/PTM packets, and then transmits the ATM/PTM packets to the interface module. The interface module then converts the ATM/PTM packets into analog signals, and transmits the analog signals to the subscriber line through the splitter module.

## Front Panel Port





## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

The pin assignments of LINE ports are the same as those of the PSTN ports. [Table 3-135](#) describes the pin assignments of the PSTN0 port, and [Table 3-136](#) describes the pin assignments of the PSTN1 port.

**Table 3-135** Pin assignments of the PSTN0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-136** Pin assignments of the PSTN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59



Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.22.19 H80BVDPM Board Description

H80BVDPM is a 64-port VDSL2 over POTS service board. Using its VDSL2 port, the H80BVDPM board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access service.

#### Feature and Specifications

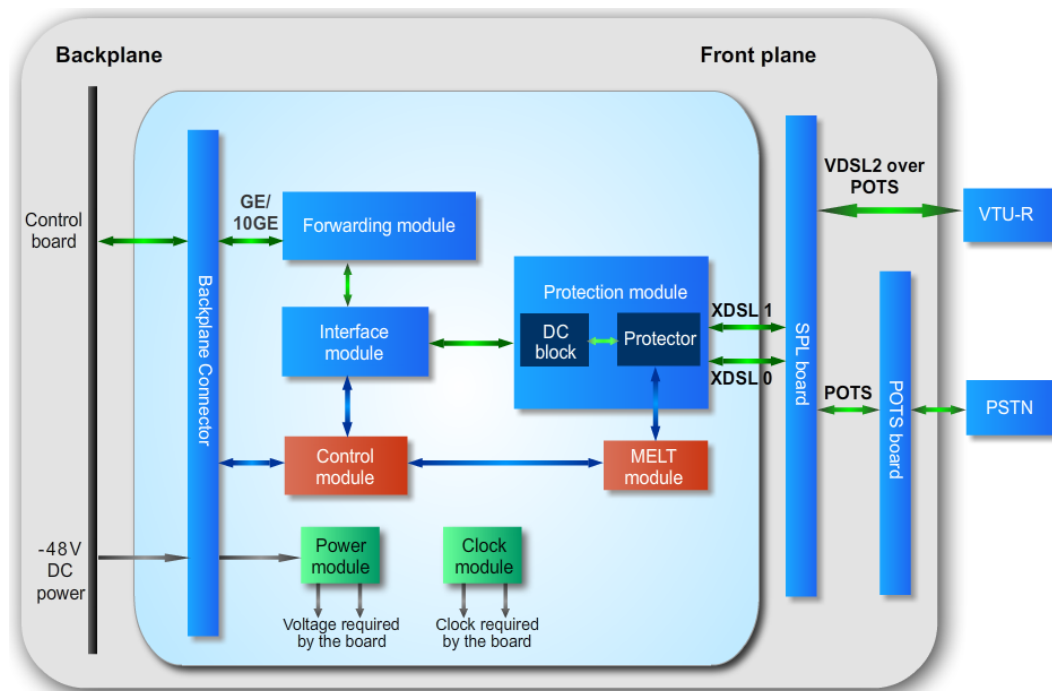
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-131 Working principle of the H80BVDPM board



The basic working principle of the H80BVDPM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module provides two functions:
  - In the upstream direction, the interface module converts line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into PTM packets.
  - In the downstream direction, the interface module converts the PTM cell flows sent from the forwarding module into line signals that are transmitted downstream.
- The forwarding module processes services. For details, see the description of service processing.
- The MELT module provides the MELT test function for digital subscriber lines.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

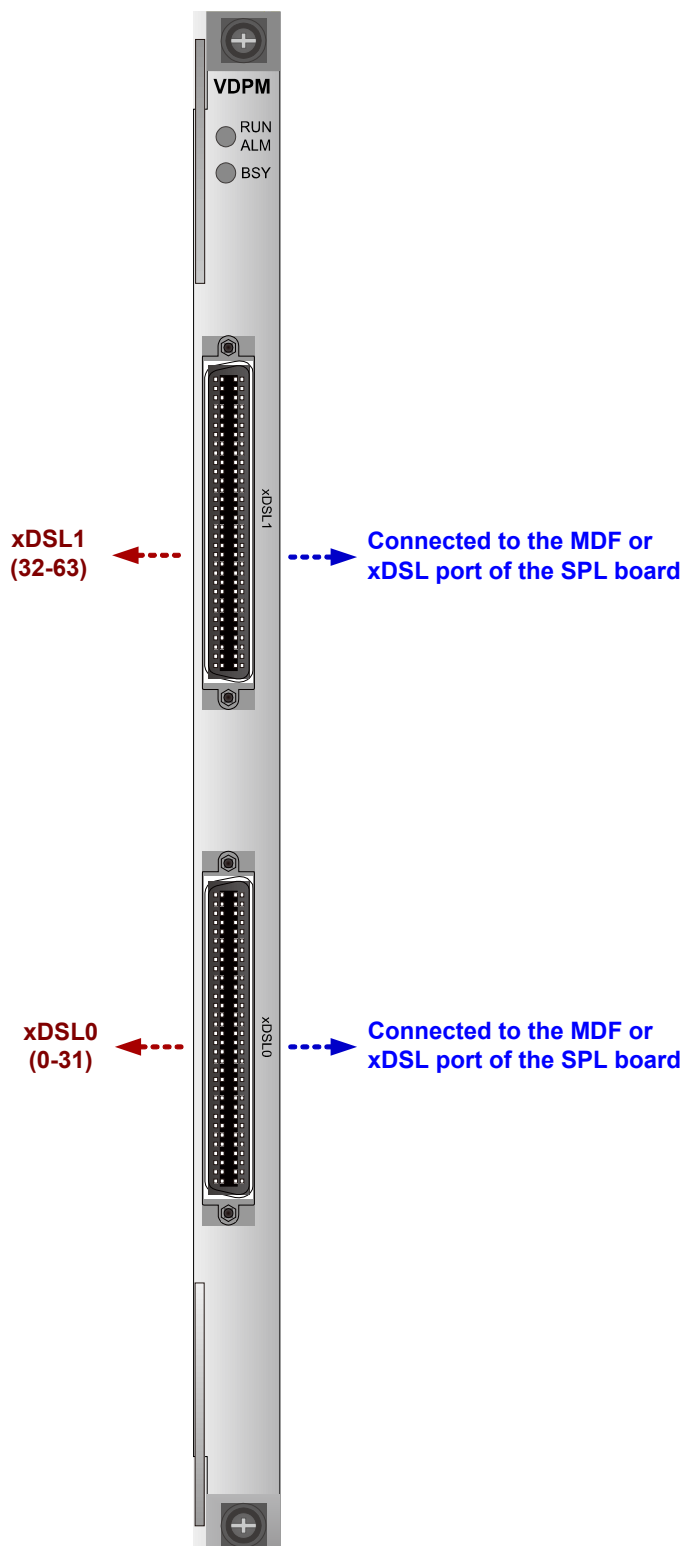
The service processing is as follows:

- In the upstream direction, the interface module converts the VDSL2 line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into PTM packets. The forwarding module encapsulates the reassembled PTM packets into IP packets, performs CAR on the IP packets, and then sends the IP packets to the backplane bus through the backplane port and then to the control board. After

being processed by the control board, the IP packets are transmitted upstream to the upper-level device through the optical or electrical port.

- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits the PTM packets to the interface module. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line.

## Front Panel Port



## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

[Table 3-137](#) describes the pin assignments of the xDSL0 port on the front panel of the H80BVDPM board, and [Table 3-138](#) describes the pin assignments of the xDSL1 port on the front panel of the H80BVDPM board.

**Table 3-137** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-138** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.2.2.20 H80DVCPD Board Description

H80DVCPD is a 64-port VDSL2 over POTS Service Board. Using its VDSL2 port, the H80DVCPD board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access service. In addition, it supports vectoring.

#### Feature and Specifications

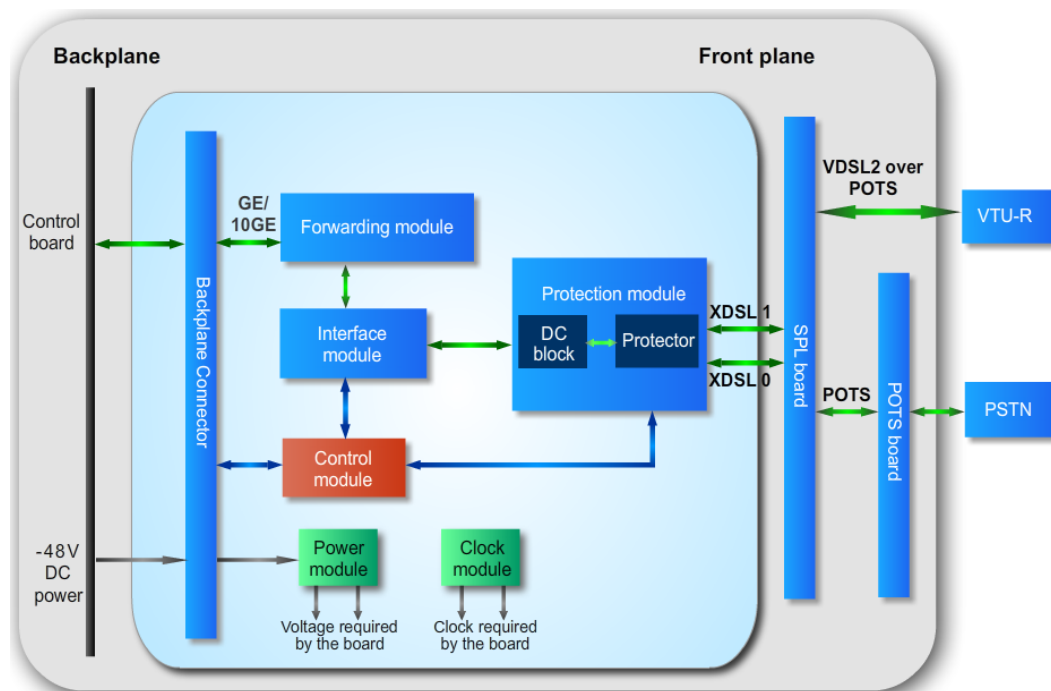
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-132 Working principle of the H80DVCPD board



The basic working principle of the H80DVCPD board is as follows:

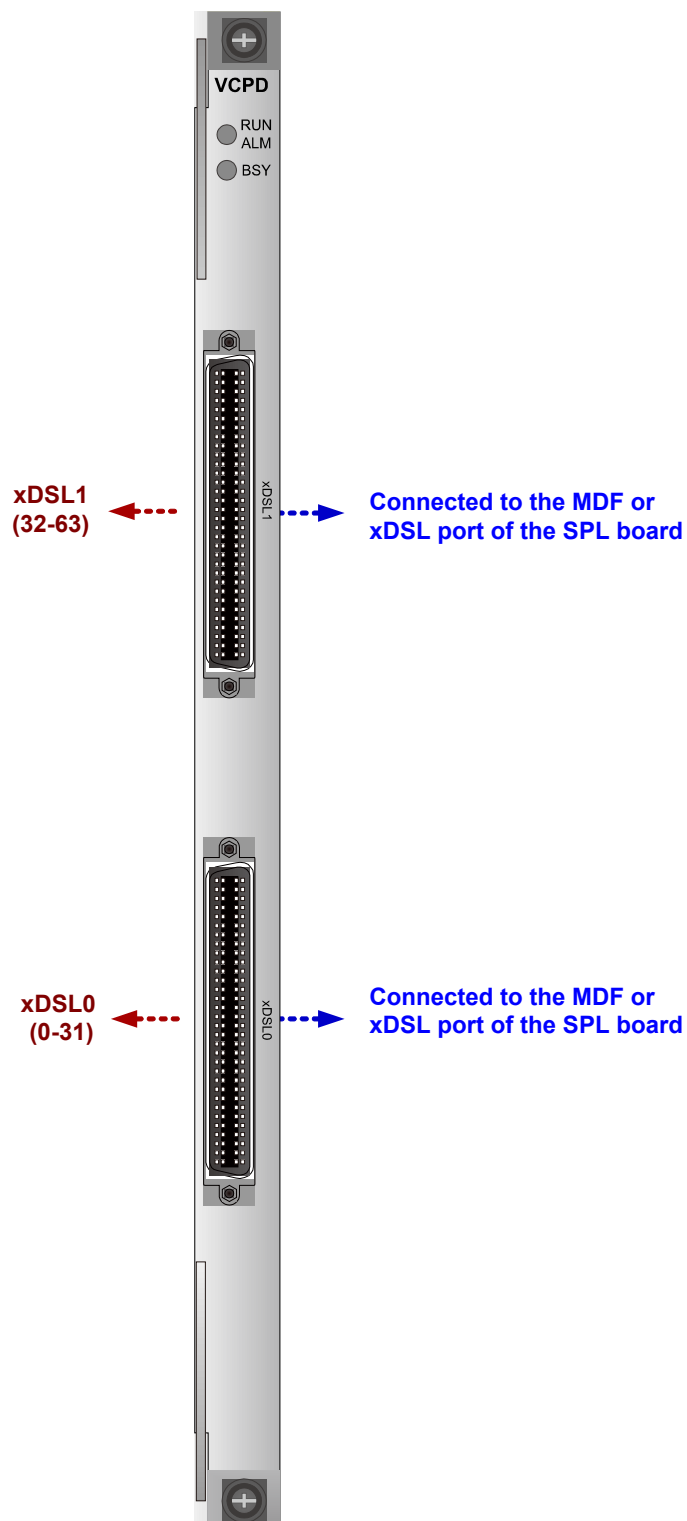
- The control module loads the board software, controls the running of the board, and manages the entire board.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The protection module protects and isolates the board from lightning strikes.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service processing is as follows:

- In the upstream direction, the interface module converts the VDSL2 line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into PTM packets. The forwarding module encapsulates the reassembled PTM packets into IP packets, performs CAR on the IP packets, and then sends the IP packets to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper-level device through the optical or electrical port.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits the PTM packets to the interface module. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line.



## Front Panel Port





## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-139** describes the pin assignments of the xDSL0 port on the front panel of the H80DVCPD board, and **Table 3-140** describes the pin assignments of the xDSL1 port on the front panel of the H80DVCPD board.

**Table 3-139** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-140** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.22.21 H80DVCPE Board Description

H80DVCPE is a 64-port VDSL2 over POTS Service Board with built-in splitter. Using its VDSL2 port, the H80DVCPE board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access services. In addition, it supports vectoring.

#### Feature and Specifications

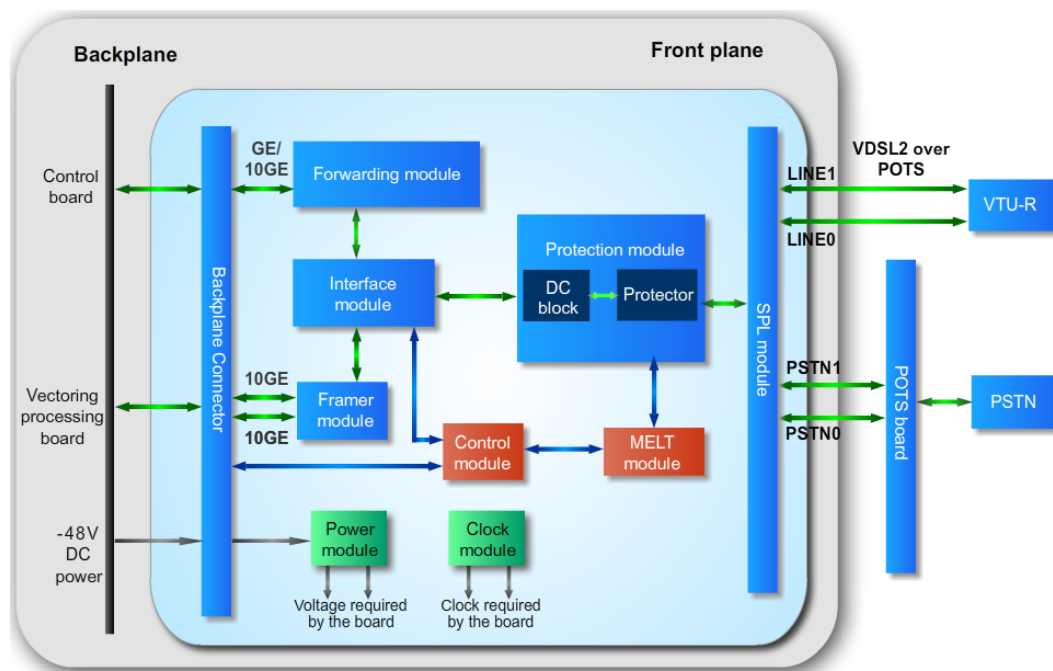
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-133 Working principle of the H80DVCPE board



The basic working principle of the H80DVCPE board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The splitter module separates POTS signals from VDSL2 signals over the subscriber line.
- The interface module provides two functions:
  - In the upstream direction, the interface module converts line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into ATM/PTM packets.
  - In the downstream direction, the interface module converts the ATM/PTM cell flows sent from the forwarding module into line signals that are transmitted downstream.
- The forwarding module processes services. For details, see the description of service processing.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

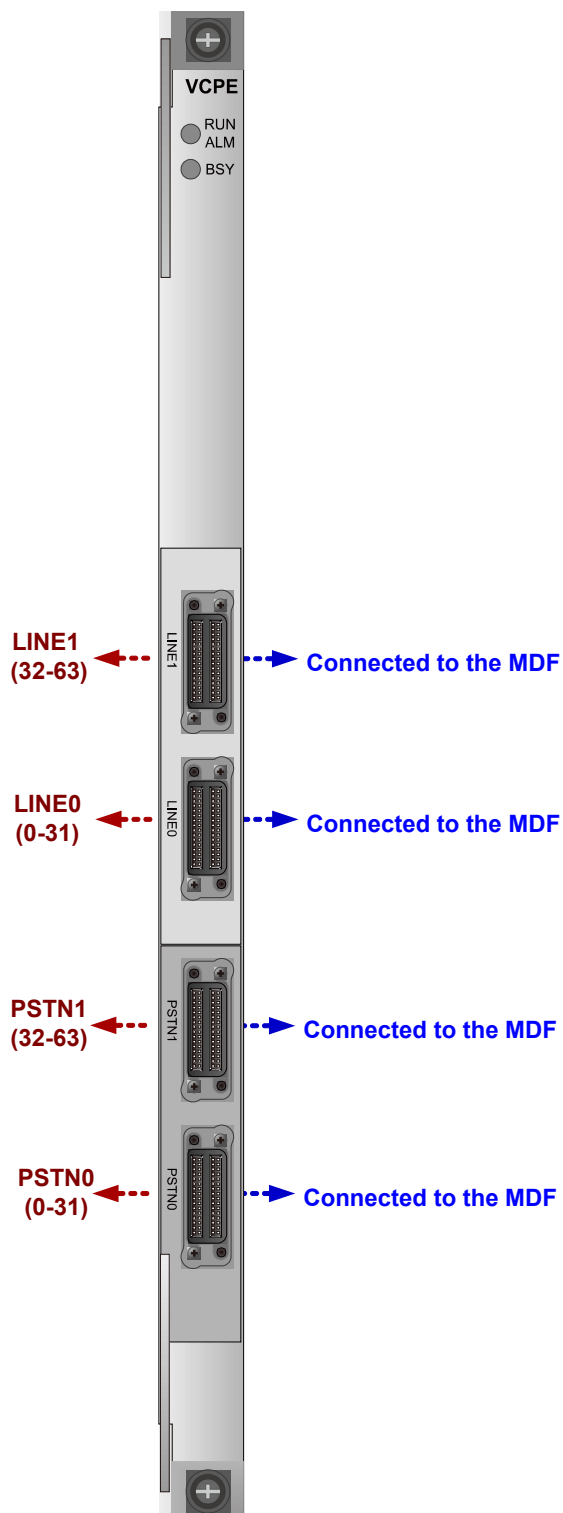
The service processing is as follows:

- In the upstream direction, the splitter module separates LINE signals over the subscriber line into POTS signals and VDSL2 signals, and then the interface module transmits these signals to the forwarding module. The forwarding module reassembles the cell flow into

ATM/PTM packets, encapsulates the ATM/PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logic switch, the IP packets are transmitted to the backplane bus through the backplane interface.

- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, perform CAR on the packets, reassembles the packets into ATM/PTM packets, and then transmits the ATM/PTM packets to the interface module. The interface module then converts the ATM/PTM packets into analog signals, and transmits the analog signals to the subscriber line through the splitter module.

## Front Panel Port





## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Indicator

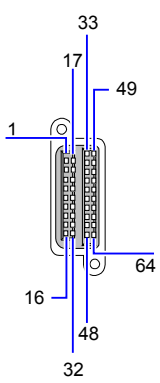
Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

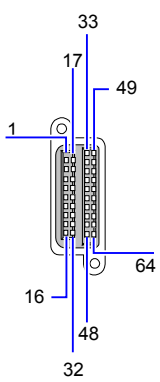
The pin assignments of LINE ports are the same as those of the PSTN ports. [Table 3-141](#) describes the pin assignments of the PSTN0 port, and [Table 3-142](#) describes the pin assignments of the PSTN1 port.



**Table 3-141** Pin assignments of the PSTN0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			52			
5	5	21	13		37	21	53	29
6		22			54			
7	4	23	12		39	20	55	28
8		24			56			
9	3	25	11		41	19	57	27
10		26			58			
11	2	27	10		43	18	59	26
12		28			60			
13	1	29	9		45	17	61	25
14		30			62			
15	0	31	8		47	16	63	24
16		32			64			

**Table 3-142** Pin assignments of the PSTN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			52			
5	37	21	45		37	53	53	61
6		22			54			
7	36	23	44		39	52	55	60
8		24			56			
9	35	25	43		41	51	57	59

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.22.22 H80DVCPM Board Description

H80DVCPM is a 64-port VDSL2 over POTS Service Board. Using its VDSL2 port, the H80DVCPM board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access service. In addition, it supports vectoring.

#### Feature and Specifications

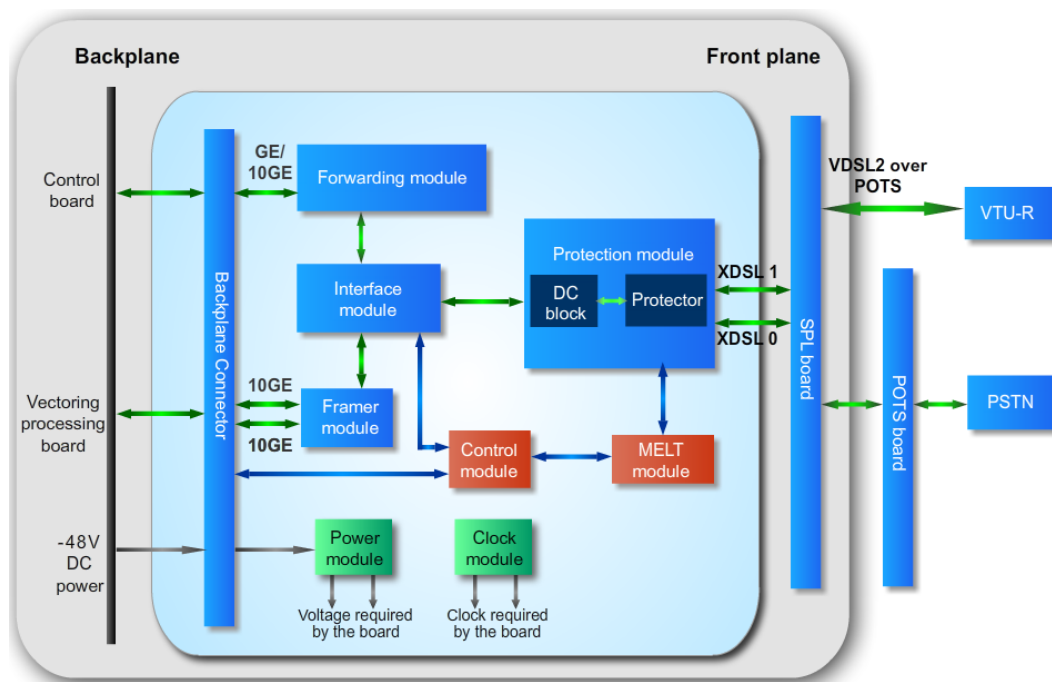
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

#### Working Principle

Figure 3-134 Working principle of the H80DVCPM board



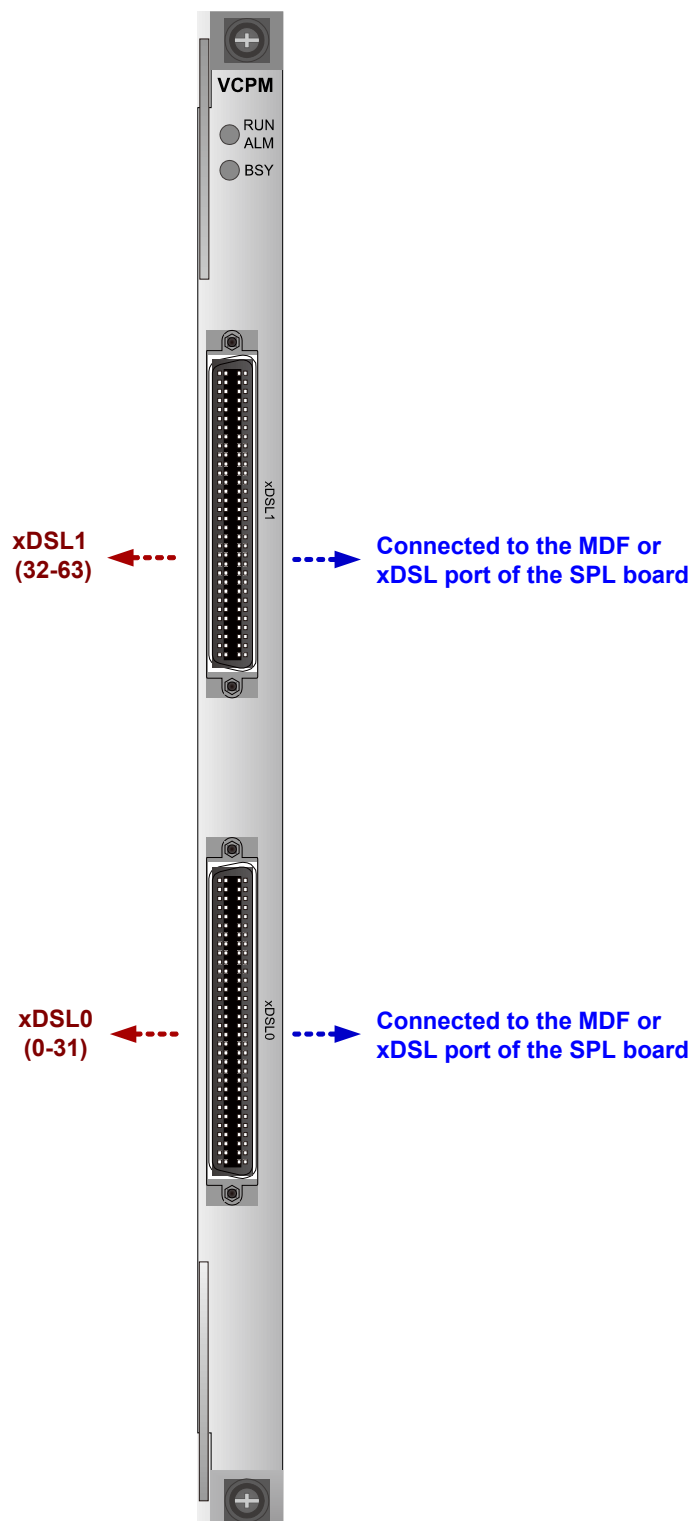
The basic working principle of the H80DVCPM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The interface module provides the ports for information exchange.
- The protection module protects and isolates the board from lightning strikes.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service processing is as follows:

- In the upstream direction, the interface module converts the VDSL2 line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into PTM packets. The forwarding module encapsulates the reassembled PTM packets into IP packets, performs CAR on the IP packets, and then sends the IP packets to the backplane bus through the backplane port and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper-level device through the optical or electrical port.
- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into PTM packets, and then transmits the PTM packets to the interface module. The interface module then converts the PTM packets into analog signals, and transmits the analog signals over the subscriber line.

## Front Panel Port





## NOTICE

The device supports protection specification 1500 V (the basic standard is ITU-T K.20). If the device is placed in the scenario where the supported protection specification is higher than 1500 V, a protective unit needs to be configured on the MDF.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

[Table 3-143](#) describes the pin assignments of the xDSL0 port on the front panel of the H80DVCPM board, and [Table 3-144](#) describes the pin assignments of the xDSL1 port on the front panel of the H80DVCPM board.

**Table 3-143** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-144** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.22.23 H80DSDPM Board Description

H80DSDPM is a 64-port VDSL2 over POTS service board. Using its VDSL2 port, the H80DSDPM board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access services. In addition, it supports SuperVector and MELT.

#### Feature and Specifications

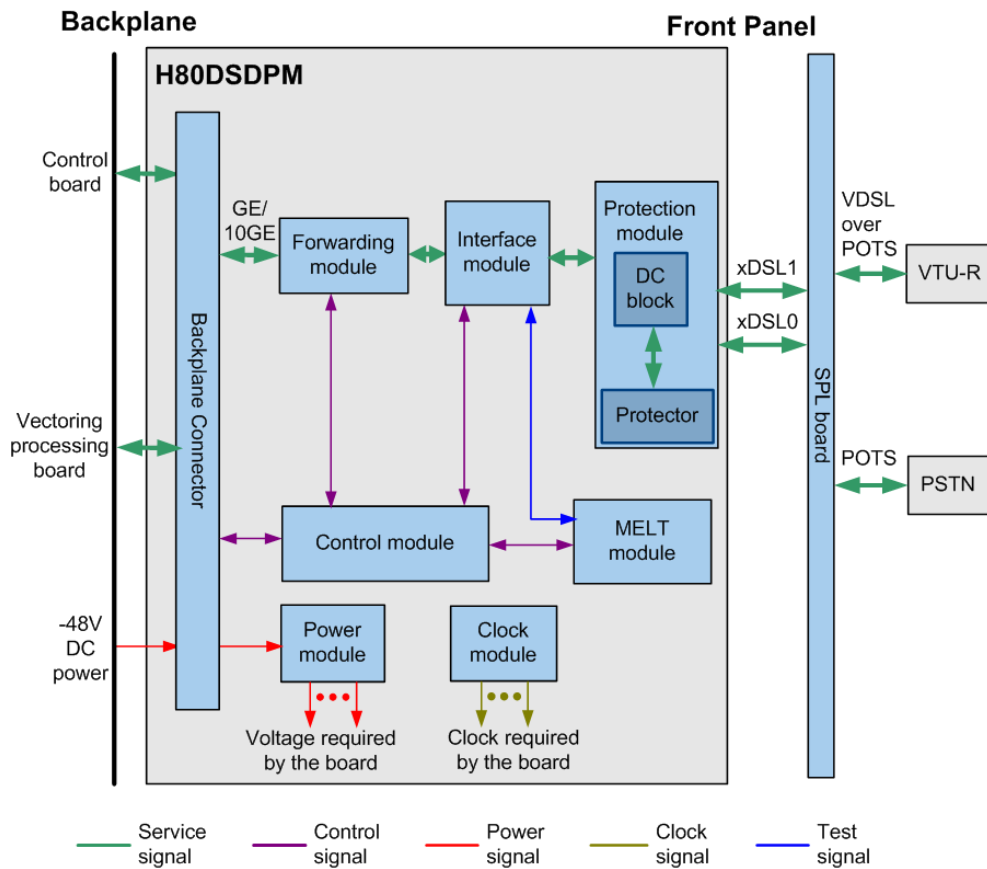
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-135 Working principle of the H80DSDPM board



The basic working principle of the H80DSDPM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module converts between the ATM/PTM service and the IP service, and also supports flow control and scheduling.
- The framer module forwards vectoring data.
- The interface module provides the ports for information exchange.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

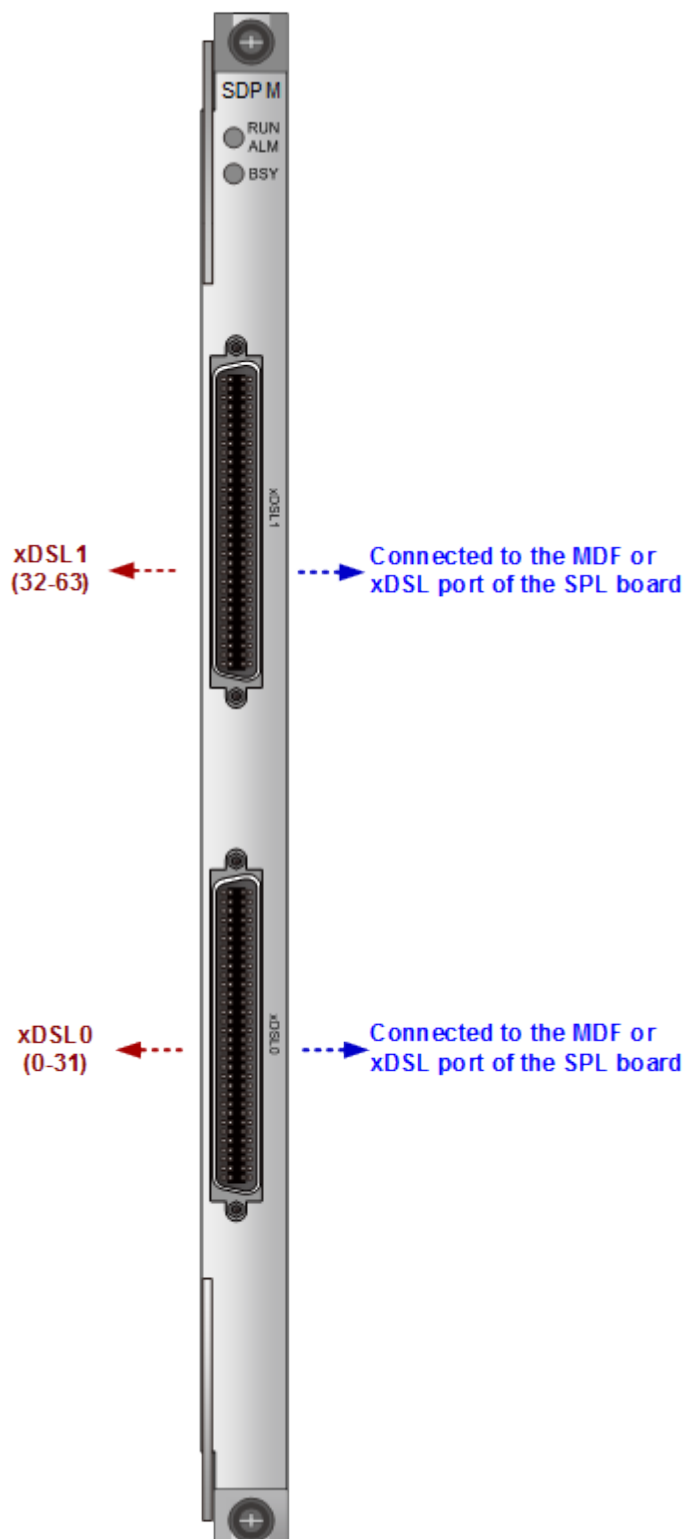
- In the upstream direction, the interface module converts the VDSL2 signals into a cell flow, aggregates the flow to the forwarding module, and then reorganizes the cell flow into ATM/PTM packets. The forwarding module encapsulates the reorganized ATM/PTM packets and performs CAR on the ATM/PTM packets to convert them into IP packets. The IP packets are transmitted to the backplane bus through the backplane port



and then to the control board. After being processed by the control board, the IP packets are transmitted upstream to the upper level device through the optical or electrical port.

- In the downstream direction, the forwarding logic decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and then transmits the signals to subscriber lines.

## Front Panel Port



## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

For pin assignment of the xDSL0 port, see [Table 3-145](#); For pin assignment of the xDSL1 port, see [Table 3-146](#);

**Table 3-145** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-146** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

### 3.2.2.24 H80BVDQM Board Description

H80BVDQM is a 64-port VDSL2 over ISDN service board. Using its VDSL2 port, the H80BVDQM board works with the VDSL transceiver unit, remote terminal end (VTU-R) to provide 64 channels of VDSL2 access service.

#### Feature and Specifications

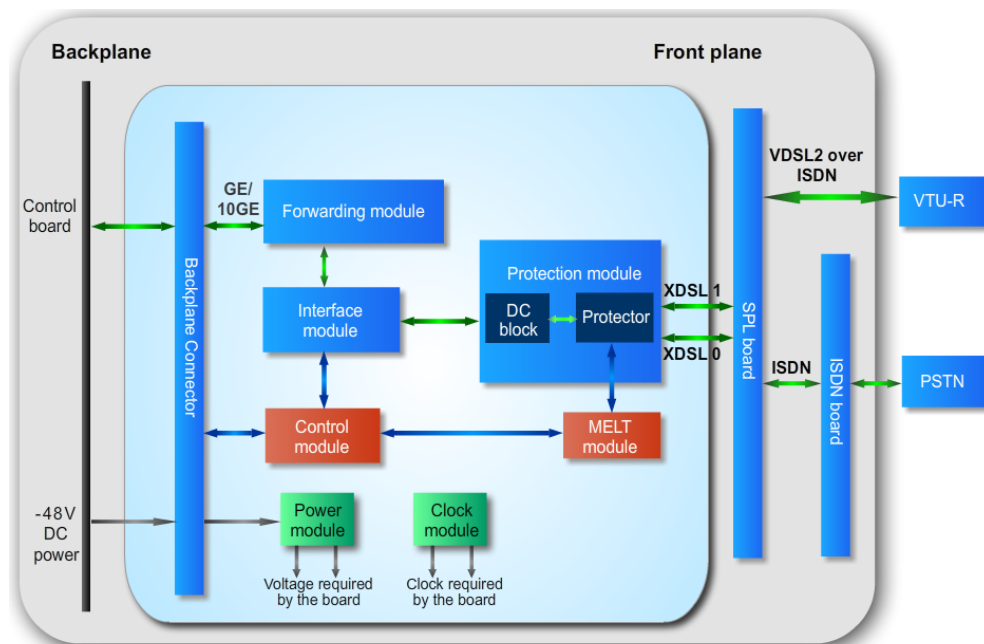
Please refer to "[64-Channel VDSL2 Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-136 Working principle of the H80BVDQM board



The basic working principle of the H80BVDQM board is as follows:

- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The interface module provides two functions:
  - In the upstream direction, the interface module converts line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into ATM/PTM packets.
  - In the downstream direction, the interface module converts the ATM/PTM cell flows sent from the forwarding module into line signals that are transmitted downstream.
- The forwarding module processes services. For details, see the description of service processing.
- The MELT module provides the MELT test function for digital subscriber lines.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

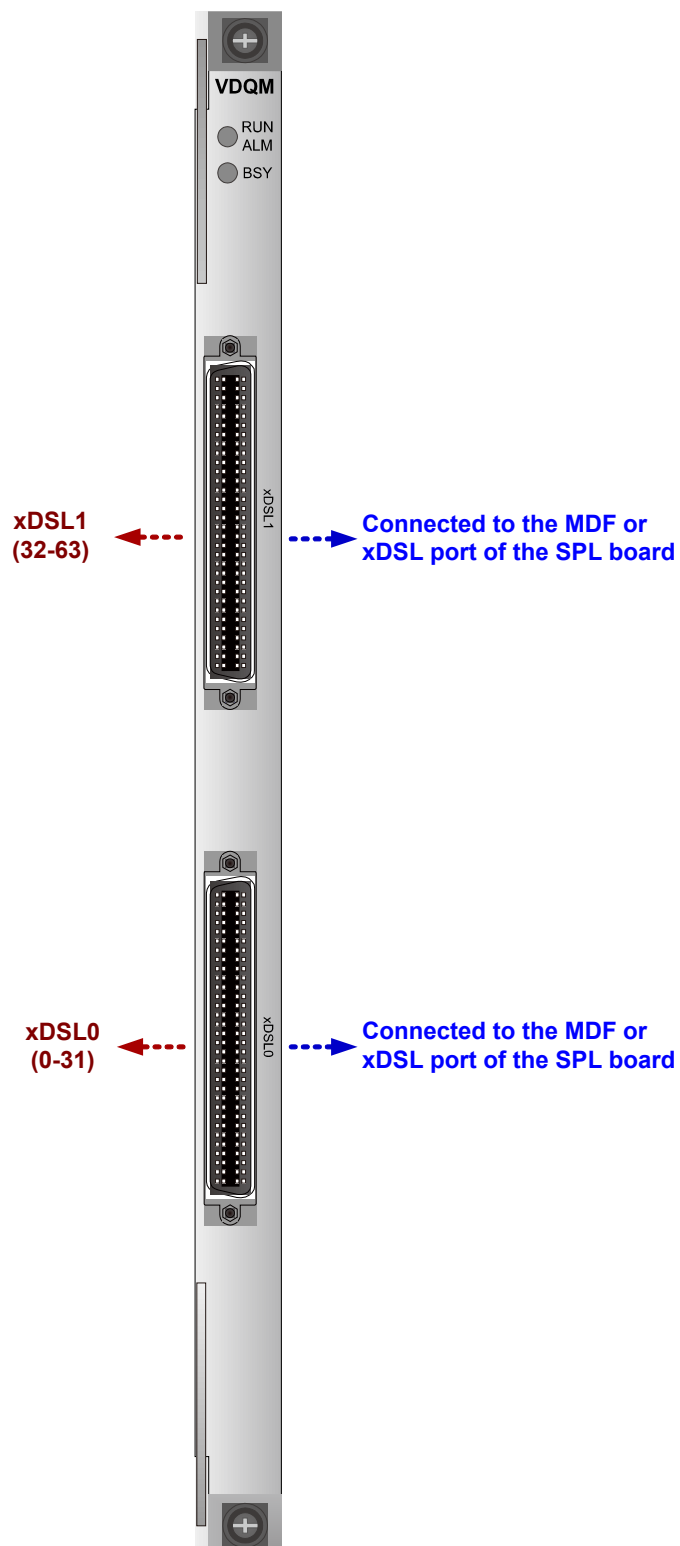
The service processing is as follows:

- In the upstream direction, the interface module converts the VDSL2 line signals into cell flows, aggregates the cell flows to the forwarding module, and then reassembles the cell flows into ATM/PTM packets. The forwarding module encapsulates the reassembled ATM/PTM packets into IP packets, performs CAR on the IP packets, and then sends the IP packets to the backplane bus through the backplane port and then to the control board.

After being processed by the control board, the IP packets are transmitted upstream to the upper-level device through the optical or electrical port.

- In the downstream direction, the forwarding module decapsulates the IP packets sent from the backplane bus, performs CAR on the packets, reassembles the packets into ATM/PTM packets, and then transmits the ATM/PTM packets to the interface module. The interface module then converts the ATM/PTM packets into analog signals, and transmits the analog signals over the subscriber line.

## Front Panel Port







## NOTICE

- When cables from the xDSL ports are routed to an outdoor environment or the user side, the MDF must be installed with a protective unit.

## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

[Table 3-147](#) describes the pin assignments of the xDSL0 port on the front panel of the H80BVDQM board, and [Table 3-148](#) describes the pin assignments of the xDSL1 port on the front panel of the H80BVDQM board.

**Table 3-147** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

**Table 3-148** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	47	48	39		32	48	16	56
63		47			31		15	
62	46	46	38		30	49	14	57
61		45			29		13	
60	45	44	37		28	50	12	58
59		43			27		11	
58	44	42	36		26	51	10	59
57		41			25		9	
56	43	40	35		24	52	8	60
55		39			23		7	
54	42	38	34		22	53	6	61
53		37			21		5	
52	41	36	33		20	54	4	62
51		35			19		3	
50	40	34	32		18	55	2	63
49		33			17		1	

## 3.23 Vectoring Processing Board

The Vectoring processing board provides the Vectoring feature, and it is used to eliminate the signal crosstalk in the VDSL2 system.

### 3.23.1 Mapping Between the Vectoring Processing Board with Other Boards

To implement vectoring, the device needs to be equipped with boards that support this feature.

 **NOTE**

A vectoring board supports vectoring only when this board and VP board use the same R-version board software.

**Table 3-149** Vectoring Hardware

Product	Board Type	Board Name	Remarks	Corresponding Outdoor Cabinet	Terminals
MA5603T	Control board	SCUB SCUN SCUH SCUK	Supports SLV only.	S300/T300/ T500	Vectoring can be implemented on VDSL2 lines only when their connected terminals support vectoring.  Vectoring-supported Huawei terminals include the HG612, HG622, HG630, and HG658. For details about the version of these terminals in supporting vectoring, see the product documents of these terminals.
	Backplane	H802M ABO	None		
	VP board	H806V PEA H806V PEF	Installed in slot 12 fixedly.		

Product	Board Type	Board Name	Remarks	Corresponding Outdoor Cabinet	Terminals
	VDSL2 board	<ul style="list-style-type: none"> <li>● H80 BV CM M</li> <li>● H80 DC CPE</li> <li>● H80 DV CPD</li> <li>● H80 DV CPE</li> <li>● H80 DV CP M</li> <li>● H80 DSD MM</li> </ul>	<ul style="list-style-type: none"> <li>● The H80BVCM M board is a 48-channel VDSL2 over POTS access service board.</li> <li>● The H80DCCPE board is a 64-channel VDSL2&amp;POTS Combo Board with built-in splitter.</li> <li>● The H80DVCPD board is a 64-channel VDSL2 over POTS access service board.</li> <li>● The H80DVCPE board is a 64-channel VDSL2 over POTS access service board, equipped with a built-in splitter.</li> <li>● The H80DVCP M board is a 64-channel VDSL2 over POTS access service board.</li> <li>● H80DSDM: 48-channel</li> </ul>		

Product	Board Type	Board Name	Remarks	Corresponding Outdoor Cabinet	Terminals
			SuperVector access service board.		
<b>MA5600T</b>	<b>Control board</b>	SCUB SCUN SCUH SCUK	Supports SLV only.	N/A	
	<b>Backplane</b>	H802M ABC H803M ABC	None		
	<b>VP board</b>	H806V PGA	Consistently installed in slot 8 and slot 11.		

Product	Board Type	Board Name	Remarks	Corresponding Outdoor Cabinet	Terminals
	VDSL2 board	<ul style="list-style-type: none"> <li>● H80 BV CM M</li> <li>● H80 DC CPE</li> <li>● H80 DV CPD</li> <li>● H80 DV CPE</li> <li>● H80 DV CP M</li> </ul>	<ul style="list-style-type: none"> <li>● The H80BVCM M board is a 48-channel VDSL2 over POTS access service board.</li> <li>● The H80DCCPE board is a 64-channel VDSL2&amp;POTS Combo Board with built-in splitter.</li> <li>● The H80DVCPD board is a 64-channel VDSL2 over POTS access service board.</li> <li>● The H80DVCPE board is a 64-channel VDSL2 over POTS access service board, equipped with a built-in splitter.</li> <li>● The H80DVCP M board is a 64-channel VDSL2 over POTS access service board.</li> </ul>		

Product	Board Type	Board Name	Remarks	Corresponding Outdoor Cabinet	Terminals
<b>MA5623AR</b>	N/A	N/A	The MA5623AR extended subrack can be considered as the extension service board for the main subrack. The main subrack manages the MA5623AR extended subrack in the same way as it manages its service boards. The MA5623AR extended subrack provides the same functions as the VDSL2 board of the main subrack.	N/A	
<b>MA5616</b>	<b>Control board</b>	H831C CUE	Supports SLV and NLV.	S200/S100	
	<b>Daughter board</b>	UP2CA / UP2AA	None		
	<b>Backplane</b>	H831M ABB	None		



Product	Board Type	Board Name	Remarks	Corresponding Outdoor Cabinet	Terminals
	<b>VP board</b>	H836V PBA H836V PDA H836V PME	<ul style="list-style-type: none"> <li>● H836VPBA/H836VPME : A daughter board for SLV; attached to the power board.</li> <li>● H836VPDA: A daughter board for NLV; attached to the power board. It only can be used together with H83BVCM M, H83BVCLE or H83BVCLF board for vectoring.</li> </ul>		

Product	Board Type	Board Name	Remarks	Corresponding Outdoor Cabinet	Terminals
	<b>VDSL2 board</b>	H83BV CMM H83DV CMM H83BV CLE H83BV CLF H83DC CME H83DS DMM	<ul style="list-style-type: none"> <li>● H83BVCM M/ H83DVCM M: 48-channel VDSL2 access service board.</li> <li>● H83BVCLE / H83BVCLF: 32-channel VDSL2 access service board.</li> <li>● H83DCCM E: 48-channel VDSL2&amp;PO TS combo board.</li> <li>● H83DSDM M: 48-channel SuperVector access service board.</li> </ul>		
	<b>Power board</b>	H831P AVDA H832P DVAA H832P DNAA H832P DMSB	<ul style="list-style-type: none"> <li>● H831PAVD A: An AC power board for SLV.</li> <li>● H832PDVA A: A DC power board for SLV.</li> <li>● H832PDNA A: A DC power board for NLV.</li> <li>● H832PDMS B: A DC power board for SLV.</li> </ul>		

Product	Board Type	Board Name	Remarks	Corresponding Outdoor Cabinet	Terminals
MA5622A	Control board	HS22C CVB	Supports SLV only.	N/A	
MA5623A	Control board	HS22C CVW	Supports SLV only.	N/A	
MA5611S	Integrated device	N/A	Supports SLV only.	N/A	
MA5811S	Integrated device	N/A	Supports G.fast Vectoring.	N/A	

**Table 3-150** SuperVector Hardware

Product	Board Type	Board Name	Remarks
MA5603T	Control board	SCUB SCUN SCUK	SCUN is recommended.
	Backplane	H802MABO	None
	VP board	H806VPEF	Installed in slot 12 fixedly.
	SuperVector board	H80DSDMM	A 48-channel SuperVector access service board.
		H80DSDPM	A 64-channel SuperVector access service board.
		H80DCSPE	A 64-channel SuperVector access service board.

### 3.23.2 H806VPEA Board Description

The H806VPEA board is a vectoring centralized processing board, and it works with the vectoring-supporting VDSL2 board to achieve vectoring on the MA5603T. It provides the clock source for the system and supports functions such as input and output of alarm digital parameters.

#### Functional Specifications

The H806VPEA board supports the following functions and features:

- Seven inputs of alarm digital parameters and one output of digital controlling parameters
- Two inputs of 2 Mbit/s or 2 MHz BITS clock signals

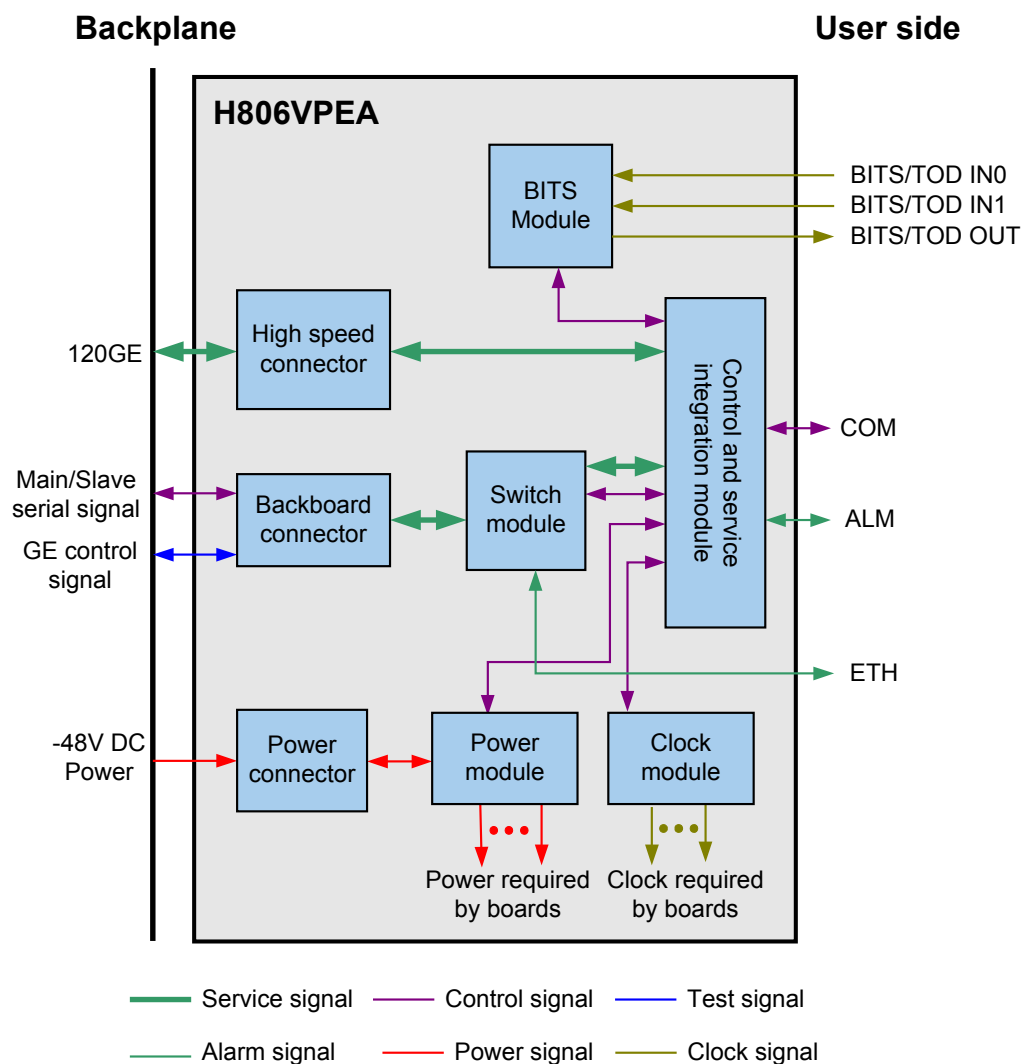
- Two inputs of 1 PPS+TOD time signals
- One output of 2 Mbit/s or 2 MHz clock signals
- The control board pass-through RS-485 monitoring serial port, and providing environmental monitoring channel with the main control board
- External monitoring Ethernet port to transparently transmit monitored data
- Automatic power shutdown in case of a high temperature (only supported by H802SCUN)
- Working with the H802MABO backplane and installed in the GPIO slot of the subrack.
- G.993.5

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principles

Figure 3-137 Working principles of the H806VPEA board



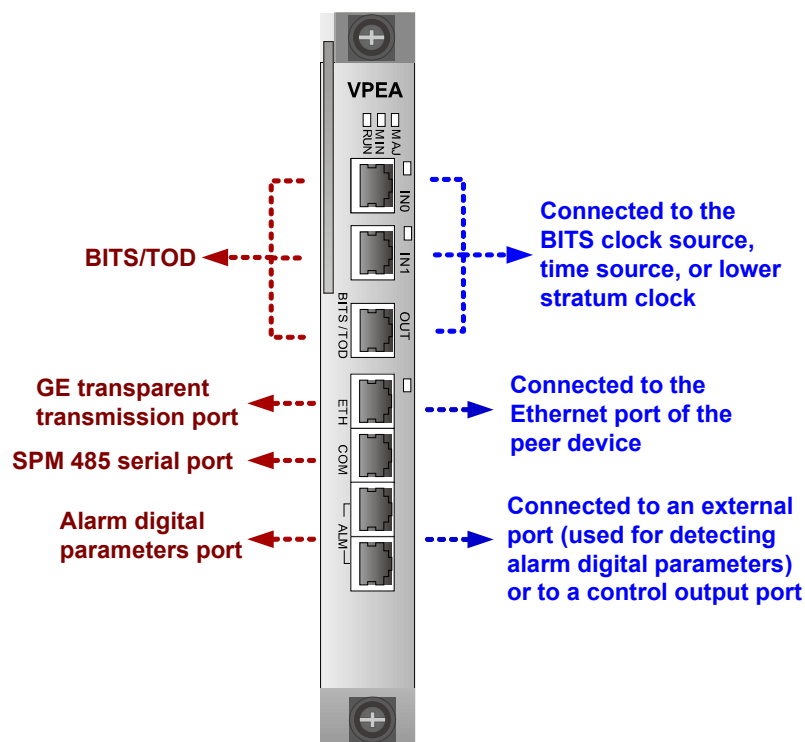
The basic working principles of the H806VPEA board are as follows:

- The control and service integration module, including the service processor and peripheral memory, manages the H806VPEA board and service boards, communicates with the SPM subrack through a serial port, calculates the link signal compensation for service boards, achieves the energy-saving control, detects the slot information and types of service boards, performs the clock frequency-dividing detection, and records the restart information.
- The switching module provides four GE ports, for the interconnection between the main control board, control and service integration module, monitoring network port.
- The BITS clock daughter board recovers the 2 Mbit/s clock signals or shapes the 2 MHz clock signals, which can function as the system clock source.
- The power module supplies power to other function modules of the board.
- The clock module provides the working clock for other function modules of the board.

The service process of the H806VPEA board is as follows:

The H806VPEA board provides 120GE bus signals, and sends these signals to each service board in a star topology (20GE signals for each service board). This method enables the H806VPEA board to calculate the link signal compensation for each service board.

## Front Panel Port



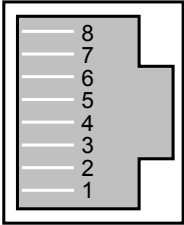
## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
MAJ	Alarm indicators	Red	On	The system has generated a major alarm
MIN	Alarm indicators	Red	On	The system has generated a minor alarm
IN0,IN1	IN0 indicator, IN1 indicator	Green	On	The signals are correct
		-	Off	There are no signals or the signals are incorrect
ETH	ETH indicator	Green	On	The link is normal
		Green	Blinking	Data is being transmitted
		-	Off	The link is abnormal or no data is being transmitted over the link

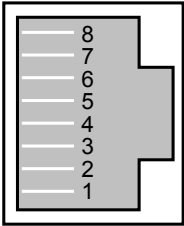
## Pin Assignment

[Table 3-151](#), [Table 3-152](#), [Table 3-153](#), [Table 3-154](#), [Table 3-155](#), [Table 3-156](#) and [Table 3-157](#) show the pin assignments of the BITS/TOD IN0 port, BITS/TOD IN1 port, BITS/TOD OUT port, ETH port, COM port, ALM port (upper) and ALM port (lower) on the front panel of the H806VPEA board.

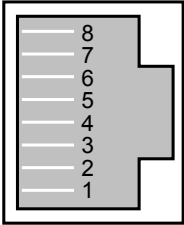
**Table 3-151** Pin assignments of the BITS/TOD IN0 port

Port	Pin	Signal	Remarks
	1	BITS0_IN_B	Input B of channel 0 BITS clock signals
	2	BITS0_IN_A	Input A of channel 0 BITS clock signals
	3	PPS0_IN-	Negative polarity of channel 0 PPS time signals
	4	TOD0_IN-	Negative polarity of channel 0 TOD time signals
	5	TOD0_IN+	Positive polarity of channel 0 TOD time signals
	6	PPS0_IN+	Positive polarity of channel 0 PPS time signals
	7	-	-
	8	GND	Grounding

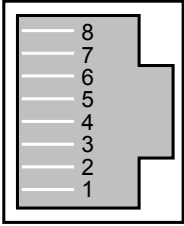
**Table 3-152** Pin assignments of the BITS/TOD IN1 port

Port	Pin	Signal	Remarks
	1	BITS1_IN_B	Input B of channel 1 BITS clock signals
	2	BITS1_IN_A	Input A of channel 1 BITS clock signals
	3	PPS1_IN-	Negative polarity of channel 1 PPS time signals
	4	TOD1_IN-	Negative polarity of channel 1 TOD time signals
	5	TOD1_IN+	Positive polarity of channel 1 TOD time signals
	6	PPS1_IN+	Positive polarity of channel 1 PPS time signals
	7	-	-
	8	GND	Grounding

**Table 3-153** Pin assignments of the BITS OUT port

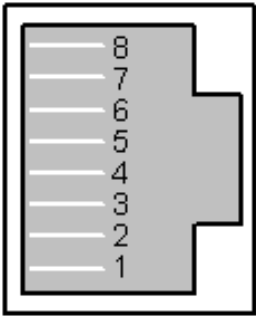
Port	Pin	Signal	Remarks
	1	TOD_OUT-	Negative polarity of the TOD time signals output
	2	TOD_OUT+	Positive polarity of the TOD time signals output
	3	PPS_OUT-	Negative polarity of the PPS time signals output
	4	BITS_OUT_B	Output B of the BITS clock signals
	5	BITS_OUT_A	Output A of the BITS clock signals
	6	PPS_OUT+	Positive polarity of the PPS time signals output
	7	GND	Grounding
	8	-	-

**Table 3-154** Pin assignment of the ETH port

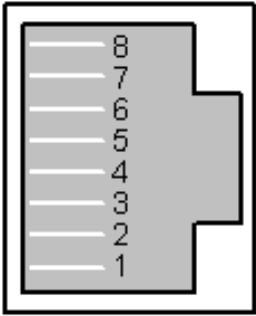
Port	Pin	Signal	Remarks
	1	GE1_MDI_T0+	GE electrical port
	2	GE1_MDI_T0-	
	3	GE1_MDI_T1+	
	4	GE1_MDI_T2+	
	5	GE1_MDI_T2-	
	6	GE1_MDI_T1-	
	7	GE1_MDI_T3+	
	8	GE1_MDI_T3-	



**Table 3-155** Pin assignment of the COM port

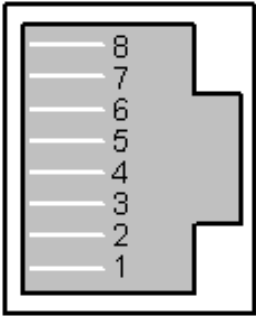
Port	Pin	Signal	Remarks
	1	B_SPM_485_TX+	485 serial port on the control board
	2	B_SPM_485_TX-	485 serial port on the control board
	3	B_SPM_485_RX+	485 serial port on the control board
	4	-	-
	5	-	-
	6	B_SPM_485_RX-	485 serial port on the control board
	7	-	-
	8	-	-

**Table 3-156** Pin assignment of the ALM port (upper)

Port	Pin	Signal	Remarks
	1	ALM_IN0_+	Positive polarity of channel 0 alarm digital parameter signals
	2	ALM_IN0_-	Negative polarity of channel 0 alarm digital parameter signals
	3	ALM_IN1_+	Positive polarity of channel 1 alarm digital parameter signals
	4	ALM_IN2_+	Positive polarity of channel 2 alarm digital parameter signals
	5	ALM_IN2_-	Negative polarity of channel 2 alarm digital parameter signals
	6	ALM_IN1_-	Negative polarity of channel 1 alarm digital parameter signals
	7	ALM_IN3_+	Positive polarity of channel 3 alarm digital parameter signals

Port	Pin	Signal	Remarks
	8	ALM_IN3_-	Negative polarity of channel 3 alarm digital parameter signals

**Table 3-157** Pin assignment of the ALM port (lower)

Port	Pin	Signal	Remarks
	1	ALM_IN4_+	Positive polarity of channel 4 alarm digital parameter signals
	2	ALM_IN4_-	Negative polarity of channel 4 alarm digital parameter signals
	3	ALM_IN5_+	Positive polarity of channel 5 alarm digital parameter signals
	4	ALM_IN6_+	Positive polarity of channel 6 alarm digital parameter signals
	5	ALM_IN6_-	Negative polarity of channel 6 alarm digital parameter signals
	6	ALM_IN5_-	Negative polarity of channel 5 alarm digital parameter signals
	7	ALM_OUT_+	Positive polarity of alarm signal control output
	8	ALM_OUT_-	Negative polarity of alarm signal control output

**NOTE**

The "upper" and "lower" in [Table 3-156](#) and [Table 3-157](#) refer to the physical location of ALM ports on the front panel of the H806VPEA board.

### 3.23.3 H806VPEF Board Description

The H806VPEF board is a SuperVector centralized processing board, Being used on the MA5603T,it works with the vectoring-supporting VDSL2 board to achieve 17a Vectoring,works with the SuperVector-supporting VDSL2 board to achieve 35b SuperVector function. It provides the clock source for the system and supports functions such as input and output of alarm digital parameters.

## Functional Specifications

The H806VPEF board supports the following functions and features:

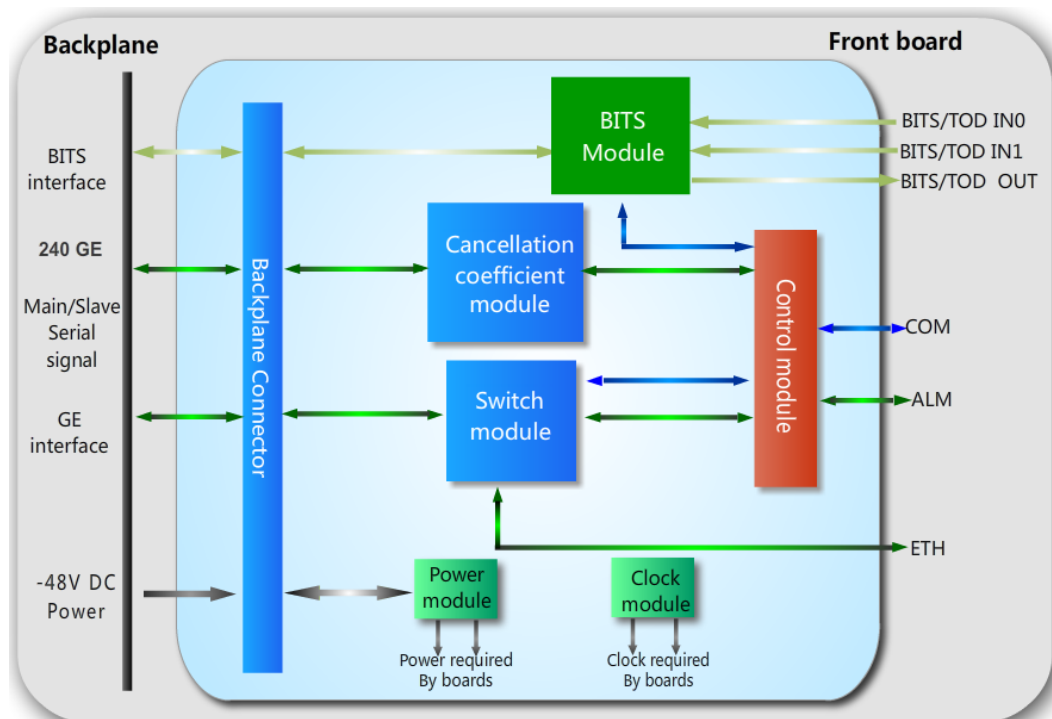
- Seven inputs of alarm digital parameters and one output of digital controlling parameters
- Two inputs of 2 Mbit/s or 2 MHz BITS clock signals
- Two inputs of 1 PPS+TOD time signals
- One output of 2 Mbit/s or 2 MHz clock signals
- The control board pass-through RS-485 monitoring serial port, and providing environmental monitoring channel with the main control board
- External monitoring Ethernet port to transparently transmit monitored data
- Automatic power shutdown in case of a high temperature (supported by H802SCUN and H801SCUK)
- Working with the H802MABO backplane and installed in the GPIO slot of the subrack.
- G.993.5

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principles

Figure 3-138 Working principles of the H806VPEF board

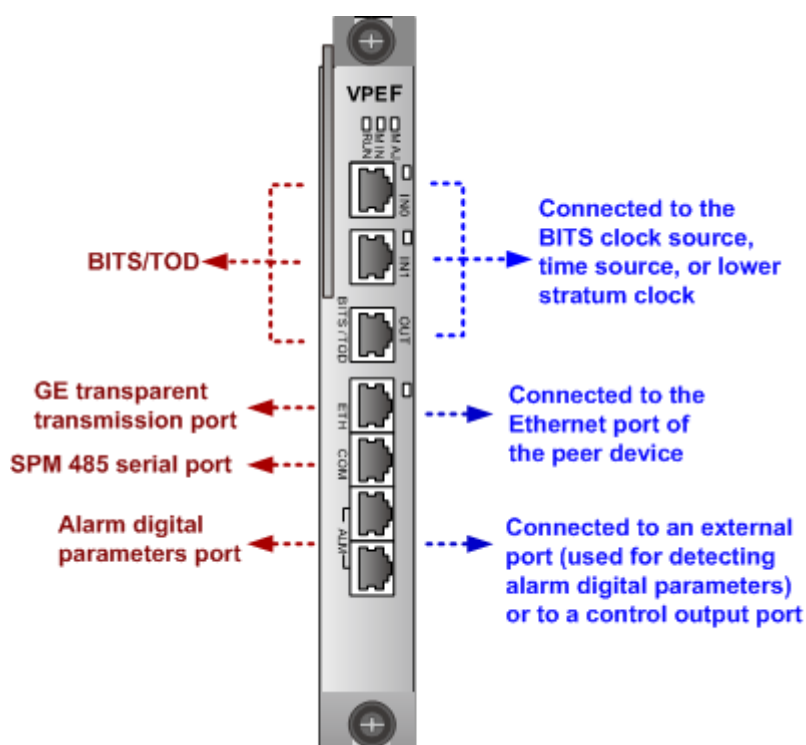


The basic working principles of the H806VPEF board are as follows:

- The control module controls the board operating status.
- The switching module processes signals on the GE interface.
- The panel provides the BITS, clock, and GE interfaces.
- The BITS module receives, transmits, and shapes BTIS signals.
- The power module supplies power to other function modules of the board
- The clock module provides the working clock for other function modules of the board

The H806VPEF board processes services as follows: The H806VPEF board sends 240 channels of GE bus signals to service boards. Each service board processes 40 channels of GE services, and implements the crosstalk calculation function.

## Front Panel Port



## Indicator

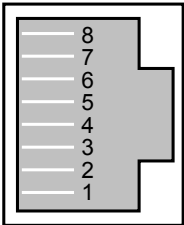
Indicator	Name	Color	Status	Meaning
RUN	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up

Indicator	Name	Color	Status	Meaning
		Orange	Blinking (on for 0.25 s and off for 0.25 s repeatedly)	A high-temperature alarm is generated
		Red	On	The board is faulty
MAJ	Alarm indicators	Red	On	The system has generated a major alarm
MIN	Alarm indicators	Red	On	The system has generated a minor alarm
IN0,IN1	IN0 indicator, IN1 indicator	Green	On	The signals are correct
		-	Off	There are no signals or the signals are incorrect
ETH	ETH indicator	Green	On	The port has a connection set up
		Green	Blinking	Data is being transmitted
		-	Off	The port has no connection or no data is being transmitted over the link

## Pin Assignment

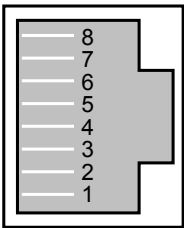
[Table 3-158](#), [Table 3-159](#), [Table 3-160](#), [Table 3-161](#), [Table 3-162](#), [Table 3-163](#) and [Table 3-164](#) show the pin assignments of the BITS/TOD IN0 port, BITS/TOD IN1 port, BITS/TOD OUT port, ETH port, COM port, ALM port (upper) and ALM port (lower) on the front panel of the H806VPEF board.

**Table 3-158** Pin assignments of the BITS/TOD IN0 port

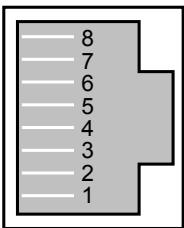
Port	Pin	Signal	Remarks
	1	BITS0_IN_B	Input B of channel 0 BITS clock signals
	2	BITS0_IN_A	Input A of channel 0 BITS clock signals
	3	PPS0_IN-	Negative polarity of channel 0 PPS time signals
	4	TOD0_IN-	Negative polarity of channel 0 TOD time signals
	5	TOD0_IN+	Positive polarity of channel 0 TOD time signals

Port	Pin	Signal	Remarks
	6	PPS0_IN+	Positive polarity of channel 0 PPS time signals
	7	-	-
	8	GND	Grounding

**Table 3-159** Pin assignments of the BITS/TOD IN1 port

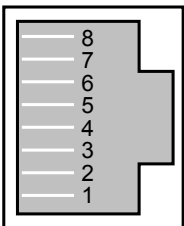
Port	Pin	Signal	Remarks
	1	BITS1_IN_B	Input B of channel 1 BITS clock signals
	2	BITS1_IN_A	Input A of channel 1 BITS clock signals
	3	PPS1_IN-	Negative polarity of channel 1 PPS time signals
	4	TOD1_IN-	Negative polarity of channel 1 TOD time signals
	5	TOD1_IN+	Positive polarity of channel 1 TOD time signals
	6	PPS1_IN+	Positive polarity of channel 1 PPS time signals
	7	-	-
	8	GND	Grounding

**Table 3-160** Pin assignments of the BITS OUT port

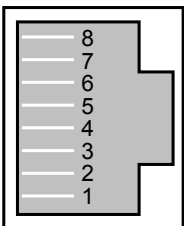
Port	Pin	Signal	Remarks
	1	TOD_OUT-	Negative polarity of the TOD time signals output
	2	TOD_OUT+	Positive polarity of the TOD time signals output
	3	PPS_OUT-	Negative polarity of the PPS time signals output
	4	BITS_OUT_B	Output B of the BITS clock signals
	5	BITS_OUT_A	Output A of the BITS clock signals

Port	Pin	Signal	Remarks
	6	PPS_OUT+	Positive polarity of the PPS time signals output
	7	GND	Grounding
	8	-	-

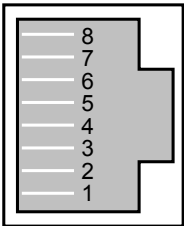
**Table 3-161** Pin assignment of the ETH port

Port	Pin	Signal	Remarks
	1	GE1_MDI_T0+	GE electrical port
	2	GE1_MDI_T0-	
	3	GE1_MDI_T1+	
	4	GE1_MDI_T2+	
	5	GE1_MDI_T2-	
	6	GE1_MDI_T1-	
	7	GE1_MDI_T3+	
	8	GE1_MDI_T3-	

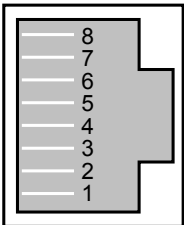
**Table 3-162** Pin assignment of the COM port

Port	Pin	Signal	Remarks
	1	B_SPM_485_T X+	485 serial port on the control board
	2	B_SPM_485_T X-	485 serial port on the control board
	3	B_SPM_485_R X+	485 serial port on the control board
	4	-	-
	5	-	-
	6	B_SPM_485_R X-	485 serial port on the control board
	7	-	-
	8	-	-

**Table 3-163** Pin assignment of the ALM port (upper)

Port	Pin	Signal	Remarks
	1	ALM_IN0_+	Positive polarity of channel 0 alarm digital parameter signals
	2	ALM_IN0_-	Negative polarity of channel 0 alarm digital parameter signals
	3	ALM_IN1_+	Positive polarity of channel 1 alarm digital parameter signals
	4	ALM_IN2_+	Positive polarity of channel 2 alarm digital parameter signals
	5	ALM_IN2_-	Negative polarity of channel 2 alarm digital parameter signals
	6	ALM_IN1_-	Negative polarity of channel 1 alarm digital parameter signals
	7	ALM_IN3_+	Positive polarity of channel 3 alarm digital parameter signals
	8	ALM_IN3_-	Negative polarity of channel 3 alarm digital parameter signals

**Table 3-164** Pin assignment of the ALM port (lower)

Port	Pin	Signal	Remarks
	1	ALM_IN4_+	Positive polarity of channel 4 alarm digital parameter signals
	2	ALM_IN4_-	Negative polarity of channel 4 alarm digital parameter signals
	3	ALM_IN5_+	Positive polarity of channel 5 alarm digital parameter signals
	4	ALM_IN6_+	Positive polarity of channel 6 alarm digital parameter signals
	5	ALM_IN6_-	Negative polarity of channel 6 alarm digital parameter signals
	6	ALM_IN5_-	Negative polarity of channel 5 alarm digital parameter signals
	7	ALM_OUT_+	Positive polarity of alarm signal control output
	8	ALM_OUT_-	Negative polarity of alarm signal control output



 **NOTE**

The "upper" and "lower" in [Table 3-163](#) and [Table 3-164](#) refer to the physical location of ALM ports on the front panel of the H806VPEF board.

## 3.23.4 H806VPGA Board Description

The H806VPGA board is a vectoring centralized processing board, and it works with vectoring-supporting VDSL2 board to achieve vectoring on the MA5600T.

### Functional Specifications

The H806VPGA board supports the following functions and features:

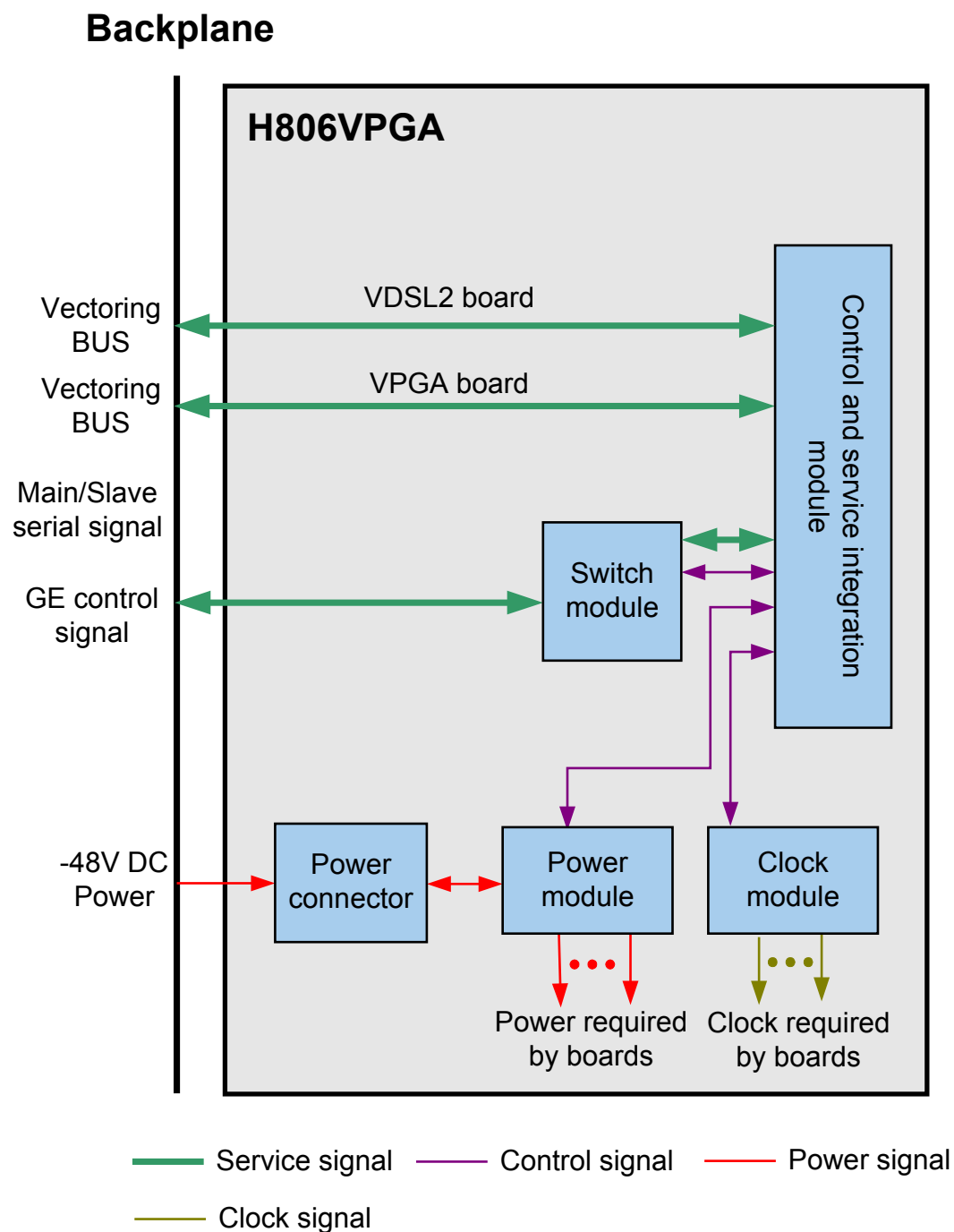
- Automatic power shutdown in case of a high temperature
- Working with the H802MABC and H803MABC backplane and the H806VPGA board can be installed only in slots 8 and 11. When installed in slot 8, the H806VPGA board processes the vectoring services of slots 1-6. When installed in slot 11, the H806VPGA board processes the vectoring services of slots 13-18. Slots 7 and 12 cannot house vectoring service boards but can house other service boards.
- G.993.5

### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principles

Figure 3-139 Working principles of the H806VPGA board



The basic working principles of the H806VPGA board are as follows:

- The control and service integration module, manages the H806VPGA board and service boards, and calculates the link signal compensation for service boards.

- The switching module is used for the interconnection between the main control board, control and service integration module.
- The power module supplies power to other function modules of the board.
- The clock module provides the working clock for other function modules of the board.

The service process of the H806VPGA board is as follows:

- H806VPGA connects with other service boards by vectoring bus, which enables the H806VPGA board to calculate the link signal compensation for each service board.
- H806VPGA interconnects with the other H806VPGA by vectoring bus, which provides link signal compensation for vectoring.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Red	Blinking	The board enters the APP start phase during the board startup
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty

## 3.24 SHDSL Service Board

SHDSL service boards provide SHDSL access services using their broadband ports.

### 3.24.1 SHDSL Service Board Comparison

In the table, "Yes" indicates "supported" and "No" indicates "not supported".

**Table 3-165** Specifications lists of SHDSL service boards

Specifications	H803SHDA	H802SHLB	H80ASHLM	H802SHGM
Wetting current	No	Yes	Yes	Yes
Board Power-off	No	No	Yes	Yes
Temperature Query and High-temperature Alarm	Yes	No	Yes	Yes

Specific ations	H803SHDA	H802SHLB	H80ASHLM	H802SHGM
<b>Bonding</b>	Yes (M Pair bonding)	Yes (M Pair and EFM bonding )	Yes (M Pair, EFM and IMA bonding )	Yes (M Pair and EFM bonding )
<b>MELT</b>	No	No	Yes	Yes
<b>Annex Type</b>	G.991.2 ANNEX A/B(does not support SHDSL.bis)	G.991.2 Annex A/B (contains F/G of SHDSL.bis)	G.991.2 Annex A/B (contains F/G of SHDSL.bis)	G.991.2 Annex A/B (contains F/G of SHDSL.bis)
<b>Matchin g Cable</b>	<b>32-channel subscriber cable (old wire sequence)</b>	<b>32-channel subscriber cable</b>	<b>32-channel subscriber cable</b>	<b>32-channel subscriber cable</b>
<b>SHDSL regenera tors manage ment</b>	No	Yes	Yes	Yes
<b>16-TCPAM/ 32-TCPAM</b>	Yes	Yes	Yes	Yes
<b>Modulati on configur ation</b>	No	Yes(Supports TCPAM16 and TCPAM32)	Yes(Supports TCPAM16 and TCPAM32)	Yes
<b>Connect or</b>	Champ 64-pin	Champ 64-pin	Champ 64-pin	Champ 64-pin

### 3.24.2 H803SHDA Board Description

H803SHDA is a 16-port SHDSL service board. It board works with the SHDSL transceiver unit-remote end (STU-R) to provide 16 channels of SHDSL access services.

#### Functional Specifications

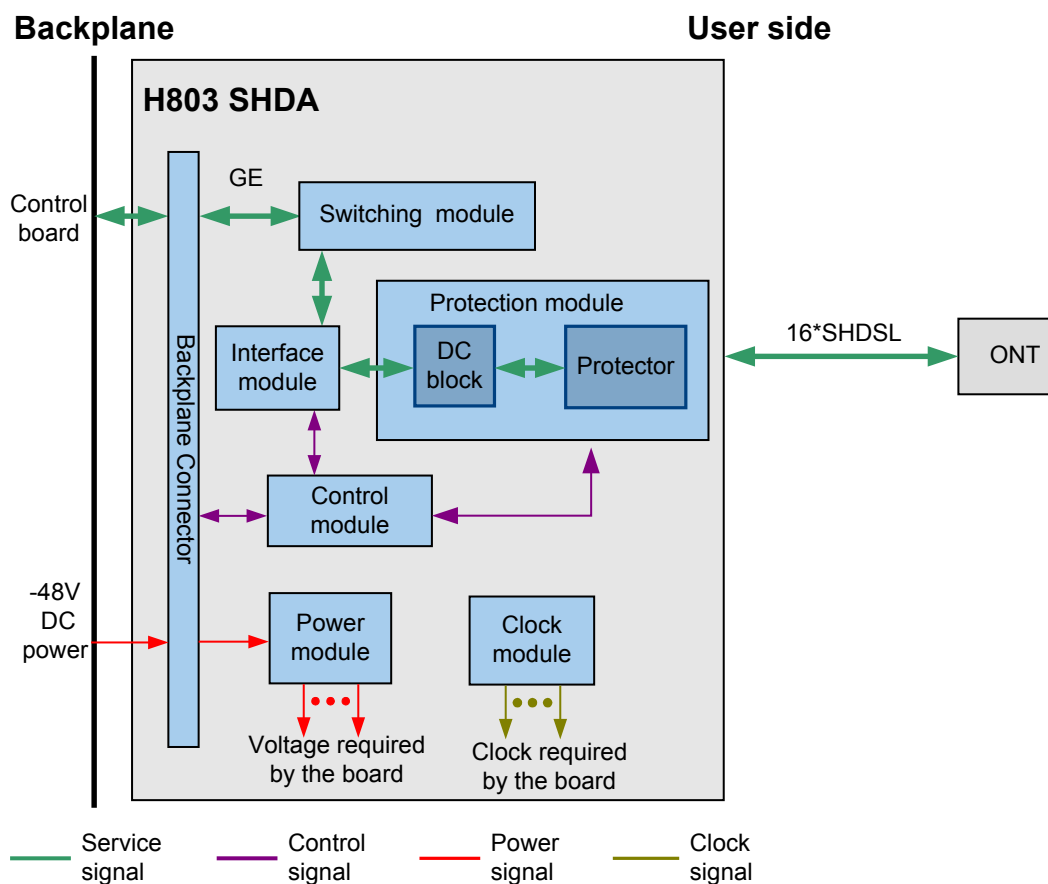
Please refer to "[SHDSL Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-140 Working principle of the H803SHDA board



The basic working principle of the H803SHDA board is as follows:

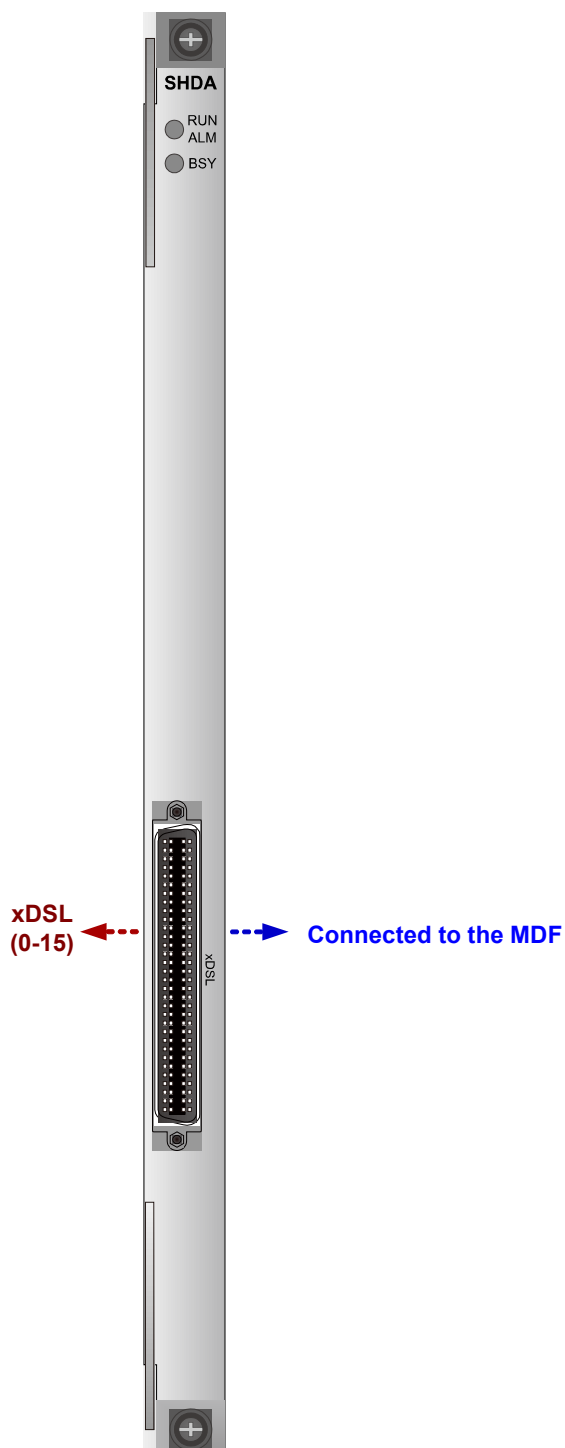
- The control module loads the board software, controls the running of the board, and manages the board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module forwards signals. After being processed by the control module, the signals are then sent to the backplane bus through the backplane connector.
- The interface module inputs, outputs, and converts signals.
- The power module supplies power to other functional modules of the board.
- The clock module provides the working clock for other functional modules of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM/PTM packets, encapsulates the ATM/PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logic switch, the IP packets are transmitted to the backplane bus through the backplane interface.

- In the downstream direction, the forwarding module decapsulates the IP packets that are transmitted from the backplane bus, performs CAR on the packets, reassembles the packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module then converts the ATM/PTM packets into analog signals, and transmits the analog signals over the subscriber line.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-166** describes the pin assignments of the xDSL port on the front panel of the H803SHDA board.



**Table 3-166** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
48	15	40	7		17	-	25	-
16		8			49		57	
47	14	39	6		18	-	26	-
15		7			50		58	
46	13	38	5		19	-	27	-
14		6			51		59	
45	12	37	4		20	-	28	-
13		5			52		60	
44	11	36	3		21	-	29	-
12		4			53		61	
43	10	35	2		22	-	30	-
11		3			54		62	
42	9	34	1		23	-	31	-
10		2			55		63	
41	8	33	0		24	-	32	-
9		1			56		64	

### 3.24.3 H802SHLB Board Description

The H802SHLB is a 16-port SHDSL.bis service board. The SHDSL port cooperates with the SHDSL transceiver unit-remote (STU-R) to provide 16 channels of the SHDSL service.

#### Functional Specifications

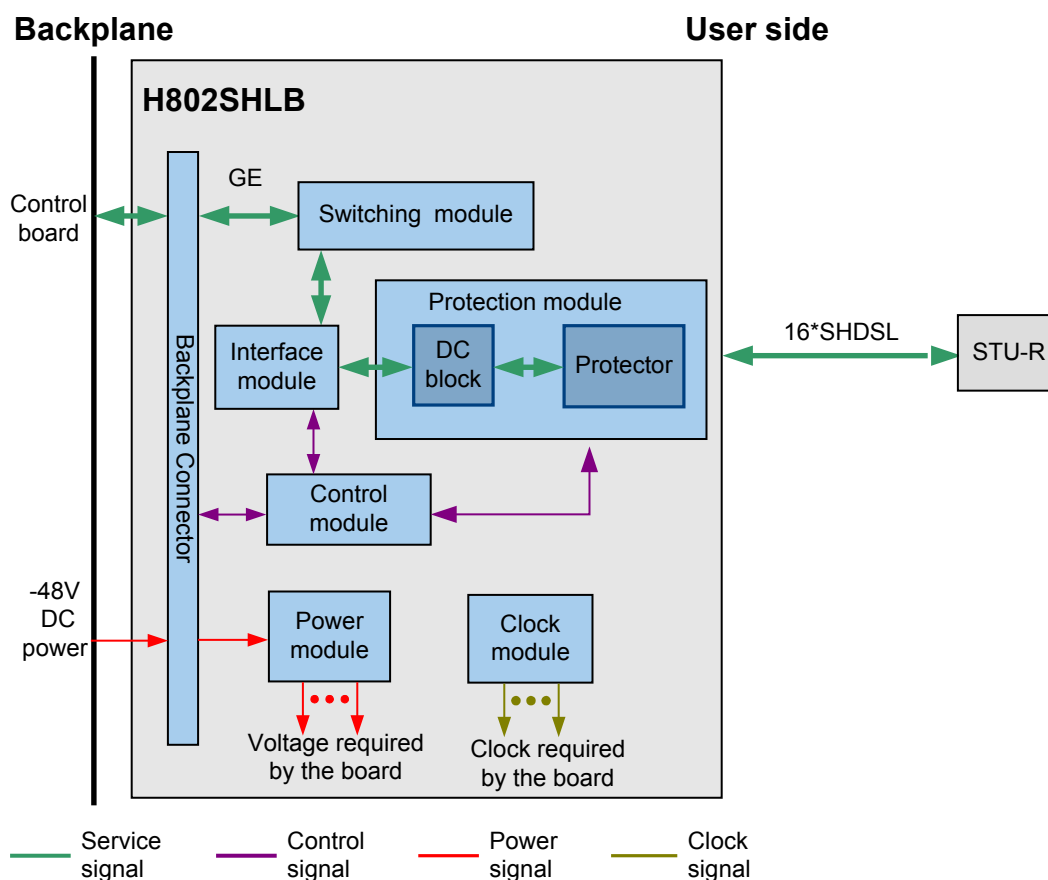
Please refer to "[SHDSL Service Board Comparison](#)".

#### Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-141 Working principle of the H802SHLB board



The basic working principle of the H802SHLB board is as follows:

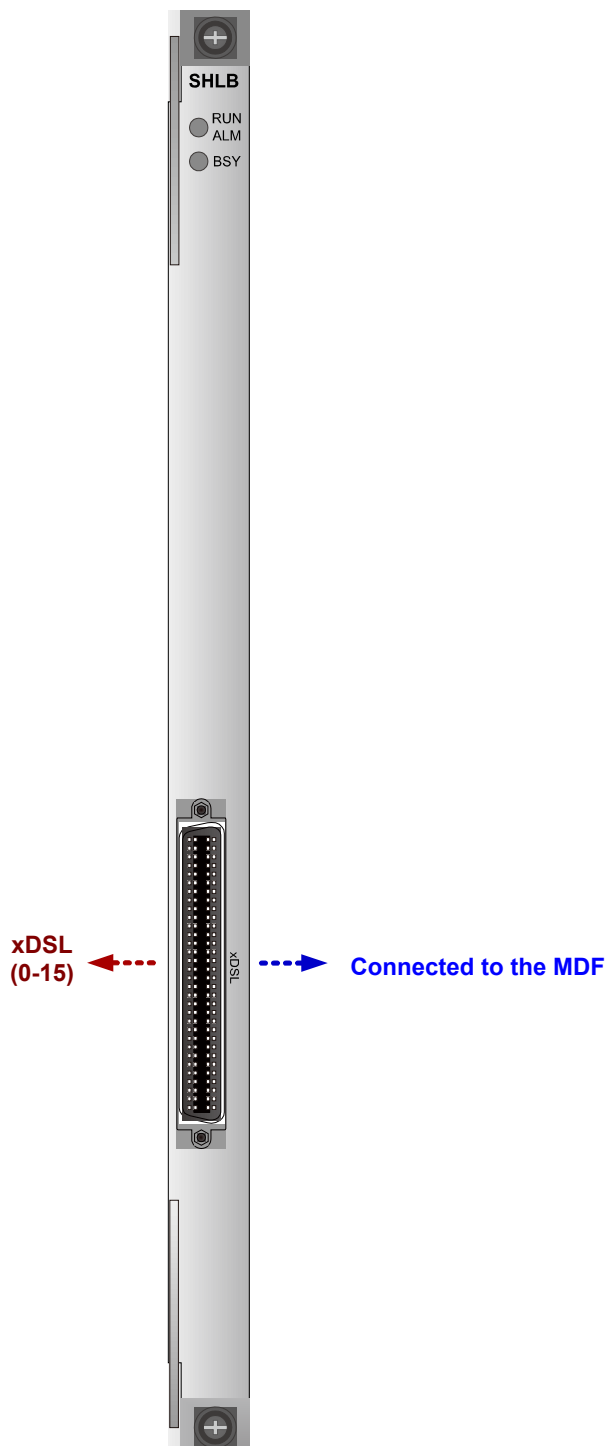
- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module processes the signals. After being processed by the control module, the signals are transmitted to the backplane bus through the interface of the backplane.
- The interface module inputs, outputs, and converts the signals.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM/PTM packets, encapsulates the ATM/PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.

- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-167** describes the pin assignments of the xDSL port on the front panel of the H802SHLB board.

**Table 3-167** Pin assignments of the xDSL port

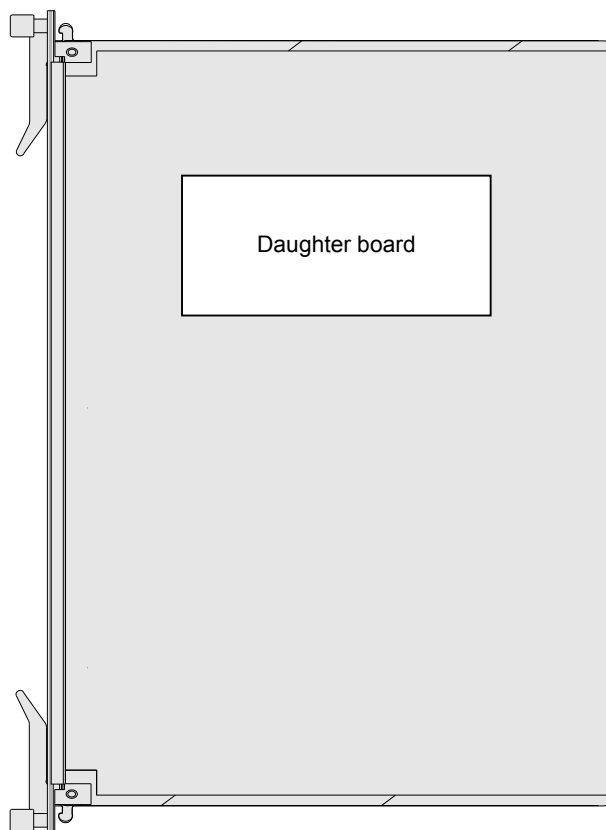
Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	-	16	-
63		47			31		15	
62	14	46	6		30	-	14	-
61		45			29		13	
60	13	44	5		28	-	12	-
59		43			27		11	
58	12	42	4		26	-	10	-
57		41			25		9	
56	11	40	3		24	-	8	-
55		39			23		7	
54	10	38	2		22	-	6	-
53		37			21		5	
52	9	36	1		20	-	4	-
51		35			19		3	
50	8	34	0		18	-	2	-
49		33			17		1	

## Daughter Board

The H802SHLB board provides one daughter board port that can hold one daughter board.

**Figure 3-142** shows the position of the daughter board on the H802SHLB board.

**Figure 3-142** Position of the daughter board on the H802SHLB board



**Table 3-168** describes the daughter board supported by the H802SHLB board.

**Table 3-168** Daughter board supported by the H802SHLB board

Daughter board	Function	Remarks
H806SHUAB	The functional module of logical processing is integrated on the daughter board to support the protocol process and frame format conversion of the service data stream.	Mandatory

### 3.24.4 H80ASHLM Board Description

The H80ASHLM board is a 16-port SHDSL.bis service board. It works with the SHDSL transceiver unit-remote (STU-R) to provide 16-channels of SHDSL services.

#### Functional Specifications

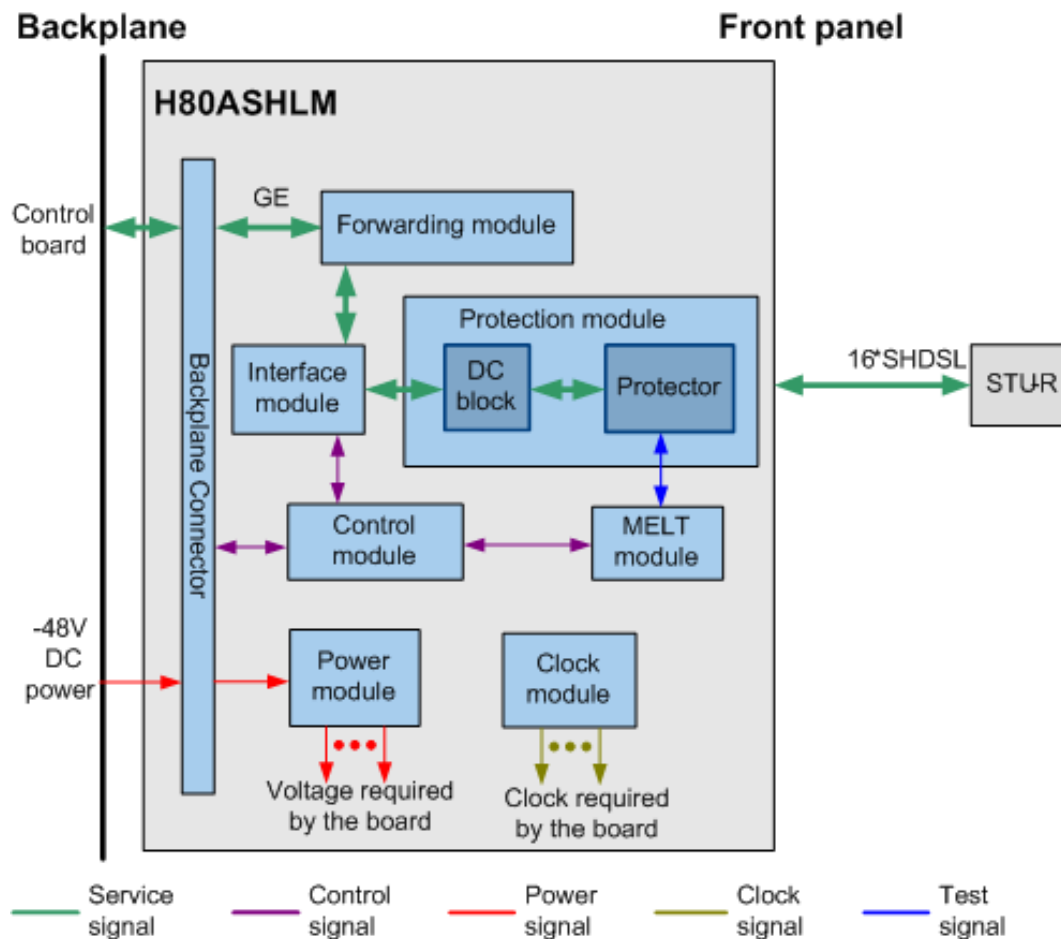
Please refer to "[SHDSL Service Board Comparison](#)".

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-143 Working principle of the H80ASHLM board



The basic working principle of the H80ASHLM board is as follows:

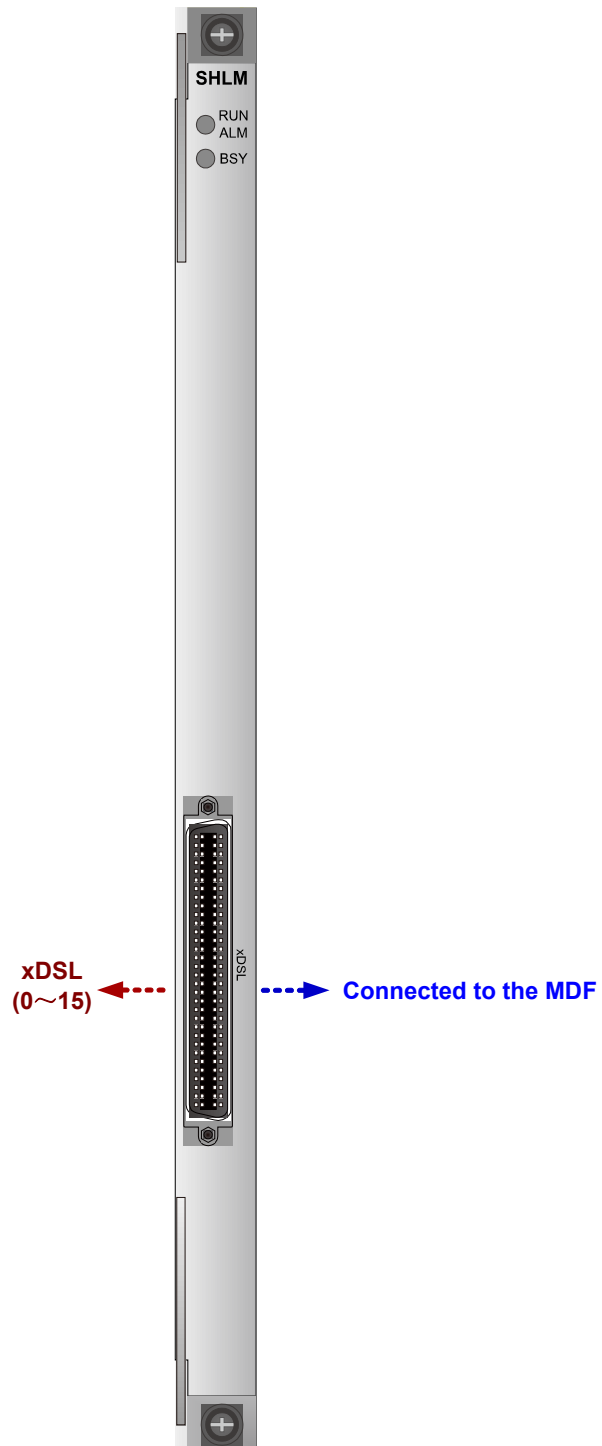
- The control module loads the board software, controls the running of the board, and manages the entire board.
- The forwarding module processes the signals. After being processed by the control module, the signals are transmitted to the backplane bus through the interface of the backplane.
- The interface module inputs, outputs, and converts the signals.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.
- The MELT module provides the MELT test function for digital subscriber lines.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM/PTM packets, encapsulates the ATM/PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and transmits the signals to subscriber lines.



## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

[Table 3-169](#) describes the pin assignments of the xDSL port on the front panel of the H80ASHLM board.

**Table 3-169** Pin assignments of the xDSL port

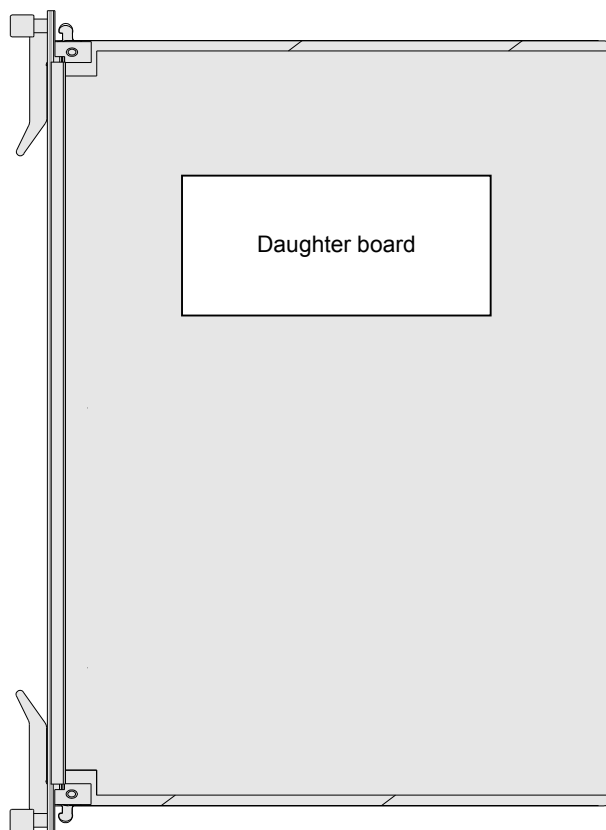
Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	-	16	-
63		47			31		15	
62	14	46	6		30	-	14	-
61		45			29		13	
60	13	44	5		28	-	12	-
59		43			27		11	
58	12	42	4		26	-	10	-
57		41			25		9	
56	11	40	3		24	-	8	-
55		39			23		7	
54	10	38	2		22	-	6	-
53		37			21		5	
52	9	36	1		20	-	4	-
51		35			19		3	
50	8	34	0		18	-	2	-
49		33			17		1	

## Daughter Board

The H80ASHLM board provides one daughter board port that can hold one daughter board.

**Figure 3-144** shows the position of the daughter board on the H80ASHLM board.

**Figure 3-144** Position of the daughter board on the H80ASHLM board



**Table 3-170** describes the daughter board supported by the H80ASHLM board.

**Table 3-170** Daughter board supported by the H80ASHLM board

Daughter Board	Function	Remarks
SHUI	The functional module of logical processing is integrated on the daughter board to support the protocol process and frame format conversion of the service data stream.	Mandatory

### 3.24.5 H802SHGM Board Description

The H802SHGM board is a 32-port SHDSL.bis service board. It works with the SHDSL transceiver unit-remote (STU-R) to provide 32-channels of SHDSL services.

#### Functional Specifications

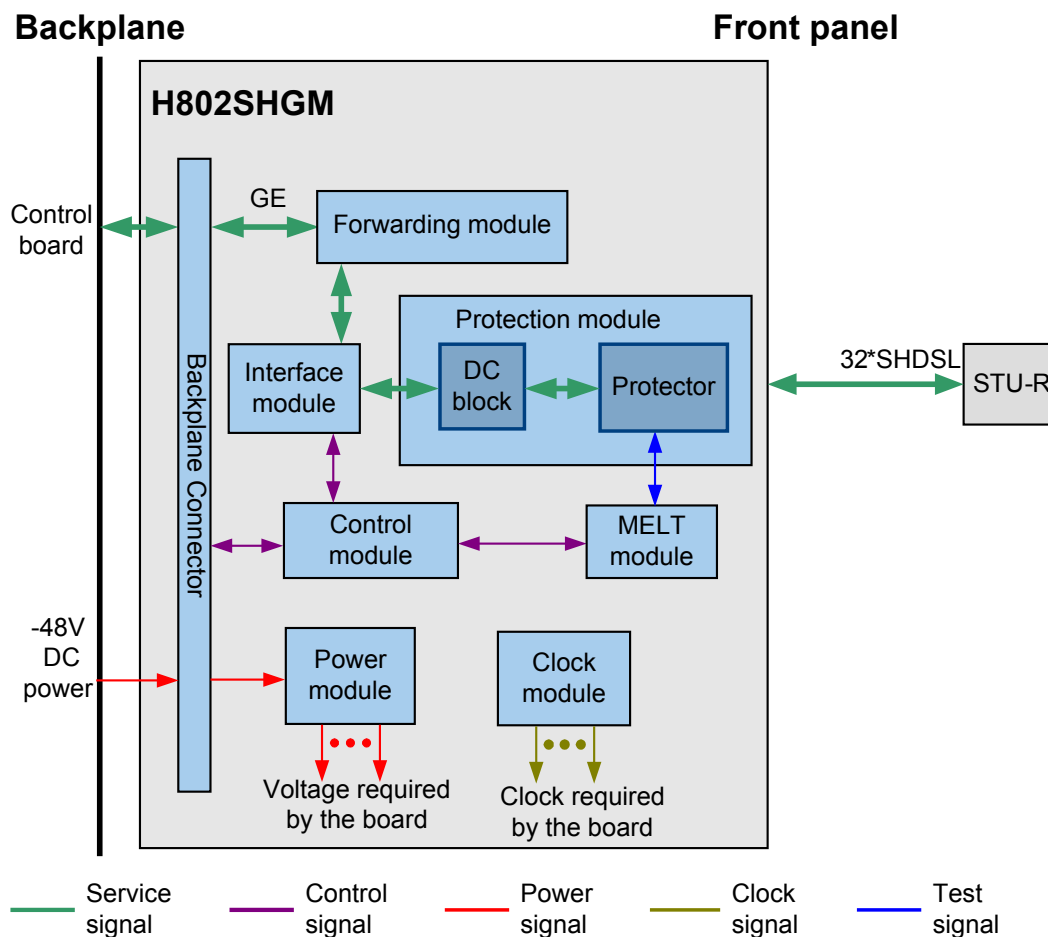
Please refer to "[SHDSL Service Board Comparison](#)".

## Technical Specifications

Please refer to "[Power Consumption and Maximum Frame Size of Boards](#)".

## Working Principle

Figure 3-145 Working principle of the H802SHGM board



The basic working principle of the H802SHGM board is as follows:

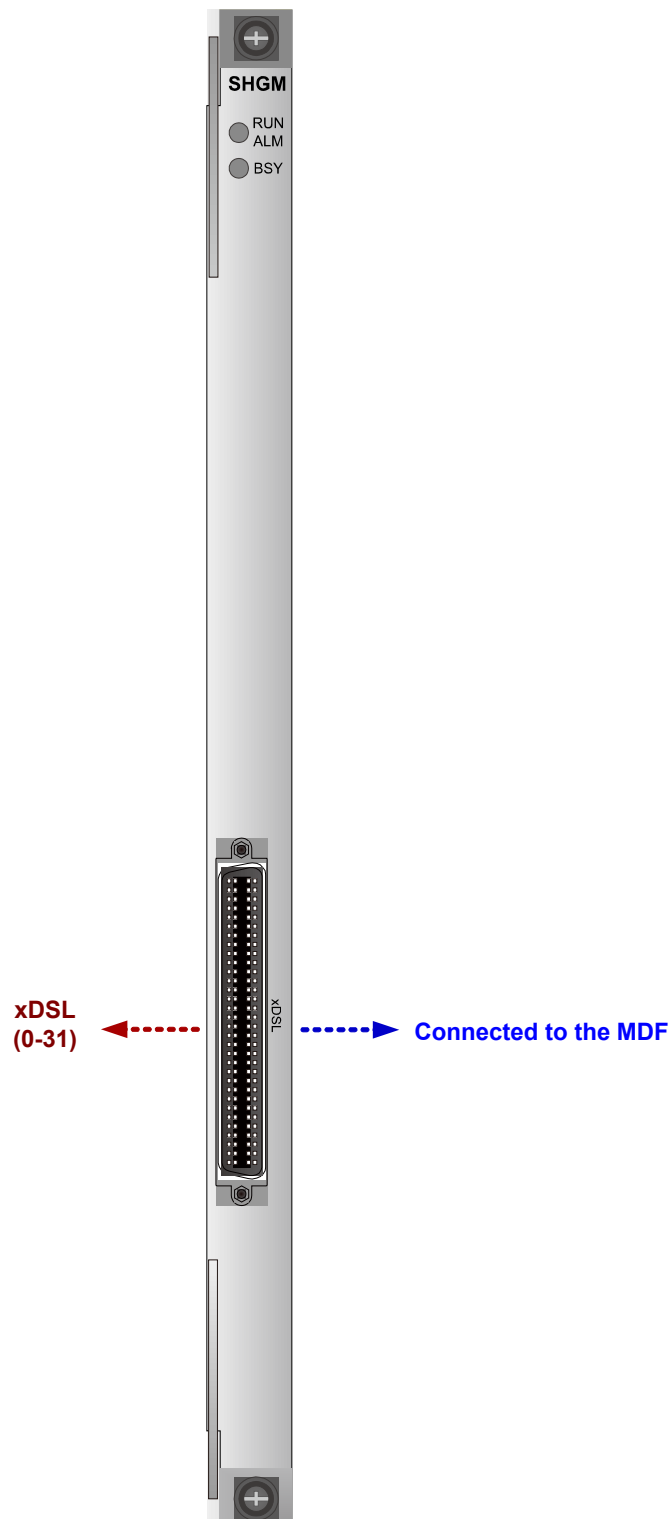
- The control module loads the board software, controls the running of the board, and manages the entire board.
- The protection module protects and isolates the board from lightning strikes. The DC block isolates the direct current. The protector protects the high voltage.
- The forwarding module processes the signals. After being processed by the control module, the signals are transmitted to the backplane bus through the interface of the backplane.
- The interface module inputs, outputs, and converts the signals.
- The power module supplies power to each functional module of the board.
- The clock module provides clock signals for each functional module of the board.

- The MELT module provides the MELT test function for digital subscriber lines.

The service process is as follows:

- In the upstream direction, the interface module transmits subscriber line signals to the forwarding module. The forwarding module reorganizes the cell flow into ATM/PTM packets, encapsulates the ATM/PTM packets into IP packets, and performs CAR on the IP packets. Controlled by the logical switch, the IP packets are transmitted to the backplane bus through the backplane interface.
- In the downstream direction, the forwarding module decapsulates the IP packets from the backplane bus, performs CAR on the IP packets, reorganizes the IP packets into ATM/PTM packets, and transmits the ATM/PTM packets to the interface module. The interface module converts the ATM/PTM packets into analog signals and transmits the signals to subscriber lines.

## Front Panel Port



## Indicator

Indicator	Name	Color	Status	Meaning
RUN ALM	Running status indicator	Green	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is communicating with the control board
		Red	Blinking	The board is in the APP startup phase
		Orange	Blinking	A high-temperature alarm is generated
		Red	On	The board is faulty
BSY	Port status indicator	Green	On	At least one service port is activated
		-	Off	No service port is activated

## Pin Assignments

**Table 3-171** describes the pin assignments of the xDSL port on the front panel of the H802SHGM board.



**Table 3-171** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	15	48	7		32	16	16	24
63		47			31		15	
62	14	46	6		30	17	14	25
61		45			29		13	
60	13	44	5		28	18	12	26
59		43			27		11	
58	12	42	4		26	19	10	27
57		41			25		9	
56	11	40	3		24	20	8	28
55		39			23		7	
54	10	38	2		22	21	6	29
53		37			21		5	
52	9	36	1		20	22	4	30
51		35			19		3	
50	8	34	0		18	23	2	31
49		33			17		1	

## 3.25 ADSL2+ SPL Board

The ADSL SPL board separates narrowband signals from ADSL signals.

### 3.25.1 Differences Between ADSL SPL Boards

ADSL SPL boards separate ADSL2+ broadband signals from POTS/ISDN narrowband signals.

By access user quantity, ADSL SPL boards can be classified into 32-channel ADSL SPL board and 64-channel ADSL SPL board.

- A 32-channel ADSL SPL board works with a 32-channel ADSL2+ service board.
- A 64-channel ADSL SPL board works with a 64-channel ADSL2+ service board.

#### Differences Between 32-channel ADSL SPL Boards

**Table 3-172** lists the major differences between 32-channel ADSL SPL boards.

**Table 3-172** Major differences between 32-channel ADSL SPL boards

Board	Port Impedance	Applicable Line	Applicable Service Board
H801SPLF	600-ohm impedance	POTS	<ul style="list-style-type: none"> <li>● H805ADLF</li> <li>● H808ADLF</li> </ul>
H801SPLH	2B1Q or 4B3T	ISDN	H808ADIF
H801SPLL	Complex impedance (ETSI TS 101 952 01 01 option A)	POTS	<ul style="list-style-type: none"> <li>● H805ADLF</li> <li>● H808ADLF</li> </ul>

## Differences Between 64-channel ADSL SPL Boards

By the front panel appearance, 64-channel ADSL SPL boards can be classified into two types: boards with common front panel and boards with embedded front panel. These two types of boards are applicable to different subracks and use different cables. Therefore, they cannot be used together.

### NOTE

- Ports on the board with common front panel (from top to bottom): xDSL0, xDSL1, LINE1, LINE0, PSTN1, and PSTN0
- Ports on the board with embedded front panel (from top to bottom): xDSL1, xDSL0, LINE0, LINE1, PSTN0, and PSTN1

**Figure 3-146** shows the appearance difference between 64-channel ADSL SPL boards.

**Figure 3-146** Appearance of the board with common front panel and board with embedded front panel



**Table 3-173** lists the major differences between 64-channel ADSL SPL boards.

**Table 3-173** Major differences between 64-channel ADSL SPL boards

Board	Front Panel	Port Impedance	Applicable Line	Applicable Service Board
H801SPPF	Common	600-ohm impedance	POTS	<ul style="list-style-type: none"> <li>● H802ADPD</li> <li>● H805ADPD</li> </ul>
H801SPPH A	Embedded	2B1Q or 4B3T	ISDN	H802ADQD
H801SPPF1	Embedded	600-ohm impedance	POTS	<ul style="list-style-type: none"> <li>● H802ADPD</li> <li>● H805ADPD</li> </ul>
H801SPPLA	Embedded	Complex impedance (ETSI TS 101 952 01 01 option A)	POTS	<ul style="list-style-type: none"> <li>● H802ADPD</li> <li>● H805ADPD</li> </ul>
H801SPPLB	Embedded	BT complex impedance	POTS	<ul style="list-style-type: none"> <li>● H802ADPD</li> <li>● H805ADPD</li> </ul>
H801SPPLC	Embedded	Complex impedance (ETSI TS 101 952 01 01 option B)	POTS	<ul style="list-style-type: none"> <li>● H802ADPD</li> <li>● H805ADPD</li> </ul>

**NOTE**

- More information about the boards supported by the product version, please reference the [3.2 Mapping Between Boards and Software Versions](#).
- More information about the boards function supported by the version, please reference the related board description topic.

### 3.25.2 H801SPLF Board Description

The H801SPLF is 32-port ADSL over POTS splitter board, It separates POTS signals from ADSL2+ signals.

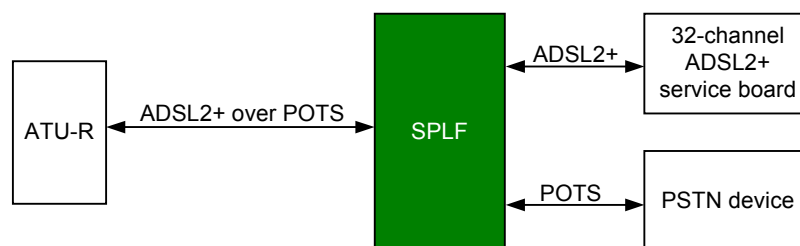
#### Functional Specifications

The H801SPLF supports the following function:

- Separating 32-channel POTS signals from ADSL2+ signals
- Supporting real impedance (600 ohms).

[Figure 3-147](#) shows the external connections of the H801SPLF board.

**Figure 3-147** External connections of the H801SPLF board



## Technical Specifications

**Table 3-174** Technical specifications of the H801SPLF board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801SPLF	22.86 mm x 237.00 mm x 395.40 mm	0 W

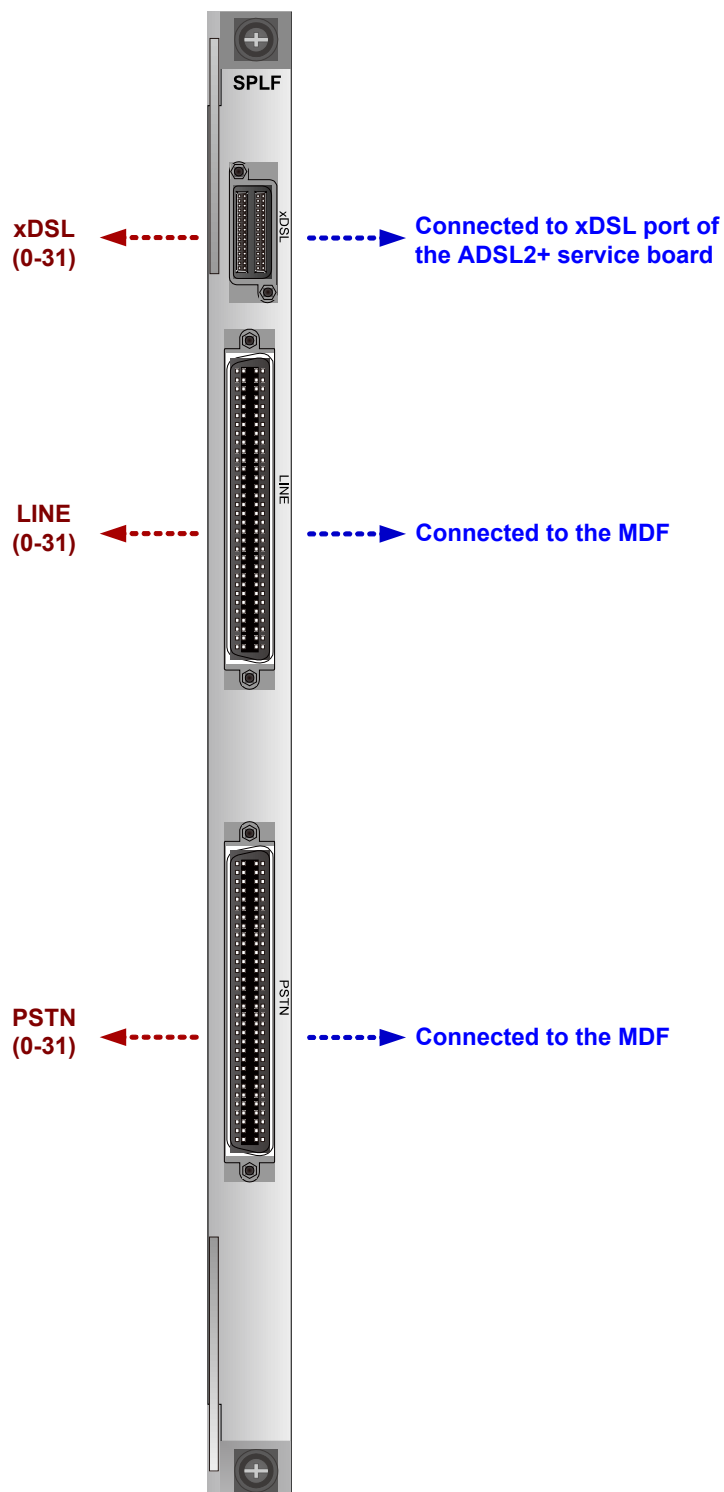
## Working Principle

Different signals use different bands.

The H801SPLF board mainly consists of a splitter that is a low-pass filter for filtering ADSL2+ signals. Therefore, the SPPF board can separate POTS signals from ADSL2+ signals.

After being transmitted to the H801SPLF board through the LINE port, the mixed signals of POTS and ADSL2+ are transmitted to the splitter through the line protection module. The splitter separates the mixed signals, and then the ADSL2+ signals and the POTS signals are forwarded through corresponding ports.

## Front Panel Port



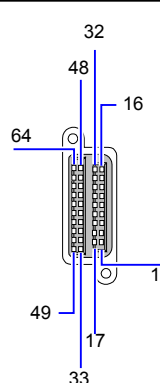
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

[Table 3-175](#) describes the pin assignment of the xDSL port of the H801SPLF board.

**Table 3-175** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	31	48	23		32	15	16	7
63		47			31		15	
62	30	46	22		30	14	14	6
61		45			29		13	
60	29	44	21		28	13	12	5
59		43			27		11	
58	28	42	20		26	12	10	4
57		41			25		9	
56	27	40	19		24	11	8	3
55		39			23		7	
54	26	38	18		22	10	6	2
53		37			21		5	
52	25	36	17		20	9	4	1
51		35			19		3	
50	24	34	16		18	8	2	0
49		33			17		1	

The pin assignments of the LINE port and the pin assignment of the PSTN port are the same on the H801SPLF board, as described in [Table 3-176](#).

**Table 3-176** Pin assignments of the PSTN port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

### 3.25.3 H801SPLH Board Description

The H801SPLH is 32-port ADSL over ISDN splitter board, It separates ISDN signals from ADSL2+ signals.

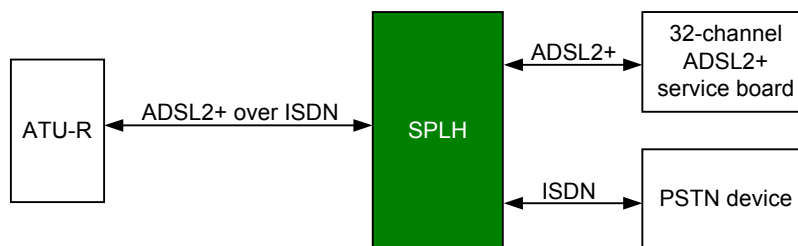
#### Functional Specifications

The H801SPLH supports the following function:

- Separating 32-channel ISDN signals from ADSL2+ signals
- Supporting 2B1Q/4B3T coding.

Figure 3-148 shows the external connections of the H801SPLH board.

Figure 3-148 External connections of the H801SPLH board



## Technical Specifications

Table 3-177 Technical specifications of the H801SPLH board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801SPLH	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

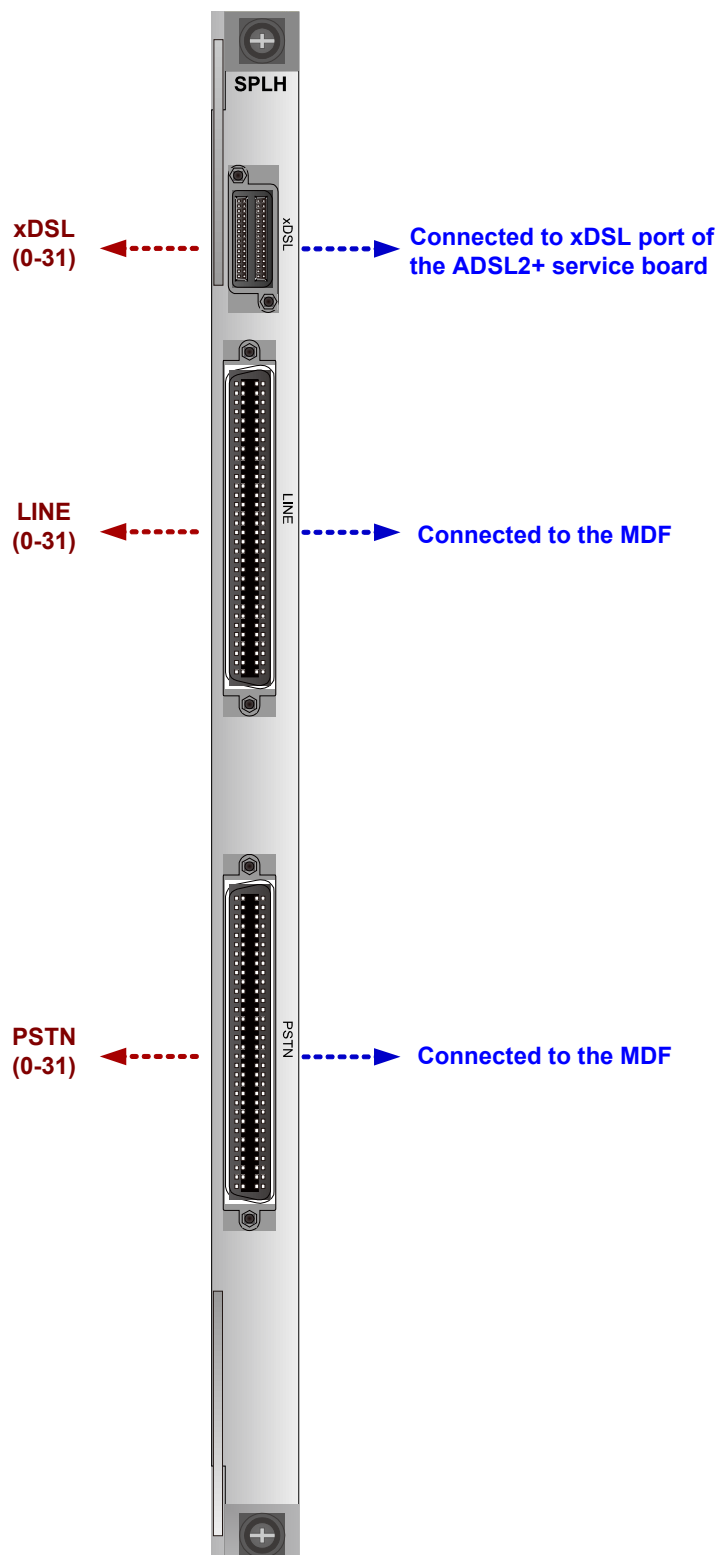
Different signals use different bands.

The H801SPLH board mainly consists of a splitter that is a low-pass filter for filtering ADSL2+ signals. Therefore, the SPPF board can separate ISDN signals from ADSL2+ signals.

After being transmitted to the H801SPLH board through the LINE port, the mixed signals of ISDN and ADSL2+ are transmitted to the splitter through the line protection module. The splitter separates the mixed signals, and then the ADSL2+ signals and the ISDN signals are forwarded through corresponding ports.



## Front Panel Port



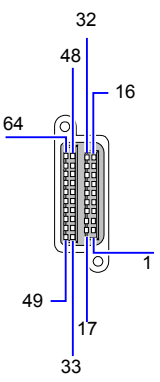
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

[Table 3-178](#) describes the pin assignment of the xDSL port of the H801SPLH board.

**Table 3-178** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	31	48	23		32	15	16	7
63		47			31		15	
62	30	46	22		30	14	14	6
61		45			29		13	
60	29	44	21		28	13	12	5
59		43			27		11	
58	28	42	20		26	12	10	4
57		41			25		9	
56	27	40	19		24	11	8	3
55		39			23		7	
54	26	38	18		22	10	6	2
53		37			21		5	
52	25	36	17		20	9	4	1
51		35			19		3	
50	24	34	16		18	8	2	0
49		33			17		1	

The pin assignments of the LINE port and the pin assignment of the PSTN port are the same on the H801SPLH board, as described in [Table 3-179](#).

**Table 3-179** Pin assignments of the PSTN port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

### 3.25.4 H801SPLL Board Description

The H801SPLL is 32-port ADSL over POTS splitter board, It separates POTS signals from ADSL2+ signals.

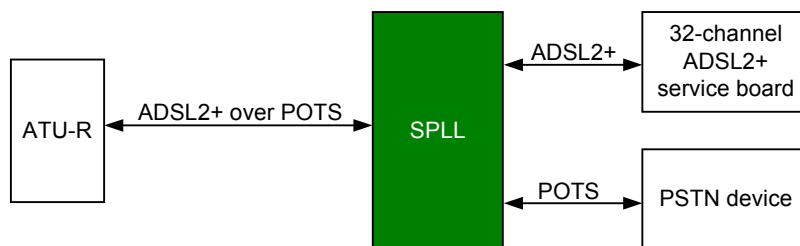
#### Functional Specifications

The H801SPLL supports the following function:

- Separating 32-channel POTS signals from ADSL2+ signals
- Supporting complex impedance (ETSI TS 101 952 01 01 option A).

Figure 3-149 shows the external connections of the H801SPLL board.

Figure 3-149 External connections of the H801SPLL board



## Technical Specifications

Table 3-180 Technical specifications of the H801SPLL board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801SPLL	22.86 mm x 237.00 mm x 395.40 mm	0 W

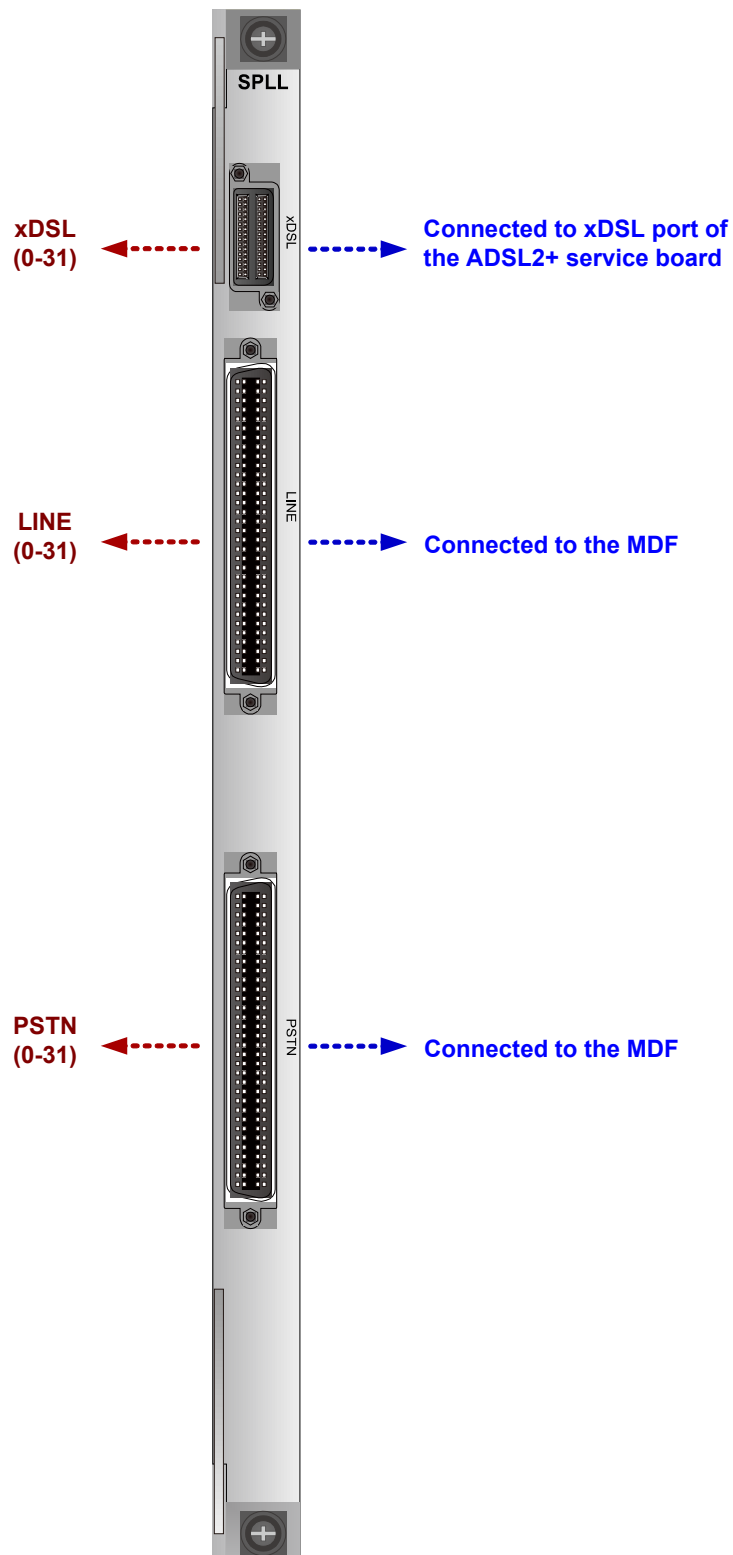
## Working Principle

Different signals use different bands.

The H801SPLL board mainly consists of a splitter that is a low-pass filter for filtering ADSL2+ signals. Therefore, the SPPF board can separate POTS signals from ADSL2+ signals.

After being transmitted to the H801SPLL board through the LINE port, the mixed signals of POTS and ADSL2+ are transmitted to the splitter through the line protection module. The splitter separates the mixed signals, and then the ADSL2+ signals and the POTS signals are forwarded through corresponding ports.

## Front Panel Port



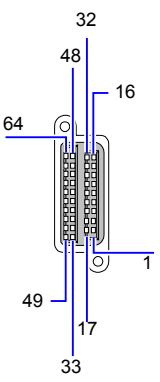
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

**Table 3-181** describes the pin assignment of the xDSL port of the H801SPLL board.

**Table 3-181** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	31	48	23		32	15	16	7
63		47			31		15	
62	30	46	22		30	14	14	6
61		45			29		13	
60	29	44	21		28	13	12	5
59		43			27		11	
58	28	42	20		26	12	10	4
57		41			25		9	
56	27	40	19		24	11	8	3
55		39			23		7	
54	26	38	18		22	10	6	2
53		37			21		5	
52	25	36	17		20	9	4	1
51		35			19		3	
50	24	34	16		18	8	2	0
49		33			17		1	

The pin assignments of the LINE port and the pin assignment of the PSTN port are the same on the H801SPLL board, as described in **Table 3-182**.

**Table 3-182** Pin assignments of the PSTN port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

### 3.25.5 H801SPPLA Board Description

The H801SPPLA is 64-port ADSL over POTS splitter board, It separates POTS signals from ADSL2+ signals.

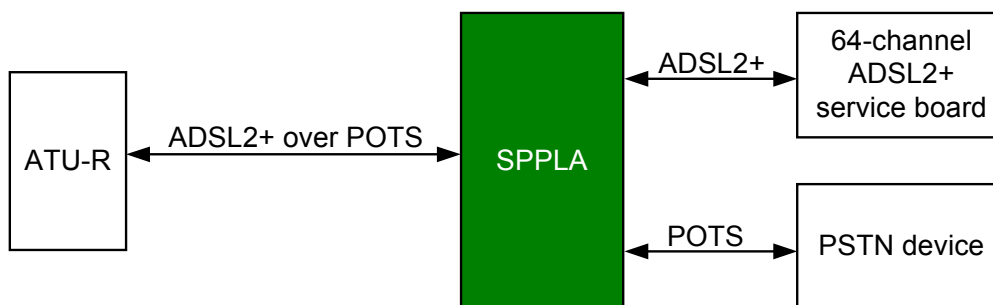
#### Functional Specifications

The H801SPPLA supports the following function:

- Separating 64-channel ADSL2+ signals from POTS signals
- standard impedance (ETSI TS 101 952 01 01 option A).

Figure 3-150 shows the external connections of the H801SPPLA board.

Figure 3-150 External connections of the H801SPPLA board



## Technical Specifications

Table 3-183 Technical specifications of the H801SPPLA board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801SPPLA	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

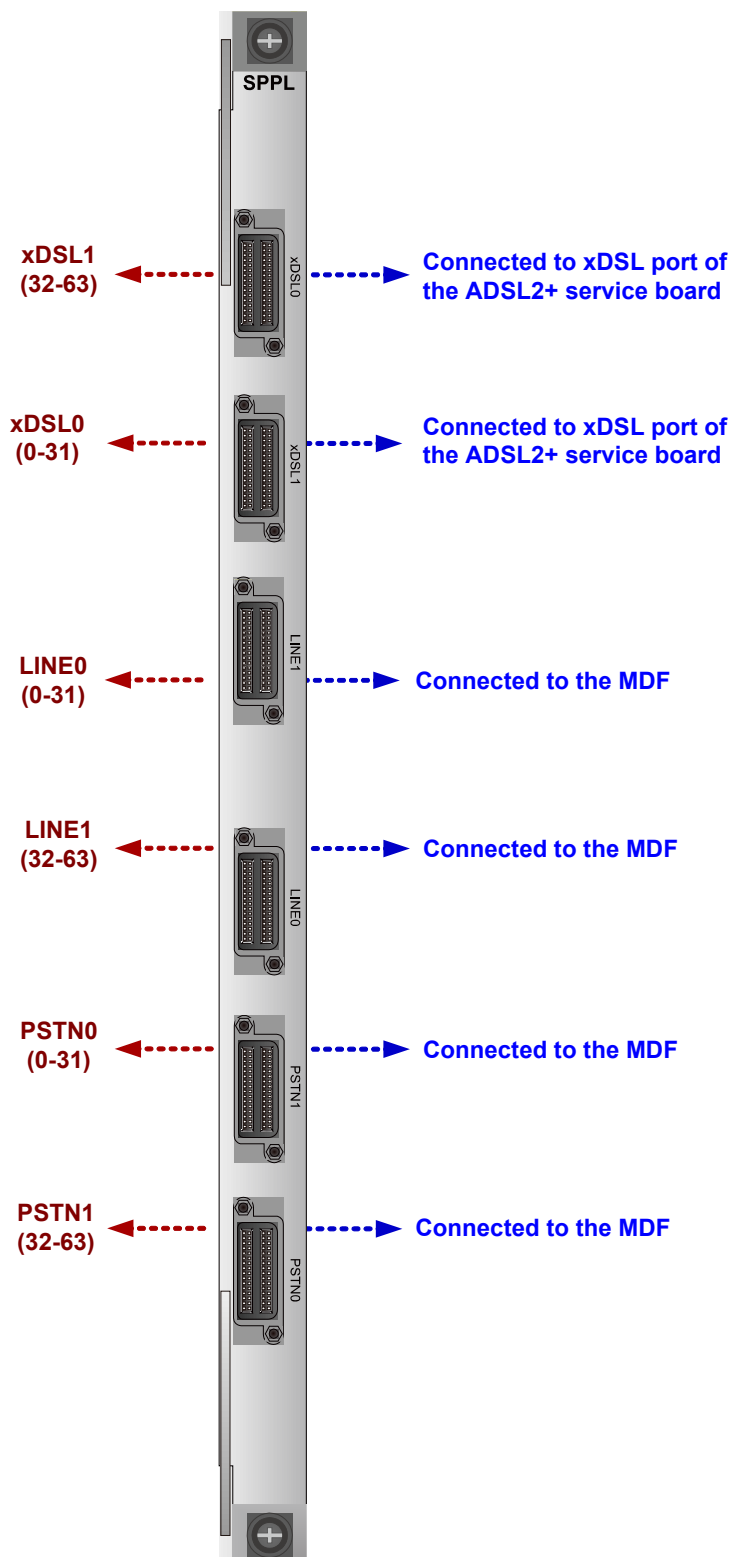
Different signals use different bands.

The H801SPPLA board mainly consists of a splitter that is a low-pass filter for filtering ADSL2+ signals. Therefore, the H801SPPLA board can separate POTS signals from ADSL2+ signals.

After being transmitted to the H801SPPLA board through the LINE port, the mixed signals of POTS and ADSL2+ are transmitted to the splitter through the line protection module. The splitter separates the mixed signals, and then the ADSL2+ signals and the POTS signals are forwarded through corresponding ports.



## Front Panel Port



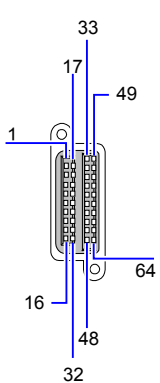
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignment of the xDSL port, LINE port, and PSTN port on the H801SPPLA board are the same. For pin assignment of the xDSL0 port, see [Table 3-184](#); for pin assignment of the xDSL1 port, see [Table 3-185](#).

**Table 3-184** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-185** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.25.6 H801SPPLB Board Description

The H801SPPLB is 64-port ADSL over POTS splitter board, It separates POTS signals from ADSL2+ signals.

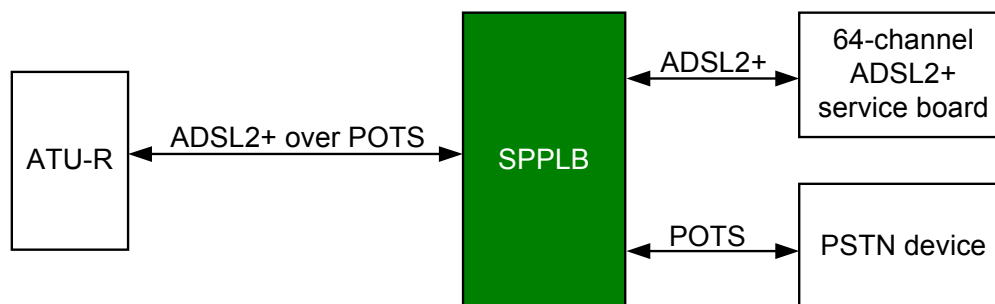
#### Functional Specifications

The H801SPPLB supports the following function:

- Separating 64-channel ADSL2+ signals from POTS signals
- the BT complex impedance.

**Figure 3-151** shows the external connections of the H801SPPLB board.

**Figure 3-151** External connections of the H801SPPLB board



## Technical Specifications

**Table 3-186** Technical specifications of the H801SPPLB board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801SPPLB	22.86 mm x 237.00 mm x 395.40 mm	0 W

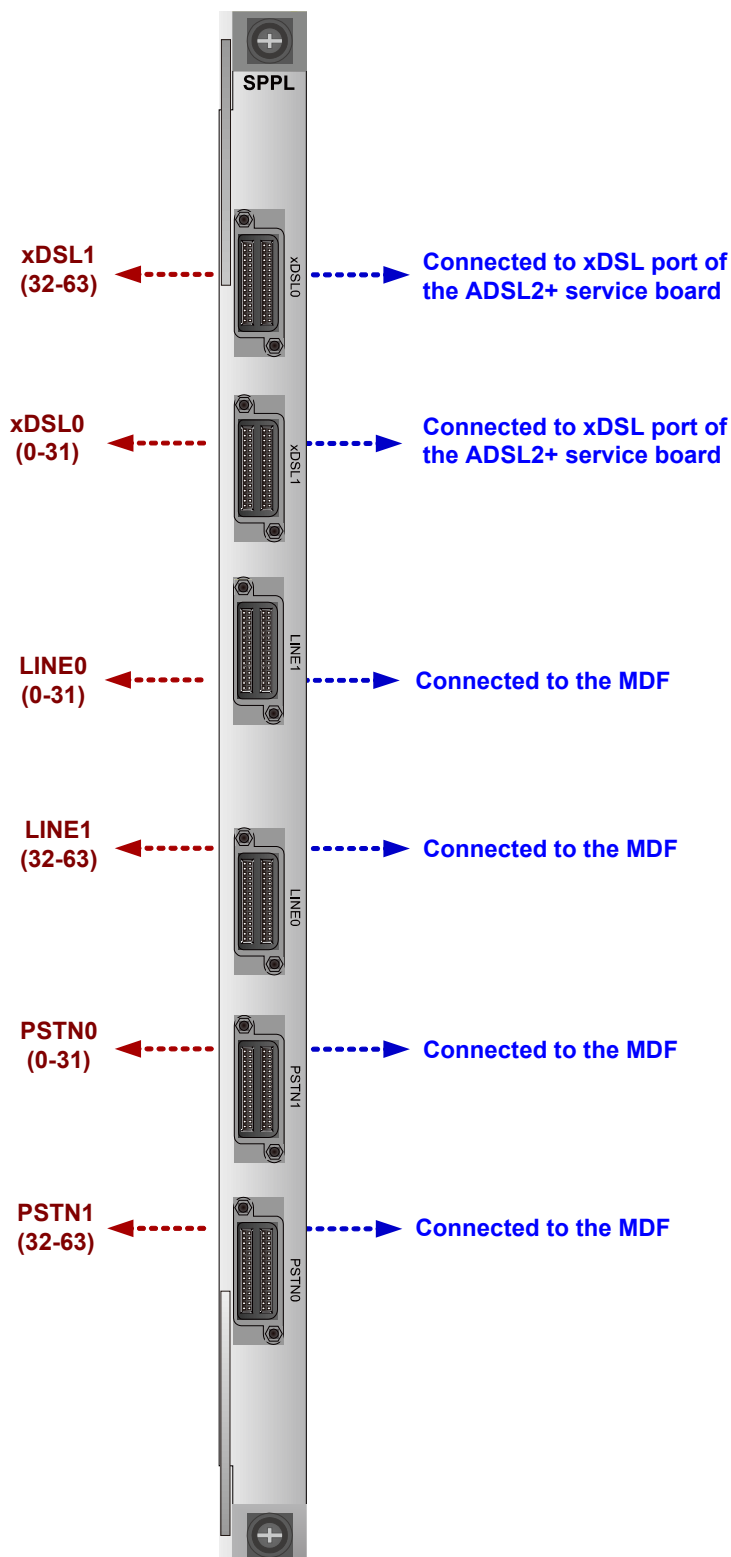
## Working Principle

Different signals use different bands.

The H801SPPLB board mainly consists of a splitter that is a low-pass filter for filtering ADSL2+ signals. Therefore, the H801SPPLB board can separate POTS signals from ADSL2+ signals.

After being transmitted to the H801SPPLB board through the LINE port, the mixed signals of POTS and ADSL2+ are transmitted to the splitter through the line protection module. The splitter separates the mixed signals, and then the ADSL2+ signals and the POTS signals are forwarded through corresponding ports.

## Front Panel Port



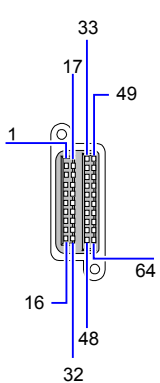
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignment of the xDSL port, LINE port, and PSTN port on the H801SPPLB board are the same. For pin assignment of the xDSL0 port, see [Table 3-187](#); for pin assignment of the xDSL1 port, see [Table 3-188](#).

**Table 3-187** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-188** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.25.7 H801SPPLC Board Description

The H801SPPLC is 64-port ADSL over POTS splitter board, It separates POTS signals from ADSL2+ signals.

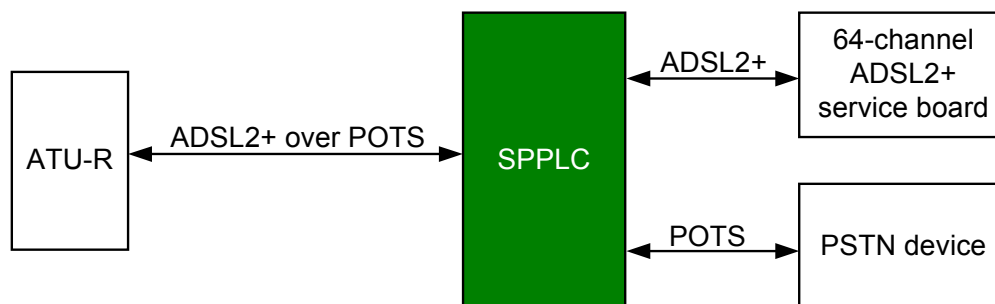
#### Functional Specifications

The H801SPPLC supports the following function:

- Separating 64-channel ADSL2+ signals from POTS signals
- standard impedance (ETSI TS 101 952 01 01 option B).

**Figure 3-152** shows the external connections of the H801SPPLC board.

**Figure 3-152** External connections of the H801SPPLC board



## Technical Specifications

**Table 3-189** Technical specifications of the H801SPPLC board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801SPPLC	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

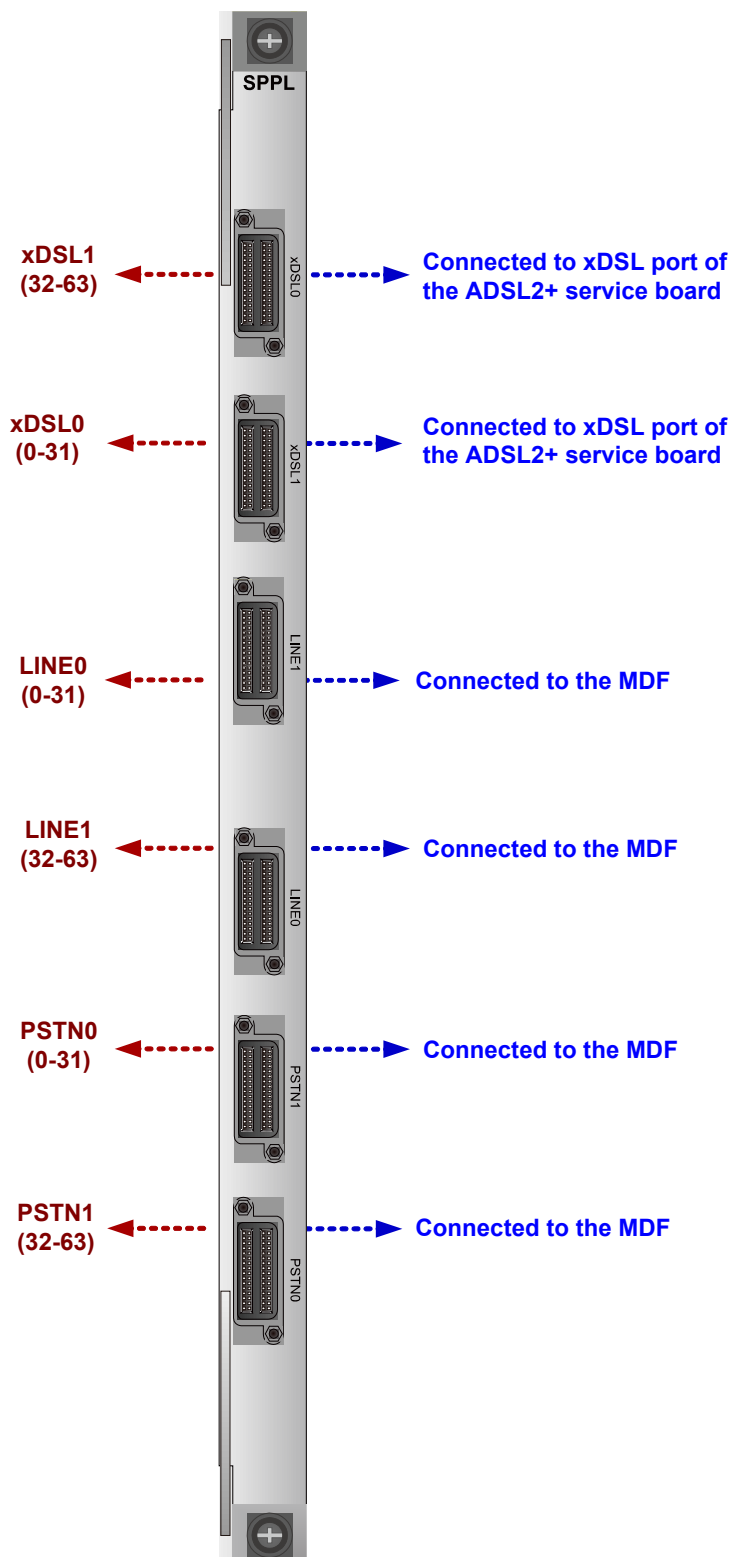
Different signals use different bands.

The H801SPPLC board mainly consists of a splitter that is a low-pass filter for filtering ADSL2+ signals. Therefore, the H801SPPLC board can separate POTS signals from ADSL2+ signals.

After being transmitted to the H801SPPLC board through the LINE port, the mixed signals of POTS and ADSL2+ are transmitted to the splitter through the line protection module. The splitter separates the mixed signals, and then the ADSL2+ signals and the POTS signals are forwarded through corresponding ports.



## Front Panel Port



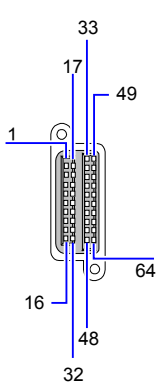
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignment of the xDSL port, LINE port, and PSTN port on the H801SPPLC board are the same. For pin assignment of the xDSL0 port, see [Table 3-190](#); for pin assignment of the xDSL1 port, see [Table 3-191](#).

**Table 3-190** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-191** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.25.8 H801SPPHA Board Description

The H801SPPHA is 64-port ADSL over ISDN splitter board, It separates ISDN signals from ADSL2+ signals.

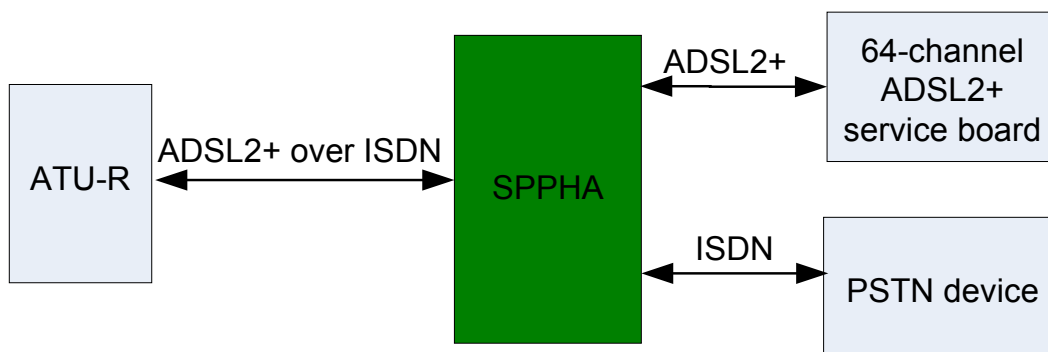
#### Functional Specifications

The H801SPPHA supports the following function:

- Separating 64-channel ISDN signals from ADSL2+ signals
- Supporting 2B1Q/4B3T coding.

**Figure 3-153** shows the external connections of the H801SPPHA board.

**Figure 3-153** External connections of the H801SPPHA board



## Technical Specifications

**Table 3-192** Technical specifications of the H801SPPHA board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801SPPHA	22.86 mm x 237.00 mm x 395.40 mm	0 W

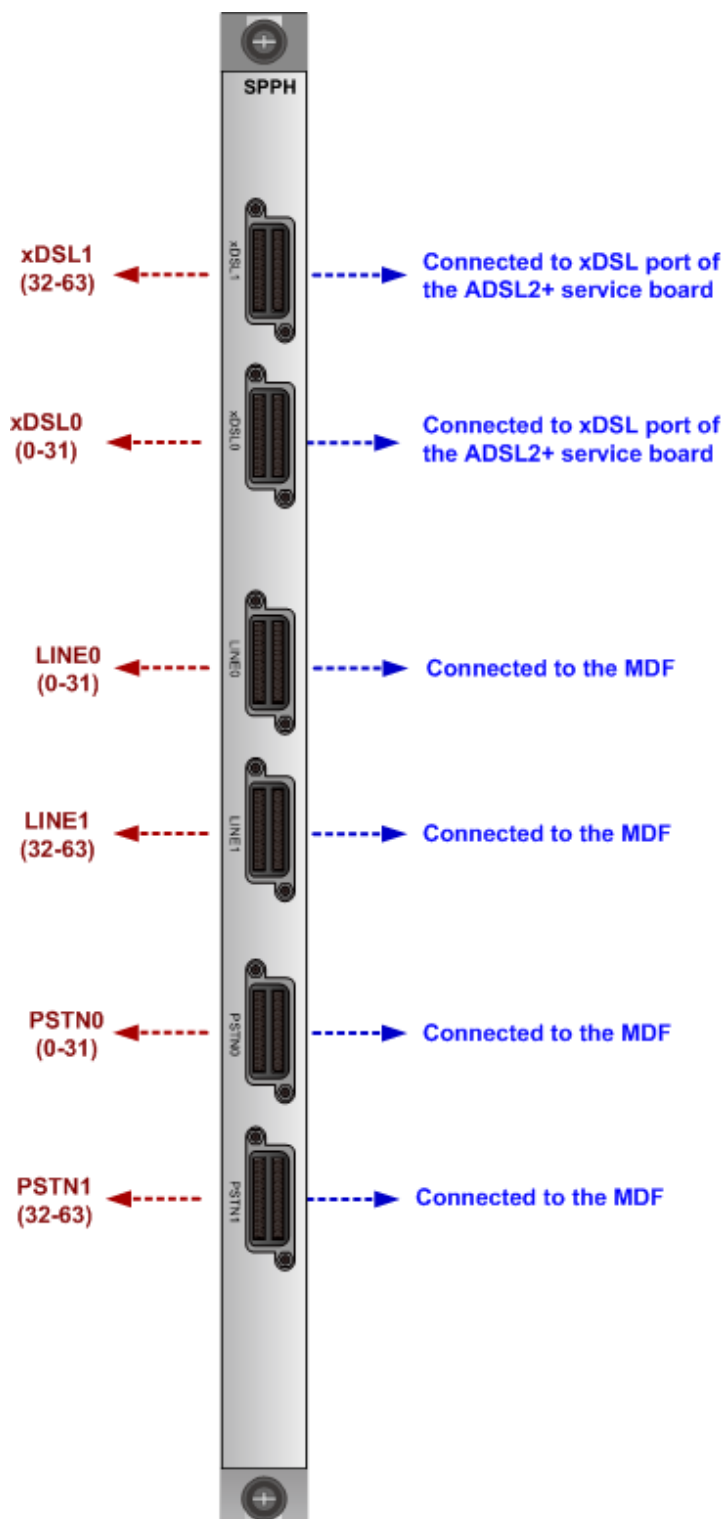
## Working Principle

Different signals use different bands.

The H801SPPHA board mainly consists of a splitter that is a low-pass filter for filtering ADSL2+ signals. Therefore, the SPPF board can separate ISDN signals from ADSL2+ signals.

After being transmitted to the H801SPPHA board through the LINE port, the mixed signals of ISDN and ADSL2+ are transmitted to the splitter through the line protection module. The splitter separates the mixed signals, and then the ADSL2+ signals and the ISDN signals are forwarded through corresponding ports.

## Front Panel Port



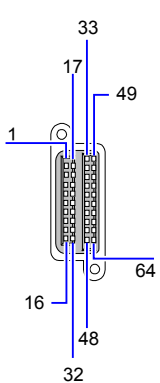
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignment of the xDSL port, LINE port, and PSTN port on the H801SPPHA board are the same. For pin assignment of the xDSL0 port, see [Table 3-193](#); for pin assignment of the xDSL1 port, see [Table 3-194](#).

**Table 3-193** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-194** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.25.9 H801SPPF1 Board Description

The H801SPPF1 is 64-port ADSL over POTS splitter board, It separates POTS signals from ADSL2+ signals.

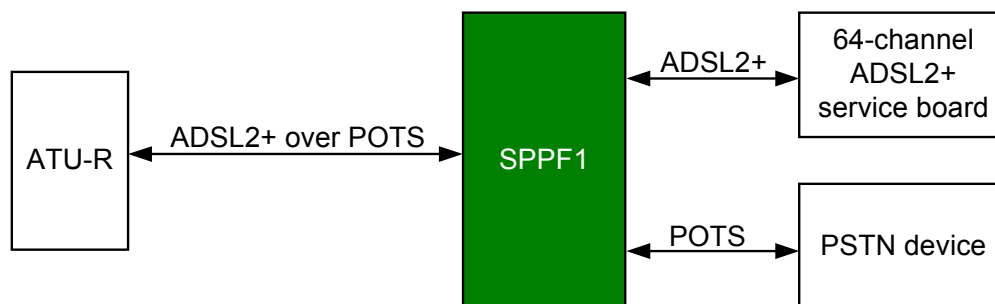
#### Functional Specifications

The H801SPPF1 supports the following function:

- Separating 64-channel POTS signals from ADSL2+ signals
- Supporting real impedance (600 ohms).

**Figure 3-154** shows the external connections of the H801SPPF1 board.

**Figure 3-154** External connections of the H801SPPF1 board



## Technical Specifications

**Table 3-195** Technical specifications of the H801SPPF1 board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801SPPF1	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

Different signals use different bands.

The H801SPPF1 board mainly consists of a splitter that is a low-pass filter for filtering ADSL2+ signals. Therefore, the H801SPPF1 board can separate POTS signals from ADSL2+ signals.

After being transmitted to the H801SPPF1 board through the LINE port, the mixed signals of POTS and ADSL2+ are transmitted to the splitter through the line protection module. The splitter separates the mixed signals, and then the ADSL2+ signals and the POTS signals are forwarded through corresponding ports.

## Front Panel Port

**PSTN1  
(32-63)**



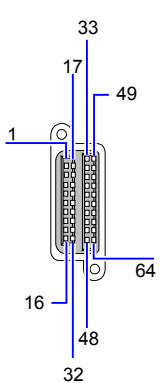
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignment of the xDSL port, LINE port, and PSTN port on the H801SPPF1 board are the same. For pin assignment of the xDSL0 port, see [Table 3-196](#); for pin assignment of the xDSL1 port, see [Table 3-197](#).

**Table 3-196** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-197** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.2.5.10 H801SPPF Board Description

The H801SPPF is 64-port ADSL over POTS splitter board, It separates POTS signals from ADSL2+ signals.

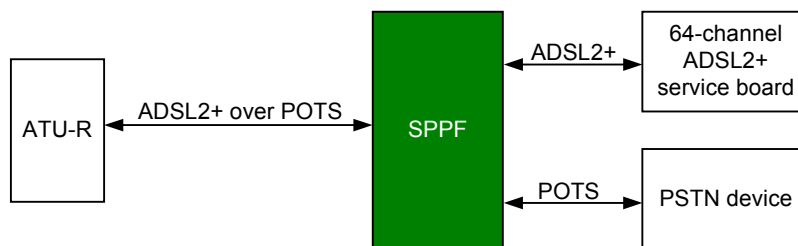
#### Functional Specifications

The H801SPPF supports the following function:

- Separating 64-channel POTS signals from ADSL2+ signals
- Supporting real impedance (600 ohms).

**Figure 3-155** shows the external connections of the H801SPPF board.

**Figure 3-155** External connections of the H801SPPF board



## Technical Specifications

**Table 3-198** Technical specifications of the H801SPPF board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801SPPF	22.86 mm x 237.00 mm x 395.40 mm	0 W

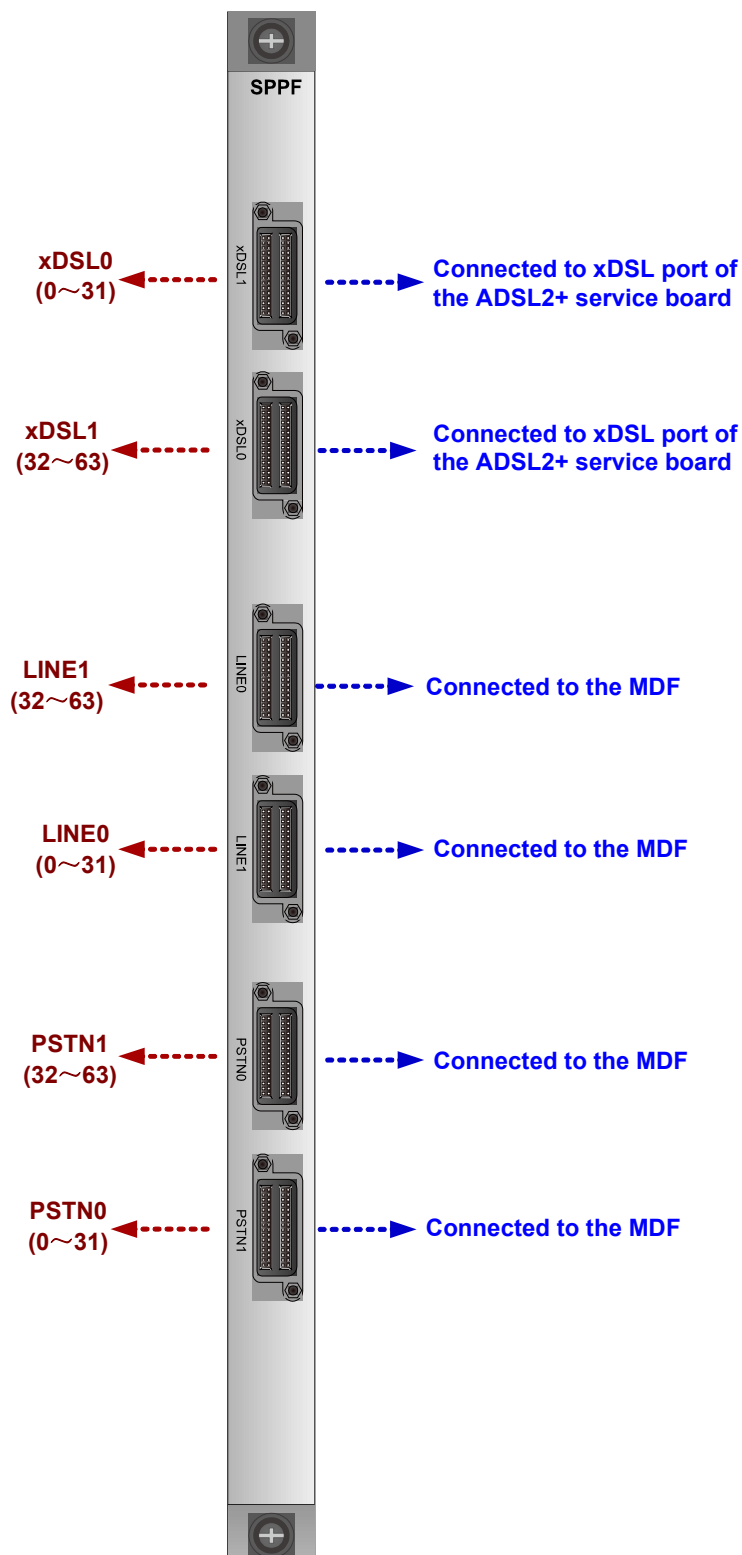
## Working Principle

Different signals use different bands.

The H801SPPF board mainly consists of a splitter that is a low-pass filter for filtering ADSL2+ signals. Therefore, the H801SPPF board can separate POTS signals from ADSL2+ signals.

After being transmitted to the H801SPPF board through the LINE port, the mixed signals of POTS and ADSL2+ are transmitted to the splitter through the line protection module. The splitter separates the mixed signals, and then the ADSL2+ signals and the POTS signals are forwarded through corresponding ports.

## Front Panel Port



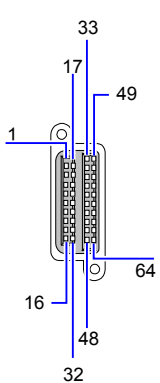
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignment of the xDSL port, LINE port, and PSTN port on the H801SPPF board are the same. For pin assignment of the xDSL0 port, see [Table 3-199](#); for pin assignment of the xDSL1 port, see [Table 3-200](#).

**Table 3-199** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-200** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

## 3.26 VDSL2 SPL Board

The VDSL SPL board separates narrowband signals from VDSL signals.

### 3.26.1 Differences Between VDSL SPL Boards

VDSL SPL boards separate VDSL2 broadband signals from POTS/ISDN narrowband signals.

By access user quantity, VDSL SPL boards can be classified into 24-channel VDSL SPL board and 48/64-channel VDSL SPL board.

- A 24-channel VDSL SPL board works with a 24-channel VDSL2 service board.
- A 48/64-channel VDSL SPL board works with a 48-channel VDSL2 service board.

#### NOTE

- The 24-channel VDSL SPL board is a low-density SPL board.
- The 48/64-channel VDSL SPL board is a high-density SPL board. Both the 24-channel VDSL SPL board and 48/64-channel VDSL SPL board use the same intra-subrack interconnection cable, inter-subrack interconnection cable, and external subscriber cable.

## Differences Between 24-channel VDSL SPL Boards

**Table 3-201** lists the major differences between 24-channel VDSL SPL boards.

**Table 3-201** Major differences between 24-channel VDSL SPL boards

Board	Port Impedance	Applicable Line	Applicable Service Board
H801VSTL	Complex impedance (ETSI TS 101 952 01 01 option A)	POTS	24-port VDSL2 over POTS Service Board
H801VSTH	Complex impedance (2B1Q or 4B3T)	ISDN	24-port VDSL2 over ISDN Service Board

## Differences Between 48/64-channel VDSL SPL Boards

**Table 3-202** lists the major differences between 48/64-channel VDSL SPL boards.

**Table 3-202** Major differences between 48/64-channel VDSL SPL boards

Board	Port Quantity	Port Impedance	Applicable Line	Applicable Service Board
H801VSNF	48	600-ohm impedance	POTS	48-port VDSL2 over POTS Service Board
H801VSNLA	48	Complex impedance (ETSI TS 101 952 01 01 option A)	POTS	48-port VDSL2 over POTS Service Board
H801VSPHA	64	2B1Q or 4B3T	ISDN	48/64-port VDSL2 over ISDN Service Board
H801VSPLA	64	Complex impedance (ETSI TS 101 952 01 01 option A)	POTS	64-port VDSL2 over POTS Service Board

Board	Port Quantity	Port Impedance	Applicable Line	Applicable Service Board
H801VSP LC	64	Complex impedance (ETSI TS 101 952 01 01 option B)	POTS	64-port VDSL2 over POTS Service Board

 **NOTE**

- More information about the boards supported by the product version, please reference the [3.2 Mapping Between Boards and Software Versions](#).
- More information about the boards function supported by the version, please reference the related board description topic.

### 3.26.2 H801VSTH Board Description

The H801VSTH board is a 24-port VDSL2 over ISDN splitter board, separating 24-channel VDSL signals from ISDN signals.

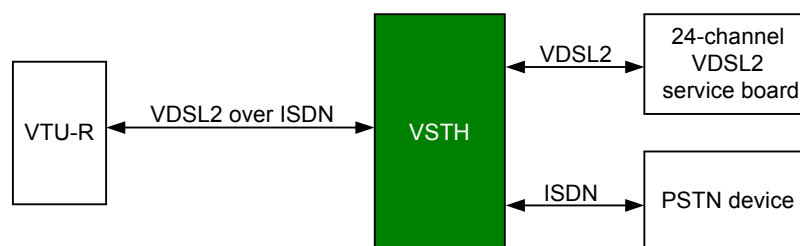
#### Functional Specifications

The H801VSTH board supports the following function:

- Separating 24-channel VDSL2 signals from ISDN signals
- Supporting 2B1Q/4B3T coding

[Figure 3-156](#) shows the external connections of the H801VSTH board.

**Figure 3-156** External connections of the H801VSTH board



#### Technical Specifications

**Table 3-203** Technical specifications of the H801VSTH boards

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801VSTH	22.86 mm x 237.00 mm x 395.40 mm	0 W

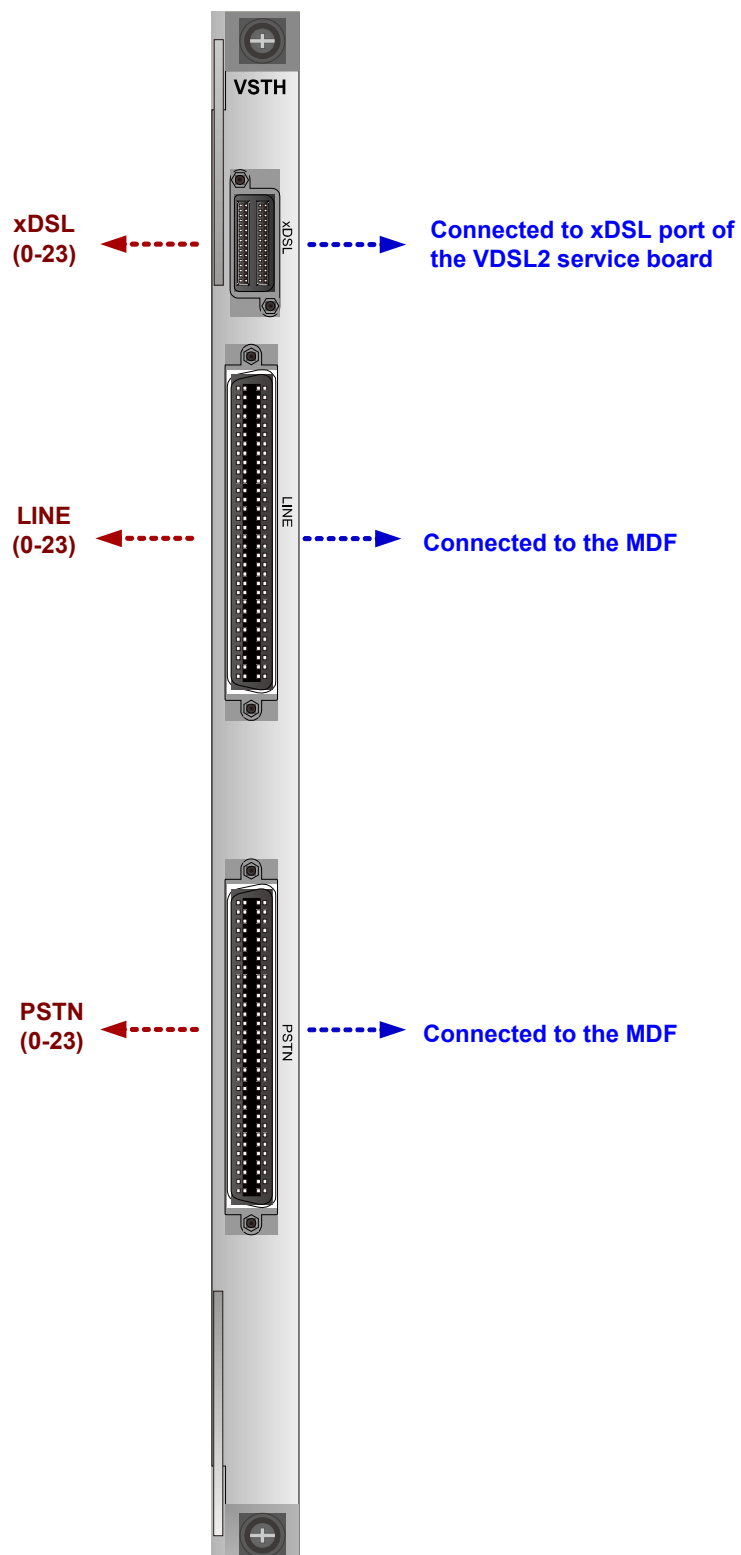


## Working Principle

The H801VSTH board mainly consists of a splitter that is a low-pass filter for filtering the VDSL2 band signals. Therefore, the SPL board can separate VDSL2 signals from ISDN signals.

After being transmitted to the H801VSTH board through the LINE port, the mixed ISDN and VDSL2 signals are transmitted to the splitter through the line protection module. The mixed signals are separated by the splitter, and then the separated ISDN and VDSL2 signals are forwarded through corresponding ports.

## Front Panel Port



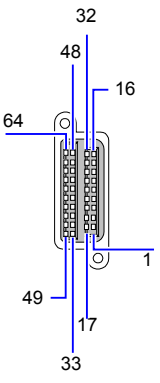
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

**Table 3-204** describes the pin assignments of the xDSL port of the H801VSTH board. The H801VSTH board uses only the first 24 channels of signals.

**Table 3-204** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	31	48	23		32	15	16	7
63		47			31		15	
62	30	46	22		30	14	14	6
61		45			29		13	
60	29	44	21		28	13	12	5
59		43			27		11	
58	28	42	20		26	12	10	4
57		41			25		9	
56	27	40	19		24	11	8	3
55		39			23		7	
54	26	38	18		22	10	6	2
53		37			21		5	
52	25	36	17		20	9	4	1
51		35			19		3	
50	24	34	16		18	8	2	0
49		33			17		1	

Pin assignments for the LINE port and that for the PSTN port are the same, as described in **Table 3-205**. The H801VSTH board uses only the first 24 channels of signals.

**Table 3-205** Pin assignments of the PSTN port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

### 3.26.3 H801VSTL Board Description

The H801VSTL board is a 24-port VDSL2 over POTS splitter board, separating 24-channel VDSL signals from POTS signals.

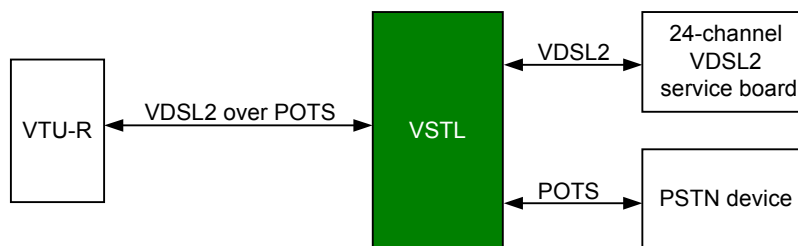
#### Functional Specifications

The H801VSTL board supports the following function:

- Separating 24-channel VDSL2 signals from POTS signals
- Supporting complex impedance (ETSI TS 101 952 01 01 option A)

Figure 3-157 shows the external connections of the H801VSTL board.

Figure 3-157 External connections of the H801VSTL board



## Technical Specifications

Table 3-206 Technical specifications of the H801VSTL boards

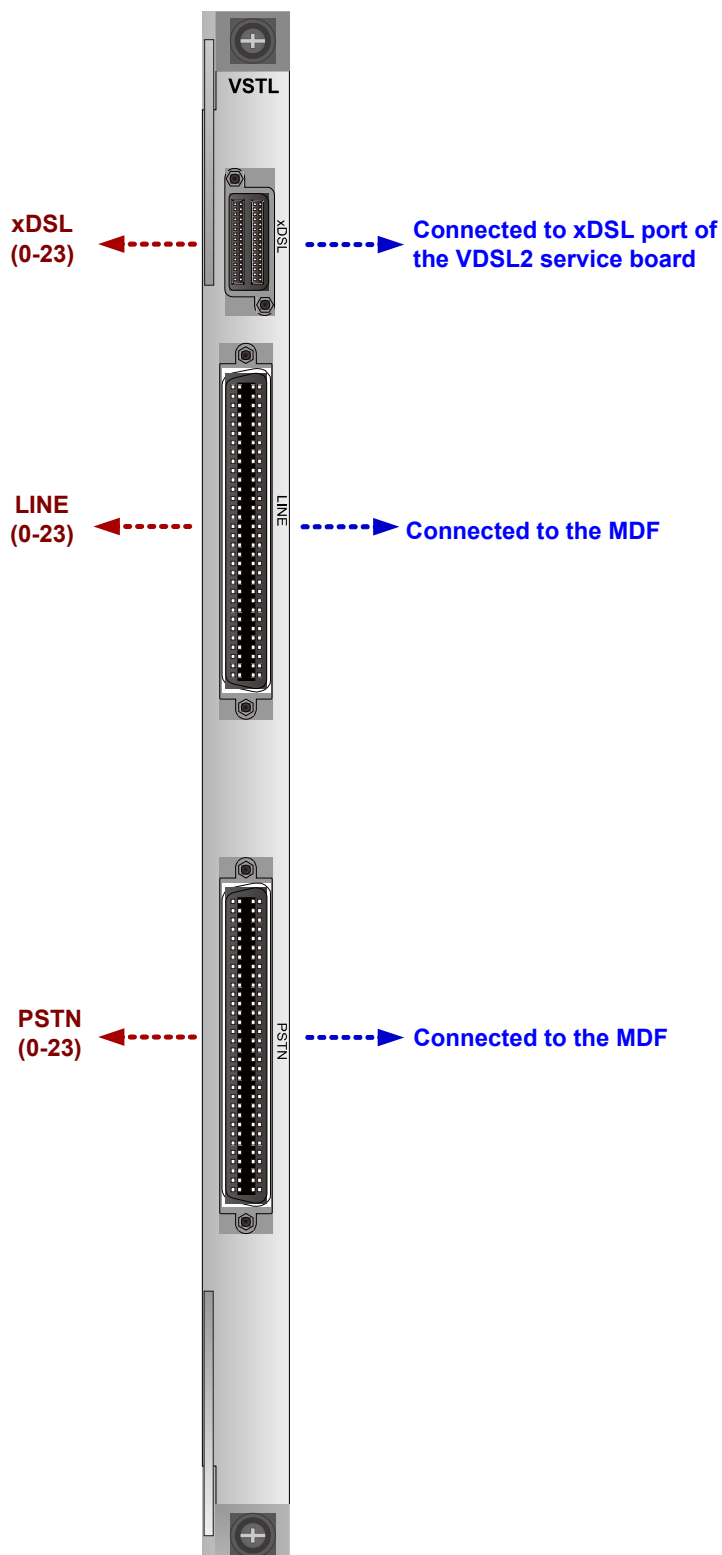
Board	Dimensions (W x D x H)	Maximum Power Consumption
H801VSTL	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

The H801VSTL board mainly consists of a splitter that is a low-pass filter for filtering the VDSL2 band signals. Therefore, the SPL board can separate VDSL2 signals from POTS signals.

After being transmitted to the H801VSTL board through the LINE port, the mixed POTS and VDSL2 signals are transmitted to the splitter through the line protection module. The mixed signals are separated by the splitter, and then the separated POTS and VDSL2 signals are forwarded through corresponding ports.

## Front Panel Port



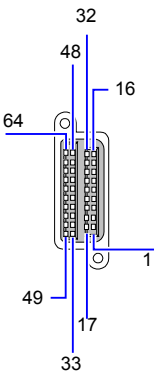
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

**Table 3-207** describes the pin assignments of the xDSL port of the H801VSTL board. The H801VSTL board uses only the first 24 channels of signals.

**Table 3-207** Pin assignments of the xDSL port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	31	48	23		32	15	16	7
63		47			31		15	
62	30	46	22		30	14	14	6
61		45			29		13	
60	29	44	21		28	13	12	5
59		43			27		11	
58	28	42	20		26	12	10	4
57		41			25		9	
56	27	40	19		24	11	8	3
55		39			23		7	
54	26	38	18		22	10	6	2
53		37			21		5	
52	25	36	17		20	9	4	1
51		35			19		3	
50	24	34	16		18	8	2	0
49		33			17		1	

Pin assignments for the LINE port and that for the PSTN port are the same, as described in **Table 3-208**. The H801VSTL board uses only the first 24 channels of signals.

**Table 3-208** Pin assignments of the PSTN port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
64	TIP15	48	TIP7		32	TIP16	16	TIP24
63	RING 15	47	RING 7		31	RING 16	15	RING 24
62	TIP14	46	TIP6		30	TIP17	14	TIP25
61	RING 14	45	RING 6		29	RING 17	13	RING 25
60	TIP13	44	TIP5		28	TIP18	12	TIP26
59	RING 13	43	RING 5		27	RING 18	11	RING 26
58	TIP12	42	TIP4		26	TIP19	10	TIP27
57	RING 12	41	RING 4		25	RING 19	9	RING 27
56	TIP11	40	TIP3		24	TIP20	8	TIP28
55	RING 11	39	RING 3		23	RING 20	7	RING 28
54	TIP10	38	TIP2		22	TIP21	6	TIP29
53	RING 10	37	RING 2		21	RING 21	5	RING 29
52	TIP9	36	TIP1		20	TIP22	4	TIP30
51	RING 9	35	RING 1		19	RING 22	3	RING 30
50	TIP8	34	TIP0		18	TIP23	2	TIP31
49	RING 8	33	RING 0		17	RING 23	1	RING 31

### 3.26.4 H801VSNF Board Description

The H801VSNF is a 48-port VDSL2 over POTS splitter board that supports real impedance (600 ohms). It separates 48 channels of VDSL signals from POTS signals. The separated VDSL2 signals are transmitted to the VDSL2 service board, and the separated POTS signals are transmitted to the PSTN switch device.

#### Functional Specifications

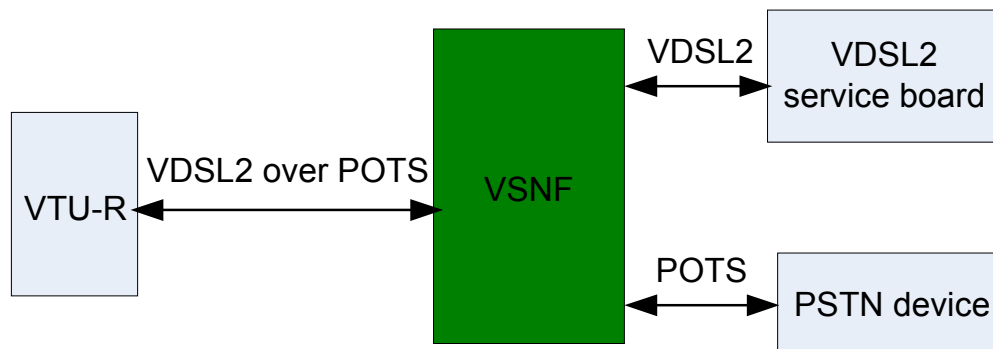
The H801VSNF board supports the following function:



- Separating 48-channel VDSL2 signals from POTS signals
- Real impedance (600 ohms)

Figure 3-158 shows the external connections of the H801VSNF board.

Figure 3-158 External connections of the H801VSNF board



## Technical Specifications

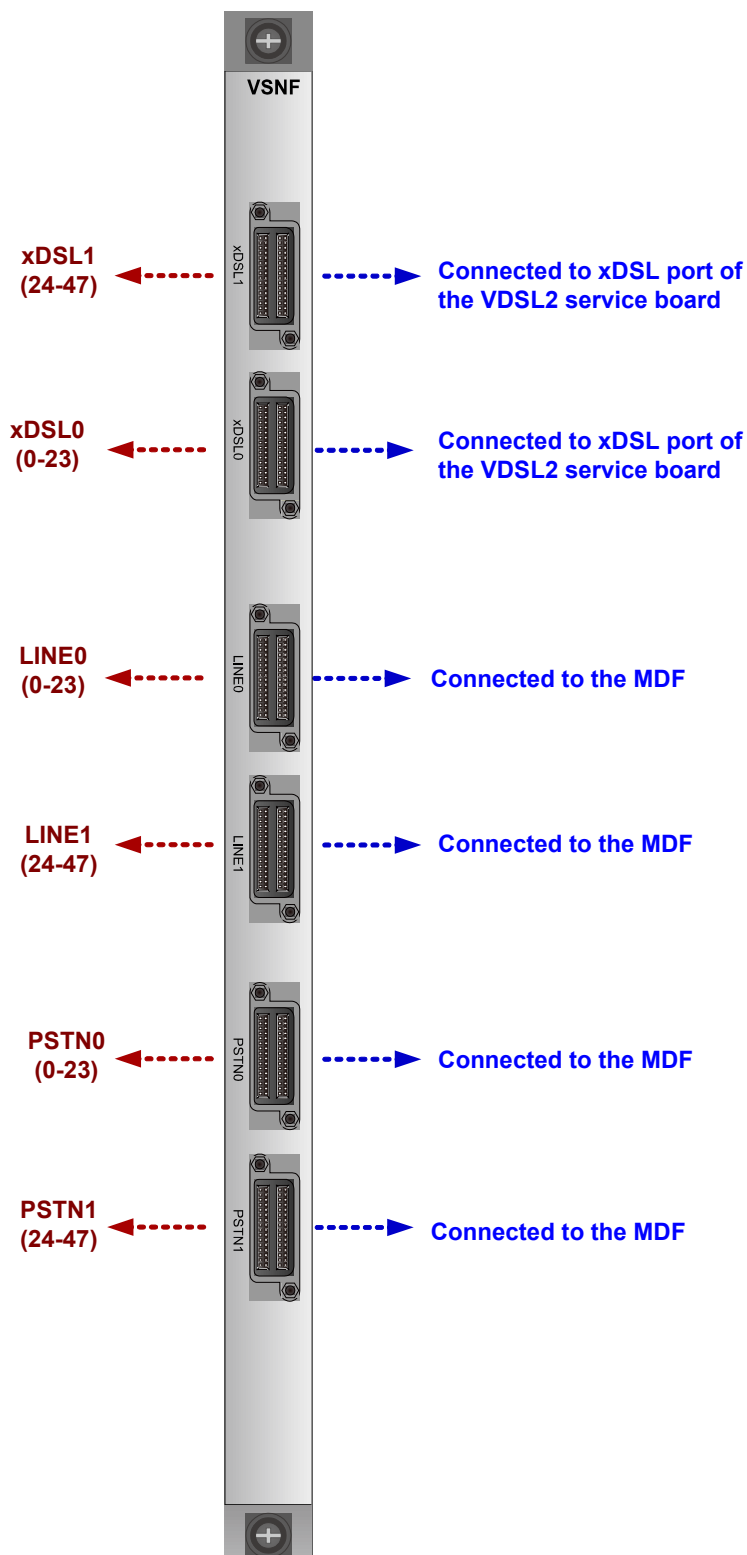
Table 3-209 Technical specifications of the H801VSNF board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801VSNF	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

The H801VSNF board consists of two parts: splitter module and protection module. The splitter module separates the VDSL signals and the POTS signals. The protection module supports the over-voltage protection of the LINE line.

## Front Panel Port



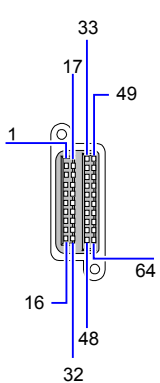
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignment of the xDSL port, LINE port, and PSTN port on the H801VSNF board are the same. For pin assignment of the xDSL0 port, see [Table 3-210](#); for pin assignment of the xDSL1 port, see [Table 3-211](#).

**Table 3-210** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	-
2		18			34		50	
3	6	19	14		35	22	51	-
4		20			36		52	
5	5	21	13		37	21	53	-
6		22			38		54	
7	4	23	12		39	20	55	-
8		24			40		56	
9	3	25	11		41	19	57	-
10		26			42		58	
11	2	27	10		43	18	59	-
12		28			44		60	
13	1	29	9		45	17	61	-
14		30			46		62	
15	0	31	8		47	16	63	-
16		32			48		64	

**Table 3-211** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	31	17	39		33	47	49	-
2		18			34		50	
3	30	19	38		35	46	51	-
4		20			36		52	
5	29	21	37		37	45	53	-
6		22			38		54	
7	28	23	36		39	44	55	-
8		24			40		56	
9	27	25	35		41	43	57	-
10		26			42		58	
11	26	27	34		43	42	59	-
12		28			44		60	
13	25	29	33		45	41	61	-
14		30			46		62	
15	24	31	32		47	40	63	-
16		32			48		64	

### 3.26.5 H801VSNLA Board Description

The H801VSNLA board is a 48-port VDSL2 over POTS splitter board that supports standard complex impedance. It separates 48 channels of VDSL signals from POTS signals. The separated VDSL2 signals are transmitted to the VDSL2 service board, and the separated POTS signals are transmitted to the PSTN switch device.

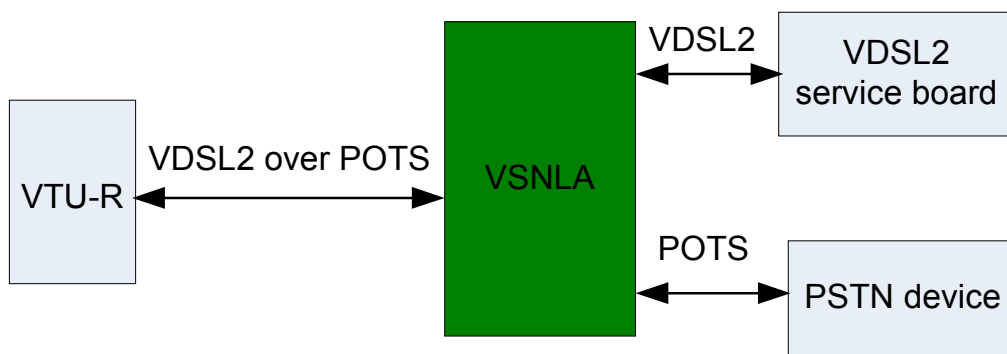
#### Functional Specifications

The H801VSNLA board supports the following function:

- Separating 48-channel VDSL2 signals from POTS signals
- Supports complex impedance (ETSI TS 101 952 01 01 option A)

**Figure 3-159** shows the external connections of the H801VSNLA board.

**Figure 3-159** External connections of the H801 VSNLA board



## Technical Specifications

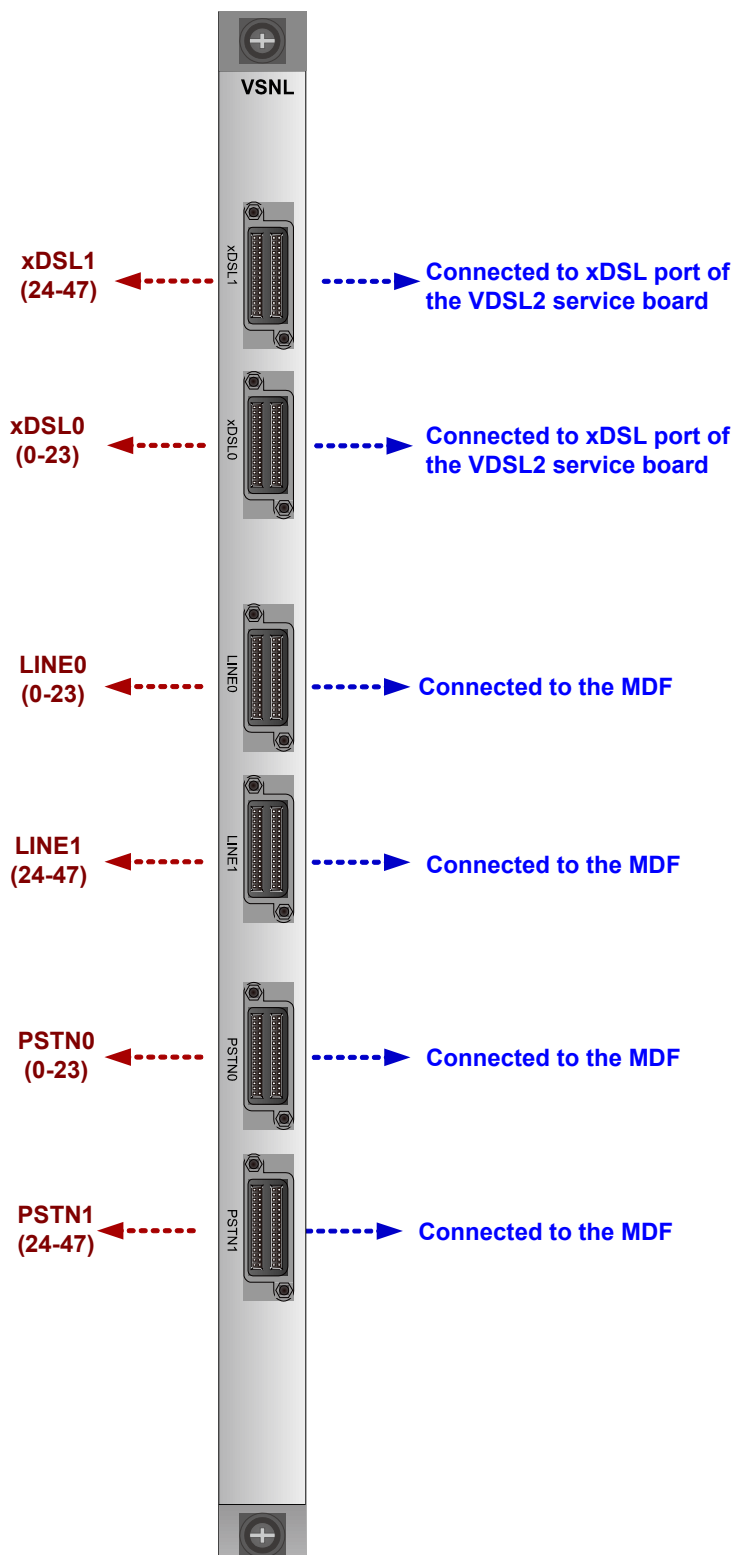
**Table 3-212** Technical specifications of the H801 VSNLA board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801 VSNLA	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

The H801 VSNLA board consists of two parts: splitter module and protection module. The splitter module separates the VDSL signals and the POTS signals. The protection module supports the over-voltage protection of the LINE line.

## Front Panel Port



### NOTE

Ports on the front panel are concave.

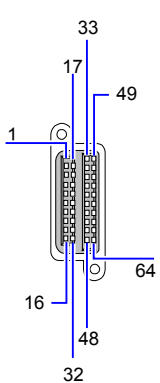
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignment of the xDSL port, LINE port, and PSTN port on the H801VSNLA board are the same. For pin assignment of the xDSL0 port, see [Table 3-213](#); for pin assignment of the xDSL1 port, see [Table 3-214](#).

**Table 3-213** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	-
2		18			34		50	
3	6	19	14		35	22	51	-
4		20			36		52	
5	5	21	13		37	21	53	-
6		22			38		54	
7	4	23	12		39	20	55	-
8		24			40		56	
9	3	25	11		41	19	57	-
10		26			42		58	
11	2	27	10		43	18	59	-
12		28			44		60	
13	1	29	9		45	17	61	-
14		30			46		62	
15	0	31	8		47	16	63	-
16		32			48		64	

**Table 3-214** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	31	17	39		33	47	49	-
2		18			34		50	
3	30	19	38		35	46	51	-
4		20			36		52	
5	29	21	37		37	45	53	-
6		22			38		54	
7	28	23	36		39	44	55	-
8		24			40		56	
9	27	25	35		41	43	57	-
10		26			42		58	
11	26	27	34		43	42	59	-
12		28			44		60	
13	25	29	33		45	41	61	-
14		30			46		62	
15	24	31	32		47	40	63	-
16		32			48		64	

### 3.26.6 H801VSPHA Board Description

The H801VSPHA board is a 64-port VDSL2 over ISDN splitter board, separating 64-channel VDSL2 signals from the ISDN signals. The H801VSPHA board supports overvoltage and overcurrent protection of the external line (K.21). After passing the H801VSPHA board, the VDSL2 signals of the LINE line from the MDF are transmitted to the VDSL2 service board, and the ISDN signals of the LINE line are transmitted to the PSTN switch through the MDF.

#### Functional Specifications

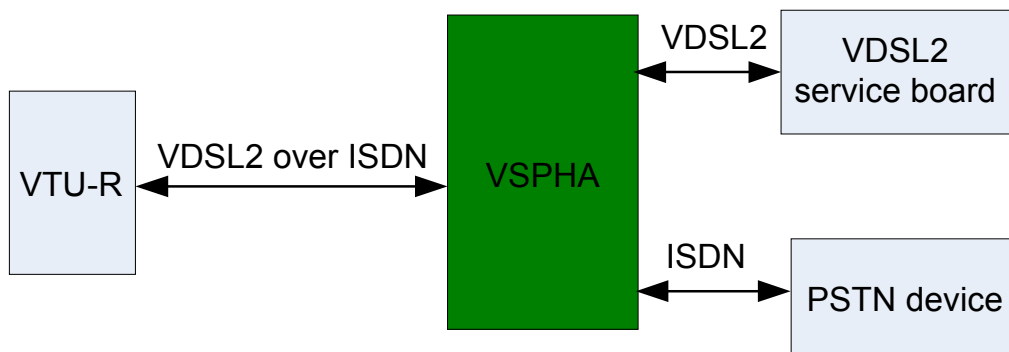
The H801VSPHA board supports the following function:

- Separating 64-channel VDSL2 signals from ISDN signals
- Supporting ISDN (2B1Q/4B3T) complex impedance.

**Figure 3-160** shows the external connections of the H801VSPHA board.



**Figure 3-160** External connections of the H801VSPHA board



## Technical Specifications

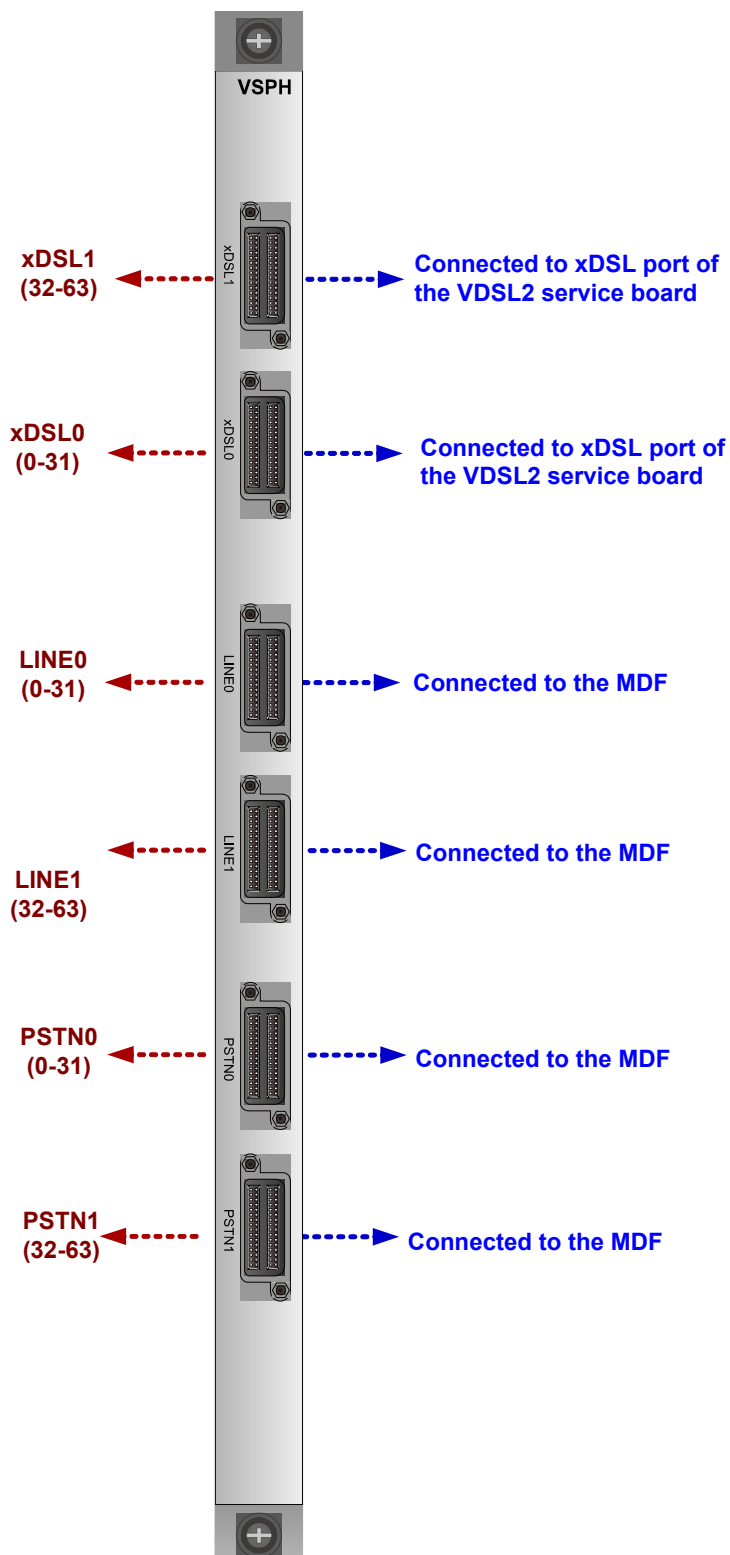
**Table 3-215** Technical specifications of the H801VSPHA board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801VSPHA	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

The H801VSPHA board consists of 2 parts: splitter module and protection module. The splitter module separates the VDSL signals and the ISDN signals. The protection module supports the over-voltage protection of the LINE line.

## Front Panel Port



### NOTE

Ports on the front panel are concave.

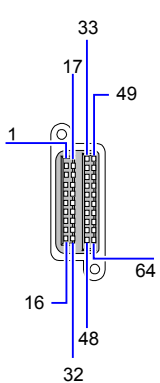
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignment of the xDSL port, LINE port, and PSTN port on the H801VSPHA board are the same. For pin assignment of the xDSL0 port, see [Table 3-216](#); for pin assignment of the xDSL1 port, see [Table 3-217](#).

**Table 3-216** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-217** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.26.7 H801VSPLA Board Description

H801VSPLA is a 64-port VDSL over POTS splitter board. It separates 64-channel VDSL2 signals from POTS signals and protects the subscriber line against overcurrent and overvoltage (K.20). The H801VSPLA board separates the LINE signals into VDSL2 signals and POTS signals. After that, the VDSL2 signals are sent to the VDSL2 service board and the POTS signals are sent to the PSTN device through the MDF.

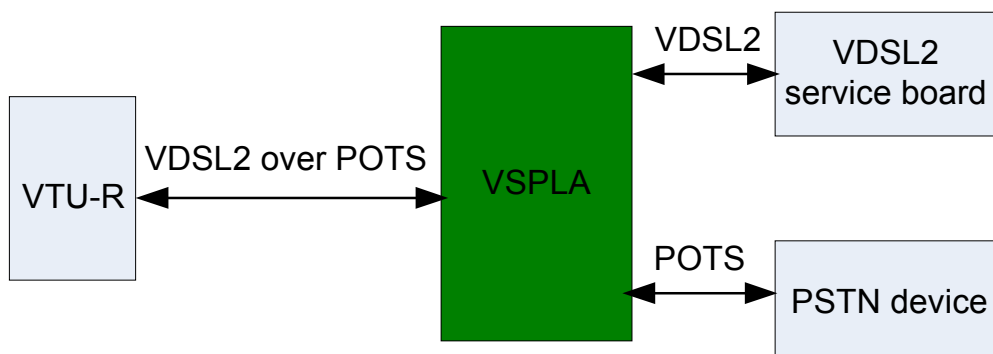
#### Functional Specifications

The H801VSPLA board supports the following functions:

- Separation of 64-channel VDSL2 signals from POTS signals
- Complex impedance (ETSI TS 101 952 01 01 option A)

**Figure 3-161** shows the external connections of the H801VSPLA board.

**Figure 3-161** External connections of the H801VSPLA board



## Technical Specifications

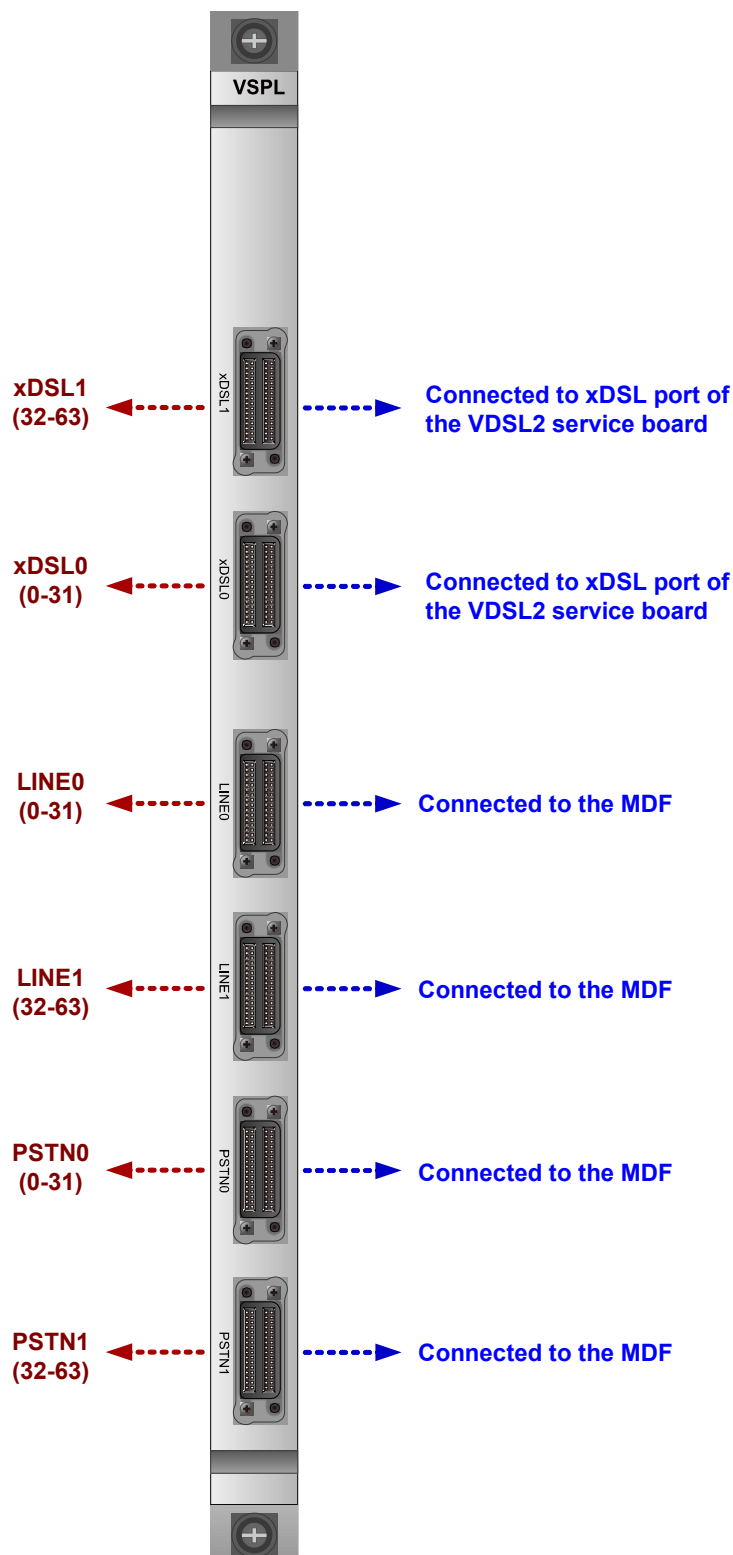
**Table 3-218** Technical specifications of the H801VSPLA board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801VSPLA	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

The H801VSPLA board is divided into two parts: splitter module and protection module. The splitter module separates VDSL2 signals from POTS signals, and the protection module protects the LINE line against overcurrent and overvoltage.

## Front Panel Port



### NOTE

Ports on the front panel are concave.

## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Port

The ports of the H801VSPLA board are located on its front panel. [Table 3-219](#) describes the ports of the H801VSPLA board.

**Table 3-219** Ports of the H801VSPLA board

Port	Function	Connection
xDSL1	Provides 32 channels (channels 32-63) of VDSL2 access service.	Use an <b>intra-subrack interconnection cable</b> or <b>inter-subrack interconnection cable</b> to connect the port to an xDSL port of the VDSL2 service board.
xDSL0	Provides 32 channels (channels 0-31) of VDSL2 access service.	
LINE0	Provides 32 channels (channels 0-31) of user access service.	Use a <b>subscriber cable</b> to connect the port to the MDF.
LINE1	Provides 32 channels (channels 32-63) of user access service.	
PSTN0	Provides 32 channels (channels 0-31) of POTS access service.	Use a <b>subscriber cable</b> to connect the port to the MDF.
PSTN1	Provides 32 channels (channels 32-63) of POTS access service.	

## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignments of xDSL, LINE, and PSTN ports on the H801VSPLA board are the same. [Table 3-220](#) describes the pin assignments of the xDSL0 port, and [Table 3-221](#) describes the pin assignments of the xDSL1 port.

**Table 3-220** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	



**Table 3-221** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

### 3.26.8 H801VSPLC Board Description

H801VSPLC is a 64-port VDSL2 over POTS splitter board. It separates 64-channel VDSL2 signals from POTS signals and protects the subscriber line against overcurrent and overvoltage (K.20). The H801VSPLC board separates the LINE signals into VDSL2 signals and POTS signals. After that, the VDSL2 signals are sent to the VDSL2 service board and the POTS signals are sent to the PSTN device through the MDF.

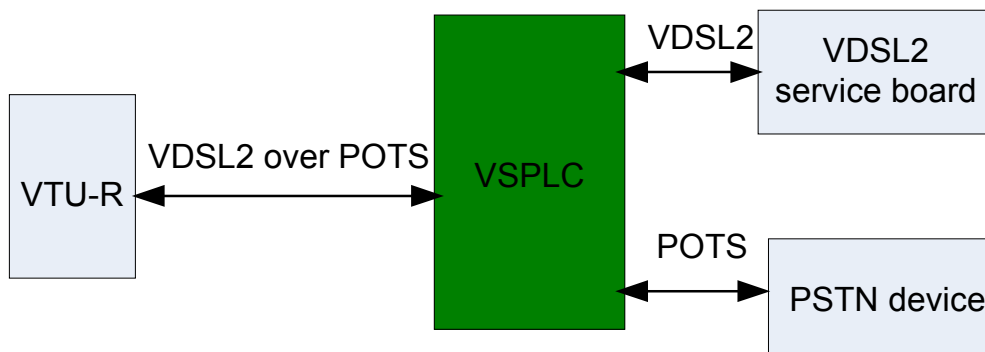
#### Functional Specifications

The H801VSPLC board supports the following functions:

- Separation of 64-channel VDSL2 signals from POTS signals
- Complex impedance (ETSI TS 101 952 01 01 option B)

**Figure 3-162** shows the external connections of the H801VSPLC board.

**Figure 3-162** External connections of the H801VSPLC board



## Technical Specifications

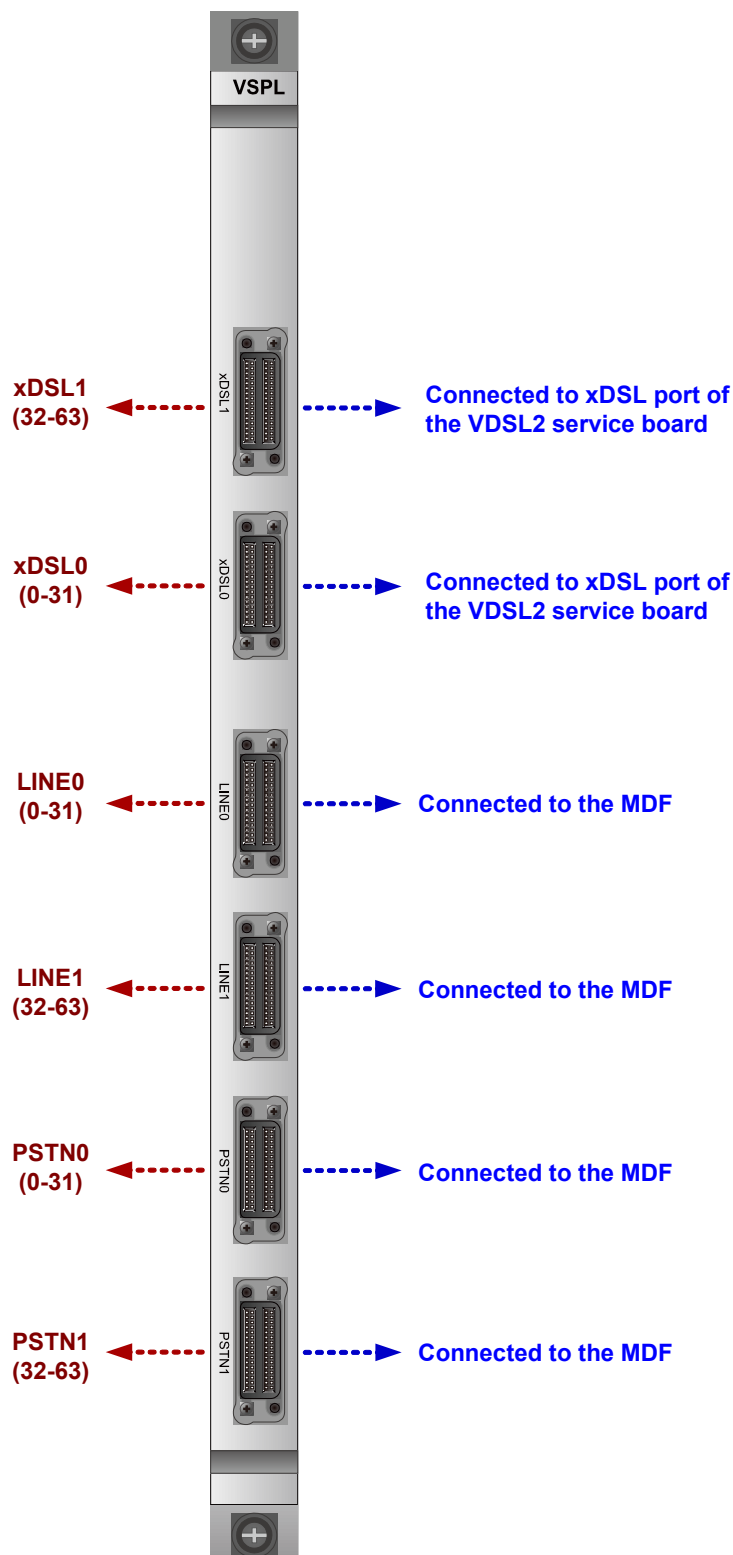
**Table 3-222** Technical specifications of the H801VSPLC board

Board	Dimensions (W x D x H)	Maximum Power Consumption
H801VSPLC	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Working Principle

The H801VSPLC board is divided into two parts: splitter module and protection module. The splitter module separates VDSL2 signals from POTS signals, and the protection module protects the LINE line against overcurrent and overvoltage.

## Front Panel Port



 **NOTE**

Ports on the front panel are concave.

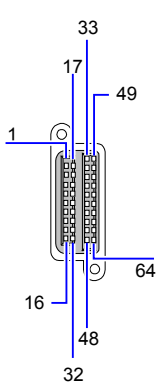
## NOTICE

- When cables from the PSTN and LINE ports are routed to an outdoor environment, the MDF must be installed with a protective unit.
- When cables from the LINE port are routed to the user side, the MDF must be installed with a protective unit.
- The PSTN port must be connected to an MDF with a protective unit or a POTS device. Otherwise, when the LINE port is struck by lightning, energy inside the SPL board or unit fluctuates and overlaps, which may damage the LINE port.

## Pin Assignments

The pin assignments of xDSL, LINE, and PSTN ports on the H801VSPLC board are the same. [Table 3-223](#) describes the pin assignments of the xDSL0 port, and [Table 3-224](#) describes the pin assignments of the xDSL1 port.

**Table 3-223** Pin assignments of the xDSL0 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	

**Table 3-224** Pin assignments of the xDSL1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

## 3.27 Extension Board

Extension boards transfer services of the service boards.

### 3.27.1 H801SHET Board Description

The H801SHET board is an 64-channel extension board. It can connect the signals between the four Delander 64-pin ports.

#### Functional Specifications

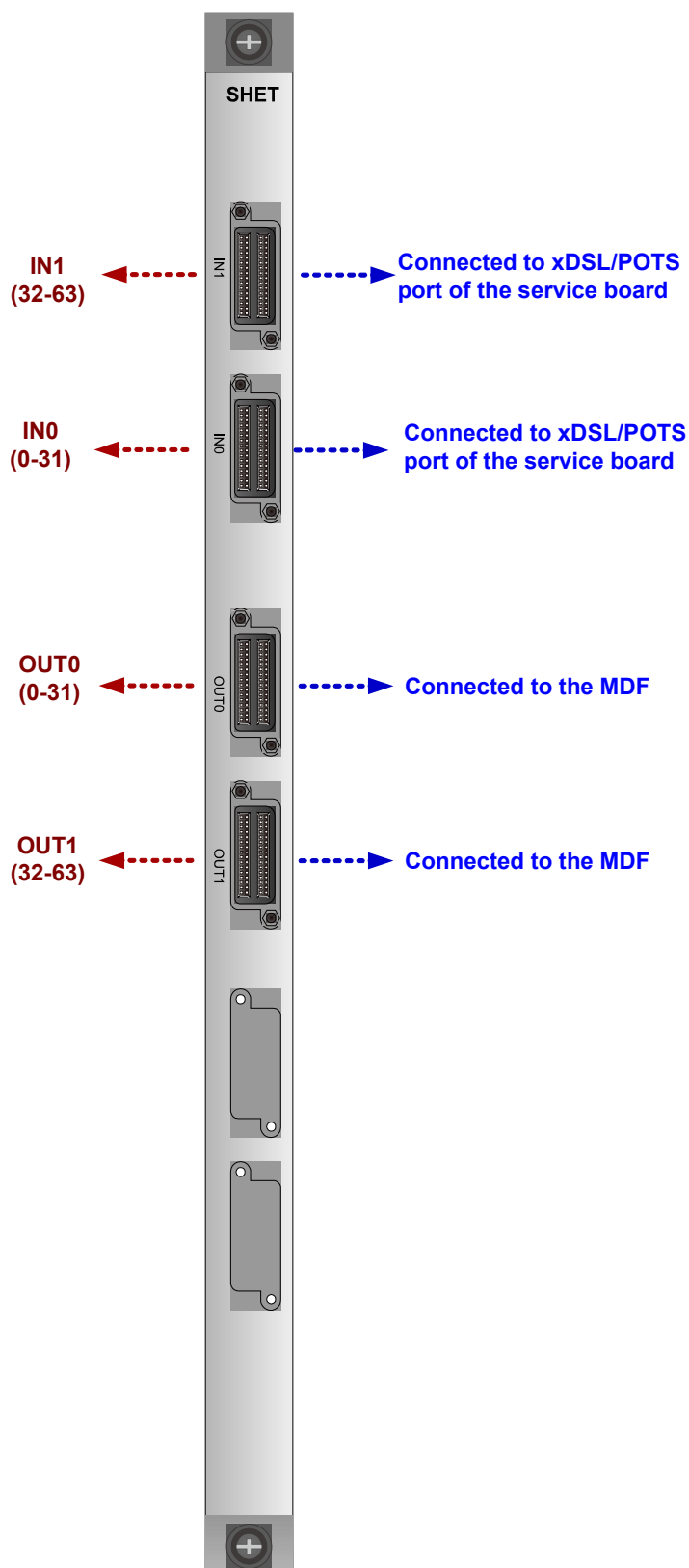
The H801SHET board is used to extend the H80ASHLM and H802SHGM board, and it converts signals between Champ 64-pin connector and Delander 64-pin connector.

## Technical Specifications

**Table 3-225** Technical specifications of the H801SHET board

<b>Board</b>	<b>Dimensions (W x D x H)</b>	<b>Maximum Power Consumption</b>
H801SHET	22.86 mm x 237.00 mm x 395.40 mm	0 W

## Front Panel Port



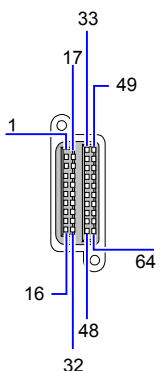
 **NOTE**

- Ports on the front panel are concave.
- The lower two connectors on the front panel are used only for securing redundant subscriber cables.

## Pin Assignments

**Table 3-226** describes the pin assignments of the IN0 port of the H801SHET board. **Table 3-227** describes the pin assignments of the IN1 port of the H801SHET board. The pin assignments of the OUT port are the same as those of the IN port.

**Table 3-226** Pin assignments of the IN0 port

Pin	Signa 1	Pin	Signa 1	Port	Pin	Signa 1	Pin	Signa 1
1	7	17	15		33	23	49	31
2		18			34		50	
3	6	19	14		35	22	51	30
4		20			36		52	
5	5	21	13		37	21	53	29
6		22			38		54	
7	4	23	12		39	20	55	28
8		24			40		56	
9	3	25	11		41	19	57	27
10		26			42		58	
11	2	27	10		43	18	59	26
12		28			44		60	
13	1	29	9		45	17	61	25
14		30			46		62	
15	0	31	8		47	16	63	24
16		32			48		64	



**Table 3-227** Pin assignments of the IN1 port

Pin	Signal	Pin	Signal	Port	Pin	Signal	Pin	Signal
1	39	17	47		33	55	49	63
2		18			34		50	
3	38	19	46		35	54	51	62
4		20			36		52	
5	37	21	45		37	53	53	61
6		22			38		54	
7	36	23	44		39	52	55	60
8		24			40		56	
9	35	25	43		41	51	57	59
10		26			42		58	
11	34	27	42		43	50	59	58
12		28			44		60	
13	33	29	41		45	49	61	57
14		30			46		62	
15	32	31	40		47	48	63	56
16		32			48		64	

## 3.28 Filler Panel

A filler panel is used to cover a slot that is not in use in a subrack.

### Functions

The filler panel supports the following functions:

- Prevents electrical parts in the subrack from being exposed.
- Prevents foreign objects from entering the subrack.
- Ensures that the subrack meets electromagnetic interference (EMI) requirements.
- Ensures that cold air inside the subrack flows along the specified air channel.
- Helps to lay out cables reserved for future capacity expansion when the filler panel provides interfaces.









 **NOTICE**


Filler panels must be installed in the vacant slots in the subrack. Otherwise, heat dissipation of the boards will be affected.

## Description

**Table 3-228** describes the applicable slots, dimensions, and appearance of filler panels.

**Table 3-228** Applicable slots, dimensions, and appearance of filler panels

Slot	Appearance (View of the Horizontally Placed Board)	Dimensions (W x H)
Control board slot		MA5600T/ MA5603T: 25.40 mm x 395.40 mm  MA5608T: 35.56 mm x 134.84 mm
Power board slot		MA5600T/ MA5603T: 25.40 mm x 105.10 mm
Slot for universal interface board		25.40 mm x 183.20 mm
Service board slot in the service subrack	<ul style="list-style-type: none"> <li>● Default configuration: </li> <li>● Pre-installing cables is required (in future when the ADPE, CAME, or VDPE board is configured): </li> </ul>	22.86 mm x 395.40 mm
GIU slot in the service subrack		25.40 mm x 197.20 mm
Service board slot in the SPL subrack	<ul style="list-style-type: none"> <li>● Pre-installing cables is not required (same as the filler panel in the service board slot of the service subrack): </li> <li>● Pre-installing cables is required (in future when the 48-port or 64-port SPL board is configured): </li> </ul>	22.86 mm x 395.40 mm

Slot	Appearance (View of the Horizontally Placed Board)	Dimensions (W x H)
GIU slot in the SPL subrack		25.40 mm x 395.40 mm

# 4 Optical and Electrical Module

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## About This Chapter

The optical and electrical module is a hot-swappable, protocol-independent optical transceiver used in optical communications for both telecommunication and data communications applications.

### [4.1 Overview](#)

This topic describes types and labels of optical and electrical modules.

### [4.2 PON Optical Module](#)

This topic describes the types, parameters, and relation with boards of PON optical modules.

### [4.3 GE Optical/Electrical Module](#)

This topic describes the types, specifications, and relation between GE optical/electrical modules and boards.

### [4.4 10GE Optical Module](#)

This topic describes the types, specifications, and relation with boards of 10GE optical modules.

### [4.5 FE Optical Module](#)

This topic describes the types, specifications, and relation between FE optical modules and boards

### [4.6 FE/GE Adaptive Optical Module](#)

This topic describes the parameters and relation between FE/GE adaptive optical modules and boards.




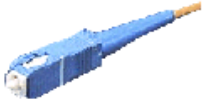

### [4.7 STM-1 Optical Module](#)




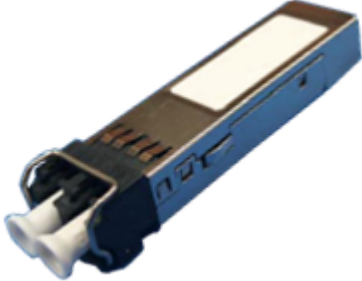

This topic describes the specifications and relation with boards of STM-1 optical modules.




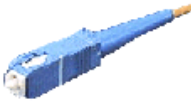


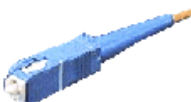
## 4.1 Overview

This topic describes types and labels of optical and electrical modules.

## Types of Optical and Electrical Modules

Module Type	Description	Appearance	Connector Type
SFP	Small form-factor pluggable optical module. supports the highest rate 4 Gbit/s and LC connectors.	<p><b>Two-fiber bi-directional optical module</b></p>  <p><b>One-fiber bi-directional optical module</b></p> 	<p>LC/PC</p>  <p>SC/PC, SC/UPC</p> 
		<p><b>Electrical module</b></p> 	RJ-45

Module Type	Description	Appearance	Connector Type
eSFP	Enhanced SFP, supports performance report LC connectors.	<p><b>Two-fiber bi-directional optical module</b></p>  <p><b>One-fiber bi-directional optical module</b></p> 	LC/PC 
CSFP	Compact SFP, uses general SFP connectors but its dimensions is reduced to 1/2 or even 1/4 of the existing industry standard. It supports multiple channels. On the device, CSFP supports dual channels.		LC/PC 

Module Type	Description	Appearance	Connector Type
SFP+	High-speed (8 Gbit/s and 10 Gbit/s) SFP	<p><b>Two-fiber bi-directional optical module</b></p>  <p><b>One-fiber bi-directional optical module</b></p> 	<p>LC/PC</p>  <p>SC/PC, SC/UPC</p> 
XFP	10-Gigabit SFP, supports LC connectors.		<p>LC/PC</p>  <p>SC/PC, SC/UPC</p> 

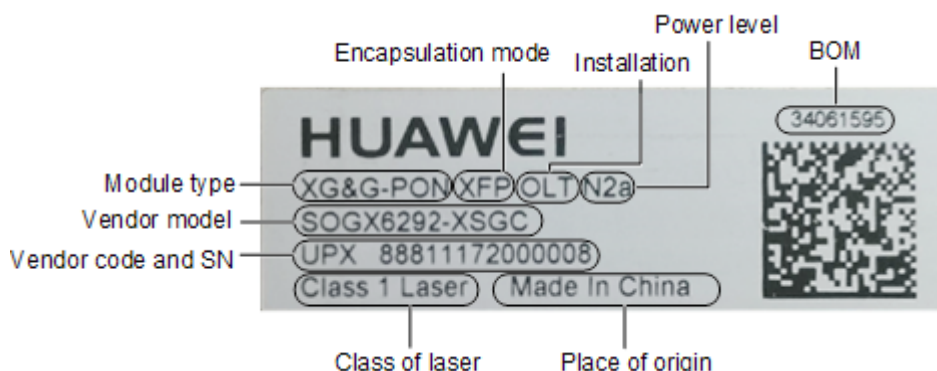
 **NOTE**

- The appearances of SFP, CSFP, and eSFP optical modules are the same.
- SFP, CSFP, and eSFP optical modules use the SFP connector.
- Unlike SFP optical modules, eSFP optical modules support performance reporting.
- A CSFP optical module is a multi-channel optical module. Huawei devices use two-channel CSFP optical modules.
- The size of an SFP+ optical module is the same as that of an SFP optical module, and the size of an XFP optical module is larger than that of an SFP+ optical module.

## Label on the Optical Module

The label attached on an optical module presents the information about this optical module. [Figure 4-1](#) shows the label of a PON optical module; [Figure 4-2](#) shows the label of a 10GE/GE/FE optical module.

**Figure 4-1** Appearance of the Label on a PON Optical Module

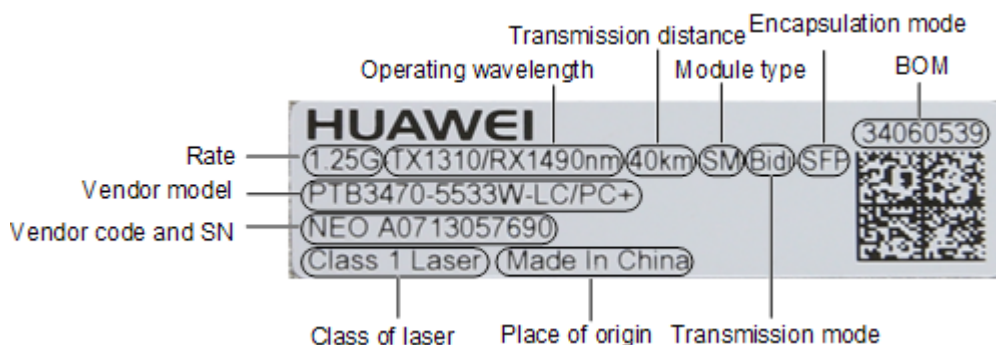


**Table 4-1** Description of the Label on a PON Optical Module

Item	Description
Item number (BOM)	Part identification code. It consists of 8-17 digits containing letters, number, and symbols - =. It is also called part number (PN for short). The BOM of optical and electrical modules consist of 8 or 12 digits.
Module type	Optical module types include GPON, XGPON, XGSPON, XG&G-PON, and XGS&G-PON.
Encapsulation mode	Encapsulation mode of an optical module. <b>NOTE</b> This field is displayed on only combo PON (XG&G-PON and XGS&G-PON) modules.
Installation	Device on which an optical module is installed: OLT, ONU, and ONT.
Power level	<ul style="list-style-type: none"> <li>● GPON: CLASS B+/C+/C++</li> <li>● XGPON/XGSPON: N1/N2a</li> <li>● XG&amp;G-PON and XGS&amp;G-PON: N1/N2a/D1/D2</li> </ul>
Vendor model	Model of an optical module vendor.
Vendor code and SN	Code and SN of an optical module vendor.
Class of laser	Class of laser (CLASS 1 LASER) of an optical module.
Place of origin	Place where an optical module is produced.



**Figure 4-2** Appearance of the Label on a 10GE/GE/FE Optical Module



**Table 4-2** Description of the Label on a 10GE/GE/FE Optical Module

Item	Description
Item number (BOM)	Part identification code. It consists of 8-17 digits containing letters, number, and symbols "-" and "=". It is also called part number (PN for short). The BOM of optical and electrical modules consist of 8 or 12 digits.
Rate	Rate of an optical module.
Operating wavelength	Operating wavelength of an optical module.
Transmission distance	Transmission distance of an optical module.
Fiber type	The fiber type can be single-mode (SM) or multimode (MM).
Transmission mode	Transmission mode of an optical module. For example, BIDI indicates a one-fiber bi-directional optical module. <b>NOTE</b> This field is displayed on only GE optical modules.
Encapsulation mode	Encapsulation mode of an optical module.
Vendor model	Model of an optical module vendor.
Vendor code and SN	Code and SN of an optical module vendor.
Class of laser	Class of laser (CLASS 1 LASER) of an optical module.
Place of origin	Place where an optical module is produced.

## 4.2 PON Optical Module

This topic describes the types, parameters, and relation with boards of PON optical modules.

**Table 4-3** shows the relation between PON optical modules and boards.

**Table 4-3** Relation between PON optical modules and boards

Board Type	Board Name	Optical Module Type	Encapsulation Type	Port Rate
Upstream interface board	P2CA	<b>GPON Upstream Optical Module</b>	SFP	Tx: 2.49 Gbit/s Rx: 1.24 Gbit/s
GPON interface board	GPBC/GPBD/ GPFD/GPBH/ GPMD	<b>GPON Optical Module</b>	SFP	Tx: 2.488 Gbit/s Rx: 1.244 Gbit/s
10G GPON interface board	XGBC/XGBD	<b>10G GPON Optical Module</b>	SFP+	Tx: 9.953 Gbit/s Rx: 2.488 Gbit/s

## GPON Upstream Optical Module

A GPON upstream optical module is connected to one SC optical fiber to provide GPON upstream transmission.

<b>Type</b>	One-fiber bi-directional optical module, ONU class B+	One-fiber bi-directional optical module, ONU class C+
<b>Operating Wavelength</b>	Tx: 1310 nm Rx: 1490 nm	Tx: 1310 nm Rx: 1490 nm
<b>Encapsulation Type</b>	SFP	SFP
<b>Port Rate</b>	Tx: 1.24 Gbit/s Rx: 2.49 Gbit/s	Tx: 1.24 Gbit/s Rx: 2.49 Gbit/s
<b>Minimum Output Optical Power</b>	0.50 dBm	0.50 dBm
<b>Maximum Output Optical Power</b>	5.00 dBm	5.00 dBm
<b>Maximum Receiver Sensitivity</b>	-27.00 dBm	-30.00 dBm (FEC enabled)
<b>Optical Connector Type</b>	SC	SC
<b>Optical Fiber Type</b>	Single-mode	Single-mode

## GPON Optical Module

A GPON optical module is connected to one SC optical fiber to provide GPON access service.

No.	1	2	3
<b>Type</b>	One-fiber bi-directional optical module, class B+	One-fiber bi-directional optical module, class C+	One-fiber bi-directional optical module, class C++
<b>Operating Wavelength</b>	Tx: 1490 nm Rx: 1310 nm	Tx: 1490 nm Rx: 1310 nm	Tx: 1490 nm Rx: 1310 nm
<b>Encapsulation Type</b>	SFP	SFP	SFP
<b>Port Rate</b>	Tx: 2.488 Gbit/s Rx: 1.244 Gbit/s	Tx: 2.488 Gbit/s Rx: 1.244 Gbit/s	Tx: 2.488 Gbit/s Rx: 1.244 Gbit/s
<b>Minimum Output Optical Power</b>	1.50 dBm	3.00 dBm	6.00 dBm
<b>Maximum Output Optical Power</b>	5.00 dBm	7.00 dBm	10.00 dBm
<b>Maximum Receiver Sensitivity</b>	-28.00 dBm	-32.00 dBm	-35.00 dBm
<b>Optical Connector Type</b>	SC	SC	SC
<b>Optical Fiber Type</b>	Single-mode	Single-mode	Single-mode
<b>Overload Optical Power</b>	-8.0 dBm	-12.0 dBm	-15.0 dBm
<b>Extinction Ratio</b>	10 dB	8.2 dB	8.2 dB

## 10G GPON Optical Module

A 10G GPON optical module is connected to one SC optical fiber to provide 10G GPON access service.

No.	1	2	3
<b>Type</b>	One-fiber bi-directional optical module, N1	One-fiber bi-directional optical module, N1	One-fiber bi-directional optical module, N2a

<b>Operating Wavelength</b>	Tx: 1577 nm Rx: 1270 nm	Tx: 1577 nm Rx: 1270 nm	Tx: 1577nm Rx: 1270nm
<b>Encapsulation Type</b>	XFP	SFP+	SFP+
<b>Port Rate</b>	Tx: 9.953 Gbit/s Rx: 2.488 Gbit/s	Tx: 9.953 Gbit/s Rx: 2.488 Gbit/s	Tx: 9.953 Gbit/s Rx: 2.488 Gbit/s
<b>Minimum Output Optical Power</b>	2 dBm	2 dBm	4dBm
<b>Maximum Output Optical Power</b>	6 dBm	6 dBm	8dBm
<b>Maximum Receiver Sensitivity</b>	-27.5 dBm	-27.5 dBm	-29.5dBm
<b>Optical Connector Type</b>	SC	SC	SC
<b>Optical Fiber Type</b>	Single-mode	Single-mode	Single-mode
<b>Overload Optical Power</b>	-7 dBm	-7 dBm	-9dBm
<b>Extinction Ratio</b>	8.2 dB	8.2 dB	8.2dB

## Standards Compliance of the GPON Port

Standard ID	Description
ITU-T G.984.1	Gigabit-capable Passive Optical Networks (GPON) General Characteristics
ITU-T G.984.2	Gigabit-capable Passive Optical Networks (GPON) Physical Media Dependent (PMD) Layer Specification
ITU-T G.984.3	Gigabit-capable Passive Optical Networks (GPON) Transmission Convergence Layer Specification
ITU-T G.984.4	Gigabit-capable Passive Optical Networks (GPON) ONU Management and Control Interface Specification

## Standards Compliance of the 10G GPON Port

Standard ID	Description
ITU-T G.987.1	10Gigabit-capable Passive Optical Networks (XG-PON) General Requirements
ITU-T G.987.2	10Gigabit-capable Passive Optical Networks (XG-PON) Physical Media Dependent (PMD) Layer Specification
ITU-T G.987.3	10Gigabit-capable Passive Optical Networks (XG-PON) Transmission Convergence Layer Specification
ITU-T G.988	10Gigabit-capable Passive Optical Networks (XG-PON) ONU Management and Control Interface Specification

## 4.3 GE Optical/Electrical Module

This topic describes the types, specifications, and relation between GE optical/electrical modules and boards.

**Table 4-4** shows the relation between GE optical/electrical modules and boards.

**Table 4-4** Relation between GE optical/electrical modules and boards

Board Type	Board Name	One-channel Two-fiber Bi-directional GE Optical Module	One-channel One-fiber Bi-directional GE Optical Module	Two-channel One-fiber Bi-directional GE Optical Module	One-channel Two-fiber Bi-directional GE CWDM Optical Module	GE Electrical Module
Control board	SCUB/ SCUN/ SCUK/ SCUF/ SCUH	√	√	×	√	√
	MCUD/ MCUD1/ MCUE	√	√	×	√	√
Upstream interface board	GICF/ GICK/ X2CK/ H802X2CS	√	√	×	√	√
	GICD	√	√	×	√	√
	GSCA	√	√	×	√	×

Board Type	Board Name	One-channel Two-fiber Bi-directional GE Optical Module	One-channel One-fiber Bi-directional GE Optical Module	Two-channel One-fiber Bi-directional GE Optical Module	One-channel Two-fiber Bi-directional GE CWDM Optical Module	GE Electrical Module
SPU board	SPUA/ SPUF	√	√	×	√	×
	SPUC	√	√	√	√	×
Ethernet service access board	ETHA	√	×	×	×	×
	ETHB	√	√	×	√	√
P2P interface board	OPGD/ OPGE	√	√	√	√	√

## One-channel Two-fiber Bi-directional GE Optical Module

A one-channel two-fiber bi-directional GE optical module is connected to two LC optical fibers (one for transmission and the other for reception) to provide one GE channel.

Type	One-channel two-fiber bi-directional optical module				
No.	1	2	3	4	5
Operating Wavelength	850 nm	1310 nm	1310 nm	1550 nm	1550 nm
Encapsulation Type	eSFP	eSFP	eSFP	eSFP	eSFP
Port Rate	2.13 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s
Minimum Output Optical Power	-9.50 dBm	-9.00 dBm	-5.00 dBm	-5.00 dBm	-2.00 dBm
Maximum Output Optical Power	-2.50 dBm	-3.00 dBm	0 dBm	0 dBm	5.00 dBm
Maximum Receiver Sensitivity	-17.00 dBm	-20.00 dBm	-23.00 dBm	-22.00 dBm	-23.00 dBm
Optical Connector Type	LC	LC	LC	LC	LC
Optical Fiber Type	Multi-mode	Single-mode	Single-mode	Single-mode	Single-mode
Reach	0.50 km	10.00 km	40.00 km	40.00 km	80.00 km

<b>Overload Optical Power</b>	0 dBm	-3.0 dBm	-3.0 dBm	-3.0 dBm	-3.0 dBm
<b>Extinction Ratio</b>	9.0 dB	9.0 dB	9.0 dB	8.5 dB	9.0 dB

## One-channel One-fiber Bi-directional GE Optical Module

A one-channel one-fiber bi-directional GE optical module is connected to one LC optical fiber (for both transmission and reception) to provide one GE channel.

Type	One-channel one-fiber bi-directional optical module					
No.	1	2	3	4	5	6
<b>Operating Wavelength</b>	Tx: 1310 nm Rx: 1490 nm	Tx: 1490 nm Rx: 1310 nm	Tx: 1310 nm Rx: 1490 nm	Tx: 1490 nm Rx: 1310 nm	Tx: 1570nm Rx: 1490nm	Tx: 1490nm Rx: 1570nm
<b>Encapsulation Type</b>	eSFP	eSFP	eSFP	eSFP	eSFP	eSFP
<b>Port Rate</b>	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s
<b>Minimum Output Optical Power</b>	-9.00 dBm	-9.00 dBm	-2.00 dBm	-2.00 dBm	-2 dBm	-2dBm
<b>Maximum Output Optical Power</b>	-3.00 dBm	-3.00 dBm	3.00 dBm	3.00 dBm	4 dBm	4dBm
<b>Maximum Receiver Sensitivity</b>	-19.50 dBm	-19.50 dBm	-23.00 dBm	-23.00 dBm	-26 dBm	-26dBm
<b>Optical Connector Type</b>	LC	LC	LC	LC	LC	LC
<b>Optical Fiber Type</b>	Single-mode	Single-mode	Single-mode	Single-mode	Single-mode	Single-mode
<b>Reach</b>	10.00 km	10.00 km	40.00 km	40.00 km	80 km	80km
<b>Overload Optical Power</b>	-3.0 dBm	-3.0 dBm	-3.0 dBm	-3.0 dBm	-3 dBm	-3dBm
<b>Extinction Ratio</b>	6.0 dB	6.0 dB	9.0 dB	9.0 dB	9 dB	9dB

## Two-channel One-fiber Bi-directional GE Optical Module

A two-channel one-fiber bi-directional GE optical module is connected to two LC optical fibers (each for both transmission and reception) to provide two GE channels.

<b>Type</b>	Two-channel one-fiber bi-directional optical module	
<b>No.</b>	1	2
<b>Operating Wavelength</b>	Tx: 1490 nm Rx: 1310 nm	Tx: 1490nm Rx: 1310nm
<b>Encapsulation Type</b>	CSFP	CSFP
<b>Port Rate</b>	1.25 Gbit/s	1.25 Gbit/s
<b>Minimum Output Optical Power</b>	-9.00 dBm	-5.0dBm
<b>Maximum Output Optical Power</b>	-3.00 dBm	0dBm
<b>Maximum Receiver Sensitivity</b>	-19.50 dBm	-25.0dBm
<b>Optical Connector Type</b>	LC	LC
<b>Optical Fiber Type</b>	Single-mode	Single-mode
<b>Reach</b>	10.00 km	40.0km
<b>Overload Optical Power</b>	-3.0 dBm	0dBm
<b>Extinction Ratio</b>	6.0 dB	6.6dB



## One-channel Two-fiber Bi-directional GE CWDM Optical Module

A GE CWDM optical module is connected to two LC optical fibers (one for transmission and the other for reception) to provide one GE channel.

<b>Type</b>	One-channel two-fiber bi-directional optical module
<b>Operating Wavelength</b>	1471 nm, 1491 nm, 1511 nm, 1531 nm, 1551 nm, 1571 nm, 1591 nm, 1611 nm
<b>Encapsulation Type</b>	eSFP
<b>Port Rate</b>	100 Mbit/s-2.67 Gbit/s
<b>Minimum Output Optical Power</b>	0 dBm
<b>Maximum Output Optical Power</b>	5.0 dBm
<b>Maximum Receiver Sensitivity</b>	-28.0 dBm
<b>Optical Connector Type</b>	LC
<b>Optical Fiber Type</b>	Single-mode
<b>Reach</b>	80.0 km
<b>Overload Optical Power</b>	-9.0 dBm
<b>Extinction Ratio</b>	8.5 dB

### NOTE

There are different types of GE CWDM optical modules, and these types of optical modules vary with the operating wavelength.

## GE Electrical Module

A GE electrical module is connected to a network cable to provide one GE channel.

<b>Type</b>	1000Base-T RJ45 electrical port
<b>Encapsulation Type</b>	SFP
<b>Port Rate</b>	Full-duplex 1000 Mbit/s

<b>Reach</b>	100.00 m
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## Standards Compliance of the GE Optical Module

Standard ID	Description
IEEE 802.3z	1000BASE-X Gbit/s Ethernet over Fiber-Optic at 1 Gbit/s
SFF-8472	Specification for Diagnostic Monitoring Interface for Optical Transceivers

## Standards Compliance of the GE Electrical Module

Standard ID	Description
IEEE 802.3ab	1000BASE-T Gbit/s Ethernet over twisted pair at 1 Gbit/s

## 4.4 10GE Optical Module

This topic describes the types, specifications, and relation with boards of 10GE optical modules.

**Table 4-5** shows the relation between 10GE optical modules and boards.

**Table 4-5** Relation between 10GE optical modules and boards

Board Type	Board Name	One-channel One-fiber Bi-directional 10GE Optical Module (SFP+)	One-channel One-fiber Bi-directional 10GE Optical Module (XFP)	One-channel One-fiber Bi-directional 10GE Optical Module	One-channel Two-fiber Bi-directional 10GE CWDM Optical Module (SFP+)
Control board	SCUH/ SCUV/ MCUD1	√	×	√	√
Upstream interface board	X1CA/ X2CA	×	√	√	×
	X2CS/ X2CK	√	×	√	√
SPU board	SPUA/ SPUC/ SPUF	√	×	√	√

## One-channel two-fiber bi-directional 10GE Optical Module (SFP+)

A 10GE optical module (SFP+) is connected to two LC optical fibers to provide one 10GE channel.

Type	One-channel two-fiber bi-directional optical module			
No.	1	2	3	4
Operating Wavelength	850 nm	1310 nm	1550 nm	1550 nm
Encapsulation Type	SFP+	SFP+	SFP+	SFP+
Port Rate	10 Gbit/s	10 Gbit/s	9.95 Gbit/s-11.10 Gbit/s	9.95 Gbit/s-10.31 Gbit/s
Minimum Output Optical Power	-7.30 dBm	-8.20 dBm	-4.70 dBm	0 dBm
Maximum Output Optical Power	-1.00 dBm	0.50 dBm	4.00 dBm	4.00 dBm
Maximum Receiver Sensitivity	-11.10 dBm	-12.60 dBm	-14.10 dBm	-24.00 dBm
Optical Connector Type	LC	LC	LC	LC
Optical Fiber Type	Multi-mode	Single-mode	Single-mode	Single-mode
Reach	0.30 km	10.00 km	40.00 km	80.00 km
Overload Optical Power	-1.0 dBm	0.5 dBm	0.5 dBm	-7.0 dBm
Extinction Ratio	3.0 dB	3.5 dB	3.5 dB	9.0 dB

## One-channel two-fiber bi-directional 10GE Optical Module (XFP)

A 10GE optical module (XFP) is connected to two LC optical fibers to provide one 10GE channel.

Type	One-channel two-fiber bi-directional optical module			
No.	1	2	3	4
Operating Wavelength	850 nm	1310 nm	1550 nm	1550 nm
Encapsulation Type	XFP	XFP	XFP	XFP
Port Rate	10.30 Gbit/s	9.95 Gbit/s-10.71 Gbit/s	9.95 Gbit/s-11.10 Gbit/s	9.95 Gbit/s-11.10 Gbit/s

<b>Minimum Output Optical Power</b>	-7.30 dBm	-6.00 dBm	-1.00 dBm	0 dBm
<b>Maximum Output Optical Power</b>	-1.30 dBm	-1.00 dBm	2.00 dBm	4.00 dBm
<b>Maximum Receiver Sensitivity</b>	-7.50 dBm	-14.40 dBm	-15.00 dBm	-24.00 dBm
<b>Optical Connector Type</b>	LC	LC	LC	LC
<b>Optical Fiber Type</b>	Multi-mode	Single-mode	Single-mode	Single-mode
<b>Reach</b>	0.30 km	10.00 km	40.00 km	80.00 km
<b>Overload Optical Power</b>	-1.0 dBm	0.5 dBm	-1.0 dBm	-7.0 dBm
<b>Extinction Ratio</b>	3.0 dB	6.0 dB	8.2 dB	9.0 dB

## One-channel One-fiber Bi-directional 10GE Optical Module

A 10GE optical module (SFP+) is connected to one LC optical fibers to provide one 10GE channel.

<b>Type</b>	One-channel one-fiber bi-directional optical module					
<b>No.</b>	1	2	3	4	5	6
<b>Operating Wavelength</b>	Tx: 1270nm Rx: 1330nm	Tx: 1330nm Rx: 1270nm	Tx: 1270nm Rx: 1330nm	Tx: 1330nm Rx: 1270nm	Tx: 1330nm Rx: 1270nm	Tx: 1270nm Rx: 1330nm
<b>Encapsulation Type</b>	SFP+	SFP+	SFP+	SFP+	SFP+	SFP+
<b>Port Rate</b>	9.95Gbit/s-10.3Gbit/s	9.95Gbit/s-10.3Gbit/s	2.5Gbit/s-11.3Gbit/s	2.5Gbit/s-11.3Gbit/s	9.95Gbit/s-10.3Gbit/s	9.95Gbit/s-10.3Gbit/s
<b>Minimum Output Optical Power</b>	-4.2dBm	-4.2dBm	-8.2dBm	-8.2dBm	0dBm	0dBm
<b>Maximum Output Optical Power</b>	3dBm	3dBm	0.5dBm	0.5dBm	5dBm	5dBm
<b>Maximum Receiver Sensitivity</b>	-14.4dBm	-14.4dBm	-14.4dBm	-14.4dBm	-18dBm	-18dBm

<b>Optical Connector Type</b>	LC	LC	LC	LC	LC	LC
<b>Optical Fiber Type</b>	Single-mode	Single-mode	Single-mode	Single-mode	Single-mode	Single-mode
<b>Reach</b>	20km	20km	10km	10km	40km	40km
<b>Overload Optical Power</b>	0.5dBm	0.5dBm	0.5dBm	0.5dBm	-9dBm	-9dBm
<b>Extinction Ratio</b>	3.5dB	3.5dB	3.5dB	3.5dB	3.5dB	3.5dB

## One-channel Two-fiber Bi-directional 10GE CWDM Optical Module

A 10GE CWDM optical module is connected to two LC optical fibers (one for transmission and the other for reception) to provide one 10GE channel.

<b>Type</b>	One-channel two-fiber bi-directional optical module
<b>Operating Wavelength</b>	1471 nm, 1491 nm, 1511 nm, 1531 nm, 1551 nm, 1571 nm, 1591 nm, 1611 nm
<b>Encapsulation Type</b>	SFP+
<b>Port Rate</b>	9.95 Gbit/s-11.1 Gbit/s
<b>Minimum Output Optical Power</b>	0 dBm
<b>Maximum Output Optical Power</b>	4.0 dBm
<b>Maximum Receiver Sensitivity</b>	-23.0 dBm
<b>Optical Connector Type</b>	LC
<b>Optical Fiber Type</b>	Single-mode
<b>Reach</b>	70.0 km
<b>Overload Optical Power</b>	-7.0 dBm
<b>Extinction Ratio</b>	8.2 dB

 **NOTE**

There are different types of 10GE CWDM optical modules, and these types of optical modules vary with the operating wavelength.

## Standards Compliance of the 10GE Optical Port

Standard ID	Description
IEEE 802.3ae	10 Gbit/s (1,250 MB/s) Ethernet over fiber
SFF-8431	Specifications for Enhanced Small Form Factor Pluggable Module SFP+
INF-8432	Specification for SFP+ Module and Cage

## 4.5 FE Optical Module

This topic describes the types, specifications, and relation between FE optical modules and boards

### Relation between FE Optical Modules and Boards

Board Type	Board Name	One-channel One-fiber Bi-directional FE Optical Module	Two-channel One-fiber Bi-directional FE Optical Module
P2P interface board	OPFA	√	×
	OPGD	√	√
	OPGE	√	√

### One-channel One-fiber Bi-directional FE Optical Module

A one-channel one-fiber bi-directional FE optical module is connected to one LC optical fiber to provide one FE channel.

Type	One-channel one-fiber bi-directional optical module	
No.	1	2
Operating Wavelength	Tx: 1550 nm Rx: 1310 nm	Tx: 1310 nm Rx: 1550 nm
Encapsulation Type	eSFP	eSFP
Port Rate	155 Mbit/s	155 Mbit/s

<b>Minimum Output Optical Power</b>	-15.00 dBm	-15.00 dBm
<b>Maximum Output Optical Power</b>	-8.00 dBm	-8.00 dBm
<b>Maximum Receiver Sensitivity</b>	-32.00 dBm	-32.00 dBm
<b>Optical Connector Type</b>	LC	LC
<b>Optical Fiber Type</b>	Single-mode	Single-mode
<b>Reach</b>	15.00 km	15.00 km
<b>Overload Optical Power</b>	-8.0 dBm	-8.0 dBm
<b>Extinction Ratio</b>	8.5 dB	8.5 dB

## Two-channel One-fiber Bi-directional FE Optical Module

A two-channel one-fiber bi-directional FE optical module is connected to two LC optical fibers to provide two FE channels.

<b>Type</b>	Two-channel one-fiber bi-directional optical module
<b>Operating Wavelength</b>	Tx: 1550 nm Rx: 1310 nm
<b>Encapsulation Type</b>	CSFP
<b>Port Rate</b>	125 Mbit/s-155 Mbit/s
<b>Minimum Output Optical Power</b>	-14.00 dBm
<b>Maximum Output Optical Power</b>	-8.00 dBm
<b>Maximum Receiver Sensitivity</b>	-28.2 dBm
<b>Optical Connector Type</b>	LC
<b>Optical Fiber Type</b>	Single-mode
<b>Reach</b>	10.00 km
<b>Overload Optical Power</b>	-8.0 dBm

<b>Extinction Ratio</b>	8.2 dB
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## Standards Compliance of the FE Optical Modules

Standard ID	Description
IEEE 802.3	100BASE-BX Fast Ethernet at 100 Mbit/s
SFF-8472	Specification for Diagnostic Monitoring Interface for Optical Transceivers

## 4.6 FE/GE Adaptive Optical Module

This topic describes the parameters and relation between FE/GE adaptive optical modules and boards.

### Relation between FE/GE Adaptive Optical Moduls and Boards

An FE/GE adaptive optical modules is applicable to the OPGD and OPGE boards.

### Two-channel One-fiber Bi-directional FE/GE adaptive optical module

A two-channel one-fiber bi-directional FE/GE adaptive optical module is connected to two LC optical fibers to provide two FE/GE channels.

Type	Two-channel one-fiber bi-directional optical module	
<b>No.</b>	1	2
<b>Operating Wavelength</b>	Tx: 1490 nm Rx: 1310 nm	Tx: 1490 nm Rx: 1310 nm
<b>Encapsulation Type</b>	CSFP	CSFP
<b>Port Rate</b>	125 Mbit/s–1.25 GBit/s	125 Mbit/s–1.25 GBit/s
<b>Minimum Output Optical Power</b>	-9.00 dBm	-9.00 dBm
<b>Maximum Output Optical Power</b>	-3.00 dBm	-3.00 dBm
<b>Maximum Receiver Sensitivity</b>	-23.00 dBm	-24 dBm



<b>Optical Connector Type</b>	LC	LC
<b>Optical Fiber Type</b>	Single-mode	Single-mode
<b>Reach</b>	10.00 km	10.00 km
<b>Overload Optical Power</b>	-3.00 dBm	-3.00 dBm
<b>Extinction Ratio</b>	6.60 dB	6.6 dB

## 4.7 STM-1 Optical Module

This topic describes the specifications and relation with boards of STM-1 optical modules.

An STM-1 optical module is applicable to the TOPA (O2CE/CSSA) board, AIUG (O2CS) board and TOPB board. It is connected to two LC optical fibers to provide one STM-1 channel. The following table lists specifications of STM-1 optical modules.

Type	One-channel two-fiber bi-directional optical module			
No.	1	2	3	4
<b>Operating Wavelength</b>	1310 nm	1310 nm	1310 nm	1550 nm
<b>Encapsulation Type</b>	eSFP	SFP	eSFP	eSFP
<b>Port Rate</b>	STM-1	STM-1	STM-1	STM-1
<b>Minimum Output Optical Power</b>	-15.00 dBm	-19.00 dBm	-5.00 dBm	-5.00 dBm
<b>Maximum Output Optical Power</b>	-8.00 dBm	-14.00 dBm	0 dBm	0 dBm
<b>Maximum Receiver Sensitivity</b>	-31.00 dBm	-30.00 dBm	-37.00 dBm	-37.00 dBm
<b>Optical Connector Type</b>	LC	LC	LC	LC
<b>Optical Fiber Type</b>	Single-mode	Multi-mode	Single-mode	Single-mode
<b>Reach</b>	15.00 km	2.00 km	40.00 km	80.00 km
<b>Overload Optical Power</b>	-8.0 dBm	-14.0 dBm	-10.0 dBm	-10.0 dBm
<b>Extinction Ratio</b>	8.2 dB	10.0 dB	10.5 dB	10.5 dB

# 5 Cable

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## About This Chapter

This topic covers the appearance, pin assignments, applications, and technical specifications of the cables used by the device.

### [5.1 Power Cable and Ground Cable](#)

Power cable supplies power and ensures that the load works in the normal state, and ground cable is used to protect devices from lightning strike and interference.

### [5.2 Subscriber Cable](#)

This topic provides the appearance and parameters of the subscriber cable, and describes the application and pin assignments of the cable.

### [5.3 E1 Trunk Cable](#)

This topic covers the applications, appearances, pin assignments, and technical specifications of E1 trunk cables.

### [5.4 Clock Cable](#)

This topic covers the applications, appearances, and technical specifications of Clock cables.

### [5.5 Network Cable](#)

A network cable is used for equipment cascading, communication between the device and the network, and local maintenance and remote access of the device.

### [5.6 Optical Fiber](#)

An optical fiber connects an optical port to an upstream device or optical network terminal.

### [5.7 Environment Monitoring Cable](#)

Environment monitoring cable is the shielded straight-through network cable, and it used to transmit the monitored signals collected by the ESC board to the control board.

### [5.8 Local Maintenance Serial Cable](#)

A local maintenance serial cable is used for debugging devices or maintaining devices at the local end.

### [5.9 Local Maintenance and Environment Monitoring Combo Cable](#)

A local maintenance and environment monitoring combo cable is connected to a local maintenance terminal or an environment monitoring device for debugging and maintaining the main device or reporting the monitoring information to the control board.

## 5.1 Power Cable and Ground Cable

Power cable supplies power and ensures that the load works in the normal state, and ground cable is used to protect devices from lightning strike and interference.

### 5.1.1 DC Power Cable (Cabinet)

The DC power cable is used to transmit the DC power to loads and enable the loads to work in the normal state.

#### Application

The DC power cable (cabinet) connects the power port of the device to the external power supply. It is connected as follows:

- One end of the DC power cable is connected to the output port of the DC power supply.
- The other end of the DC power cable is connected to the input port on the DC PDU of the device.

#### NOTE

The black cable is the -48 V return ground cable connected to the RTN(+) terminal of the DC power board. The blue cable is the -48 V power cable connected to the NEG(-) terminal of the DC power board.

#### Appearance and Structure

[Figure 5-1](#) and [Figure 5-2](#) show the appearances of a -48 V return ground cable and a -48 V power cable.

**Figure 5-1** Appearance of a -48 V return ground cable



**Figure 5-2** Appearance of a -48 V power cable



## Technical Specifications

The technical specifications of a -48 V return ground cable and a -48 V power cable are the same, as listed in [Table 5-1](#).

**Table 5-1** Technical specifications of a -48 V return ground cable and a -48 V power cable

Specification	Description
Cable type	Electrical cable
Color	Black (-48 V return ground cable); blue (-48 V power cable)
Maximum current	110 A
DC resistance of the inner conductor	0.78 ohms/km
Cross-sectional area of the conductor	25 mm <sup>2</sup> or 16 mm <sup>2</sup> <b>NOTE</b> The diameter and length of the DC power cable affect the power supply of the device. <ul style="list-style-type: none"> <li>● The DC power line, whose length is shorter than 20 m and whose cross-sectional area is 16 mm<sup>2</sup>, can meet the device voltage requirement.</li> <li>● The DC power line, whose length is longer than 20 m but shorter than 32 m must have a cross-sectional area of 25 mm<sup>2</sup> to meet the device voltage requirement.</li> </ul>

### 5.1.2 DC Power Cable (Device)

DC power cable supplies power and ensures that the load works in the normal state.

## Cable Connector



## Specification

Specification	Description
Type	Electric power cable
Color	<ul style="list-style-type: none"><li>● Blue (-)</li><li>● Black (+)</li></ul>
DC resistance of the inner conductor	3.3 ohms/km
Maximum current	40 A
Cross-sectional area of the conductor	6 mm <sup>2</sup>

### 5.1.3 AC Power Cable (Cabinet)

AC power cable supplies power and ensures that the load works in the normal state.

#### Application

The AC power cable connects the power port of the device to the external power supply. The AC power cable is connected as follows:

- One end of the AC power cable connects to the output port of the AC power supply.
- The other end of the AC power cable connects to the input port on the power system of the device.

#### Appearance

**Figure 5-3** shows the appearance of the AC power cable.

**Figure 5-3** Appearance of the AC power cable



## Specification

**Table 5-2** lists the parameters of the AC power cable.

**Table 5-2** Parameters of the AC power cable

Specification	Description
Type	Electric power cable
Color	Black
DC resistance of the inner conductor	3.3 ohms/km
Maximum current	43 A
Cross-sectional area of the conductor	6 mm <sup>2</sup>

### 5.1.4 AC Power Cable (Device)

An AC power cable is used to transmit AC power supply to loads and enable the loads to work in the normal state.

## Cable Connector



## Technical Specifications

**Table 5-3** lists the technical specifications of an AC power cable.

### NOTE

Specifications of the AC power cable vary with country/area. The following uses the AC power cable that meets the Chinese standard as an example.

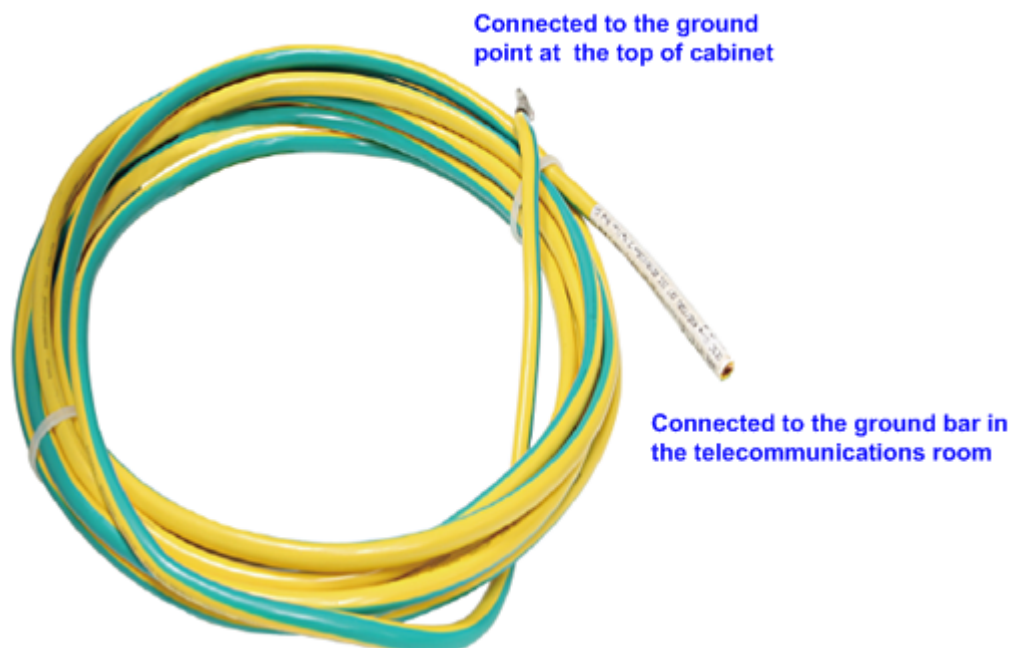
**Table 5-3** Specifications of an AC power cable

Specification	Description
Connector 1	PI straight male
Connector 2	C13 straight female
Cable type	External power cable
Cable length	1.8 m
Cross-sectional area of the conductor	1.0 mm <sup>2</sup>

### 5.1.5 PGND Cable (Cabinet)

PGND cable (cabinet) is used for protect cabinet from lightning strike and interference.

## Cable Connector



## Specification

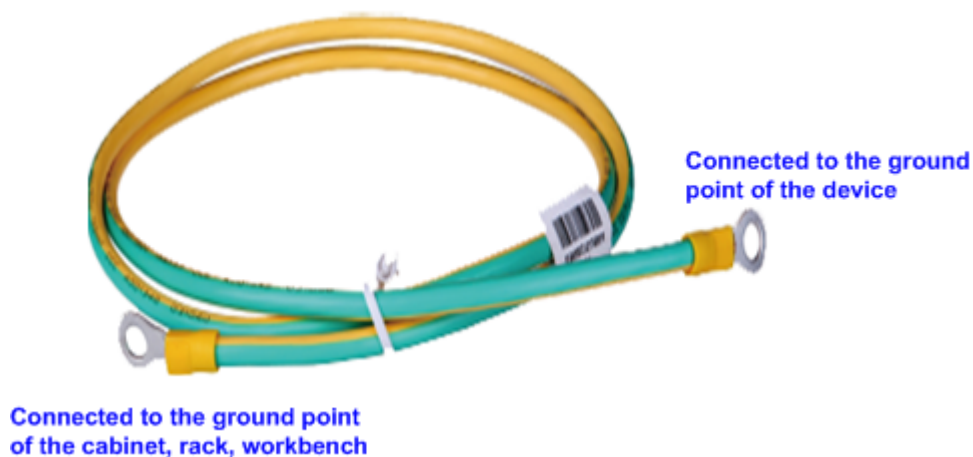
Specification	Description
Type	Electric power cable
Color	Yellow and green
DC resistance of the inner conductor	0.78 ohms/km
Maximum current	110 A
Cross-sectional area of the conductor	25 mm <sup>2</sup>

### 5.1.6 PGND Cable (Device)

A PGND cable (device) is used for protecting the device against lightning strikes and interference.



## Cable Connector



## Specification

Specification	Description
Cable type	Electrical cable
Color	Yellow and green
Connector (X1) type	OT 6-6
Connector (X2) type	OT 6-6
Wire gauge of the inner conductor	6 mm <sup>2</sup>
Maximum current	50A

## 5.2 Subscriber Cable

This topic provides the appearance and parameters of the subscriber cable, and describes the application and pin assignments of the cable.

### 5.2.1 32-Channel Intra-Subrack Interconnection Cable (for 32/24-Channel Board)

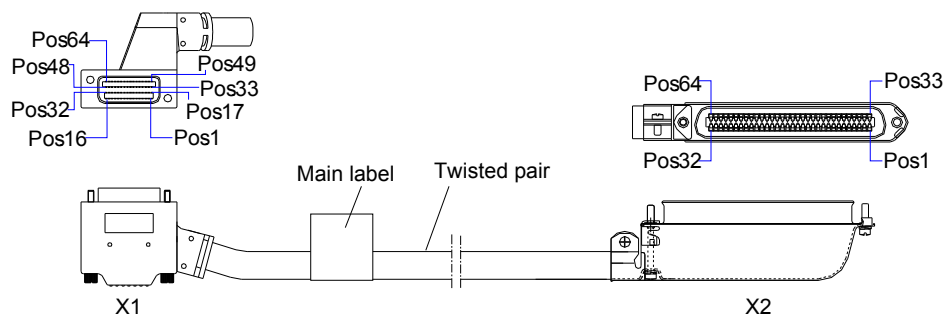
Intra-subrack interconnection cable is used to connect a service board to an SPL board.

## Cable Connector

**Delander 64-pin connector**  
Connected to the xDSL  
port of the SPL board

**Champ 64-pin connector**  
Connected to the xDSL  
port of the service board

## Cable Structure



## Pin Assignment

X1	X2	Color		Port	X1	X2	Color		Port
1	33	Blue bundle	White	0	17	49	Red	8	
2	34		Blue		1	18	50		Brown
3	35		White			19	51		Red
4	36		Orange		2	20	52		Grey
5	37		White			21	53		Black
6	38		Green		3	22	54		Blue
7	39		White			23	55		Black
8	40		Brown		4	24	56		Orange
9	41		White	25		57	Black		
10	42		Grey	5	26	58	Green		
11	43		Red		27	59	Black		
12	44		Blue	6	28	60	Brown		
13	45		Red		29	61	Black		
14	46		Orange	7	30	62	Grey		
15	47		Red		31	63	Yellow		
16	48		Green		32	64	Blue		
X1	X2	Color		Port	X1	X2	Color		Port
33	31	Orange bundle	White	16	49	15	Red	24	
34	32		Blue		17	50	16		Brown
35	29		White			51	13		Red
36	30		Orange		18	52	14		Grey
37	27		White			53	11		Black
38	28		Green		19	54	12		Blue
39	25		White			55	9		Black
40	26		Brown		20	56	10		Orange
41	23		White	57		7	Black		
42	24		Grey	21	58	8	Green		
43	21		Red		59	5	Black		
44	22		Blue	22	60	6	Brown		
45	19		Red		61	3	Black		
46	20		Orange	23	62	4	Grey		
47	17		Red		63	1	Yellow		
48	18		Green		64	2	Blue		

## Specification

Specification	Description
Connector	<ul style="list-style-type: none"> <li>● X1: Delander 64-pin</li> <li>● X2: Champ 64-pin</li> </ul>
Type	Symmetrical twisted pair

Specification	Description
Color	PANTONE 430 U (PANTONE refers to international standard color cards and 430 U is close to grey)
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.400 mm (26 AWG)
Wire	64-wire
Breakdown voltage	1000.0 V
DC resistance of the inner conductor	145.0 ohms/km
Frequency range	Default
Frequency attenuation	≤ 2.95 dB/100 m (1 MHz)
Capacitance	≤ 56 nF/km (1 kHz)

## 5.2.2 32-Channel Intra-Subrack Interconnection Cable (for 64/48-Channel Board)

Intra-subrack interconnection cable is used to connect a service board to an SPL board.

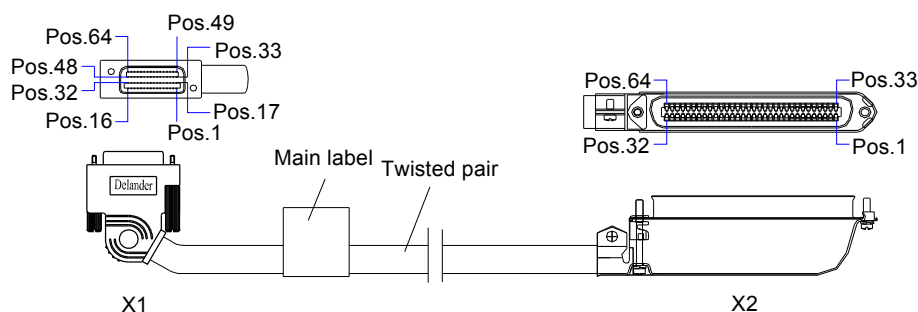
### Cable Connector



**Delander 64-pin connector**  
Connected to the xDSL  
port of the SPL board

**Champ 64-pin connector**  
Connected to the xDSL  
port of the service board

### Cable Structure



## Pin Assignment

X1	X2	Color		Port	X1	X2	Color		Port
1	48	Blue bundle	White	7	17	64	Red	15	
2	47		Blue						
3	46		White	6	18	63	Brown		
4	45		Orange						
5	44		White	5	19	62	Red		
6	43		Green						
7	42		White	4	20	61	Grey		
8	41		Brown						
9	40		White	3	21	60	Black		
10	39		Grey						
11	38		Red	2	22	59	Blue		
12	37		Blue						
13	36		Red	1	23	58	Black		
14	35		Orange						
15	34		Red	0	24	57	Orange		
16	33		Green						
				25	56	Black	11		
				26	55	Green			
				27	54	Black	10		
				28	53	Brown			
				29	52	Black	9		
				30	51	Grey			
				31	50	Yellow	8		
				32	49	Blue			
X1	X2	Color		Port	X1	X2	Color		Port
33	18	Orange bundle	White	23	49	2	Red	31	
34	17		Blue						
35	20		White	22	50	1	Brown		
36	19		Orange						
37	22		White	21	51	4	Red		
38	21		Green						
39	24		White	20	52	3	Grey		
40	23		Brown						
41	26		White	19	53	6	Black		
42	25		Grey						
43	28		Red	18	54	5	Blue		
44	27		Blue						
45	30		Red	17	55	8	Black		
46	29		Orange						
47	32		Red	16	56	7	Orange		
48	31		Green						
				57	10	Black	27		
				58	9	Green			
				59	12	Black	26		
				60	11	Brown			
				61	14	Black	25		
				62	13	Grey			
				63	16	Yellow	24		
				64	15	Blue			

## Specification

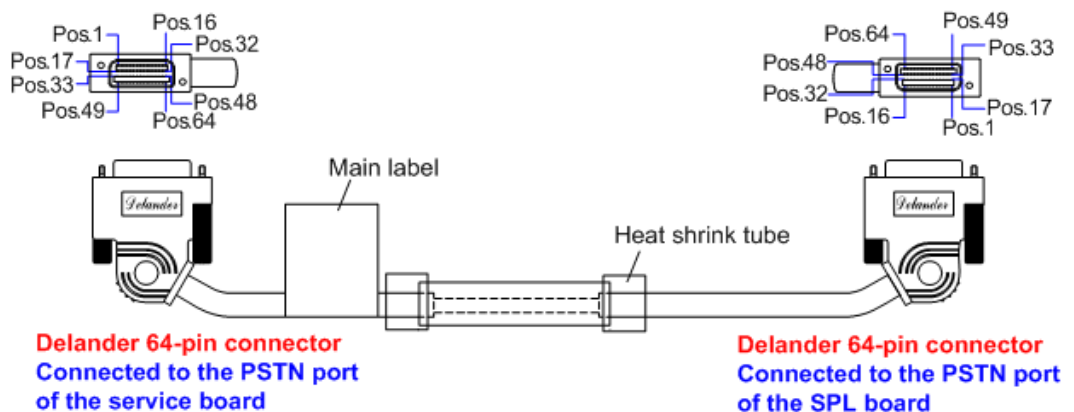
Specification	Description
Connector	<ul style="list-style-type: none"> <li>● X1: Delander 64-pin</li> <li>● X2: Champ 64-pin</li> </ul>
Type	Symmetrical twisted pair

Specification	Description
Color	PANTONE 430 U (PANTONE refers to international standard color cards and 430 U is close to grey)
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.400 mm (26 AWG)
Wire	64-wire
Breakdown voltage	1000.0 V
DC resistance of the inner conductor	145.0 ohms/km
Frequency range	Default
Frequency attenuation	≤ 2.95 dB/100 m (1 MHz)
Capacitance	≤ 56 nF/km (1 kHz)

### 5.2.3 32-Channel Intra-Subrack Interconnection Cable (for 64-Channel Board)

Intra-subrack interconnection cable is used to connect a service board to an SPL board.

#### Cable Connector



## Pin Assignment

X1	X2	Color		Port	X1	X2	Color		Port
1	1	Blue bundle	White	7	17	17	Red	15	
2	2		Blue						
3	3		White						
4	4		Orange						
5	5		White						
6	6		Green						
7	7		White						
8	8		Brown	6	18	18	Brown		
9	9		White		19	19	Red		
10	10		Grey	5	20	20	Grey		
11	11		Red		21	21	Black		
12	12		Blue		22	22	Blue		
13	13		Red	4	23	23	Black		
14	14		Orange		24	24	Orange		
15	15		Red	3	25	25	Black		
16	16		Green		26	26	Green		
			2	27	27	Black			
				28	28	Brown			
			1	29	29	Black			
				30	30	Grey			
			0	31	31	Yellow			
				32	32	Blue			

X1	X2	Color		Port	X1	X2	Color		Port
33	33	Orange bundle	White	23	49	49	Red	31	
34	34		Blue						
35	35		White						
36	36		Orange						
37	37		White						
38	38		Green						
39	39		White						
40	40		Brown	22	50	50	Brown		
41	41		White		51	51	Red		
42	42		Grey	21	52	52	Grey		
43	43		Red		53	53	Black		
44	44		Blue		54	54	Blue		
45	45		Red	20	55	55	Black		
46	46		Orange		56	56	Orange		
47	47		Red	19	57	57	Black		
48	48		Green		58	58	Green		
			18	59	59	Black			
				60	60	Brown			
			17	61	61	Black			
				62	62	Grey			
			16	63	63	Yellow			
				64	64	Blue			

## Specification

Specification	Description
Connector	<ul style="list-style-type: none"> <li>● X1: Delander 64-pin</li> <li>● X2: Delander 64-pin</li> </ul>
Type	Symmetrical twisted pair

Specification	Description
Color	PANTONE 430 U (PANTONE refers to international standard color cards and 430 U is close to grey)
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.400 mm (26 AWG)
Wire	64-wire
Breakdown voltage	1000.0 V
DC resistance of the inner conductor	145.0 ohms/km
Capacitance	≤ 56 nF/km (1 kHz)

## 5.2.4 32-Channel Inter-Subrack Interconnection Cable (for 32/24-Channel Board)

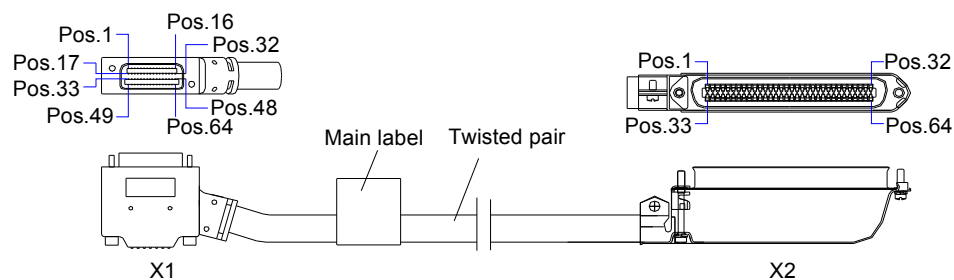
Inter-subrack interconnection cable is used to connect a service board to an SPL board.

### Cable Connector

**Delander 64-pin connector**  
Connected to the xDSL  
port of the SPL board

**Champ 64-pin connector**  
Connected to the xDSL  
port of the service board

### Cable Structure





## Pin Assignment

X1	X2	Color		Port	X1	X2	Color		Port
1	33	Blue bundle	White	0	17	49	Red	8	
2	34		Blue		1	18	50		Brown
3	35		White			19	51		Red
4	36		Orange		2	20	52		Grey
5	37		White			21	53		Black
6	38		Green		3	22	54		Blue
7	39		White			23	55		Black
8	40		Brown		4	24	56		Orange
9	41		White	25		57	Black		
10	42		Grey	5	26	58	Green		
11	43		Red		27	59	Black		
12	44		Blue	6	28	60	Brown		
13	45		Red		29	61	Black		
14	46		Orange	7	30	62	Grey		
15	47		Red		31	63	Yellow		
16	48		Green		32	64	Blue		
33	31	Orange bundle	White	16	49	15	Red	24	
34	32		Blue		17	50	16		Brown
35	29		White			51	13		Red
36	30		Orange		18	52	14		Grey
37	27		White			53	11		Black
38	28		Green		19	54	12		Blue
39	25		White			55	9		Black
40	26		Brown		20	56	10		Orange
41	23		White	57		7	Black		
42	24		Grey	21	58	8	Green		
43	21		Red		59	5	Black		
44	22		Blue	22	60	6	Brown		
45	19		Red		61	3	Black		
46	20		Orange	23	62	4	Grey		
47	17		Red		63	1	Yellow		
48	18		Green		64	2	Blue		

## Specification

Specification	Description
Connector	<ul style="list-style-type: none"> <li>● X1: Delander 64-pin</li> <li>● X2: Champ 64-pin</li> </ul>
Type	Symmetrical twisted pair

Specification	Description
Color	PANTONE 430 U (PANTONE refers to international standard color cards and 430 U is close to grey)
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.400 mm (26 AWG)
Wire	64-wire
Breakdown voltage	1000.0 V
DC resistance of the inner conductor	145.0 ohms/km
Frequency range	Default
Frequency attenuation	≤ 2.95 dB/100 m (1 MHz)
Capacitance	≤ 56 nF/km (1 kHz)

## 5.2.5 32-Channel Inter-Subrack Interconnection Cable (for 64/48-Channel Board)

Inter-subrack interconnection cable is used to connect a service board to an SPL board.

### Cable Connector



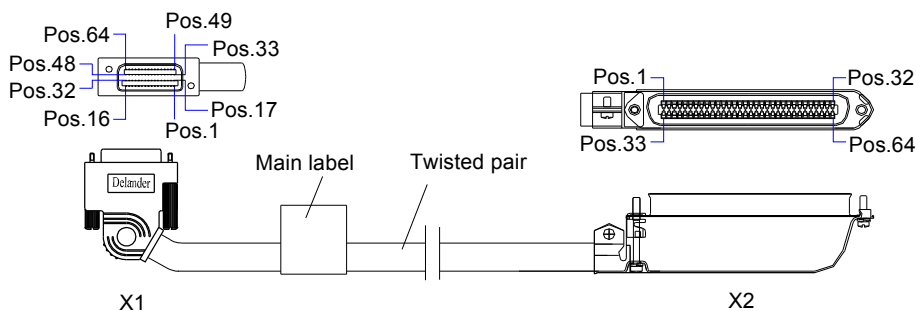
**Delander 64-pin connector**  
Connected to the xDSL  
port of the SPL board

**Champ 64-pin connector**  
Connected to the xDSL  
port of the service board

The 32-channel inter-subrack interconnection cables can be classified according to the length of the cables.

- The shorter one connects the xDSL0 port of the SPL board to the xDSL0 port of the service board.
- The longer one connects the xDSL1 port of the SPL board to the xDSL1 port of the service board.

### Cable Structure



## Pin Assignment

X1	X2	Color		Port	X1	X2	Color		Port
1	48	Blue bundle	White	7	17	64	Red	15	
2	47		Blue						
3	46		White	6	18	63	Brown		
4	45		Orange						
5	44		White	5	19	62	Red		
6	43		Green						
7	42		White	4	20	61	Grey		
8	41		Brown						
9	40		White	3	21	60	Black		
10	39		Grey						
11	38		Red	2	22	59	Blue		
12	37		Blue						
13	36		Red	1	23	58	Black		
14	35		Orange						
15	34		Red	0	24	57	Orange		
16	33		Green						
				25	56	Black	11		
				26	55	Green			
				27	54	Black	10		
				28	53	Brown			
				29	52	Black	9		
				30	51	Grey			
				31	50	Yellow	8		
				32	49	Blue			

X1	X2	Color		Port	X1	X2	Color		Port
33	18	Orange bundle	White	23	49	2	Red	31	
34	17		Blue						
35	20		White	22	50	1	Brown		
36	19		Orange						
37	22		White	21	51	4	Red		
38	21		Green						
39	24		White	20	52	3	Grey		
40	23		Brown						
41	26		White	19	53	6	Black		
42	25		Grey						
43	28		Red	18	54	5	Blue		
44	27		Blue						
45	30		Red	17	55	8	Black		
46	29		Orange						
47	32		Red	16	56	7	Orange		
48	31		Green						
				57	10	Black	27		
				58	9	Green			
				59	12	Black	26		
				60	11	Brown			
				61	14	Black	25		
				62	13	Grey			
				63	16	Yellow	24		
				64	15	Blue			

## Specification

Specification	Description
Connector	<ul style="list-style-type: none"> <li>● X1: Delander 64-pin</li> <li>● X2: Champ 64-pin</li> </ul>
Type	Symmetrical twisted pair

Specification	Description
Color	PANTONE 430 U (PANTONE refers to international standard color cards and 430 U is close to grey)
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.400 mm (26 AWG)
Wire	64-wire
Breakdown voltage	1000.0 V
DC resistance of the inner conductor	145.0 ohms/km
Frequency range	Default
Frequency attenuation	≤ 2.95 dB/100 m (1 MHz)
Capacitance	≤ 56 nF/km (1 kHz)

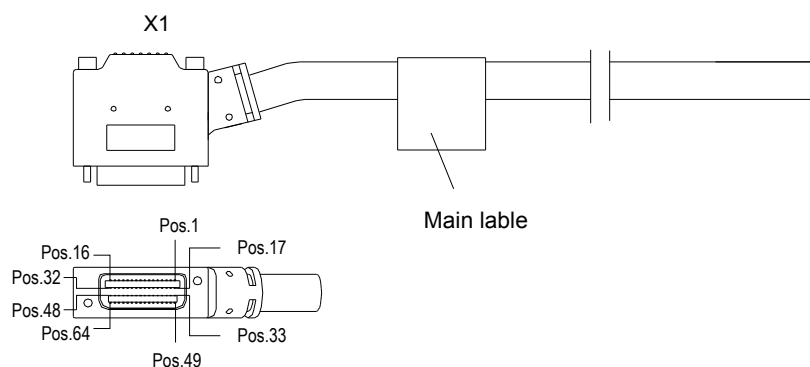
## 5.2.6 32-Channel Subscriber Cable (for 64/48 channel board)

Subscriber cable connects the SPL board or service board to the MDF to transmit audio, video, and data signals.

### Cable Connector



### Cable Structure



## Pin Assignment

Figure 5-4 describes the pin assignments of the 32-channel subscriber cable.

Figure 5-4 Pin assignments of the 32-channel subscriber cable

X1	Color	Port	X1	Color	Port		
16	Blue bundle	White	0	32	Red	8	
15		Blue	31	Brown			
14		White	30	Red	9		
13		Orange	29	Grey			
12		White	28	Black	10		
11		Green	27	Blue			
10		White	3	26	Black		11
9		Brown	25	Orange			
8	White	4	24	Black	12		
7	Grey	23	Green				
6	Red	5	22	Black	13		
5	Blue	21	Brown				
4	Red	6	20	Black	14		
3	Orange	19	Grey				
2	Red	7	18	Yellow	15		
1	Green	17	Blue				
X1	Color	Port	X1	Color	Port		
48	Orange bundle	White	16	64	Red	24	
47		Blue	63	Brown			
46		White	17	62	Red		
45		Orange	61	Grey	25		
44		White	60	Black			
43		Green	18	59	Blue		26
42		White	19	58	Black		
41		Brown	20	57	Orange		
40		White	21	56	Black		28
39		Grey	22	55	Green		
38		Red	23	54	Black		29
37		Blue	53	Brown			
36		Red	52	Black	30		
35		Orange	51	Grey			
34		Red	23	50	Yellow		31
33		Green	49	Blue			

## Specification

Specification	Description
Connector	Delander 64-pin
Type	Symmetrical twisted pair
Color	PANTONE 430 U (PANTONE refers to international standard color cards and 430 U is close to grey)
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.400 mm (26 AWG)
Wire	64-wire
Breakdown voltage	1000.0 V
DC resistance of the inner conductor	145.0 ohms/km
Frequency range	ADSL: Default VDSL: 1 MHz - 30 MHz
Frequency attenuation	≤ 2.95 dB/100 m (1 MHz)
Capacitance	≤ 56 nF/km (1 kHz)

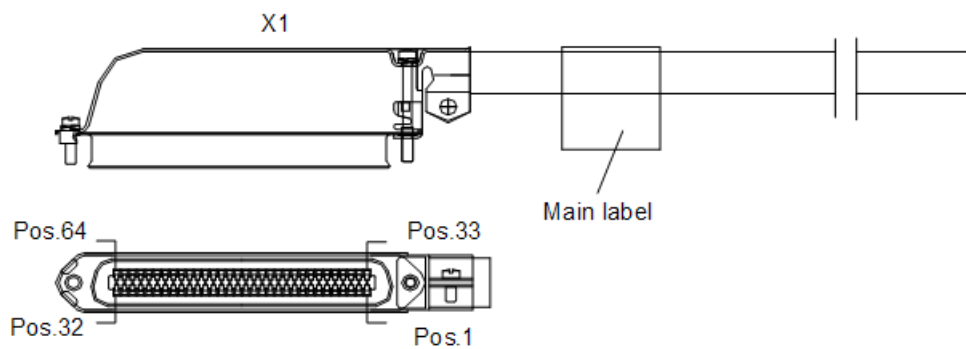
### 5.2.7 32-Channel Subscriber Cable (for 32/24/16 channel board)

Subscriber cable connects the service board or SPL board to the MDF to transmit audio, video, and data signals.

#### Cable Connector



## Cable Structure



## Pin Assignment

X1	Color	Port	X1	Color	Port	
33	Blue bundle	White	49	Red	8	
34		Blue	50	Brown		
35		White	51	Red		9
36		Orange	52	Grey		
37		White	53	Black		10
38		Green	54	Blue		
39		White	55	Black		11
40		Brown	56	Orange		
41	White	4	57	Black	12	
42	Grey	5	58	Green		
43	Red	5	59	Black	13	
44	Blue		60	Brown		
45	Red	6	61	Black	14	
46	Orange		62	Grey		
47	Red	7	63	Yellow	15	
48	Green		64	Blue		

X1	Color	Port	X1	Color	Port	
31	Orange bundle	White	15	Red	24	
32		Blue	16	Brown		
29		White	17	Red	25	
30		Orange	14	Grey		
27		White	18	Black	26	
28		Green	12	Blue		
25		White	19	9	Black	27
26		Brown	10	Orange bundle	Orange	
23		White	20	7	Black	28
24		Grey	21	8	Green	
21		Red	21	5	Black	29
22		Blue		6	Brown	
19		Red	22	3	Black	30
20		Orange		4	Grey	
17		Red	23	1	Yellow	31
18		Green		2	Blue	

## Specification

Specification	Description
Connector	Champ 64-pin
Type	Symmetrical twisted pair



Specification	Description
Color	PANTONE 430 U (PANTONE refers to international standard color cards and 430 U is close to grey)
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.400 mm (26 AWG)
Wire	64-wire
Breakdown voltage	1000.0 V
DC resistance of the inner conductor	145.0 ohms/km
Frequency range	ADSL: Default VDSL: 1 MHz - 30 MHz
Frequency attenuation	≤ 2.95 dB/100 m (1 MHz)
Capacitance	≤ 56 nF/km (1 kHz)

## 5.2.8 64-Channel Subscriber Cable

The 64-channel subscriber cable connects the service board to the MDF to transmit audio, video, and data signals.

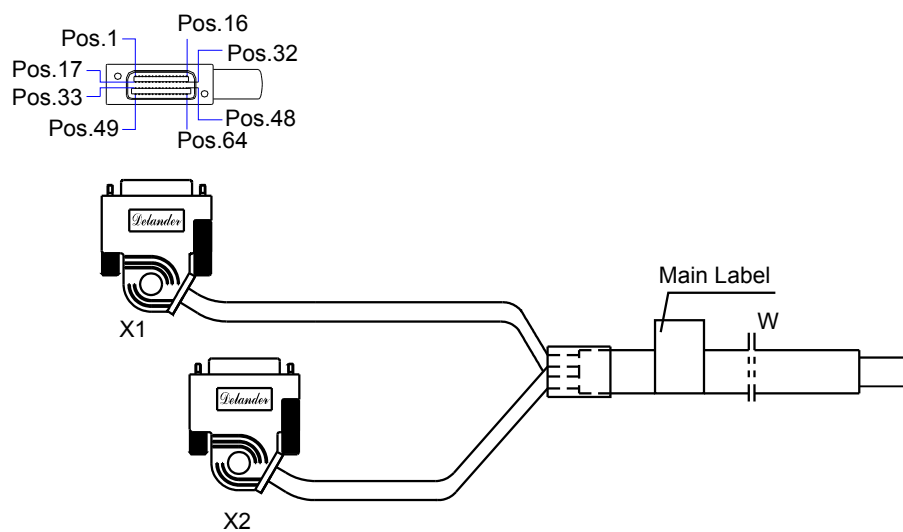
### Cable Connector

 **NOTE**

The 64-channel subscriber cable can be classified into four types, unshielded ADSL subscriber cable, shielded ADSL subscriber cable, unshielded VDSL subscriber cable, and shielded VDSL subscriber cable. The appearances of these cables are similar.



## Cable Structure



## Pin Assignment

Figure 5-5 Pin assignments of the 64-channel subscriber cable (UP)

X1	Color	LINE/PSTN	Label	X1	Color	LINE/PSTN	Label		
16	Green bundle	White	Up	48	Brown bundle	White	UP		
15		Blue		0		47		Blue	16
14		White				1		46	
13		Orange		2				45	Orange
12		White				3		44	White
11		Green		4				43	Green
10		White				5		42	White
9		Brown		6				41	Brown
8		White	7			40		White	
7		Grey		8		39		Grey	
6		Red	9			38		Red	
5		Blue		10		37		Blue	
4		Red	11			36		Red	
3		Orange		12		35		Orange	
2		Red	13			34		Red	
1		Green		14		33		Green	
32	Green bundle	Red	Up		64	Brown bundle	Red	UP	
31		Brown		8	63		Brown		
30		Red			9		62		Red
29		Grey		10			61		Grey
28		Black			11		60		Black
27		Blue		12			59		Blue
26		Black			13		58		Black
25		Orange		14			57		Orange
24		Black			15		56		Black
23		Green		16			55		Green
22		Black			17		54		Black
21		Brown		18			53		Brown
20		Black			19		52		Black
19		Grey		20			51		Grey
18		Yellow			21		50		Yellow
17		Blue		22			49		Blue

Figure 5-6 Pin assignments of the 64-channel subscriber cable (DOWN)

X2	Color	LINE/PSTN	Label	X2	Color	LINE/PSTN	Label
16	Blue bundle	White	DOWN	48	Orange bundle	16	DOWN
15		Blue		47		Blue	
14		White		46		White	
13		Orange		45		Orange	
12		White		44		White	
11		Green		43		Green	
10		White		42		White	
9		Brown		41		Brown	
8		White		40		White	
7		Grey		39		Grey	
6		Red		38		Red	
5		Blue		37		Blue	
4		Red		36		Red	
3		Orange		35		Orange	
2		Red		34		Red	
1		Green		33		Green	
32	Blue bundle	Red	DOWN	64	Orange bundle	24	DOWN
31		Brown		63		Brown	
30		Red		62		Red	
29		Grey		61		Grey	
28		Black		60		Black	
27		Blue		59		Blue	
26		Black		58		Black	
25		Orange		57		Orange	
24		Black		56		Black	
23		Green		55		Green	
22		Black		54		Black	
21		Brown		53		Brown	
20		Black		52		Black	
19		Grey		51		Grey	
18		Yellow		50		Yellow	
17		Blue		49		Blue	

## Specification

Specification	Description
Connector	Delander 64-pin
Type	Symmetrical twisted pair
Color	PANTONE 430 U (PANTONE refers to international standard color cards and 430 U is close to grey)
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.40 mm (26 AWG)
Wire	128-wire
Breakdown voltage	1000.0 V
DC resistance of the inner conductor	145.0 ohms/km

Specification	Description
Frequency range	Default
Frequency attenuation	≤ 2.95 dB/100 m (1 MHz)
Capacitance	≤ 56 nF/km (1 kHz)

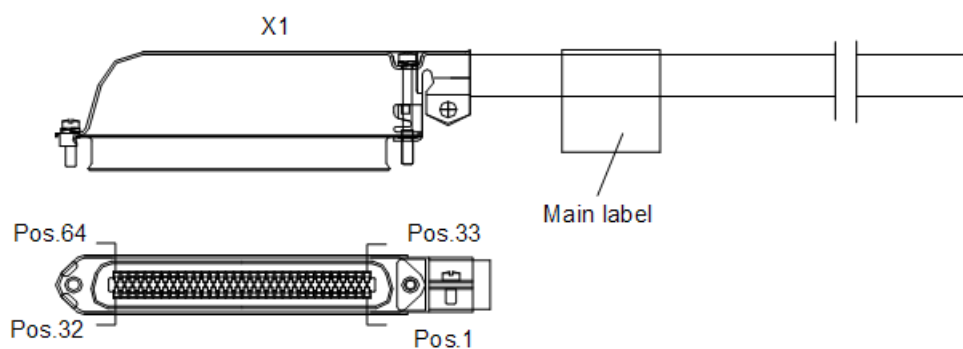
## 5.2.9 32-Channel xDSL Subscriber Cable (old pin assignments)

xDSL subscriber cable connects the service board or SPL board to the MDF to transmit audio, video, and data signals.

### Cable Connector



### Cable Structure



## Pin Assignment

X1	Color	Port	X1	Color	Port
1	Blue	0	17	Blue	16
33	White		49	White	
2	Orange	1	18	Orange	17
34	White		50	White	
3	Green	2	19	Green	18
35	White		51	White	
4	Brown	3	20	Brown	19
36	White		52	White	
5	Grey	4	21	Grey	20
37	White		53	White	
6	Blue	5	22	Blue	21
38	Red		54	Red	
7	Orange	6	23	Orange	22
39	Red		55	Red	
8	Green	7	24	Green	23
40	Red		56	Red	
X1	Color	Port	X1	Color	Port
9	Brown	8	25	Brown	24
41	Red		57	Red	
10	Grey	9	26	Grey	25
42	Red		58	Red	
11	Blue	10	27	Blue	26
43	Black		59	Black	
12	Orange	11	28	Orange	27
44	Black		60	Black	
13	Green	12	29	Green	28
45	Black		61	Black	
14	Brown	13	30	Brown	29
46	Black		62	Black	
15	Grey	14	31	Grey	30
47	Black		63	Black	
16	Blue	15	32	Blue	31
48	Yellow		64	Yellow	

## Parameter

Parameter	Description
Connector	Champ 64-pin
Type	Symmetrical twisted pair
Color	PANTONE 430 U (PANTONE refers to international standard color cards and 430 U is close to grey)
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.400 mm (26 AWG)
Wire	64-wire
Breakdown voltage	1000.0 V
DC resistance of the inner conductor	145.0 ohms/km
Frequency range	ADSL: Default VDSL: 1 MHz - 30 MHz

Parameter	Description
Frequency attenuation	≤ 2.95 dB/100 m (1 MHz)
Capacitance	≤ 56 nF/km (1 kHz)

## 5.3 E1 Trunk Cable

This topic covers the applications, appearances, pin assignments, and technical specifications of E1 trunk cables.

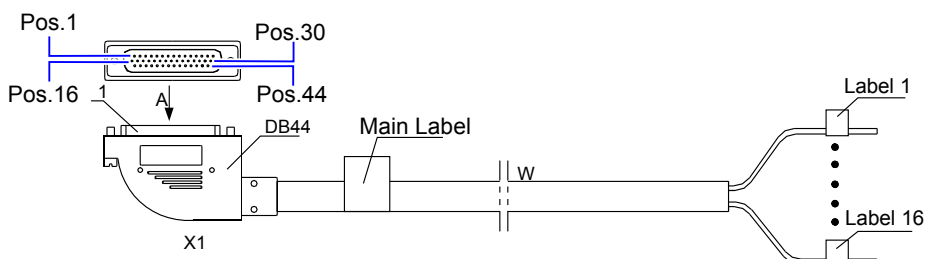
### 5.3.1 75-ohm E1 Trunk Cable

A 75-ohm E1 trunk cable is a communication cable used for transmitting E1 trunk signals.

#### Cable Connector



#### Cable Structure



## Pin Assignments

 **NOTE**

"SN" in "Cable and SN" is the print on the cable sheath.

A 75-ohm E1 trunk cable consists of the shield layer and wire.

In the following table, "Rx/Tx Channel" indicates that the transmitting is from the board and the receiving is to the board.

- R0: receive end of channel 0 E1 signals
- T0: transmit end of channel 0 E1 signals

X1 Pin	Cable and SN		Rx/Tx Channel	X1 Pin	Cable and SN		Rx/Tx Channel
38	Shield layer	1	R0	15	Shield layer	2	T0
23	Wire			30	Wire		
37	Shield layer	3	R1	14	Shield layer	4	T1
22	Wire			29	Wire		
36	Shield layer	5	R2	13	Shield layer	6	T2
21	Wire			28	Wire		
35	Shield layer	7	R3	12	Shield layer	8	T3
20	Wire			27	Wire		
34	Shield layer	9	R4	11	Shield layer	10	T4
19	Wire			26	Wire		
33	Shield layer	11	R5	10	Shield layer	12	T5
18	Wire			25	Wire		
32	Shield layer	13	R6	9	Shield layer	14	T6
17	Wire			24	Wire		
31	Shield layer	15	R7	8	Shield layer	16	T7
16	Wire			7	Wire		



## Technical Specifications

Specification	Description
Connector	DB44 connector
Cable type	Coaxial cable
Characteristic impedance	75.0 ohms
Cable diameter	2.20 mm
Wire diameter of the inner conductor	0.25 mm
DC resistance of the inner conductor	$\leq 355.0$ ohms/km
Frequency attenuation	4.2 dB/100 m@2 MHz
Capacitance	$\leq 64$ pF/m

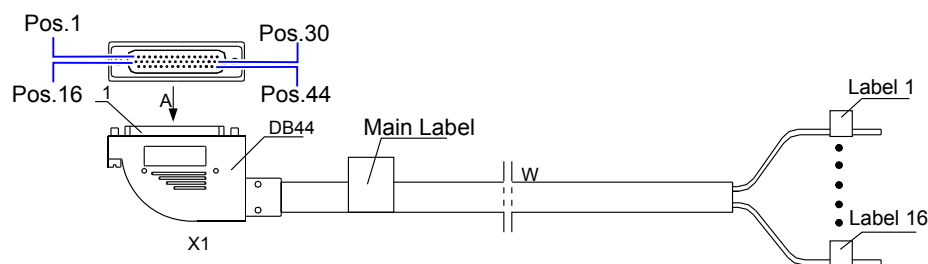
### 5.3.2 120-ohm E1 Trunk Cable

A 120-ohm E1 trunk cable is a communication cable used for transmitting E1 trunk signals.

#### Cable Connector



#### Cable Structure



## Pin Assignments

### NOTE

A 120-ohm E1 trunk cable is a twisted pair cable consisting of two wires.

"Rx/Tx Channel" in the following table indicates that the transmitting is from the board and the receiving is to the board.

- R0-: negative pole on the receive end of channel 0 E1 signals
- R0+: positive pole on the receive end of channel 0 E1 signals
- T0-: negative pole on the transmit end of channel 1 E1 signals
- T0+: positive pole on the transmit end of channel 1 E1 signals

X1	Color	Signal	X1	Color	Signal
23	White	R0-	30	Red	T0-
38	Blue	R0+	15	Brown	T0+
22	White	R1-	29	Red	T1-
37	Orange	R1+	14	Grey	T1+
21	White	R2-	28	Black	T2-
36	Green	R2+	13	Blue	T2+
20	White	R3-	27	Black	T3-
35	Brown	R3+	12	Orange	T3+
19	White	R4-	26	Black	T4-
34	Grey	R4+	11	Green	T4+
18	Red	R5-	25	Black	T5-
33	Blue	R5+	10	Brown	T5+
17	Red	R6-	24	Black	T6-
32	Orange	R6+	9	Grey	T6+
16	Red	R7-	7	Yellow	T7-
31	Green	R7+	8	Blue	T7+

## Technical Specifications

Specification	Description
Connector	DB44 connector
Cable type	Symmetrical twisted pair
Characteristic impedance	120.0 ohms
Core diameter of the inner conductor	0.50 mm

Specification	Description
Wire gauge of the inner conductor	24 AWG
DC resistance of the inner conductor	98.0 ohms/km
Frequency attenuation	$\leq 2.20$ dB/100 m@1.024 MHz
Capacitance	$\leq 56.0$ pF/m@1 KHz

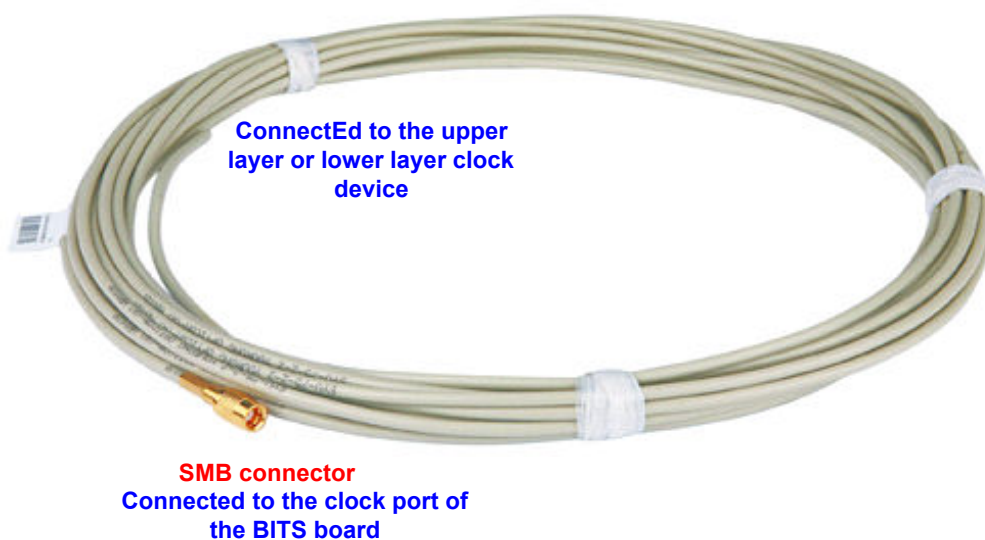
## 5.4 Clock Cable

This topic covers the applications, appearances, and technical specifications of Clock cables.

### 5.4.1 75-ohm Clock Cable

A 75-ohm clock cable is used to transmit clock signals.

#### Cable Connector



#### Specification

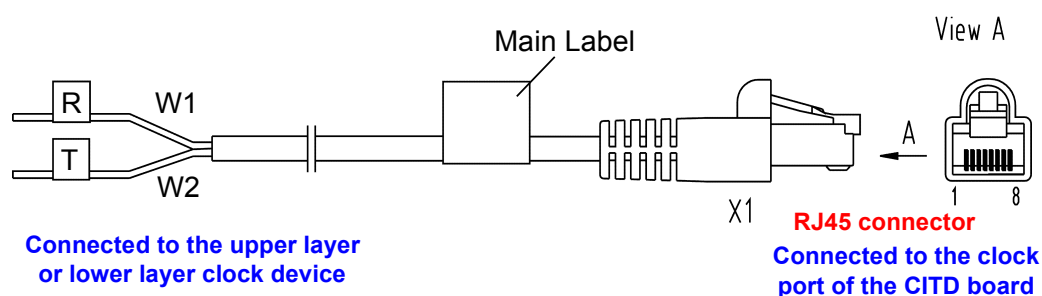
Specification	Description
Connector	Coaxial connector-SMB connector-75 ohms, straight, female
Type	Coaxial cable-75 ohms-3.9 mm-2.1 mm-0.34 mm-shielded
Characteristic impedance	75.0 ohms

Specification	Description
Diameter of the cable	3.9 mm
Diameter of the inner conductor	0.34 mm
DC resistance of the inner conductor	224.0 ohms
Frequency attenuation	3 dB/100 m @2 MHz
Capacitance	69 pF/m

## 5.4.2 120-ohm Clock Cable

A 120-ohm clock cable is used to transmit clock signals.

### Cable Connector



### Pin Assignment

Connector Pin	Color	Relation	Core No.
X1.1	Blue	Twisted pair	W1
X1.2	White		
X1.4	Orange	Twisted pair	W2
X1.5	White		

### Specification

Specification	Description
Connector	RJ45 connector

Specification	Description
Type	Symmetric twisted pair cable-120 ohms-two pairs-0.40 mm-shielded
Characteristic impedance	120.0 ohm
Diameter of the cable	4.60 mm
Diameter of the inner conductor	0.40 mm
DC resistance of the inner conductor	145.0 ohm
Frequency attenuation	2.8 dB/100 m @1.024 MHz
Capacitance	56 nF/km

### 5.4.3 Clock Transfer Cable

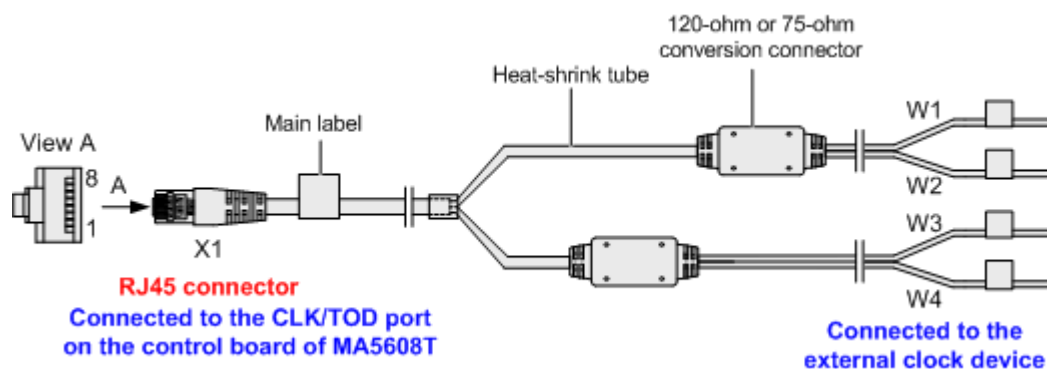
The clock transfer cable is a 120-ohm-to-75-ohm clock cable and is used for transmitting clock/time signals.

#### Connection

The clock transfer cable is connected as follows:

- One end of the cable is an RJ45 connector connecting to the CLK/TOD port on the control board.
- The other end is connected to the external clock device. The connector must be made based on the on-site situation.

#### Cable Connector



## Pin Assignment

120-Ohm Cable			75-Ohm Cable
Connector Pin	Color	Relation	Core No.
X1.1	Orange	Twisted pair	W1
X1.2	White		
X1.4	Blue	Twisted pair	W2
X1.5	White		
X1.3	Green	Twisted pair	W3
X1.6	White		
X1.7	White	Twisted pair	W4
X1.8	Brown		

## Specification

Item	Specification
Cable	120 ohm To 75 ohm Clock Cable
Connector X1 type	Network Interface Connector,8-Bit 8PIN, Crystal Model Connector
120-ohm cable type	Twisted-Pair Cable, 120 ohm, SEYVP, 0.4 mm, 26AWG, 4Pairs, Pantone 430U
75-ohm cable type	Coaxial Cable, SYV-75-2-2(4.0Z)-1/0.34 mm, OD3.9 mm, Double-Layer Copper Braid Shielded

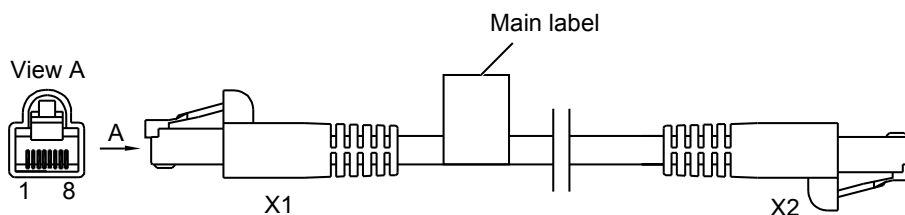
## 5.5 Network Cable

A network cable is used for equipment cascading, communication between the device and the network, and local maintenance and remote access of the device.

## Cable Appearance



## Cable Structure



**Table 5-4** Pin assignments of a straight-through cable

X1 Pin	Wire Color	X2 Pin
1	White and orange	1
2	Orange	2
3	White and green	3
4	Blue	4
5	White and blue	5
6	Green	6
7	White and brown	7
8	Brown	8

**Table 5-5** Pin assignments of a crossover cable

X1 Pin	Wire Color	X2 Pin
1	White and orange	3
2	Orange	6
3	White and green	1
4	Blue	4
5	White and blue	5
6	Green	2
7	White and brown	7
8	Brown	8

## Technical Specifications

Specification	Description
Connector (X1/X2)	RJ45 connector
Type	Category-3 and category-5 unshielded twisted pairs (UTP-3 and UTP-5) or shielded twisted pairs (STP)
Color	Dark gray
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.510 mm
Breakdown voltage	500.0 V
DC resistance of the inner conductor	93.8 ohms/km
Number of wires	8
Frequency range	0-100 MHz
Frequency attenuation	22 dB/100 m@100 MHz

## 5.6 Optical Fiber

An optical fiber connects an optical port to an upstream device or optical network terminal.



## Appearance and Structure

The appearances of a single-mode optical fiber and a multi-mode optical fiber are the same, but their colors are different. The single-mode optical fiber is yellow, and the multi-mode optical fiber is orange.

**Figure 5-7** and **Figure 5-8** show the appearances of single-mode optical fibers with different connectors.

**Figure 5-7** Appearance of a single-mode optical fiber with LC/PC connectors



**Figure 5-8** Appearance of a single-mode optical fiber with SC/PC (SC/UPC) connectors



An optical fiber carries optical signals. It is connected as follows:

- One end of the optical fiber is connected to an optical port of a board.

- The other end of the optical fiber is connected to the optical distribution frame (ODF), optical port of the upper layer device, or optical port of other devices.




## Fiber Selection Criterion

**Table 5-6** lists the criteria for selecting optical fibers. **Table 5-7** lists common optical connectors.

**Table 5-6** Criteria for selecting optical fibers

Determine ...	According to ...
Length	Survey result
Single-mode or multi-mode	Optical module type
Optical connector type	<ul style="list-style-type: none"> <li>● Square connector: SC/PC, SC/UPC and LC/PC</li> <li>● Round connector: FC/PC</li> </ul>

**Table 5-7** Common optical connectors

 SC/PC (SC/UPC) connector	 LC/PC connector
 FC/PC connector	

## 5.7 Environment Monitoring Cable

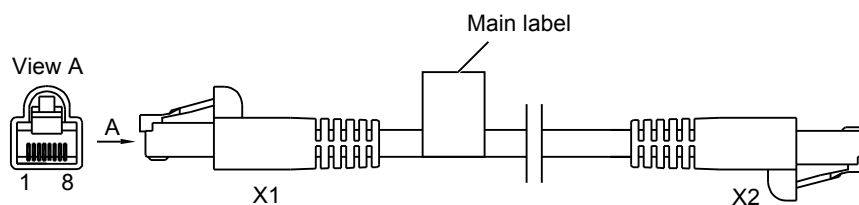
Environment monitoring cable is the shielded straight-through network cable, and it used to transmit the monitored signals collected by the ESC board to the control board.

## Cable Connector

Figure 5-9 Appearance of a network cable



## Cable Structure



## Pin Assignments

X1 Pin	Wire Color	X2 Pin
2	Orange	2
1	White and orange	1
6	Green	6
3	White and green	3
4	Blue	4
5	White and blue	5

X1 Pin	Wire Color	X2 Pin
8	Brown	8
7	White and brown	7

## Technical Specifications

Specification	Description
Connector (X1/X2)	RJ45 connector
Type	Shielded straight-through network cable
Color	Dark gray
Characteristic impedance	100.0 ohms
Wire diameter of the inner conductor	0.530 mm
DC resistance of the inner conductor	93.8 ohms/km
Number of wires	8
Frequency range	0-100 MHz

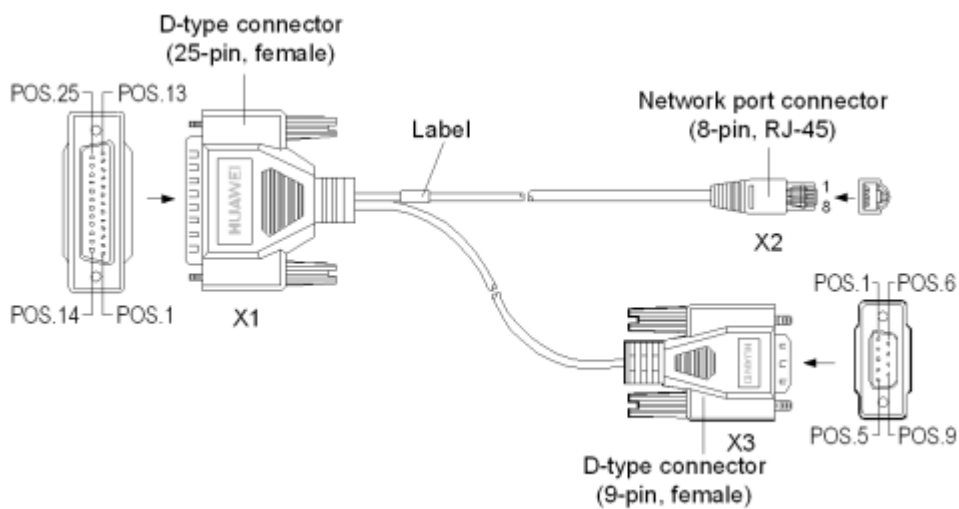
## 5.8 Local Maintenance Serial Cable

A local maintenance serial cable is used for debugging devices or maintaining devices at the local end.

## Cable Appearance



## Cable Structure



**Table 5-8** Pin assignments of the local maintenance serial cable

Connector	Pin Mapping							
X2 (RJ45)	1	2	3	4	5	6	7	8
X1 (DB-25)	5	6	3	1	7	2	20	4
X3 (DB-9)	8	6	2	5	5	3	4	7

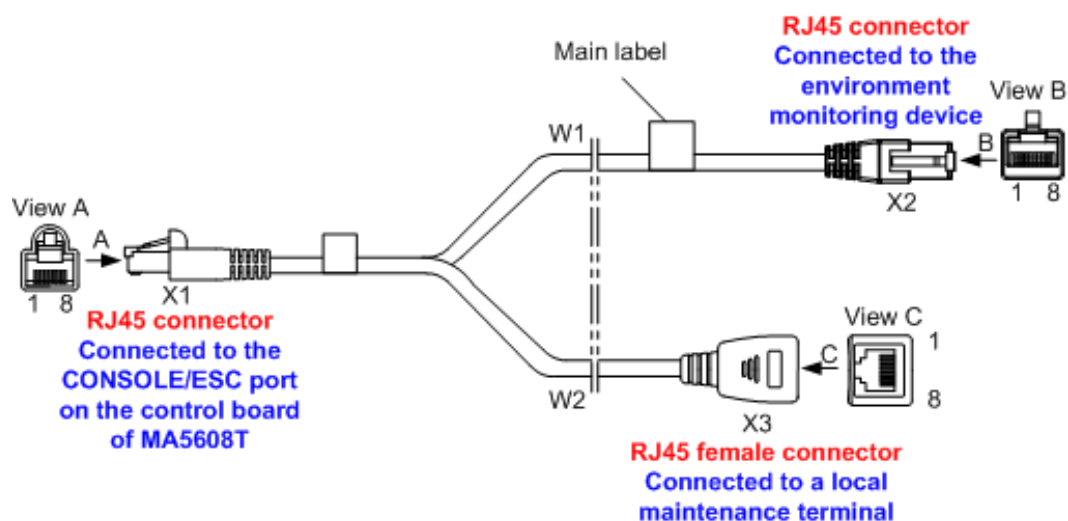
## Technical Specifications

Specification	Description
Connector type	DB-9 female + Ethernet port 8-pin/DB-25 female
Cable type	Symmetrical twisted pair
Color	Dark blue
Wire diameter of the inner conductor	0.38 mm
Wire gauge of the inner conductor	28 AWG (cross-sectional area $\approx 0.08 \text{ mm}^2$ )
Number of wires	8

## 5.9 Local Maintenance and Environment Monitoring Combo Cable

A local maintenance and environment monitoring combo cable is connected to a local maintenance terminal or an environment monitoring device for debugging and maintaining the main device or reporting the monitoring information to the control board.

### Cable Connector



### Pin Assignments

Cable	Connector X1	Connectors X2 and X3	Color	Relationship
W1	X1.1	X2.4	White	Pair

Cable	Connector X1	Connectors X2 and X3	Color	Relationship
	X1.2	X2.5	Blue	
	X1.7	X2.1	White	Pair
	X1.8	X2.2	Orange	
	X1.4	X2.6	Green	-
	X1.Shell	X2.Shell	Shield	-
W2	X1.3	X3.3	White	Pair
	X1.6	X3.6	Blue	
	X1.5	X3.5	White	-
	X1.Shell	X3.Shell	Shield	-

## Technical Specifications

Specification	Description
Connector X1 type	RJ45 connector
Connector X2 type	RJ45 connector
Connector X3 type	RJ45 female connector
Cable W1 type	Symmetrical twisted pair-100 ohms-4 pairs
Cable W2 type	Symmetrical twisted pair-100 ohms-2 pairs
Color	Black
Core diameter of the inner conductor	0.48 mm
Wire gauge of the inner conductor	26 AWG

# 6 Electromechanical Device

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## About This Chapter

This topic describes the function, front panel, and input and output terminals of the electromechanical device, and list the specification of the electromechanical device.

### [6.1 I-Type DC PDU](#)

This topic provides the appearance and specification of the I-type DC PDU, and describes the function, power distribution principle, input terminals, output terminals, -48 V/-60 V output control switch, LED, monitoring port, and environment monitoring board DIP switches of the PDU.

### [6.2 C3-Type DC PDU](#)

This topic provides the appearance and main performance specifications of the C3-type DC PDU, and describes the power distribution principle of the PDU.

### [6.3 B-Type DC PDU](#)

This topic provides the appearance and specifications of the B-type DC PDU, and describes the function, power distribution principle, input terminals, output terminals, and control switch of the PDU.

### [6.4 ETP4890 Power System](#)

An AC-powered cabinet uses the ETP4890 power system to convert the AC power to the DC power for power distribution. The small and modular ETP4890 power system supports easy installation and maintenance and effective LCD interface management. The power system supports a maximum of 90 A output current.

### [6.5 EPS75-4815AF Power System](#)

The AC-powered cabinet uses the EPS75-4815AF power system to convert the AC input into the DC and then distribute the power.

### [6.6 GEPS4845 Power System](#)

This topic describes the function, power supply principles, and front panel of the GEPS4845 power system, and provides the specifications of the GEPS4845 power system.

### [6.7 PMIB01 Sensor Transfer Box](#)

This topic describes the application and front panel of the sensor transfer box, and provides the specifications of the sensor transfer box.

### [6.8 PMIB02 Sensor Transfer Box](#)



This topic describes the application and front panel of the sensor transfer box, and provides the specifications of the sensor transfer box.

#### [6.9 SPD28SZ surge protector](#)

This topic describes the functions and front panel of the SPD28SZ surge protector, and provides the specifications of the surge protector.

#### [6.10 100 Ah Battery](#)

This topic provides the overview, outline and specifications of the 100 Ah battery.

## 6.1 I-Type DC PDU

This topic provides the appearance and specification of the I-type DC PDU, and describes the function, power distribution principle, input terminals, output terminals, -48 V/-60 V output control switch, LED, monitoring port, and environment monitoring board DIP switches of the PDU.

### Appearance

[Figure 6-1](#) shows the appearance of the I-type DC PDU.

**Figure 6-1** Appearance of the I-type DC PDU



### Function

The functions of the I-type PDU are as follows:

- Provides four or two -48 V/-60 V inputs.
- Provides eight -48 V/-60 V outputs.

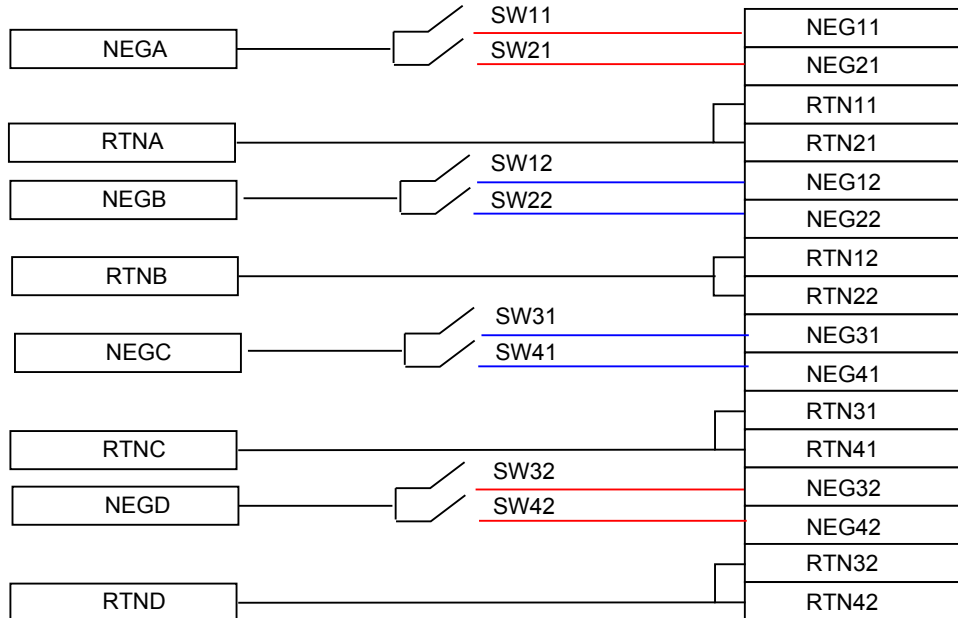
The monitoring and displaying functions of the I-type DC PDU are as follows:

- Supports displaying four or two power inputs.
- Supports detecting the voltage of four or two -48 V/-60 V inputs.
- Supports detecting 10 channels of external boolean parameters (including one channel of water sensor parameters, door status and MDF).
- Supports detecting 4 external analog parameters (including temperature, humidity and two channels of reserved parameters).

## Power Distribution Principle

**Figure 6-2** shows the power distribution principle of the I-type DC PDU.

**Figure 6-2** Power distribution principle of the I-type DC PDU



## Input Terminal

Open the front panel of the I-type DC PDU and you can see the input terminals of the PDU, as shown in **Figure 6-3**.

**Figure 6-3** Input terminals of the I-type DC PDU



The I-type DC PDU can provide four or two inputs. Different input terminals are used for different external power inputs, as described in **Table 6-1**.

**Table 6-1** Input terminals of the I-type DC PDU

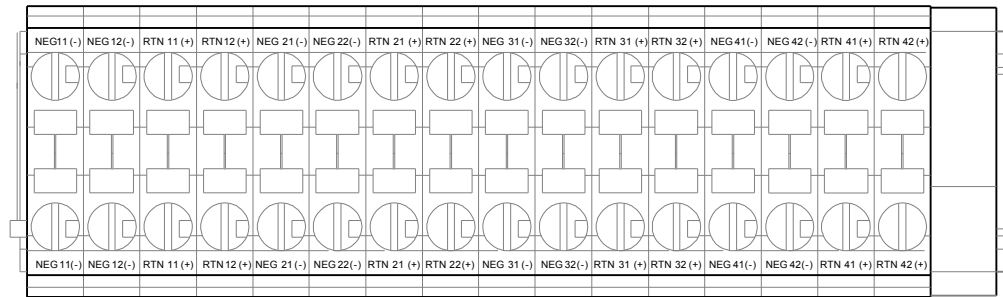
External Power Input	Input Terminal	Connected Cable	Remarks
Two inputs	NEGA (-)	The first -48 V/-60 V blue cable	Redundant backup mode: NEGA (-) and NEGC (-) are connected; NEGB (-) and NEGD (-) are connected. Tributaries A and B support mutual backup; tributaries C and D support mutual backup.
	NEGB (-)	The second -48 V/-60 V blue cable	
	PGND	The PGND yellow and green cable	
	RTNA (+)	The first GND black cable	
	RTNB (+)	The second GND black cable	
Four inputs	NEGA (-)	The first -48 V/-60 V blue cable	-
	NEGC (-)	The third -48 V/-60 V blue cable	
	NEGB (-)	The second -48 V/-60 V blue cable	
	NEGD (-)	The fourth -48 V/-60 V blue cable	
	PGND	The PGND yellow and green cable	
	RTNA (+)	The first GND black cable	
	RTNC (+)	The third GND black cable	
	RTNB (+)	The second GND black cable	
	RTND (+)	The fourth GND black cable	

## Output Terminal

The I-type DC PDU provides eight outputs. [Figure 6-4](#) shows the output terminals.

[Table 6-2](#) lists the mapping between the output terminals, control switches and service subracks.

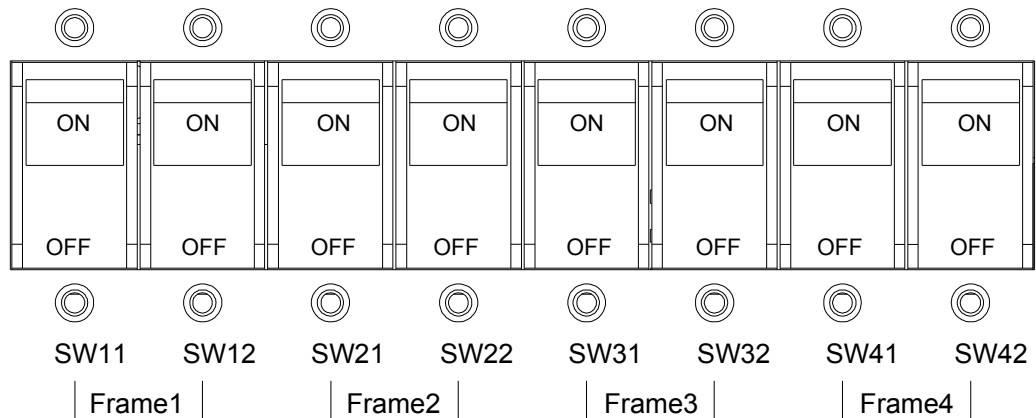
**Figure 6-4** Output terminals of the I-type DC PDU



## -48 V/-60 V Output Control Switch

**Figure 6-5** shows the -48 V/-60 V output control switch of the I-type DC PDU.

**Figure 6-5** -48 V/-60 V output control switch of the I-type DC PDU



**Table 6-2** Mapping between the output terminals, control switches and service subracks

Terminal Silkscreen	Control Switch	Load
NEG11 (-), RTN11 (+)	SW11	The first service subrack (from bottom to top)
NEG12 (-), RTN12 (+)	SW12	
NEG21 (-), RTN21 (+)	SW21	-
NEG22 (-), RTN22 (+)	SW22	
NEG31 (-), RTN31(+)	SW31	The second service subrack (from bottom to top)
NEG32 (-), RTN32 (+)	SW32	
NEG41(-), RTN41(+)	SW41	-
NEG42 (-), RTN42(+)	SW42	

## LED

**Table 6-3** describes the front panel of the monitoring board (ESCA) and lightning proof board (SPDA).

**Table 6-3** Front panel of the monitoring board

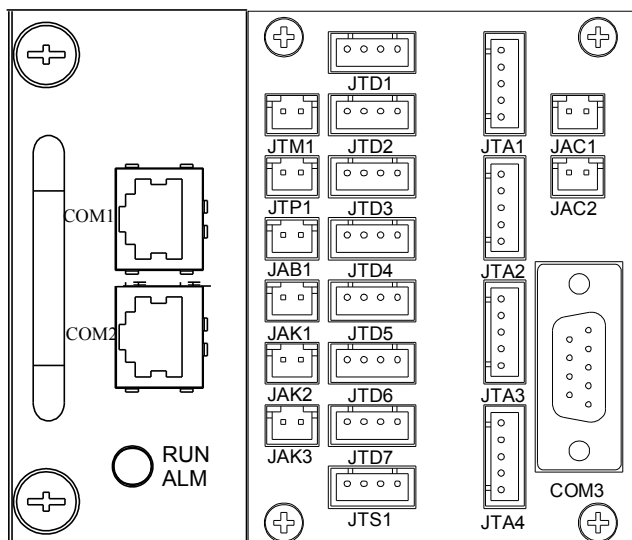
<b>RUN ALM: running status LED</b>	
Green: on for 1s and off for 1s repeatedly	The monitoring board works in the normal state.
Red: on for 0.3s and off for 0.3s repeatedly	The monitoring board generates critical alarms, such as temperature alarm, power abnormality, lightning proof abnormality, and so on.
Yellow: on for 1s and off for 1s repeatedly	The monitoring board generates warnings.
Yellow: on	The communication to the host is interrupted.
Yellow: on for 0.3s and off for 0.3s repeatedly	The monitoring board is being loaded or is not registered.
<b>SPD RUN ALM: surge protector status LED</b>	
Green: on	The surge protector is normal.
Red: on	The surge protector is faulty.

<b>PWRA, PWRB, PWRC, PWRD: 1st, 2nd, 3rd, and 4th power input LEDs</b>	
Green: on	The input voltage ranges from -38.4 V to -72 V.
Red: on	The input voltage is below -38.4 V.

## Monitoring Port

The monitoring ports of the I-type DC PDU include the serial port and the ports for monitoring boolean parameters, as shown in [Figure 6-6](#).

**Figure 6-6** Monitoring ports of the I-type DC PDU



[Table 6-4](#) describes the monitoring serial ports, and [Table 6-5](#) describes the ports for monitoring boolean parameters of the I-type DC PDU.

**Table 6-4** Monitoring serial ports of the I-type DC PDU

Serial Port	Function	Connection
COM1	(Reserved)	-
COM2	RS-485 monitoring port	Use the environment monitoring cable to connect the port to the ESC port of the control board.
COM3	(Reserved)	-

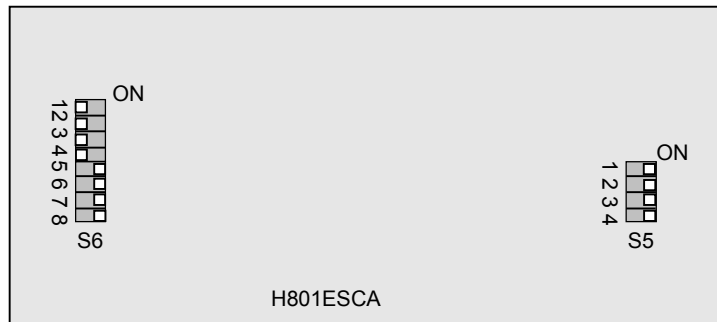
**Table 6-5** Ports for monitoring boolean parameter of the I-type DC PDU

Port	Monitoring Parameter	Remarks
JTM1	Door status sensor value	-
JTP1	MDF	-
JAB1	Output control switch of the cabinet buzzer	Reserved
JAK1	Output control switch of the cabinet alarm LED	Reserved
JAK2	Output control switch of the cabinet alarm LED	Reserved
JAK3	Output control switch of the cabinet alarm LED	Reserved
JTD1	Input 1 of the sensor for common boolean parameters	-
JTD2	Input 2 of the sensor for common boolean parameters	-
JTD3	Input 3 of the sensor for common boolean parameters	-
JTD4	Input 4 of the sensor for common boolean parameters	-
JTD5	Input 5 of the sensor for common boolean parameters	-
JTD6	Input 6 of the sensor for common boolean parameters	-
JTD7	Input 7 of the sensor for common boolean parameters	-
JTS1	Water sensor value	-
JTA1	Common external analog sensor 1	Temperature
JTA2	Common external analog sensor 2	Humidity
JTA3	Common external analog sensor 3	Reserved
JTA4	Common external analog sensor 4	Reserved
JAC1	External control parameter output (relay output)	Reserved
JAC2	External control parameter output (relay output)	Reserved

## DIP Switches of the Environment Monitoring Board

The I-type DC PDU uses the ESCA environment monitoring board, which provides two sets of DIP switches S5 and S6. **Figure 6-7** shows the layout of the DIP switches.

**Figure 6-7** Layout of the DIP switches of the I-type DC PDU



**Table 6-6** describes the settings of S5 and S6.

**Table 6-6** Settings of S5 and S6

DIP Switch	Indication	Default Settings
S5-1	S5 is used to set the external sensors of JTA1-JTA4 to be the voltage type or current type. <ul style="list-style-type: none"> <li>● ON: The external sensors are of the voltage type.</li> <li>● OFF: The external sensors are of the current type.</li> </ul>	ON
S5-2		ON
S5-3		ON
S5-4		ON
S6-1	S6-1 to S6-5 are used to set the mapping subnode addresses of system configuration to ensure normal communication. <ul style="list-style-type: none"> <li>● ON: The address bit is 0.</li> <li>● OFF: The address bit is 1.</li> </ul>	OFF
S6-2		OFF
S6-3		OFF
S6-4		OFF
S6-5		ON
S6-6	Reserved	ON
S6-7	Reserved	ON



DIP Switch	Indication	Default Settings
S6-8	<p>S6-8 is used to set the baud rate of the communication between the ESCA board and the control board.</p> <ul style="list-style-type: none"> <li>● ON: The baud rate of the communication between the ESCA board and the control board is 19200 bit/s.</li> <li>● OFF: The baud rate of the communication between the ESCA board and the control board is 9600 bit/s.</li> </ul>	ON

**Table 6-7** shows the mapping of S5 and ports for sensors.

**Table 6-7** Mapping of S5 and ports for sensors

DIP Switch	OFF	ON
S5-1	The external sensor of JTA1 is of the voltage type.	The external sensor of JTA1 is of the current type.
S5-2	The external sensor of JTA2 is of the voltage type.	The external sensor of JTA2 is of the current type.
S5-3	The external sensor of JTA3 is of the voltage type.	The external sensor of JTA3 is of the current type.
S5-4	The external sensor of JTA4 is of the voltage type.	The external sensor of JTA4 is of the current type.

S6-1 to S6-5 are used to set the subnode addresses of the ESCA board. For details, see **Table 6-8**.

**Table 6-8** Mapping of S6-1 to S6-5 and the subnode address

DIP Switch Settings (5, 4, 3, 2, 1)	Address Value	DIP Switch Settings (5, 4, 3, 2, 1)	Address Value
00000	0	10000	16
00001	1	10001	17
00010	2	10010	18
00011	3	10011	19

DIP Switch Settings (5, 4, 3, 2, 1)	Address Value	DIP Switch Settings (5, 4, 3, 2, 1)	Address Value
00100	4	10100	20
00101	5	10101	21
00110	6	10110	22
00111	7	10111	23
01000	8	11000	24
01001	9	11001	25
01010	10	11010	26
01011	11	11011	27
01100	12	11100	28
01101	13	11101	29
01110	14	11110	30
01111	15, default	11111	31

 **NOTE**

When S6-1 to S6-5 are used to set the subnode address, make sure that the DIP switch settings are consistent with the data configuration. The address value cannot be 30. The subnode address value cannot be the same as that of the monitoring board of the fan tray.

## Specification

**Table 6-9** shows the specification of the I-type DC PDU.

**Table 6-9** Specification of the I-type DC PDU

Item	Specification
Dimensions (W x D x H, excluding mounting brackets)	490 mm x 231.2 mm x 97.2 mm
Weight	5.3 kg
Output tributary quantity	8
Input voltage	-48 V (-38.4 V to -57.6 V) /-60 V (-38.4 V to -72 V)
Maximum input current	120 A

## 6.2 C3-Type DC PDU

This topic provides the appearance and main performance specifications of the C3-type DC PDU, and describes the power distribution principle of the PDU.

### Appearance

**Figure 6-8** and **Figure 6-9** show the appearance of the C3-type DC PDU.

**Figure 6-8** Appearance of the C3-type DC PDU (with cover)



**Figure 6-9** Appearance of the C3-type DC PDU (without cover)



### Function

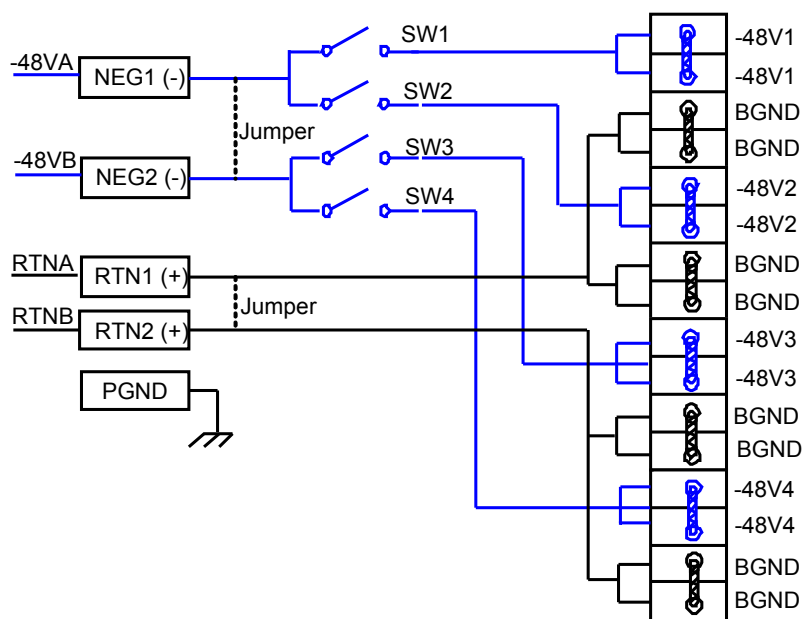
The C3-Type DC PDU provides the following functions:

- Short-circuit protection and overload protection
- The functions such as over-voltage protection, lightning proof, and filter are not provided.

### Power Distribution Principle

**Figure 6-10** shows the power distribution principle of the C3-Type DC PDU.

**Figure 6-10** Diagram of the power distribution principle of the C3-Type DC PDU



## Input Terminal

**Figure 6-11** shows the input terminals of the C3-type DC PDU.

**Figure 6-11** Input terminals of the C3-type DC PDU



The C3-type DC PDU supports two -48 V DC/-60 V DC inputs. The connections of the input terminals are as follows:

- RTN1 (+) connects to RTN of the first channel DC power supply.
- NEG1 (-) connects to NEG of the first channel DC power supply.
- PGND connects to the ground cable.
- RTN2 (+) connects to RTN of the second channel DC power supply.
- NEG2 (-) connects to NEG of the second channel DC power supply.

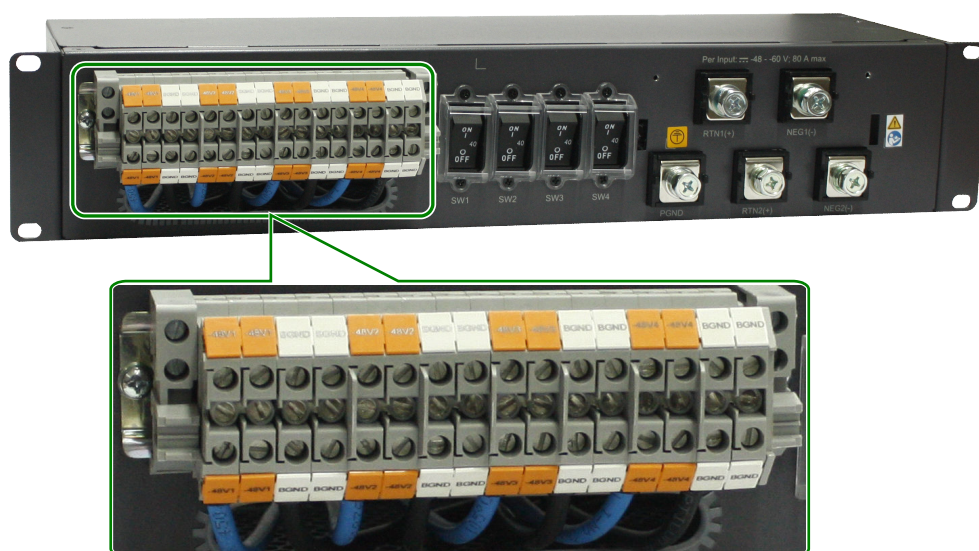
 **NOTE**

By default, the two channels of input power are provided by different power sources. To use the same power source to provide two channels of input power, connect a jumper to the terminal of each channel, as shown in [Figure 6-10](#).

## Output Terminal

[Figure 6-12](#) shows the output terminals of the C3-type DC PDU.

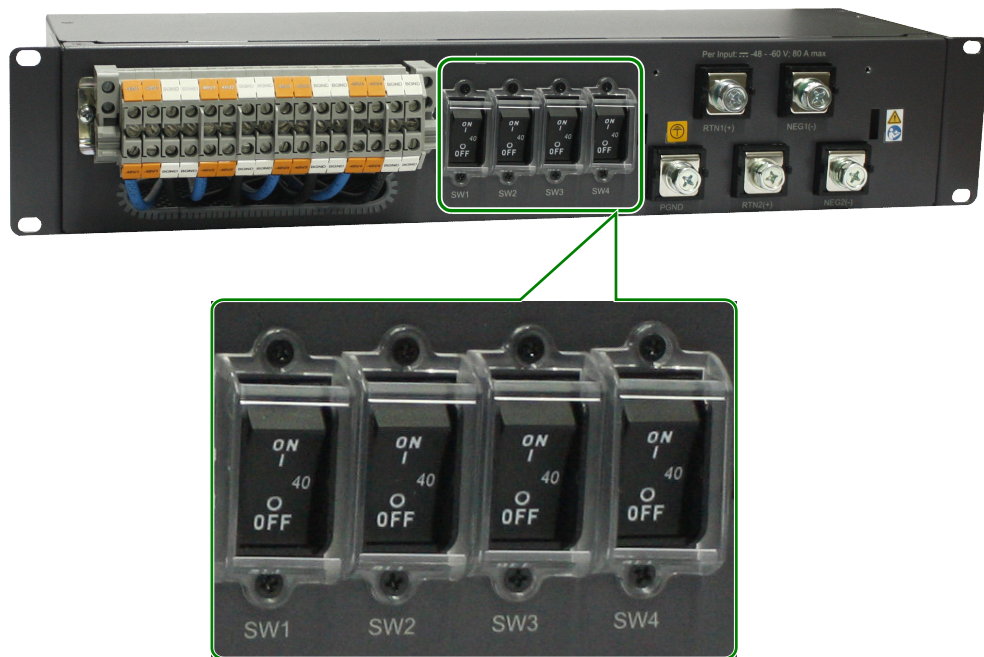
**Figure 6-12** Output terminals of the C3-type DC PDU



## -48 V// -60 V Output Control Switch

[Figure 6-13](#) shows the -48 V// -60 V output control switch of the C3-type DC PDU.

**Figure 6-13** -48 V/-60 V output control switch of the C3-type DC PDU



**Table 6-10** lists the mapping between the output terminals, control switches and service subracks.

**Table 6-10** Mapping between the output terminals, control switches and service subracks

Terminal Silkscreen	Control Switch	Load
48V1, 48V1	SW1	The first service subrack (from bottom to top)
BGND, BGND		
48V2, 48V2	SW2	The second service subrack (from bottom to top)
BGND, BGND		
48V3, 48V3	SW3	The first service subrack (from bottom to top)
BGND, BGND		
48V4, 48V4	SW4	The second service subrack (from bottom to top)
BGND, BGND		

## Specification

**Table 6-11** shows the main performance specifications of the C3-Type DC PDU.

**Table 6-11** Main performance specifications of the C3-Type DC PDU

Item		Performance Specification
Input feature	Rated input voltage	-48 V to -60 V DC
	Input voltage	-38.4 V to -72 V DC
	Mode of input power	Two channels of DC input power. By default, the two channels of input power are provided by different power sources. To use the same power source to provide two channels of input power, connect a jumper to the terminal of each channel, as shown in <a href="#">Figure 6-10</a> .
	Maximum input current	Maximum input current of each channel is 80 A.
	Input terminal	M8 OT terminal
Output feature	Rated output voltage	-48 V to -60 V DC
	output voltage	-38.4 V to -72 V DC
	Output channel	Eight channels of output power, controlled by four air breakers (Each air breaker controls two channels of output power.)
	Fixed current of the air breaker	40 A
	Output protection feature	Over-current protection. You need to restore the circuit manually.
	Output terminal	Bare crimping terminal (12-10AWG).
Environment	Working temperature	-25 °C to 55 °C
	Storage temperature	-40 °C to 70 °C
	Relative humidity	<= 95%
	Standard atmospheric pressure	70-106 KPa
Dimensions		2 U x 436 mm x 116.4 mm (Height x Width x Depth)

 **NOTE**

1 U = 44.45 mm

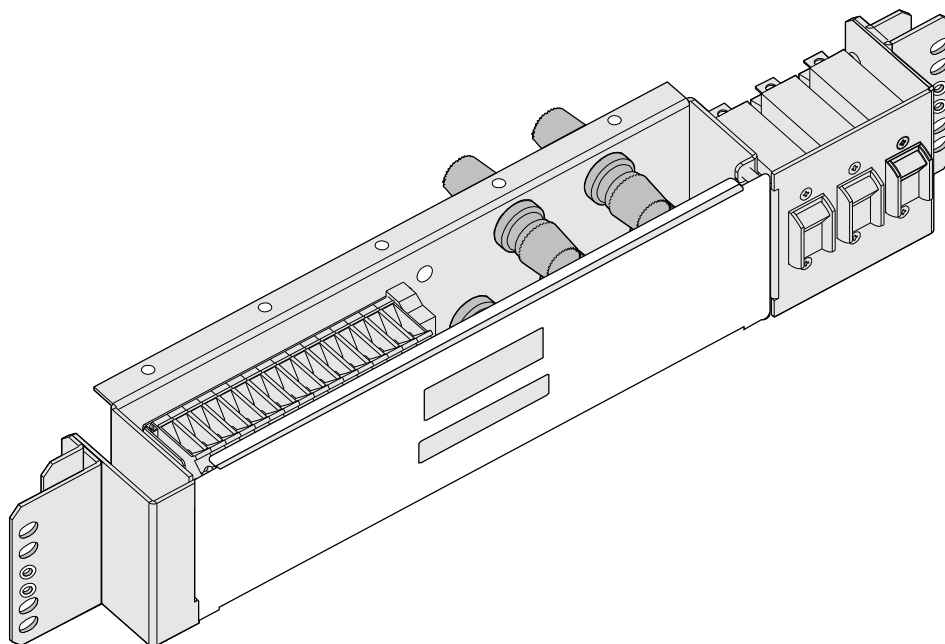
## 6.3 B-Type DC PDU

This topic provides the appearance and specifications of the B-type DC PDU, and describes the function, power distribution principle, input terminals, output terminals, and control switch of the PDU.

### Appearance

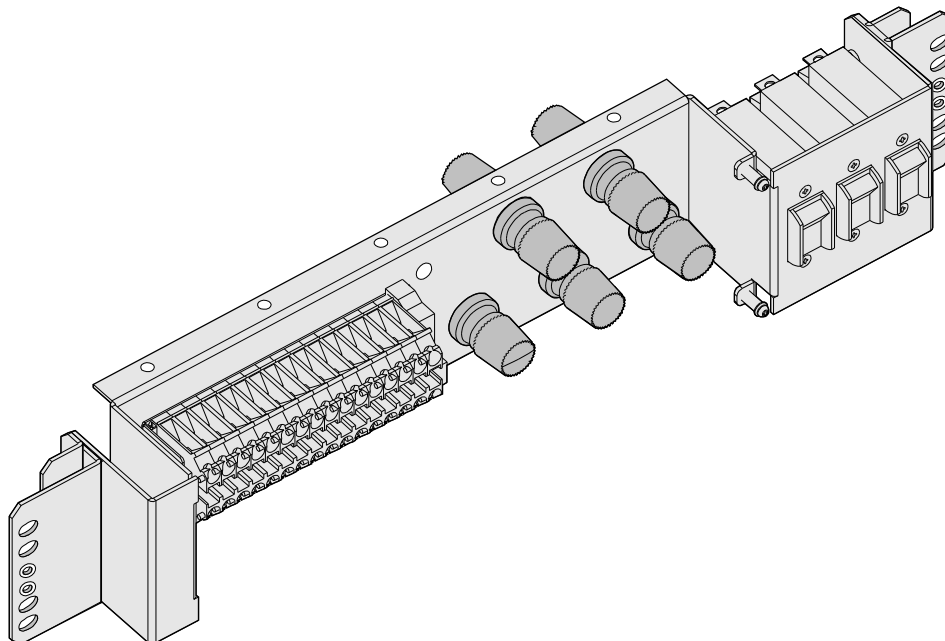
**Figure 6-14** and **Figure 6-15** show the appearance of the B-type DC PDU.

**Figure 6-14** Appearance of the B-type DC PDU (with cover)





**Figure 6-15** Appearance of the B-type DC PDU (without cover)



## Function

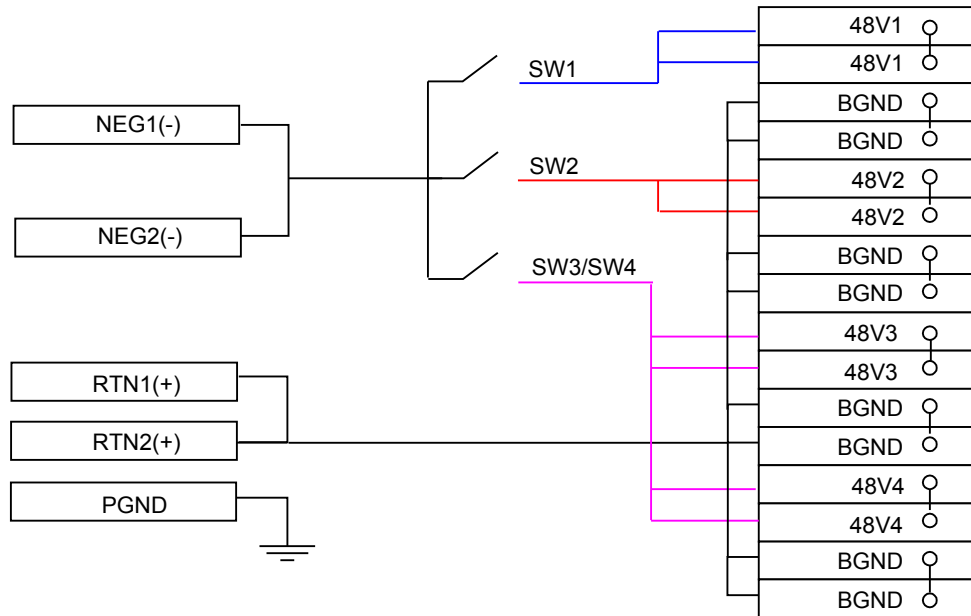
The functions of the B-type PDU are as follows:

- Provides two -48 V/-60 V inputs.
- Provides eight -48 V/-60 V outputs.

## Power Distribution Principle

**Figure 6-16** shows the power distribution principle of the B-type DC PDU.

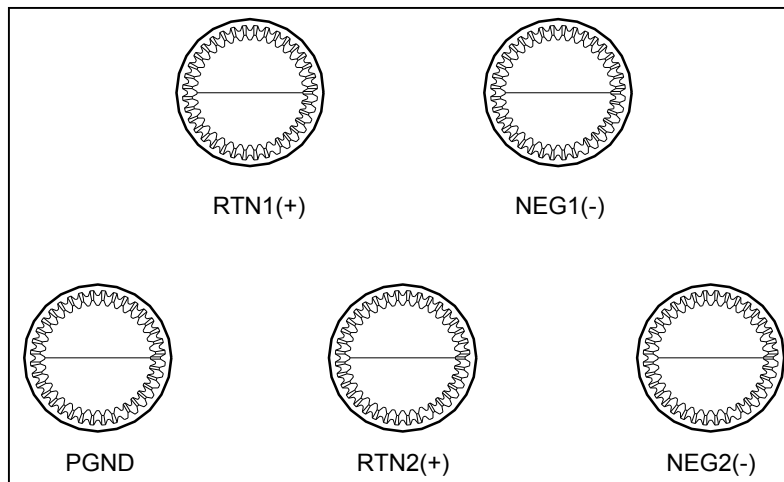
**Figure 6-16** Power distribution principle of the B-type DC PDU



## Input Terminal

**Figure 6-17** shows the input terminals of the B-type DC PDU.

**Figure 6-17** Input terminals of the B-type DC PDU



The B-type DC PDU supports two -48 V DC/-60 V DC inputs. The connections of the input terminals are as follows:

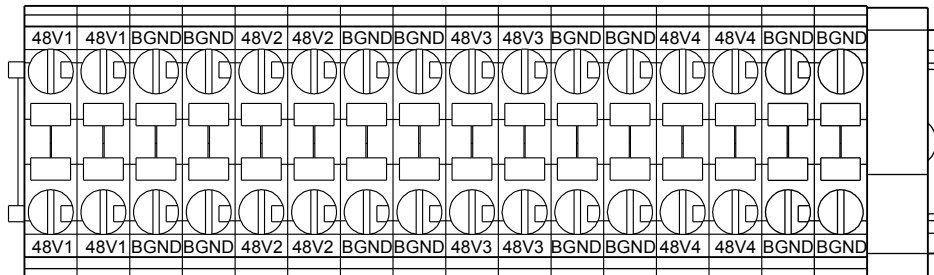
- RTN1 (+) connects to RTN of the first channel DC power supply.
- NEG1 (-) connects to NEG of the first channel DC power supply.
- PGND connects to the ground cable.

- RTN2 (+) connects to RTN of the second channel DC power supply.
- NEG2 (-) connects to NEG of the second channel DC power supply.

## Output Terminal

Figure 6-18 shows the output terminals of the B-type DC PDU.

Figure 6-18 Output terminals of the B-type DC PDU



## -48 V/-60 V Output Control Switch

Figure 6-19 shows the -48 V/-60 V output control switch of the B-type DC PDU.

Figure 6-19 -48 V/-60 V output control switch of the B-type DC PDU

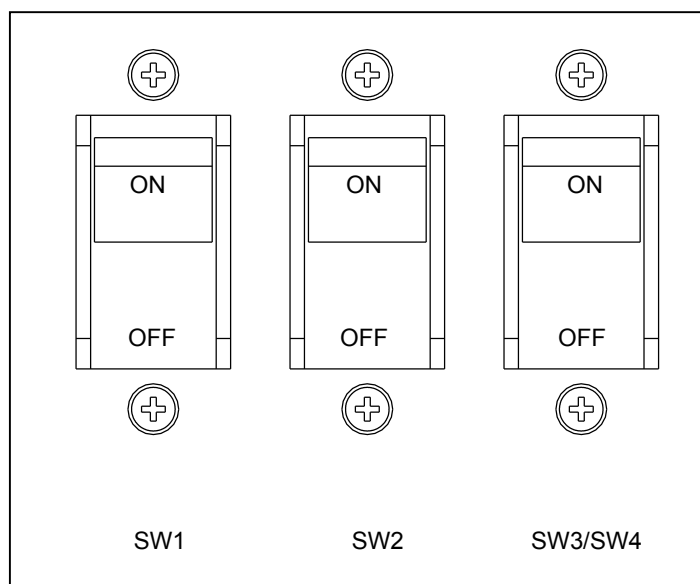


Table 6-12 lists the mapping between the output terminals, control switches and service subracks.

**Table 6-12** Mapping between the output terminals, control switches and service subracks

Terminal Silkscreen	Control Switch	Load
48V1, 48V1	SW1	The first service subrack (from bottom to top)
BGND, BGND		
48V2, 48V2	SW2	-
BGND, BGND		
48V3, 48V3	SW3/SW4	The second service subrack (from bottom to top)
BGND, BGND		
48V4, 48V4	SW3/SW4	-
BGND, BGND		

## Specification

**Table 6-13** lists the specification of the B-type DC PDU.

**Table 6-13** Specification of the B-type DC PDU

Item	Specification
Dimensions (W x D x H, excluding mounting brackets)	436 mm x 110 mm x 86.1 mm
Weight (fully loaded)	2.5 kg
Output tributary quantity	8
Input voltage	-38.4 V to -72 V
Maximum input current	120 A

## 6.4 ETP4890 Power System

An AC-powered cabinet uses the ETP4890 power system to convert the AC power to the DC power for power distribution. The small and modular ETP4890 power system supports easy installation and maintenance and effective LCD interface management. The power system supports a maximum of 90 A output current.

### Function

The ETP4890 power system supports the following functions:

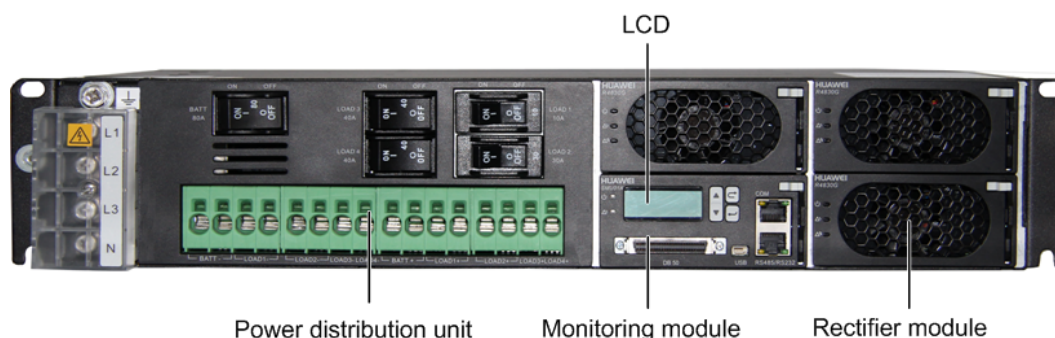
- Converts AC power to DC power and provides the DC power for communication devices.

- Communicates with the upper device using a COM or an RS485/RS232 serial port; sends control signals based on the values of monitored parameters or the control command sent by the upper device; detects power distribution parameters, power supply module parameters, and auxiliary digital parameters in real time.
- Connects to one to two groups of lead acid batteries and uses a monitoring module to manage the batteries; provides complete management for battery charging and discharging, ensuring efficient battery usage.
- Connects to a sensor transfer box using a DB50 port, detecting analog parameters and digital parameters, and outputting control signals.
- Uses a monitoring module to monitor all running parameters for the ETP4890 power system in real time; determines the working status; reports alarms in a timely manner.
- Clearly displays the monitoring and alarm information on the liquid crystal display (LCD) of the monitoring module; allows operations such as parameter setting on the LCD of the monitoring module.

## Appearance

Figure 6-20 shows the appearance of the ETP4890 power system.

Figure 6-20 ETP4890 power system



## Configuration

Table 6-14 lists the components of the ETP4890 power system.

Table 6-14 Component configuration of the ETP4890 power system

Component	Quantity
AC and DC power distribution subrack	1
Monitoring module	1
Power supply module R4830N1/R4830G1	1 to 3 (optional; by default, the R4830N1 is configured)

The ETP4890 power system can be configured with three power supply modules, which are connected in parallel for output.

Table 6-15 shows the mapping between the quantity of power supply modules in the ETP4890 power system and the maximum output current.

**Table 6-15** Mapping between the quantity of power supply modules of the ETP4890 power system and the maximum output current

Quantity of Power Supply Modules	Maximum Output Current
1	<ul style="list-style-type: none"> <li>● 30 A (at 55°C)</li> <li>● 25 A (at 60°C)</li> </ul>
2	<ul style="list-style-type: none"> <li>● 60 A (at 55°C)</li> <li>● 50 A (at 60°C)</li> </ul>
3	<ul style="list-style-type: none"> <li>● 90 A (at 55°C)</li> <li>● 75 A (at 60°C)</li> </ul>

## Communication Ports on the Monitoring Module

**Table 6-16** lists the communication ports on the monitoring module. A user can set the baud rate of the device using the LCD interface of the monitoring module.

**Table 6-16** Communication ports on the monitoring module

Communication Port	Communication Mode	Communication Parameter	Description
COM	RS485/RS232	Baud rate: 9600 bit/s or 19200 bit/s	Used as a serial port, communicating with the upper device
RS485/RS232	RS485/RS232	Baud rate: 9600 bit/s or 19200 bit/s	Used as a serial port, supporting the northbound/southbound communications

### NOTE

By default, the ETP4890 power system is equipped with a monitoring module, which is capable of the inband management (SMU01B). The COM port cannot be used as a network port.

## Indicators

**Table 6-17** lists the indicators on the power supply module of the ETP4890 power system.

**Table 6-17** Indicators on the power supply module of the ETP4890 power system

Indicator	Color	Status	Description
Power indicator	Green	Steady on	Normal

Indicator	Color	Status	Description
		Blinking at a frequency of 0.5 Hz	There is AC input, and the power supply module is in the manual query state.
		Blinking at a frequency of 4 Hz	Data is being loaded online.
		Off	There is no AC input.
Alarm indicator	Yellow	Steady on	A protection mechanism is triggered. After the fault is rectified, the power supply module can be restored to the normal state.
		Blinking	Communication between the power supply module and the site monitoring module is interrupted.
		Off	Normal
Fault indicator	Red	Steady on	An unrecoverable fault occurs.
		Blinking	The power supply module equipped with the EMU does not match the actual power supply module.
		Off	Normal

**Table 6-18** lists the indicators on the monitoring module.

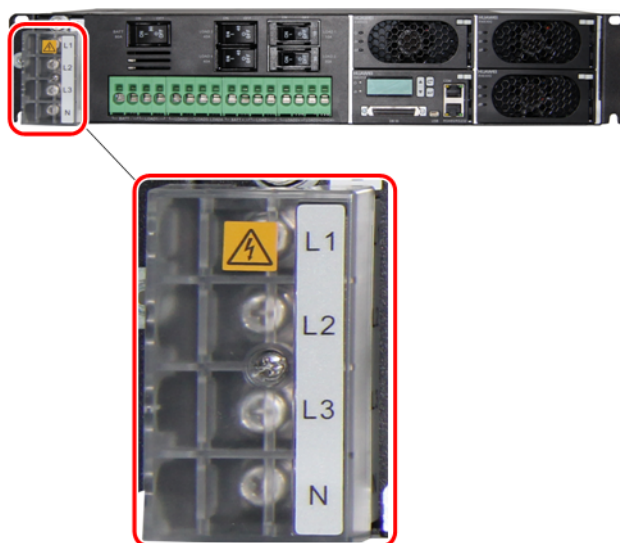
**Table 6-18** Indicators on the monitoring module

Indicator	Color	Status	Description
RUN	Green	Off	The monitoring module is faulty or there is no DC power input.
		Blinking at a frequency of 0.5 Hz	The monitoring module is working properly and communicating with the upper device properly.
		Blinking at a frequency of 4 Hz	The monitoring module works properly but does not communicate with the upper device properly.
ALM	Red	Off	The system does not generate any critical alarms.
		Steady on	The system generates critical alarms.

## Input Terminal

The ETP4890 power system supports 220 V AC input. **Figure 6-21** shows the input terminals in the ETP4890 power system.

**Figure 6-21** Input terminals in the ETP4890 power system



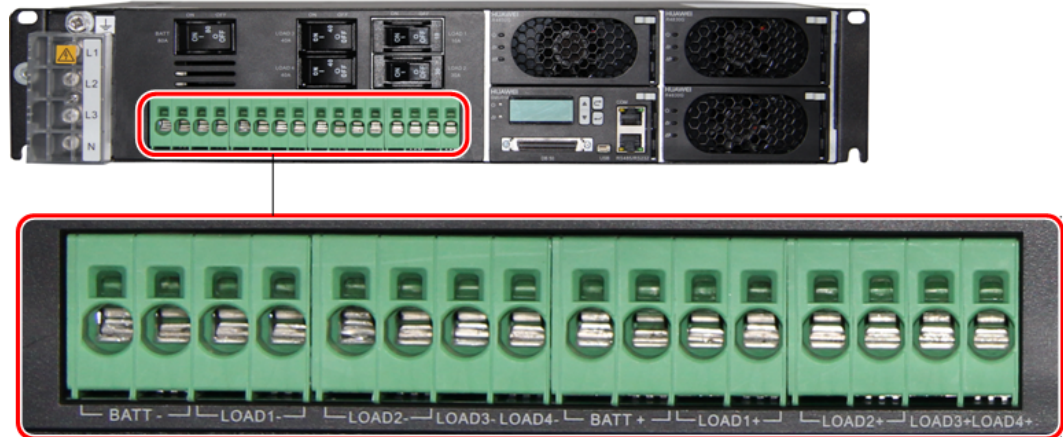


## Output Terminal

The ETP4890 power system supports eight groups of output terminals. The left-side eight output terminals are negative and the right-side eight output terminals are positive.

**Figure 6-22** shows the output terminals in the ETP4890 power system.

**Figure 6-22** Output terminals in the ETP4890 power system



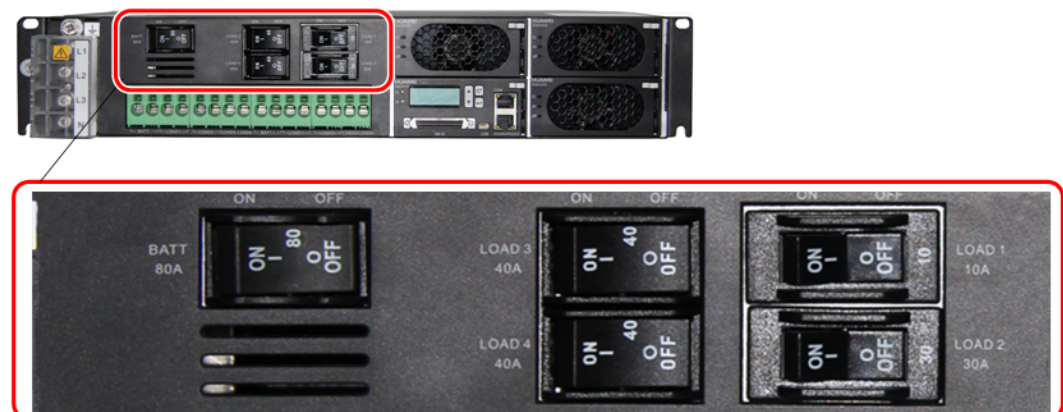
**Table 6-19** lists the Specifications of the output terminals.

**Table 6-19** Specifications of the output terminals

Port	Circuit Breaker
LOAD1	10 A
LOAD2	30 A
LOAD3	40 A
LOAD4	40 A
BATT	80 A

**Figure 6-23** shows the output branch circuit breaker in the ETP4890 system.

**Figure 6-23** Output branch circuit breaker in the ETP4890 system



## Specifications

**Table 6-20** lists the specifications of the ETP4890 power system.

**Table 6-20** Specifications of the ETP4890 power system

Specification Class	Specification	Description
Environment conditions	Operating temperature	-40°C to +70°C <b>NOTE</b> The power system can work at a temperature of 70°C for 8 hours.
	Operating humidity	5% to 95% (no condensation)
	Altitude	0 m to 4000 m (Note that in the range of 2000 m to 4000 m, the operating temperature decreases by 1°C when the altitude increases by 200 m.)
AC input	Mode	mono-phase, dual-live wire
	Voltage	85 V AC to 290 V AC (rated value: 110 V/220 V)
	Frequency	45 Hz to 66 Hz (rated value: 50 Hz)
	Power factor	≥ 0.99 in the case of a rated load
	Power supply module peak efficiency	<ul style="list-style-type: none"> <li>● R4830N1: 94%</li> <li>● R4830G1: 96%</li> </ul>
DC output	Voltage	-42 V to -58 V
	Default voltage	-53.5 V
	Maximum power	<ul style="list-style-type: none"> <li>● R4830N1: 4815 W (input voltage: 176 V AC to 290 V AC; if the temperature is higher than 55°C, power decreases linearly); 2407.5 W (input voltage: 85 V AC to 175 V AC; if the temperature is higher than 55°C, power decreases linearly)</li> <li>● R4830G1: 4800 W (input voltage: 176 V AC to 290 V AC; if the temperature is higher than 55°C, power decreases linearly); 2400 W (input voltage: 85 V AC to 175 V AC; if the temperature is higher than 55°C, power decreases linearly)</li> </ul> <b>NOTE</b> Maximum output power of the system = Number of the configured power supply modules x Output power of each power supply module

Specification Class	Specification	Description
	Regulated voltage precision	$\leq \pm 0.6\%$
	Peak noise voltage	$\leq 200$ mV (0 MHz to 20 MHz)
Structure	Dimensions (H x W x D) without brackets	86.1 mm x 442 mm x 255 mm
	Weight	$\leq 10$ kg (including three 30 A power supply modules and one SMU01B monitoring module)
	Protection class	IP20
	Installation mode	Installed in an IEC cabinet or an ETSI cabinet with brackets
	Maintenance mode	Front access
	Cooling method	Air cooling, with the built-in fan in the power supply module

## 6.5 EPS75-4815AF Power System

The AC-powered cabinet uses the EPS75-4815AF power system to convert the AC input into the DC and then distribute the power.

### Functions

The EPS75-4815AF power system converts one AC input into six DC outputs to implement the DC power distribution. It can be connected to one to two sets of batteries and use its monitoring module to manage batteries.

The EPS75-4815AF power system can also use the external sensor transfer box to collect and report the status of sensors and standby detected parameters.

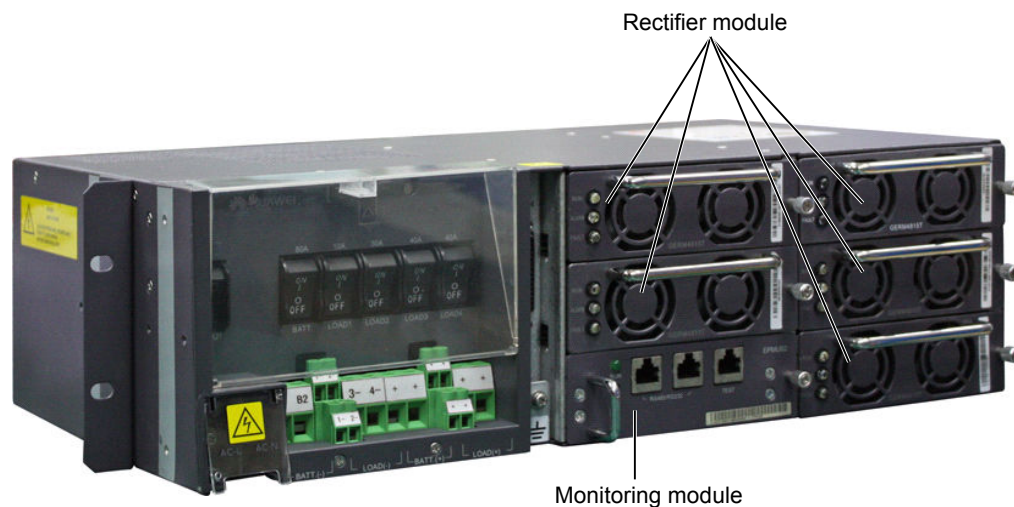
#### NOTE

The rectifier modules of the EPS75-4815AF power system work in the load balancing and mutual hot backup mode.

### Appearance

**Figure 6-24** shows the appearance of the EPS75-4815AF power system.

**Figure 6-24** Appearance of the EPS75-4815AF power system



## Configuration

**Table 6-21** lists the component configuration of the EPS75-4815AF power system.

**Table 6-21** Component configuration of the EPS75-4815AF power system

Component Name	Configuration
GERM4815T rectifier module	2 to 5 (optional)
EPMU02 monitoring module	1
Rack-EPS75-4815AF AC/DC power supply unit	1

The EPS75-4815AF power system can be configured with five rectifier modules, which are connected in parallel for output.

**Table 6-22** shows the mapping between the number of rectifier modules in the EPS75-4815AF power system and the maximum output current.

**Table 6-22** Mapping between the number of rectifier modules in the EPS75-4815AF power system and the maximum output current

Number of Rectifier Modules	Maximum Output Current
1	15 A
2	30 A
3	45 A
4	60 A

Number of Rectifier Modules	Maximum Output Current
5	75 A

## LED Description

**Table 6-23** describes the LEDs on the rectifier module of the EPS75-4815AF power system.

**Table 6-23** LEDs on the rectifier module of the EPS75-4815AF power system

LED	Status	Description
RUN	The green LED is on.	The rectifier module works in the normal state.
	The green LED is off.	This LED is off when the red LED is on or the yellow LED is on which is not caused by the output overcurrent.
ALM	The yellow LED is on.	An alarm has been generated for the rectifier module. The possible causes are as follows: <ul style="list-style-type: none"> <li>● The AC power is cut off or no AC power is supplied.</li> <li>● Over-temperature protection is enabled.</li> <li>● Primary protection is enabled. Specifically, the rectifier module automatic protection function is enabled due to a high voltage on the AC input end.</li> <li>● Overcurrent protection is enabled. Specifically, the rectifier module automatic protection function is enabled because the DC output current of the rectifier module exceeds the current range supported by the rectifier module.</li> </ul>
	The yellow LED blinks.	The communication of the rectifier module is interrupted.
	The yellow LED is off.	The rectifier module works in the normal state.
FAULT	The red LED is on.	The rectifier module is faulty. The possible causes are as follows: <ul style="list-style-type: none"> <li>● The AC power supply is faulty.</li> <li>● The output voltage is 0 V.</li> <li>● The fan is faulty.</li> <li>● The rectifier module output is short-circuited or does not work.</li> </ul>

LED	Status	Description
	The red LED is off.	The rectifier module works in the normal state.

**Table 6-24** describes the LEDs on the monitoring module of the EPS75-4815AF power system.

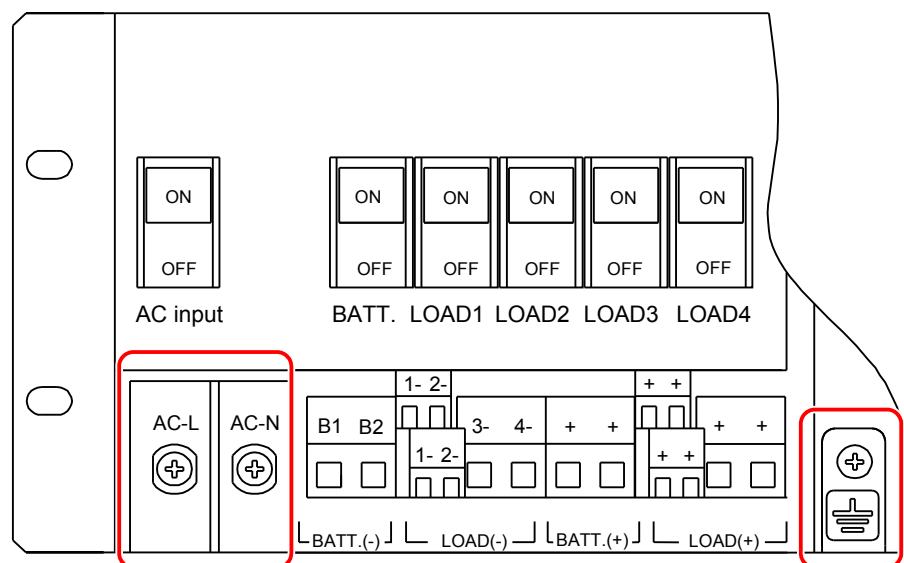
**Table 6-24** LEDs on the monitoring module of the EPS75-4815AF power system

LED	Status	Description
RUN	The green LED is on for 1s and off for 1s repeatedly.	The monitoring module works in the normal state.
	The green LED is blinking quickly.	The monitoring unit hardware is normal but the communication between the monitoring unit and the upper layer device is faulty.
	The green LED is off.	The monitoring module is faulty or there is no AC power input.
ALM	The red LED is on.	The system generates a critical alarm or the battery is disconnected.
	The red LED is off.	The system does not generate any critical alarm and the battery is already connected.

## Input Terminals

**Figure 6-25** shows the input terminals of the EPS75-4815AF power system.

**Figure 6-25** Input terminals of the EPS75-4815AF power system



The EPS75-4815AF power system supports one 220 VAC input. The connections of the power system are as follows:

- The AC-L terminal is connected to line L of the AC power cable.
- The AC-N terminal is connected to line N of the AC power cable.
- The grounding point is connected to the PGND cable.

## Output Terminals

Figure 6-26 shows the output terminals of the EPS75-4815AF power system.

Figure 6-26 Output terminals of the EPS75-4815AF power system

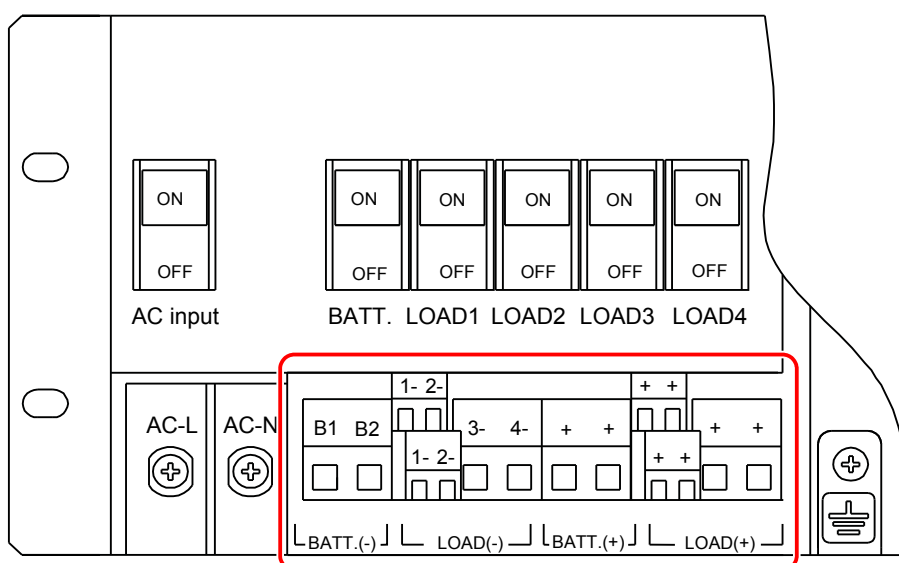
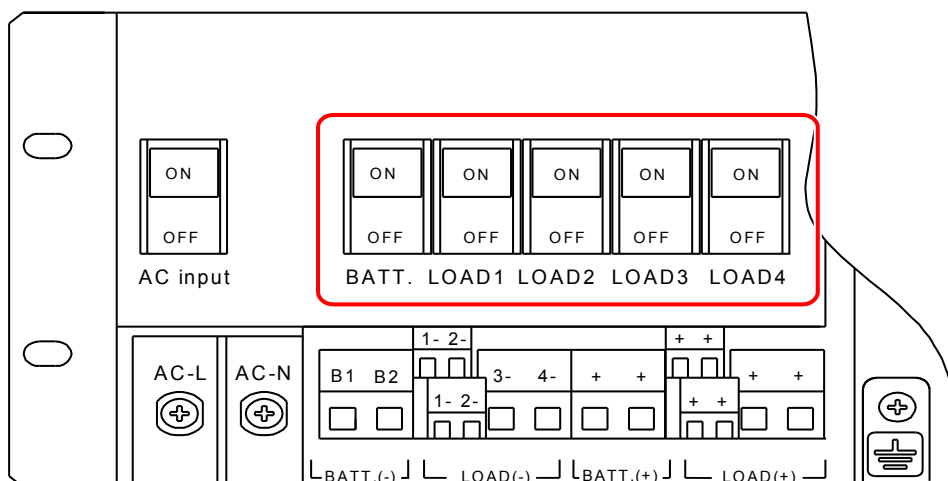


Figure 6-27 shows the output tributary switches of the EPS75-4815AF power system.

Figure 6-27 Output tributary switches of the EPS75-4815AF power system



**Table 6-25** shows the mapping between the output tributary switches and the loading tributaries.

**Table 6-25** Mapping between the output tributary switches and the loading tributaries

Output Tributary Switch	Load Tributary
BATT.	BATT. (-) (two channels) and BATT.(+) (two channels)
LOAD1	LOAD1 (-) (two channels) and LOAD1(+) (two channels)
LOAD2	LOAD2 (-) (two channels) and LOAD2(+) (two channels)
LOAD3	LOAD3 (-), LOAD3(+)
LOAD4	LOAD4 (-), LOAD4(+)

## DIP Switch

The EPS75-4815AF power system provides a DIP switch, the DIP switch is on the right middle of the monitoring module control board, which can be seen after you remove the monitoring module. The DIP switch has eight available electrical switches. ON indicates 1, and OFF indicates 0. **Table 6-26** describes the settings of DIP switch.

**Table 6-26** Settings of the DIP switch

Electrical Switch	Setting	Indication	Factory Default
1-5	Supported	Used to set the address of the environment monitoring module.	1: OFF 2: OFF 3: OFF 4: OFF 5: OFF
6-7	Supported	Used to set the rate of the serial port	6: ON 7: OFF
8	Not supported	-	OFF

The DIP switches 1-5 are used to set the address of the environment monitoring module, **Table 6-27** shows the settings of the DIP switches.



**Table 6-27** Settings of the DIP switches 1-5

5	4	3	2	1	Address Value
0	0	0	0	0	0
0	0	0	0	1	1
0	0	0	1	0	2
0	0	0	1	1	3
0	0	1	0	0	4
0	0	1	0	1	5
0	0	1	1	0	6
0	0	1	1	1	7
0	1	0	0	0	8
0	1	0	0	1	9
0	1	0	1	0	A
0	1	0	1	1	B
0	1	1	0	0	C
0	1	1	0	1	D
0	1	1	1	0	E
0	1	1	1	1	F
1	0	0	0	0	10
...	..	..	..	..	..

The DIP switches 6-7 are used to set the rate of the serial port, [Table 6-28](#) shows the settings of the DIP switches.

**Table 6-28** Settings of the DIP switches 6-7

7	6	Rate Value
0	0	4800 bit/s
0	1	9600 bit/s
1	0	19200 bit/s

## Specifications

[Table 6-29](#) lists the specifications of the EPS75-4815AF power system.

**Table 6-29** Specifications of the EPS75-4815AF power system

Item	Specification
Input	<ul style="list-style-type: none"> <li>● Rated input voltage: 220 VAC (90 VAC to 290 VAC) (Note that in the range of 90 VAC to 175 VAC, the output current also decreases linearly, limited within a specified range.)</li> <li>● Maximum input current: 28 A</li> <li>● Frequency: 50 Hz (45 Hz to 65 Hz)</li> </ul>
Output	<ul style="list-style-type: none"> <li>● Rated output voltage: -53.5 V DC</li> <li>● Voltage range: -42 V DC to -58 V DC</li> <li>● Output current:                             <ul style="list-style-type: none"> <li>- LOAD1: 10 A (circuit breaker)</li> <li>- LOAD2: 30 A (circuit breaker)</li> <li>- LOAD3: 40 A (circuit breaker)</li> <li>- LOAD4: 40 A (circuit breaker)</li> <li>- BATT.: 80 A (circuit breaker)</li> </ul> </li> </ul>
Efficiency	≥ 90% (in rated working state)
Working temperature range	-33 °C to +65 °C. <b>NOTE</b> In the range of +50 °C to +65 °C, the output current decreases linearly, limited within a specified range.
Cooling method	Forced air cooling, with the built-in fan in the rectifier module
Dimensions (W x D x H, excluding the mounting ears)	436 mm x 255 mm x 133 mm

## 6.6 GEPS4845 Power System

This topic describes the function, power supply principles, and front panel of the GEPS4845 power system, and provides the specifications of the GEPS4845 power system.

### Function

The AC-powered cabinet uses the GEPS4845 power system to convert the 220/110 VAC into -48 V DC and then distributes the power to each load. The GEPS4845 power system can connect to two sets of batteries.

#### NOTE

Both the rectifier units of GEPS4845 and the two sets of batteries work in the load-balancing mode. The rectifier units are hot backup for each other.

## Front Panel

Figure 6-28 shows the front panel of the GEPS4845 power system.

Figure 6-28 Front panel of the GEPS4845 power system

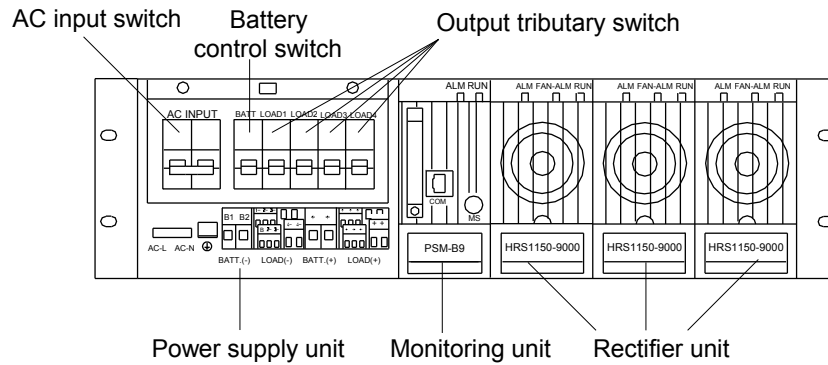


Table 6-30 describes the front panel of the GEPS4845 power system.

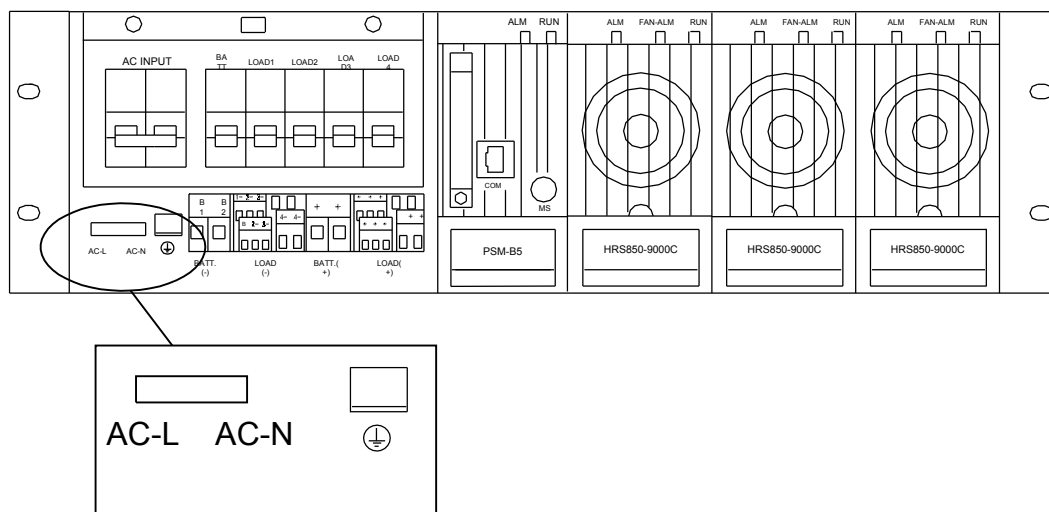
Table 6-30 Front panel of the GEPS4845 power system

Item	Description
Switch for AC input	Used to control the AC input.
Switch for battery control	Used to control the battery connection.
Output tributary switch	Used to control the output loading.
Power supply unit	Input and output terminal blocks.
Monitoring unit	Used for environment monitoring. Only one unit can be configured to the power system.
Rectifier unit	Used to convert the AC to the DC. Up to three units can be configured to the power system.

## Input Terminal

Figure 6-29 shows the input terminals of the GEPS4845 power system.

**Figure 6-29** Input terminals of the GEPS4845 power system



The GEPS4845 power system supports one 220/110 VAC input and the connection of the power system is as follows:

- AC-L connects to line L of the AC power supply.
- AC-N connects to line N of the AC power supply.
- PGND connects to the ground cable.

## Output Terminal

**Figure 6-30** shows the output terminals of the GEPS4845 power system.

**Figure 6-30** Output terminals of the GEPS4845 power system

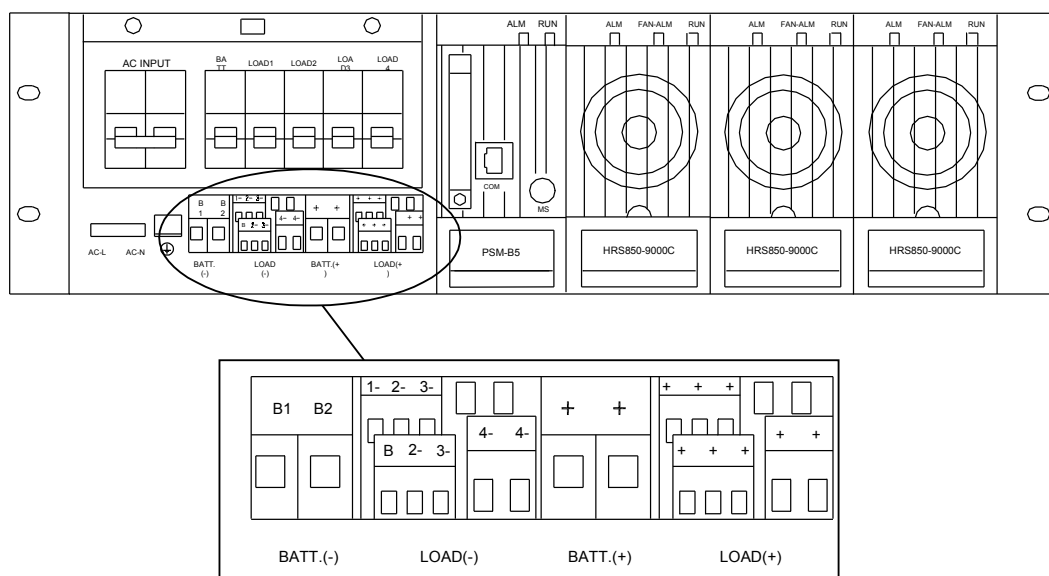
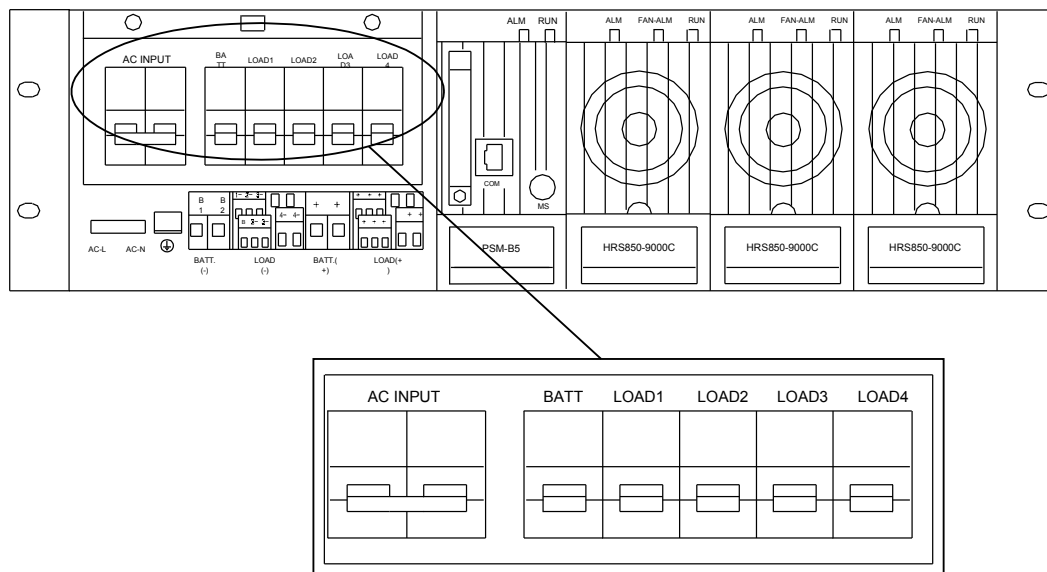


Figure 6-31 shows the output tributary switches of the GEPS4845 power system.

Figure 6-31 Output tributary switches of the GEPS4845 power system



The GEPS4845 power system supports four sets with eight -48 V DC outputs in total.

Table 6-31 shows the mapping between the output tributary switches and the loading tributaries.

Table 6-31 Mapping between the output tributary switches and the loading tributaries

Output Tributary Switch	Loading Tributary
BATT	BATT. (-), BATT. (+)
LOAD1	LOAD (-) 1, LOAD (+) 1
LOAD2	LOAD (-) 2, LOAD (+) 2
LOAD3	LOAD (-) 3, LOAD (+) 3
LOAD4	LOAD (-) 4, LOAD (+) 4

## Specifications

Table 6-32 lists the specifications of the GEPS4845 power system.

Table 6-32 Specifications of the GEPS4845 power system

Item	Specifications
Dimensions (W x D x H)	483 mm x 350 mm x 133 mm

Item	Specifications
Number of output tributaries	8 channels
Output current	<ul style="list-style-type: none"> <li>● BATT: 63 A</li> <li>● LOAD1: 10 A</li> <li>● LOAD2: 20 A</li> <li>● LOAD3: 20 A</li> <li>● LOAD4: 50 A</li> </ul>

The GEPS4845 AC power supply unit contains three rectifier modules. The three rectifier modules are parallel connected for output.

**Table 6-33** shows the number of rectifier modules in the GEPS4845 AC power supply unit and the maximum output current.

**Table 6-33** Number of rectifier modules and the maximum output current

Number of Rectifier Modules	Maximum Output Current
1	15 A
2	30 A
3	45 A

## 6.7 PMIB01 Sensor Transfer Box

This topic describes the application and front panel of the sensor transfer box, and provides the specifications of the sensor transfer box.

### Appearance

**Figure 6-32** shows the PMIB01 sensor transfer box.

**Figure 6-32** Front panel of the PMIB01 sensor transfer box



## Sensor Port

Figure 6-33 and Table 6-34 describe the sensor ports of the PMIB01 sensor transfer box.

Figure 6-33 Sensor ports of the PMIB01 sensor transfer box

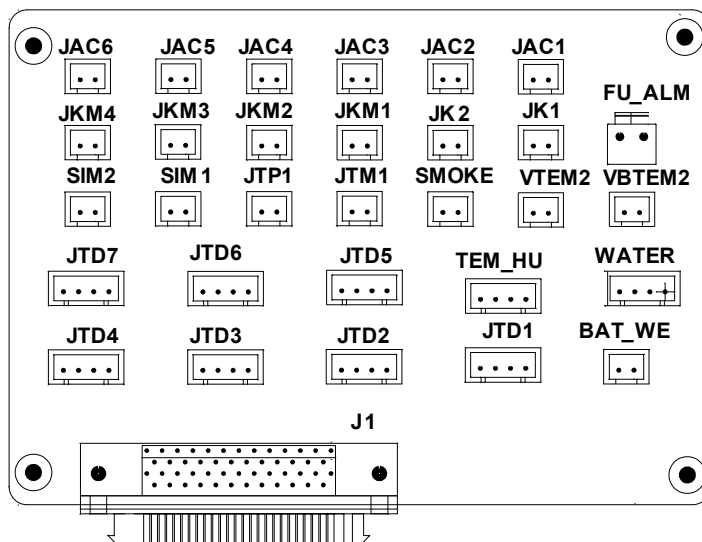


Table 6-34 Pin Function of the Sensor Ports

Silk Screen	Signal Port	Pin Function
BAT_WE	Sensor port of battery temperature 1	<ul style="list-style-type: none"> <li>● Pin 1 is for the +12 V power supply.</li> <li>● Pin 2 is for the signal cable.</li> </ul> The external sensor outputs the 0-5 V voltage signal.
VBTEM2	Sensor port of battery temperature 2	<ul style="list-style-type: none"> <li>● Pin 1 is for the +24 V power supply.</li> <li>● Pin 2 is for the temperature signal cable.</li> </ul> The external sensor outputs the 4-20 mA current signal.
WATER	Water sensor port	<ul style="list-style-type: none"> <li>● Pin 1 is for the +12 V power supply.</li> <li>● Pin 2 is for the signal cable.</li> <li>● Pin 3 is for grounding.</li> <li>● Pin 4 is reserved.</li> </ul> When the impedance between pin 2 and pin 3 drops to a certain range, alarms are triggered.

Silk Screen	Signal Port	Pin Function
TEM_HU	Sensor port of temperature and humidity 1	<ul style="list-style-type: none"> <li>● Pin 1 and pin 3 are for the +24 V power supply.</li> <li>● Pin 2 is for the temperature signal cable.</li> <li>● Pin 4 is for the humidity signal cable.</li> </ul>
VTEM2	Sensor port of temperature and humidity 2	<ul style="list-style-type: none"> <li>● Pin 1 is for the +24 V power supply.</li> <li>● Pin 2 is for the temperature or humidity signal cable.</li> </ul> <p>The external sensor outputs the 4-20 mA current signal.</p>
JTP1	Sensor port of the MDF	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable.</li> <li>● Pin 2 is reserved.</li> </ul>
SMOKE	Smoke sensor port	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable.</li> <li>● Pin 2 is for the +24 V power supply.</li> </ul>
JTM1	Door-status sensor port	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable.</li> <li>● Pin 2 is for the +24 V power supply.</li> </ul> <p>By default, when pin 1 and pin 2 are connected, the door is in the normal state; when they are disconnected, alarms are triggered. If no door-status sensor is used, connect pin 1 and pin 2 to disable door-status alarms.</p>
JK1, JK2	Alarm digital ports	<p>The maximum voltage is 60 V DC and the maximum load current is 500 mA.</p> <ul style="list-style-type: none"> <li>● When minor alarms are generated, JK2 is short-circuited.</li> <li>● When critical alarms are generated, JK1 is short-circuited.</li> <li>● Users can define alarm levels through the BAM program.</li> </ul>
JKM1-JKM4	Digital ports	<p>The maximum voltage is 5.6 V DC and the maximum current is 20 mA.</p>
SIM1, SIM2	Battery unbalanced sensor ports	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable.</li> <li>● Pin 2 is reserved.</li> </ul>
JAC1-JAC6	Output ports of the optical coupler	<p>Pin 1 and pin 2 are connected to pole C and pole E of the optical coupler.</p> <p>The optical coupling parameter <math>V_{ce\ max}</math> is 40 V DC and <math>I_c\ max</math> is 80 mA. Avoid setting the parameters to the maximum values.</p>
FU_ALM	Detecting port of the battery fuse	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable FU1+ and is connected to the negative pole of the battery.</li> <li>● Pin 2 is reserved for the FU1- signal.</li> </ul>



Silk Screen	Signal Port	Pin Function
JTD1-JTD7	Input ports of the standby Boolean value	<ul style="list-style-type: none"> <li>● Pin 1 is for the +24 V power supply.</li> <li>● Pin 2 is for the +12 V power supply.</li> <li>● Pin 3 is for the signal cable.</li> <li>● Pin 4 is for grounding.</li> </ul> <p>According to the actual requirements, access related passive digital signals to pins 2 and pin 3.</p>
J1	DB50 port	The port connects the monitoring transfer board and the monitoring board to input the sensor signals and the output the control signals.

## Specifications

**Table 6-35** lists the specifications of the PMIB01 sensor transfer box.

**Table 6-35** Specifications of the PMIB01 sensor transfer box

Sensor Transfer Box	Dimensions (W x D x H)
PMIB01	140 mm x 96 mm x 31 mm

## 6.8 PMIB02 Sensor Transfer Box

This topic describes the application and front panel of the sensor transfer box, and provides the specifications of the sensor transfer box.

### Function

The sensor transfer box provides various sensor ports to connect the EMU and external sensors.

### Overview

The sensor transfer box is an optional part. It provides diverse Sensor ports to connect the monitoring unit to the external sensors.

### Front Panel

**Figure 6-34** shows the PMIB02 sensor transfer box.

**Figure 6-34** Front panel of the PMIB02 sensor transfer box



## Sensor Port

Figure 6-35 and Table 6-36 describe the sensor ports of the PMIB02 sensor transfer box.

Figure 6-35 Sensor ports of the PMIB02 sensor transfer box



Table 6-36 Function of the sensor ports

Silk Screen	Signal Port	Pin Function	Remarks
BAT_W E	Sensor port of battery temperature 1	<ul style="list-style-type: none"> <li>● Pin 1 is for grounding.</li> <li>● Pin 2 is for the signal cable.</li> <li>● Pin 3 is reserved.</li> <li>● Pin 4 is for the +12 V power supply.</li> </ul> The external sensor outputs the 0-5 V voltage signal.	Used
VBTEM 2	Sensor port of battery temperature 2	<ul style="list-style-type: none"> <li>● Pin 1 is for the +24 V power supply.</li> <li>● Pin 2 is for the temperature signal cable.</li> </ul> The external sensor outputs the 4-20 mA current signal.	-
WATER	Water sensor port	<ul style="list-style-type: none"> <li>● Pin 1 is for the +12 V power supply.</li> <li>● Pin 2 is for the signal cable.</li> <li>● Pin 3 is for grounding.</li> <li>● Pin 4 is reserved.</li> </ul> When the impedance between pin 2 and pin 3 drops to a certain range, alarms are triggered.	-
TEM_H U	Sensor port of temperature and humidity 1	<ul style="list-style-type: none"> <li>● Pin 1 and pin 3 are for the +24 V power supply.</li> <li>● Pin 2 is for the temperature signal cable.</li> <li>● Pin 4 is for the humidity signal cable.</li> </ul>	Used

Silk Screen	Signal Port	Pin Function	Remarks
VTEM2	Sensor port of temperature and humidity 2	<ul style="list-style-type: none"> <li>● Pin 1 is for the +24 V power supply.</li> <li>● Pin 2 is for the temperature or humidity signal cable.</li> </ul> <p>The external sensor outputs the 4-20 mA current signal.</p>	-
JTP1	Sensor port of the MDF	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable.</li> <li>● Pin 2 is reserved.</li> </ul>	Used
SMOKE	Smoke sensor port	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable.</li> <li>● Pin 2 is for the +24 V power supply.</li> </ul>	-
JTM1	Door-status sensor port	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable.</li> <li>● Pin 2 is for the +24 V power supply.</li> </ul> <p>By default, when pin 1 and pin 2 are connected, the door is in the normal state; when they are disconnected, alarms are triggered. If no door-status sensor is used, connect pin 1 and pin 2 to disable door-status alarms.</p>	Used
JK1, JK2	Alarm digital ports	<p>The maximum voltage is 60 V DC and the maximum load current is 500 mA.</p> <ul style="list-style-type: none"> <li>● When minor alarms are generated, JK2 is short-circuited.</li> <li>● When critical alarms are generated, JK1 is short-circuited.</li> <li>● Users can define alarm levels through the BAM program.</li> </ul>	Reserved
JKM1-JKM4	Digital ports	<p>The maximum voltage is 5.6 V DC and the maximum current is 20 mA.</p>	-
SIM1, SIM2	Battery unbalanced sensor ports	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable.</li> <li>● Pin 2 is reserved.</li> </ul>	-
JAC1-JAC6	Output ports of the optical coupler	<p>Pin 1 and pin 2 are connected to pole C and pole E of the optical coupler.</p> <p>The optical coupling parameter <math>V_{ce\ max}</math> is 40 V DC and <math>I_c\ max</math> is 80 mA. Avoid setting the parameters to the maximum values.</p>	Reserved
FU_ALM	Detecting port of the battery fuse	<ul style="list-style-type: none"> <li>● Pin 1 is for the signal cable FU1+ and is connected to the negative pole of the battery.</li> <li>● Pin 2 is reserved for the FU1- signal.</li> </ul>	-

Silk Screen	Signal Port	Pin Function	Remarks
JTD1-JTD7	Input ports of the standby Boolean value	<ul style="list-style-type: none"> <li>● Pin 1 is for the +24 V power supply.</li> <li>● Pin 2 is for the +12 V power supply.</li> <li>● Pin 3 is for the signal cable.</li> <li>● Pin 4 is for grounding.</li> </ul> <p>According to the actual requirements, access related passive digital signals to pins 2 and pin 3.</p>	Reserved
J1	DB50 port	The port connects the monitoring transfer board and the monitoring board to input the sensor signals and the output the control signals.	-

 **NOTE**

"JTD1-JTD7" are the input ports of the standby Boolean value. By default, the sensors are not configured. You can determine the type of signal to be accessed. With related configuration, the monitor unit can monitor them.

## Specifications

[Table 6-37](#) lists the specifications of the PMIB02 sensor transfer box.

**Table 6-37** Specifications of the PMIB02 sensor transfer box

Sensor Transfer Box	Dimensions (W x D x H)
PMIB02	482.6 mm x 70 mm x 43.6 mm

## 6.9 SPD28SZ surge protector

This topic describes the functions and front panel of the SPD28SZ surge protector, and provides the specifications of the surge protector.

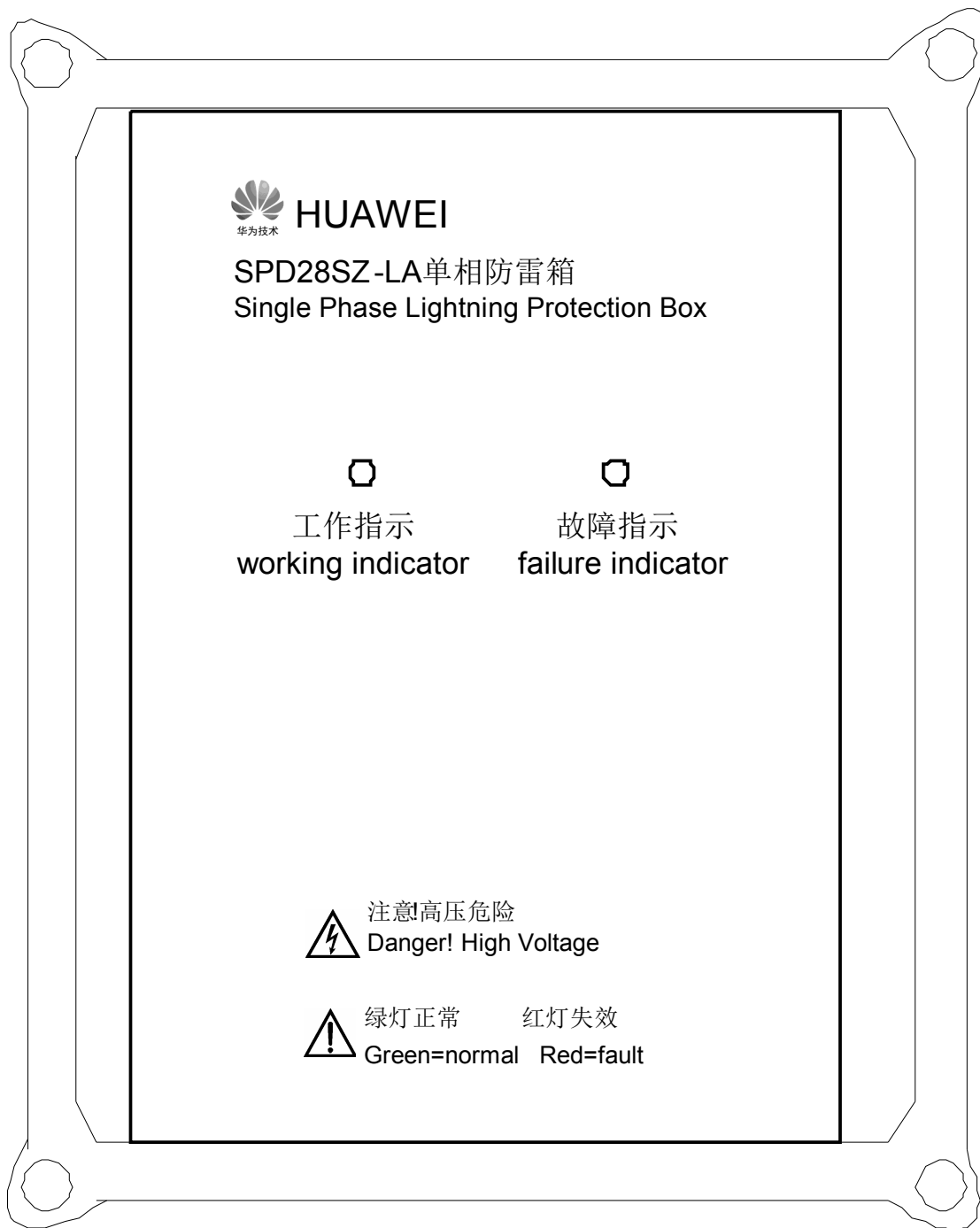
### Function

The SPD28SZ surge protector has the over-voltage protection function against lightning. It can protect the power supply device and the powered device. The SPD28SZ surge protector is used in the 220 VAC-powered indoor cabinet.

### Front Panel

[Figure 6-36](#) shows the front panel of the SPD28SZ surge protector.

**Figure 6-36** Front panel of the SPD28SZ surge protector



## LEDs

**Table 6-38** describes the LEDs on the front panel of the SPD28SZ surge protector.

**Table 6-38** LEDs on the front panel of the SPD28SZ surge protector.

LED	Status Description	
Working LED	Green	The surge protector works in the normal state.
	Red	The surge protector is faulty.
Failure LED	OFF	The surge protector works in the normal state.
	Red	The surge protector is faulty.

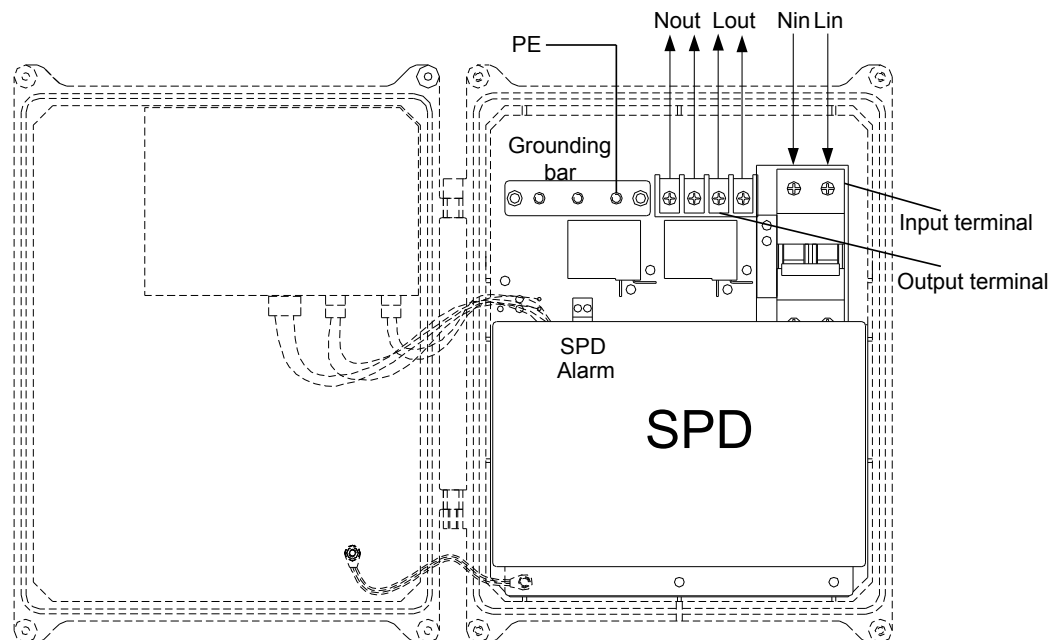
**NOTE**

When the mains over-voltage protection circuit is started for the surge protector, the surge protection function of the surge protector still works and the green working LED is still on. When the failure LED is red, replace the surge protector in time.

## Electrical Connection

**Figure 6-37** shows the electrical connections of the SPD28SZ surge protector.

**Figure 6-37** Electrical connections of the SPD28SZ surge protector



## Specifications

**Table 6-39** lists the specifications of the SPD28SZ surge protector.

**Table 6-39** Specifications of the SPD28SZ surge protector

No.	Item	Technical Requirement	
1	Input feature	Input rated voltage	Single-phase 220 VAC
		Input frequency range	47 Hz to 53 Hz
		Input voltage range	154 V to 286 V
		Input rated current	30 A
2	Output feature	Output voltage	154 V to 286 V
3	surge protection index	Normal nominal discharge current $I_n$	20 kA
		Maximum impact throughput capacity $I_{max}$	40 kA
		Residual voltage $U_r$ (8/20 $\mu$ s, 20 kA)	$\leq 1300$ V
4	Over-voltage protection	Over-voltage protection point	275 $\pm$ 5 V
		Return difference	5 V to 10 V
5	Alarm function	Remote alarm function	The remote output is the dry contact digital signals. In normal cases, the contact is closed.
		Local alarm function	Indicated by the LED on the front panel.

## 6.10 100 Ah Battery

This topic provides the overview, outline and specifications of the 100 Ah battery.



### NOTICE

- Ensure that the polarity position of each battery is correct. The connection between batteries and the power system/battery interface of the device must be firm and correct.
- When the device power supplied by the battery, it is suggested that powered on timely to avoid the battery extended storage.
- When the device is power off, ensure that the battery switch is in the OFF state.
- After the device is powered on, the battery parameters need to be configured in time.

### NOTE

The appearance and weight of the battery are only for reference, which may differ from the actual delivered battery.

## Overview

Batteries are rechargeable and functions as a backup power supply for the device.

## Outline

**Figure 6-38** shows the outline of the 100 Ah battery.

**Figure 6-38** Outline of the 100 Ah battery



 **NOTE**

The 100 Ah storage battery shown in the figure is only for reference, which may differ from the delivered storage battery.

## Specifications

**Table 6-40** lists the specifications of the 100 Ah battery.

**Table 6-40** Specifications of the 100 Ah battery

Item	Value
Single battery voltage	12 V
Rated capacity	100 Ah
Equalized charging voltage (four batteries in serial connection)	56.5 V
Floating charging voltage (four batteries in serial connection)	53.5 V
Maximum charging current	25.0 A
Dimensions of a single battery (width x depth x height)	330.0 mm x 173.0 mm x 218 mm
Weight of a single battery	34.3 kg



 **NOTE**

The battery charging status can be float charging or equalized charging, as described in the following:

- Equalized charging: It is a method that fully charges the discharged battery quickly by constant voltage and limited current. The voltage is usually set high. This method balances the capacity among batteries in a battery group.
- Float charging: It is a charging method that preserves full charge for the battery by constant voltage. The voltage is usually set low.