

AN6000-17

Optical Line Terminal Equipment

Hardware Description

Version: A

Code: MN000003536

FiberHome Telecommunication Technologies Co., Ltd.

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1 Documentation Guide

Document Orientation

Hardware Description gives a detailed introduction to the hardware components of the AN6000-17. This manual is designed for readers who want to have a detailed knowledge about the hardware of the equipment or need the hardware information to guide their operation and maintenance of the equipment.

Intended Readers

- ◆ Marketing personnel
- ◆ Commissioning engineers
- ◆ Operation and maintenance engineers

Version Information

Version	Version Information
A	Initial version.

Content

Chapter	Summary
Subrack	◆ Subrack model and specifications ◆ Subrack structure ◆ Fan unit ◆ Slot distribution and cards supported
Cards	◆ Card structure and card overview ◆ Interfaces and indicator LEDs on the card panel ◆ Modules supported and performance parameters ◆ Working principle
Modules	◆ Mappings between modules and cards ◆ Module types and specifications
Wires and Cables	◆ Cable functions ◆ Cable structure ◆ Connections and specifications of wires and cables

Chapter	Summary
Cabinet	◆ Cabinet overview ◆ Appearances and detailed dimensions of the cabinets ◆ Equipment layout
PDP	◆ PDP overview ◆ Panel and terminals of the PDP

Related Documentation

Document	Applied to
<i>AN6000-17 Optical Line Terminal Equipment Product Description</i>	Network planning phase
<i>AN6000-17 Optical Line Terminal Equipment Quick Installation Guide</i>	Network deployment phase
<i>AN6000-17 Optical Line Terminal Equipment UNM2000 Configuration Guide</i>	Network deployment phase / network maintenance phase
<i>AN6000-17 Optical Line Terminal Equipment CLI Reference</i>	Network deployment phase / network maintenance phase

2 Subrack

- ☒ Subrack Model and Specifications
- ☒ Subrack Structure
- ☒ Fan Unit
- ☒ Slot Distribution and Cards Supported

2.1 Subrack Model and Specifications

Model

The model number of the AN6000-17 subrack is 3061146.

Dimensions

Item	Specification
Dimensions of the subrack with mounting ears for 21-inch cabinets (H × W × D)	486 mm × 530 mm × 282 mm



Note:

The 21-inch mounting ears are integrated with the side panels of the AN6000-17 subrack.

Weight

Item	Specification
Weight of an empty subrack (excluding the fan unit)	14 kg
Weight of an empty subrack (including the fan unit)	19 kg

Operating Environment

Item	Specification
Working temperature	Long term: 0°C to 45°C Short term: -5°C to 60°C
Working relative humidity	5% to 90% (non-condensing)
Storage temperature	-40°C to 70°C
Relative humidity for storage	5% to 95%

Overall Power Consumption

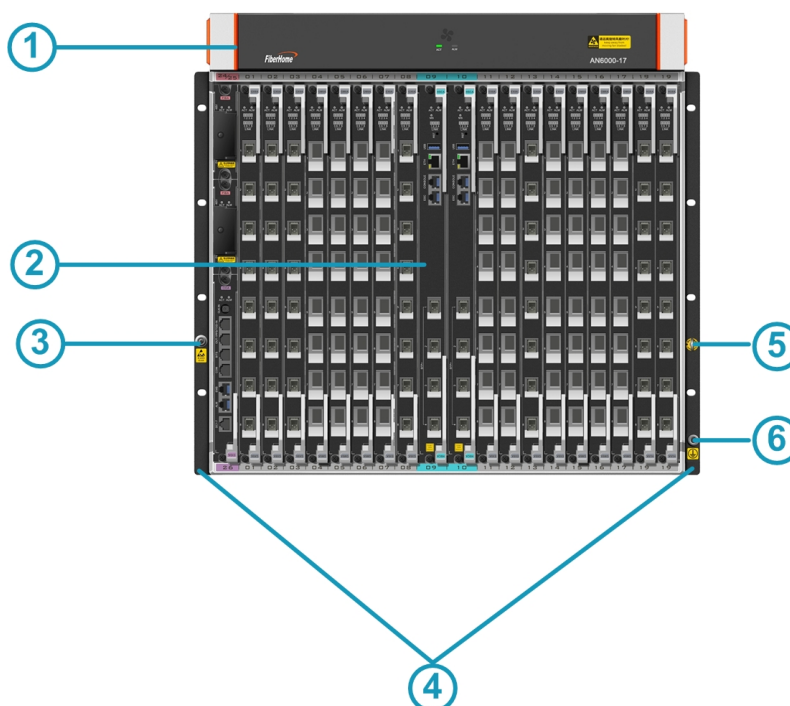
The overall power consumption is measured under the following conditions:

- ◆ Static power consumption: all the broadband ports are deactivated.
- ◆ Typical power consumption: 50% of the broadband ports are concurrently activated.

- ◆ Maximum power consumption: all the broadband ports are concurrently activated.

Typical Configuration	Static Power Consumption	Typical Power Consumption	Maximum Power Consumption
2*HSCA + 16*GX8A + 2*PIBA + HU8A + FAN + CIOA	1119 W	1284 W	1536 W
2*HSCA + 16*GM8A + 2*PIBA + HU8A + FAN + CIOA	1087 W	1332 W	1632 W
2*HSCA + 16*GPOA + 2*PIBA + HU8A + FAN + CIOA	1071 W	1140 W	1296 W
2*HSCA + 8*GPOA + 8*GX8A + 2*PIBA + HU8A + FAN + CIOA	1095 W	1212 W	1416 W

2.2 Subrack Structure



No.	Name	Function
①	Horizontal fan card slot	Houses the fan card.
②	Vertical card slot	Accommodate cards to implement various functions of the equipment.
③	ESD protection earth ground fastener	Connects to the ESD protection device.

No.	Name	Function
④	Mounting ear	Secures the subrack in the cabinet.
⑤	Fiber puller hanger	Holds the fiber puller.
⑥	Subrack earth ground point	Connects with the subrack earth ground cable.

**Note:**

The AN6000-17 is not designed with an anti-dust screen. The cabinet is used for dust prevention.

2.3 Fan Unit

Model

The model number of the fan unit for the AN6000-17 is 405000320.

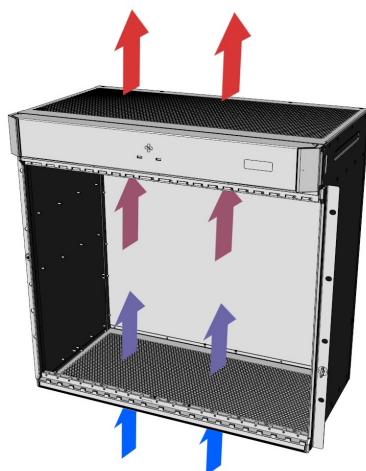
Appearance



Working Principle

- ◆ Located on the top of the subrack, the fan unit facilitates air cooling in the subrack by drawing air. A flow of cooling air is drawn into the subrack from its lower part. After passing through each working card in the subrack, the air is

exhausted from the upper part of the subrack.



- ◆ The fan unit is configured with a fan monitoring board, which can detect the working status of the fans. The monitoring board provides interfaces for communication with the core switch card of the equipment, and sends the monitoring information to the core switch card regularly.
- ◆ The fan unit provides seven speed choices: 1 to 7, in the ascending order of speed. The fan speed can be regulated in two modes: the manual mode and the intelligent mode.
 - ▶ In the manual mode, the fan unit operates at the speed set in the network management system.
 - ▶ In the intelligent mode, the core switch card of the equipment automatically selects a speed for the fan unit according to the card temperature detected, and the fan unit will operate at the selected speed.

Indicator LEDs

Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The fan is powered on normally.
			OFF	The fan is not powered on normally.
ALM	Alarm indicator LED	Red	ON	The fan is faulty.
			Blinking	The fan has its speed regulated automatically.
			OFF	The fan is working normally.

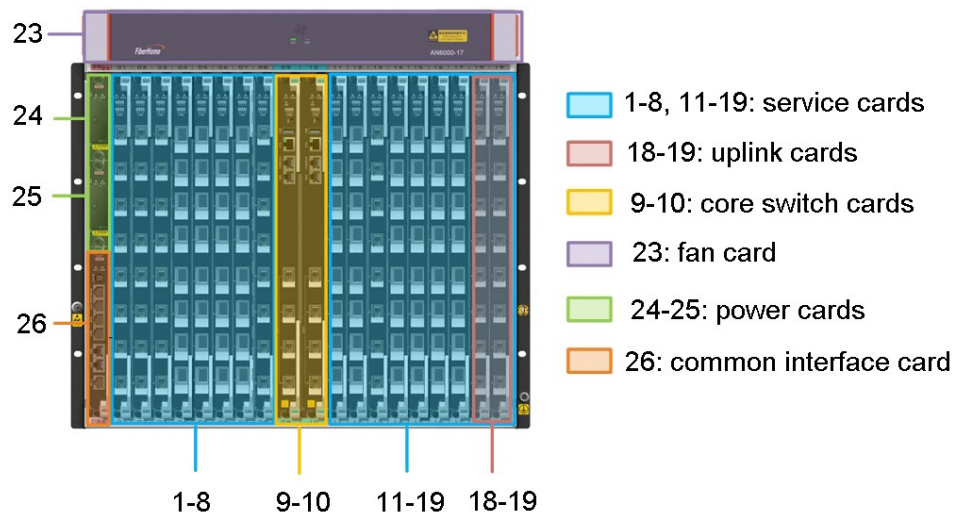
Technical Specifications

Item	Specification
Dimensions (H × W × D)	494 mm × 269.5 mm × 60 mm
Weight	5.0 kg
Typical power consumption (the power consumption when the fan unit is operating at speed level 3)	≤ 90 W
Maximum power consumption (the power consumption when the fan unit is operating at speed level 7)	≤ 270 W

2.4 Slot Distribution and Cards Supported

Slot Distribution

The AN6000-17 subrack has 22 vertical slots and one horizontal slot.



Card Supported

The slots can be classified as follows according to the cards they house:

Type	Slot	Card Supported
Service card slot	1 to 8, 11 to 19	EX8A, GX8A, GM8A and GPOA
Uplink card slot	18 to 19	KU1A and HU8A
Core switch card slot	9 to 10	HSCA
Fan card slot	23	FANA
Power card slot	24 to 25	PIBA
Common interface card slot	26	CIOA

3 Cards

- ☒ Card Structure
- ☒ Card Overview
- ☒ Core Switch Card
- ☒ Uplink Card
- ☒ Power Card
- ☒ 10G EPON Service Card
- ☒ GPON / XG-PON Service Card
- ☒ Other Cards

3.1 Card Structure

Card Structure

The figure below illustrates the card structure, using the GX8A card as an example.

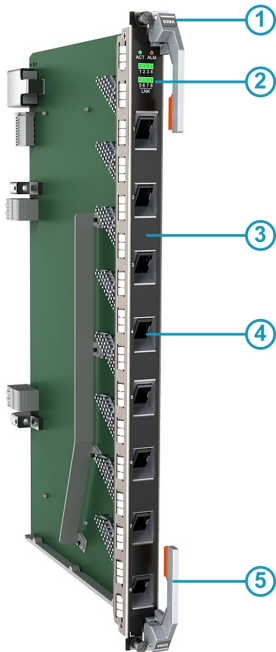
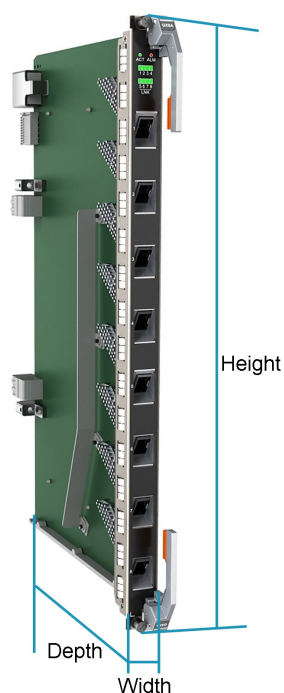


Figure 3-1 Card Structure

No.	Name	Function
①	Card Name	Identifies the card.
②	Indicator LED area	Contains various indicator LEDs, such as the interface status indicator LED and the card operating status indicator LED.
③	Card panel	Provides card-related identifiers; protects and secures the card.
④	Interface	Connects to different devices to implement the card functions.
⑤	Latch	Facilitates plugging or unplugging a card.

Card Dimensions

The figure below shows how the card dimensions are measured.



Width: The height of the reed is not counted.

Depth: The maximum distance between the panel and the connector.

Figure 3-2 Card Dimensions

The table below lists the card dimensions.

Card Type	Card Name	Dimensions (H × W × D)
Core switch card	HSCA	392 mm × 29.7 mm × 230.6 mm
Uplink card	KU1A, HU8A	392 mm × 23 mm × 230.6 mm
Power card	PIBA	98 mm × 25.1 mm × 255.5 mm
Service card	EX8A, GX8A, GM8A and GPOA	392 mm × 23 mm × 230.6 mm
Common interface card	CIOA	194 mm × 25.1 mm × 230.6 mm
Fan card	FAN	494 mm × 60 mm × 269.5 mm

3.2 Card Overview

The cards can be divided into the following types according to their functions:

- ◆ The core switch card aggregates, switches and controls traffic flow, processes Layer-2 protocols, and manages the faults, performance and configuration of the equipment.
- ◆ The uplink card provides uplink ports for uplinking.
- ◆ The power card inducts the DC power supply for the equipment.
- ◆ The service cards provide service ports to enable integrated service access by working together with the ONUs.

The table below describes the names, numbers, and power consumptions of various cards.

Card Type	Card Name	Card Number	Static Power Consumption	Typical Power Consumption	Maximum Power Consumption
Core switch card	HSCA	2202093	58 W	74 W	90 W
Uplink card	KU1A	2202598	16 W	23 W	30 W
	HU8A	2202094	12 W	17 W	24 W
10G EPON service card	EX8A	2202597	37 W	50 W	64 W
XG-PON service card	GX8A	2202647	44 W	52 W	62 W
GPON & XG-PON Combo service card	GM8A	2202648	42 W	55 W	68 W
GPON service card	GPOA	2202802	41 W	43 W	47 W
Other cards	CIOA	2202096	3 W	3 W	3 W

3.3 Core Switch Card

The core switch card aggregates, switches and controls traffic flow, processes Layer-2 protocols, and manages the faults, performance and configuration of the equipment.

3.3.1 HSCA

Basic Information

[Card Overview](#) describes the number and power consumption of the card.

Panel Description

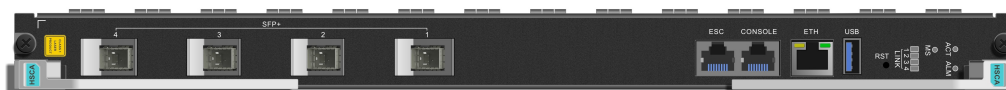


Table 3-1 Interfaces and Buttons

Identifier	Meaning	Description
RST	The reset button	Function reserved for future use.
USB	USB interface	Connects to the USB interface storage device.
ETH	Out-of-band management network port	Connects to an out-of-band network management computer.
CONSOLE	Local debugging serial port	Connects to the CLI network management computer.
ESC	Environment monitoring interface	Connects to the environment monitoring equipment and reports the environment status to the network management system.
SFP+ 1 to 4	10GE optical port	Connects to the upper-layer device.

Table 3-2 Indicator LEDs

Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The card is working normally.
			Blinking slowly	The card is being initialized.
			Blinking quickly	The card is standby and is receiving a configuration command from the active card.
			OFF	The card is not powered on.
ALM	Alarm indicator LED	Red	ON	The card is being reset or has alarms.
			OFF	The card is working normally.
MS	Active / standby status indicator LED	Green	ON	The card is active.
			OFF	The card is standby.
LINK1-4	Port status indicator LED	Green	ON	The port is connected to the upper-layer device.
			Blinking	The port is transmitting or receiving data.

Table 3-2 Indicator LEDs (Continued)

Identifier	Meaning	Color	Status	Description
			OFF	The port is not connected to the upper layer device.

Technical Specifications

Item	Specification
Network standards	IEEE 802.1ag, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.1D, IEEE 802.1p, IEEE 802.1Q, IEEE 802.3ae, IEEE Std 802.1s-2002, RFC 2236, RFC 3376, RFC 826, RFC 2328, RFC 2131, ITU-T Y.1731, etc.
Supported operating modes	10/100 Mbit/s, 10 Gbit/s
Switching mode	Store-and-forward
Capacity of the core switch card	960 Gbit/s
Supported MAC address quantity	128 k
Switching time	≤ 50 ms

Interface Specifications

Item	Specification
CONSOLE port	Interface type
	Interface standard
	Baud rate
	RJ-45
	Asynchronous EIA / TIA-232
	115200 Bd

Matching Module

Item	Specification
GE optical module	1.25G-0.5km-850nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-10km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-40km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-40km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-80km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)

Item	Specification
	1.25G-10km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-10km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-40km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-40km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-80km-1570nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-80km-1490nm/1570nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
GE electrical module	1000M-100m-SFP (1000Base-T)
10GE optical module	10G-0.3km-850nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-10km-1310nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-40km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-80km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-20km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-20km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-10km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-10km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-40km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-40km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
Note 1: GE Module and 10GE Optical Module describe the module specifications.	

Function

The HSCA card supports the following functions:

Classification	Function
Interface function	Provides the local commissioning serial port to meet the demand of CLI local management.
	Provides the out-of-band management network port to access the out-of-band network management system.
Multicast function	Supports the multicast function; four multicast modes are available: Proxy, Snooping, Proxy-Snooping, and MLD multicast.
	Supports multicast protocols such as PIM-SM / DM and IGMP V2 / V3.
Voice function	Supports NGN voice service and voice protocols SIP and H.248.
VLAN functions	Supports port-based and IEEE 802.1q-based VLAN.
	Supports selective QinQ VLAN and VLAN translation.
Layer 2 switching function	Supports Layer 2 switching.
Layer 3 function	Supports ARP and ARP Proxy.
	Supports the DHCP Server / Relay / Snooping function.
	Supports the IPv6 protocol.
	Supports uplink based on the routing protocols such as OSPF.
QoS function	Supports flow control.
	Supports priority queues and processes user services on the basis of priority.
Maintenance and management function	Supports the mirroring function of the uplink interface.
	Supports remote upgrade of card software.
	Supports multiple management VLANs and multiple management IP addresses.
	Supports reporting the environment monitoring information and the alarm information for the equipment and the connected ONUs.
Reliability function	Supports PON port protection.
	Supports uplink port trunking and port dual-uplink protection.
	Supports RSTP to avoid generation of loops in the network.
	Supports MSTP to avoid proliferation and infinite loop of packets in the loop network and allow load balance in the VLAN.
Security function	Supports classification and filtering of data packets at Layers 2 to 7.
	Supports ACL functions and provides a strict security protection mechanism.

Classification	Function
	Supports suppression of broadcast packets, multicast packets and unknown packets to prevent broadcast storms in the network.
	Prevents DoS attacks.

Working Principle

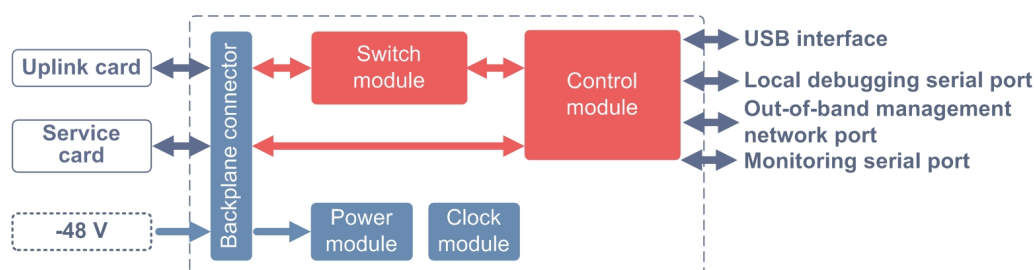


Figure 3-3 Working Principle of the HSCA Card

- ◆ The control module is used for configuring the entire system, collecting and reporting statuses, processing protocols, and providing the USB interface, local commissioning serial port, monitoring serial port and out-of-band management network port.
- ◆ The switch module is used for service data switching.
- ◆ The power module supplies power to each functional module of the card.
- ◆ The clock module provides the working clock signal for each functional module of the card.

3.4 Uplink Card

The uplink cards provide uplink ports.

3.4.1 KU1A

Basic Information

[Card Overview](#) describes the number and power consumption of the card.

Panel Description



Table 3-3 Interfaces

Identifier	Meaning	Description
1	100G uplink optical port	Connects to the IP network.
2 to 5	10GE uplink optical port	Connects to the IP network.

Table 3-4 Indicator LEDs

Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The card is working normally.
			Blinking slowly	The card is being started.
			Blinking quickly	The card has received configuration data from the core switch card.
			OFF	The card is not powered on normally.
ALM	Alarm indicator LED	Red	ON	The card has an urgent alarm.
			OFF	The card has no alarms.
LINK1-5	Port status indicator LED	Green	ON	The port is connected to the upper-layer device.
			OFF	The port is not connected to the upper-layer device.

Technical Specifications

Item	Specification
Network standards	IEEE 802.3, IEEE 802.3z, IEEE 802.3ae, etc.
Supported operating modes	10 / 100 / 1000 Mbit/s, 10 Gbit/s

Matching Module

Item	Specification
GE optical module	1.25G-0.5km-850nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-10km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)

Item	Specification
	1.25G-40km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-40km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-80km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-10km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-10km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-40km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-40km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-80km-1570nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-80km-1490nm/1570nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
GE electrical module	1000M-100m-SFP (1000Base-T)
10GE optical module	10G-0.3km-850nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-10km-1310nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-40km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-80km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-20km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-20km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-10km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-10km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-40km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)

Item	Specification
	10G-40km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
100G optical module	100G-10km-OLT-CFP4 (100G Ethernet)
Note 1: GE Module , 10GE Optical Module and 100G Optical Module describe the module specifications.	

Function

- ◆ Provides the uplink ports.
- ◆ Each uplink port can be used as the network management port to connect with a network management computer.
- ◆ Each uplink interface can be used as a cascade interface allowing multiple equipment sets to be cascaded to the IP network via a single IP port.

Working Principle

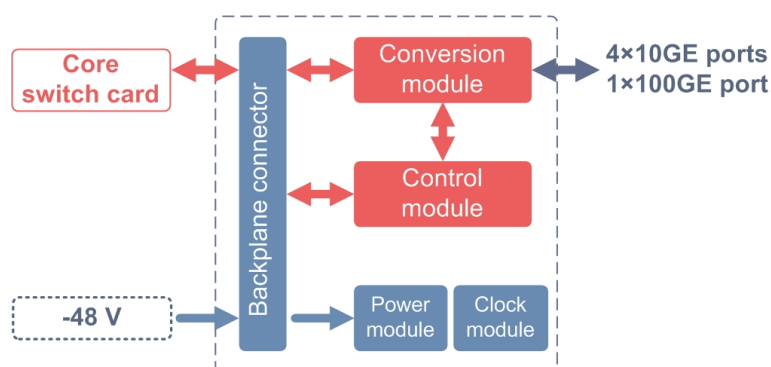


Figure 3-4 Working Principle of the KU1A Card

- ◆ The conversion module provides uplink interfaces and transmits data transparently.
- ◆ The control module loads the card software, controls the card operation, and manages the card.
- ◆ The power module supplies power to each functional module of the card.
- ◆ The clock module provides the working clock signal for each functional module of the card.

3.4.2 HU8A

Basic Information

[Card Overview](#) describes the number and power consumption of the card.

Panel Description



Table 3-5 Interfaces

Identifier	Meaning	Description
1 to 8	10GE uplink optical port	Connects to the IP network.

Table 3-6 Indicator LEDs

Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The card is working normally.
			Blinking slowly	The card is being started.
			Blinking quickly	The card is receiving configuration data from the core switch card.
			OFF	The card is not powered on normally.
ALM	Alarm indicator LED	Red	ON	The card has an urgent alarm.
			OFF	The card has no alarms.
LINK1-8	Port status indicator LED	Green	ON	The port is connected to an upper-layer device or the ONU connected to the port is registered and authorized.
			OFF	The port is not connected to an upper-layer device or the ONU connected to the port is not registered / authorized.

Technical Specifications

Item	Specification
Network standards	IEEE 802.3, IEEE 802.3z, IEEE 802.3ae, etc.
Supported operating modes	10 Gbit/s

Matching Module

Item	Specification
GE optical module	1.25G-0.5km-850nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-10km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-40km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-40km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-80km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
	1.25G-10km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-10km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-40km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-40km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-80km-1570nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
	1.25G-80km-1490nm/1570nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
GE electrical module	1000M-100m-SFP (1000Base-T)
10GE optical module	10G-0.3km-850nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-10km-1310nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-40km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-80km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
	10G-20km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-20km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)

Item	Specification
	10G-10km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-10km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-40km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
	10G-40km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
Note 1: GE Module and 10GE Optical Module describe the module specifications.	

Function

- ◆ Provides the uplink ports.
- ◆ Each uplink port can be used as the network management port to connect with a network management computer.
- ◆ Each uplink interface can be used as a cascade interface allowing multiple equipment sets to be cascaded to the IP network via a single IP port.

Working Principle

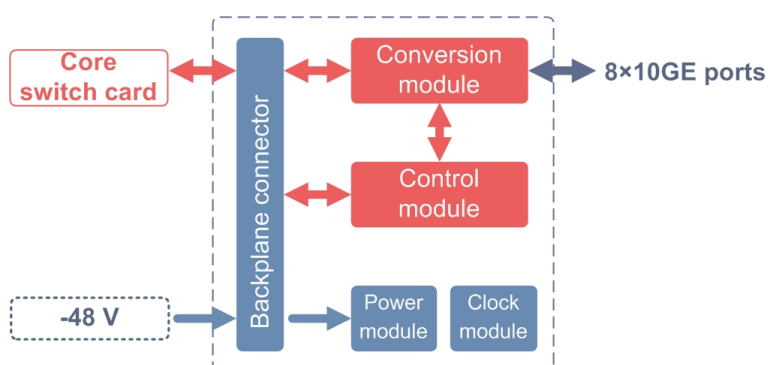


Figure 3-5 Working Principle of the HU8A Card

- ◆ The conversion module provides uplink interfaces and transmits data transparently.
- ◆ The control module loads the card software, controls the card operation, and manages the card.
- ◆ The power module supplies power to each functional module of the card.

- ◆ The clock module provides the working clock signal for each functional module of the card.

3.5 Power Card

The power card inducts the DC power supply for the equipment.

3.5.1 PIBA

Basic Information

[Card Overview](#) describes the number and power consumption of the card.

Panel Description



Table 3-7 Interfaces

Identifier	Meaning	Description
0 V, -48 V	DC power interface	Inputs the -48 V DC power supply. 0 V corresponds to the high potential of the DC power supply while -48 V the low potential of the DC power supply.

Table 3-8 Indicator LEDs

Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The -48 V power input is provided.
			OFF	The -48 V power input is not provided.
ALM	Alarm indicator LED	Red	ON	The lightning protection function fails or the 5 V module inside the card is faulty.
			OFF	The card has no alarms.

Function

The PIBA card provides the -48 V DC power supply for the equipment, and performs the lightning protection and power filtering functions.

Working Principle

The PIBA card inducts the -48 V DC power from the PDP and supplies power to the equipment.

3.6 10G EPON Service Card

The 10G EPON service card provides service ports to access 10G EPON services by working together with ONUs.

3.6.1 EX8A

Basic Information

[Card Overview](#) describes the number and power consumption of the card.

Panel Description



Figure 3-6 EX8A

Table 3-9 Interfaces

Identifier	Meaning	Description
1 to 8	10G EPON port	Connects to a remote ONU via the ODN.

Table 3-10 Indicator LEDs

Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The card is started and is working normally.
			Blinking slowly	The card is being initialized.

Table 3-10 Indicator LEDs (Continued)

Identifier	Meaning	Color	Status	Description
			Blinking quickly	The card is receiving a configuration command from the core switch card or the communication between the active and standby cards is being set up.
			OFF	The card is not powered on.
ALM	Alarm indicator LED	Red	ON	The card has alarms, or the communication between the active and standby cards is interrupted.
			OFF	The card is working normally.
LINK1-8	Register status indicator LED	Green	ON	A remote ONU is successfully registered via the port.
			OFF	Registration of the remote ONU via the port fails.

Technical Specifications

Item	Specification
Network standards	IEEE 802.3, IEEE 802.3av, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z 1000BASE-SX/LX, IEEE 802.1d, IEEE 802.1p, IEEE 802.1q VLAN, etc.
Switching mode	Store-and-forward
Supported MAC address quantity	32 k
Maximum split ratio	1:128
Maximum LLID	1024
Bandwidth allocation granularity	64 kbit/s
Optical fiber connector	SC/PC
Network cable	G.652 single-mode fiber

Matching Module

Module Type	Module Code
10G EPON optical module	10/1.25G-20km-10G EPON OLT asymmetric-XFP (10G/1G BASE-PRX30)
	10/1.25G-20km-10G EPON OLT symmetric-XFP (10G BASE-PR30)
Note 1: 10G EPON Optical Module describes the module specifications.	

Function

The EX8A card supports the following functions:

Classification	Function
Interface function	Provides EPON / 10G EPON service interfaces.
Access feature	Supports Triple Play, including data, voice and IPTV.
Multicast function	Supports the IGMP proxy / snooping multicast and the controlled multicast.
QoS function	Supports real-time DBA.
	Provides the selective QoS and SLA functions.
Maintenance and management function	Supports local and remote loopback tests.
	Supports remote upgrade of the card software.
	Supports automatic discovery and detection of ONUs.
	Supports pre-authorization and pre-configuration of ONUs.
	Supports ONU configuration in a batch manner.
	Supports automatic upgrade of the ONU software to facilitate maintenance and management.
Reliability function	Provides the FEC function.
	Provides OAM functions.

Working Principle

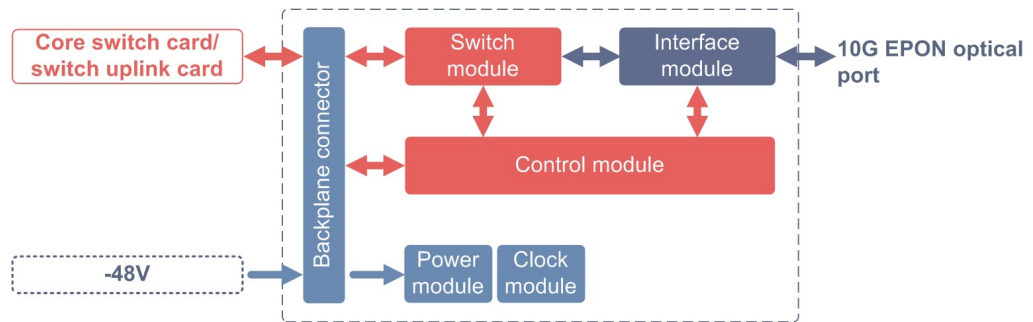


Figure 3-7 Working Principle of the EX8A Card

- ◆ The interface module provides 10G EPON ports, and enables the conversion between EPON packets and Ethernet packets.
- ◆ The switch module aggregates signals from eight ports.
- ◆ The control module loads the card software, controls the card operation, and manages the card.
- ◆ The power module supplies power to each functional module of the card.
- ◆ The clock module provides the working clock signal for each functional module of the card.

3.7 GPON / XG-PON Service Card

The GPON / XG-PON service cards provide service interfaces to access GPON / XG-PON services by working together with ONUs.

3.7.1 GX8A

Basic Information

[Card Overview](#) describes the number and power consumption of the card.

Panel Description



Table 3-11 Interfaces

Identifier	Meaning	Description
1 to 8	XG-PON port	Connects to a remote ONU via the ODN.

Table 3-12 Indicator LEDs

Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The card is working normally.
			Blinking slowly	The card is being initialized.
			Blinking quickly	The card is receiving a configuration command or the communication link between the active and standby cards is being set up.
			OFF	The card is not powered on or the software is not started.
ALM	Alarm indicator LED	Red	ON	The card has alarms, or the communication between the active and standby cards is interrupted.
			OFF	The card has no alarms.
LINK1-8	Port status indicator LED	Green	ON	The port is connected to an ONU at the far end, and the ONU has been authorized.
			OFF	The port is not connected to an ONU at the far end, or the far-end ONU is not authorized.

Technical Specifications

Item	Specification
Network standards	IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.1d, IEEE 802.1p, IEEE 802.1q, etc.
Switching mode	Store-and-forward
Supported MAC address quantity	250 k
Maximum split ratio	1:256
Maximum quantity of T-CONTs	2048
Bandwidth allocation granularity	64 kbit/s
Optical fiber connector	SC/PC

Matching Module

Module Type	Module Code
XG-PON optical module	10/2.5G-20km-XG-PON OLT-SFP+ (N1 ODN CLASS)
Note 1: XG-PON Optical Module describes the module specifications.	

Function

Classification	Function
Interface function	Provides XG-PON service ports.
Access feature	Supports Triple Play, including data, voice and IPTV.
Multicast function	Supports the IGMP proxy / snooping multicast and the controlled multicast.
QoS function	Supports real-time DBA.
	Provides the selective QoS and SLA functions.
Maintenance and management function	Supports local and remote loopback tests.
	Supports remote upgrade of the card software.
	Supports automatic discovery and detection of ONUs.
	Supports pre-authorization and pre-configuration of ONUs.
	Supports ONU configuration in a batch manner.
Reliability function	Supports automatic upgrade of the ONU software to facilitate maintenance and management.
	Provides the FEC function.
Reliability function	Provides OAM functions.

Working Principle

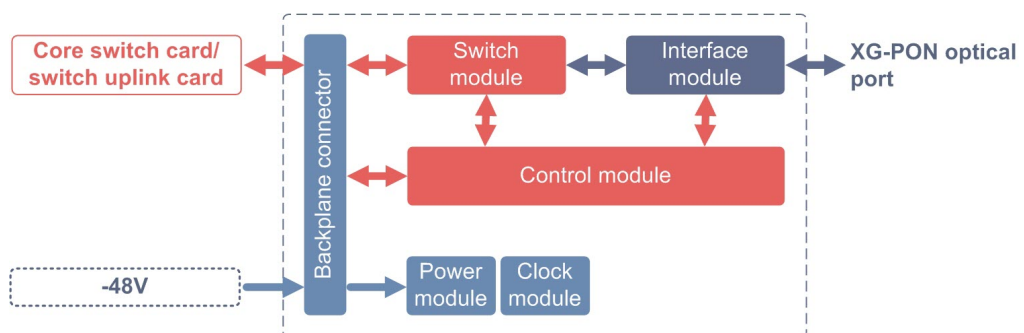


Figure 3-8 Working Principle of the GX8A Card

- ◆ The interface module provides XG-PON ports, and enables the conversion between the XG-PON packets and Ethernet packets.

- ◆ The switch module aggregates signals from eight ports.
- ◆ The control module loads the card software, controls the card operation, and manages the card.
- ◆ The power module supplies power to each functional module of the card.
- ◆ The clock module provides the working clock signal for each functional module of the card.

3.7.2 GM8A

Basic Information

[Card Overview](#) describes the number and power consumption of the card.

Panel Description



Table 3-13 Interfaces

Identifier	Meaning	Description
1 to 8	GPON & XG-PON Combo port	Connects to a remote ONU via the ODN.

Table 3-14 Indicator LEDs

Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The card is working normally.
			Blinking slowly	The card is being initialized.
			Blinking quickly	The card is receiving a configuration command or the communication link between the active and standby cards is being set up.
			OFF	The card is not powered on or the software is not started.
ALM	Alarm indicator LED	Red	ON	The card has alarms, or the communication between the active and standby cards is interrupted.
			OFF	The card has no alarms.

Table 3-14 Indicator LEDs (Continued)

Identifier	Meaning	Color	Status	Description
LINK1-8	Port status indicator LED	Green	ON	The port is connected to an ONU at the far end, and the ONU has been authorized.
			OFF	The port is not connected to an ONU at the far end, or the far-end ONU is not authorized.

Technical Specifications

Item	Specification
Network standards	IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.1d, IEEE 802.1p, IEEE 802.1q, etc.
Switching mode	Store-and-forward
Supported MAC address quantity	250 k
Maximum split ratio	1:256
Maximum quantity of T-CONTs	2048
Bandwidth allocation granularity	64 kbit/s
Optical fiber connector	SC/PC

Matching Module

Module Type	Module Code
Combo PON optical module	10/2.5G:2.5/1.25G-20km-XG-PON: GPON OLT-XFP (D1 ODN CLASS)
	10/2.5G:2.5/1.25G-20km-XG-PON: GPON OLT-XFP (D2 ODN CLASS)
Note 1: Combo PON Optical Module describes the module specifications.	

Function

Classification	Function
Interface function	Provides XG-PON Combo service ports.
Access feature	Supports Triple Play, including data, voice and IPTV.
Multicast function	Supports the IGMP proxy / snooping multicast and the controlled multicast.
QoS function	Supports real-time DBA.
	Provides the selective QoS and SLA functions.

Classification	Function
Maintenance and management function	Supports local and remote loopback tests.
	Supports remote upgrade of the card software.
	Supports automatic discovery and detection of ONUs.
	Supports pre-authorization and pre-configuration of ONUs.
	Supports ONU configuration in a batch manner.
	Supports automatic upgrade of the ONU software to facilitate maintenance and management.
Reliability function	Provides the FEC function.
	Provides OAM functions.

Working Principle

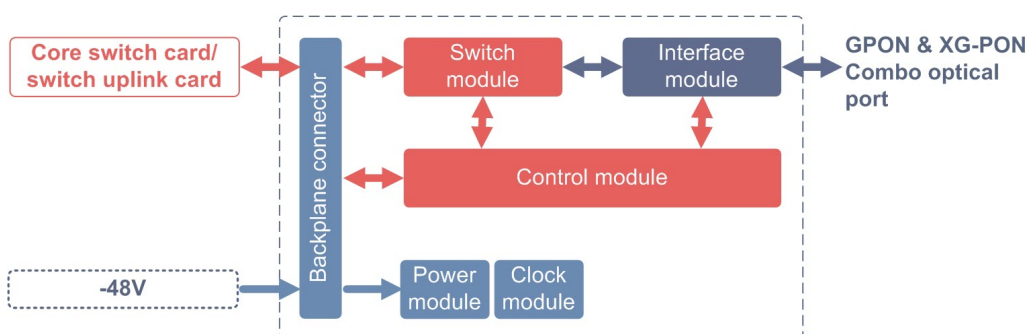


Figure 3-9 Working Principle of the GM8A Card

- ◆ The interface module provides the GPON & XG-PON Combo ports, and enables conversion between the GPON/XG-PON packets and Ethernet packets.
- ◆ The switch module aggregates signals on eight lines from the ports.
- ◆ The control module loads the card software, controls the card operation, and manages the card.
- ◆ The power module supplies power to each functional module of the card.
- ◆ The clock module provides the working clock signal for each functional module of the card.

3.7.3 GPOA

Basic Information

[Card Overview](#) describes the number and power consumption of the card.

Panel Description



Table 3-15 Interfaces

Identifier	Meaning	Description
1 to 16	GPON optical port	Connects to a remote ONU via the ODN.

Table 3-16 Indicator LEDs

Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The card is working normally.
			Blinking slowly	The card is being initialized.
			Blinking quickly	The card is receiving a configuration command.
			OFF	The card is not powered on.
ALM	Alarm indicator LED	Red	ON	The card is being reset or has alarms.
			OFF	The card has no alarms.
1 to 16	Status indicator LED	Green	ON	The PON port is successfully registered.
			OFF	The PON port is not registered.

Technical Specifications

Item	Specification
Network standards	IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.1d, IEEE 802.1p, IEEE 802.1q, etc.
Switching mode	Store-and-forward
Supported MAC address quantity	250 k
Maximum split ratio	1:256
Maximum quantity of T-CONTs	2048

Item	Specification
Bandwidth allocation granularity	64 kbit/s
Optical fiber connector	SC/PC

Matching Module

Module Type	Module Code
GPON optical module	2.5/1.25G-20km-GPON OLT-SFP (CLASS B+)
	2.5/1.25G-20km-GPON OLT-SFP (CLASS C+)
	2.5/1.25G-20km-GPON OLT-SFP (CLASS C++)
Note 1: GPON Optical Module describes the module specifications.	

Function

Classification	Function
Interface function	Provides the GPON optical port.
Access feature	Supports Triple Play, including data, voice and IPTV.
Multicast function	Supports the IGMP proxy / snooping multicast and the controlled multicast.
QoS function	Supports real-time DBA.
	Provides the selective QoS and SLA functions.
Maintenance and management function	Supports local and remote loopback tests.
	Supports remote upgrade of the card software.
	Supports automatic discovery and detection of ONUs.
	Supports pre-authorization and pre-configuration of ONUs.
	Supports ONU configuration in a batch manner.
	Supports automatic upgrade of the ONU software to facilitate maintenance and management.
Reliability function	Provides the FEC function.
	Provides OAM functions.

Working Principle

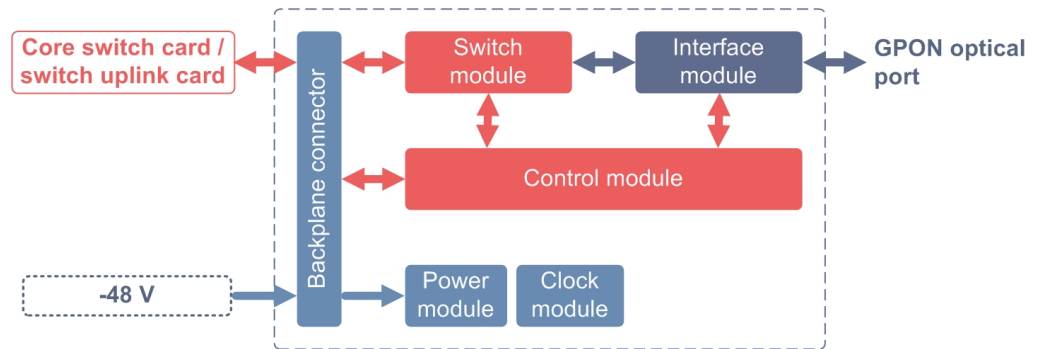


Figure 3-10 Working Principle of the GPOA Card

- ◆ The interface module provides GPON optical ports, and enables the conversion between GPON packets and Ethernet packets.
- ◆ The switch module aggregates signals from 16 ports.
- ◆ The control module loads the card software, controls the card operation, and manages the card.
- ◆ The power module supplies power to each functional module of the card.
- ◆ The clock module provides the working clock signal for each functional module of the card.

3.8 Other Cards

This section introduces the basic information, panels, technical parameters, interface specifications, functions and working principles of the common interface card.

3.8.1 CIOA

Basic Information

[Card Overview](#) describes the number and power consumption of the card.

Panel Description

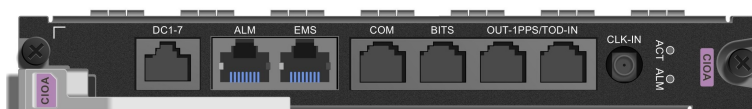


Table 3-17 Interfaces

Identifier	Meaning	Description
CLK-IN	Clock input interface	Provides GPS clock input.
1PPS/TOD-IN	1PPS+TOD input interface	Inducts the high-precision clock and time information from GPS.
1PPS/TOD-OUT	1PPS+TOD output interface	Connects to the time input port of the cascade equipment for time synchronization.
BITS	BITS clock input / output interface	Inducts clock information from the E1 link.
COM	Reserved interface	Reserved functional interface
EMS	Out-of-band management network port	Connects to an out-of-band network management computer.
ALM	Alarm interface	Outputs the equipment alarms to the PDP, the top of the cabinet, or the head of row cabinet.
DC1-7	Dry contact interface	Connects to the dry contact signals.

Table 3-18 Indicator LEDs

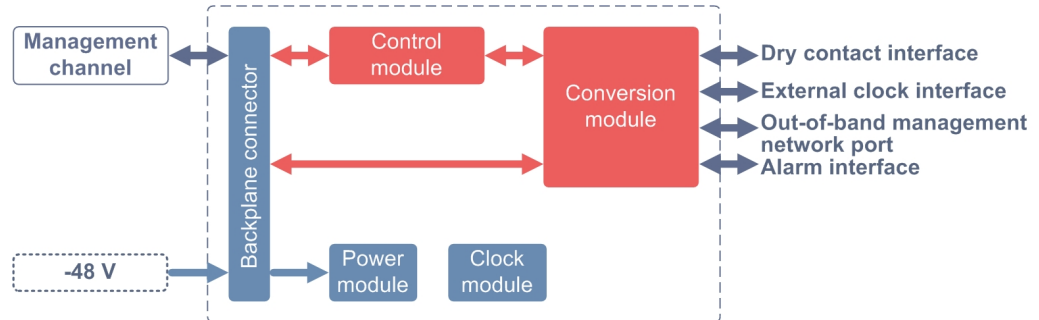
Identifier	Meaning	Color	Status	Description
ACT	Working indicator LED	Green	ON	The card is working normally.
			Blinking slowly	The card is being initialized.
			OFF	The card is not powered on.
ALM	Alarm indicator LED	Red	ON	The card is being reset or has alarms.
			OFF	The card is working normally.

Function

- ◆ Provides the EMS interface for the out-of-band network management of the system.
- ◆ Provides the alarm monitoring interface (ALM).
- ◆ Provides the external clock interface.

- ◆ Provides the dry contact interface for 7 lines.

Working Principle



- ◆ The conversion module transmits data transparently, and provides the dry contact interface, external clock interface, out-of-band management network port and alarm interface.
- ◆ The control module loads the card software, controls the card operation, and manages the card.
- ◆ The power module supplies power to each functional module of the card.
- ◆ The clock module provides the working clock signal for each functional module of the card.

4 Modules

☒ Mappings Between Modules and Cards

☒ PON Module

☒ Ethernet Module

4.1 Mappings Between Modules and Cards

The AN6000-17 supports encapsulation formats including SFP+, XFP, CFP4, eSFP, CSFP and SFP for pluggable modules.

The module interface types include LC, SC and RJ-45 (the electrical module).

Figure 4-1 shows the modules with different interface types.

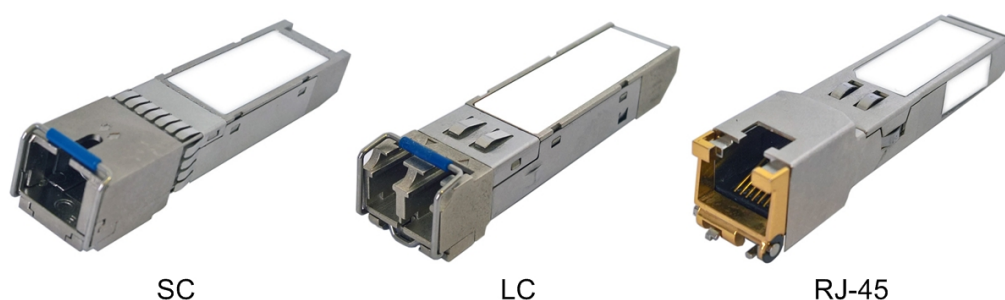


Figure 4-1 Module Appearance

Module Type	Application Code	Module Code	Card Supported
10G EPON optical module	10G/1G BASEPRX30	10/1.25G-20km-10G EPON OLT asymmetric-XFP (10G/1G BASE-PRX30)	EX8A
	10G BASE-PR30	10/1.25G-20km-10G EPON OLT symmetric-XFP (10G BASE-PR30)	EX8A
GPON optical module	CLASS B+	2.5/1.25G-20km-GPON OLT-SFP (CLASS B+)	GPOA
	CLASS C+	2.5/1.25G-20km-GPON OLT-SFP (CLASS C+)	GPOA
	CLASS C++	2.5/1.25G-20km-GPON OLT-SFP (CLASS C++)	GPOA
XG-PON optical module	N1 ODN CLASS	10/2.5G-20km-XG-PON OLT-SFP + (N1 ODN CLASS)	GX8A
Combo PON optical module	D1 ODN CLASS	10/2.5G:2.5/1.25G-20km-XG-PON:GPON OLT-XFP (D1 ODN CLASS)	GM8A
	D2 ODN CLASS	10/2.5G:2.5/1.25G-20km-XG-PON:GPON OLT-XFP (D2 ODN CLASS)	GM8A

Module Type	Application Code	Module Code	Card Supported
GE optical module	Single-channel two-fiber bidirectional optical module	1.25G-0.5km-850nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)	KU1A , HU8A, HSCA
		1.25G-10km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)	
		1.25G-40km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)	
		1.25G-40km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)	
		1.25G-80km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)	
	Single-channel single-fiber bidirectional optical module	1.25G-10km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	KU1A , HU8A, HSCA
		1.25G-10km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	
		1.25G-40km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	
		1.25G-40km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	
		1.25G-80km-1570nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	
		1.25G-80km-1490nm/1570nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	
GE electrical module	1000Base-T	1000M-100m-SFP (1000Base-T)	KU1A , HU8A, HSCA
10GE optical module	Single-channel two-fiber bidirectional optical module	10G-0.3km-850nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)	KU1A , HU8A, HSCA

Module Type	Application Code	Module Code	Card Supported
		10G-10km-1310nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)	
		10G-40km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)	
		10G-80km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)	
	Single-channel single-fiber bidirectional	10G-20km-1270nm/1330nm-SFP + (Single-channel Single-fiber Bidirectional Optical Module)	KU1A , HU8A, HSCA
		10G-20km-1330nm/1270nm-SFP + (Single-channel Single-fiber Bidirectional Optical Module)	
		10G-10km-1270nm/1330nm-SFP + (Single-channel Single-fiber Bidirectional Optical Module)	
		10G-10km-1330nm/1270nm-SFP + (Single-channel Single-fiber Bidirectional Optical Module)	
		10G-40km-1330nm/1270nm-SFP + (Single-channel Single-fiber Bidirectional Optical Module)	
		10G-40km-1270nm/1330nm-SFP + (Single-channel Single-fiber Bidirectional Optical Module)	
100G optical module	100G Ethernet	100G-10km-OLT-CFP4 (100G Ethernet)	KU1A

4.2 PON Module

The following introduces PON modules, including the 10G EPON optical modules, GPON optical modules, XG-PON optical modules and Combo PON optical modules.

4.2.1 10G EPON Optical Module

Item	Specification	
Module code	10/1.25G-20km-10G EPON OLT asymmetric-XFP (10G/1G BASE-PRX30)	10/1.25G-20km-10G EPON OLT symmetric-XFP (10G BASE-PR30)
Optical module type	10/1G BASE-PRX30	10G BASE-PR30
Wavelength range	Tx: 1490 nm (1480 nm to 1500 nm), 1577 nm (1575 nm to 1580 nm) Rx: 1260 nm to 1360 nm	Tx: 1490 nm (1480 nm to 1500 nm), 1577 nm (1575 nm to 1580 nm) Rx: 1270 nm (1260 nm to 1280 nm), 1310 nm (1280 nm to 1360 nm)
Encapsulation mode	XFP	XFP
Rate	Tx: 10.3125 Gbit/s, 1.25 Gbit/s Rx: 1.25 Gbit/s	Tx: 10.3125 Gbit/s, 1.25 Gbit/s Rx: 10.3125 Gbit/s, 1.25 Gbit/s
Output optical power	1490 nm: 2 dBm to 7 dBm 1577 nm: 2 dBm to 5 dBm	1490 nm: 2 dBm to 7 dBm 1577 nm: 2 dBm to 5 dBm
Optical fiber connector type	SC/PC	SC/PC
Transmission distance	20 km	20 km
Receiving sensitivity	-29.78 dBm	1270 nm: -28 dBm; 1310 nm: -29.78 dBm
Overload optical power	-9.38 dBm	1270 nm: -6 dBm; 1310 nm: -9.38 dBm
Extinction ratio	1490 nm: > 9 dB, 1577 nm: > 6 dB	1490 nm: > 9 dB, 1577 nm: > 6 dB

4.2.2 GPON Optical Module

Item	Specification		
Module Code	2.5/1.25G-20km-GPON OLT-SFP (CLASS B+)	2.5/1.25G-20km-GPON OLT-SFP (CLASS C+)	2.5/1.25G-20km-GPON OLT-SFP (CLASS C++)
Optical module type	CLASS B+	CLASS C+	CLASS C++
Wavelength range	Tx: 1480 nm to 1500 nm Rx: 1260 nm to 1360 nm	Tx: 1480 nm to 1500 nm Rx: 1260 nm to 1360 nm	Tx: 1480 nm to 1500 nm Rx: 1260 nm to 1360 nm, 1290 nm to 1330 nm, 1280 nm to 1360 nm
Encapsulation mode	SFP	SFP	SFP
Rate	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

Item	Specification		
Output optical power	2.5 dBm to 5 dBm (room temperature)	4 dBm to 7 dBm (room temperature)	5.5 dBm to 10 dBm (room temperature)
Optical fiber connector type	SC/PC	SC/PC	SC/PC
Transmission distance	20km	20km	20km
Receiving sensitivity	-29 dBm (room temperature)	-31 dBm (room temperature)	-31 dBm (room temperature)
Overload optical power	-8 dBm	-12 dBm	-12 dBm
Extinction ratio	> 8.2 dB	> 8.2 dB	> 8.2 dB

4.2.3 XG-PON Optical Module

Item	Specification
Module code	10/2.5G-20km-XG-PON OLT-SFP+ (N1 ODN CLASS)
Optical module type	N1 ODN CLASS
Wavelength range	Tx: 1575 nm to 1580 nm Rx: 1260 nm to 1280 nm
Encapsulation mode	SFP+
Rate	Tx: 9.95328 Gbit/s Rx: 2.48832 Gbit/s
Output optical power	2 dBm to 6 dBm (full temperature range)
Optical fiber connector type	SC/PC
Transmission distance	> 20 km
Receiving sensitivity	-27.5 dBm
Overload optical power	-7 dBm
Extinction ratio	> 8.2 dB

4.2.4 Combo PON Optical Module

Item	Specification	
Module code	10/2.5G:2.5/1.25G-20km-XG-PON:GPON OLT-XFP (D1 ODN CLASS)	10/2.5G:2.5/1.25G-20km-XG-PON:GPON OLT-XFP (D2 ODN CLASS)
Optical module type	D1 ODN CLASS	D2 ODN CLASS

Item	Specification			
Wavelength range	GPON	Tx: 1490 nm (1480 nm to 1500 nm) Rx: 1310 nm (1290 nm to 1330 nm)	GPON	Tx: 1490 nm (1480 nm to 1500 nm) Rx: 1310 nm (1290 nm to 1330 nm)
	XG-PON	Tx: 1577 nm (1575 nm to 1580 nm) Rx: 1270 nm (1260 nm to 1280 nm)	XG-PON	Tx: 1577 nm (1575 nm to 1580 nm) Rx: 1270 nm (1260 nm to 1280 nm)
Encapsulation mode	XFP			
Rate	GPON	Tx: 2.488 Gbit/s Rx: 1.244 Gbit/s	GPON	Tx: 2.488 Gbit/s Rx: 1.244 Gbit/s
	XG-PON	Tx: 9.95328 Gbit/s Rx: 2.48832 Gbit/s	XG-PON	Tx: 9.95328 Gbit/s Rx: 2.48832 Gbit/s
Output optical power	GPON	1490 nm: 1.5 dBm to 5 dBm	GPON	1490 nm: 3 dBm to 7 dBm
	XG-PON	1577 nm: 1 dBm to 6 dBm	XG-PON	1577 nm: 5 dBm to 8 dBm
Optical fiber connector type	SC/PC			
Transmission distance	20 km			
Receiving sensitivity	GPON	1310 nm: -28 dBm	GPON	1310 nm: -32 dBm
	XG-PON	1270 nm: -26.5 dBm	XG-PON	1270 nm: -30.5 dBm
Overload optical power	GPON	1310 nm: -8 dBm	GPON	1310 nm: -12 dBm
	XG-PON	1270 nm: -7 dBm	XG-PON	1270 nm: -9 dBm
Extinction ratio	> 8.2 dB			

4.3 Ethernet Module

The following introduces Ethernet optical modules, including the GE modules, 10GE optical modules and 100G optical modules.

4.3.1 GE Module

GE Optical Module – Single-channel Two-fiber Bidirectional

Item	Specification				
Module code	1.25G-0.5km-850nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)	1.25G-10km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)	1.25G-40km-1310nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)	1.25G-40km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)	1.25G-80km-1550nm-eSFP (Single-channel Two-fiber Bidirectional Optical Module)
Optical module type	Single-channel two-fiber bidirectional optical module				
Operating wavelength	850 nm	1310 nm	1310 nm	1550 nm	1550 nm
Encapsulation mode	eSFP	eSFP	eSFP	eSFP	eSFP
Rate	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s
Output optical power	-9.5 dBm to -2.5 dBm	-9 dBm to -3 dBm	-5 dBm to 0 dBm	-5 dBm to 0 dBm	-2 dBm to 5 dBm
Optical fiber connector type	LC	LC	LC	LC	LC
Optical fiber type	Multimode	Single-mode	Single-mode	Single-mode	Single-mode
Transmission distance	0.5 km	10 km	40 km	40 km	80 km
Receiving sensitivity	-17 dBm	-20 dBm	-23 dBm	-22 dBm	-23 dBm
Overload optical power	0 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm
Extinction ratio	9 dB	9 dB	9 dB	8.5 dB	9 dB

GE Optical Module – Single-channel Single-fiber Bidirectional

Item	Specification					
Module code	1.25G-10km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	1.25G-10km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	1.25G-40km-1310nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	1.25G-40km-1490nm/1310nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	1.25G-80km-1570nm/1490nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)	1.25G-80km-1490nm/1570nm-eSFP (Single-channel Single-fiber Bidirectional Optical Module)
Optical module type	Single-channel single-fiber bidirectional optical module					
Operating wavelength	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: 1570 nm Rx: 1490 nm	Tx: 1490 nm Rx: 1570 nm
Encapsulation mode	eSFP	eSFP	eSFP	eSFP	eSFP	eSFP
Rate	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s	1.25 Gbit/s
Output optical power	-9 dBm to -3 dBm	-9 dBm to -3 dBm	-2 dBm to 3 dBm	-2 dBm to 3 dBm	-2 dBm to 4 dBm	-2 dBm to 4 dBm
Optical fiber connector type	LC	LC	LC	LC	LC	LC
Optical fiber type	Single-mode	Single-mode	Single-mode	Single-mode	Single-mode	Single-mode
Transmission distance	10 km	10 km	40 km	40 km	80 km	80 km
Receiving sensitivity	-19.5 dBm	-19.5 dBm	-23 dBm	-23 dBm	-26 dBm	-26 dBm
Overload optical power	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm
Extinction ratio	6 dB	6 dB	9 dB	9 dB	9 dB	9 dB

GE Electrical Module

Item	Specification
Module code	1000M-100m-SFP (1000Base-T)
Module type	1000Base-T
Encapsulation mode	SFP
Rate	1000 Mbit/s (full duplex)
Connector type	RJ-45 electrical port
Transmission distance	100 m

4.3.2 10GE Optical Module

10GE Optical Module – Single-channel Two-fiber Bidirectional

Item	Specification			
Module code	10G-0.3km-850nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)	10G-10km-1310nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)	10G-40km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)	10G-80km-1550nm-SFP+ (Single-channel Two-fiber Bidirectional Optical Module)
Optical module type	Single-channel two-fiber bidirectional optical module			
Operating wavelength	850 nm	1310 nm	1550 nm	1550 nm
Encapsulation mode	SFP+	SFP+	SFP+	SFP+
Rate	10 Gbit/s	10 Gbit/s	9.95 Gbit/s to 11.1 Gbit/s	9.95 Gbit/s to 10.31 Gbit/s
Output optical power	-7.3 dBm to -1 dBm	-8.2 dBm to 0.5 dBm	-4.7 dBm to 4 dBm	0 dBm to 4 dBm
Optical fiber connector type	LC	LC	LC	LC
Optical fiber type	Multimode	Single-mode	Single-mode	Single-mode
Transmission distance	0.3 km	10 km	40 km	80 km
Receiving sensitivity	-9.9 dBm	-12.6 dBm	-14.1 dBm	-24 dBm

Item	Specification			
Overload optical power	-1 dBm	0.5 dBm	0.5 dBm	-7 dBm
Extinction ratio	3 dB	3.5 dB	3.5 dB	9 dB

10GE Optical Module – Single-channel Single-fiber Bidirectional

Item	Specification					
Module code	10G-20km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)	10G-20km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)	10G-10km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)	10G-10km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)	10G-40km-1330nm/1270nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)	10G-40km-1270nm/1330nm-SFP+ (Single-channel Single-fiber Bidirectional Optical Module)
Optical module type	Single-channel single-fiber bidirectional optical module					
Operating wavelength	Tx: 1270 nm Rx: 1330 nm	Tx: 1330 nm Rx: 1270 nm	Tx: 1270 nm Rx: 1330 nm	Tx: 1330 nm Rx: 1270 nm	Tx: 1330 nm Rx: 1270 nm	Tx: 1270 nm Rx: 1330 nm
Encapsulation mode	SFP+	SFP+	SFP+	SFP+	SFP+	SFP+
Rate	9.95 Gbit/s to 10.3 Gbit/s		2.5 Gbit/s to 11.3 Gbit/s		9.95 Gbit/s to 10.3 Gbit/s	
Output optical power	-4.2 dBm to 3 dBm		-8.2 dBm to 0.5 dBm		0 dBm to 5 dBm	
Optical fiber connector type	LC	LC	LC	LC	LC	LC
Optical fiber type	Single-mode	Single-mode	Single-mode	Single-mode	Single-mode	Single-mode
Transmission distance	20 km	20 km	10 km	10 km	40 km	40 km
Receiving sensitivity	-14.4 dBm	-14.4 dBm	-14.4 dBm	-14.4 dBm	-18 dBm	-18 dBm
Overload optical power	0.5 dBm	0.5 dBm	0.5 dBm	0.5 dBm	-9 dBm	-9 dBm
Extinction ratio	3.5 dB	3.5 dB	3.5 dB	3.5 dB	3.5 dB	3.5 dB

4.3.3 100G Optical Module

Item	Specification
Module code	100G-10km-OLT-CFP4 (100G Ethernet)
Optical module type	100G Ethernet
Wavelength range	1294.53 nm to 1310.19 nm
Encapsulation mode	CFP4
Rate	100 Gbit/s
Output optical power	10.5 dBm
Optical fiber connector type	LC
Transmission distance	10 km
Receiving sensitivity	-8.6 dBm
Overload optical power	4.5 dBm
Extinction ratio	4 dB

5 Wires and Cables

- ☒ Cable Overview
- ☒ Power Cable
- ☒ Protection Earth Ground Cable
- ☒ Alarm Cable
- ☒ Fiber Jumper
- ☒ Network Cable
- ☒ Time Synchronization Cable
- ☒ Coaxial Clock Cable
- ☒ Serial Port Line
- ☒ Dry Contact Cable

5.1 Cable Overview

Cable	Model	Applied to
External Power Cable	-48 V power cable: 3696097 (16 mm ²) / 408000003 (25 mm ²)	PDP850A (3000064)
	0 V power cable: 408000033 (16 mm ²) / 408000006 (25 mm ²)	
	Protection earth ground cable: 3696100 (16 mm ²) / 408000019 (25 mm ²)	
Subrack DC Power Cable	-48 V power cable: 408000363	The PIBA card
	0 V power cable: 408000364	
PDP Protection Earth Ground Cable	408000007	PDP850A (3000064)
Subrack Protection Earth Ground Cable	3696084	The AN6000-17 subrack
Alarm Cable for the Head of Row Cabinet	3695135	PDP850A (3000064)
Subrack Alarm Cable	3695095	PDP850A (3000064)
Fiber Jumper	SC/PC-type optical fiber jumper: OFC-SC/PC-SC/PC-S-20	The EX8A / GX8A / GM8A / GPOA card
	LC/PC-type optical fiber jumper: OFC-LC/PC-LC/PC-S-20	The HSCA / KU1A / HU8A card
Network Cable	3695095	The HSCA / KU1A / HU8A card
Time Synchronization Cable	3695458	The CIOA card
Coaxial Clock Cable	3695187	The CIOA card
Serial Port Line	3695341	The HSCA card
Dry Contact Cable	3695452	The CIOA card

5.2 Power Cable

The power cables supply electric energy to loads so that the loads can work normally.

5.2.1 External Power Cable

Function

The external power cables, including the -48 V power cable, 0 V power cable, and protection earth ground cable, are used to induct the power source in the equipment room to the PDP inside the cabinet.

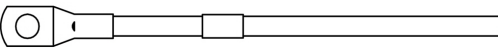
Model

Table 5-1 describes the model numbers of the external power cables.

Table 5-1 Model Numbers of the External Power Cables

PDP Model	Cable Type	Cable Model ^{Note}		Cable Color
PDP850A (3000064)	-48 V power cable	3696097-X (16 mm ²)	408000003-X (25 mm ²)	Blue
	0 V power cable	408000033-X (16 mm ²)	408000006-X (25 mm ²)	Black
	Protection earth ground cable	3696100-X (16 mm ²)	408000019-X (25 mm ²)	Yellow- / green
◆ X indicates the cable length, which is determined by the distance for cable connection in the project. ◆ The 16 mm² power cable is used by default. ◆ When the cable connection distance between the head of row cabinet and the PDP is within 25 m, the 16 mm² power cable should be used. ◆ When the cable connection distance between the head of row cabinet and the PDP is between 25 m and 40 m, the 25 mm² power cable should be used. ◆ The 16 mm² and 25 mm² cables should not be used together. ◆ Generally, two blue cables, two black cables and one yellow- / green cable are used as a set of cables by default. If two sub racks are mounted in a cabinet, use four blue cables, four black cables, and one yellow- / green cable as a set of cables.				

Structure

Cable Model	Description	Illustration
408000019/408000006	Uninsulated ring terminal + bare wire	
3696097/408000003/3696100	Cord end terminal + bare wire	
408000033	Copper cord end terminal + bare wire	

Connection

One end of the external power cable is connected with the PDP or the earth ground point on the top of the cabinet, and the other end is connected with the head of row cabinet. For details of the connection, see Table 5-2.

Table 5-2 Connection of the External Power Cables

PDP Used	Cable Type	Internal Connector		External Connector
PDP850A (3000064)	-48 V power cable (blue)	Use the bus bar and only one pair of the active and standby connectors.	Select one of the connectors among -48V_1 to -48V_4 in Area A (active). Select one of the connectors among -48V_1 to -48V_4 in Area B (standby).	External -48 V DC power supply
		Do not use the bus bar, and select the active and standby connectors as needed.	Connectors -48V_1 to -48V_4 in Area A (active) Connectors -48V_1 to -48V_4 in Area B (standby)	
	0 V power cable (black)	The GND terminal on the bus bar		External power earth ground
	Protection earth ground cable (yellow- /green)	Earth ground point on the top of the cabinet		Earth ground point on the head of row cabinet in the equipment room



Note:

- ◆ When no bus bar is used, either 16 mm² or 25 mm² power cables can be used.
- ◆ When a bus bar is used, only 25 mm² power cables can be used.

Technical Specifications

Item	Specification
Maximum rated current	◆ 16 mm² power cable: 80 A ◆ 25 mm² power cable: 100 A

5.2.2 Subrack DC Power Cable

Function

The subrack DC power cable connects the PDP and the PIBA card of the AN6000-17 to induct a set of redundant branch power rails (two branch power rails in total) from the PDP to the subrack.

Model

The model numbers of the DC power cables for the AN6000-17 subrack are 408000363 (-48 V power cable) and 408000364 (0 V power cable).

Structure

As shown in Figure 5-1, the -48 V power cable (408000363) has a cord end terminal on one end and a ring terminal on the other end.

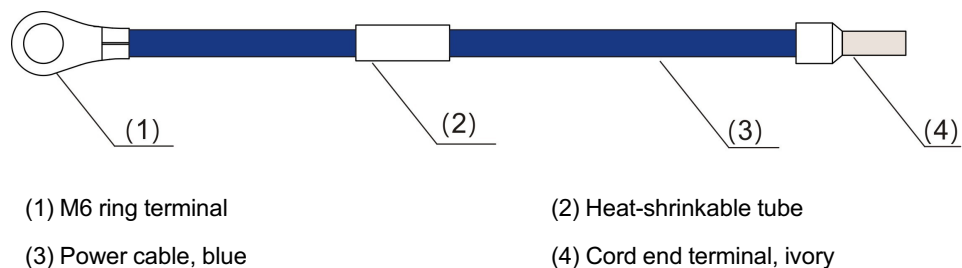


Figure 5-1 -48 V Power Cable

As shown in Figure 5-2, the 0 V power cable (408000364) has a cord end terminal on one end and a ring terminal on the other end.

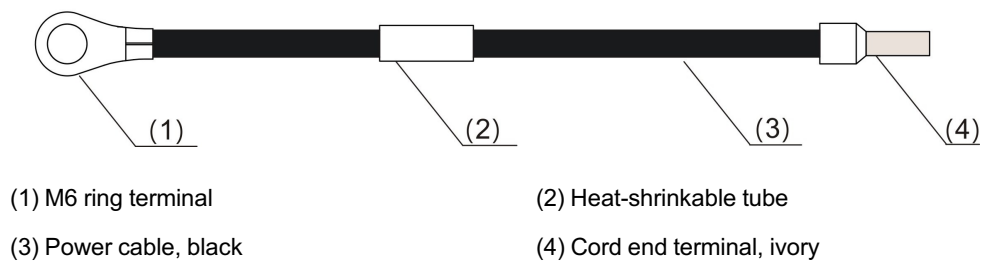


Figure 5-2 0 V Power Cable

Connection

Cable Model	Cable Connector	Connection Description
-48 V power cable (408000363)	Single-wire cord end terminal	Connected to the -48 V output connector of the PDP.
	M6 ring terminal	Connected to the -48 V interface of the PIBA card.
0 V power cable (408000364)	Single-wire cord end terminal	Connected to the 0 V output connector of the PDP.
	M6 ring terminal	Connected to the 0 V interface of the PIBA card.

Technical Specifications

Cable Model	Cable Type	Color	Maximum Current	Cross-sectional Area of Conductor
-48 V power cable (408000363)	Single-wire power cable	Blue	62 A	10.5 mm ²
0 V power cable (408000364)		Black		

5.3 Protection Earth Ground Cable

The protection earth ground cables (including the cabinet protection earth ground cable, PDP protection earth ground cable and the subrack protection earth ground cable) protect the equipment from lightning and interference.

5.3.1 PDP Protection Earth Ground Cable

Function

The PDP protection earth ground cable is used to connect the PDP protection earth ground and the cabinet earth ground point.

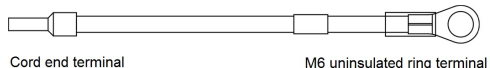
Model

Table 5-3 describes the mapping between the PDP and the protection earth ground cable.

Table 5-3 Mapping Between the PDP and the Protection Earth Ground Cable

PDP Model	Cable Model
PDP850A (3000064)	408000007

Structure

Cable Model	Description	Appearance
408000007	Comprises a cord end terminal at the PDP side and an M6 uninsulated ring terminal at the cabinet side, with a yellow- / green cable between them.	 Cord end terminal M6 uninsulated ring terminal

Connection

PDP Model	Cable Model	Cable Connector	Description
PDP850A (3000064)	408000007	Cord end terminal	Connected to the PE terminal of the PDP.
		M6 uninsulated ring terminal	Connected to the earth ground point on the top of the cabinet.



Note:

The PDP protection earth ground cable has been connected to the PE terminal of the PDP before delivery. Users need only to connect the other end of the cable to the earth ground point on the top of the cabinet.

Technical Specifications

Cable Model	Cable Type	Color	Maximum Current	Cross-sectional Area of Conductor
408000007	Single core soft cable	Yellow- / green	40 A	10 mm ²

5.3.2 Subrack Protection Earth Ground Cable

Function

The subrack protection earth ground cable is used to connect the subrack and the protection earth ground terminal of the cabinet to provide ground protection for the subrack.

Model

The model number of the subrack protection earth ground cable for the AN6000-17 is 3696084.

Structure

The subrack protection earth ground cable is shown in Figure 5-3. Both ends of the cable are M6 pre-insulation terminals, and between them is a yellow- / green cable.

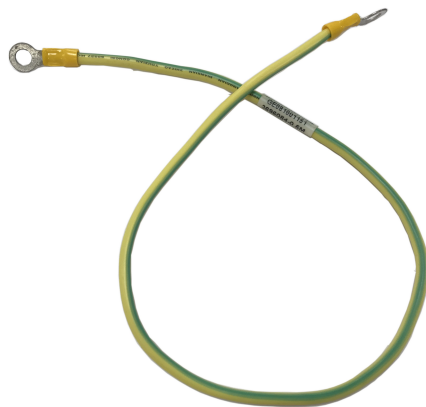


Figure 5-3 Subrack Protection Earth Ground Cable

Connection

Cable Connector	Connection Description
M6 pre-insulation ring terminal	Connected to the cabinet earth ground point.
M6 pre-insulation ring terminal	Connected to the subrack earth ground point.

Technical Specifications

Item	Specification
Cable type	Single-sheathed heat-resistant (withstanding a temperature up to 90°C) single-core soft cable
Color	Yellow- / green
Maximum current	32 A
Cross-sectional area of the conductor	4 mm ²

5.4 Alarm Cable

The alarm cables include the subrack alarm cable and the alarm cable for the head of row cabinet.

5.4.1 Alarm Cable for the Head of Row Cabinet

Function

The alarm cable for the head of row cabinet is used to connect the PDP with the head of row cabinet to output the equipment alarm signals to the head of row cabinet.

Model

The model number of the alarm cable for the head of row cabinet is 3695135, which is applicable to the PDP850A (3000064).

Structure

As shown in Figure 5-4, one end of the alarm cable for the head of row cabinet is a three-conductor D-type connector, and the other end is the three-conductor cable led out from the connector. The brown, black and blue wires output CALL (order wire call), NUA (non-urgent alarm) and UA (urgent alarm) signals respectively.

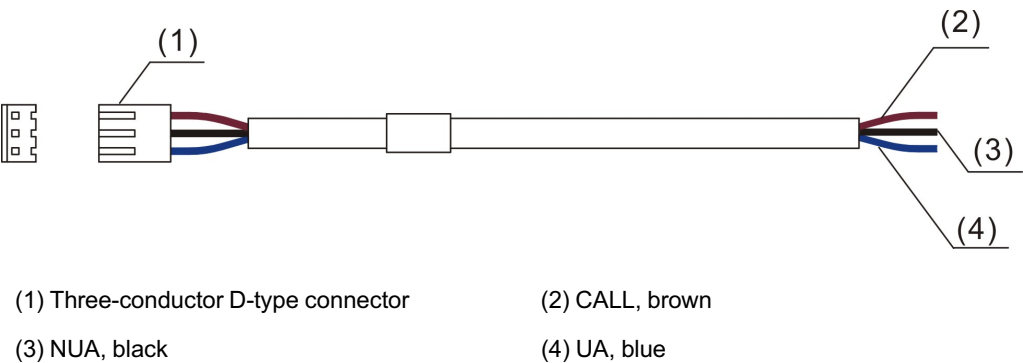


Figure 5-4 Alarm Cable for the Head of Row Cabinet

Connection

Cable	Connector	Connection Description
Alarm cable for the head of row cabinet	Three-conductor D-type connector	Connects to the XP6 terminal on the PDP850A (3000064).
	Three-conductor cable	Connected to the head of row cabinet.

5.4.2 Subrack Alarm Cable

Function

The subrack alarm cable connects the subrack with the PDP, and outputs the subrack alarms to the PDP.

Model

The model number of the subrack alarm cable is 3695095, which is applicable to the PDP850A (3000064).

Structure

The subrack alarm cable is a straight-through network cable with RJ-45 connectors (also known as crystal heads) on both ends, as shown in Figure 5-5.



Figure 5-5 Subrack Alarm Cable

Connection

Cable Connector	Connection Description
RJ-45 connector at the subrack side	Connected to the alarm interface (ALM) on the CIOA card.
RJ-45 connector at the PDP side	PDP850A (3000064): Connects to one of the connectors XS1 to XS4 on the PDP.

Technical Specifications

Item	Specification
Cable type	CAT-5 twisted pair
Connector type	RJ-45
Number of wires	8
Conductor diameter	AWG24
Breakdown voltage	2000 V

5.5 Fiber Jumper

Function

Serving as the transmission carrier for optical signals, the fiber jumper is applied to short-distance transmission of optical signals. It connects the optical interface of a card to the ODF.

Model

Classification	Model
LC/PC-type optical fiber jumper	OFC-LC/PC-LC/PC-S-20
SC/PC-type optical fiber jumper	OFC-SC/PC-SC/PC-S-20

Structure

Classification	Connector
LC/PC-type optical fiber connector	
SC/PC-type fiber connector	

Connection

Table 5-4 Connection of the Optical Fiber Jumper

Cable	Connector	Card Connected	Interface Connected	Connection on the ODF Side
Fiber jumper	SC/PC connector	EX8A	1 to 8	Connected to the remote ONU to provide the 10G EPON downlink channel.
		GX8A	1 to 8	Connected to the remote ONU to provide the XG-PON downlink channel.
		GM8A	1 to 8	Connected to the remote ONU to provide the GPON & XG-PON Combo downlink channel.
		GPOA	1 to 16	Connected to the remote ONU to provide the GPON downlink channel.

Table 5-4 Connection of the Optical Fiber Jumper (Continued)

Cable	Connector	Card Connected	Interface Connected	Connection on the ODF Side
	LC/PC connector	HSCA	SFP+ (1 to 4)	Connected to the IP network to provide the GE, 10 GE and 100 GE optical channels.
		KU1A	1, 2 to 5	
		HU8A	1 to 8	

Basis for Choice of Optical Fiber

Parameter	Basis for Choice
Length	On-site investigation
Single-mode / multi-mode	Type of the optical module
Type of the optical fiber connector	◆ Optical module type ◆ Cabinet depth^{Note 1}
◆ Among the SC/PC optical fiber connectors, the 55 mm long and 39 mm long ones are most commonly used. The 55 mm ones are called long connectors, and the 39 mm ones are called short connectors. When the equipment is mounted in a 300 mm-deep cabinet, it is advisable to use the 39 mm optical fiber connectors (short connectors). ◆ Among the LC/PC optical fiber connectors, the 48 mm long and 31 mm long ones are most commonly used. The 48 mm ones are called long connectors, and the 31 mm ones are called short connectors. When the equipment is mounted in a 300 mm-deep cabinet, it is advisable to use the 31 mm optical fiber connectors (short connectors).	

5.6 Network Cable

Function

The network cable is used for uplinking via the electrical port or equipment monitoring via the network management system. It connects the uplink equipment, the network management computer, or the environment monitoring equipment.

Model

The model number of the straight-through network cable is 3695095.

Structure

Both ends of the network cable are installed with the RJ-45 connectors (also known as crystal heads), as shown in Figure 5-6.



Figure 5-6 Network Cable

Table 5-5 lists the pin definitions for the straight-through network cable.

Table 5-5 Pin Definitions for the Straight-through Network Cable

Pin of the Local End	Wire Color	Pin of the Opposite End
1	White- / orange	1
2	Orange	2
3	White- / green	3
4	Blue	4
5	White- / blue	5
6	Green	6
7	White- / brown	7
8	Brown	8

Connection

Cable	Cable Connector	Card Connected	Interface Connected	Connection at the Opposite End
Network cable	The RJ-45 connector at the subrack side	HSCA	ETH, SFP+ (1 to 4)	Connected to the out-of-band network management computer to enable supervision via the EMS; connected to the IP network.
			ESC	Connected to the environment monitoring equipment.
		KU1A	2 to 5	Connected to the IP network.
		HU8A	1 to 8	

Cable	Cable Connector	Card Connected	Interface Connected	Connection at the Opposite End
		CIOA	EMS	Connected to the network management equipment.

Technical Specifications

Item	Specification
Cable type	CAT-5 twisted pair
Connector type	RJ-45
Number of wires	8
Conductor diameter	AWG24
Breakdown voltage	2000 V

5.7 Time Synchronization Cable

Function

The time synchronization cable is used to connect the 1PPS+TOD interface of the equipment and the external clock device.

Model

The model number of the time synchronization cable is 3695458.

Structure

Figure 5-7 shows the time synchronization cable.

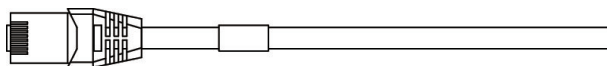


Figure 5-7 Time Synchronization Cable

When the time synchronization cable is used to connect the CIOA card and the external clock device, its pins are defined as in Table 5-6.

Table 5-6 Pin Definitions for the Time Synchronization Cable

PIN	Signal Definition	Meaning
1	NC	Not connected (high impedance) by default
2	NC	Not connected (high impedance) by default
3	422_1_N	1PPS
4	GND	RS-422 level GND
5	GND	RS-422 level GND
6	422_1_P	1PPS
7	422_2_N	TOD time information
8	422_2_P	TOD time information

5.8 Coaxial Clock Cable

Function

The coaxial clock cable is used to transmit the clock signals and connect the BITS clock interface of the local equipment with the clock equipment at a lower / higher layer.

Model

The model number of the coaxial clock cable is 3695187.

Structure

As shown in Figure 5-8, the coaxial clock cable has the SAA series L-type coaxial plug on one end and the bare wire on the other end.

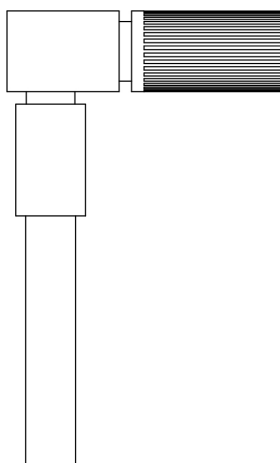


Figure 5-8 Coaxial Clock Cable

Connection

Cable	Cable Connector	Connection Description
Coaxial clock cable	SAA series L-type coaxial plug	Connected to the CLK-IN interface of the CIOA card.
	Bare wire end	Connected to the external clock device.

Technical Specifications

Table 5-7 Technical Specifications of the Coaxial Clock Cable

Item	Specification
Cable type	SYV-75-2-2
Connector type	SAA-type coaxial connector
Characteristic impedance	75Ω
Number of wires	1

5.9 Serial Port Line

Function

The serial port line is used for debugging or local maintenance. It connects the local debugging serial port of the equipment's core switch card and the serial port of the network management computer.

Model

The model number of the serial port line is 3695341.

Structure

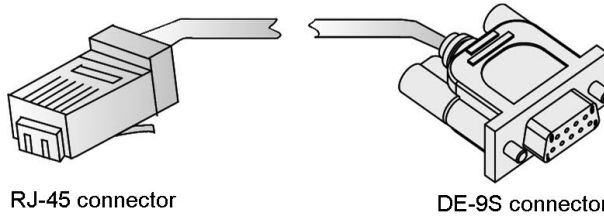


Table 5-8 lists the terminal definitions for the serial port line.

Table 5-8 Terminal Definitions for the Serial Port Line

Connected Signal	RJ-45 Connector Pin	DE-9S Connector Pin
Transmitted signal of the equipment	3	2
GND	4/5	5
Received signal of the equipment	6	3

Connection

Cable	Cable Connector	Connection Description
Serial port line	RJ-45 connector	Connected to the CONSOLE interface of the HSCA card.
	DE-9S connector	Connected to the serial port of the network management computer.

Technical Specifications

Item	Specification
Cable outside diameter	5.2±0.3 mm
Maximum DC resistance of the conductor	93.8Ω/km
Characteristic impedance	100±15Ω
Number of wires	4

5.10 Dry Contact Cable

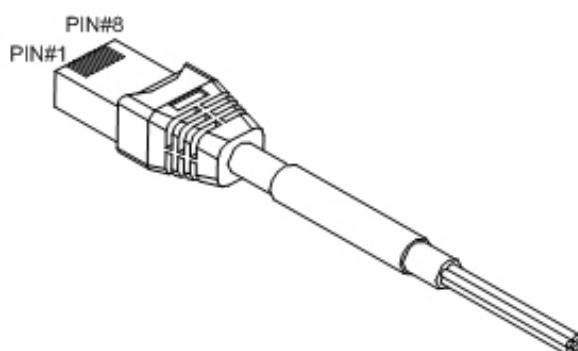
Function

The dry contact cable is used to connect the dry contact interface on the subrack or card to an external dry contact device to enable infrared detection and monitoring of smoke, mains supply, humidity, temperature, fans, shake, door access control, etc.

Model

The model number of the dry contact cable is 3695452.

Structure



Connection

Cable	Cable Connector	Connection Description
Dry contact cable	RJ-45 connector	Connected to the DC1-7 interface of the CIOA card.
	Bare wire end	Connected to the dry contact device.

Technical Specifications

Item	Specification
Cable type	CAT-5 twisted pair
Connector type	RJ-45
Number of wires	8
Conductor diameter	AWG 24

6 Cabinet

The following introduces the cabinets used by the AN6000-17.

- ☒ Cabinet Overview
- ☒ Detailed Dimensions of the Cabinet
- ☒ Equipment Layout

6.1 Cabinet Overview

Table 6-1 Models and Appearances of the Cabinets

Cabinet Model	404000068 to 404000071	404000596 to 404000599	4102581 to 4102584
Description	21-inch 300mm-deep cabinet with anti-dust screen	21-inch 340mm-deep cabinet with anti-dust screen	21-inch 600 mm-deep cabinet with anti-dust screen
Appearance			
Remarks	◆ Among the SC/PC optical fiber connectors, the 55 mm long and 39 mm long ones are most commonly used. The 55 mm ones are called long connectors, and the 39 mm ones are called short connectors. When the equipment is mounted in a 300 mm-deep cabinet, it is advisable to use the 39 mm optical fiber connectors (short connectors). ◆ Among the LC/PC optical fiber connectors, the 48 mm long and 31 mm long ones are most commonly used. The 48 mm ones are called long connectors, and the 31 mm ones are called short connectors. When the equipment is mounted in a 300 mm-deep cabinet, it is advisable to use the 31 mm optical fiber connectors (short connectors).		

Table 6-2 Dimensions and Weight of the Cabinets

Cabinet Type	Cabinet Model	Dimensions (H × W × D) (mm)	Weight (kg)
21-inch 300mm-deep cabinet with anti-dust screen	404000068	1600 × 600 × 300	58
	404000069	2000 × 600 × 300	69
	404000070 ^{Note 1}	2200 × 600 × 300	74
	404000071	2600 × 600 × 300	85

Table 6-2 Dimensions and Weight of the Cabinets (Continued)

Cabinet Type	Cabinet Model	Dimensions (H × W × D) (mm)	Weight (kg)
21-inch 340mm-deep cabinet with anti-dust screen	404000596	2600 × 600 × 340	81
	404000597	2200 × 600 × 340	70
	404000598	2000 × 600 × 340	63
	404000599	1600 × 600 × 340	51
21-inch 600 mm-deep cabinet with anti-dust screen	4102584	1600 × 600 × 600	79
	4102583	2000 × 600 × 600	89
	4102582	2200 × 600 × 600	99
	4102581	2600 × 600 × 600	109
Note 1: The AN6000-17 uses the 404000070 cabinet by default. In some special cases, cabinets of other heights can be used.			

6.2 Detailed Dimensions of the Cabinet

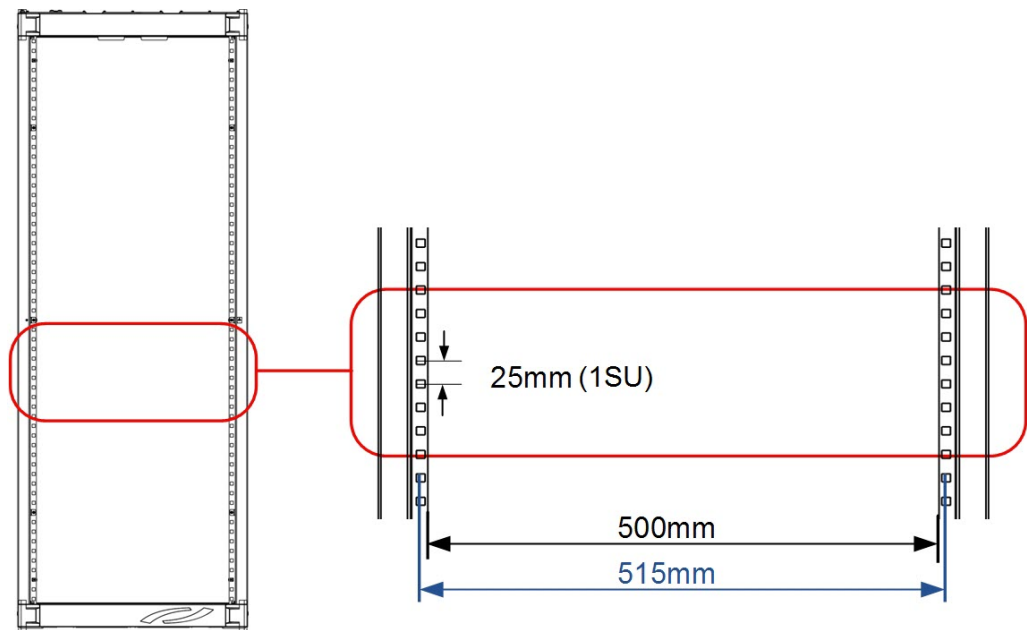


Figure 6-1 Detailed Dimensions of the 21-inch Cabinet

Table 6-3 Detailed Dimensions of the 21-inch Cabinet

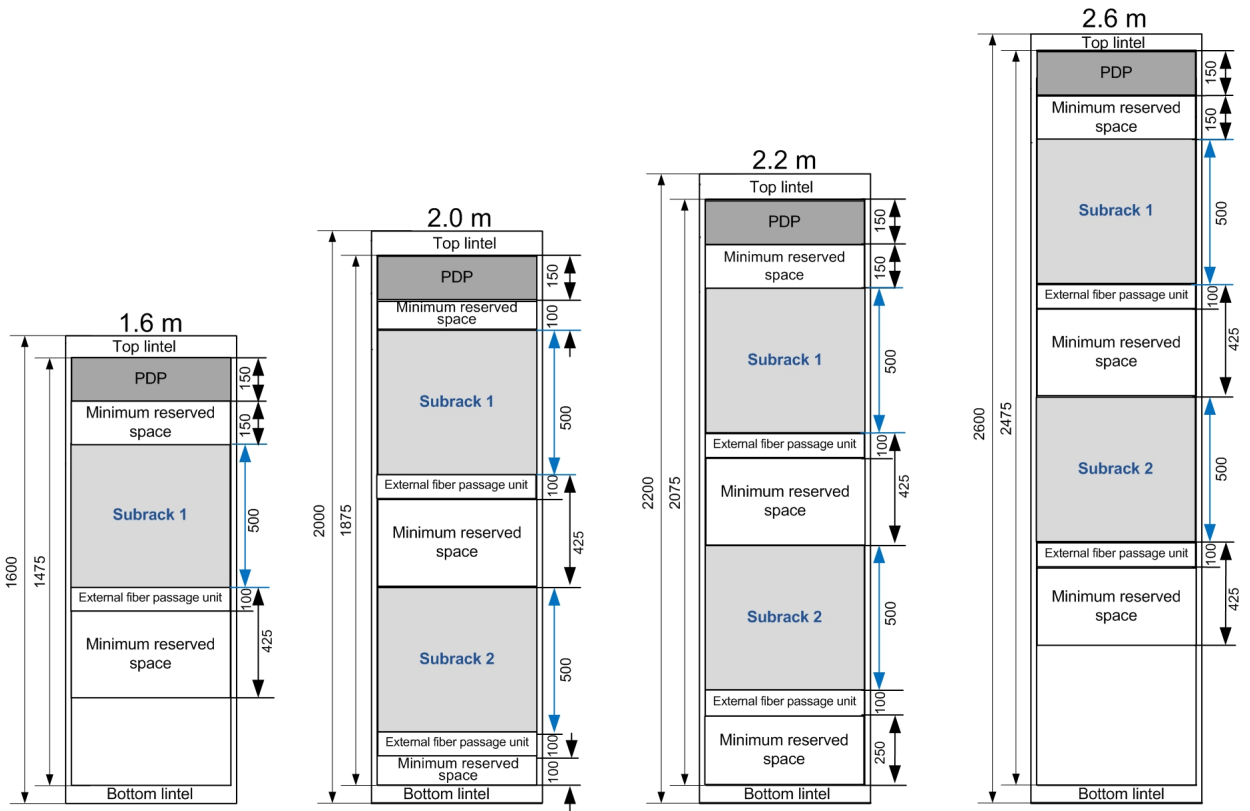
Item	Specification
Distance between holes on the mounting flange	1 SU = 25 mm
Angle opening width	500 mm
Fixing centres	515 mm

6.3 Equipment Layout

Guide

When multiple AN6000-17 subracks are to be installed in a cabinet, arrange them from the top down.

21-inch Cabinet



Note 1: Unit: mm

7

PDP



PDP Overview



PDP850A (3000064)

7.1 PDP Overview

The table below describes the model number, appearance and input / output specifications of the PDP for the AN6000-17.

Table 7-1 Appearance and Input / Output Specifications of the PDP

Item	PDP850A
Model	3000064-2FH
Appearance	
Range of input voltage	-38 V to -60 V
Input channels	Eight channels of power (four active and four standby)
Input current	The maximum current of a single channel is 63 A.
Range of output voltage	-38 V to -60 V
Output channels	Eight channels of output power
Output current	The maximum current of a single channel is 63 A.

7.2 PDP850A (3000064)

The following introduces the front panel, power / alarm terminals, jumper pins and lightning protection module of the PDP850A (3000064).

Front Panel

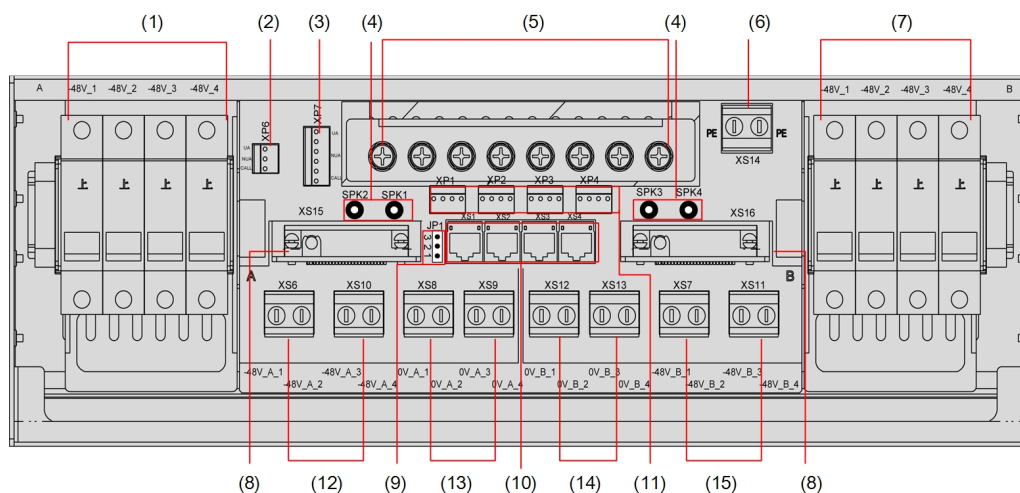


On the front panel of the PDP850A (3000064), there are eight automatic air circuit breakers which control the power supply outputs. Among them,

- ◆ SW1-1 to SW1-4 switch on / off branch power rails -48V_A_1 to -48V_A_4 respectively.

- ◆ SW2-1 to SW2-4 switch on / off branch power rails -48V_B_1 to -48V_B_4 respectively.

Terminal Board



- | | | |
|--|--|--|
| (1) External power -48V input connector A | (2) Alarm terminal for the head of row cabinet | (3) Alarm connector for indicators on the top of the cabinet |
| (4) Audible alarm buzzer | (5) Busbar | (6) Protection earth ground cable connector |
| (7) External power -48V input connector B | (8) Lightning protection module | (9) Jumper pin |
| (10) Subrack alarm aggregation connector | (11) Alarm cascade terminal | (12) Branch power rail -48V output connector A |
| (13) Branch power rail 0V output connector A | (14) Branch power rail 0V output connector B | (15) Branch power rail -48V output connector B |

Power Connectors

Connector Type	No.	Connector	Description
External power input (2 × 4 channels)	(1)	-48V_1 to -48V_4 in Area A	Inducts 2×4 channels of -48V power from the external. The connectors in Area A and Area B can back up each other ^{Note} .
	(7)	-48V_1 to -48V_4 in Area B	
	(5)	Eight connectors on the busbar	Inducts external 0V signals.
	(6)	Right connector of XS14	Connects to the PE protection earth ground of the external power.

Connector Type	No.	Connector	Description
Branch power rail output (2 × 4 channels)	(12)	XS6, XS10	Outputs 2×4 channels of -48V power.
	(15)	XS7, XS11	Branch A and Branch B can back up each other.
	(13)	XS8, XS9	Outputs 2×4 channels of 0V power.
	(14)	XS12, XS13	Branch A and Branch B can back up each other.
Note 1: Users only need to induct one channel of power from the external when the PDP is equipped with a busbar. If the busbar is not used, they need to input four channels of external power. When the busbar is used, the air circuit breakers can still control each channel of power independently.			

Alarm Connectors

Connector Type	No.	Connector	Description
Subrack alarm convergence connector	(10)	XS1 to XS4	RJ-45 sockets receiving the alarm information from the equipment inside the cabinet
Alarm cascade terminal	(11)	XP1 to XP4	XP1 to XP4 correspond to XS1 to XS4 one by one. When two PDPs are installed in the cabinet, the alarm cables of the front and rear subracks are connected to the XS terminals of the front and rear PDPs respectively. The front XP terminals and rear XP terminals are cascaded correspondingly.
Alarm connector for the head of row cabinet	(2)	XP6	XP6 is a three-conductor D-type socket, which can output the alarm information to the head of row cabinet.
Alarm connector for indicator LEDs on the top of cabinet	(3)	XP7	XP7 is a six-conductor D-type socket, which can output the alarm indicator triggering signal to the cabinet-top indicator LEDs.

Jumper Pin

JP1 is the jumper pin for selecting the operating status indicator LED of the PDP. It is located as indicated by (9) in the figure, and can be set in either of the two ways as described below:

- ◆ Short pin1 and pin2 of JP1, and the green indicator LED on the top of the cabinet will indicate the normal working status of the PDP.
- ◆ Short pin2 and pin3 of JP1, and the green indicator LED on the top of the cabinet will be controlled by the order wire call (CALL) signal, instead of indicating the working status of the PDP.



Note:

Pin2 and pin3 of JP1 have been shorted by default before delivery of the PDP.

Lightning Protection Module

The lightning protection module is inserted into the bases of XS15 and XS16, as indicated by (8) in the figure.

The lightning protection module can withstand the surge of 4 kV (1.2/50 us - 8/20 us combination wave) in the common mode and the surge of 2 kV (1.2/50 us - 8/20 us combination wave) in the differential mode, so as to guarantee the normal operation of the equipment.

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