Preface

We appreciate your business. Your satisfaction is our goal. We will provide you with comprehensive technical support and after-sales service. Please contact your local sales representative, service representative or distributor for any help needed at the contact information shown below.

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Contents

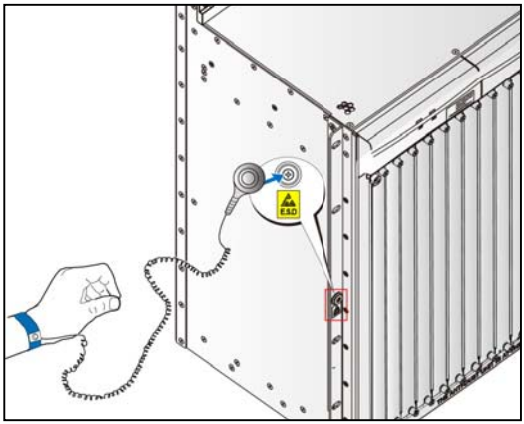
1 Safety Precautions

Warning

High power laser can cause bodily harm, especially to eyes. Never look directly into the end of the optical transmitter fiber jumper or the end of its active connector.

Caution

Do not touch any component or wires on cards, or metal conductors in sockets. ESD protection measures should be taken if it is necessary to touch the card during maintenance.



Caution

Carpets or other materials that easily generate static electricity should not be used on the floor of equipment room.

Warning

Optical communication equipment must be protected from electrical surges, thunder and lightning.

Caution

Exercise care if you must bend fibers. If bends are necessary, the fiber bending radius should never be less than 38mm.

Caution

All cables on the installation site, such as power cables, alarm cables and optical fibers, should be laid out independently and bound separately. Note that optical fibers cannot be bound with typical wire binder.

Caution

Do not open the active fiber connector unnecessarily. If it is necessary to open it for equipment maintenance, protection measures should be taken to avoid contaminating the end face of connector.

Caution

The network management system requires a dedicated computer. Use of unidentified memory devices should be prohibited so as to avoid computer viruses.

Caution

When maintaining or testing the equipment, connect the instrument ground cable with the equipment (or the cabinet where the equipment is installed) ground cable properly. Otherwise, the relevant components of signal interfaces might be damaged.

2 Introduction to Installation Tools

Measuring tape

Marker pen

Spirit level

File

Electric drill

Claw hammer

Cross screwdriver

Flat screwdriver

Crimping and peeling pliers

Sharp nose pliers

Diagonal pliers

Wire stripper

Multimeter

Optical power meter

Network cable tester

Error detector

Spanner wrench

ESD protection wrist strap

3 Installing the Cabinet

Introduction

The AN5116-06B can be installed in the 19-inch cabinet or the 21-inch anti-dust cabinet.
Refer to the corresponding cabinet's quick installation guide for the detailed installation method.

Cabinet	Quick Installation Guide
19-inch cabinet	Quick Installation Guide for the 19-inch Cabinet (600mm-deep) (596-599)
21-inch anti-dust cabinet	Quick Installation Guide for the 21-inch Cabinet (300mm-deep) (069-072)

4 Installing the Subrack and the Card

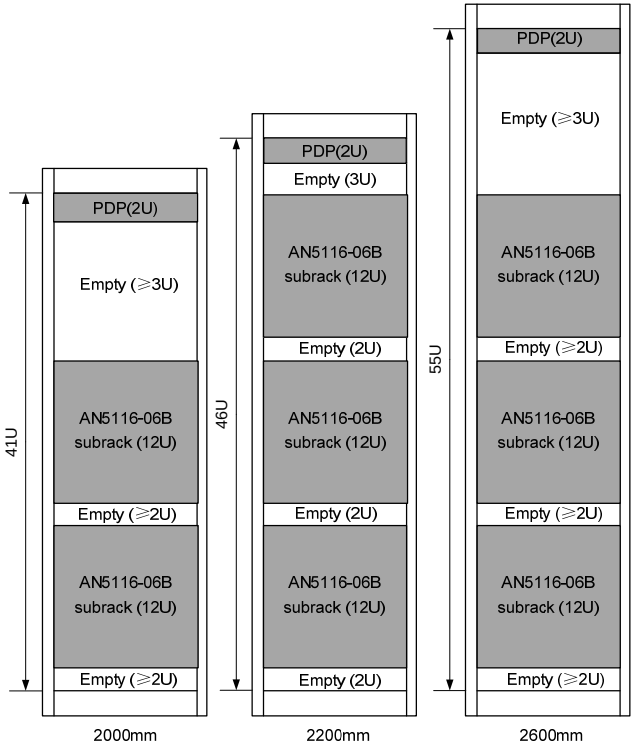
Introduction

Generally, the subracks have been already installed in the cabinet and the cards, fan units, and anti-dust screens have been installed in the subrack before delivery and the onsite installation and removal of the components mentioned above are not required. But these operations may be required during the expansion or maintenance after installation.

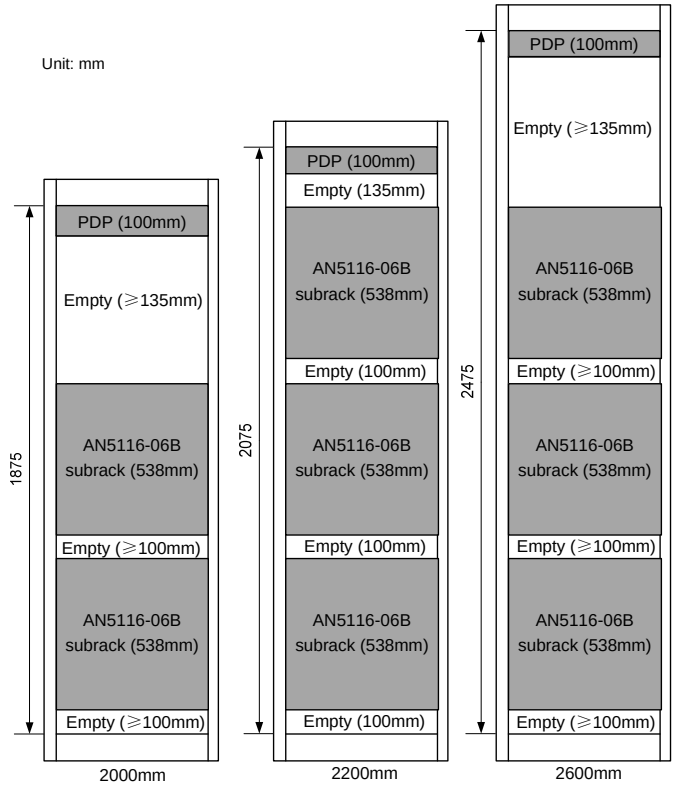
4.1 Installing the Subrack

Introduction

The spaces marked as "empty" are for air cooling and cannot be occupied.
Lay out the subracks from the bottom up and reserve the upper space for capacity expansion in future.



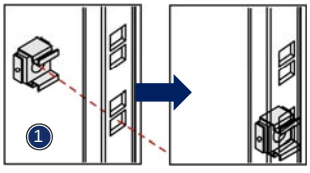
The equipment layout figure for the 19-inch cabinet



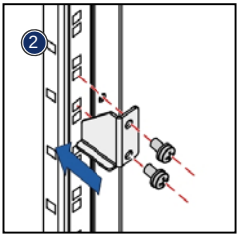
The equipment layout figure for the 21-inch cabinet

a Installing the Subrack in the 19-inch Cabinet

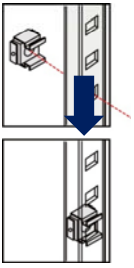
1. Determine the installation position of the slide rails and install the floating nuts.



2. Install the slide rails.

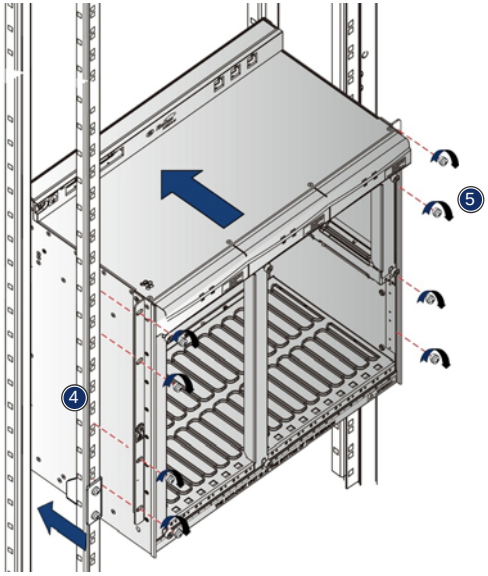


3. According to the installation position of the subrack, insert the floating nuts into the corresponding square mounting holes on the vertical mounting flanges at both sides of the cabinet.



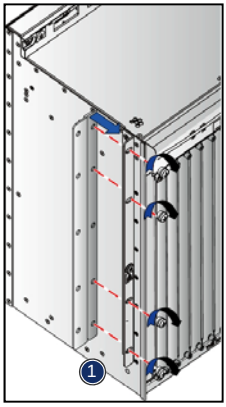
4 Put the subrack on the slide rails, and then slowly push it in.

5 Tighten the panel screws by rotating them clockwise to secure the subrack.

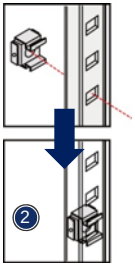


b Installing the Subrack in the 21-inch Cabinet

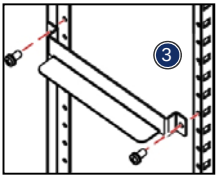
1 Install the adaptor mounting ears to the left and right mounting ears of the subrack.

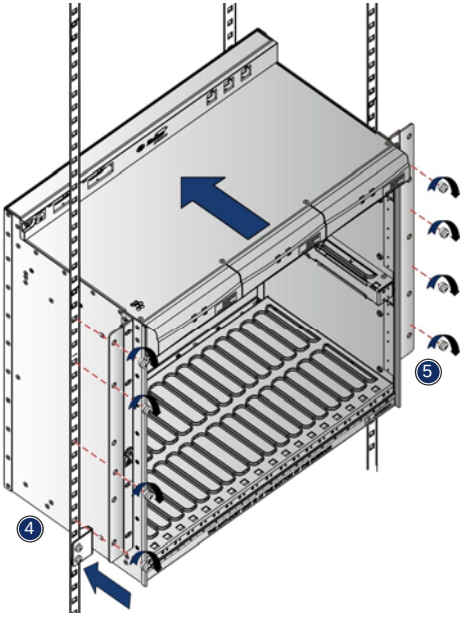


2 Determine the positions of the slide rails and the subrack, then install the floating nuts.



3 Install the slide rails.





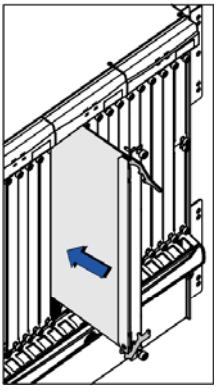
4 Push the subrack into the cabinet along the slide rails.

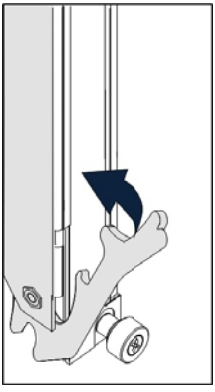
5 Tighten the panel screws by rotating them clockwise to secure the subrack.

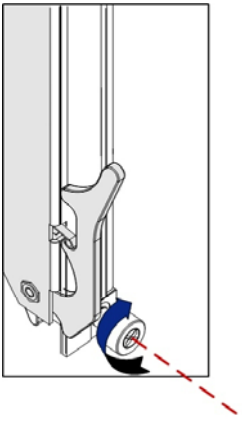
4.2 Installing the Card

Caution

Do not operate forcefully, especially installing or removing the card with excessive force.
Removing an in-service card will impact the normal operation of equipment and can cause an interruption of services!







1 Align the upper and lower edges of the card with the inner slide rails of the corresponding slot inside the subrack (keep its component side to the right) and push it in along the slide rails slowly.

2 Push the card to its position and close and secure the card's latches as shown in the figure.

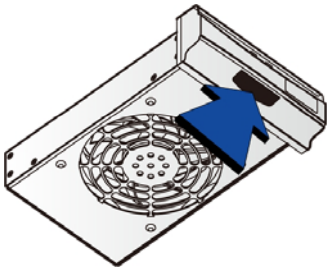
3 Lock the card.

4.3 Installing the Fan Unit

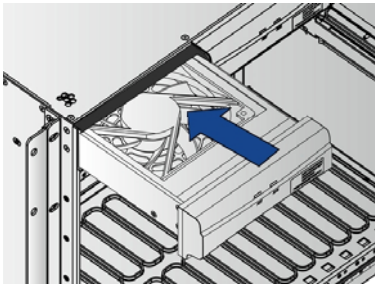
Caution

Do not operate forcefully, especially installing or removing the fan unit with excessive force.

1. Hold the fan and press the fan's bottom snap-in latch.

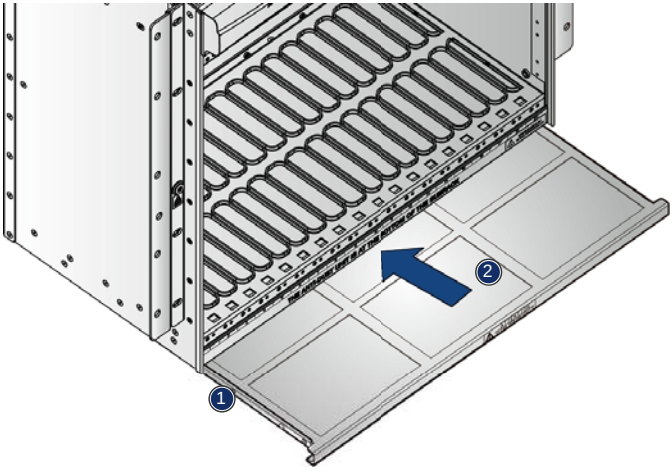


2. Push the fan unit into the subrack along the slide rails slowly. After the fan is pushed into the proper position, release the snap-in latch, and the fan will be locked into the subrack automatically.



4.4 Installing the Anti-dust Screen

1. Align the slide rails of the anti-dust screen with the slide rail grooves of the subrack.
2. Push the anti-dust screen slowly into the subrack.



5 Connection and Layout of the Wires and Cables

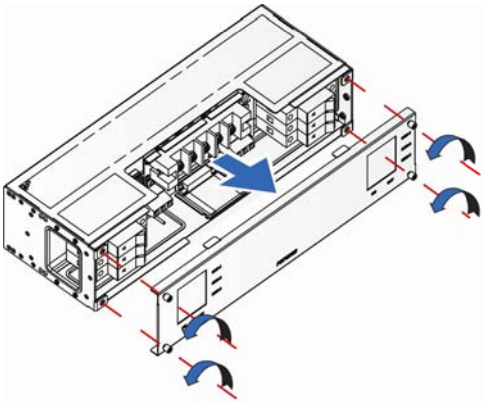
Introduction

The AN5116-06B uses the PDP with dual-power supply. The PDP's code is 3000068.

Note

The installers need to remove the front panel of the PDP before the layout of the wires and cables, and restore them after the layout.

Removing the PDP's front panel



Introduction

The internal cables are the wires and cables that are connected inside the cabinet; these are usually connected before delivery. The installers should check the connection of the internal cables on site. The items to check include whether the cable distribution is reasonable, whether the wires and cables are neatly arranged and clean, whether the connection plugs are connected firmly, whether incorrect insertion or poor insertion occurs, and whether any part is missing.

Introduction

The installers can choose the top access wiring mode or the floor access wiring mode according to the equipment room environment and the onsite installation condition (This guide uses the top access wiring mode as an example in description).

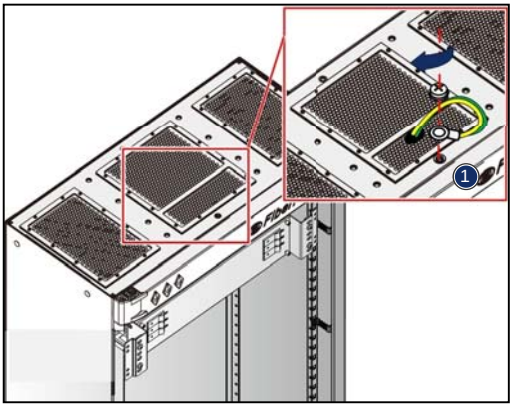
5.1 Layout of the Cabinet Protection Earth Ground Cable and the Cabinet Power Cable

a Layout of the Cabinet Protection Earth Ground Cable

Note

The connector of the cabinet protection earth ground cable at the PDP side is connected to the inner PE connector of the PDP before delivery, so its onsite installation is not needed.

1. Route the other end of the cabinet protection earth ground cable to the cabinet top. Attach the round pre-insulation terminal to the protection earth ground point on the cabinet top, and use a screw to secure them.

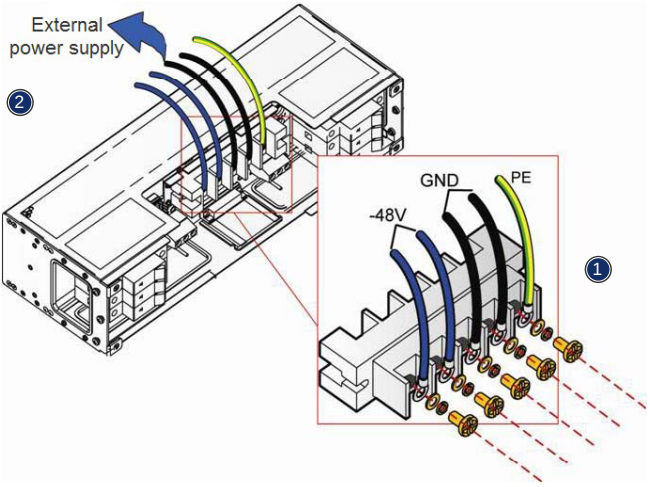


b Layout of the Cabinet Power Cable

Caution

Make sure the switch of the corresponding external power supply is in the off position before connecting the cabinet power cable. Never connect the cabinet power cable while it is powered.

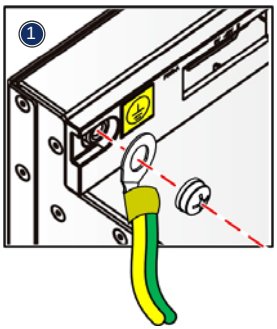
1. Connect the uninsulated ring tongue crimped terminal of the cabinet power cable to the corresponding connector on the PDP.
2. Connect the other end of the cabinet power cable to the external power supply.

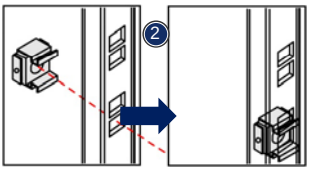


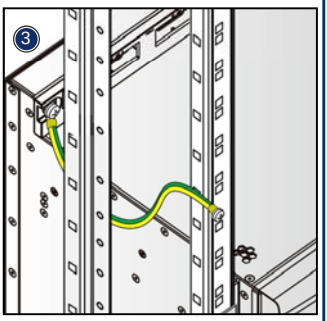
5.2 Layout of the Subrack Protection Earth Ground Cable and the Subrack Power Cable

a Layout of the Subrack Protection Earth Ground Cable

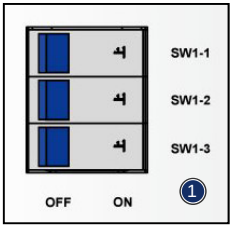
1. Attach one uninsulated ring tongue crimped terminal of the subrack protection earth ground cable to the subrack earth ground pole, then use a panel screw with a washer from the accessories to secure it.
2. Install the floating nuts.
3. Attach the other uninsulated ring tongue crimped terminal to the determined mounting hole with floating nut on the vertical mounting flange, and use the panel screw with a washer from the accessories to secure it.

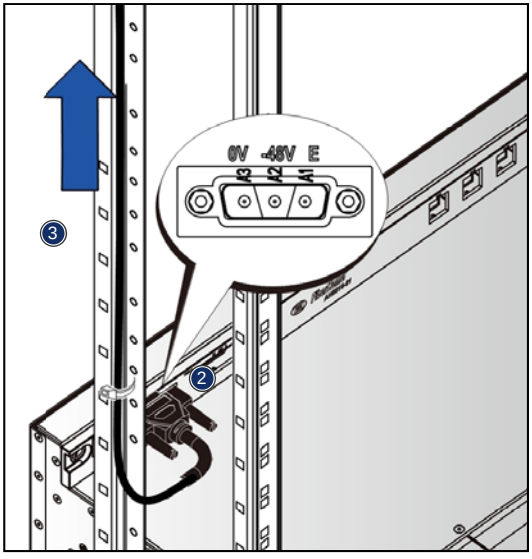






1. Make sure that the power control switch of the corresponding subrack on the PDP is placed in the OFF position.

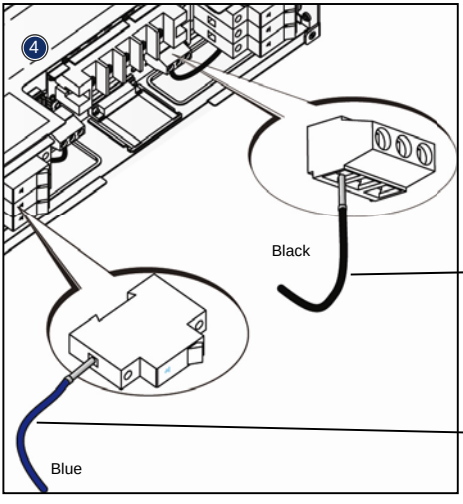




2. Insert the D-type connector of the subrack power cable into the PWR interface on the subrack backplane.

3. Route the subrack power cable upward along the cabinet left wiring channel.

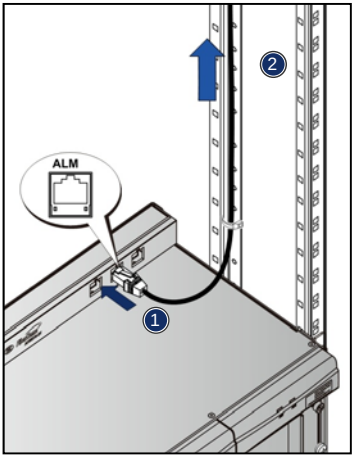
4. Insert the tube terminal on the other end of the subrack power cable into the corresponding connector and tighten the screws.



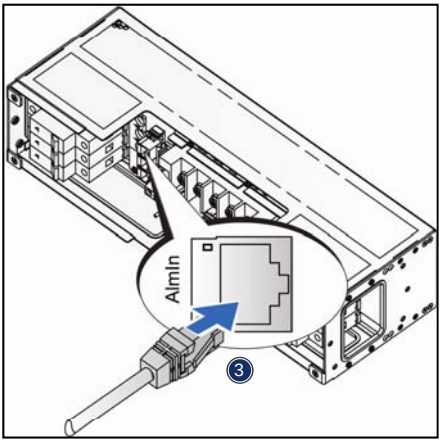
Connects to the PDP
0V_B_1 to 0V_B_3 (XS2)
0V_A_1 to 0V_A_3 (XS1)

Connects to the branch ACBs (Automatic Circuit Breakers) on the PDP
-48V_A_1 to -48V_A_3
-48V_B_1 to -48V_B_3

5.3 Layout of the Subrack Alarm Cable

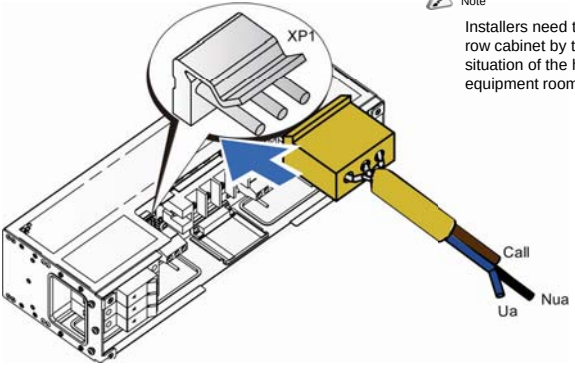


1. Insert the subrack alarm cable's RJ-45 connector into the ALM interface on the subrack backplane.
2. Route the other end of the subrack alarm cable upward along the rear vertical mounting flange at the right side of the cabinet.
3. Insert the RJ-45 connector of the subrack alarm cable into one among the sockets AlmIn1 to AlmIn3 on the PDP.



5.4 Layout of the Alarm Cable for the Head of Row Cabinet

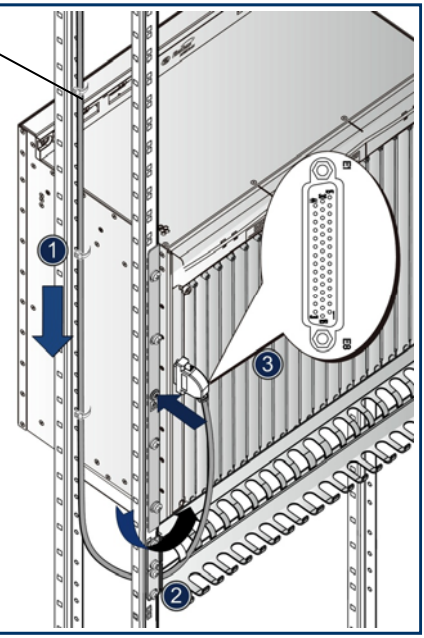
1. Lead the alarm cable for the head of row cabinet through the wiring hole on the cabinet top / bottom, routing it to the PDP along the wiring channel at the side of the cabinet, passing through the wiring hole on the top of the PDP.
2. Insert the D-type connector of the alarm cable for the head of row cabinet into the XP1 socket on the PDP.
3. Arrange the cable and complete the connection and layout of the cable for the head of row cabinet side.



Note

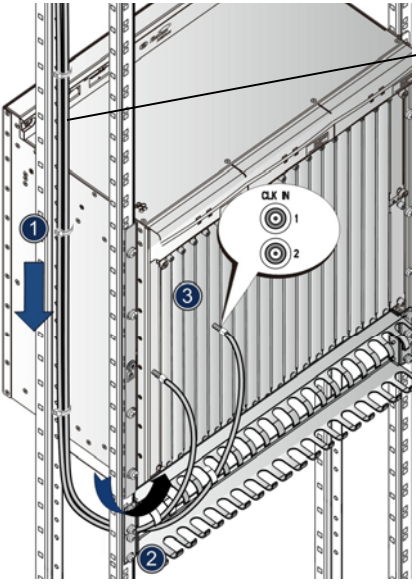
Installers need to make plugs for the head of row cabinet by themselves according to the situation of the head of row cabinet in the equipment room.

5.5 Layout of the E1 Cable



1. Lead the E1 cable through the wiring hole on the cabinet top, routing it downward along the wiring channel on the side of the cabinet to the CE1B card.
2. Route the E1 cable through the fiber passage unit.
3. Insert the DB-44P connector into the E1 interface of the CE1B card and fasten the tightening screws.

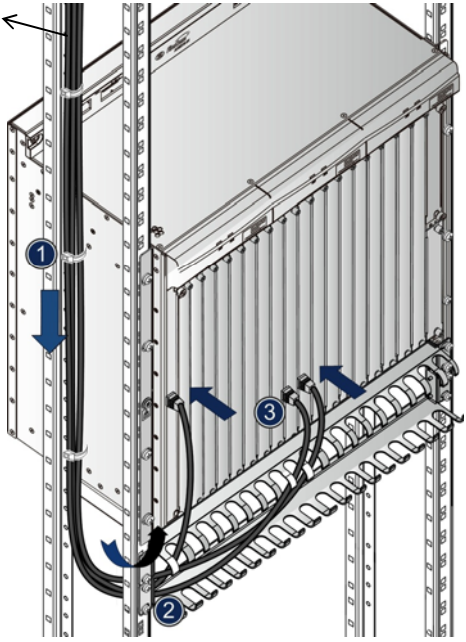
5.6 Layout of the External Clock Cable



Connects to the external clock source

1. Lead the clock cable through the wiring hole on the top of the cabinet and route it downward along the wiring channel on the side of the cabinet.
2. Route the clock cable through the fiber passage unit.
3. Insert the plug of the clock cable into the corresponding interface of the C155A card and tighten the screws on the front side of the plug.

5.7 Layout of the Network Cable



The following uses the connection of the network cable to the EMS interface of the CIO card as an example in description.

1. Route the network cable through the cabinet top wiring hole. Lead it downward to the CIO card along the cabinet side wiring channel.
2. Route the network cable through the fiber passage unit.
3. Insert the RJ-45 connector into the EMS interface of the CIO card.

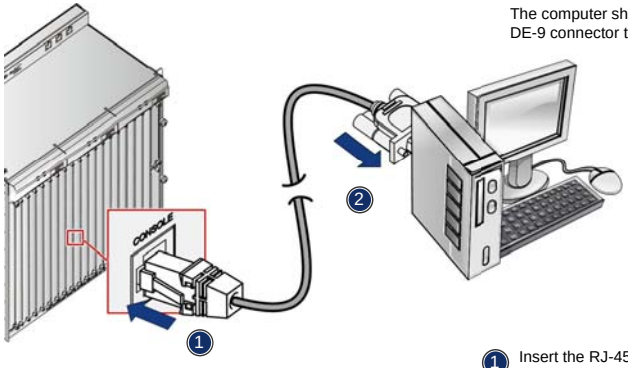
5.8 Layout of the Serial Port Line

Introduction

The serial port line is used to connect the CONSOLE interface of the HSWA card with the serial port of the local computer. It is used only in project start-up and commissioning.

Note

The computer should be powered off when you connect the DE-9 connector to the serial port on the computer.



1. Insert the RJ-45 connector of the serial port line into the CONSOLE interface of the HSWA card.
2. Insert the DE-9 connector of the serial port line into the serial port of the local computer and tighten the screws.

6 Connection and Layout of the Optical Fibers

Introduction

Select the optical fiber jumpers depending on the types of the optical interfaces on the devices at both local and far ends. The optical fiber connectors for the optical interfaces on the AN5116-06B side are LC / PC-type and SC / PC-type.

LC / PC-type fiber connector

SC / PC-type fiber connector

6.1 Preparations Before Layout

Introduction

Before layout, users need to complete the following preparation work:

1. Make temporary marks on both ends of the optical fiber to be arranged. Arrange the optical fiber in order and lay them straight. Please note that the fiber should be arranged in pairs for transmitting and receiving.
2. Cut out an appropriate length of protection casing according to the length of optical fiber (the fiber between the cabinet on the local end and the cabinet / ODF on the far end should be protected by the protection casing).
3. Adjust the length of the optical fiber outside the protection casing: when the fibers are excessively long, installers should leave the excess length to the ODF side, so as to ensure that the length of the fibers entering the cabinet from the client and line sides is appropriate.
4. Route the optical fiber sheathed with the protection casing from other cabinet or ODF to the cabinet through the upper support channel, and lead the fiber into the cabinet via the wiring hole on the cabinet top.

6.2 Layout of the Optical Fibers

Note

Exercise care if you must bend fibers. If bends are necessary, the fiber bending radius should never be less than 38mm.

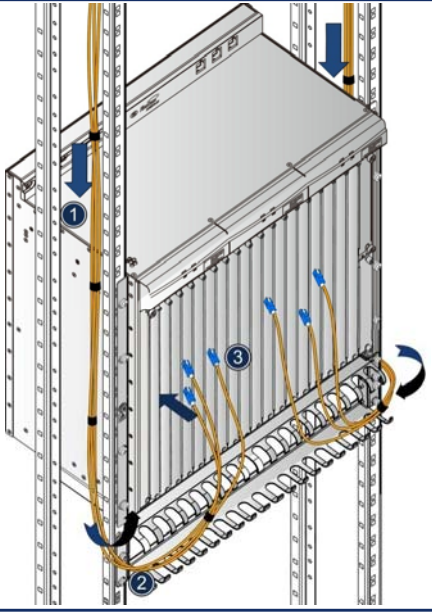
Caution

Installers should bind all wires and cables used in onsite installation. Each cable type should be bound separately. For example, power cables, alarm cables and optical fibers should be laid out independently and bound separately. Note that optical fibers cannot be bound with typical wire binder.

1. Arrange the optical fibers along the left and right wiring channels of the cabinet to the fiber passage area of the subrack.
   (Take the top access wiring mode as an example, as shown in the figure.)

   For the top access wiring mode: The optical fibers are led into the cabinet from the top and routed down.

   For the floor access wiring mode: The optical fibers are led into the cabinet from the bottom and routed up.
2. Lead the optical fibers through the fiber passage unit.
3. Connect the optical fiber connector with the corresponding card optical interface.



1. After the connection of the optical fibers is completed, installers should bind the optical fibers at the entrance of the cabinet and at the point near to the fiber passage area with soft plastic binders to secure them.

   Note

   The interval between binders should be 3 to 4 times larger than the length of the fiber bundle diameter and the intervals should be equally spaced.

2. Connect the optical fibers at the ODF side.
3. Make and attach labels on both ends of the optical fibers.

7 Installing the Cabinet Doors

Introduction

The AN5116-06B can be installed in the 19-inch cabinet or the 21-inch anti-dust cabinet.
Refer to the corresponding cabinet quick installation guide for the detailed installation method.

Cabinet	Quick Installation Guide
19-inch cabinet	Quick Installation Guide for the 19-inch Cabinet (600mm-deep) (596-599)
21-inch anti-dust cabinet	Quick Installation Guide for the 21-inch Cabinet (300mm-deep) (069-072)

8 Post Installation Inspection

8.1 Checking the Connection and Layout of Wires and Cables

Caution

When the connection and layout of the cables and wires is completed, installers should conduct the connectivity test and ensure that the signals are transmitted effectively.

No.	Checking Content	Method
1	The specifications, routes, cross-sectional area, and position of the cable arrangements are compliant with the construction plan drawing. The cables are arranged in good order, without damage to their sheath.	Visual inspection
2	The plugs of the cables are clean and intact; and the plugs made onsite are up to standard. The plugs are all connected correctly and firmly.	Visual inspection
3	When cables must be arranged along the upper part of the cabinet, the distance between them and the ventilation hole on the cabinet top should be no less than 10cm. If the distance between the cabling rack and the cabinet is larger than 0.8m, installers should set up a cabling ladder.	Visual inspection
4	When the cables are arranged under the floor, the height of the cable bundles should not be higher than 3/4 of the net height from the ground to the ESD protection raised floor or the ventilation and air cooling may be hindered.	Visual inspection
5	Layout of the fiber pigtails: 1. The fiber pigtails are not arranged too closely with each other or intertwined at the turning points. The paired fiber pigtails are bound after being arranged in order. Do not bind with too much force and leave pressure marks on the fiber pigtails. 2. Fiber pigtails can move forward or backward freely in the fiber fastener but cannot bend in right angle. 3. After the fiber pigtails are arranged, do not put any cable or other objects upon them.	Visual inspection

8.2 Checking Before Power-on

Caution

The AN5116-06B utilizes a -48V DC power supply with an acceptable voltage range from -40V to -57V.

Before turning on the power for the cabinet, installers should check the following items:

◆Confirm that the cabinet power cable is correctly connected with the external power supply equipment.

◆Confirm that the wires and cables at all levels are connected correctly.

◆Place all power control switches on the PDP in the OFF position.

◆Unplug the power cable plugs of all subracks.

◆Disconnect all cards inside the subrack but leave them on their slots.

◆Disconnect the fan unit inside the subrack but leave it on its slot.

8.3 Power-on Test on the Equipment

1. Measure the voltage between the **-48V** and the **0V** connectors on the external power supply input area of the PDP, whose normal value should be between -40V and -57V.
2. Place each branch ACB on the PDP in the ON position.
3. Measure the voltage between the **-48V** and the **0V** connectors on each subrack power cable's plugs respectively; the measured value should be between - 40V and -57V.
4. Place each branch ACB and switch on the PDP front panel in the OFF position.
5. Insert the power card into the subrack. Then insert the plugs of the subrack power cables into the subrack power interfaces.
6. Place each branch ACB and switch on the PDP front panel in the ON position.
7. Confirm that the subrack has no abnormal sound or smell.
8. Plug in the fan unit first. The fan unit will start running as soon as it is plugged and air movement will begin.
9. Plug the cards into the subrack in sequence and the cards will be electrified normally in two or three minutes. Then the indicator LEDs of all cards on the subrack should be in normal working status.

Introduction

The power-off procedures for the AN5116-06B are in reverse order of the power-on.