RRU3008 V300R008
Installation Guide

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HUAWEI TECHNOLOGIES Co., Ltd.

HUAWEI

Contents

Safety Information

Following All Safety Precautions

Before any operation, read the instructions and precautions in this document carefully to minimize the possibility of accidents.

The Danger, Caution, and Note items in the documents do not cover all the safety precautions that must be followed. They only provide the generic safety precautions for operations.

When operating Huawei products and equipment, you must comply with safety precautions and special safety instructions related to corresponding equipment provided by Huawei. The safety precautions in the document are related to only Huawei products. Huawei is not liable for any consequence that results from the violation of universal regulations for safety operations and safety codes on design, production, and equipment use.

Complying with the Local Safety Regulations

When operating the device, comply with the local safety regulations. The safety precautions provided in the documents are supplementary. You must comply with the local safety regulations.

Qualified Personnel Only

The personnel in charge of installation and maintenance must be trained and master the correct operating methods and safety precautions before beginning work.

Symbols

DANGER	*This symbol indicates that casualty or serious accident may occur if you ignore the safety instruction.*
CAUTION	*This symbol indicates that serious or major injury may occur if you ignore the safety instruction.*
NOTE	*This symbol indicates that the operation may be easier if you pay attention to the safety instruction.*

Safety of Personnel

The high voltage power supply provides power for running the system. Direct contact with the high voltage power supply or contact through damp objects may result in fatal danger.

Non-standard and improper high voltage operations may result in fire and electric shock.

In a thunderstorm, do not perform operations on high voltage and AC power supply facilities or on a steel tower and mast.

Ground the device before powering on the device. Otherwise, the personnel and device are in danger.

Power off the device before performing operations on the power supply equipment.

High power radio-frequency signals are harmful to human body. Before installing or maintaining an antenna on a steel tower or mast with a large number of transmitter antennas, the operator should coordinate with all parties to ensure that the transmitter antennas are shut down.

When handling optical fibers, do not stand close to, or look into the optical fiber outlet with unaided eyes.

Protect yourself when drilling holes. Flying dust may hurt your eyes or you may inhale the dust.

Power off the batteries before connecting the cables to the batteries. Otherwise, casualties may occur.

When working at a height, be cautious about falling objects.

Device Safety

Check the electrical connection of the device before operation and ensure that the device is reliably grounded.

The static electricity generated by the human body may damage the electrostatic sensitive components on the circuit board, such as the large-scale integrated circuit (LIC). Wear an ESD wrist strap or ESD gloves when performing the operation.

When working on batteries, take measures to prevent short circuits in the batteries and electrolyte spill/loss. The electrolyte may erode metal and boards, or even cause rust of the equipment or short circuits in the boards.

Installation Tools

 Percussion drill（Ø14）	 ESD gloves	 Level bar
 Heat gun	 Cross screwdriver（M3~M6）	 Straight screwdriver（M3~M6）
 Claw hammer	 Knife	 Cable peeler
 Power cable crimping pliers	 Wire cutter	 Adjustable wrench (with the diameter of at least 32 mm)
 Inner hexagon spanner	 Torque screwdriver	 Combination wrench （21mm~21mm）for pole installation （17mm~17mm）for wall installation
 Multimeter	 Marking pen (with the diameter of no more than 10 mm)	 Long measuring tape

Installing the DC RRU3008

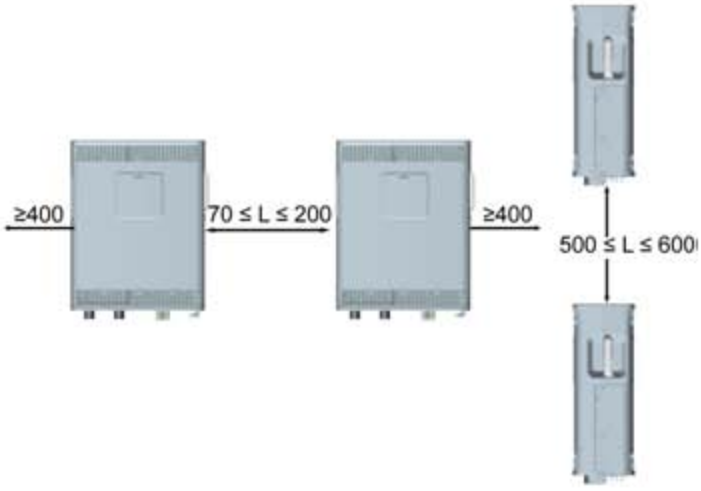
a Space Requirements (Unit: mm)

1. RRU Dimensions

2. Recommended Clearance for a Single RRU

3. Minimum Clearance for a Single RRU

4. Clearance for Two Combined RRUs



Installing the DC RRU3008

b Installation Modes

On a metal pole

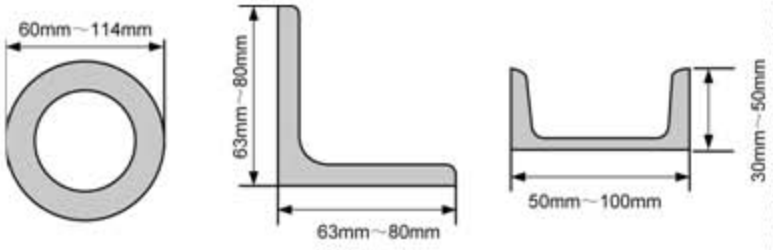
On a wall

On an angle steel

On a U-steel

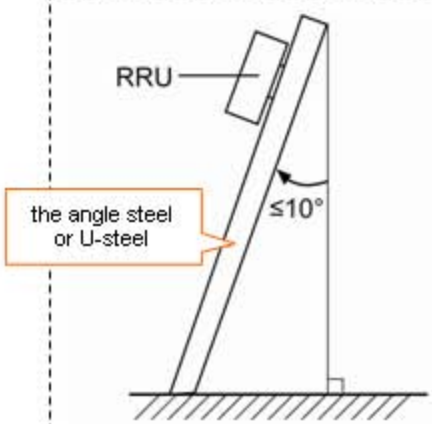
On a H-shaped stand

The following figure describes the specifications for the metal pole, angle steel, and U-steel where the RRU is installed.



Metal pole Angle steel U-steel

On a metal pole
(Back-To-Back Mode)



As shown in the figure, the angle between the vertical and the angle steel or U-steel where the RRU is installed must be less than 10 degrees.

CAUTION

Only one RRU can be installed on a U-steel or angle steel at the back.

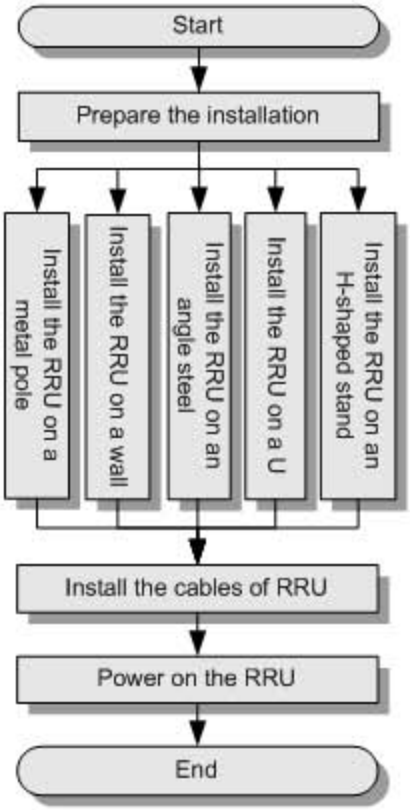
A single RRU can be lifted to the tower. For details, see page 39.

DANGER

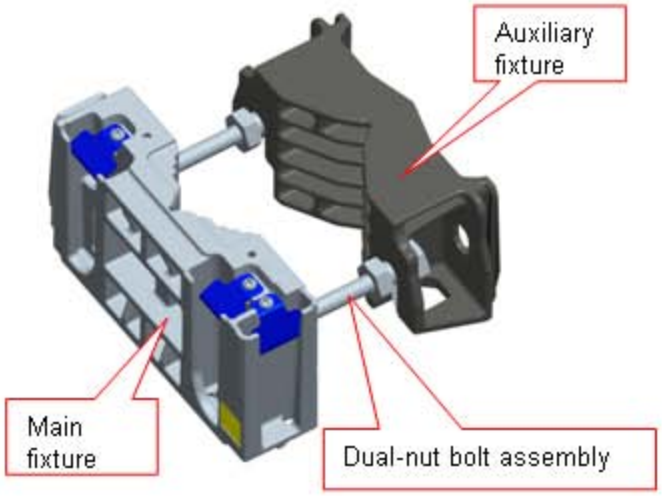
Use the torque wrench to tighten the expansion bolt to 25 N.m. In addition, the wall must have the load-bearing capacity of 115 kg.

Installing the DC RRU3008

c Installation Procedure

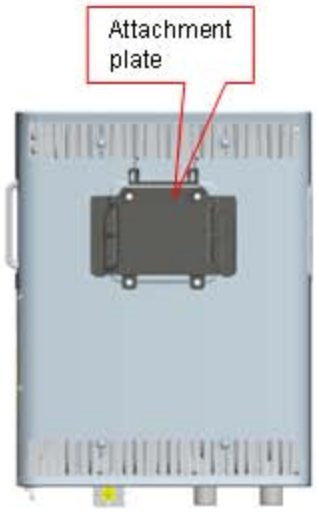


d Preparing for the Installation



Fixture assembly for installing the RRU

Front of the RRU

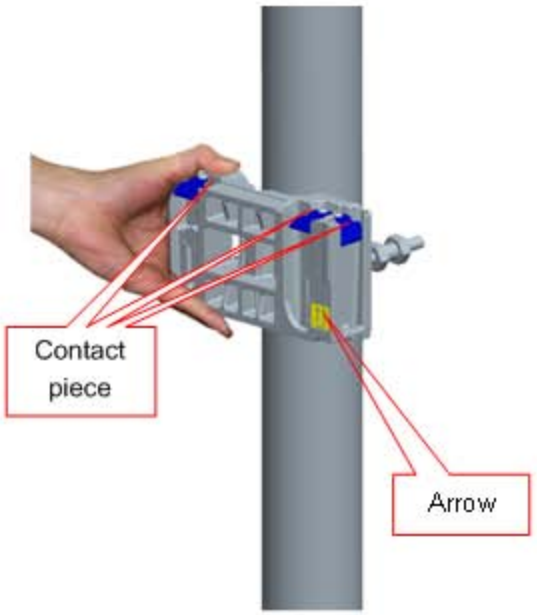


Back of the RRU

Installing the DC RRU3008

e Installing the RRU on a Metal Pole

1. Install the main fixture.



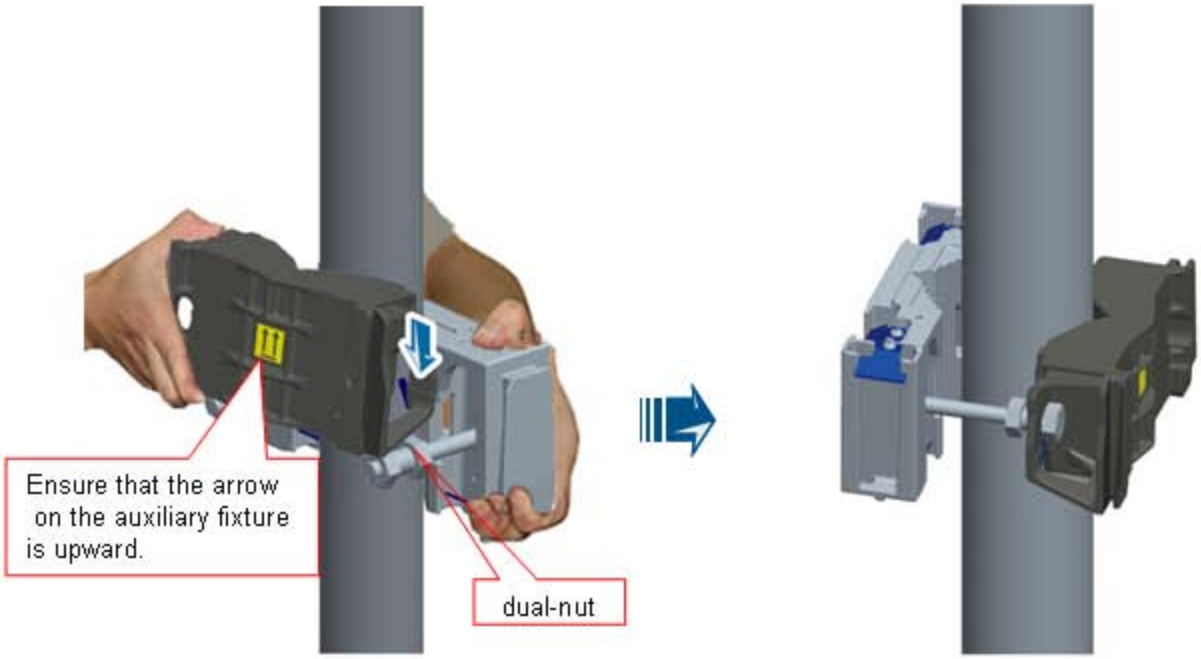
CAUTION

1. When installing the main fixture, ensure that the contact piece on the fixture is fixed.
2. When installing the main fixture, ensure that the arrow on the main fixture is upward.

NOTE

It is recommended that the bottom of the highest main fixture be 1200 mm to 1600 mm above the ground for easy maintenance.

2. Install the auxiliary fixture between the nuts of the dual-nut bolt assembly on the main fixture.



TIP: You may fit one end of the auxiliary fixture on one dual-nut bolt assembly and then the other end on the other dual-nut bolt assembly during the installation.

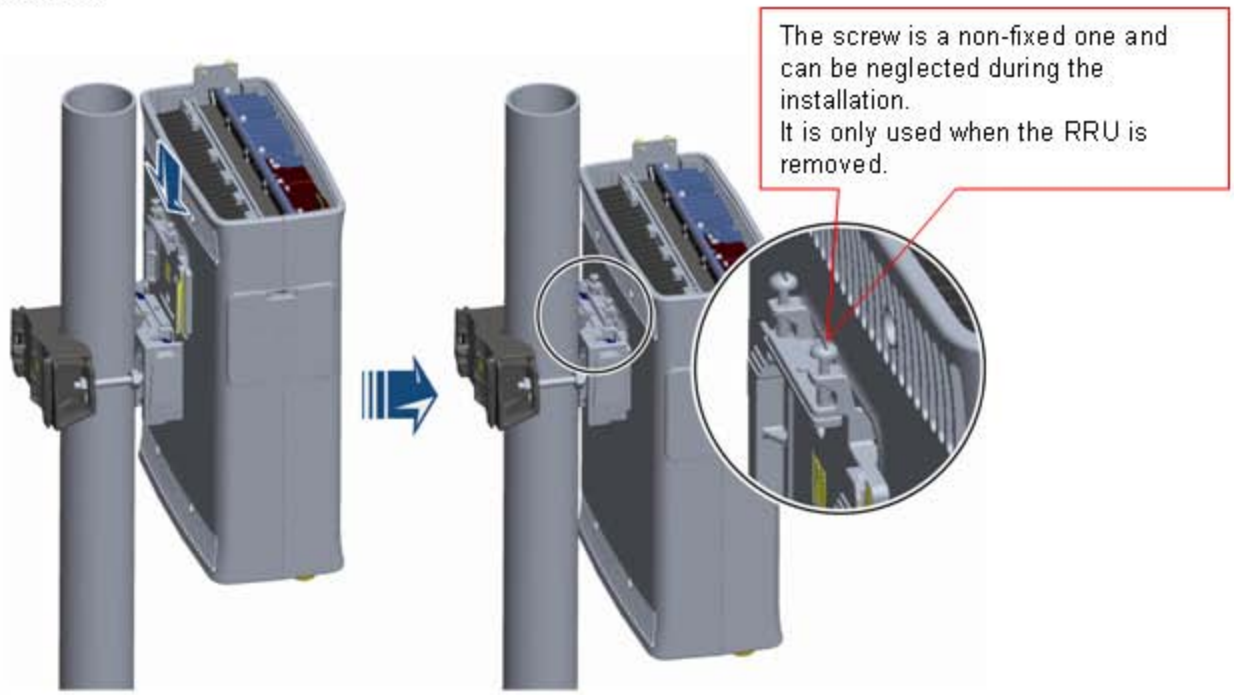
e Installing the RRU on a Metal Pole

3. Use an adjustable wrench to tighten the nut until the fastening torque is 35 N•m to 40 N•m. In this way, the main and auxiliary fixtures are secured on the pole.

⚠ CAUTION

Fasten the two dual-nut bolt assemblies alternatively. After the brackets are secure, use a tape to measure the spacing between the main bracket and the auxiliary bracket at the two sides and ensure that the spacing is the same.

4. Install the RRU on the main bracket. When you hear a click, you can infer that the RRU is in position.



The RF port at the bottom of the RRU does not have load bearing capacity. Do not place the RRU on the ground on its bottom during the installation.

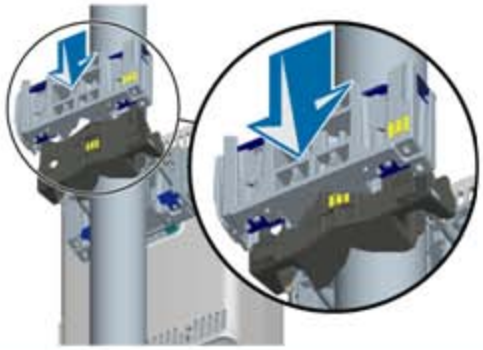
Installing the DC RRU3008

f Installing Two RRUs in Back-To-Back Mode

1. Install an RRU first. For details, see page 7.

Installing a Single RRU in Ordinary Mode.

2. Install the main fixture of another RRU. Ensure that the main and auxiliary fixtures are perfectly fitted.

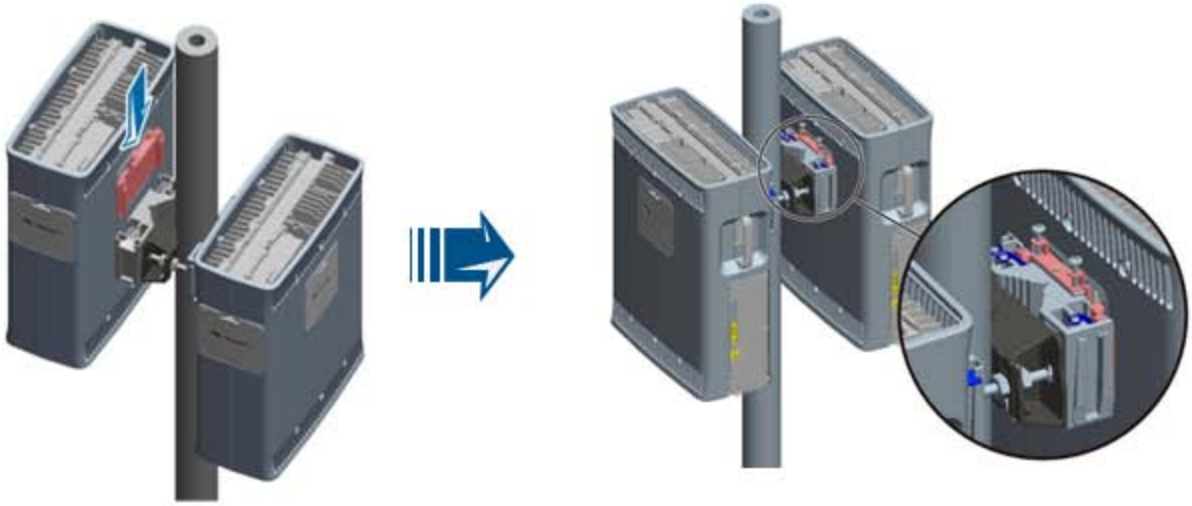


NOTE

When the surfaces of the main and auxiliary brackets are in the same plain, you can infer that the main bracket is properly installed.

3. Reinstall the cover plate and attachment plate on the second RRU to interchange their positions.

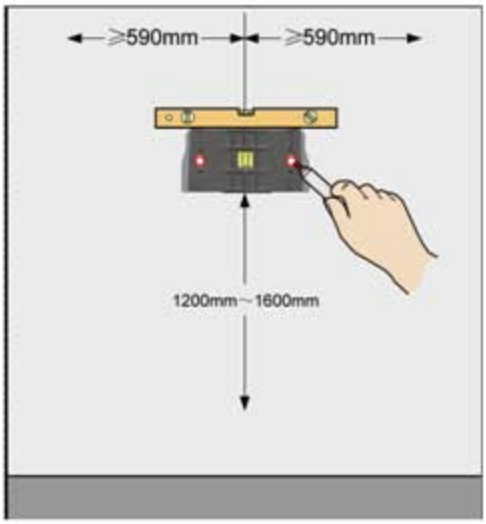
4. Install the second RRU on the main fixture.



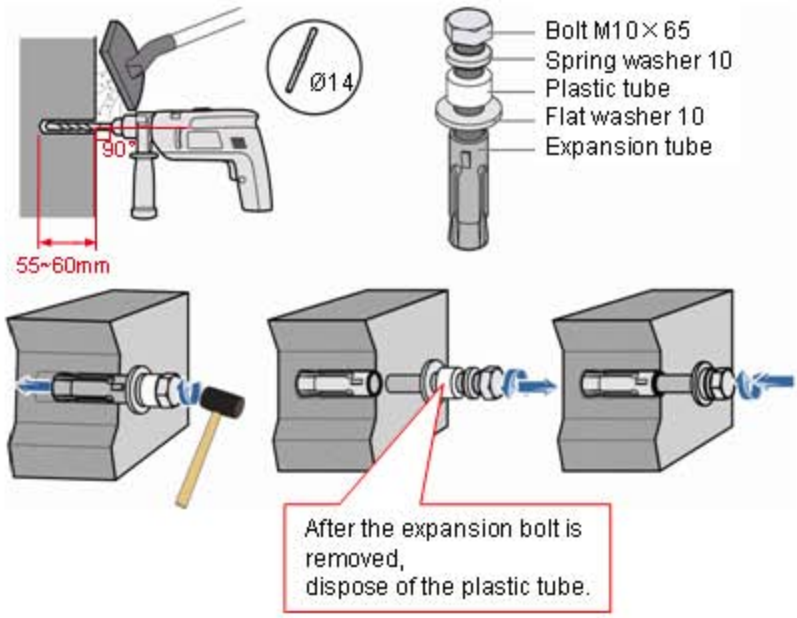
Installing the DC RRU3008

g Installing the RRU on a Wall

1. Place the auxiliary fixture on the wall at the installation position and then mark the anchor points by using a marking pen.



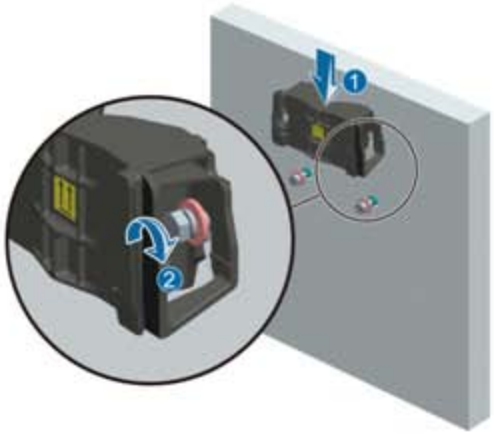
2. Drill holes at the anchor points and then install the expansion bolt assemblies.



NOTE
It is recommended that the bottom of the auxiliary fixture be 1200 mm to 1600 mm above the ground.

CAUTION
Do not hammer the bolt entirely into the expansion tube, and leave 20 mm to 30 mm of the bolt outside the wall.

3. Fit the auxiliary fixture on the expansion bolts downward, and then tighten the bolts by using a combination wrench (17 mm - 17 mm).

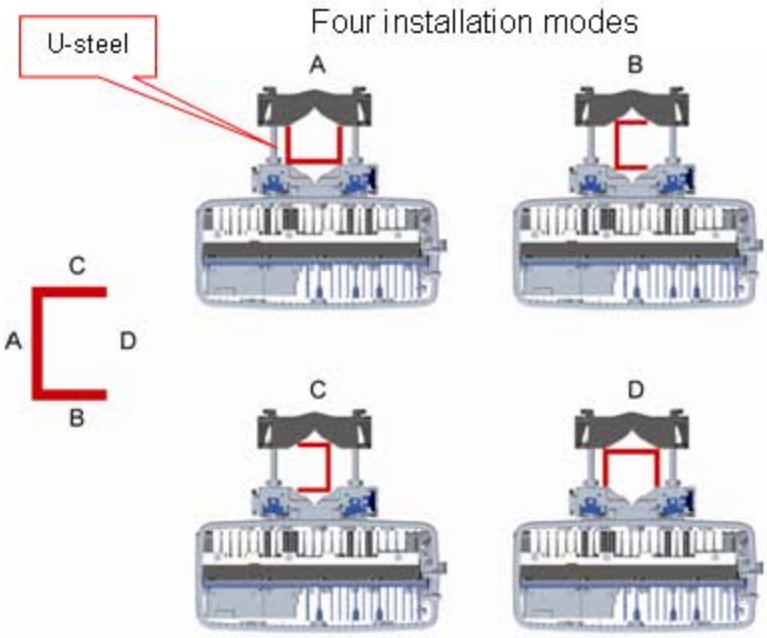


4. Install the main bracket, and then use a level bar to adjust the levelness of the bracket.

5. Install the RRU.

Installing the DC RRU3008

h Installing the RRU on a U-Steel



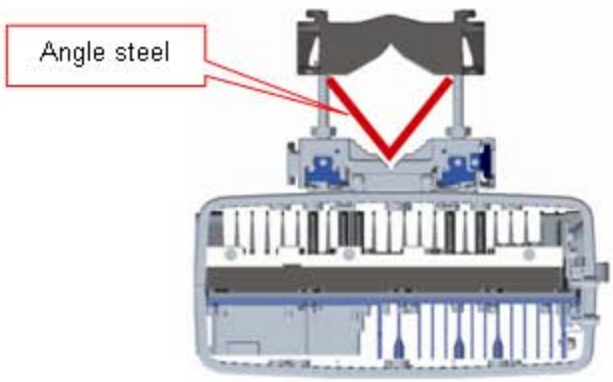
Top view

CAUTION

The procedure for installing the RRU on a U-steel is the same as that on a metal pole.

Only one RRU can be installed on a U-steel at the back.

i Installing the RRU on an Angle Steel



Top view

CAUTION

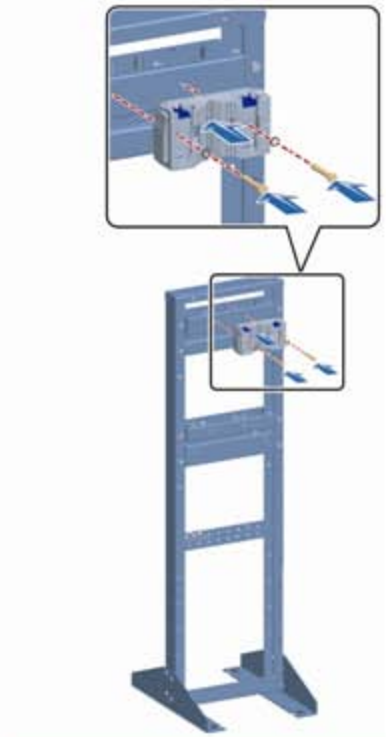
The procedure for installing the RRU on an angle steel is the same as that on a metal pole.

Only one RRU can be installed on an angle steel at the back.

Installing the DC RRU3008

j Installing the RRU on an H-shaped stand

1. Install the main bracket.



2. Mount the RRU on the main bracket

NOTE

If the expansion bolt assembly is used for fixing the main bracket, remove the expansion tube and plastic tube first.

3. Install a single RRU in standard installation mode

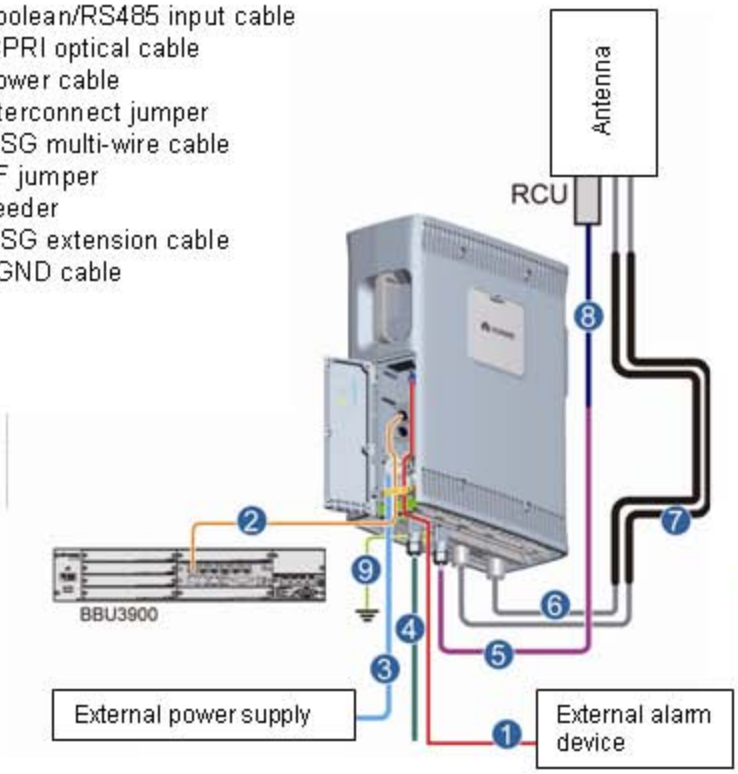
NOTE

For details on the installation of the H-shaped stand, see the BBU3900 Installation Guide.

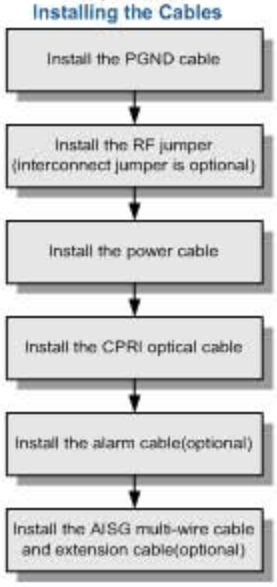
Installing the DC RRU3008

k Cable Connections of a Single RRU

①Boolean/RS485 input cable
② CPRI optical cable
③Power cable
④Interconnect jumper
⑤AISG multi-wire cable
⑥RF jumper
⑦Feeder
⑧AISG extension cable
⑨PGND cable



Sequence of Installing the Cables

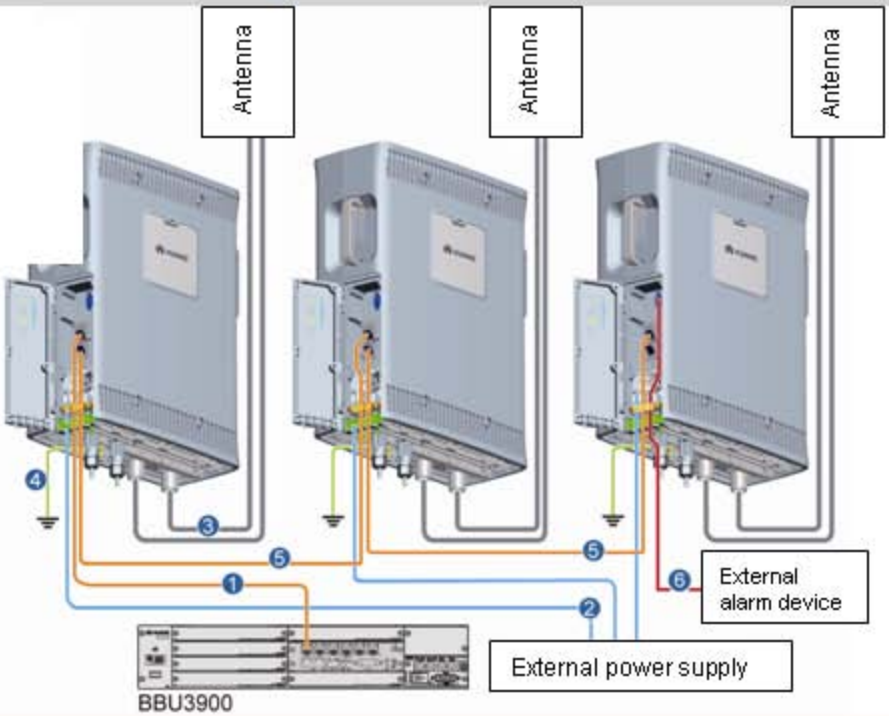


⚠ CAUTION

When a dual-polarized antenna is shared by two RRUs in the same sector, the two RRUs are connected through an inter-RRU jumper. The connections of three RRUs in the same sector are not supported.

l Cable Connections of Multiple RRUs

①CPRI optical cable
② Power cable
③RF jumper
④PGND cable
⑤SFP high-speed cable for cascading
⑥Boolean/RS485 input cable

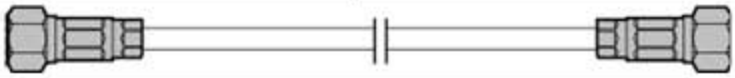
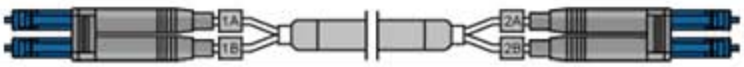
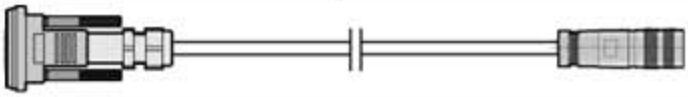


⚠ CAUTION

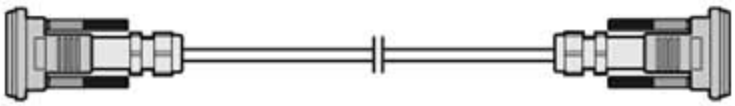
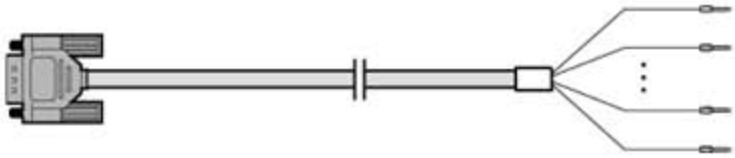
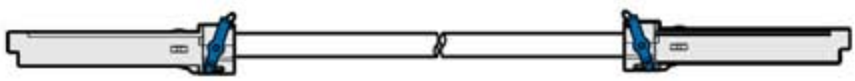
1. The RRU3008 does not support the cascading of power cables.
2. When two or more RRUs need to be cascaded in the same cell (or in the scenario for capacity expansion), the alarm cables need to be connected to the RRU in the lowest level for alarm reporting.

Installing the DC RRU3008

Cable List

Cable	Connector Type	Connected to---
PGND cable	OT terminal	Grounding bolt on the RRU
	OT terminal	Nearest grounding bar
		
RF jumper	DIN male connector	Ports labeled ANT_TX/RXA and ANT_RXB on the RRU
	DIN male connector	Feeder or antenna
		
Power cable	Two OT terminals	The OT terminal on the blue wire is connected to the NEG(-) port on the cabling cavity of the RRU. The OT terminal on the black wire is connected to the RTN(+) port on the cabling cavity of the RRU
	Bare wire	External power supply
		
CPRI optical cable	DLC connector	Connect the fiber tails labeled 1A and 1B to the CPRI_W port on the RRU
	DLC connector	Connect the fiber tails labeled 2A and 2B to one of the CPRI0 to CPRI5 ports on the GTMU
		
AISG multi-wire cable	Waterproof DB9 connector	Port labeled RET/PWR_SRXU on the RRU
	Standard AISG female connector	Standard AISG male connector of the AISG extension cable or RCU
		

Installing the DC RRU3008

Cable	Connector Type	Connected to---
AISG extension cable	Standard AISG male connector	Standard AISG female connector of the AISG multi-wire cable
	Standard AISG female connector	Standard AISG male connector of the RCU
		
Interconnect jumper	2W2 connector	Port labeled RX_IN/OUT on the upper-level RRU
	2W2 connector	Port labeled RX_IN/OUT on the lower-level RRU
		
Alarm cable	DB15 male connector	Port labeled EXT_ALM in the RRU cabling cavity
	Eight cord end terminals	External alarm devices
		
SFP high-speed cable for cascading	SFP200 male connector	the CPRI_E port on the upper-level RRU
	SFP200 male connector	the CPRI_W port on the lower-level RRU
		

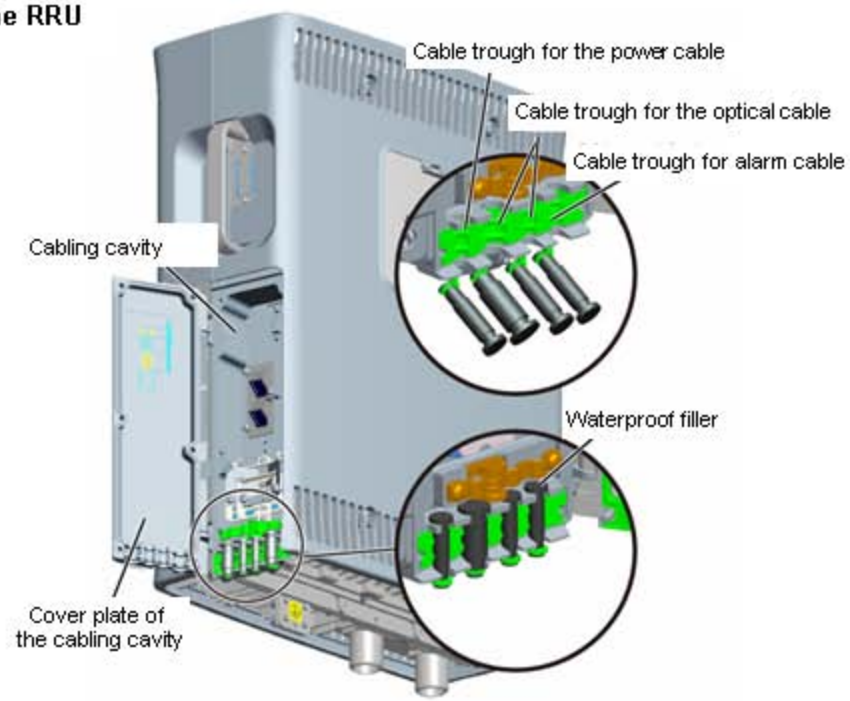
NOTE

Coil the extra length of a cable, and then connect the cable to the corresponding port according to actual installation scenario.

Installing the DC RRU3008

n Installing the RRU Cables

Cabling Cavity of the RRU



Opening and Closing the Cover Plate of the RRU Cabling Cavity

① Open the cover plate of the RRU cabling cavity.

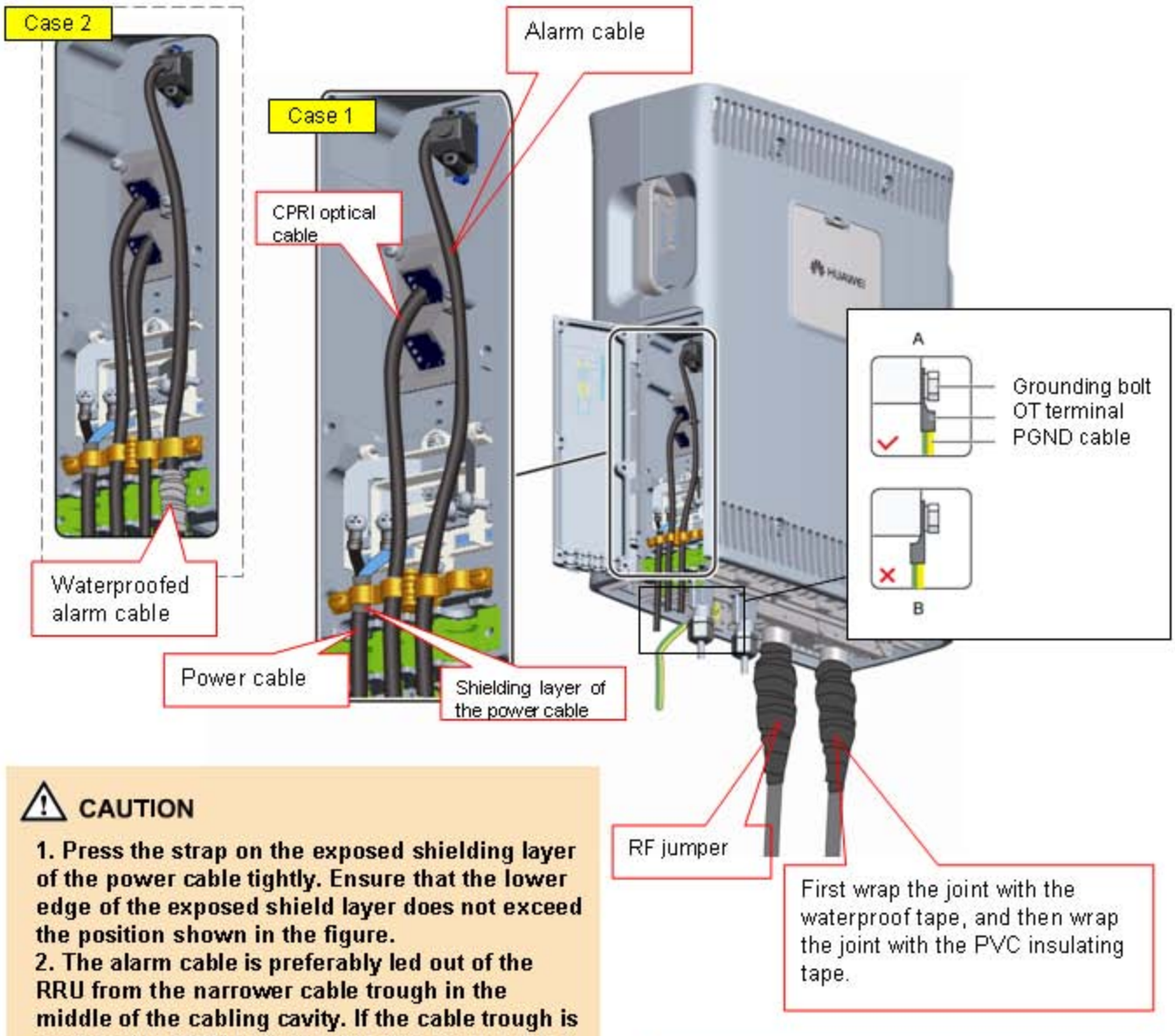
② Close the cover plated of the RRU cabling cavity.

⚠ CAUTION

1. The screw on the cover plate is tightened until the fastening torque is 14 kgf•cm.
2. The screws on the cover plate are tightened in the order shown in the preceding figure.

Installing the RRU Cables

Cable Connections of RRU



CAUTION

1. Press the strap on the exposed shielding layer of the power cable tightly. Ensure that the lower edge of the exposed shield layer does not exceed the position shown in the figure.
2. The alarm cable is preferably led out of the RRU from the narrower cable trough in the middle of the cabling cavity. If the cable trough is used by the CPRI optical cable, the alarm cable is led from the wider cable trough near the middle one. In this case, the alarm cable must be wrapped with 10 to 17 layers of waterproof tape so that the diameter of the cable reaches 10 mm to 12 mm.
3. To avoid sharp bending, the optical cable must be pressed by the strap next to the power cable during the optical cable installation.

NOTE

The tape is wrapped spirally upwards, downwards, and then upwards again in three layers. For every two adjacent tape layers, the tape on the upper layer overlaps about half the width of the tape on the lower layer.

For details on how to add the OT terminals to the power cable, see page 41.

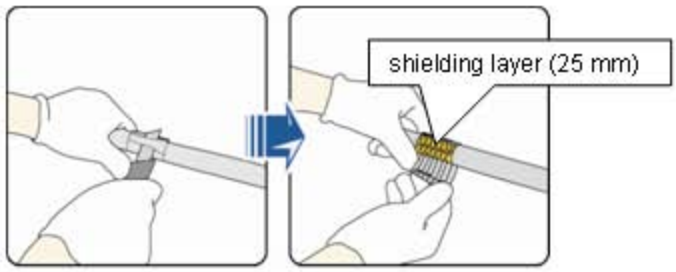
Installing the DC RRU3008

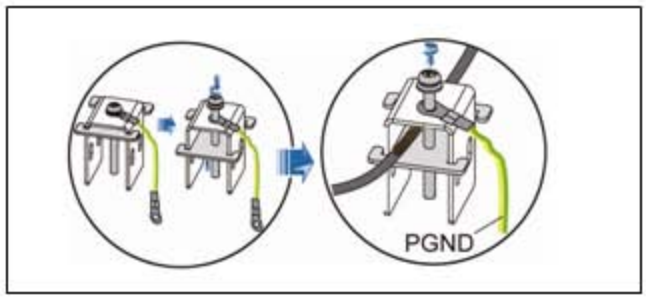
RRU Cable Installation Scenarios

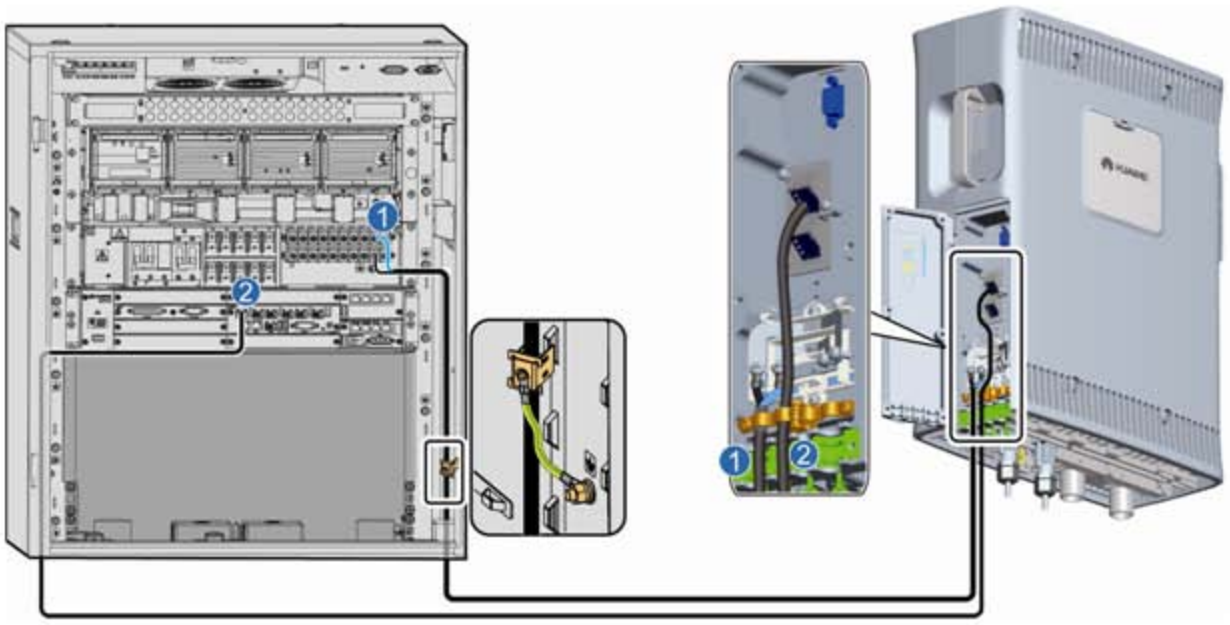
1.1. RRU+APM30/APM30H

NOTE

RRU and BBU are on the same site, and the BBU monitors the APM30 or APM30H.







(1) RRU power cable	(2)CPRI optical cable

NOTE

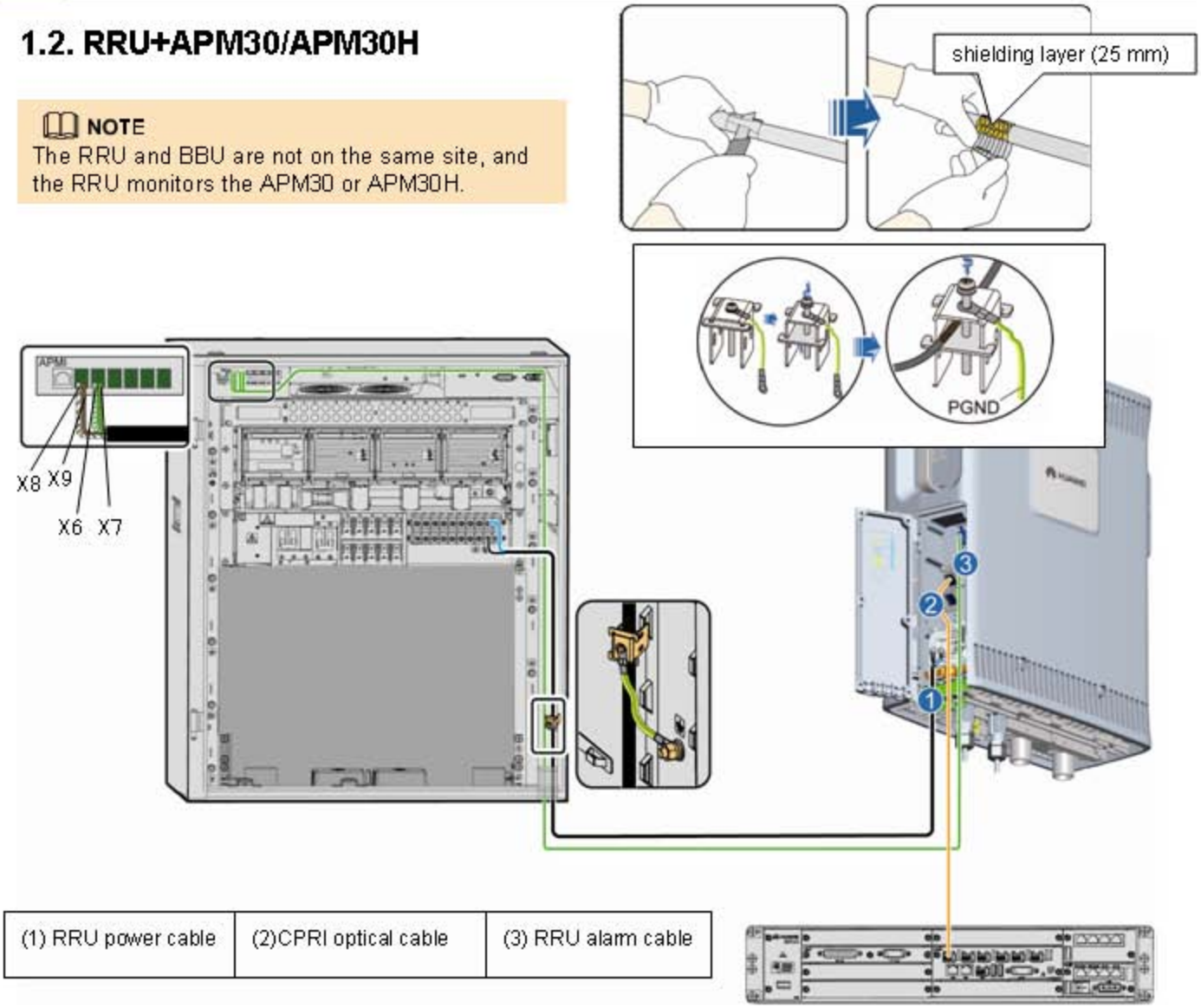
1. The RRU power cable is connected to one of the LOAD4 to LOAD9 terminals of the PDU.
2. Strip the jacket of the RRU power cable for a small part, press the exposed shielding layer on the strap, and then connect the PGND cable on the strap to the nearest grounding bolt on the side in the APM30/APM30H.

Installing the DC RRU3008

RRU Cable Installation Scenarios

1.2. RRU+APM30/APM30H

NOTE
The RRU and BBU are not on the same site, and the RRU monitors the APM30 or APM30H.



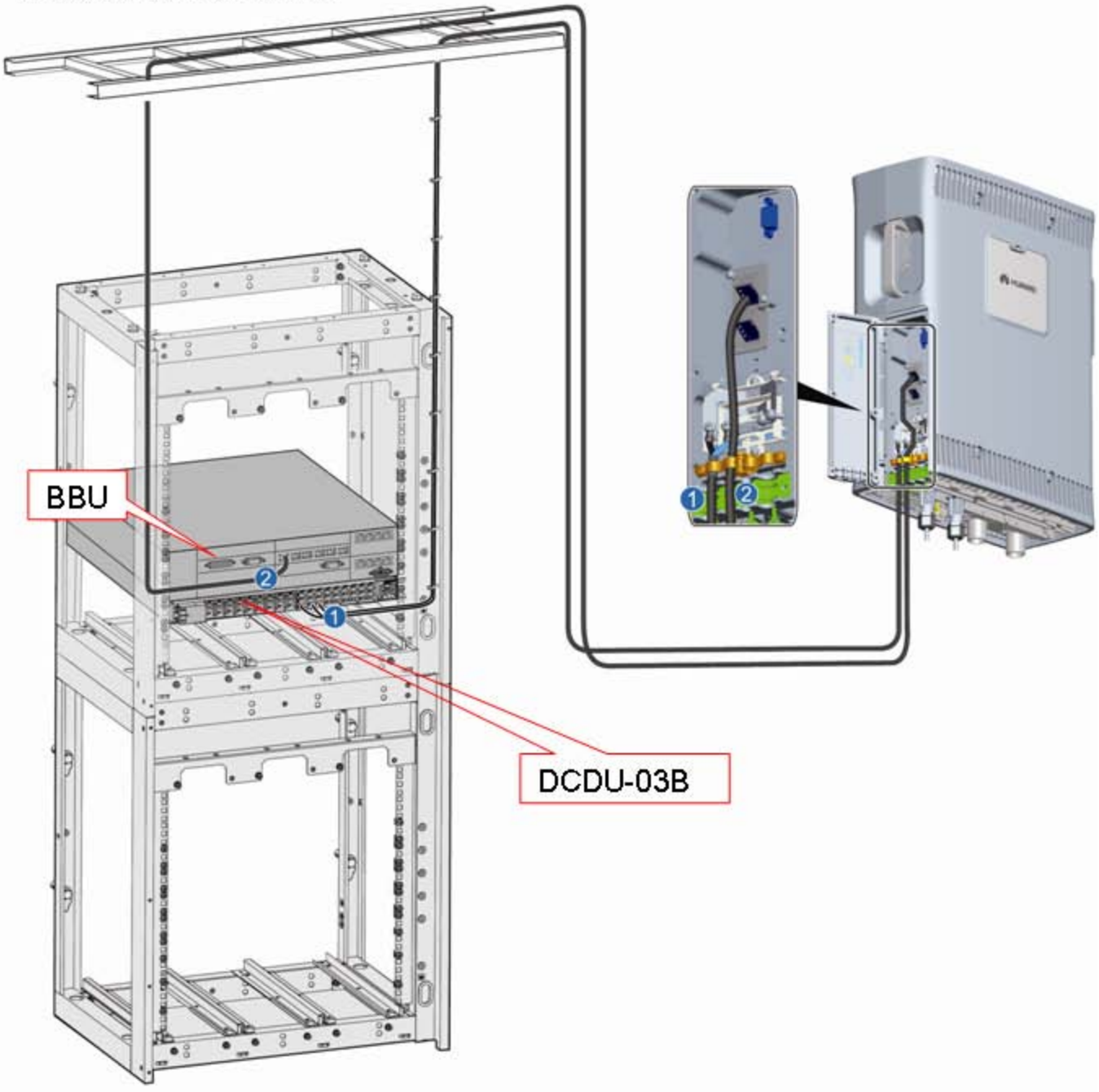
(1) RRU power cable	(2)CPRI optical cable	(3) RRU alarm cable

Wire Color of the Alarm Cable	Wire Type	Pins	Port on the APMI
Brown	Twisted pair	X9	TX+
White/brown		X8	TX-
Green	Twisted pair	X7	RX+
White/green		X6	RX-

NOTE
1. The RRU power cable is connected to one of the LOAD4 to LOAD9 terminals of the PDU.
2. Strip the jacket of the RRU power cable for a small part, press the exposed shielding layer on the strap, and then connect the PGND cable on the strap to the nearest grounding bolt on the side in the APM30/APM30H.

RRU Cable Installation Scenarios

2. RRU+19-Inch Stand



(1) RRU power cable	(2) CPRI optical cable

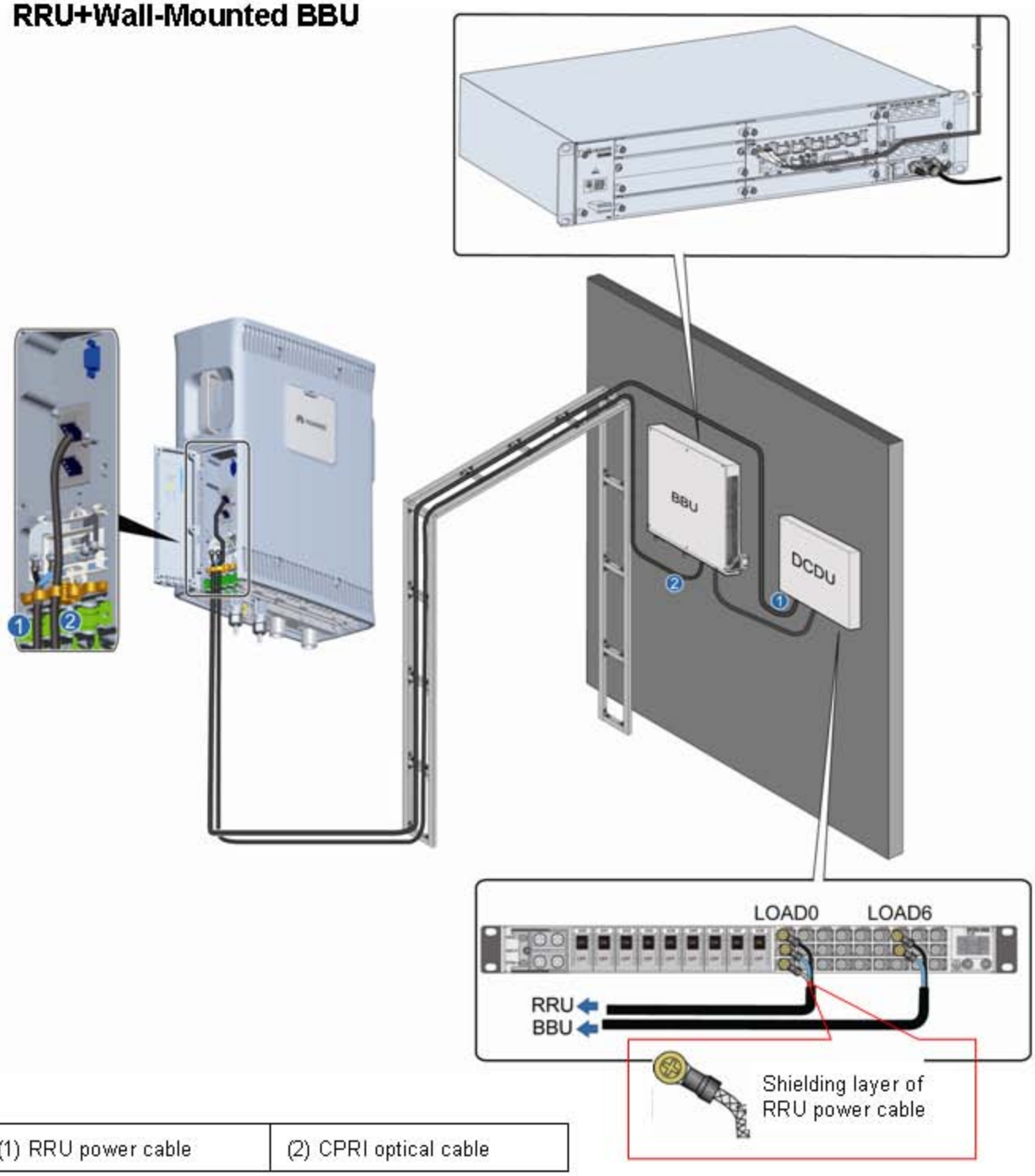
NOTE

1. The RRU power cable is connected to one of the LOAD0 to LOAD5 terminals of the DCDU-03B.

2. When connecting the RRU power cable to the DCDU-03B, you must add an OT terminal to the shielding layer. Then, fix the OT terminal to the corresponding PGND terminal of the DCDU-03B. For details on how to add an OT terminal, see page 42.

RRU Cable Installation Scenarios

3. RRU+Wall-Mounted BBU



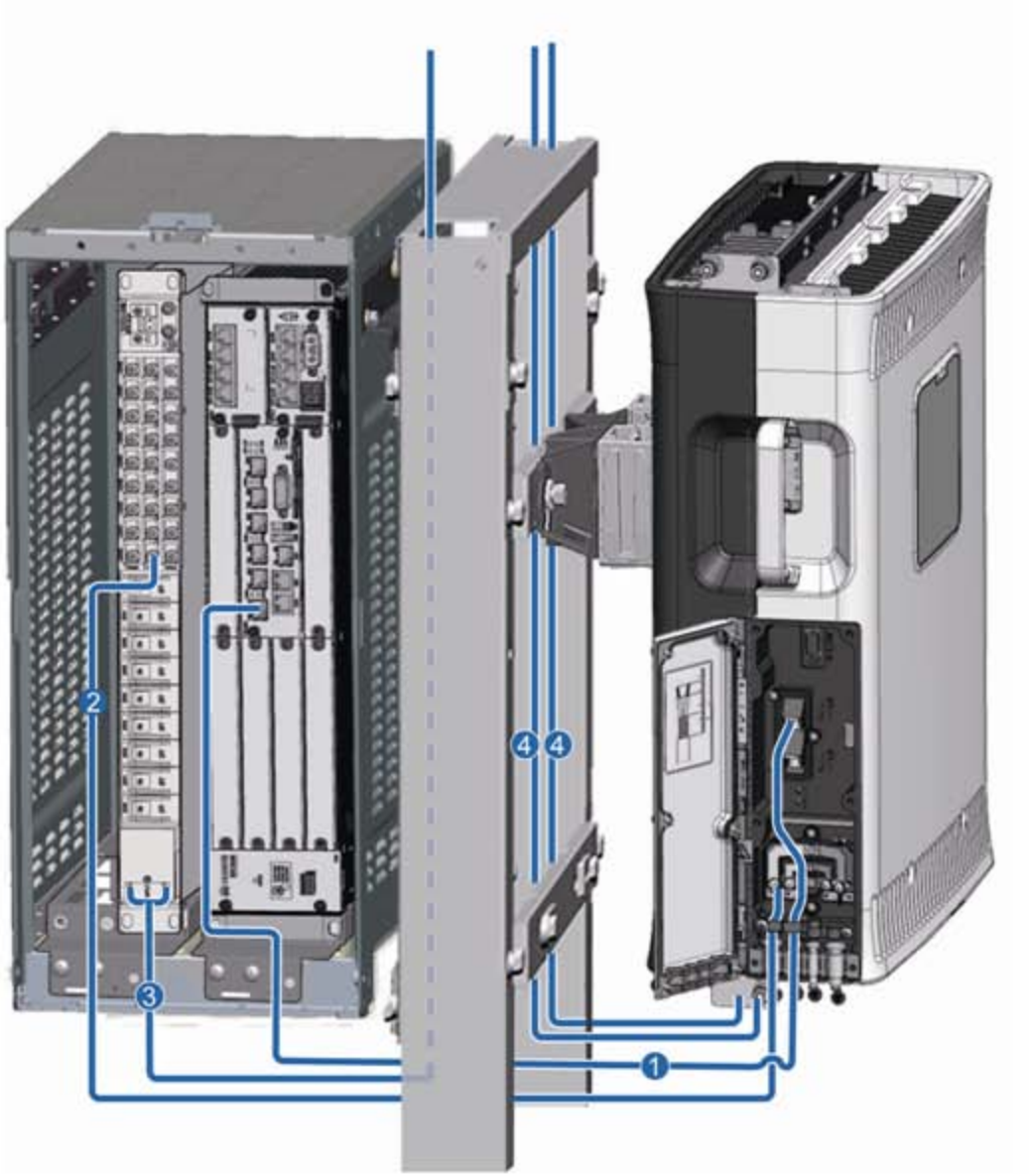
(1) RRU power cable	(2) CPRI optical cable

NOTE

1. The RRU power cable is connected to one of the LOAD0 to LOAD5 terminals of the DCDU-03B.
2. When connecting the RRU power cable to the DCDU-03B, you must add an OT terminal to the shielding layer. Then, fix the OT terminal to the corresponding PGND terminal of the DCDU-03B. For details on how to add an OT terminal, see page 42.

RRU Cable Installation Scenarios

4. RRU+H-shaped stand +RRU3004 Rack (-48 V power supply)



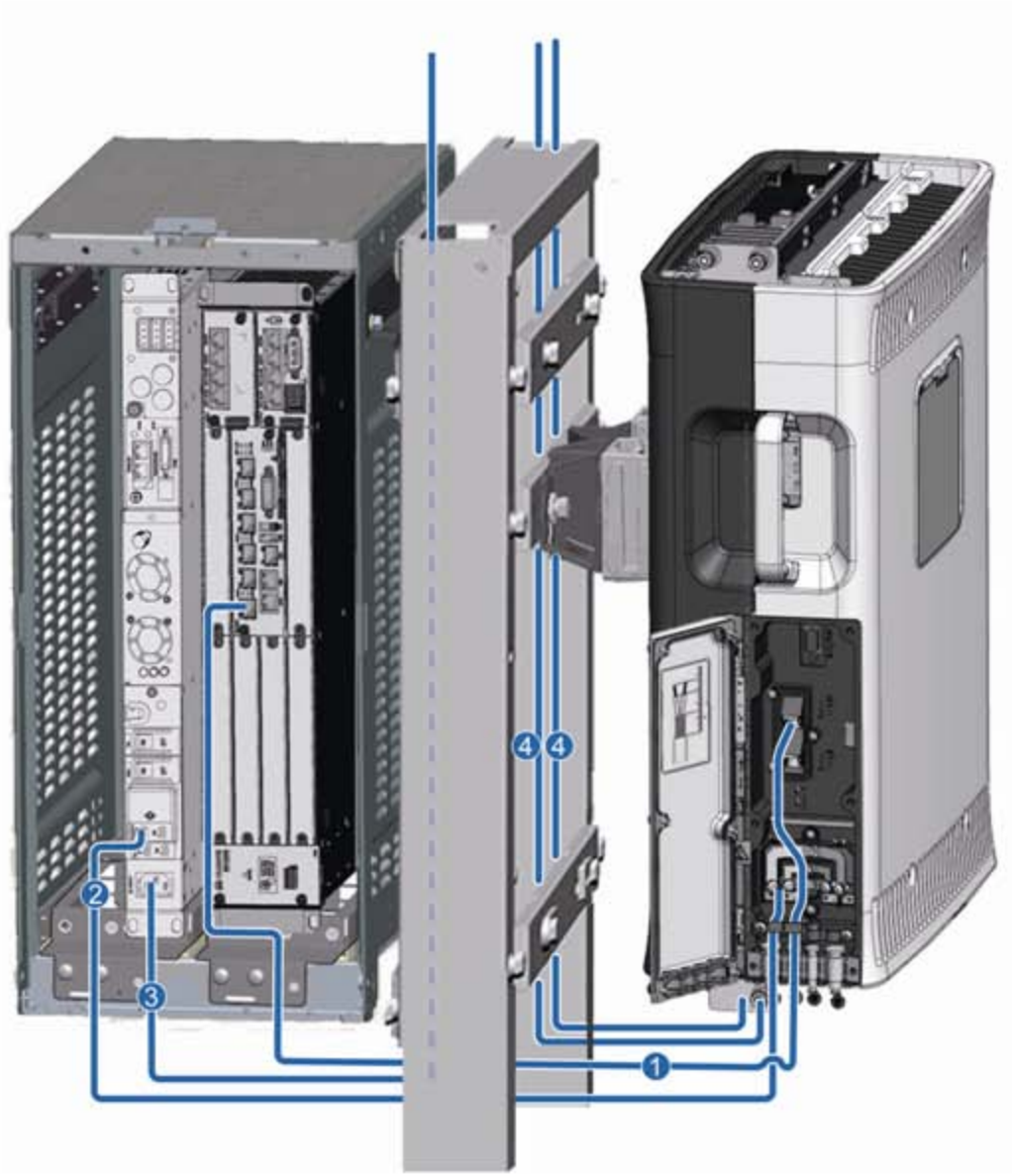
(1) CPRI optical cable	(2) RRU power cable	(3) DCDU power cable	(4) RF jumper

NOTE

The RRU power cable is connected to one of the LOAD0 to LOAD5 terminals of the DCDU-03B.

RRU Cable Installation Scenarios

4. RRU+H-shaped stand +RRU3004 Rack (220 V power supply)



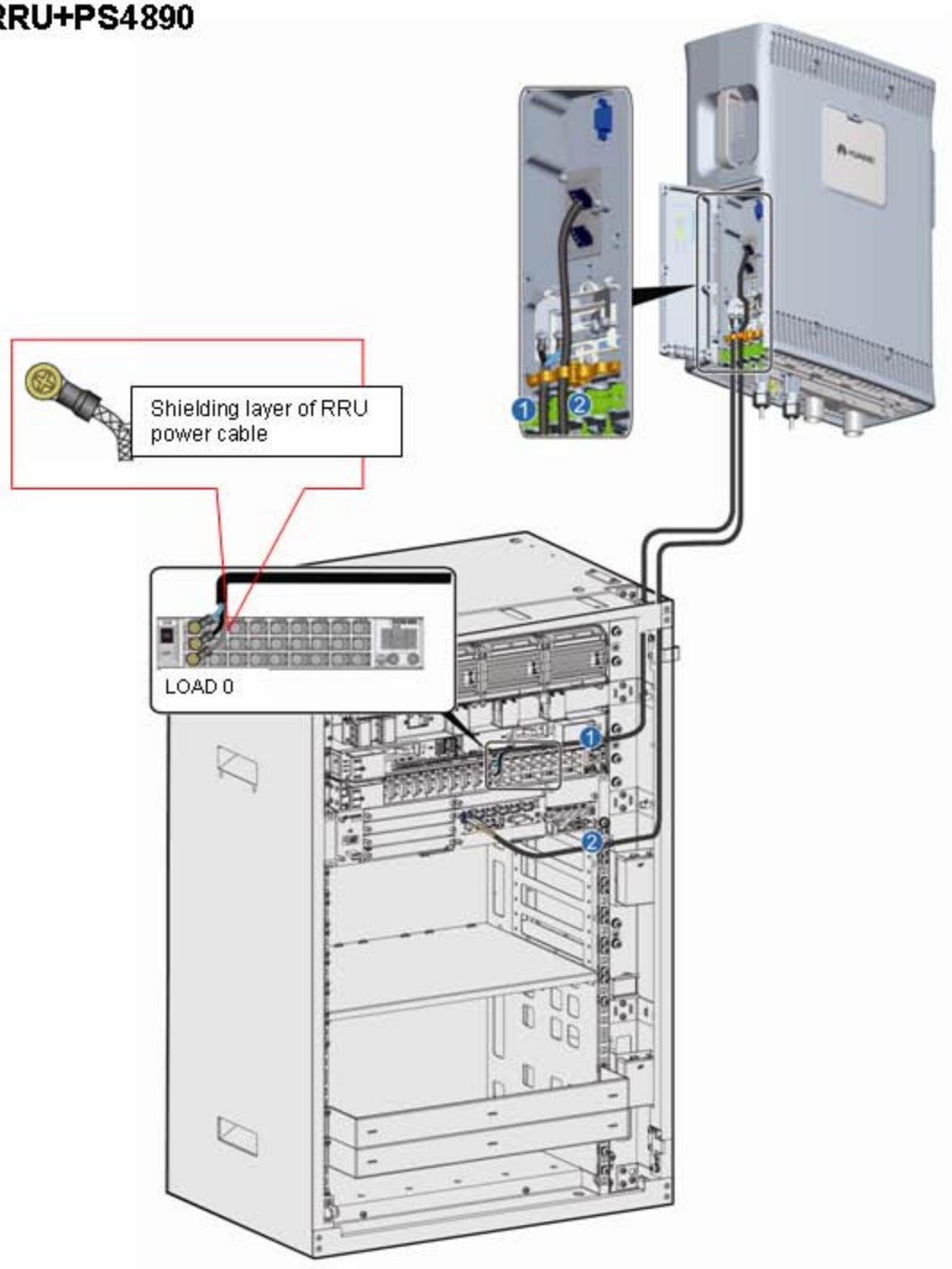
(1) CPRI optical cable	(2) RRU power cable	(3) 4815 power cable	(4) RF jumper

NOTE

The RRU power cable is connected to the OUTPUT RRU terminal of 4815.

RRU Cable Installation Scenarios

5. RRU+PS4890



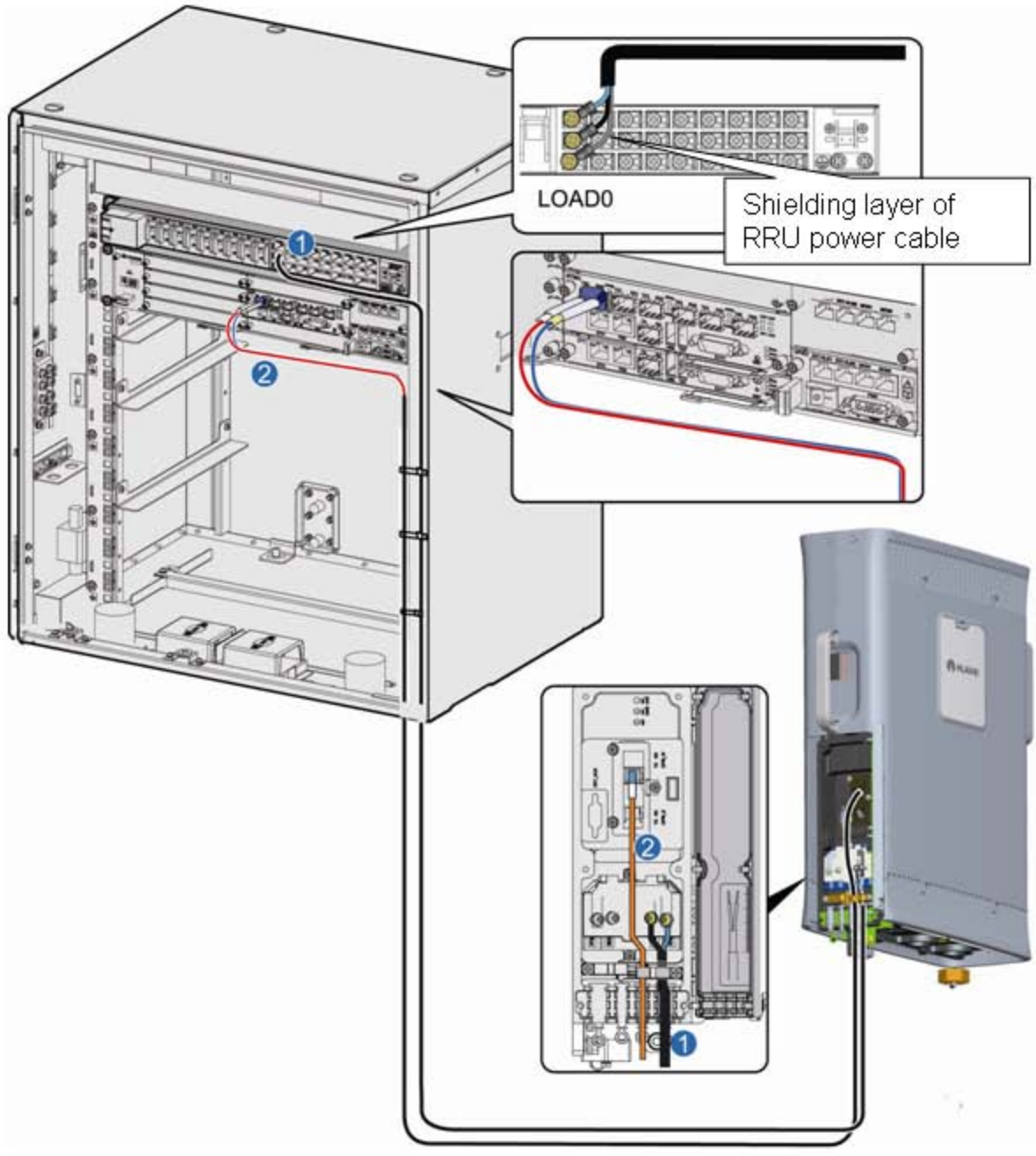
(1) RRU power cable	(2) CPRI optical cable

NOTE

1. The RRU power cable is connected to one of the LOAD0 to LOAD5 terminals of the DCDU-03B.
2. When connecting the RRU power cable to the DCDU-03B, you must add an OT terminal to the shielding layer. Then, fix the OT terminal to the corresponding PGND terminal of the DCDU-03B. For details on how to add an OT terminal, see page 42.

RRU Cable Installation Scenarios

6. RRU+TMC

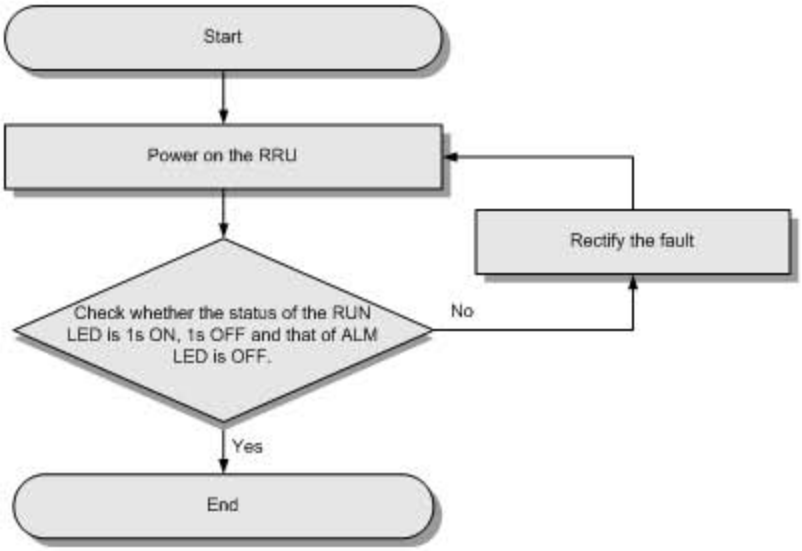


(1) RRU power cable	(2) CPRI optical cable

NOTE

1. The RRU power cable is connected to one of the LOAD0 to LOAD5 terminals of the DCDU-03B.
2. When connecting the RRU power cable to the DCDU-03B, you must add an OT terminal to the shielding layer. Then, fix the OT terminal to the corresponding PGND terminal of the DCDU-03B. For details on how to add an OT terminal, see page 42.

Powering On the RRU



CAUTION

When the RRU is unpacked, it must be powered on within 24 hours. Each time the RRU is maintained after being put into use, the power-off duration cannot exceed 24 hours.

Reference

a Binding the RRU and Installation Components

1. Bind the RRU by leading the lifting rope along the lower part of the adapting piece and through the handle, bind the main and auxiliary brackets with the lifting rope, and then bind the steering rope with the handle of the RRU, as shown in the following figures.

DANGER

Do not bind the lifting rope only on the handle when lifting the RRU.

CAUTION

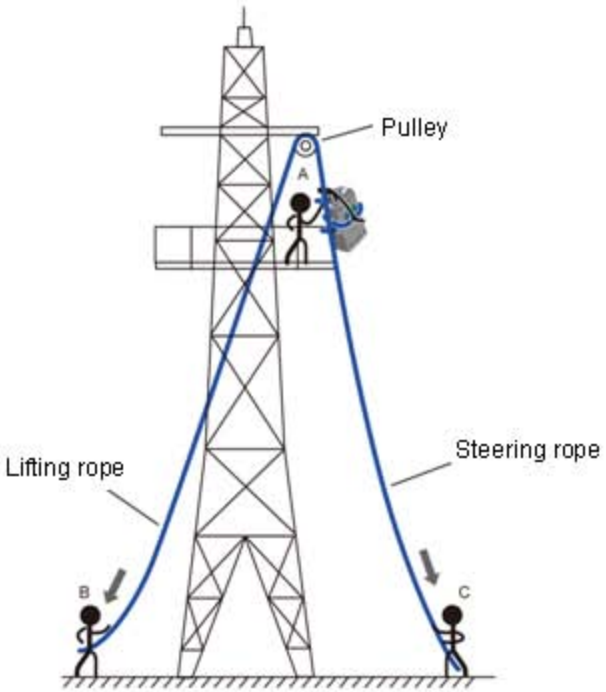
1. When lifting the RRU and installation components to the tower, prevent the RRU from colliding with the tower.

2. The cross-sectional area of the lifting rope and steering rope is around 20 mm, not more than 25 mm. In addition, the ropes can bear the weight four times more than that of the RRU.

Reference

a Binding the RRU and Installation Components

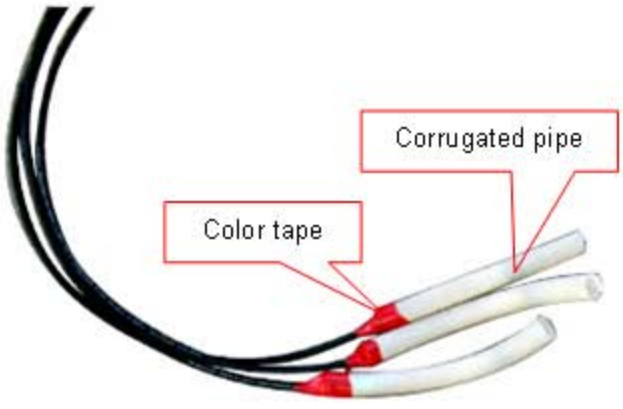
2. Lifting the RRU and Installation Components to the Tower



NOTE

1. Installers A climb onto the tower. Then, installer A fixes the pulley to the support of the tower platform and leads the lifting rope through the pulley.
2. Installer C uses a lifting rope to bind the RRU and installation components as shown in the preceding figure and then tie a knot in the steering rope at the handle of the RRU.
3. Installer B pulls the lifting rope, and at the same time, installer C pulls the steering rope away from the tower to prevent the RRU and installation components from colliding with the tower.
4. Installers A hold the RRU and installation components and untie the ropes.

3. Lifting the CPRI Optical Cable up to the Tower

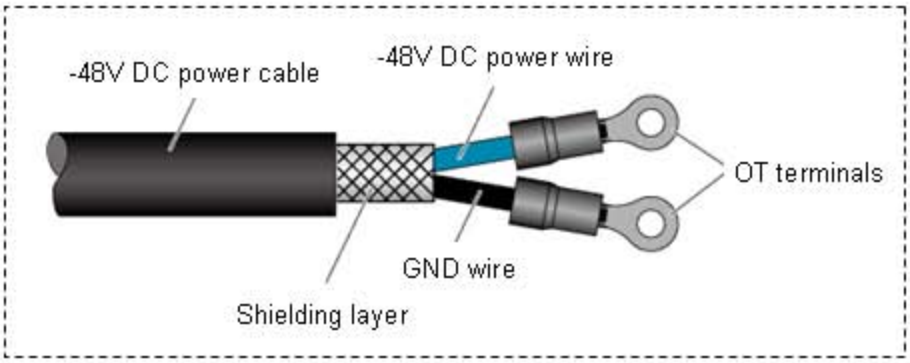


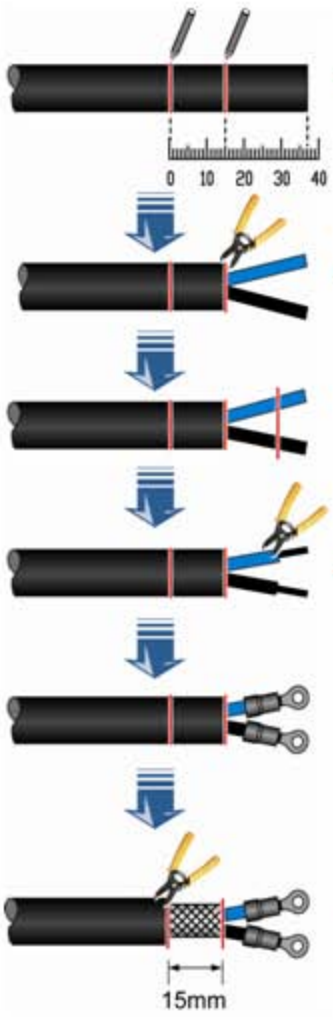
NOTE

1. Cut off a 200 mm long corrugated pipe with the diameter of 25 mm.
2. Lead the fiber tails labeled 1A and 1B of the optical cable into the corrugated pipe by 160 mm.
3. Wrap up the corrugated pipe and optical cable with the color tape.
4. For the tower made of steel pipes, tie the black jacket to the corrugated pipe at the position 150 mm away from the color tape, and then lift the optical cable up to the tower.
5. For the tower made of angle steel girders, carry the optical cable onto the tower when climbing up to the tower.
6. After the optical cable is lifted up to the tower, remove the color tape and corrugated pipe before installing the optical cable.

b Making OT Terminals by Using a Cable Peeler (Recommended)

Add two OT terminals to the end of the power cable connecting to the RRU.





Determine lengths of power cables for different operations according to the scales on the inner side of the cover plate of the cabling cavity.

Based on the determined length, remove the jacket and shielding layer off the power cable.

Remove the jacket from each wire.

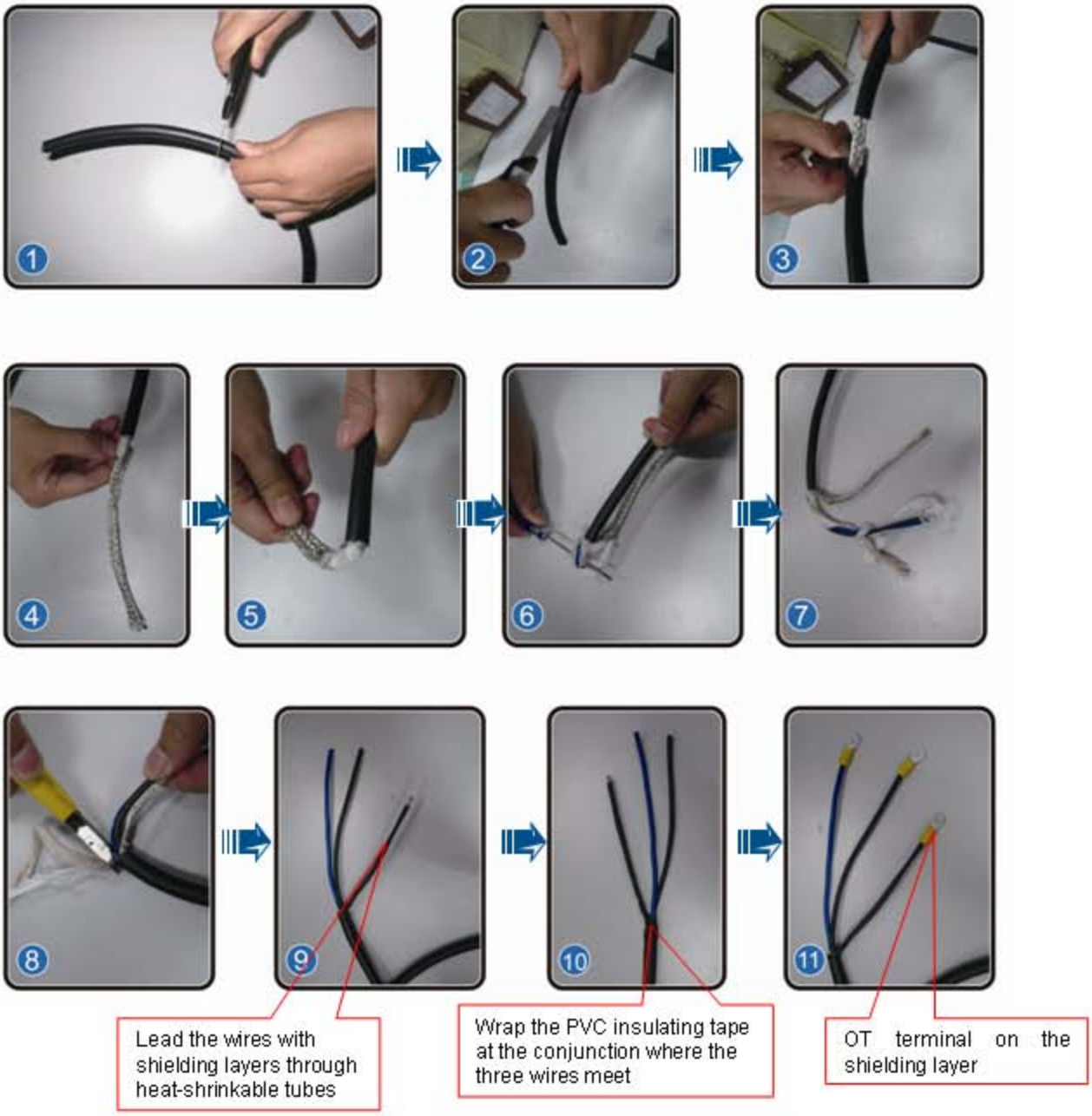
Add an OT terminal to each wire.

Strip a 15 mm jacket off the power cable to reveal the shielding layer of the power cable

NOTE

The assembling of OT terminals to the power cable must be complete before the RRU is installed on a metal pole.

C Making OT Terminals at the Input End of the Power Cable by Using a Knife



Warning: Do not damage the shielding layer of the power cable when cutting around the jacket.

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