BBU3900
Installation Guide

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.
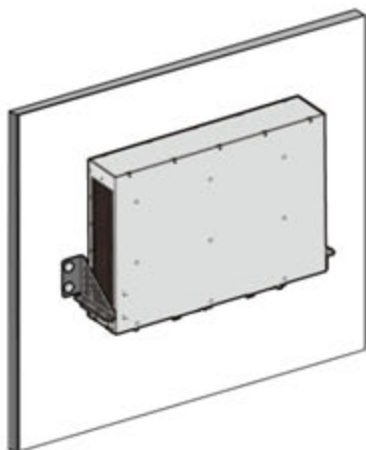
Installation Tools

|		
Percussion drill（Ø14）	ESD gloves	Vacuum cleaner
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 (5 mm)	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

Installation Scenarios
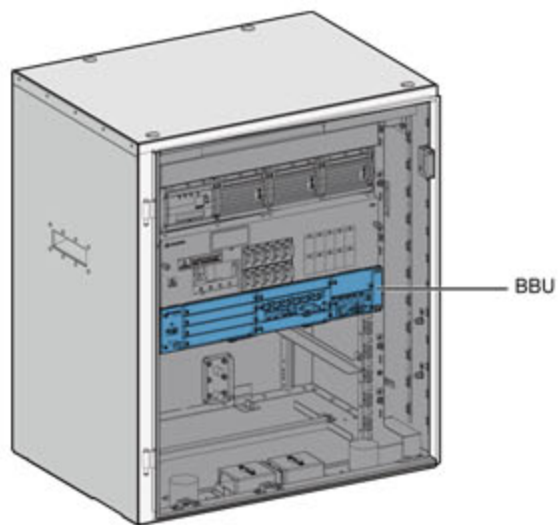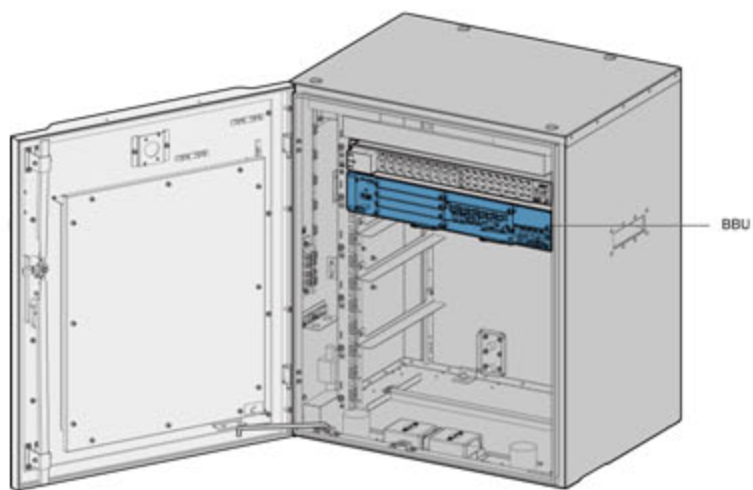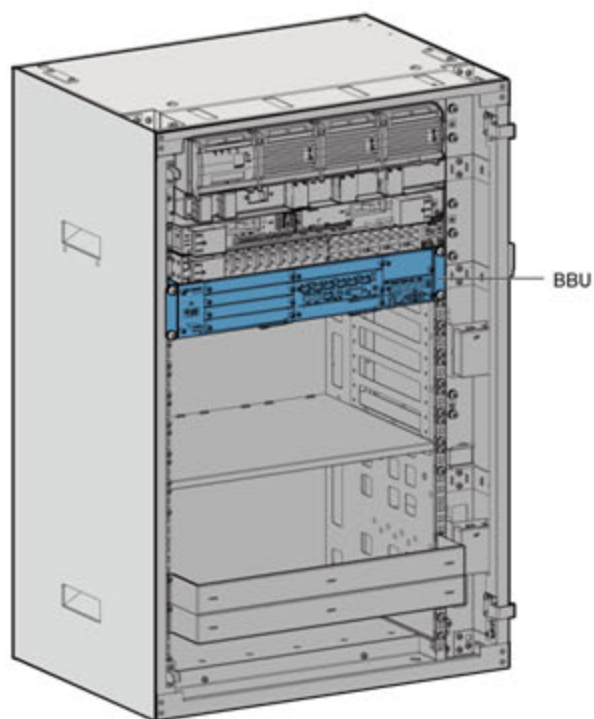

In the APM30/APM30H

On the wall
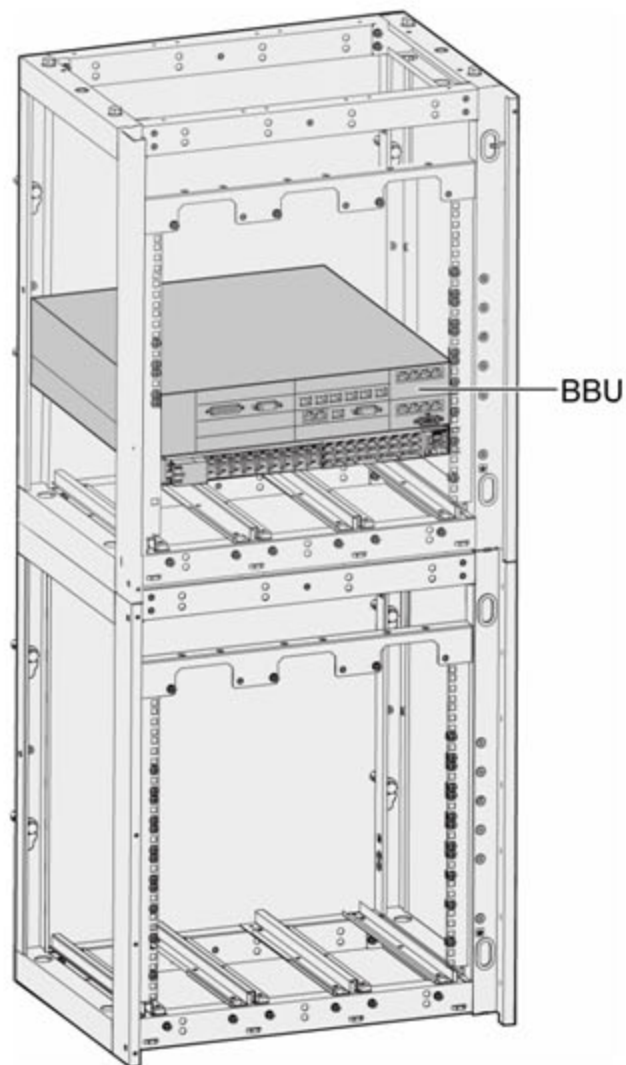
In the 19-inch rack

Installation Scenarios

In the TMC cabinet

In the RRU3004 rack
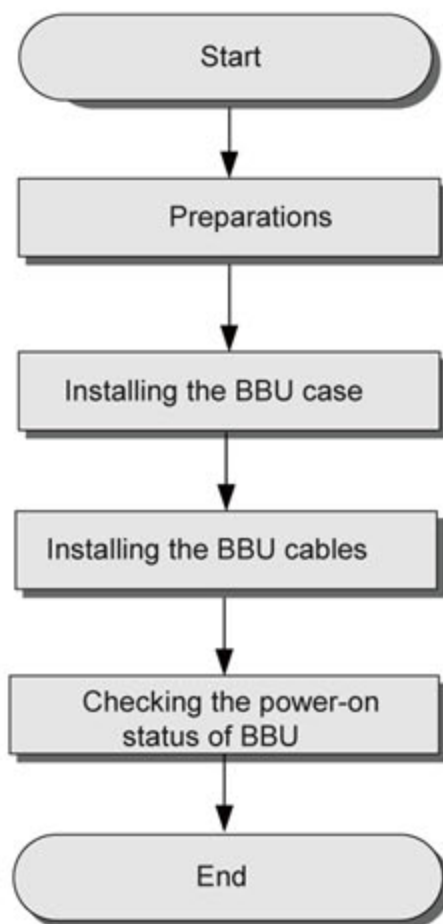

In the PS4890 cabinet

Installation Procedure

```
                    ┌─────────────────┐
                    │     Start       │
                    └────────┬────────┘
                             │
                             ▼
                    ┌─────────────────┐
                    │  Preparations   │
                    └────────┬────────┘
                             │
                             ▼
                    ┌─────────────────┐
                    │ Installing the  │
                    │    BBU case     │
                    └────────┬────────┘
                             │
                             ▼
                    ┌─────────────────┐
                    │ Installing the  │
                    │   BBU cables    │
                    └────────┬────────┘
                             │
                             ▼
                    ┌─────────────────┐
                    │ Checking the    │
                    │ power-on        │
                    │ status of BBU   │
                    └────────┬────────┘
                             │
                             ▼
                    ┌─────────────────┐
                    │      End        │
                    └─────────────────┘
```
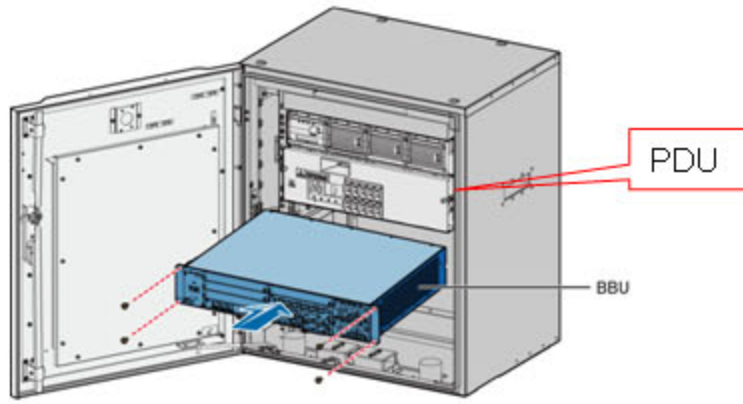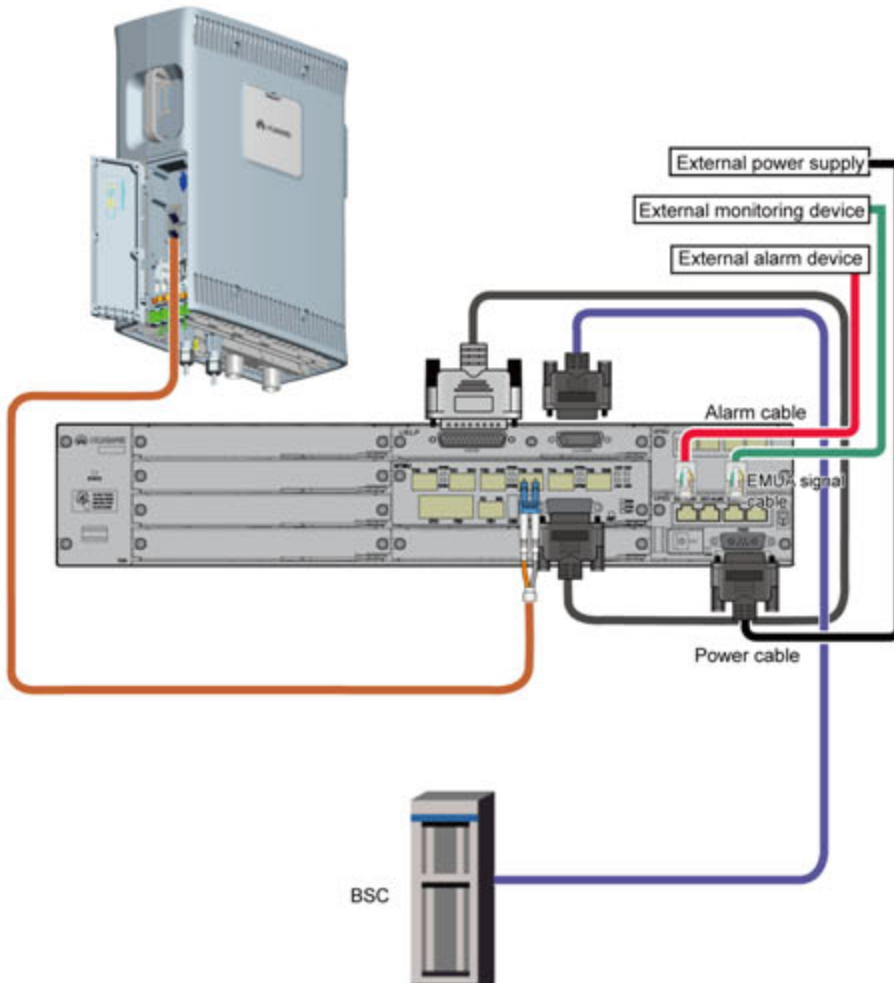
Installing the BBU in the APM30

a Installing the BBU Case

Slide the BBU case along the guide rails into the 2 U space closely under the PDU. Then, fasten the four M6 screws.
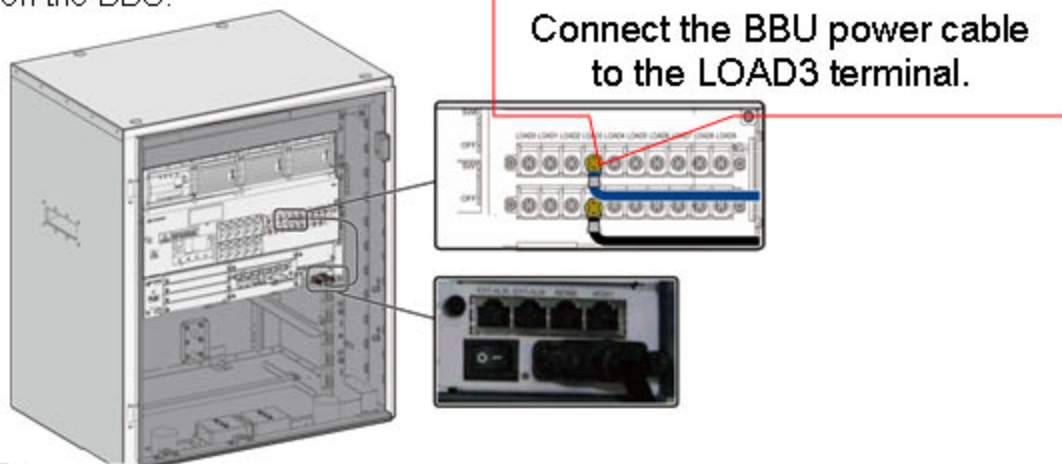

b Installing the BBU Cables

Cable connections of the BBU

Installing the BBU in the APM30

b   Installing the BBU Cables

1 **Install the power cable.** Connect the OT terminal of the power cable to the LOAD3 terminal on the APM30, and then fix the 3W3 connector of the power cable to the PWR port on the BBU.

Connect the BBU power cable to the LOAD3 terminal.

📖 NOTE

Connect the RRU power cable to one of the LOAD4 to LOAD9 terminals.

2 **Install the CPRI optical cable.** Connect one end of the optical cable to the CPRI0, CPRI1, or CPRI2 port on the GTMU panel of the BBU and the other end to the CPRI_W port on the RRU.

a. Insert the optical module into the CPRI0, CPRI1, or CPRI2 port, and then turn outwards the puller on the optical module.

b. Insert one end of the CPRI optical cable into the optical module, and then lead the CPRI optical cable out of the cabinet along the right side of the cabinet.

**c. Wrap the fiber tail with the winding pipe.**

Puller

Optical module

Winding pipe
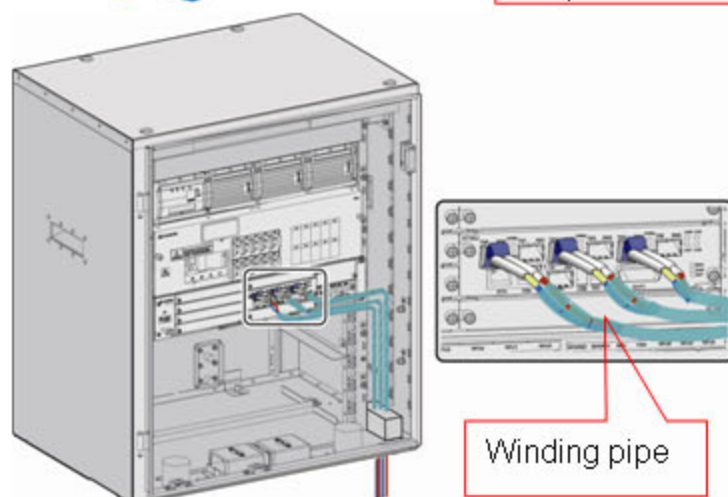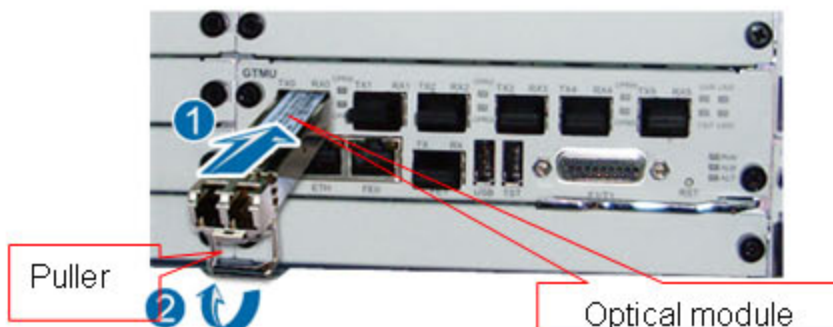
⚠ CAUTION

The TX port on the BBU is connected to the RX port on the RRU ; the RX port on the BBU is connected to the TX port on the RRU.

# Installing the BBU in the APM30

b   Installing the BBU Cables

③ **Install the E1 cable (without the UELP).** Connect one end of the E1 cable to the E1/T1 port on the GTMU, and then lead the other end out of the cabinet along the right side of the cabinet.

    a. Fix the DB26 connector of the E1 cable to the E1/T1 port on the GTMU.

    b. Strip the jacket off the E1 cable near the grounding point at the lower right corner of the cabinet to expose the shielding layer.

    c. Thread the E1 cable through the grounding clip. Then, tighten the screw on the grounding clip to make the shielding layer of the E1 cable in full contact with the grounding clip. Finally, connect the grounding cable on the grounding clip to the grounding screw on the APM30 cabinet.


Shielding layer of the E1 cable

Grounding clip
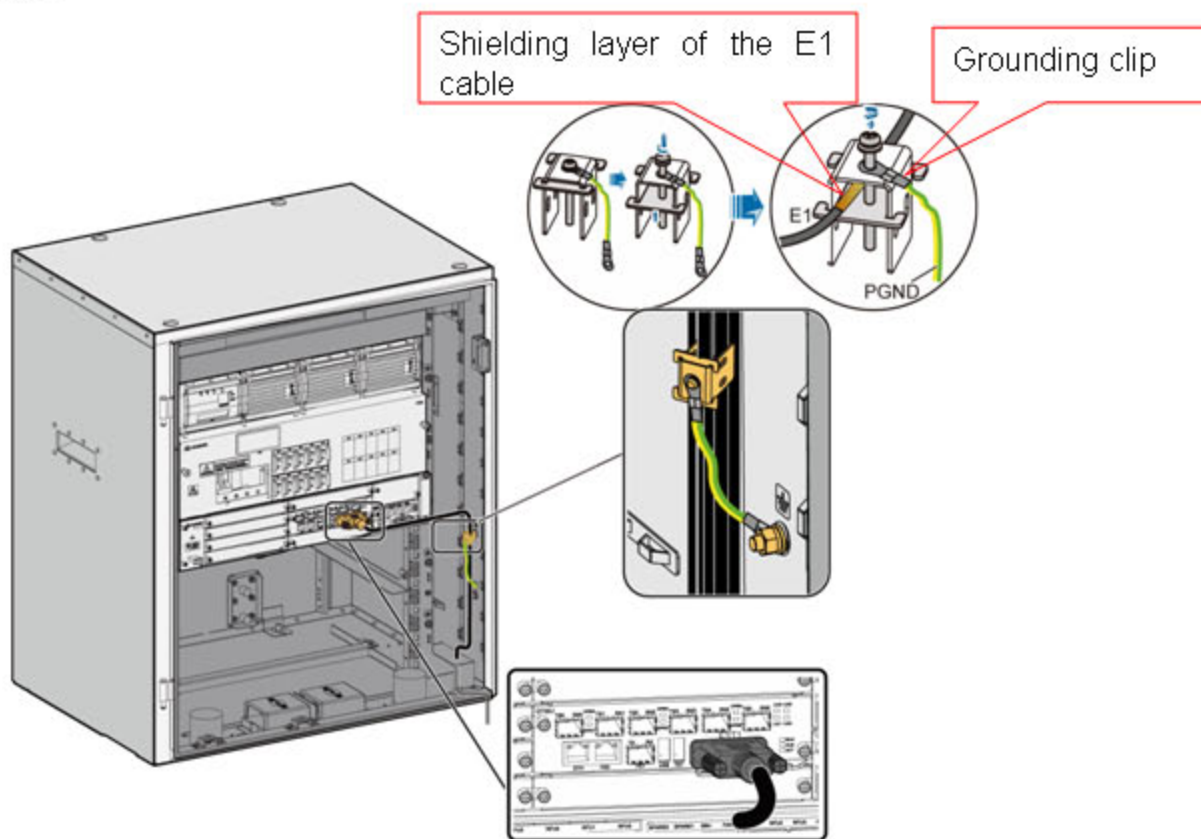
Installing the BBU in the APM30

b   Installing the BBU Cables

❹ **Install the E1 transfer cable (with the UELP).**
   a.   Connect one end of the E1 transfer cable to the INSIDE port on the UELP
         and the other end to the E1/T1 port on the GTMU.
   b.   Connect one end of the E1 cable to the OUTSIDE port on the UELP, and
         then lead the other end out of the cabinet along the right side of the
         cabinet. For details on how to ground the shielding layer of the E1 cable,
         see Page 8.
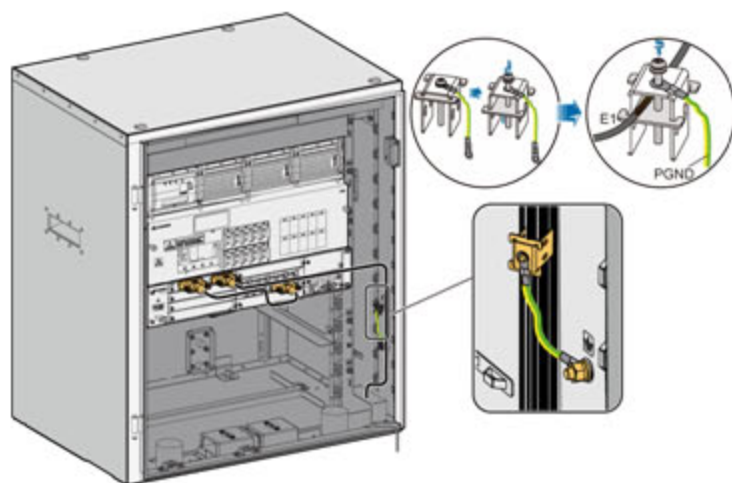
❺ **Install the monitoring signal cable between the APMI and the BBU.**
   a. Fix the RJ45 connector at one end of the cable to the MON1 port on the
   UPEU.
   b. Cut off the RJ45 connector at the other end of the cable on site, and then
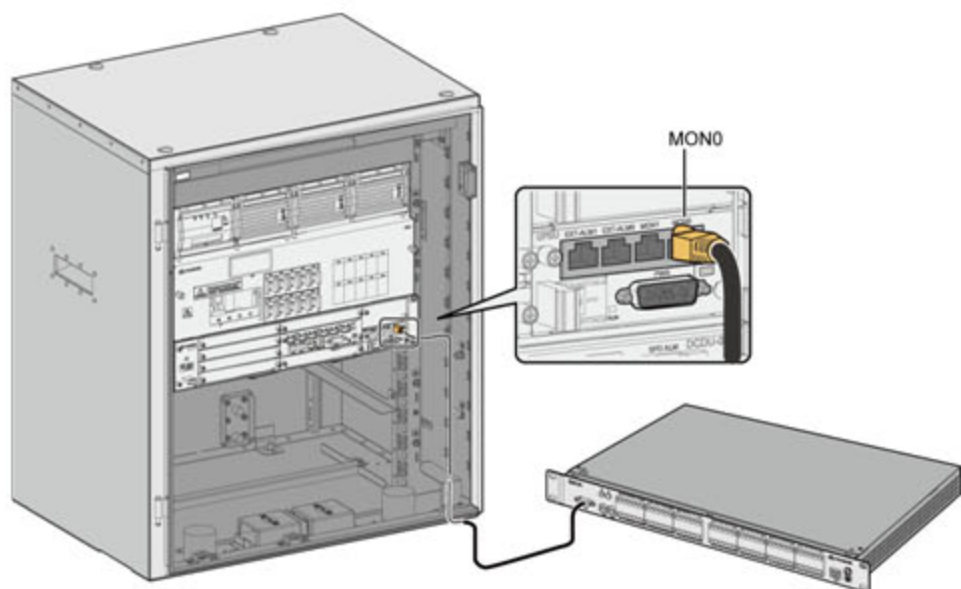   connect the four exposed wires to the RX+, RX-, TX+, and TX- ports on the
   APMI.
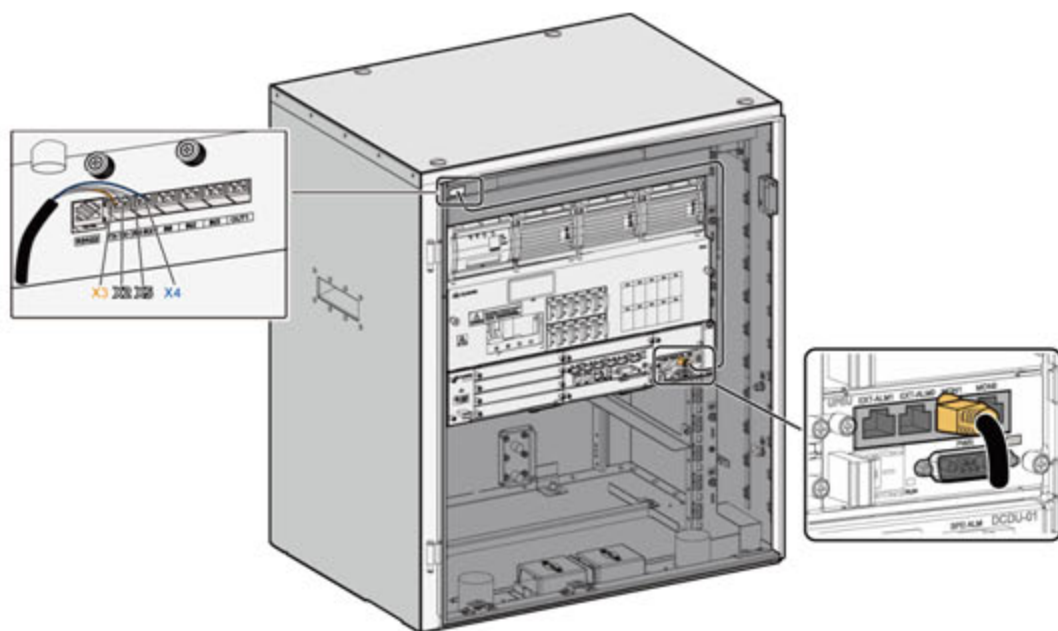
Installing the BBU in the APM30

b   Installing the BBU Cables

⑥ **Install the EMUA monitoring signal cable. (The EMUA is configured if there are external dry contacts or analog detection is required.)**

a. If the MON0 port on the BBU is available, fix the RJ45 connector of the EMUA monitoring signal cable to the MON0 port on the UPEU and the DB9 connector to the corresponding port on the EMUA.
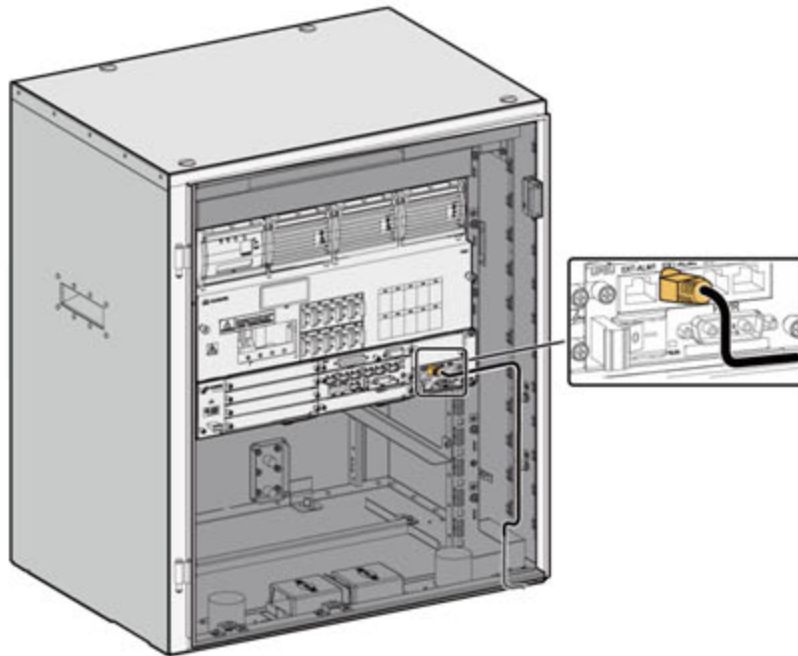

b. If the MON0 port on the BBU is unavailable, cut off the RJ45 connector of the EMUA monitoring signal cable, and then connect the four exposed wires to the RX+, RX-, TX+, and TX- ports on the APMI. For the pin assignment, see Page 35 EMUA monitoring signal cable. Fix the DB9 connector to the corresponding port on the EMUA.
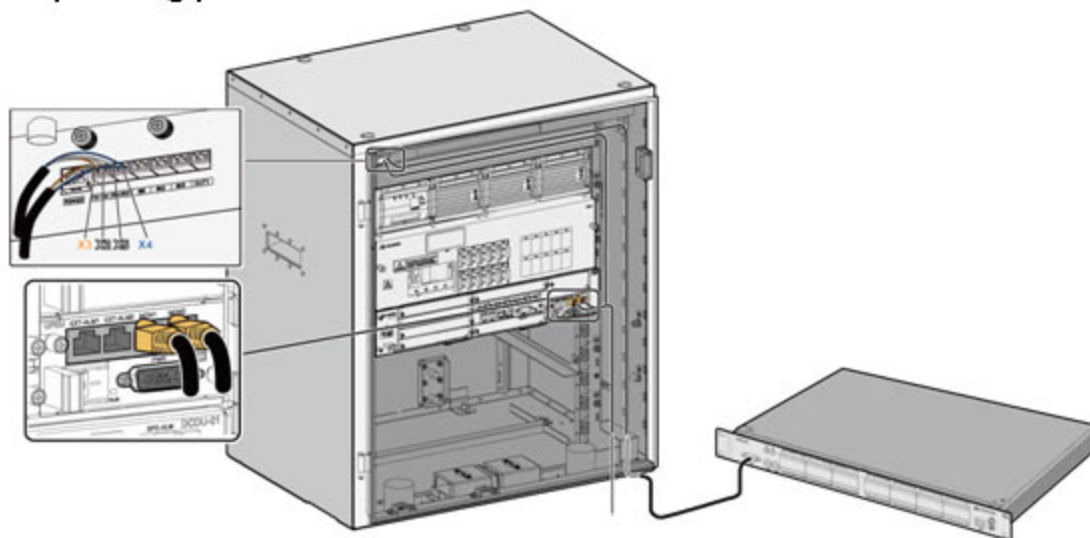
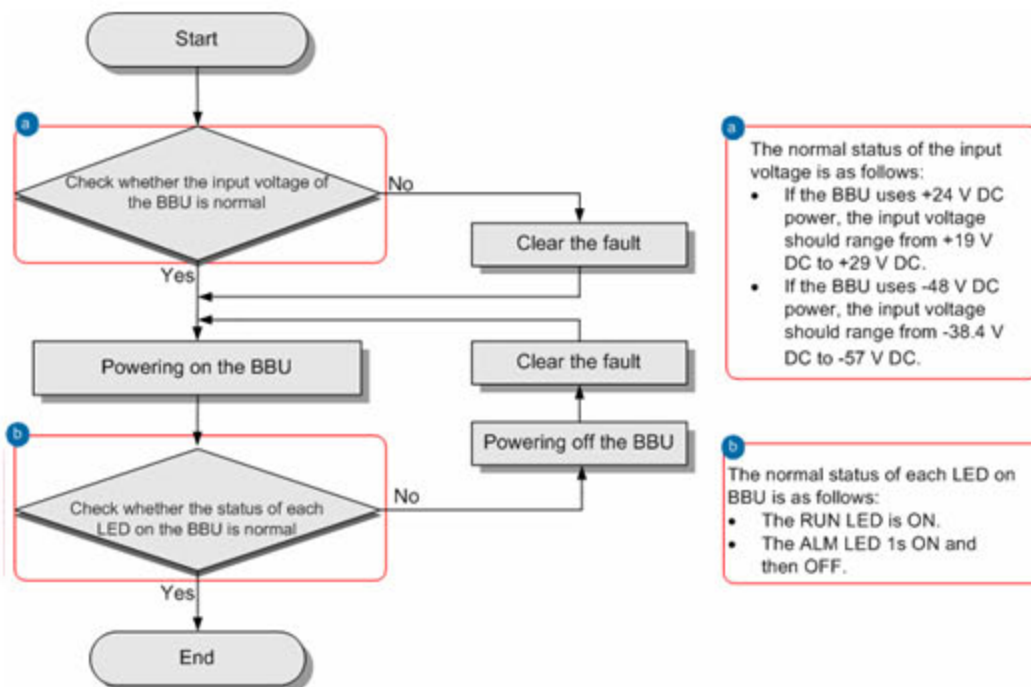# Installing the BBU in the APM30

b Installing the BBU Cables

❼ Install the alarm cable. Connect one end of the alarm cable to the EXT-ALM port on the UPEU and the other end to the corresponding alarm device.


c Checking the Power-On Status of the BBU

Start

a Check whether the input voltage of the BBU is normal — No → **Clear the fault**

a The normal status of the input voltage is as follows:
- If the BBU uses +24 V DC power, the input voltage should range from +19 V DC to +29 V DC.
- If the BBU uses -48 V DC power, the input voltage should range from -38.4 V DC to -57 V DC.

Yes ↓

Powering on the BBU

Clear the fault

b Check whether the status of each LED on the BBU is normal — No → **Powering off the BBU**

b The normal status of each LED on BBU is as follows:
- The RUN LED is ON.
- The ALM LED 1s ON and then OFF.

Yes ↓

End

Installing the BBU in the APM30H

a Installing the BBU Case

The procedure for installing the BBU case in the APM30H is the same as that for installing the BBU case in the APM30. For details, see Page 6 Installing the BBU Case.

b Installing the BBU Cables

In addition to the BBU cables installed in the APM30, a monitoring signal cable between the BBU and the HEUA needs to be installed when the BBU is installed in the APM30H. Connect one end of the monitoring signal cable to the COM IN port on the HEUA panel and the other end to the MON port on the BBU.

com in

Monitoring signal cable between the BBU and the HEUA
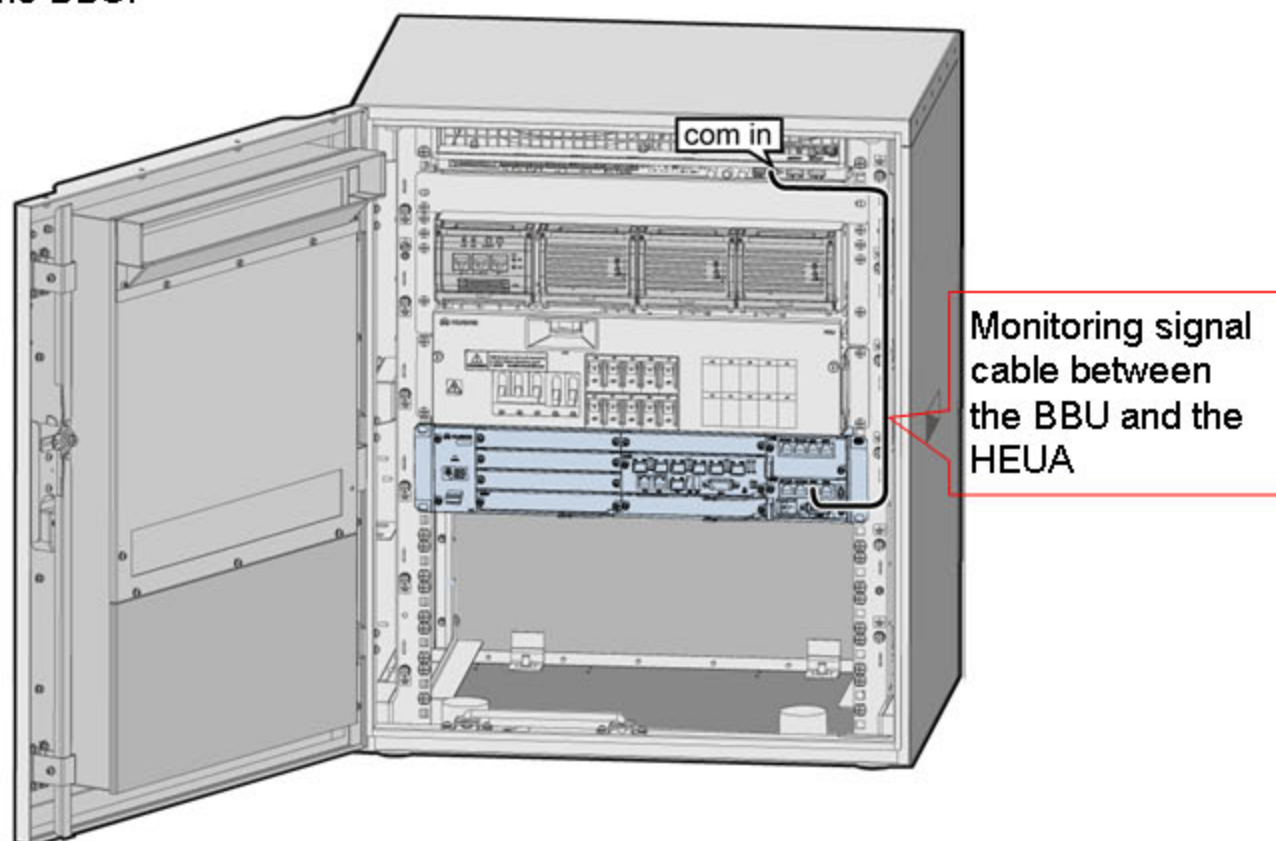
📖 **NOTE**

For details on how to install the power cable, CPRI optical cable, E1 cable, E1 transfer cable, EMUA monitoring signal cable, and the alarm cable, see Page 6 to Page 11 Installing the BBU Cables.

Installing the BBU in the 19-Inch Rack

a Space Requirements(Unit:mm)
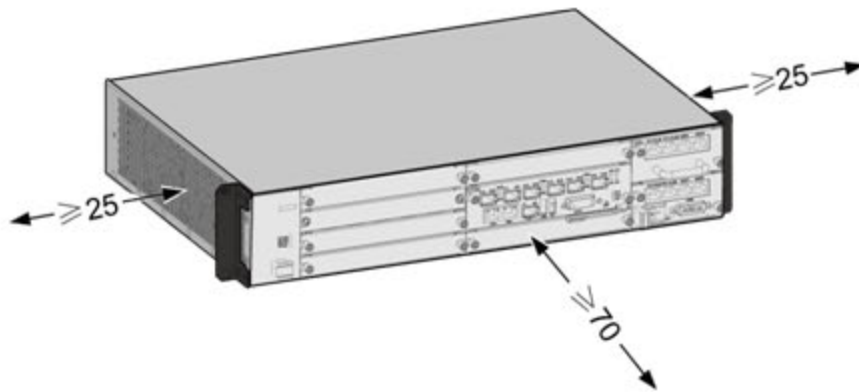
📖 **NOTE**

When the BBU3900 is installed in the 19-inch cabinet, no space is required on the left and right of the BBU3900.
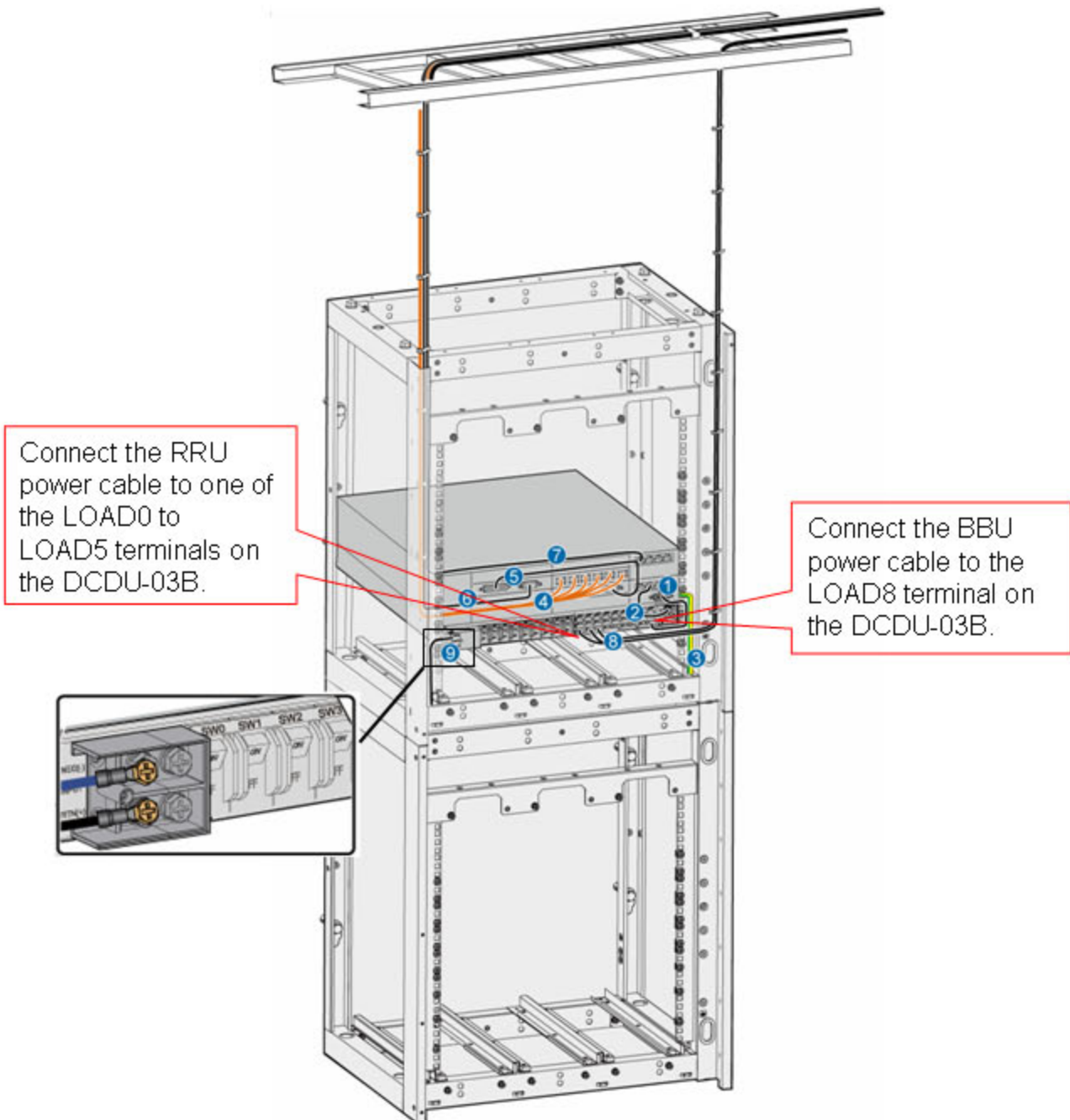
b Installing the BBU Case
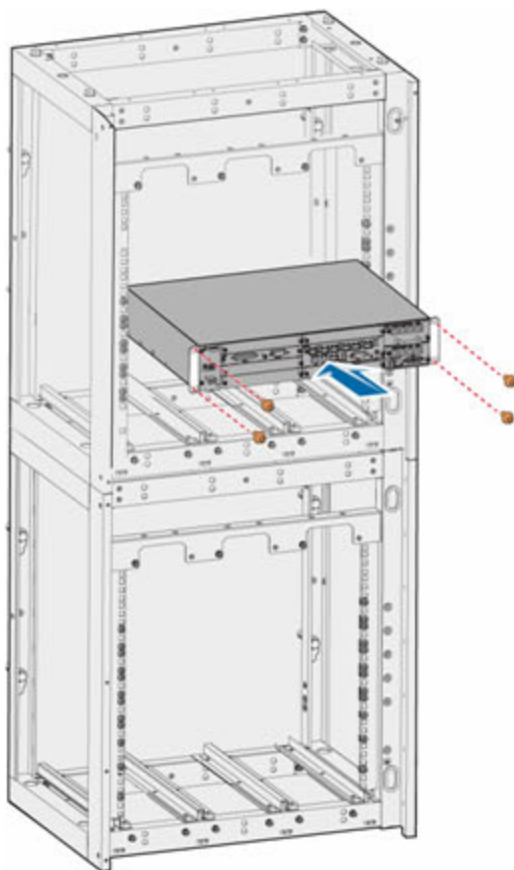
c Installing the DCDU-03B
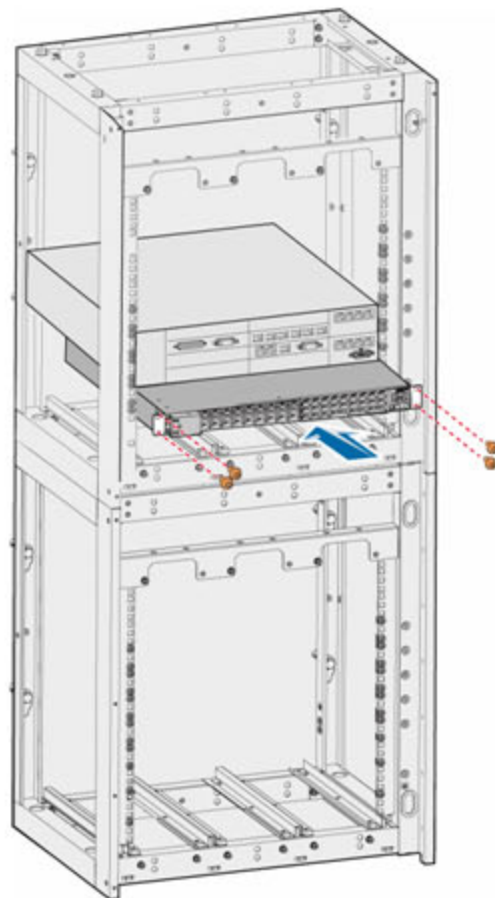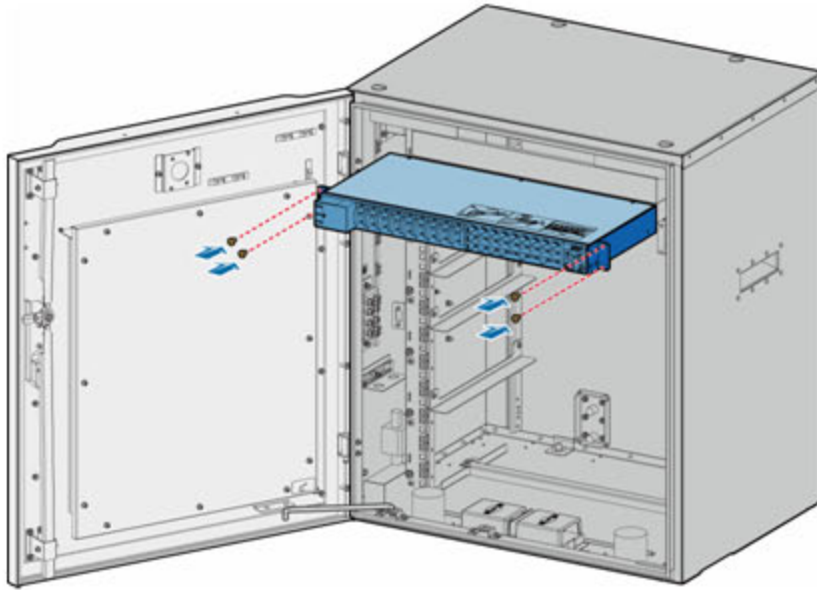
Installing the BBU in the 19-Inch Rack

d Installing the BBU Cables

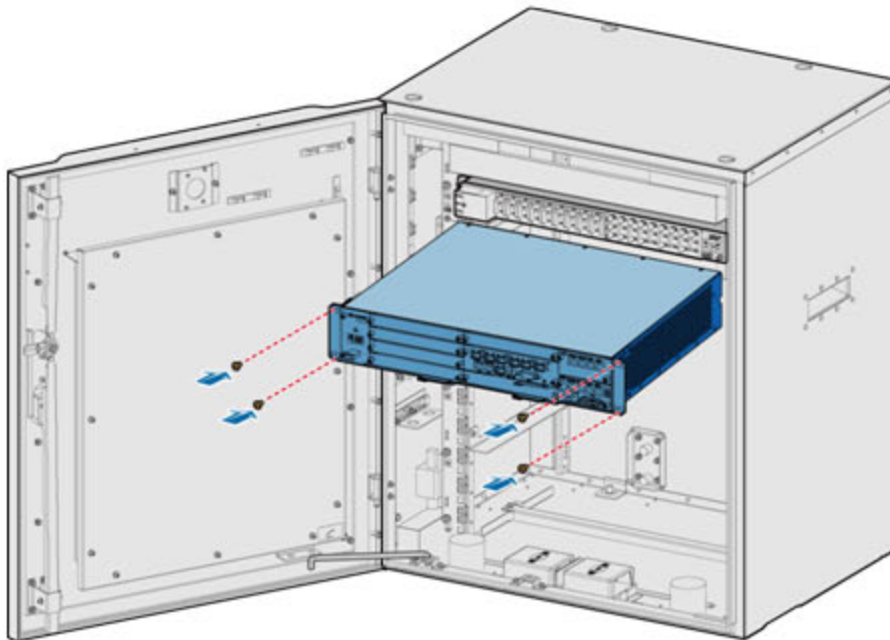Connect the RRU power cable to one of the LOAD0 to LOAD5 terminals on the DCDU-03B.

Connect the BBU power cable to the LOAD8 terminal on the DCDU-03B.

(1) BBU power cable	(2) Monitoring signal cable for the DCDU-03B	(3) PGND cable	(4) CPRI optical cable
(5) E1 transfer cable	(6) E1 cable	(7) BBU alarm cable	(8) RRU power cable
(9) External power cable			

Installing the BBU in the TMC

a   Installing the DCDU-03B

Slide the DCDU-03B into the TMC. Then, tighten the four M6 screws.

b   Installing the BBU Case

Slide the BBU into the TMC. Then, tighten the four M6 screws.

Installing the BBU in the TMC

DCDU-03B input power cable

📖 **NOTE**

1. For details on how to install the TMC alarm cable, see Page 17.

2. The DCDU-03B input power cable is connected to the external DC power supply system.

3. For cable connections of the BBU, see Page 6.

Installing the BBU in the TMC

c Installing the BBU Cables

Procedure for installing the TMC alarm cable:

a. Fix the RJ45 connector at one end of the alarm cable to the EXT_ALM1 port on the BBU.

b. Connect the two bare terminals X1.4 (blue) and X1.5 (white) to the alarm wiring terminals of the door status sensor.

c. Connect the two bare terminals X1.1 (white) and X1.2 (orange) to the OUT1+ and OUT1- alarm wiring terminals on the APMI.

d. Connect the two bare terminals X1.3 (white) and X1.6 (green) to the alarm wiring terminals of the DCDU.
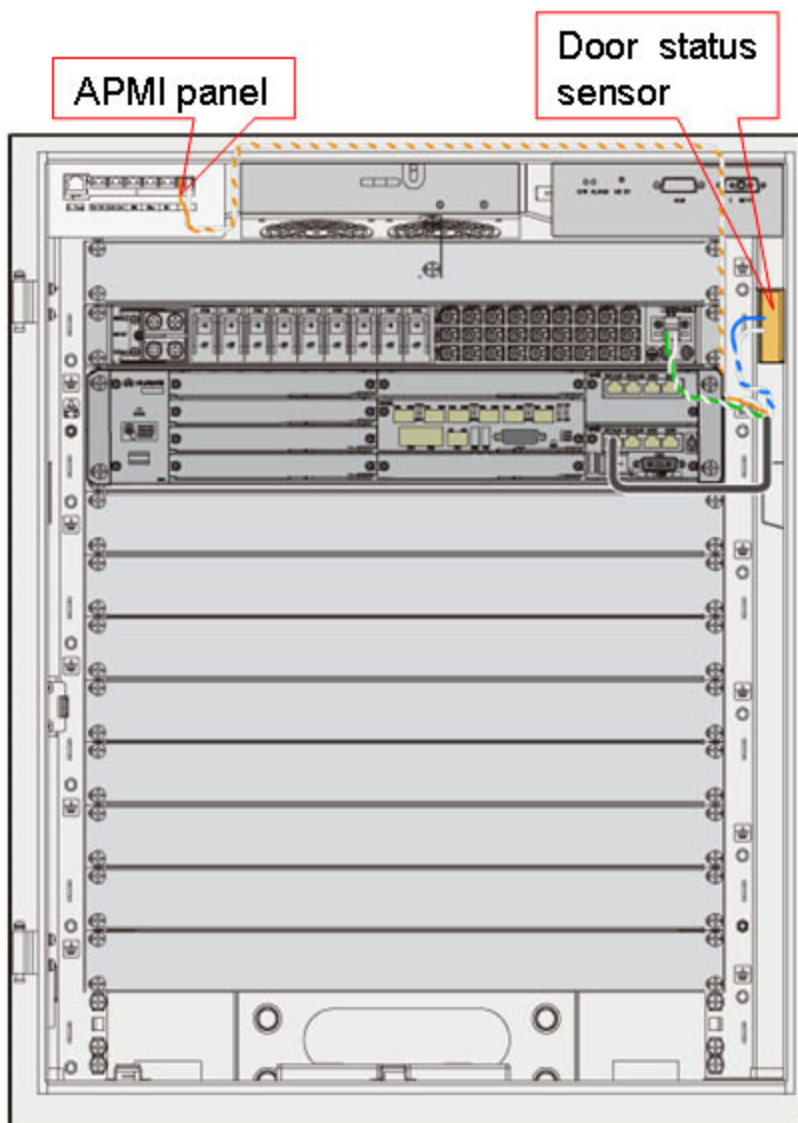
APMI panel

Door status sensor

d Checking the Power-On Status of the BBU

Check the power-on status of the BBU. For details, see Page 11.

Installing the BBU in the PS4890 Cabinet

a   Installing the DCDU-03B

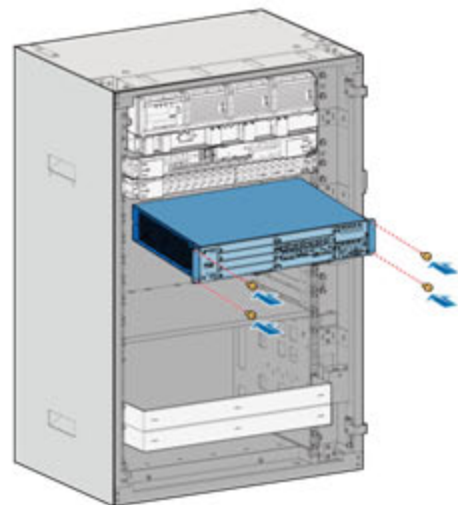**1** Slide the DCDU-03B into the PS4890 cabinet. Then, tighten the four M6 screws.
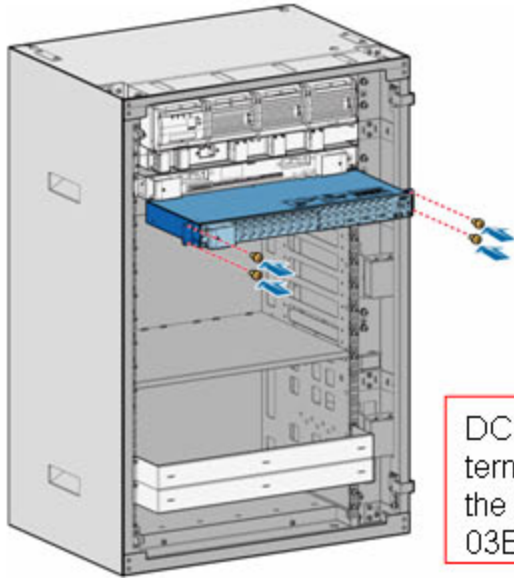
2 **Install the DCDU-03B input power cable.**
Connect one end of the power cable in blue to the DC output terminal LOAD2(-) on the power subrack and the other end to the DC input terminal NEG(-) on the DCDU-03B . Connect one end of the power cable in black to the DC output terminal RTN(+) on the power subrack and the other end to the DC input terminal RTN(+) on the DCDU-03B.

DC input terminal on the DCDU-03B

DC output terminal on the power subrack
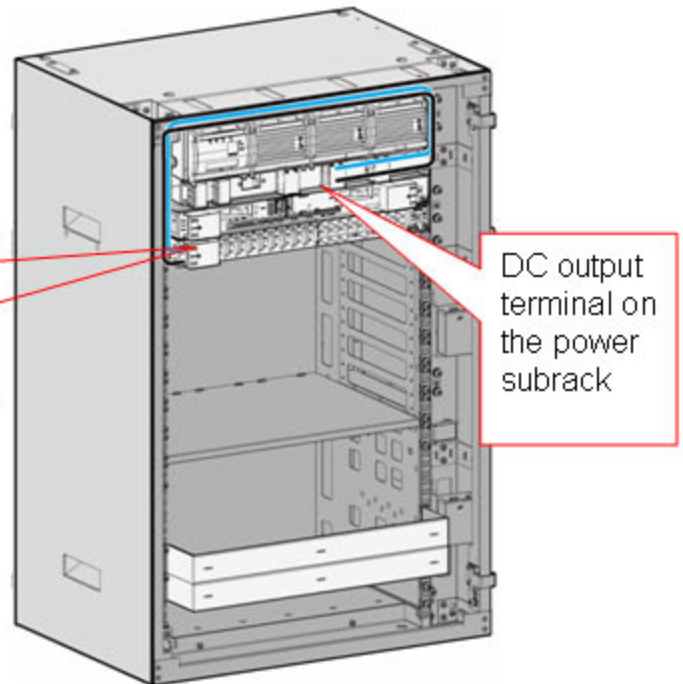
b   Installing the BBU Case

Slide the BBU case into the PS4890 cabinet. Then, tighten the four M6 screws.

C Installing the BBU Cables

Cable connections of the BBU

Connect the BBU power cable to the DC output terminal LOAD6 of the DCDU-03B.

| （1）CPRI optical cale	（2）BBU power cable	（3）E1 cable
（4） monitoring signal cable between the PMU and the BBU	5）BBU alarm cable	

📖 **NOTE**

1. In addition to the BBU cables installed in the APM30, a monitoring signal cable between the PMU and the BBU needs to be installed when the BBU is installed in the PS4890 cabinet. The monitoring signal cable between the APMI and the BBU is not required. For details on how to install the monitoring signal cable between the PMU and the BBU, see Page 21.

2. For the cable connections of the BBU, see Page 6.

Installing the BBU in the PS4890 Cabinet

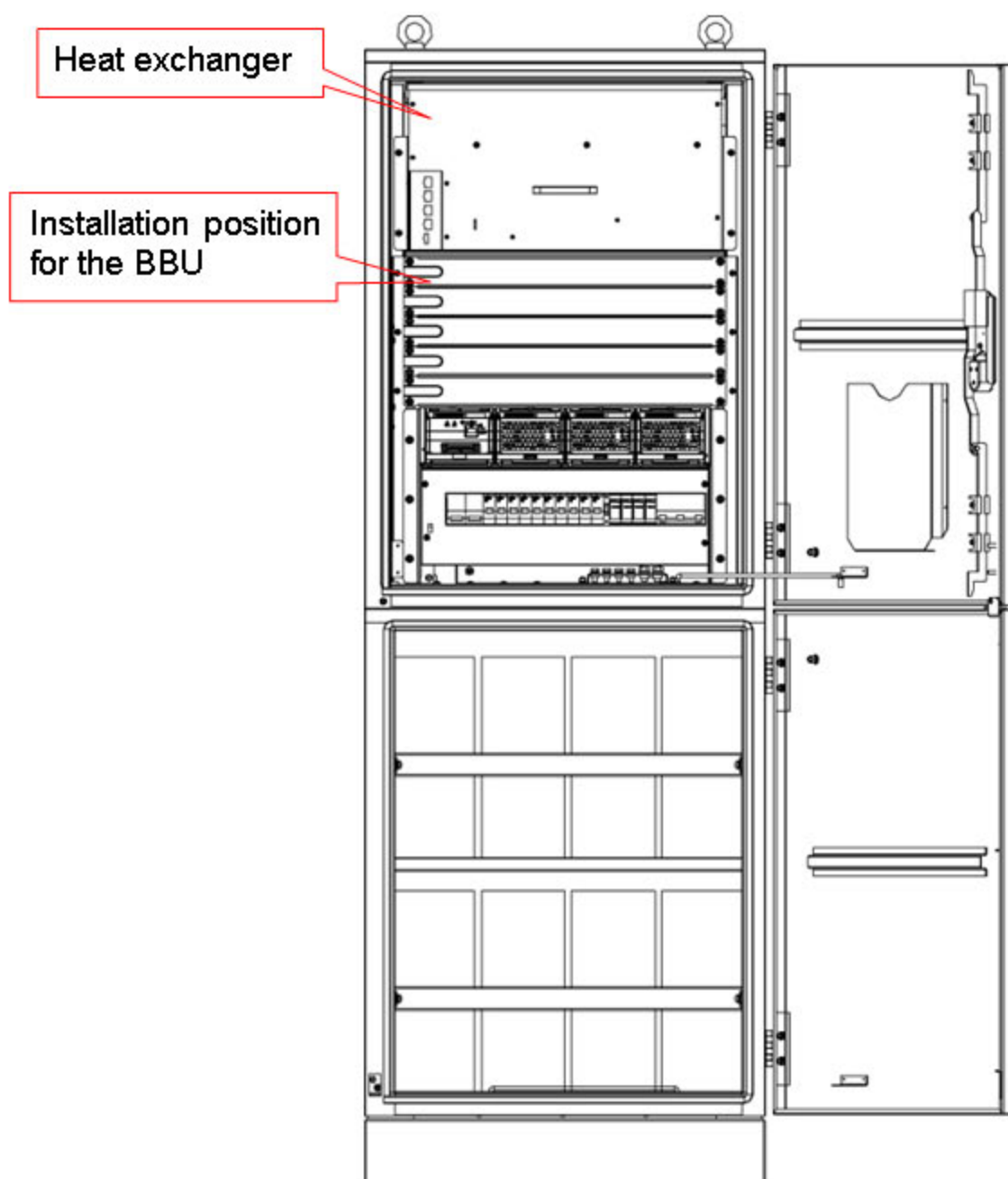## c Installing the BBU Cables

Install the monitoring signal cable between the PMU and the BBU.
Connect one end of the cable to the MON port on the BBU and the other end to the RS232/RS422 port on the PMU.
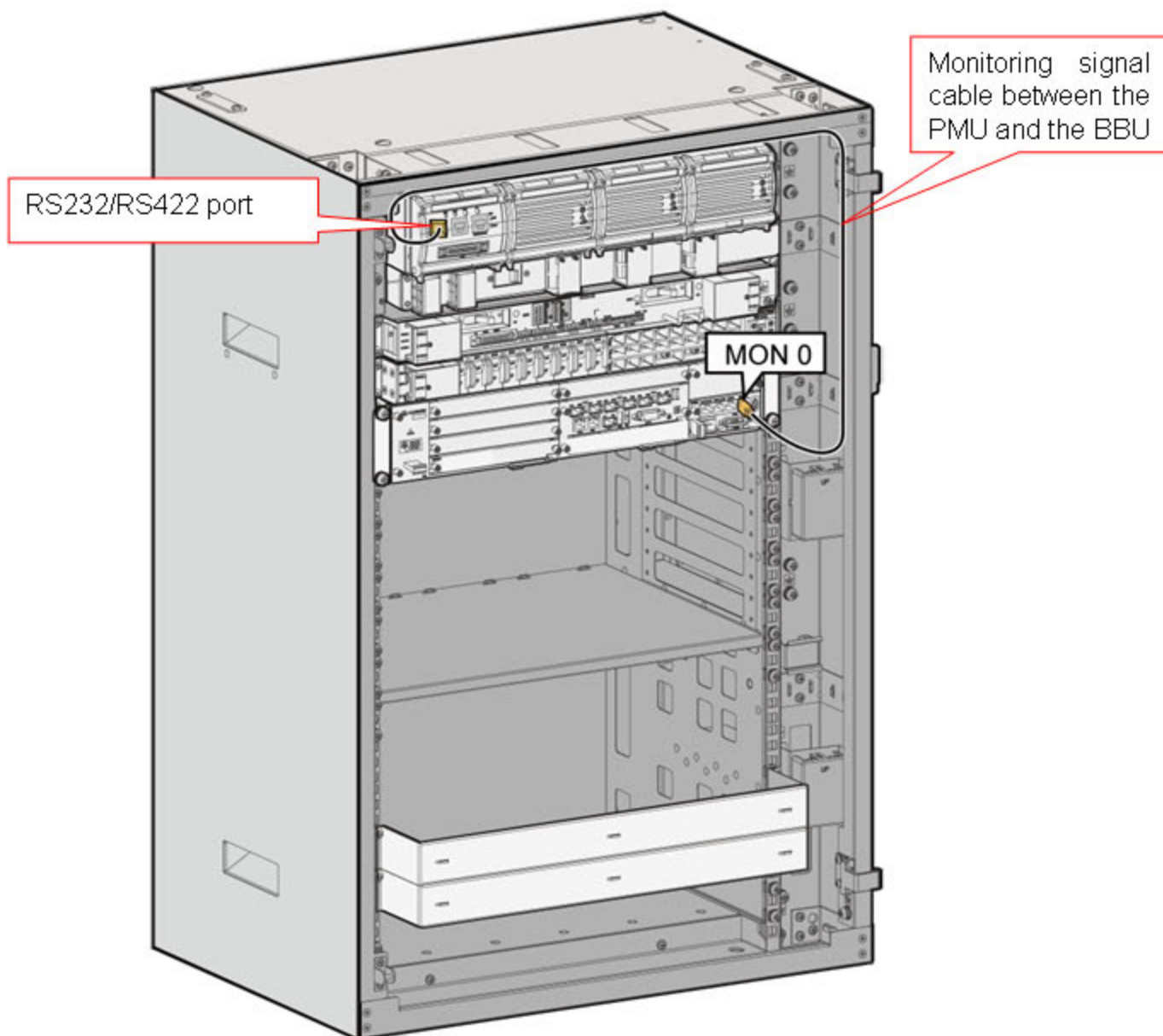
RS232/RS422 port

Monitoring signal cable between the PMU and the BBU

MON 0

d Checking the Power-On Status of the BBU

Check the power-on status of the BBU. For details, see Page 11.

Installing the BBU in the APM200E

Heat exchanger

Installation position for the BBU

NOTE

1. The BBU is installed at the 2 U space below the heat exchanger.

2. The BBU power cable is connected to the terminals corresponding to MCBs SW0 through SW3.

3. The procedure for installing the BBU in the APM200E is the same as that in the APM30. For details, see pages 6 -11 Installing the BBU in the APM30.
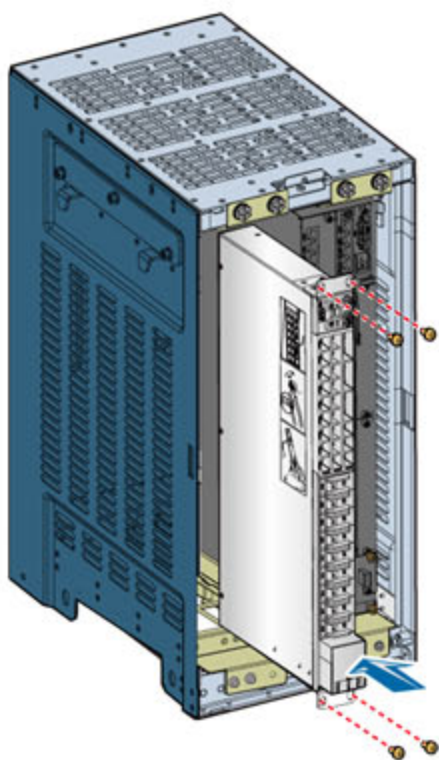
Installing the BBU in the RRU3004 Rack
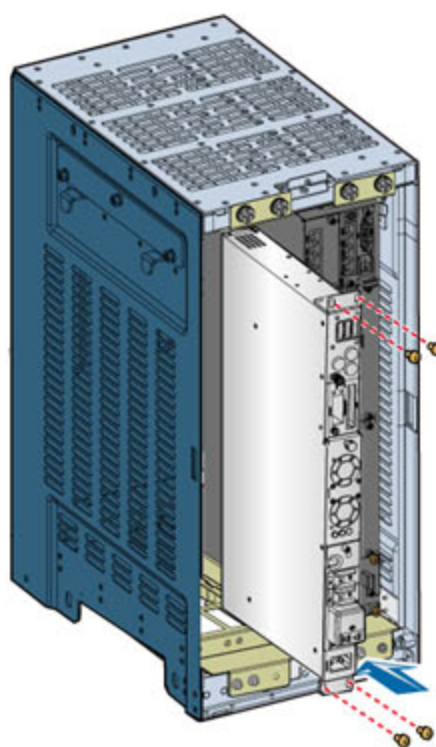
a Installing the Adapting Pieces
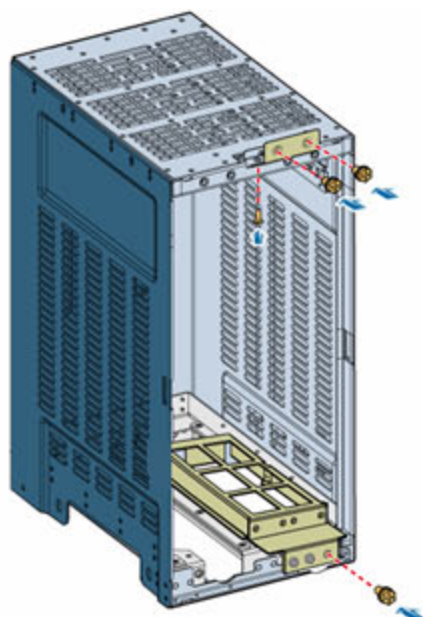
b Installing the BBU Case
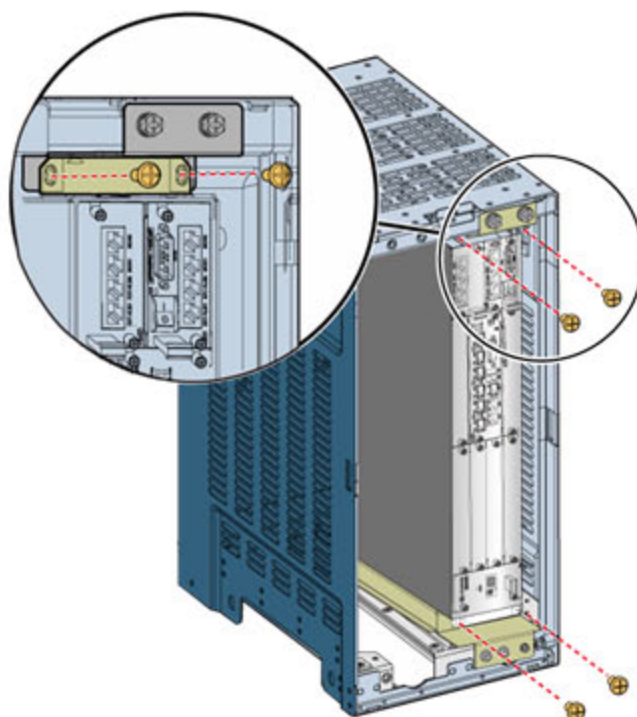
c Installing the DCDU-03B (–48 V Input Power)
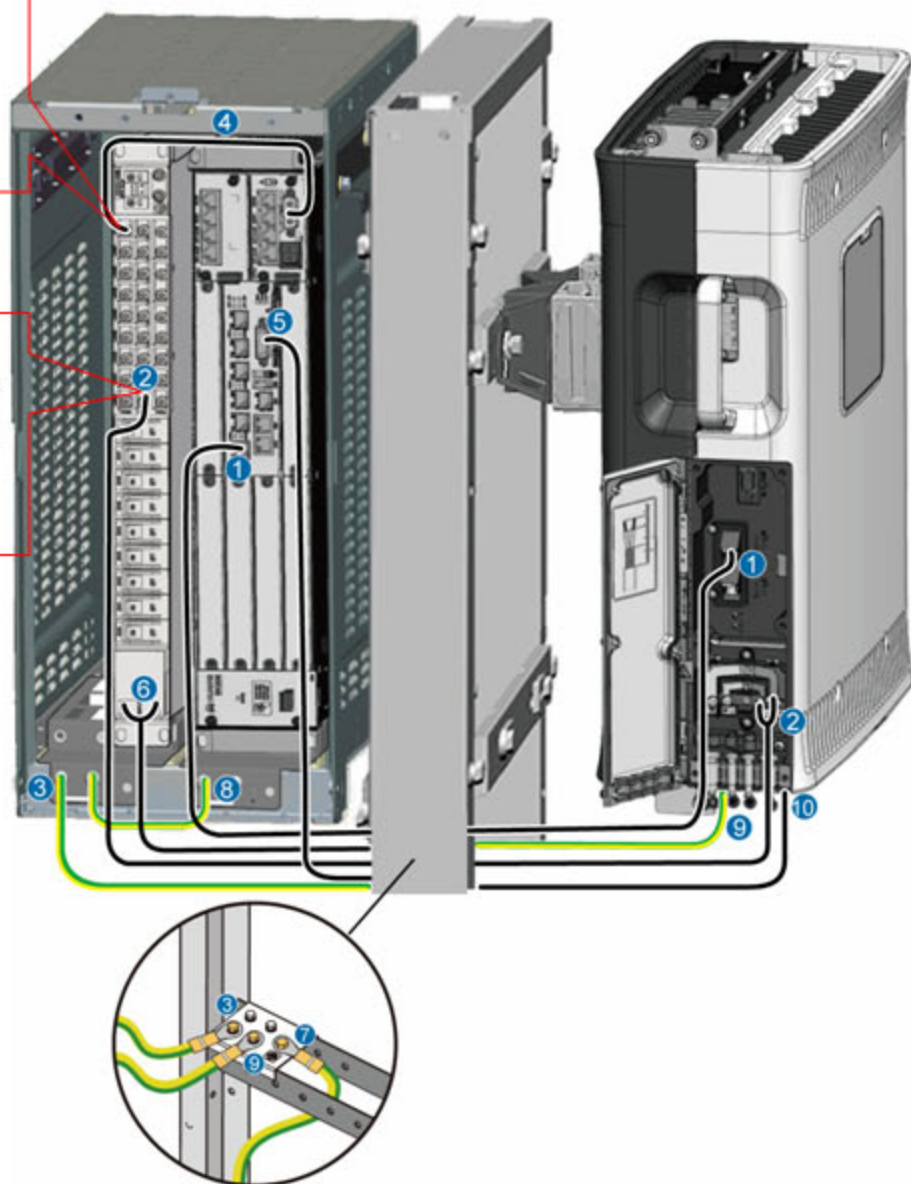
d Installing the EPS30-4815AF (AC Input Power)

e Installing the BBU Cables

1 —48 V input power

Connect the BBU power cable to the LOAD8 terminal on the DCDU-03B.

Connect the RRU power cable to one of the LOAD0 to LOAD3 terminals on the DCDU-03B.
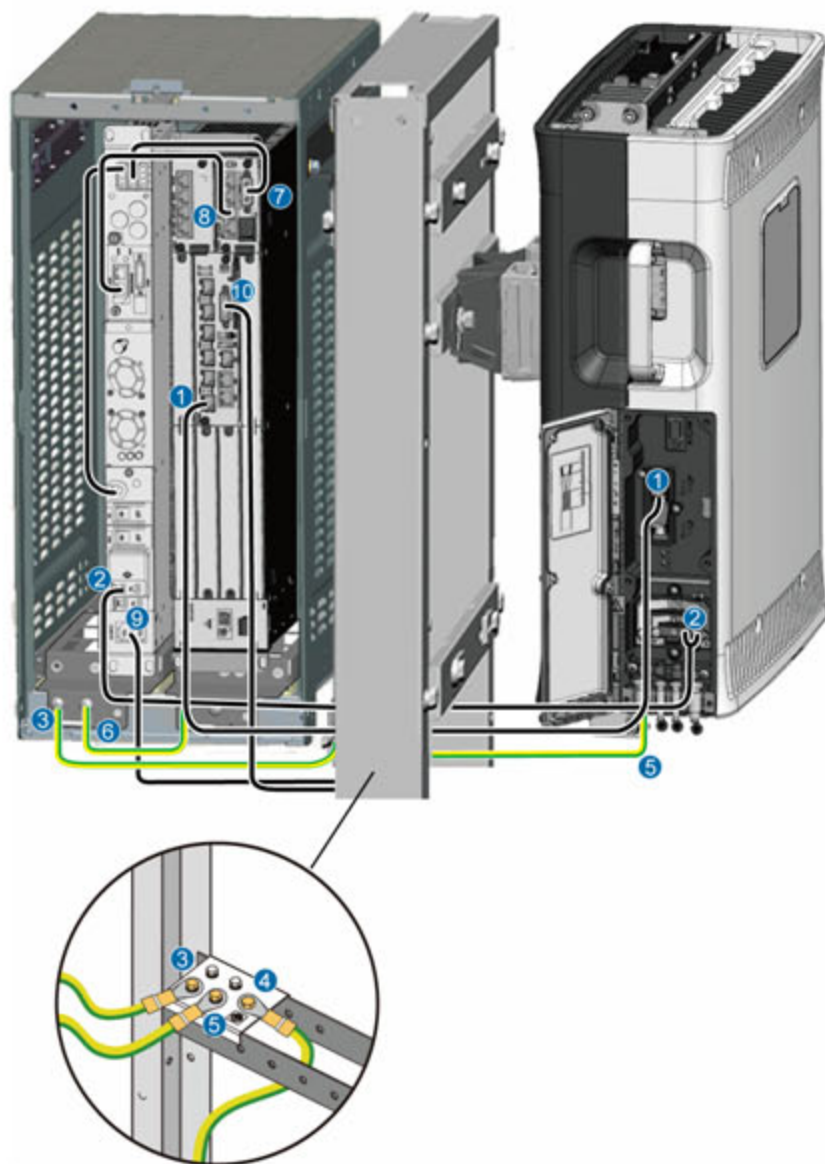

(1) CPRI optical cable	(2) RRU power cable	(3) DCDU PGND cable	(4) BBU power cable
(5) E1 cable	(6) DCDU power cable	(7) External PGND cable	(8) Equipotential cable between the BBU and the DCDU
(9) RRU PGND cable	(10) RF jumper		

e	**Installing the BBU Cables**

❷ 220 V input power

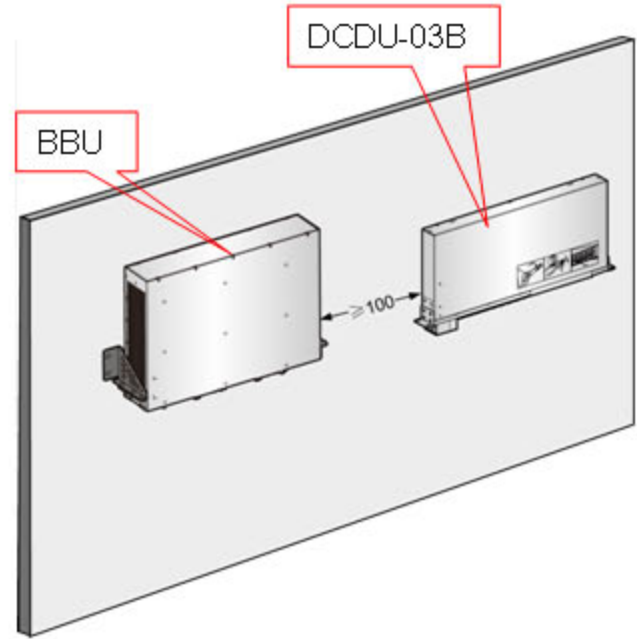| (1) CPRI optical cable	(2) RRU power cable	(3) 4815 PGND cable	(4) External PGND cable
(5) RRU PGND cable	(6) Equipotential cable between the BBU and the 4815	(7) BBU power cable	(8) Monitoring signal cable between the 4815 and the BBU
(9) 4815 power cable	(10) E1 cable		

Installing the BBU on the Wall
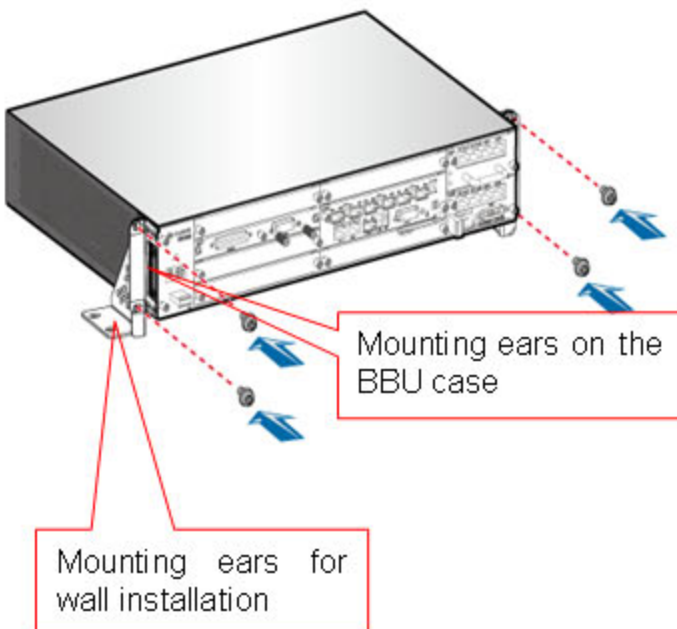
a Space Requirements

A single BBU
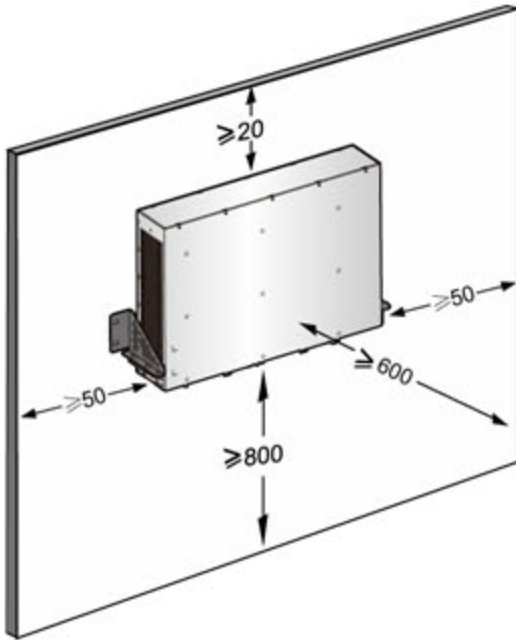
BBU+DCDU-03B

📖 **NOTE**

The DCDU should be installed close to the BBU, but the distance between BBU and DCDU must be greater than 100 mm.

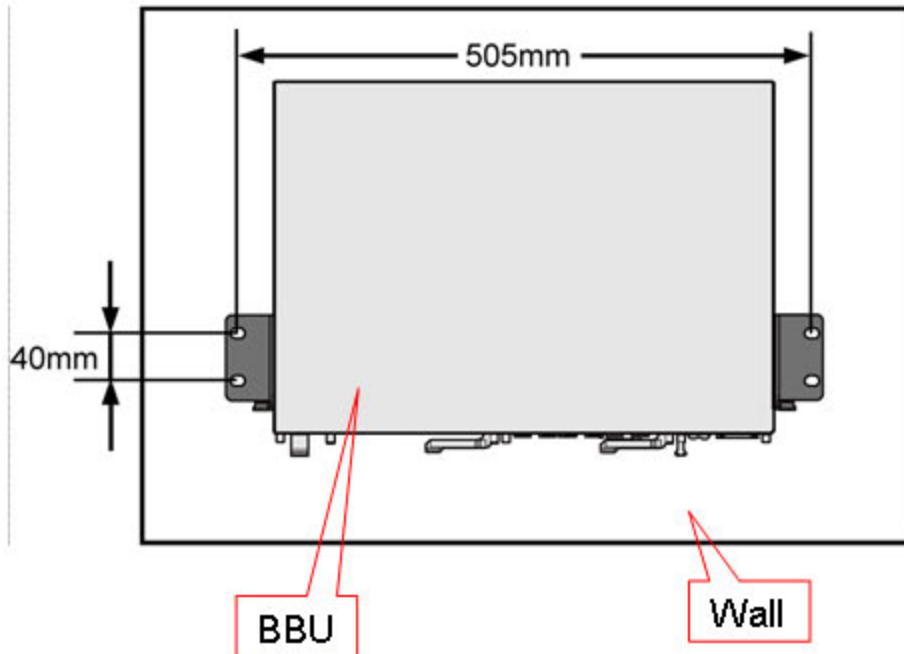## b Installing the Mounting Ears for Wall Installation

Mounting ears on the BBU case

Mounting ears for wall installation

📖 **NOTE**

Use screws to join the mounting ears for wall installation and the mounting ears on the BBU case.
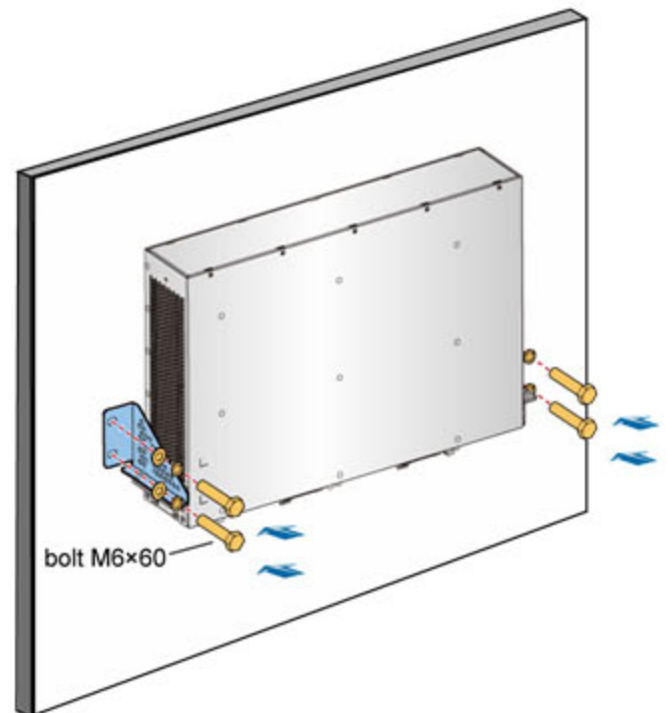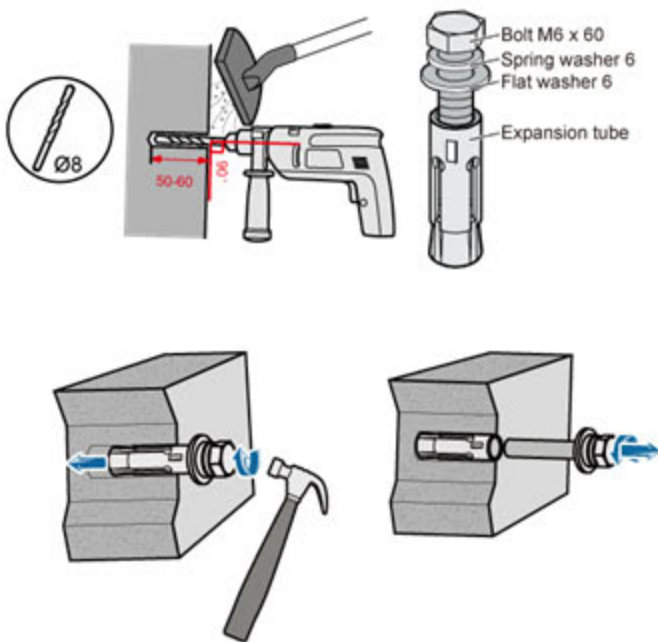
Installing the BBU on the Wall

c   Determining the Anchor Points on the Wall

Place the BBU against the wall, and then use the marking pen to mark the anchor points.
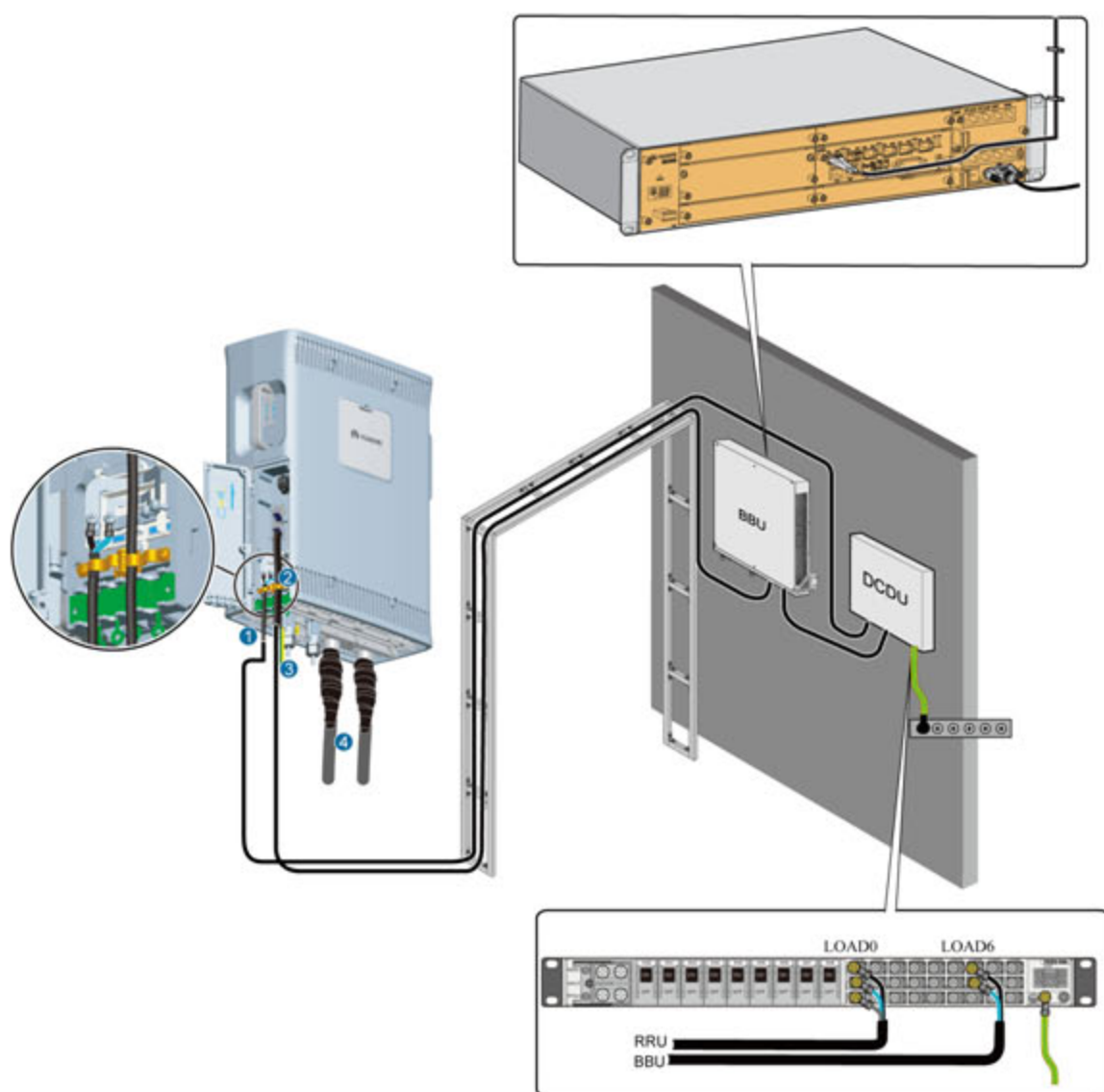

- 505mm
- 40mm
- BBU
- Wall

d   Installing the Expansion Bolts

- Ø8
- 50-60
- Bolt M6 x 60
- Spring washer 6
- Flat washer 6
- Expansion tube

e   Fixing the BBU Case on the Wall

- bolt M6×60

Installing the BBU on the Wall

f Installing the BBU Cables

| (1) BBU alarm cable | (2) CPRI optical cable | (3) PGND cable | (4) RF jumper |

g Checking the Power-On Status of the BBU

Check the power-on status of the BBU. For details, see Page 11.

Reference

a   Cable List

Cable	Connector	Connects to…
PGND cable	OT terminal (assembled on site)	Grounding bolt of the BBU3900
	OT terminal (assembled on site)	Protection grounding bar
Power cable	3V3 connector	PWR port on the BBU3900 panel
	OT terminal	External power supply (5 A)
E1 cable	DB26 male connector	Without the E1 transfer cable: E1/T1 port on the BBU3900 panel With the E1 transfer cable: OUTSIDE port on the BBU3900 panel
	Bare wire	Peer device
E1 transfer cable	DB25 male connector	INSIDE port on the BBU3900 panel
	DB26 male connector	E1/T1 port on the BBU3900 panel
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
Monitoring signal cable for the DCDU-03B	RJ45 connector	EXT-ALM0 port on the BBU3900 panel
	RJ45 connector	Alarm port on the DCDU-03B
Monitoring signal cable between the APMI and the BBU	RJ45 connector	MON1 port on the BBU3900 panel
	Bare wire (connected before delivery)	TX-, TX+, RX-, and RX+ ports on the APMI in the APM30 power cabinet
BBU alarm cable	RJ45 connector	EXT-ALM port on the BBU3900 panel
	RJ45 connector	Port on the external device
Monitoring signal cable between the PMU and the BBU	RJ45 connector	RS232/RS422 port on the PMU
	RJ45 connector	MON port on the BBU
TMC alarm cable	RJ45 connector	MON port on the BBU
	Three pairs of wires in different colors	TMC

Reference

Appearance and BOM Codes of the Cables

BOM	Cable Name	Appearance
25030191	PGND cable	
04150033	Power cable	
14130434–14130441	CPRI optical cable	
04120002 (75 ohm) 04120003 (120 ohm)	E1 cable	
04070020	E1 transfer cable	
–	Monitoring signal cable between the APMI and the BBU	
04080031	Monitoring signal cable for the DCDU-03B	
04047466	BBU alarm cable	

C Setting the DIP Switches

1 Remove the GTMU and UELP from the BBU.

⚠ **CAUTION**

Wear an ESD wrist strap during the operations on the boards to prevent damage to the boards.

ON

OFF
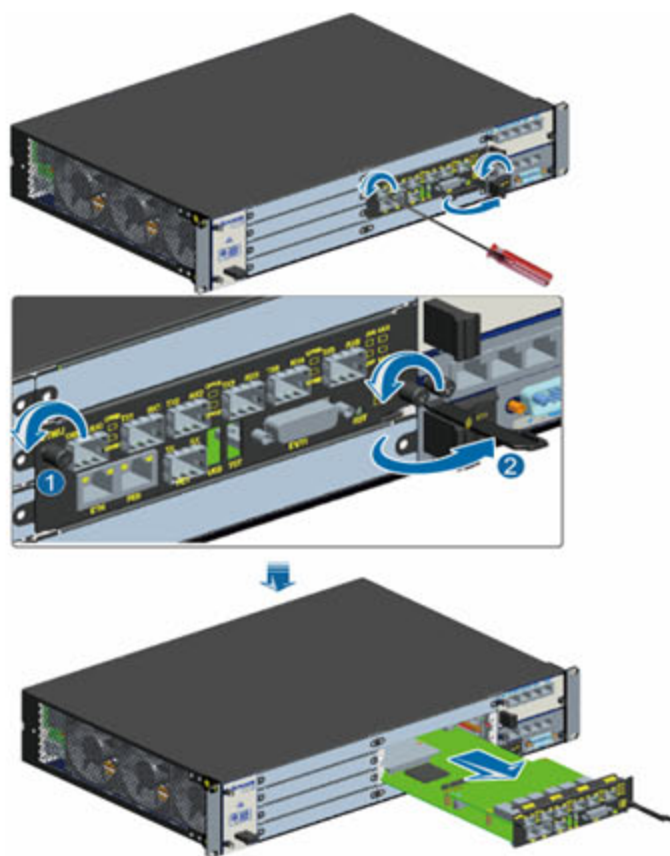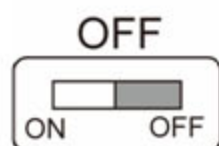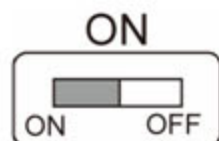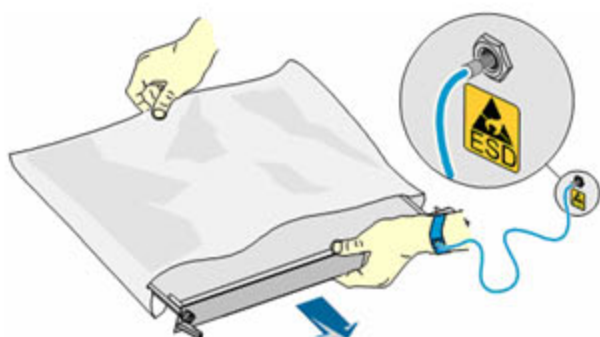
📖 **NOTE**

The UELP is optional. Please check the settings of the DIP switches according to the field conditions.

Reference

❷ **Set the DIP switches of the BBU.**

Settings of the DIP switches on the UELP

75–ohm E1 Mode

S1

ON OFF

Other Modes

S1

ON OFF

Settings of the DIP switches on the GTMU

T1 Mode

S1 S2

ON OFF ON OFF

75–ohm E1 Mode

S1 S2

ON OFF ON OFF

120–ohm E1 Mode

S1 S2

ON OFF ON OFF
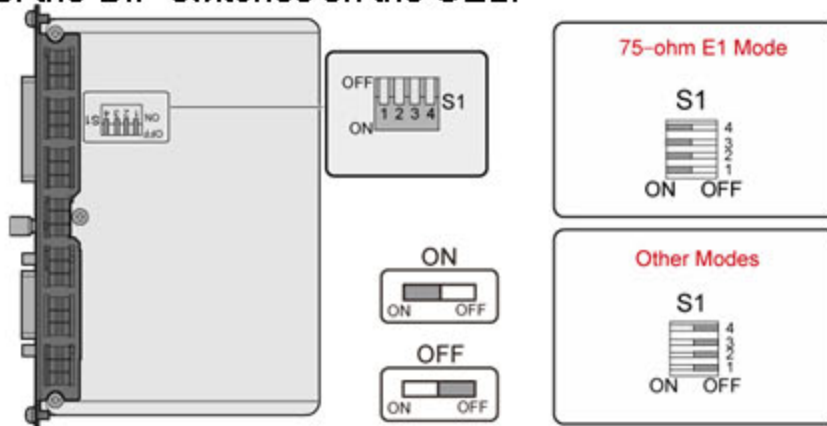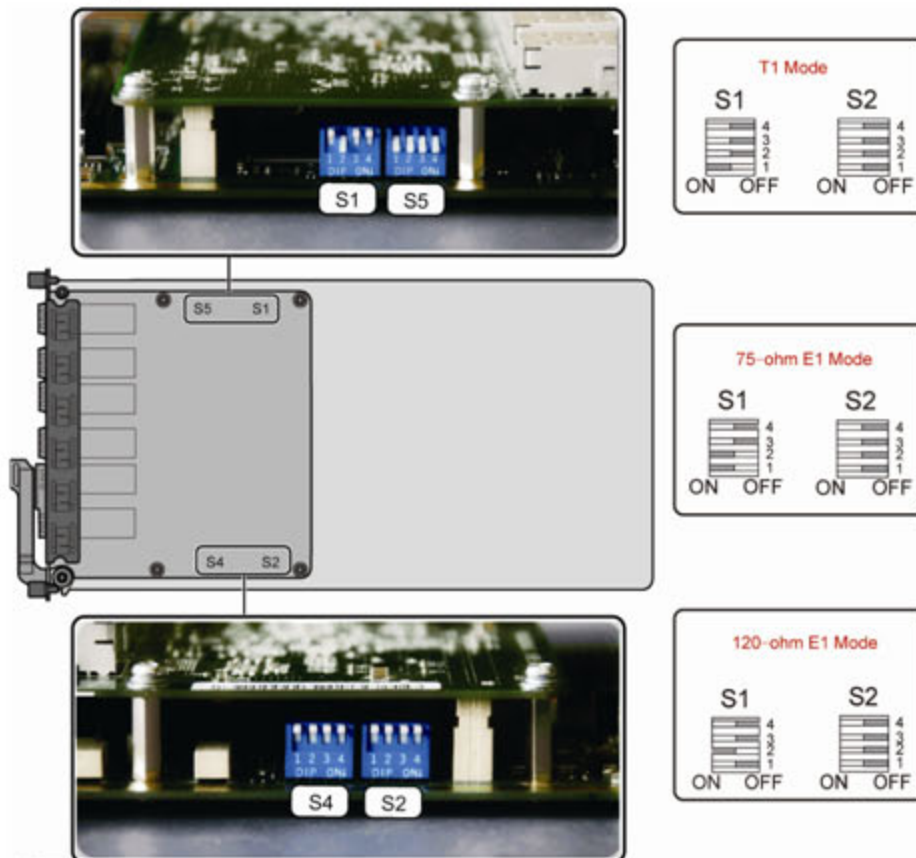
📖 **NOTE**

All the DIP bits of S2 on the GTMU are set to OFF by default in all modes.When four 75-ohm E1 links are faulty, all the DIP bits of S2 should be set to ON so that the faults are rectified.

C Setting the DIP Switches

Settings of S4 and S5 on the GTMU

DIP Switch	Setting of DIP Bit				Description
S 4	1	2	3	4	
	ON	ON	ON	ON	The E1 link can be bypassed.
	OFF	OFF	OFF	OFF	The E1 link cannot be bypassed.
	Miscellaneous				Not available

DIP Switch	Setting of DIP Bit				Description
S 5	1	2	3	4	
	ON	ON	ON	ON	The E1 link can be bypassed.
	OFF	ON	ON	OFF	The E1 link of the Level 1 cascaded BTS can be bypassed.
	ON	OFF	ON	OFF	The E1 link of the Level 2 cascaded BTS can be bypassed
	OFF	OFF	ON	OFF	The E1 link of the Level 3 cascaded BTS can be bypassed.
	ON	ON	OFF	OFF	The E1 link of the Level 4 cascaded BTS can be bypassed.
	OFF	ON	OFF	OFF	**The E1 link of the Level 5 cascaded BTS can be bypassed**

③ **Reinstall the GTMU and the UELP.**
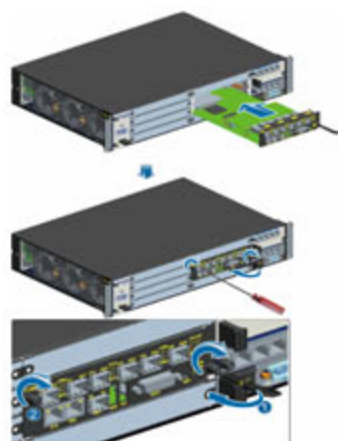
Reference

d   Engineering Specifications of the BBU

Item	Specification
Dimensions	86 mm (height) x 442 mm (width) x 310 mm (depth)
Weight	Typical configuration: 7 kg; full configuration: 11 kg
Input voltage	–48 V DC and 24 V DC

e   Pin assignment for the BBU signal cables

75-ohm E1 cable

Pin of the DB26 Male Connector	Wire Type	Coaxial Series No.	Label
X1.1	Tip	1	RX1+
X1.2	Ring		RX1-
X1.3	Tip	3	RX2+
X1.4	Ring		RX2-
X1.5	Tip	5	RX3+
X1.6	Ring		RX3-
X1.7	Tip	7	RX4+
X1.8	Ring		RX4-
X1.19	Tip	2	TX1+
X1.20	Ring		TX1-
X1.21	Tip	4	TX2+
X1.22	Ring		TX2-
X1.23	Tip	6	TX3+
X1.24	Ring		TX3-
X1.25	Tip	8	TX4+
X1.26	Ring		TX4-

Reference

120-ohm E1 cable

Pin of the DB26 Male Connector	Wire Color	Wire Type	Label
X1.1	Blue	Twisted pair	RX1+
X1.2	White		RX1-
X1.3	Orange	Twisted pair	RX2+
X1.4	White		RX2-
X1.5	Green	Twisted pair	RX3+
X1.6	White		RX3-
X1.7	Brown	Twisted pair	RX4+
X1.8	White		RX4-
X1.19	Grey	Twisted pair	TX1+
X1.20	White		TX1-
X1.21	Blue	Twisted pair	TX2+
X1.22	Red		TX2-
X1.23	Orange	Twisted pair	TX3+
X1.24	Red		TX3-
X1.25	Green	Twisted pair	TX4+
X1.26	Red		TX4-

Reference

Pin assignment for the BBU signal cables

Monitoring signal cable between the APMI and the BBU

Pin of the RJ45 Connector	Wire Color	Pins of X2, X3, X4, and X5	Wire Type	Port on the APMI
X1.1	White	X2	Twisted pair	TX+
X1.2	Orange	X3	Twisted pair	TX-
X1.4	Blue	X4	Twisted pair	RX+
X1.5	White	X5	Twisted pair	RX-

EMUA monitoring signal cable

Pin on the RJ45 Connector	Pin of the DB9 Male Connector	Wire Color	Wire Type	Port on the APMI
X1.1	X2.3	White	Twisted pair	TX+
X1.2	X2.7	Orange	Twisted pair	TX-
X1.4	X2.2	Blue	Twisted pair	RX+
X1.5	X2.6	White	Twisted pair	RX-

Reference

BBU alarm cable

Pin of the RJ45 Connector	Pin of the RJ45 Connector	Wire Color	Wire Type
X1.1	X2.1	White/orange	Twisted pair
X1.2	X2.2	Orange	
X1.3	X2.3	White/green	Twisted pair
X1.6	X2.6	Green	
X1.5	X2.5	White/blue	Twisted pair
X1.4	X2.4	Blue	
X1.7	X2.7	White/brown	Twisted pair
X1.8	X2.8	Brown	