

SingleRAN WiMAX-LTE  
V100R001C00

# Quick Installation Guide (Co-RRU3702)

Issue: XX  
Date: 2011-XX-XX

HUAWEI TECHNOLOGIES CO., LTD.

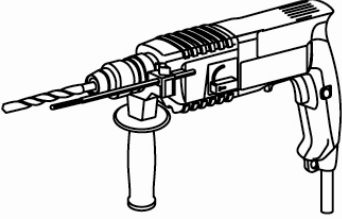
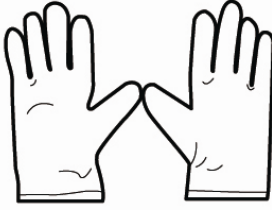

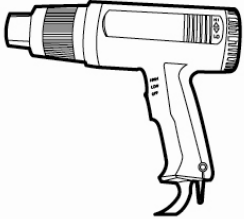
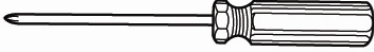

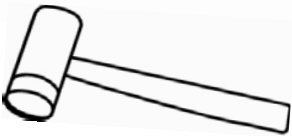
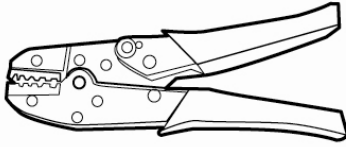
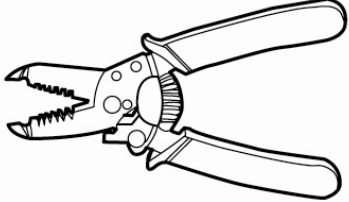
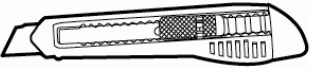
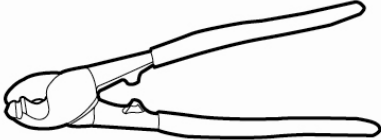


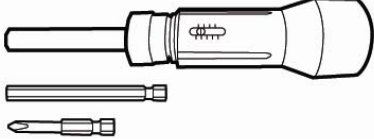




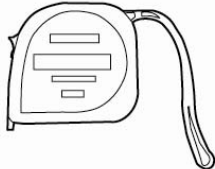


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# Contents

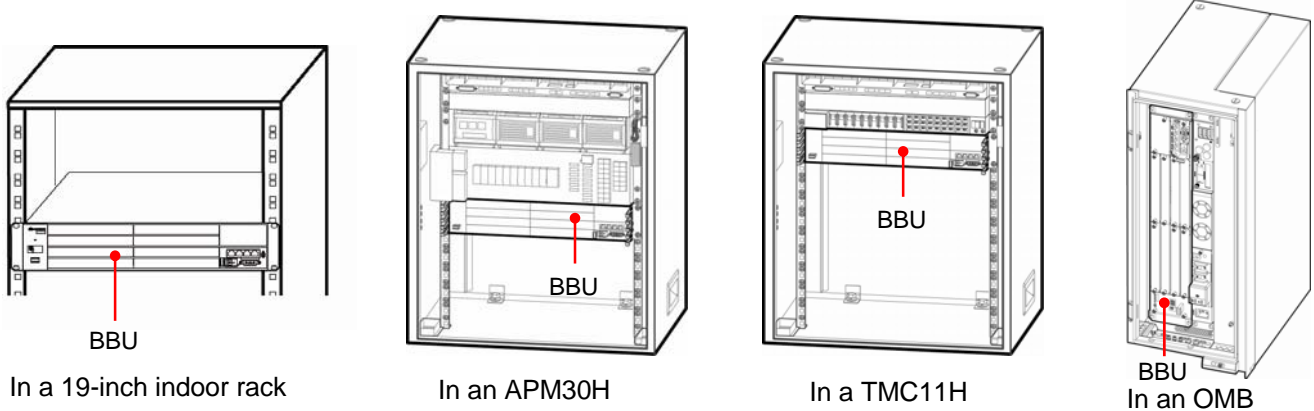
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# Installation Tools

|   |   |   |
|---|---|---|
|  <p>Hammer drill (with bit 14)</p> |  <p>ESD gloves</p>   |  <p>Vacuum cleaner</p>   |
|  <p>Heat gun</p>                   |  <p>Phillips screwdriver<br/>(M3 to M6)</p>                                    |  <p>Flat-head screwdriver<br/>(M3 to M6)</p>   |
|  <p>Rubber mallet</p>             |  <p>Crimping pliers</p>   |  <p>Wire stripper</p>   |
|  <p>Utility knife</p>            |  <p>Wire cutter</p>  |  <p>Adjustable wrench<br/>[with a diameter of at least<br/>32 mm (1 1/4")]</p>   |
|  <p>Level</p>                    |  <p>Torque screwdriver</p>   |  <p>Torque wrench</p>  <p>Combination wrench<br/>[21 mm (0 13/16") to 21 mm (0 13/16")<br/>for pole installation<br/>[17 mm (0 11/16") to 17 (0 11/16")<br/>for wall installation]</p> |
|  <p>Multimeter</p>               |  <p>Marking pen<br/>[with a diameter of no more<br/>than 10 mm (0 3/8")]</p> |  <p>Measuring tape</p>   |

# Installation Scenarios

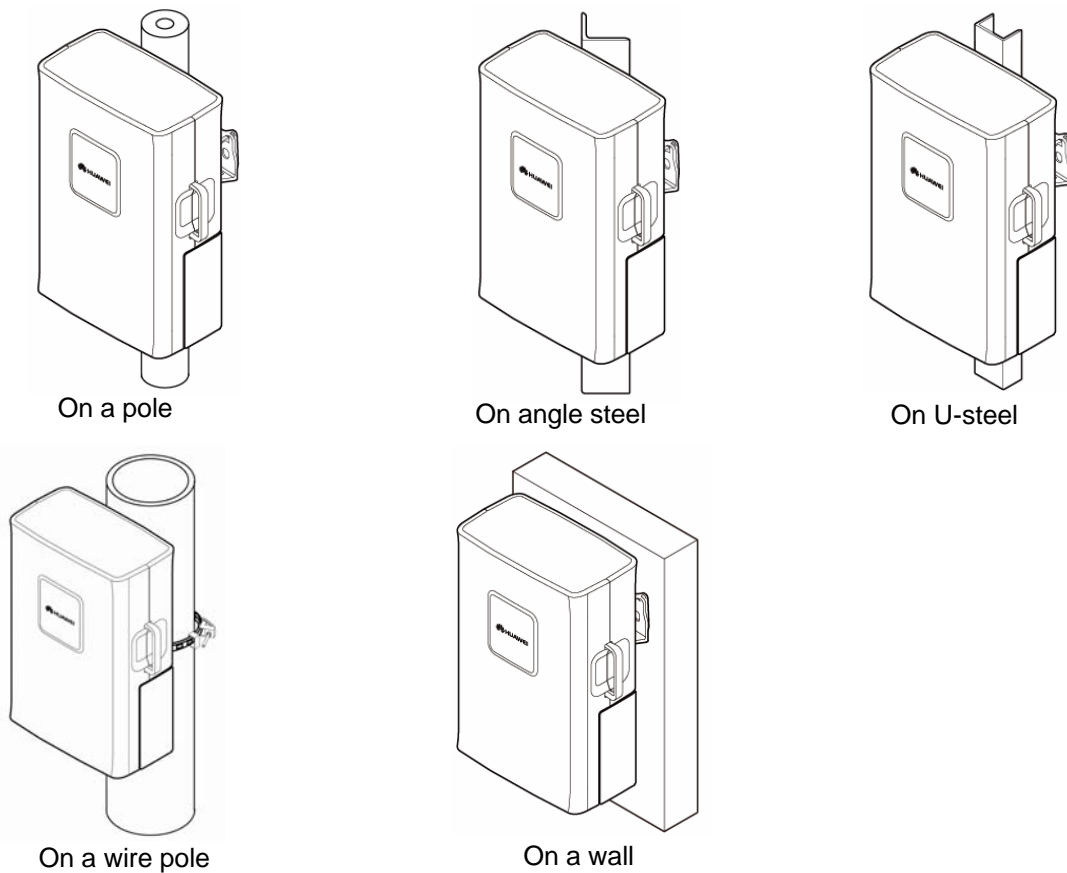
## a BBU3900 Installation Scenarios



### NOTE

For details about the installation of the APM30 and the TMC11H, see the *APM30H Installation Guide*.

## b RRU3702 Installation Scenarios

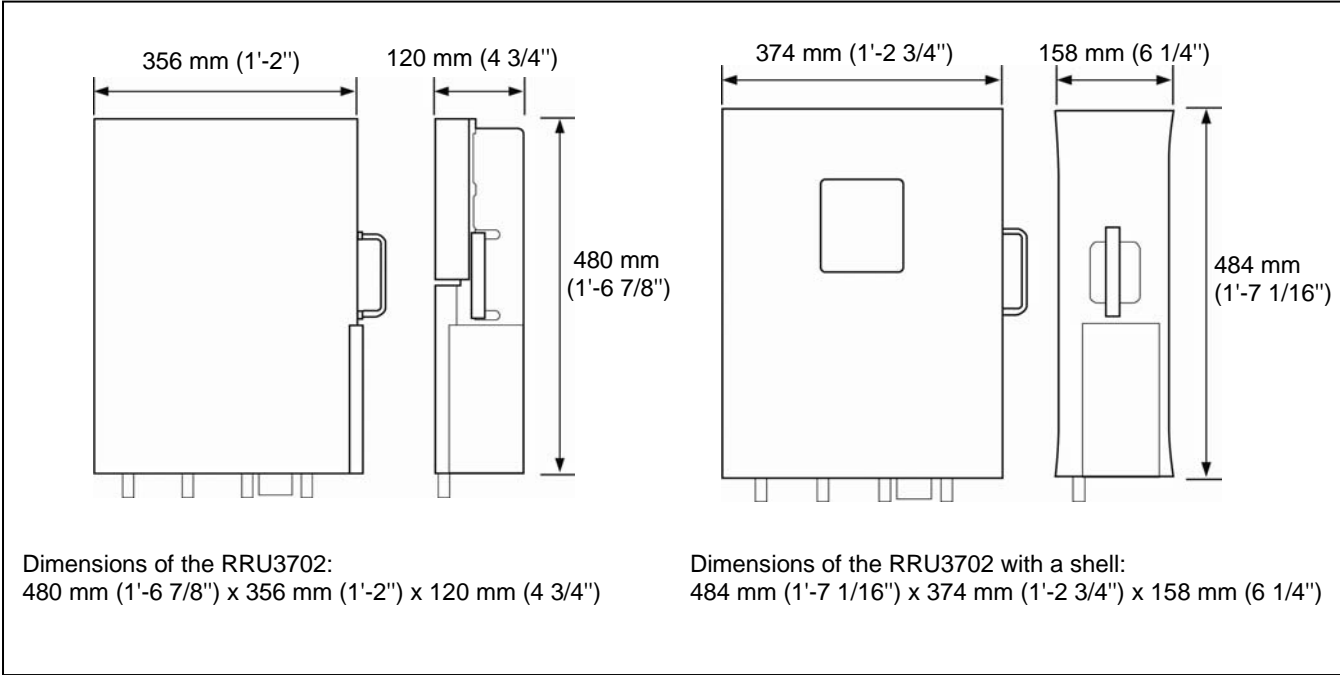
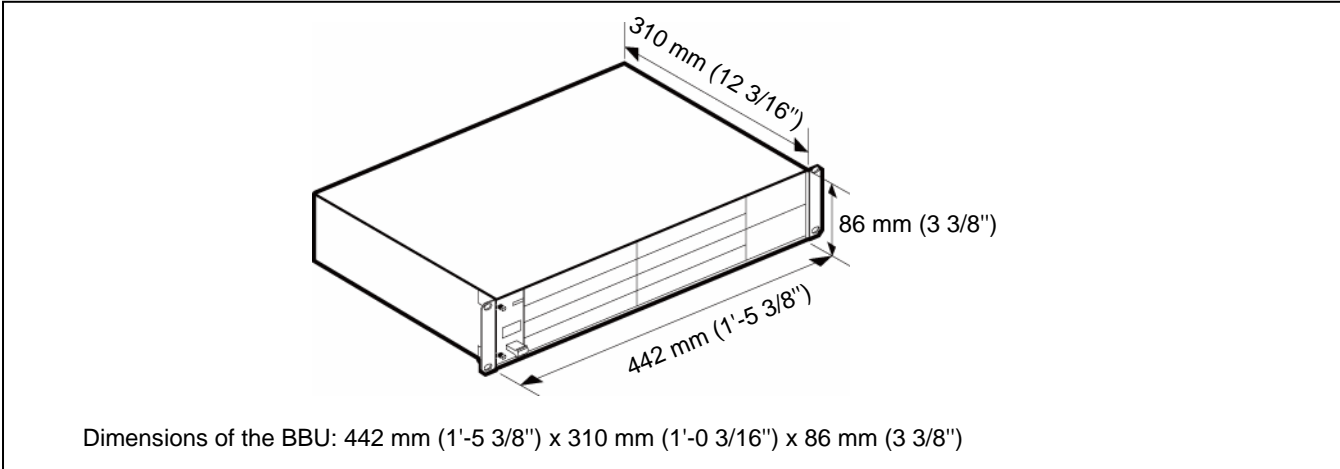


### CAUTION

- A cabinet must be powered on within seven days after being unpacked, and cannot be kept in the power-off status over 48 hours during maintenance.
- A module must be powered on within 24 hours after being unpacked or after being powered off for maintenance.

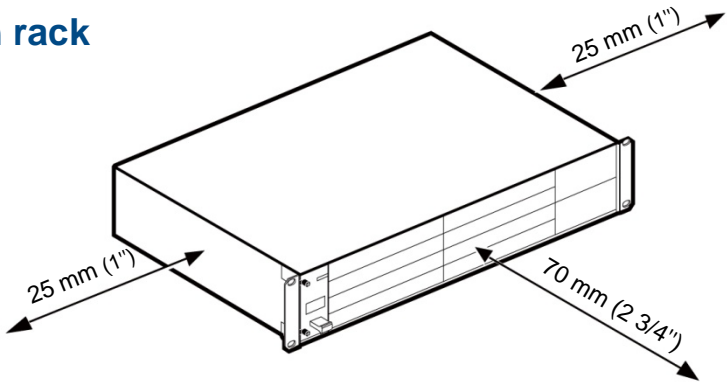
# Requirements for Dimensions and Installation Space

## a Dimensions



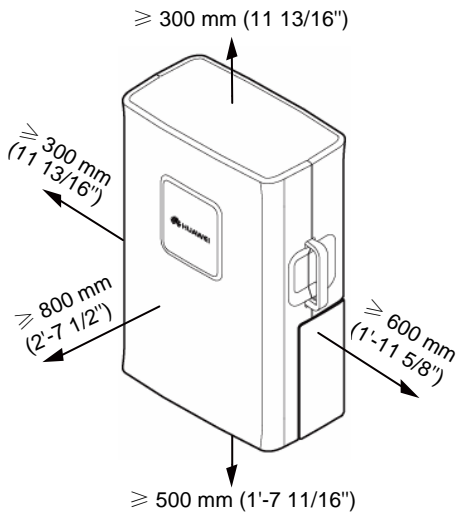
## b Space Requirements for the BBU3900 Installation

In a 19-inch rack

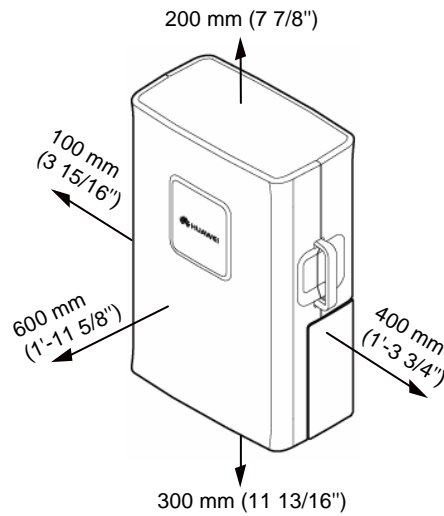


# C Installation Space

## Recommended space for RRU3702 installation



## Minimum space for RRU3702 installation



### NOTE

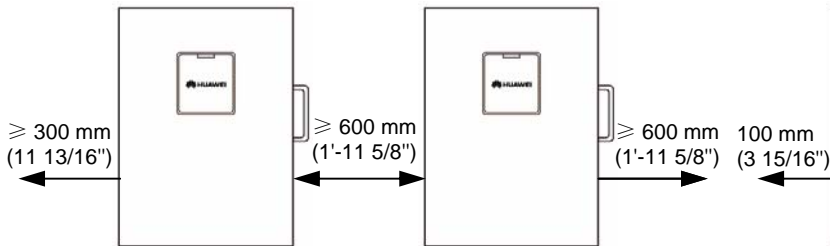
The recommended installation space meets the requirements of the equipment for normal running and OM. When the installation space is sufficient, the recommended installation space can be adopted.



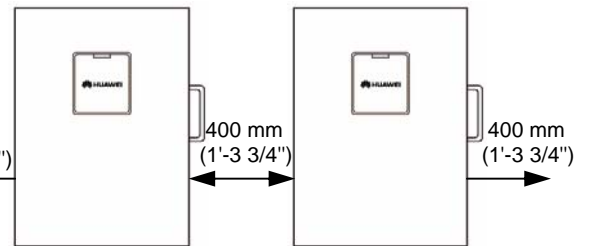
### NOTE

The minimum installation space meets the requirements of the equipment for normal running and heat dissipation, but does not meet the requirements for OM such as checking the status of the indicators and opening the maintenance cavity. When the installation space is restricted, the minimum installation space can be adopted.

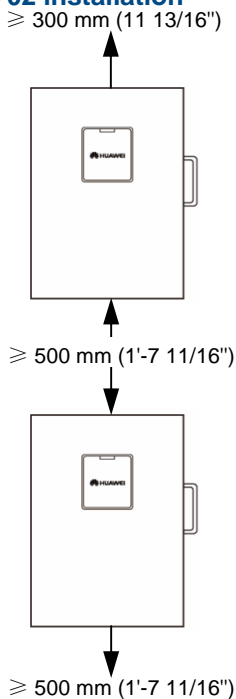
## Recommended horizontal space for RRU3702 installation



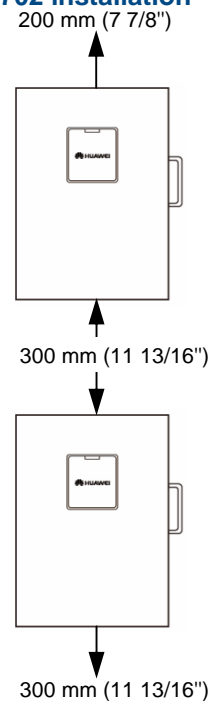
## Minimum horizontal space for RRU3702 installation



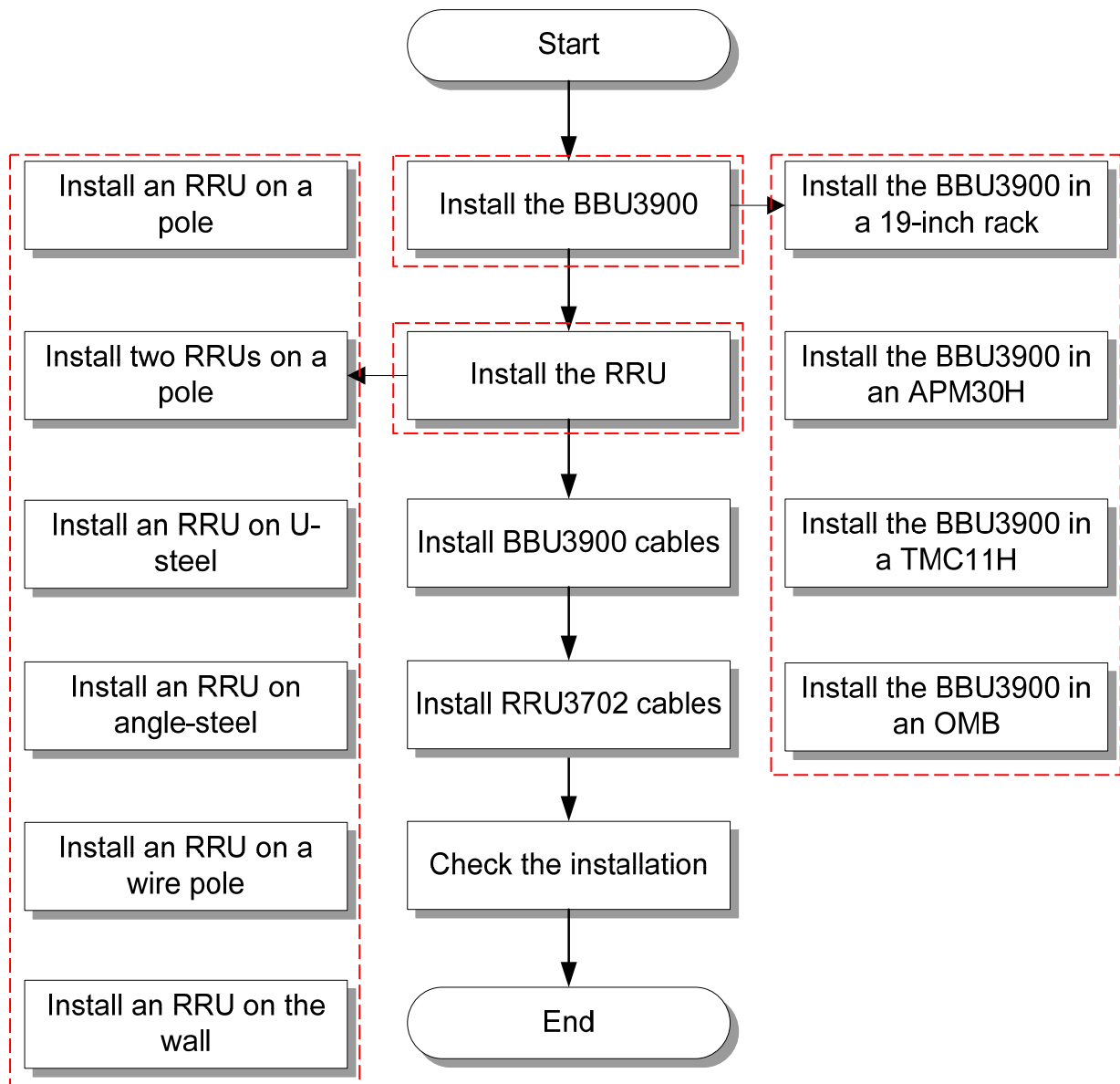
## Recommended vertical space for RRU3702 installation



## Recommended vertical space for RRU3702 installation



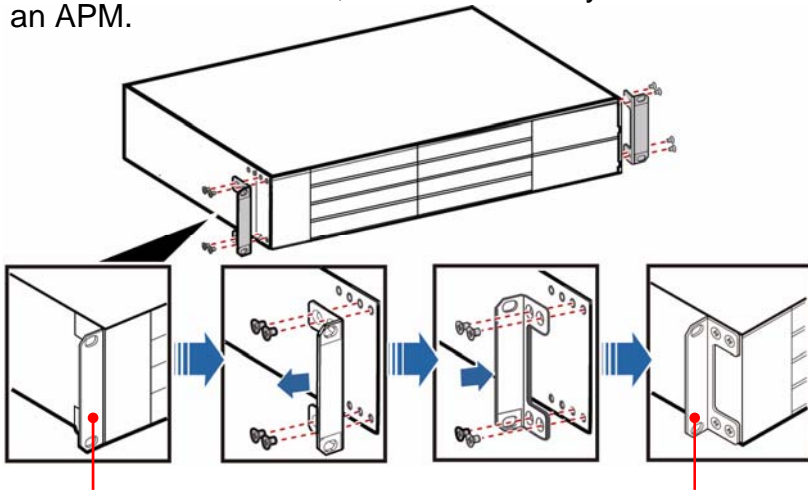
# Installation Procedure



# Installing the BBU3900

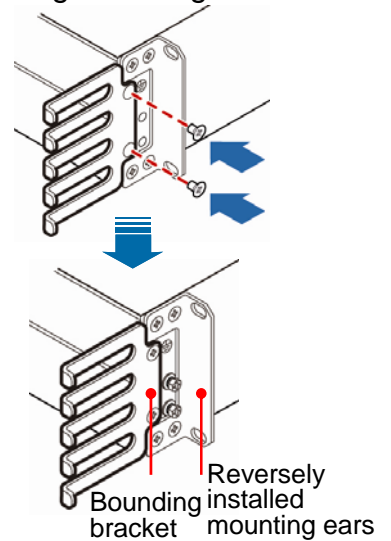
a. Verify that the BBU3900 mounting ears are regularly installed in a 19-inch rack, and are reversely installed in an APM.

b. Install the BBU3900 in an APM30H using a binding bracket.

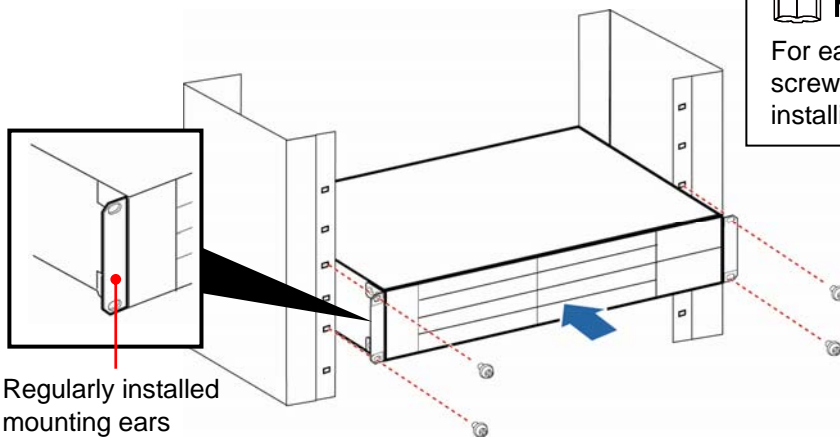


Regularly installed mounting ears

Reversely installed mounting ears



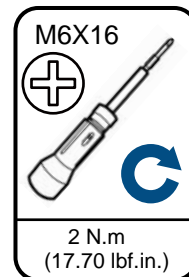
## a Installing the BBU3900 in a 19-Inch Rack



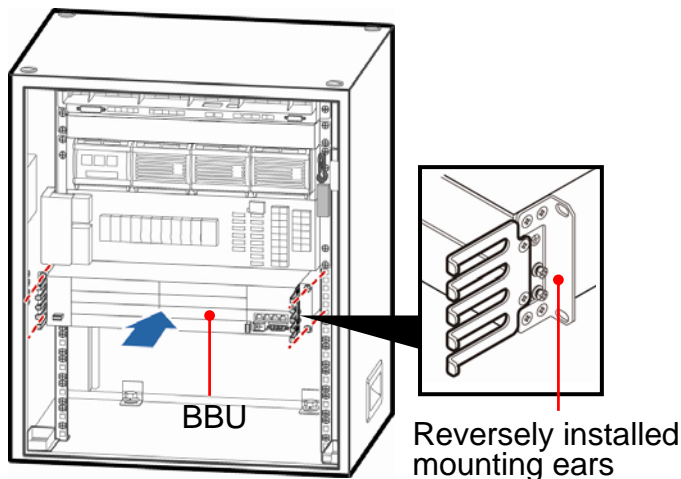
Regularly installed mounting ears

### NOTE

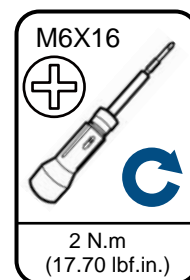
For easy installation, remove the two ground screws on the right side of the BBU panel before installing the BBU.



## b Installing the BBU3900 in an APM30H

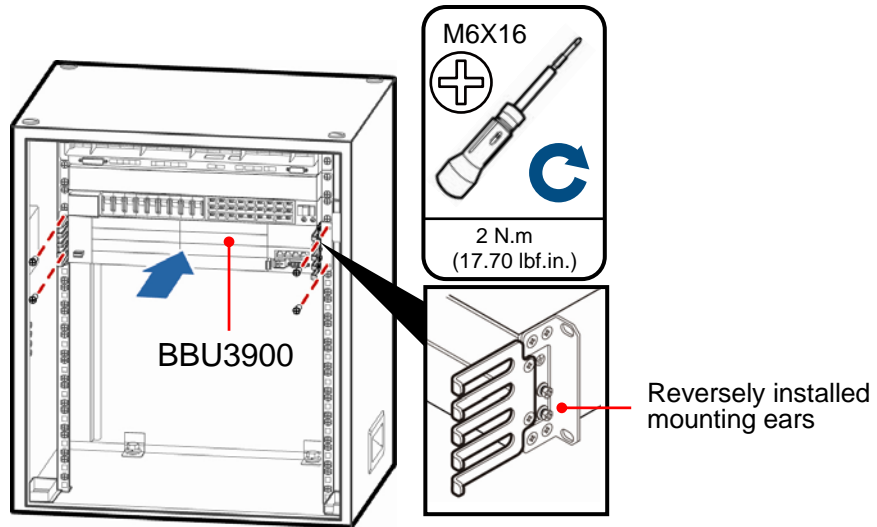


Reversely installed mounting ears

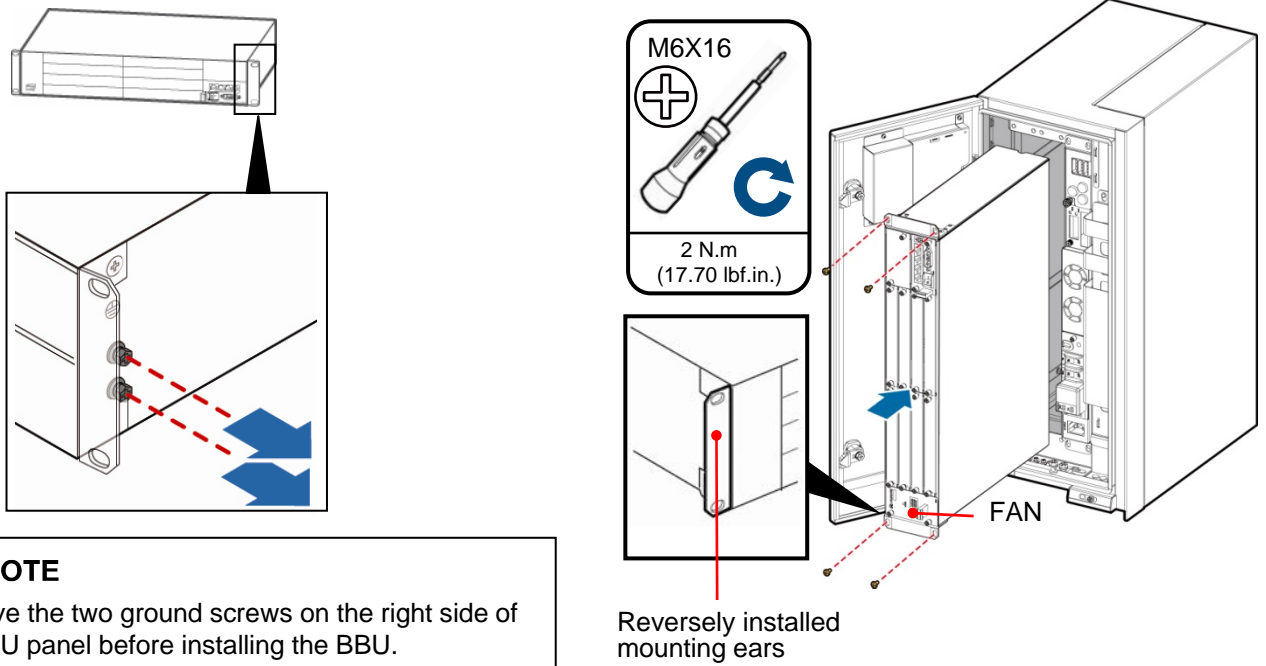




## C Installing the BBU3900 in a TMC11H



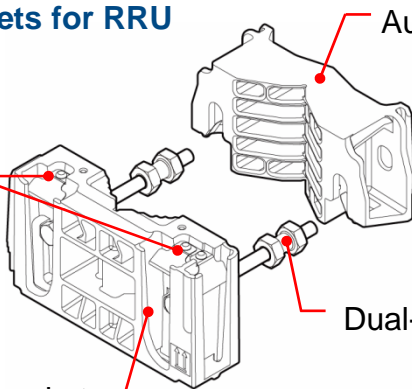
## e Installing the BBU3900 in an OMB



# Installing the RRU

## Mounting brackets for RRU

Tighten the screws when installing the RRU. Loosen these screws when removing the RRU.



Auxiliary bracket

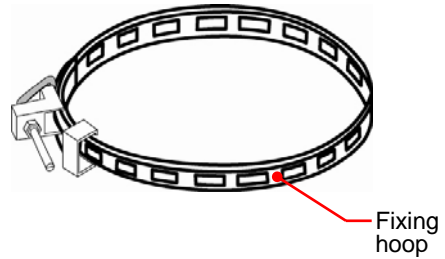
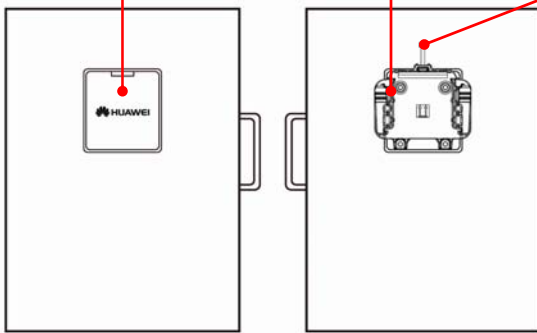
Dual-nut bolt

Main bracket

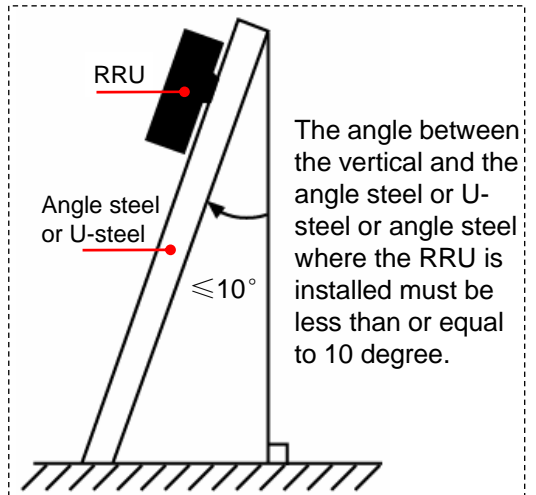
Logo on the cover plate

Transfer pieces

Tighten the screws when removing the RRU.



Fixing hoop



The angle between the vertical and the angle steel or U-steel or angle steel where the RRU is installed must be less than or equal to 10 degree.

### ⚠ CAUTION

- The RRU must be supported by foam or cardboard for protection.
- The RF ports at the bottom of the RRU cannot bear the weight of the RRU. Do not place the RRU on the ground in the upright position.

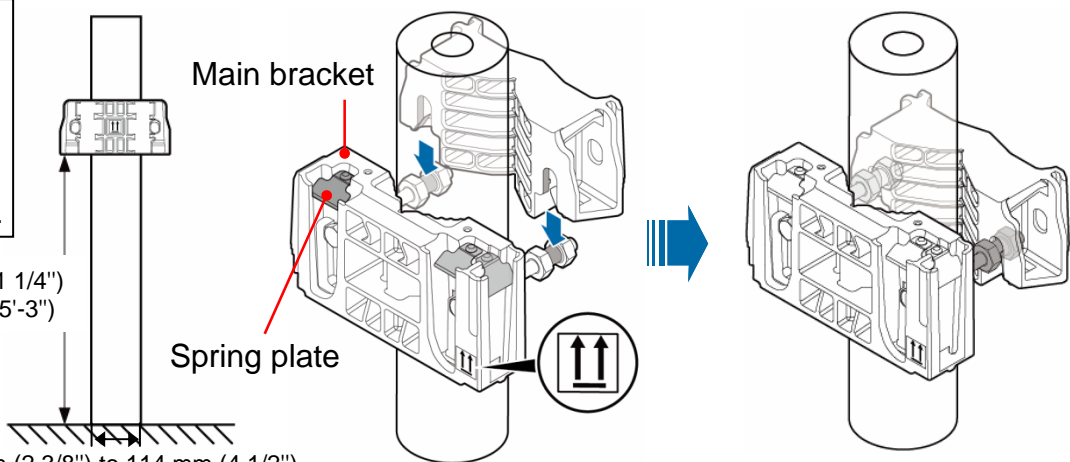
## a Installing the RRU on a Pole [Diameter: 60 mm (2 3/8") to 114 mm (4 1/2")]

### 1. Install the main bracket.

### ⚠ CAUTION

When installing the main bracket, ensure that the contact piece on the bracket is fixed.

1200 mm (3'-11 1/4")  
to 1600 mm (5'-3")



Main bracket

Spring plate

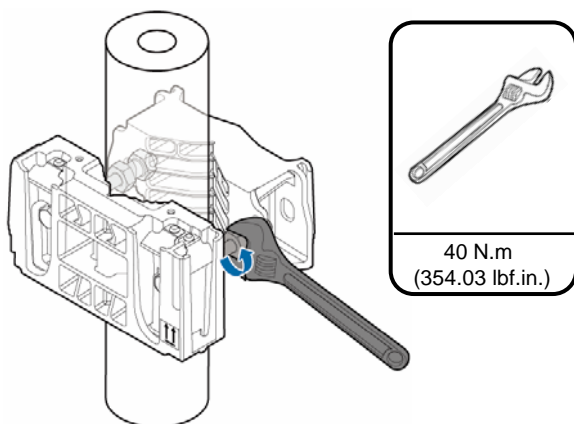
60 mm (2 3/8") to 114 mm (4 1/2")

The recommended diameter of the pole is 80 mm (3 1/8").

### 🔑 TIP

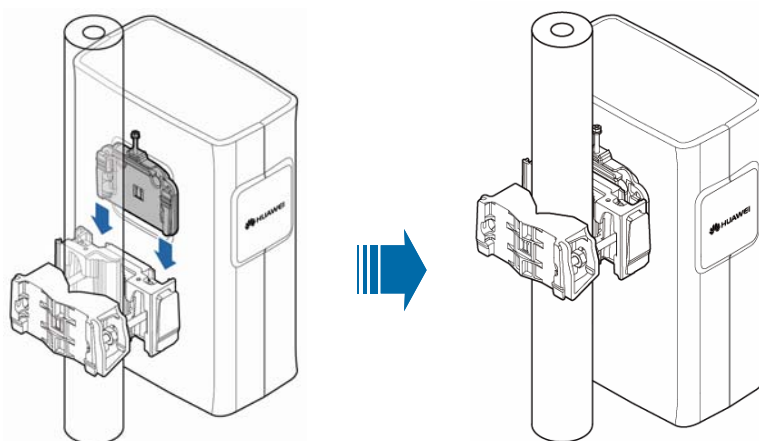
You may fit one end of the auxiliary bracket on one dual-nut bolt assembly and then the other end on the other dual-nut bolt assembly during the installation.

2. Use an adjustable wrench to tighten the nut until the fastening torque is 40 N.m (354.03 lbf.in.). This secures the main and auxiliary brackets to the pole.



**CAUTION**  
Tighten the two dual-nut bolt assemblies alternatively. After the brackets are secured, use a measuring tape to measure the spacing between the main bracket and the auxiliary bracket on two sides and confirm that the spacing is the same.

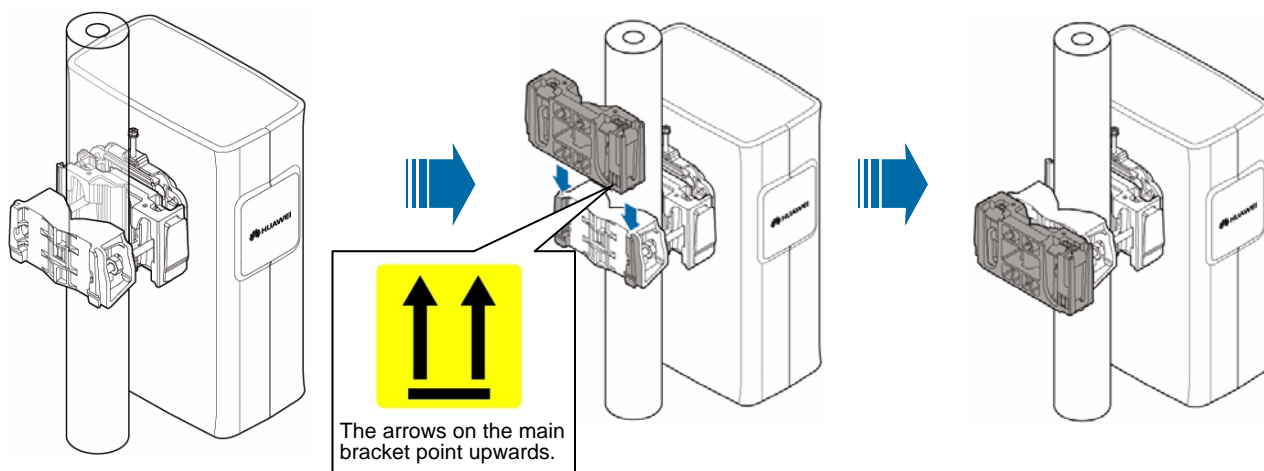
3. Install the RRU on the main bracket. When you hear click sound, the RRU is securely installed.



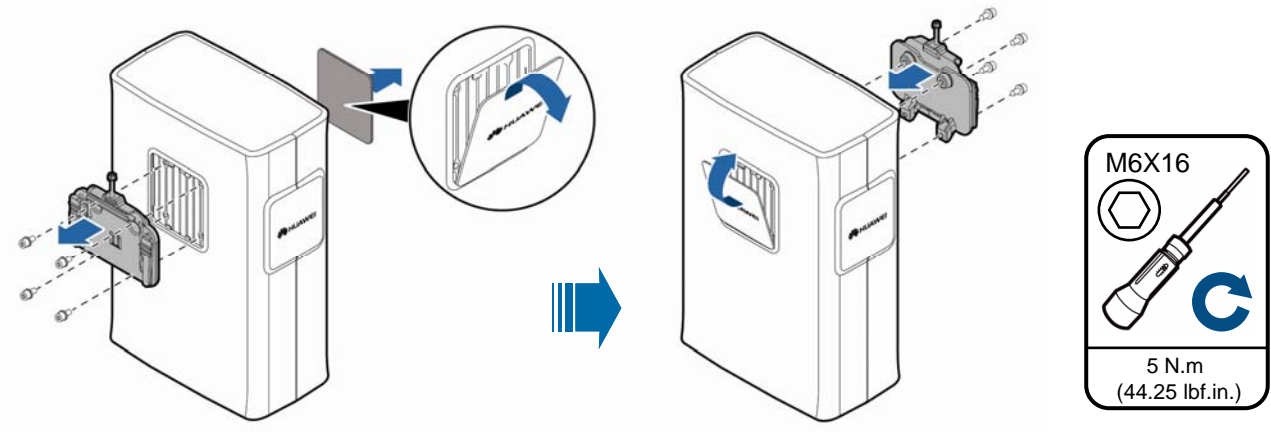
**b Installing Two RRUs on a Pole [Diameter: 60 mm (2 3/8") to 114 mm (4 1/2")]**

1. Install the first RRU.

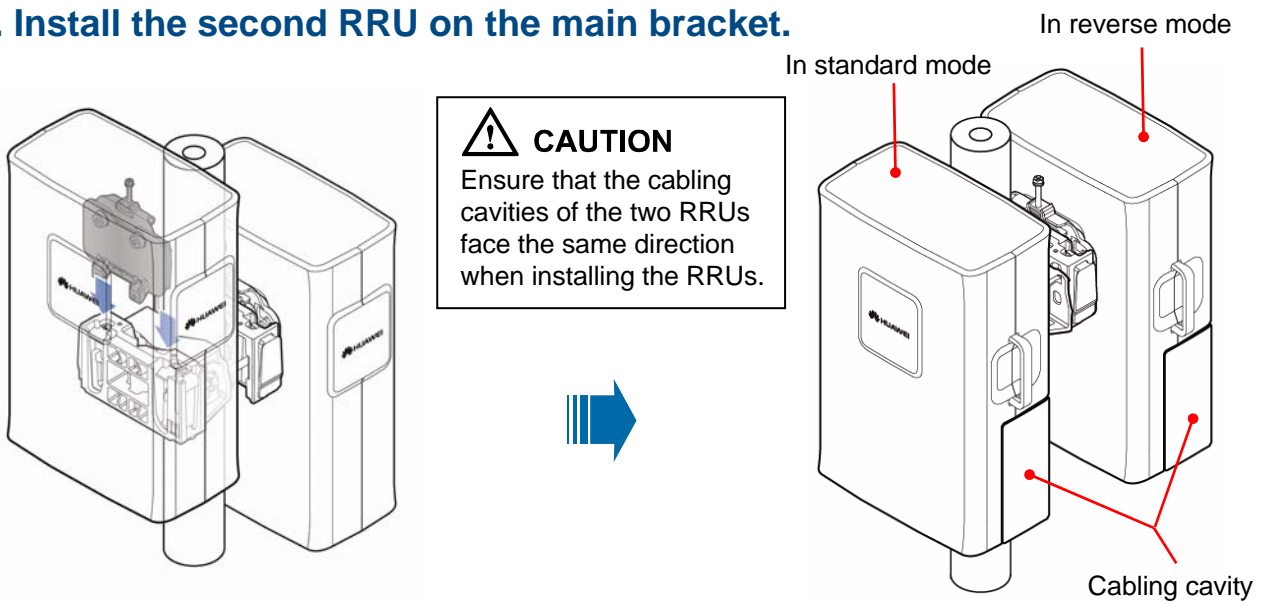
2. Install the second main bracket.



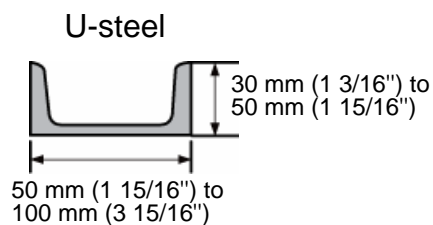
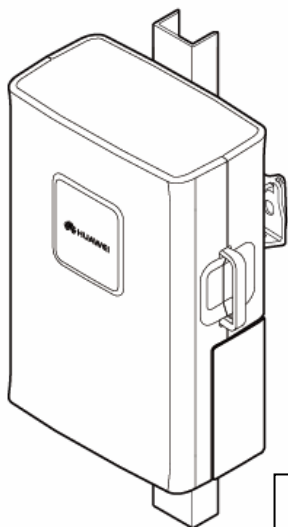
### 3. Swap the front cover and the transitional piece at the rear of the second RRU.



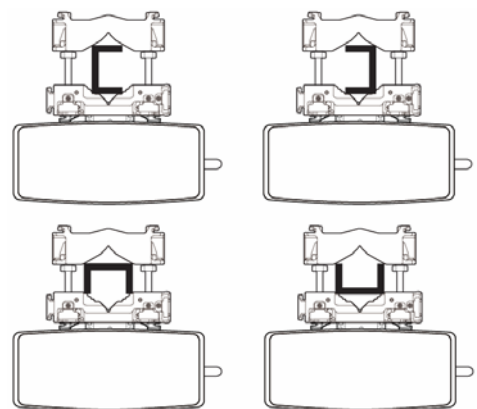
### 4. Install the second RRU on the main bracket.



## C Installing the RRU on a U-Steel



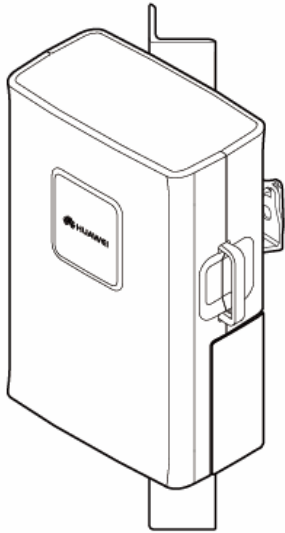
### Top views of four installation modes



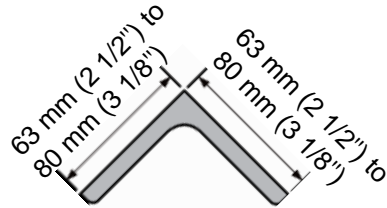
#### NOTE

- The process for installing the RRU on U-steel is the same as the procedure for installing the RRU on a pole.
- You are advised to install only one RRU on U-steel.

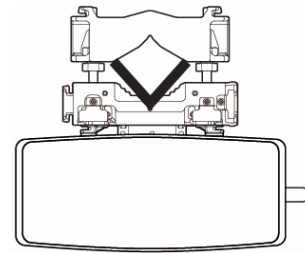
## d Installing the RRU on Angle Steel



Angle steel



Top views of the installation modes



### NOTE

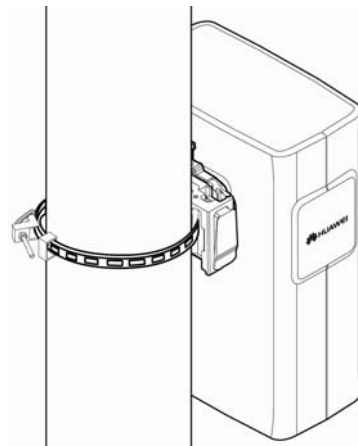
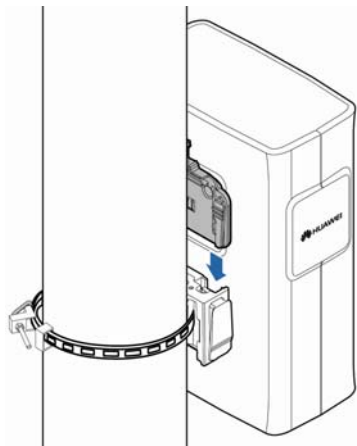
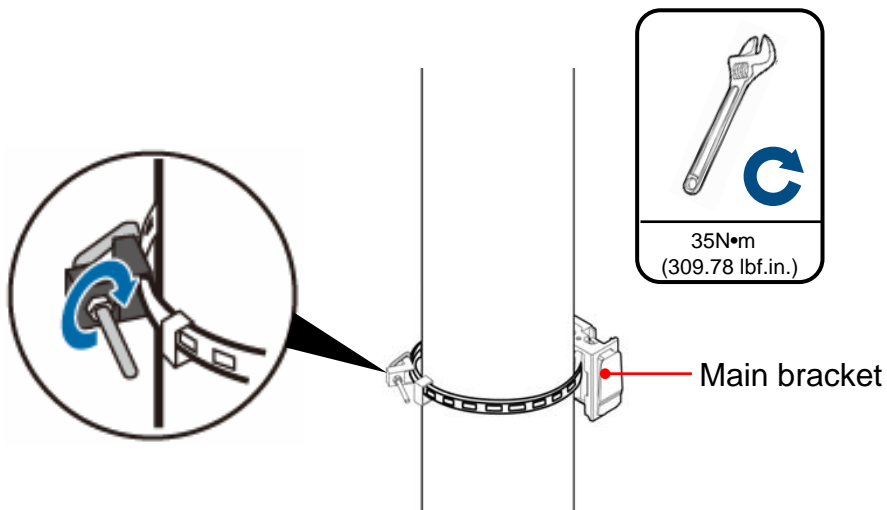
- The process for installing the RRU on angle steel is the same as the procedure for installing the RRU on a pole.
- You are advised to install only one RRU on angle steel.

## e Installing the RRU on a Wire Pole [Diameter: 300 mm (11 4/5") to 390 mm (1' 3 3/8")]



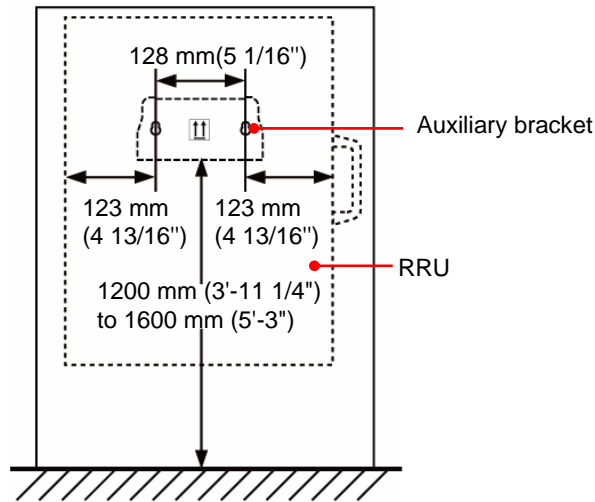
### NOTE

You are advised to install only one RRU on a wire pole.



## f Installing the RRU on a Wall

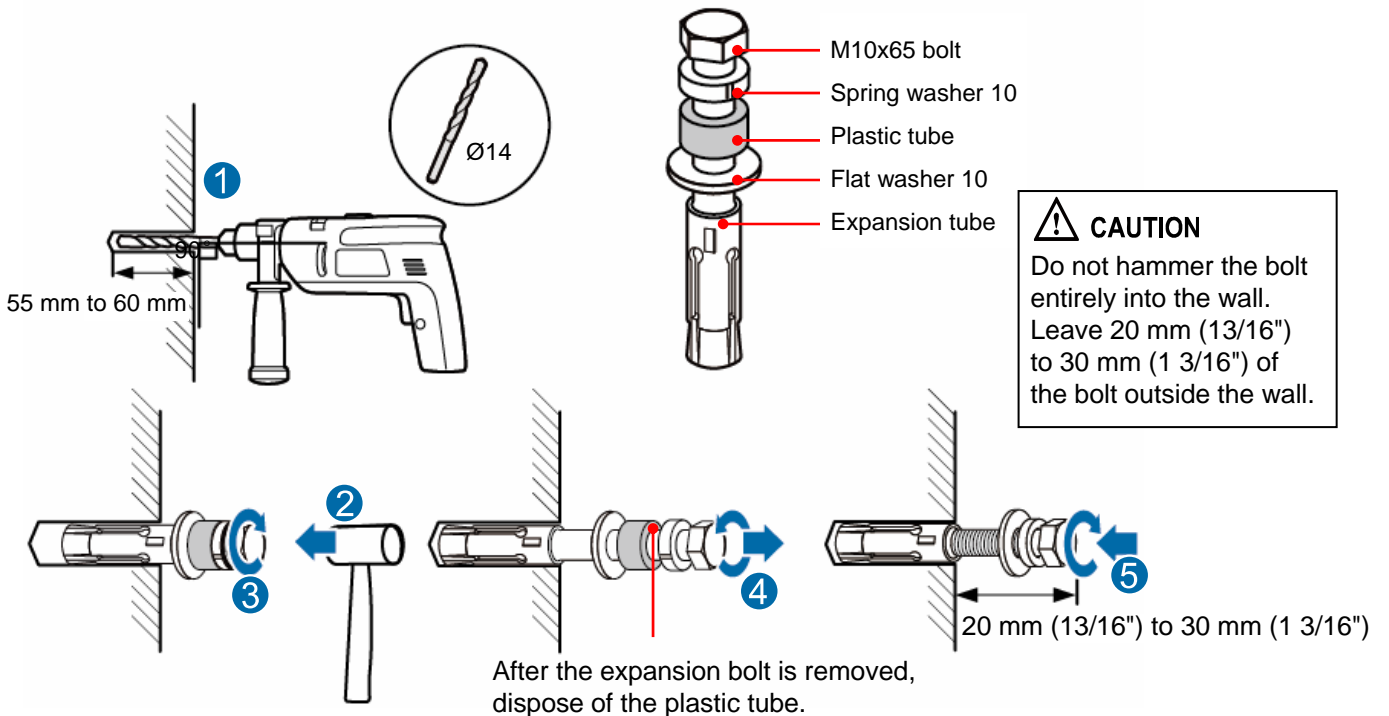
1. Place the auxiliary bracket in the installation position against the wall. Then, level the auxiliary bracket with a level and mark the anchor points with a marker.



### NOTE

It is recommended that the auxiliary bracket be 1200 mm (3'-11 1/4") to 1600 mm (5'-3") above the ground.

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

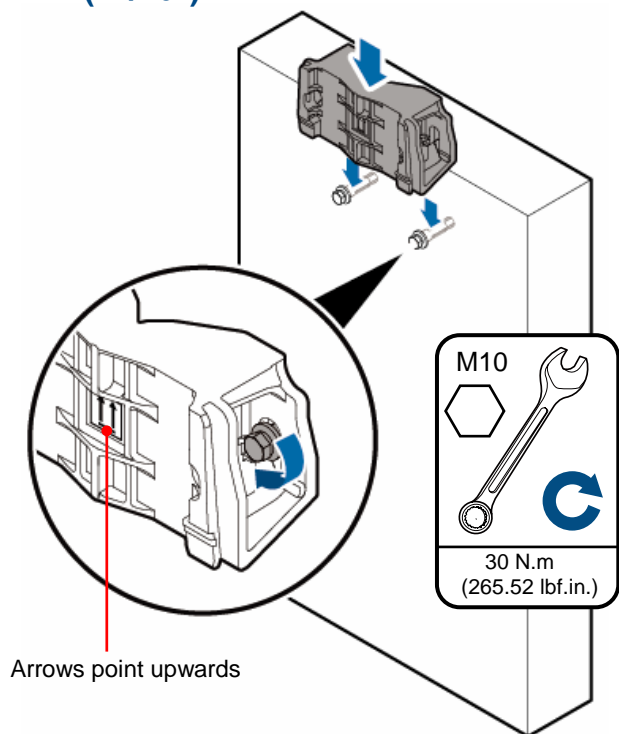


### NOTE

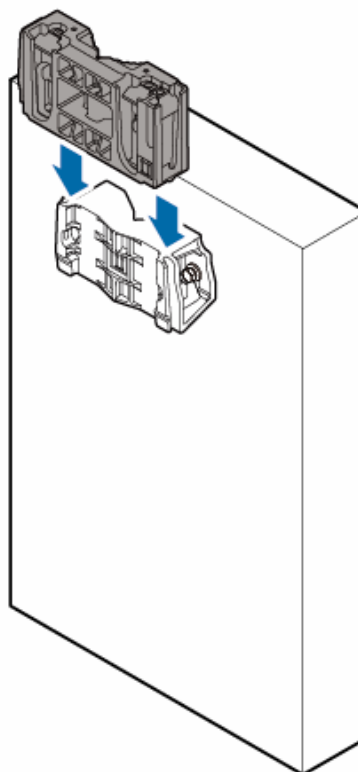
When the RRU is installed on a wall, the requirements are as follows:

- For one RRU, the wall has a weight-bearing capacity of 68 kg (149.94 lb).
- The torque for tightening the expansion bolt is 30 N.m (265.52 lbf.in.). This ensures that the expansion bolts are secured to the wall without causing damage to it.

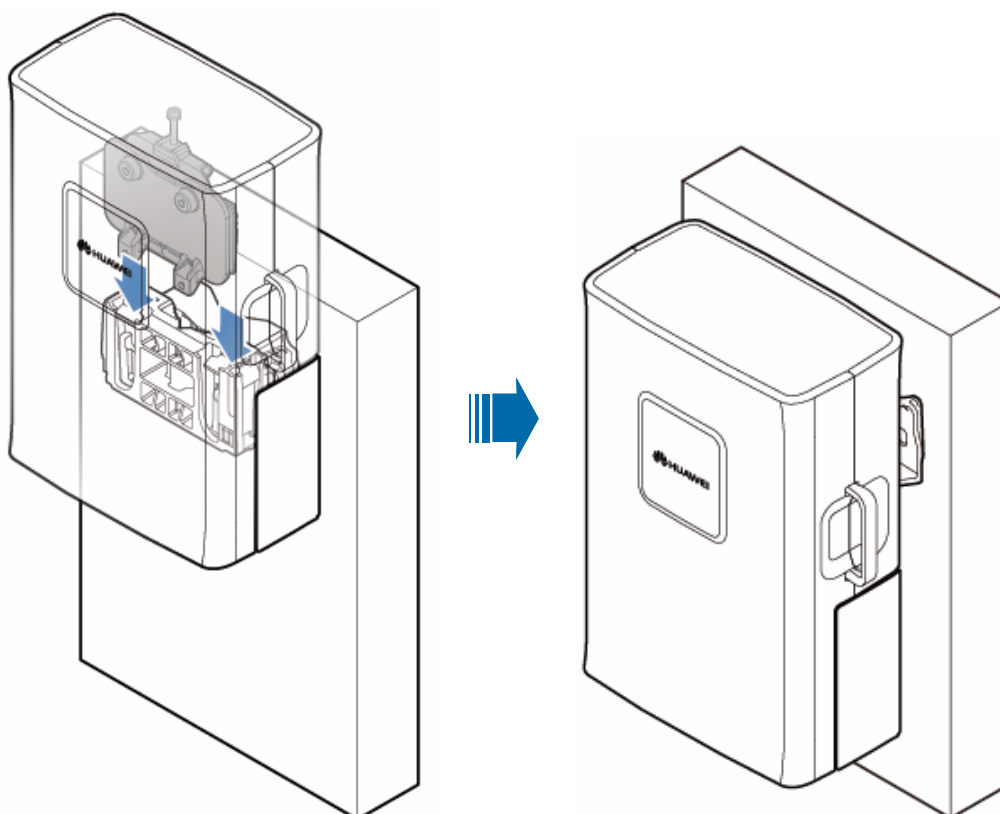
**3. Fit the auxiliary bracket on the expansion bolts downward, and then tighten the bolts by using a combination wrench with a diameter of 17 mm (11/16").**



**4. Install the main bracket.**



**5. Install the RRU.**



# Connecting Cables

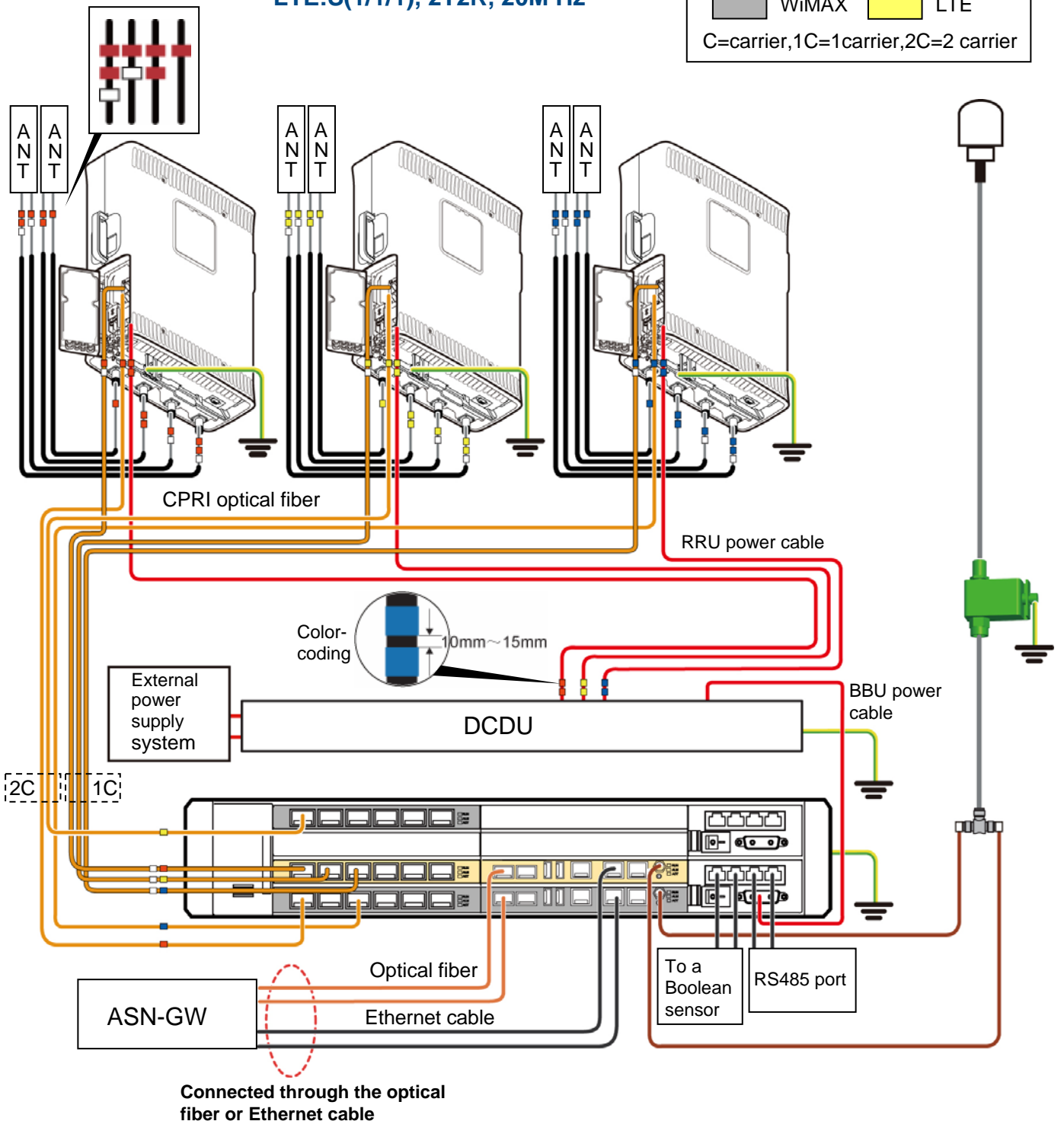
## a Cable Connections in General (RRU3702)

### NOTE

- The LMPTb, LMPTw, LBBPc, UPEUc, and FANc are used as examples.
- RRU3702s of a WiMAX-LTE BS in co-RRU mode supports only the chain topology.
- An LBBPc provides six CPRI ports. However, only the CPRI0, CPRI1, and CPRI2 ports are used in the typical configurations of a WiMAX-LTE BS in co-RRU mode.
- Configure the DCDU based on onsite situations.

**Configuration Type: WiMAX: S(2/2/2), 2T2R, 10M Hz**  
**LTE: S(1/1/1), 2T2R, 20M Hz**

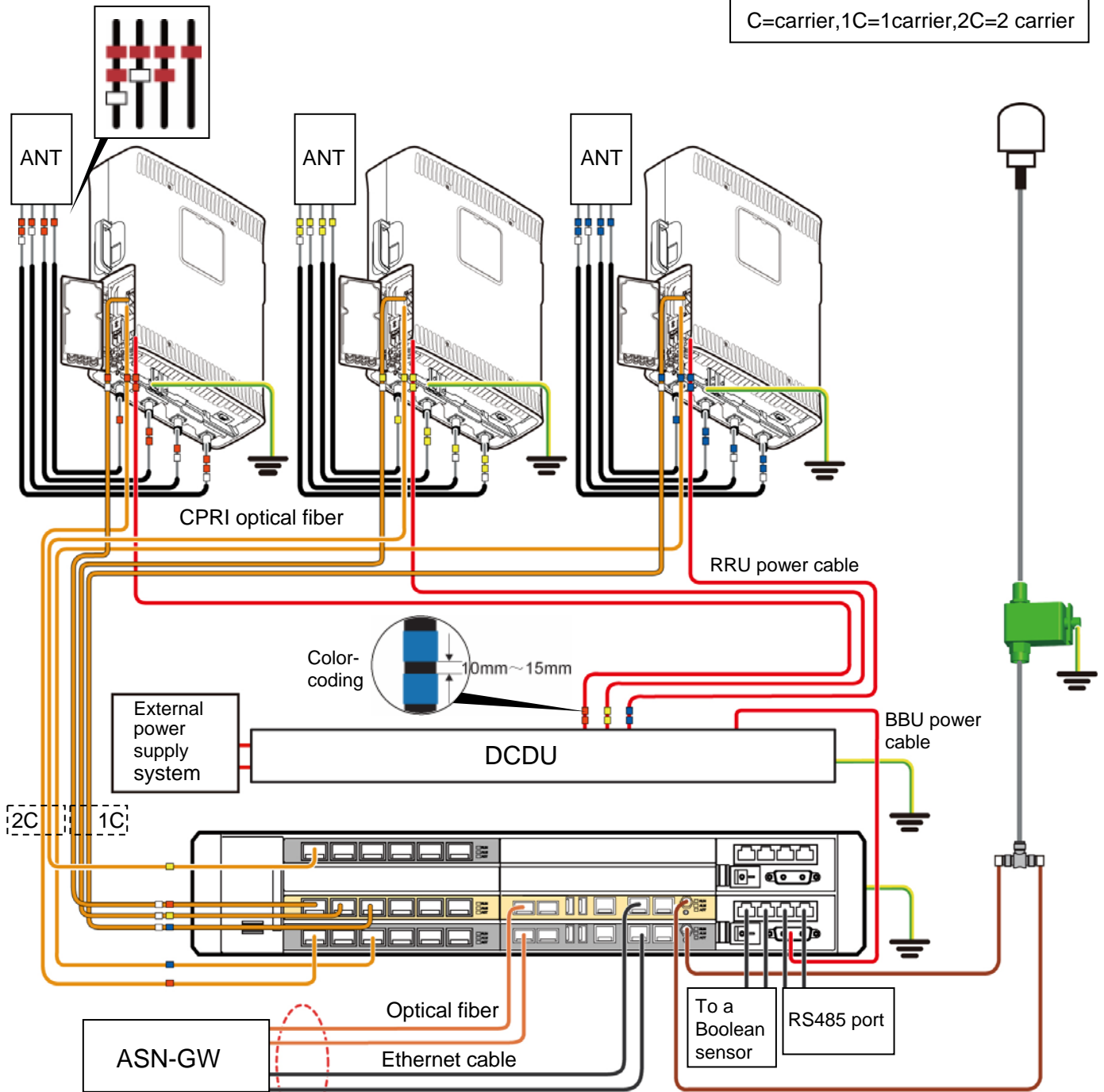
■ WiMAX ■ LTE  
 C=carrier, 1C=1 carrier, 2C=2 carrier





**Configuration Type: WiMAX: S(2/2/2), 4T4R, 10M Hz**  
**LTE:S(1/1/1), 4T4R, 10M Hz**

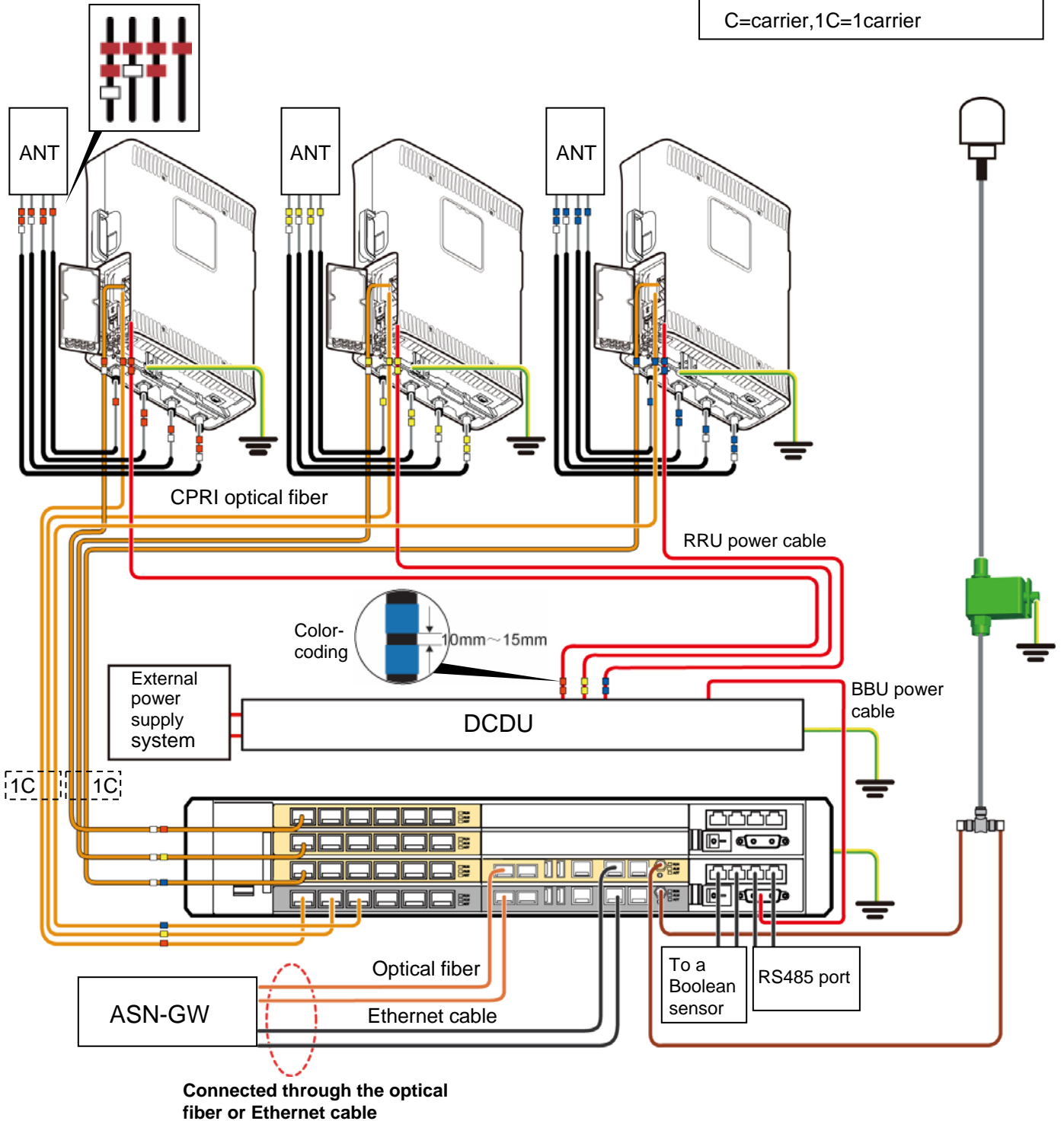
|                                      |       |  |     |
|--------------------------------------|-------|--|-----|
|                                      | WiMAX |  | LTE |
| C=carrier, 1C=1carrier, 2C=2 carrier |       |  |     |



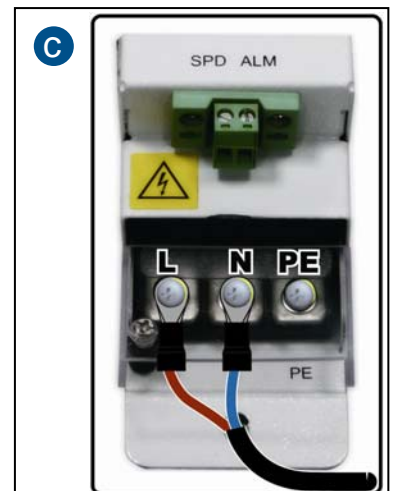
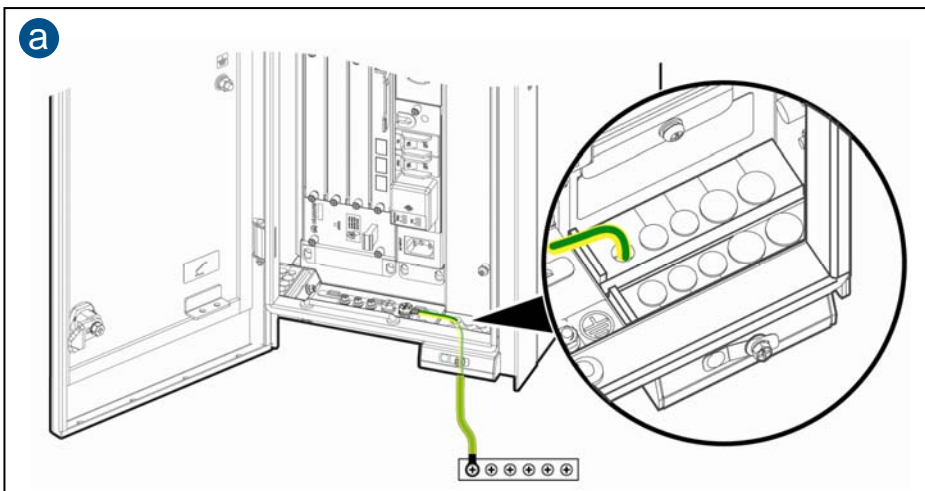
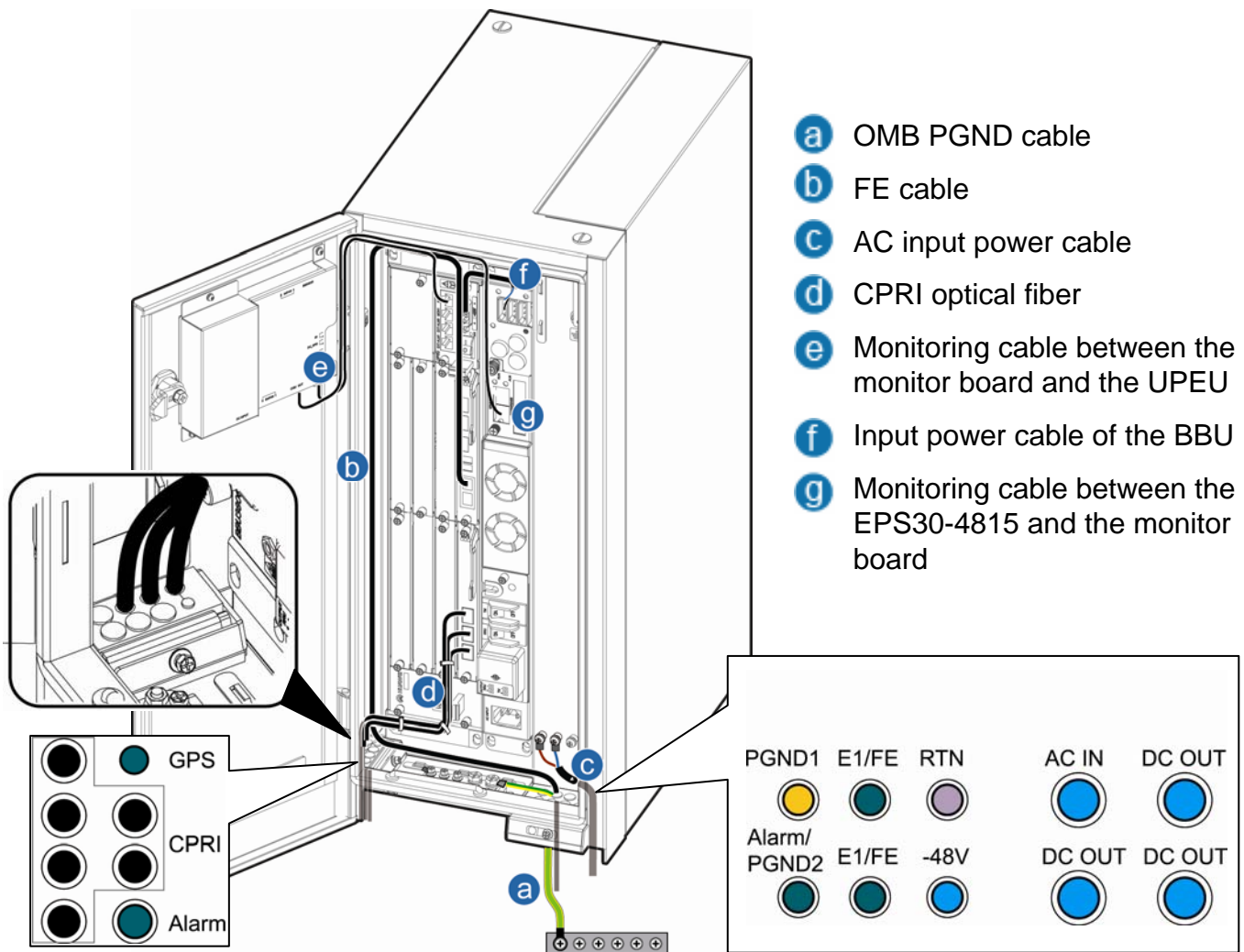
Connected through the optical fiber or Ethernet cable

**Configuration Type: WiMAX: S(1/1/1), 4T4R, 10M Hz  
 LTE:S(1/1/1), 4T4R, 20M Hz**

WiMAX   
  LTE  
 C=carrier, 1C=1carrier



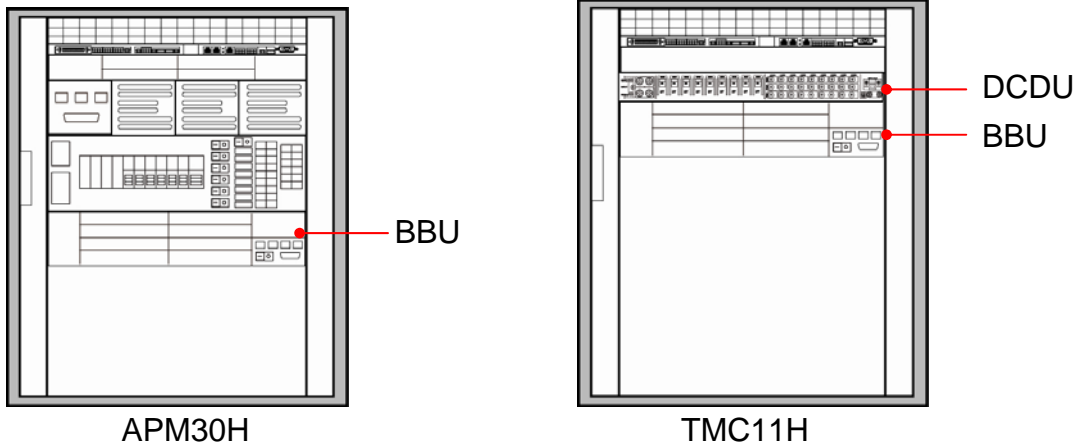
## b Cable Connections of the OMB



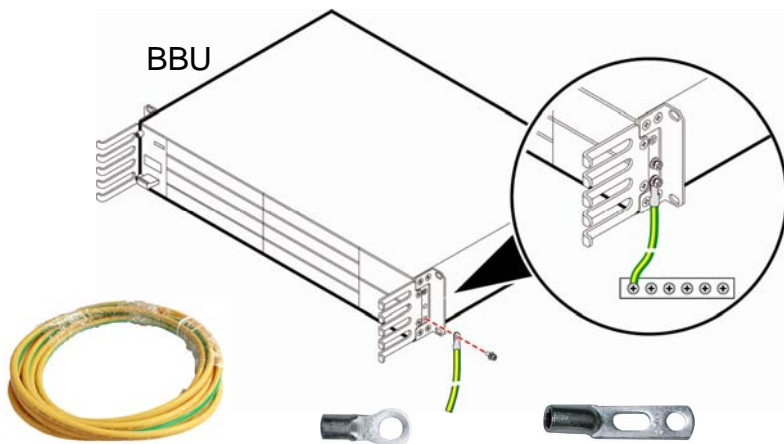
### ⚠ CAUTION

Before installing cables, you need to remove the waterproof module. Then, install the cables according to the cable layout principle of installation holes at the bottom of the cabinet—clipping the cables. After installing all the cables, place the waterproof module in the original position.

# Installing BBU3900 Cables



## a Installing the BBU3900 PGND Cable

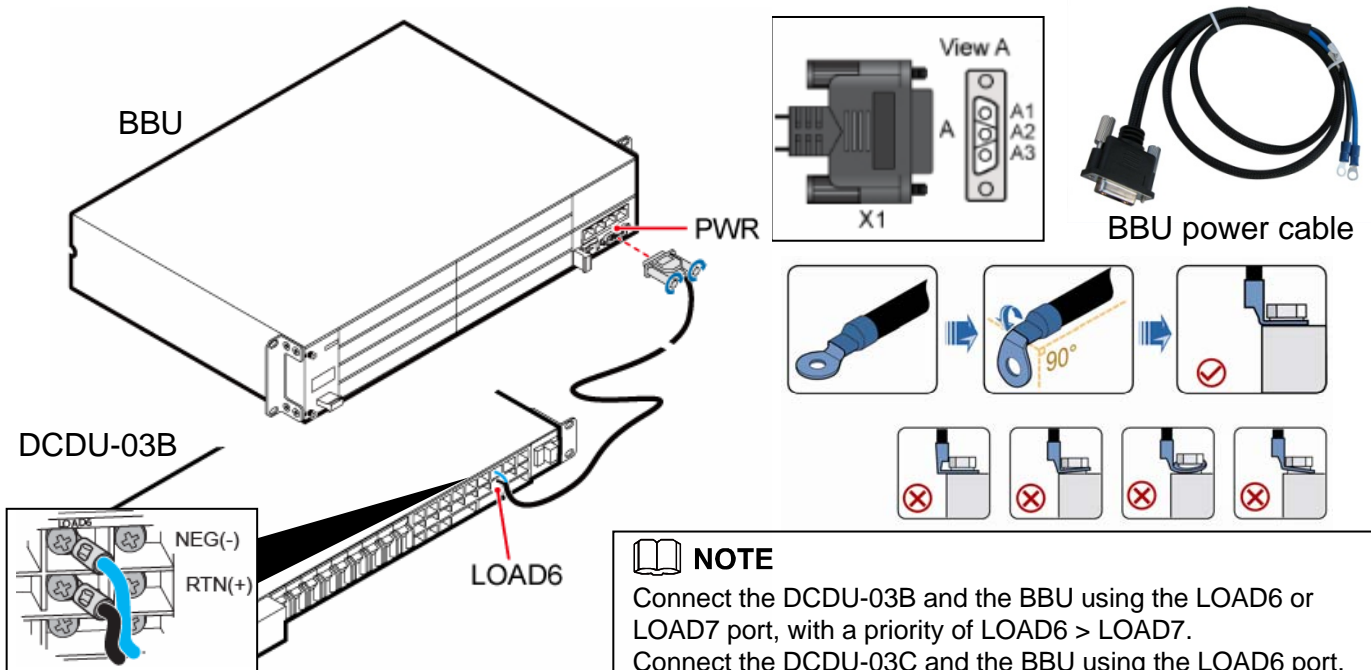


BBU PGND cable OT terminal Two-hole OT terminal

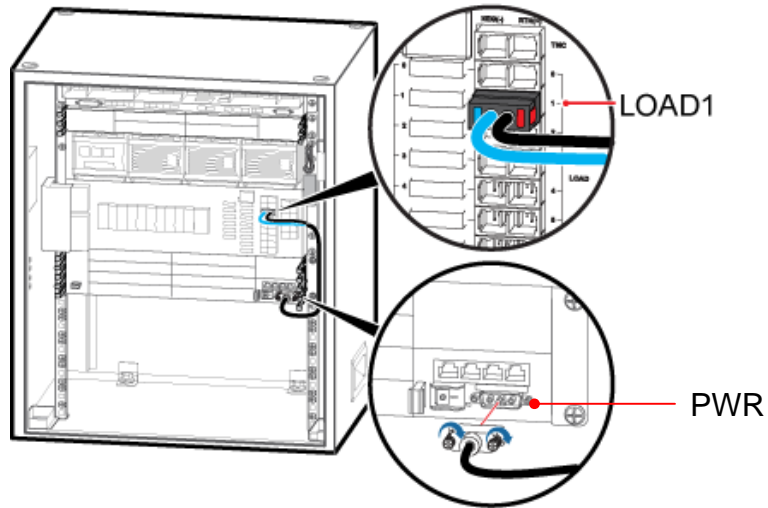
### NOTE

- The BBU PGND cable is yellow and green or green. The cross-sectional area of the PGND cable is 6 mm<sup>2</sup> (0.009 in.<sup>2</sup>).
- Connect one end terminated with an OT terminal or a two-hole OT terminal (M4) to the BBU. Connect the other end terminated with an OT terminal to the ground bar.
- Prepare the PGND cable at the site.
- The BBU in the APM30H, TMC, or OMB is grounded using mounting ears.

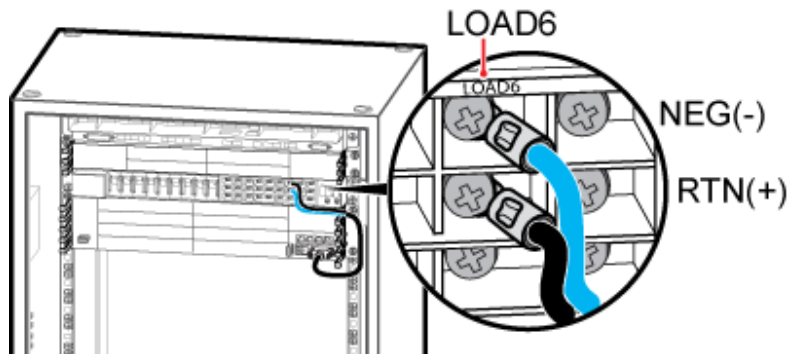
## b Installing the -48 V DC Power Cable of the BBU3900



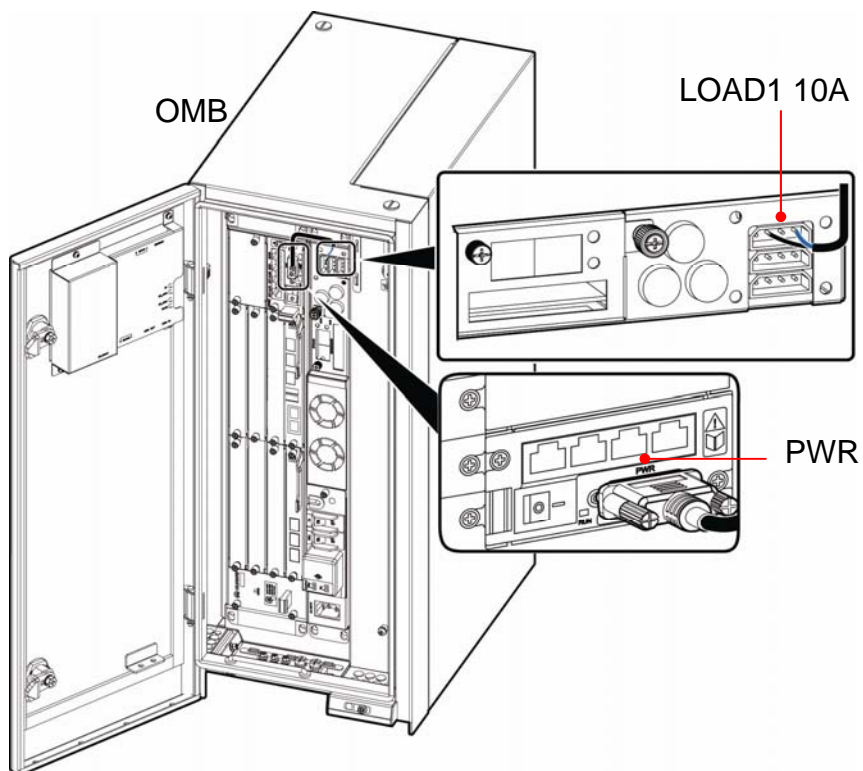
**c Installing the Power Cable Between the BBU3900 and the APM30H**



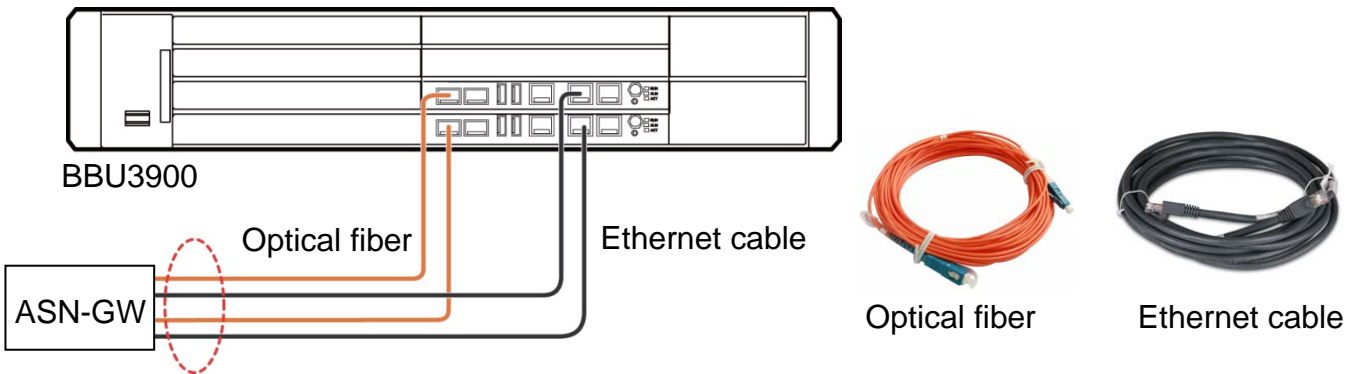
**d Installing the Power Cable Between the BBU3900 and the TMC11H**



**e Installing the Power Cable Between the BBU3900 and the OMB**



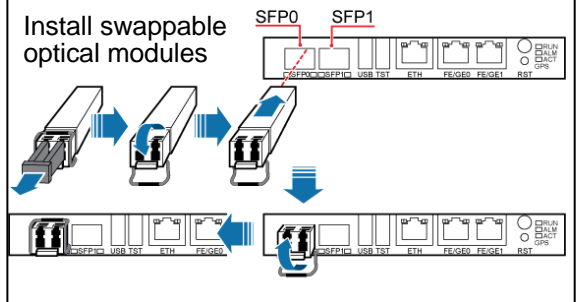
## f Installing the FE/GE Ethernet Cable or Optical Fibers



### NOTE

- Use either the Ethernet cable or optical fiber to connect the transmission equipment or gateway.
- Install swappable optical modules before installing optical fibers. The performance of an optical module that is exposed to the air for more than 20 minutes may be abnormal. Therefore, you must insert a fiber optic cable into an unpacked optical module within 20 minutes.
- Confirm that the FE/GE Ethernet cable is a shield straight-through cable.

### Install swappable optical modules

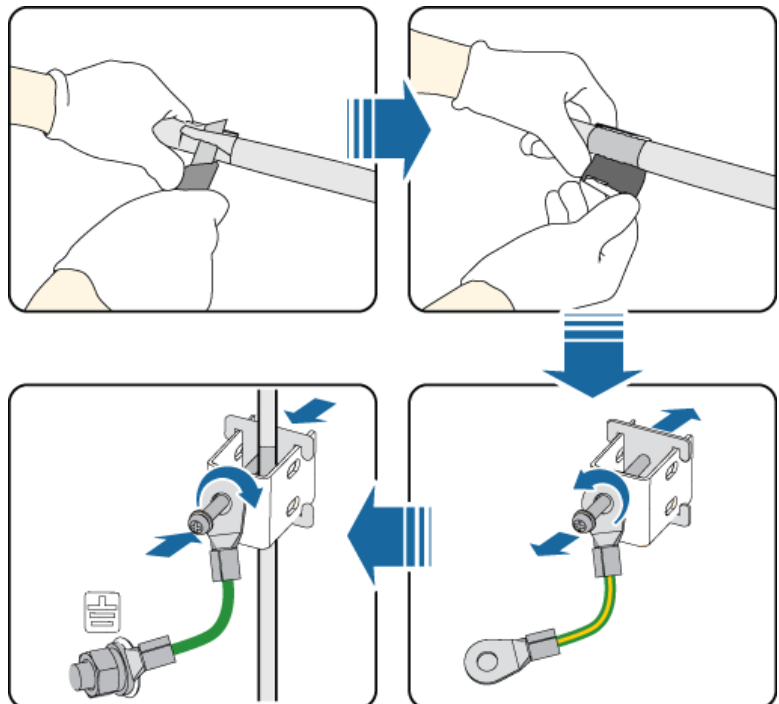
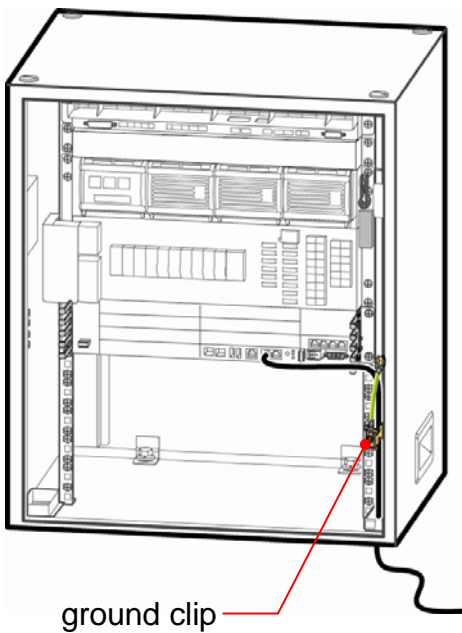


### CAUTION

Ground the shield layer of an FE/GE Ethernet cable if an FE/GE Ethernet cable is used in an APM30H or TMC11H. For details about the grounding, see the description below.

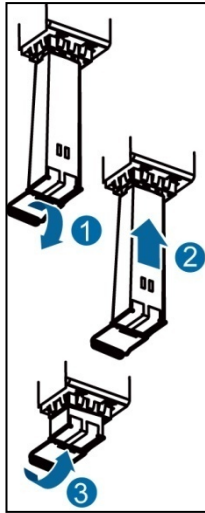
Install a ground clip on an FE/GE Ethernet cable at proper position within 1 m (3'-3 3/8") from the cabinet cable outlet.

1. Determine the position for grounding the FE/GE Ethernet cable, and strip off a sheath of about 25 mm (0 1") to expose the shield layer.
2. Loosen the screws on the ground clip, and route the FE/GE cable through the clip.
3. Confirm that the shield layer of the FE/GE Ethernet cable is in full contact with the ground clip, and tighten the screws on the clip.

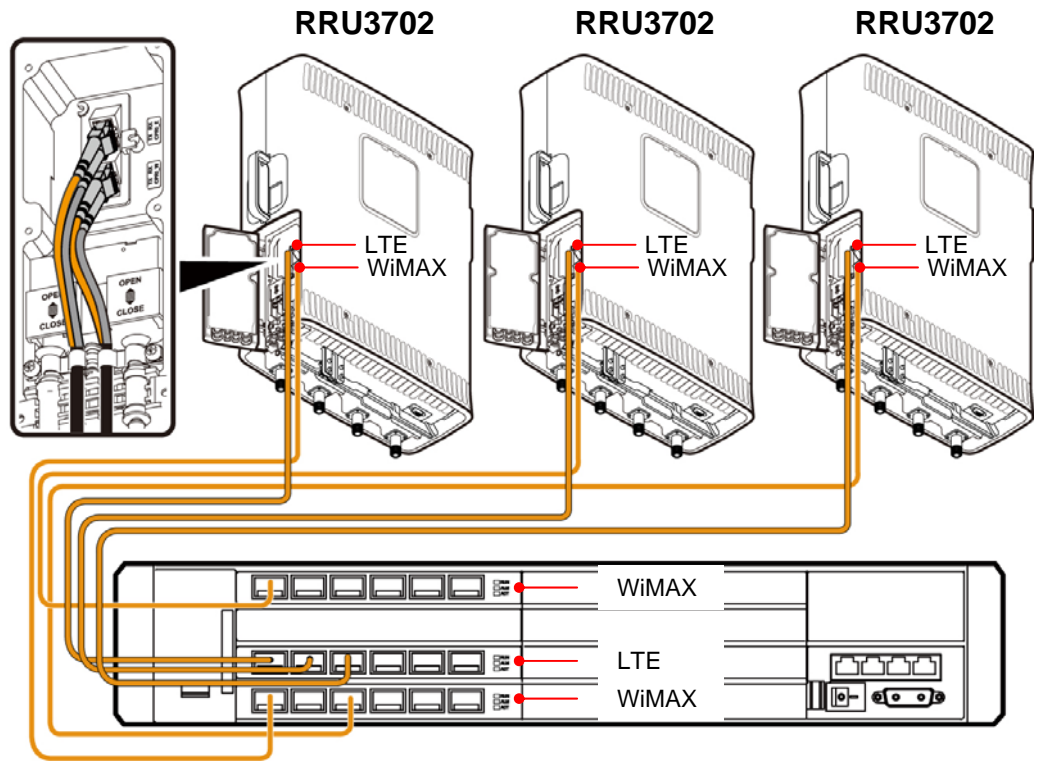


## g Installing CPRI Optical Fibers Between the BBU3900 and the RRU3702

Install hot-swappable optical modules.



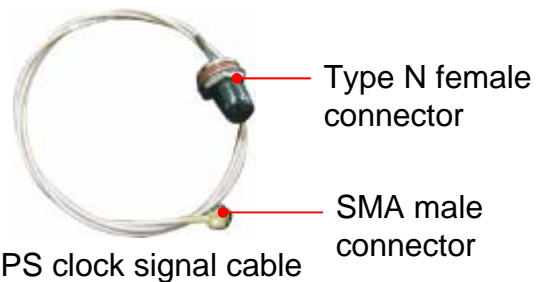
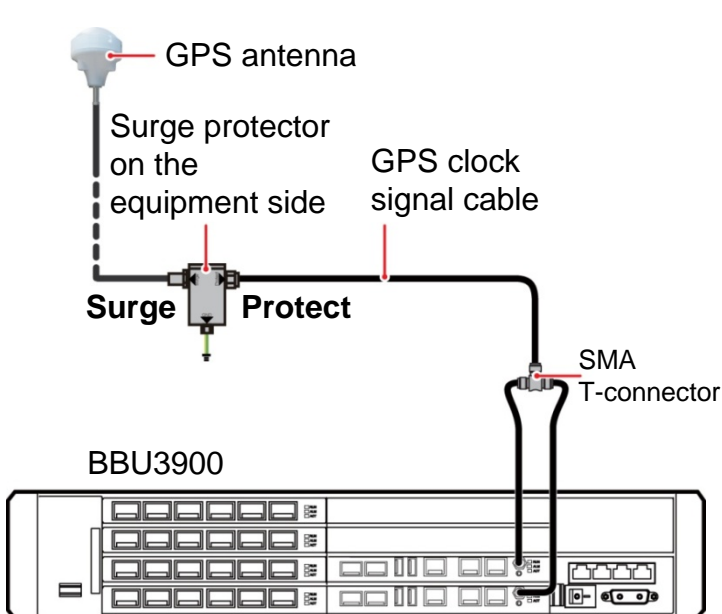
CPRI optical fiber



### NOTE

- Install swappable optical modules before installing optical fibers. The performance of an optical module that is exposed to the air for more than 20 minutes may be abnormal. Therefore, you must insert a fiber optic cable into an unpacked optical module within 20 minutes.
- Connect the longer exposed end of the optical fiber to the BBU and wrap the end with a tube, and connect the shorter exposed end to the RRU.

## h Installing a GPS Clock Signal Cable



### NOTE

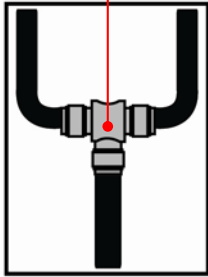
When the BBU3900 is installed in a 19-inch cabinet, ground the surge protector. Confirm that the ground cable is less than or equal to 300 mm (11 13/16") with a cross-sectional area of 6 mm<sup>2</sup> (0.01 in.<sup>2</sup>), and that both ends are terminated with an OT terminal respectively.

### CAUTION

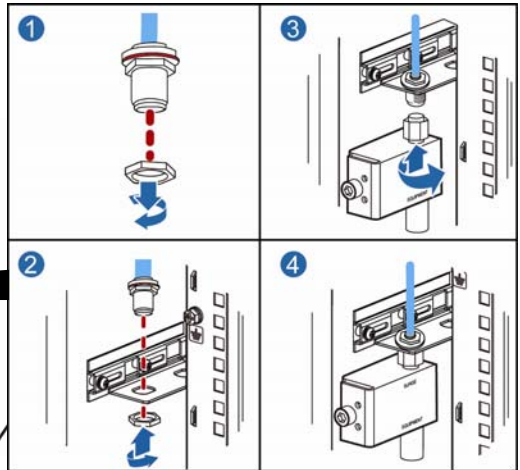
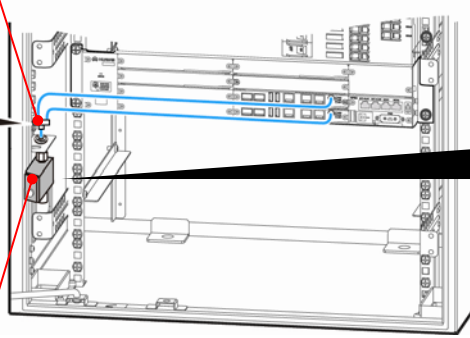
The installation of an SMA T-connector is for reference only.

### a. In an APM30H

SMA T-connector

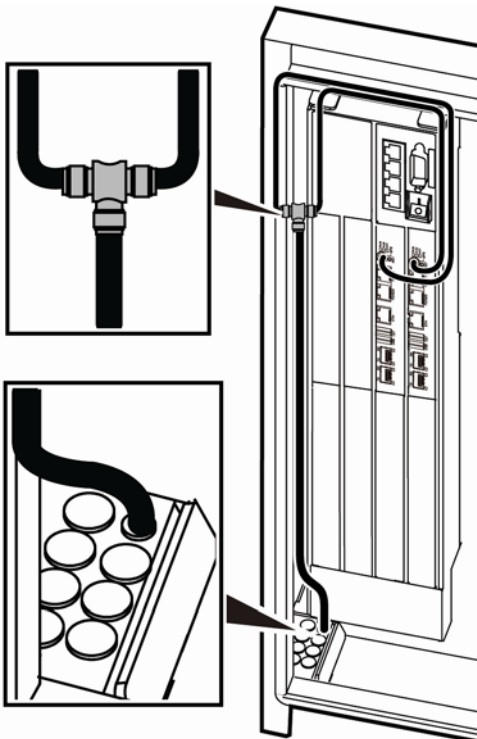


Surge protector

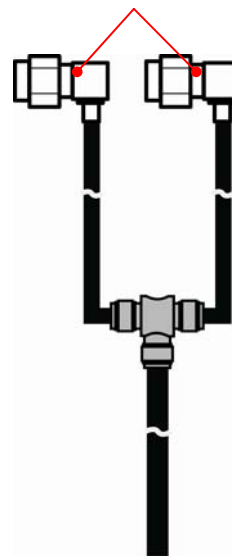


### b. In an OMB

1. Install an SMA T-connector.



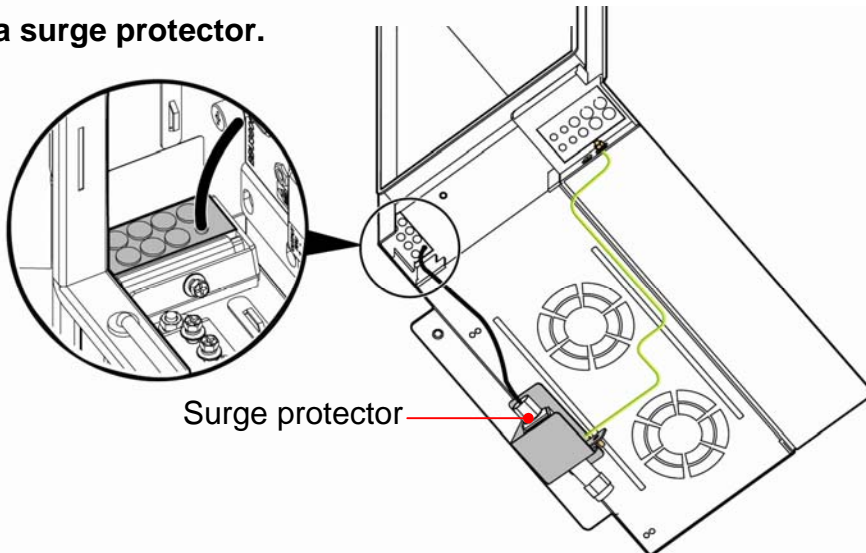
SMA male connector



#### ! CAUTION

- Install a T-connector inside a cabinet and secure it nearby based on the cable layout.
- Wrap the T-connector joints with PVC insulation tape.

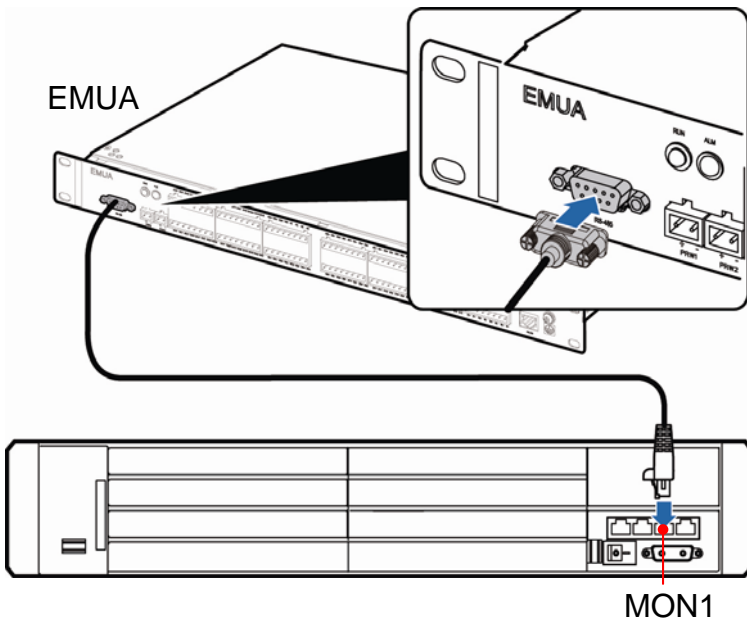
2. Install a surge protector.



Surge protector



**j** Installing the Monitoring Signal Cable Between the BBU3900 and the EMUA

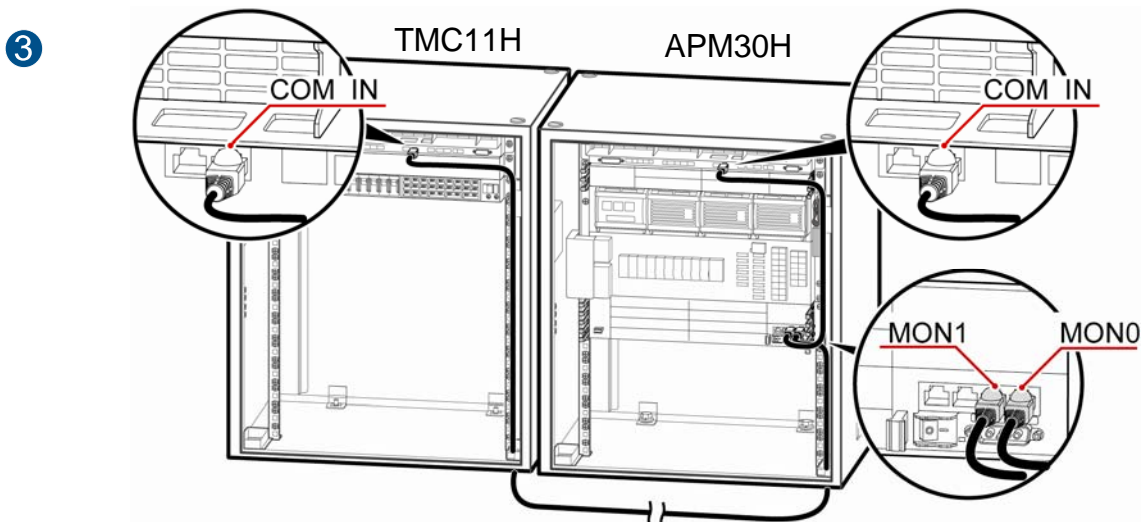
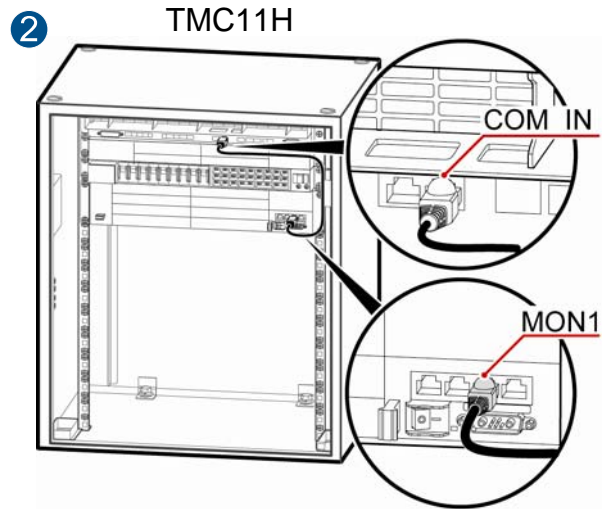
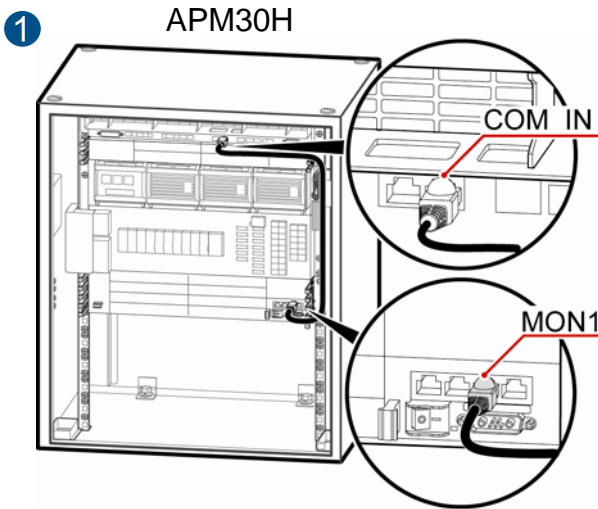


Monitoring signal cable between the BBU and the EMUA

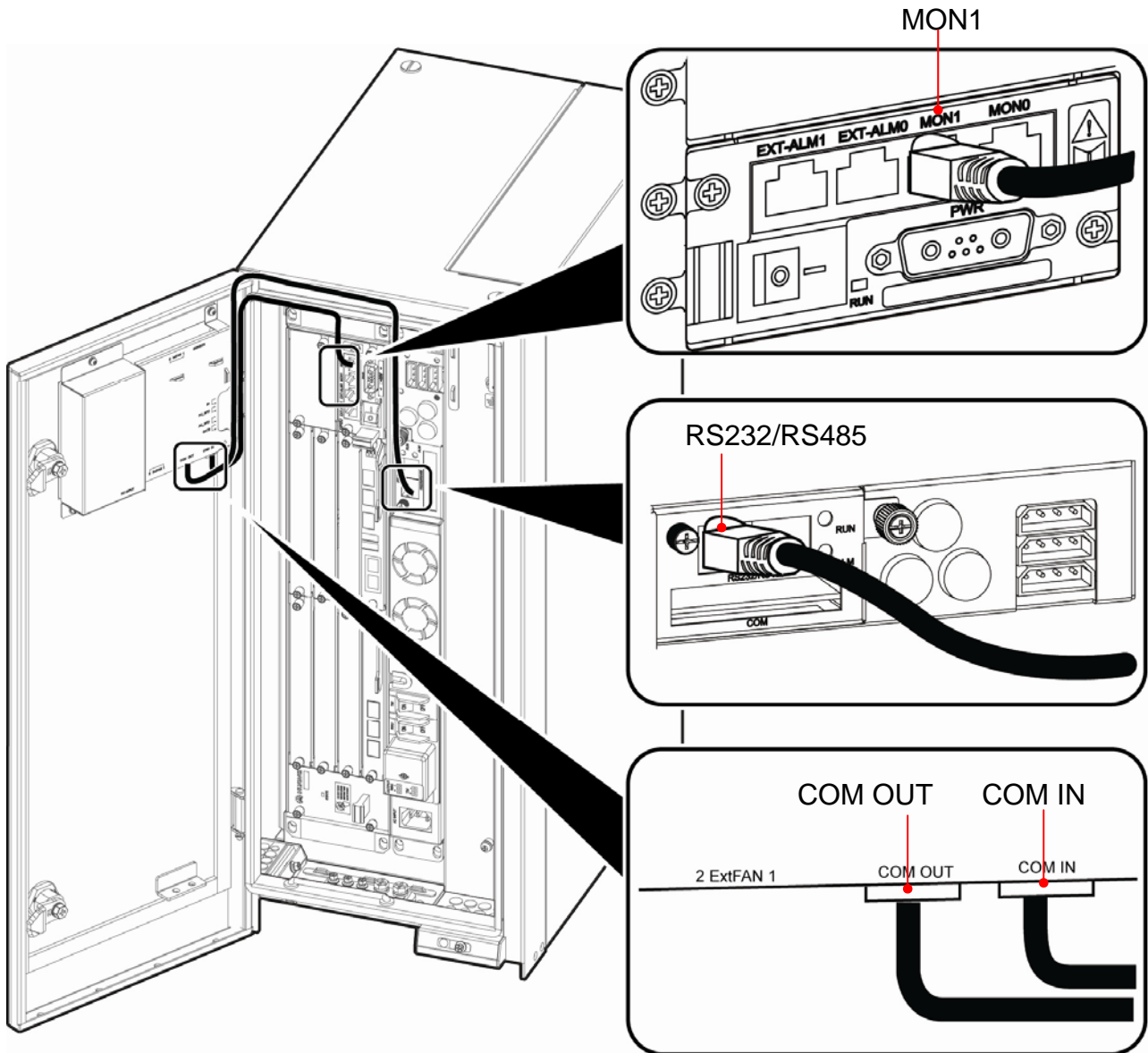
**⚠ CAUTION**

This cable connection scenario is not applicable to the APM30H, TMC11H, or OMB.

**k** Installing the Monitoring Signal Cable Between the BBU3900 and CMUA (APM30H, TMC11H)



# Installing the Monitoring Signal Cable Between the BBU3900 and the OMB



## NOTE

- The MON1 port on the BBU3900 is connected to the COM IN port on the OMB using an alarm signal cable.
- The RS232/RS485 port on the AC/DC power module is connected to the COM OUT port on the OMB using a power monitoring signal cable.

# Installing RRU3702 Cables

## a Installing the RRU3702 PGND Cable

**M6**  
4.8N•m  
(42.48 lbf.in.)

16 mm<sup>2</sup> (0.02 in.<sup>2</sup>)

**NOTE**

- The cross-sectional area of the RRU PGND cable (green and yellow or green) is 16 mm<sup>2</sup> (0.02 in.<sup>2</sup>) (6AWG).
- One end connected to the RRU is terminated with an OT terminal (M6) and the other end connected to the ground bar is terminated with a two-hole OT terminal.

## b Installing the RRU3702 Power Cable

**RRU**

**DCDU**

**LOAD0**

Ground point for the shielding layer of the power cable

RTN0(+)  
NEG0(-)

NEG(-)  
RTN(+)

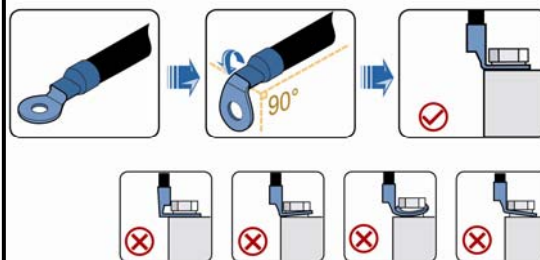
**NOTE**

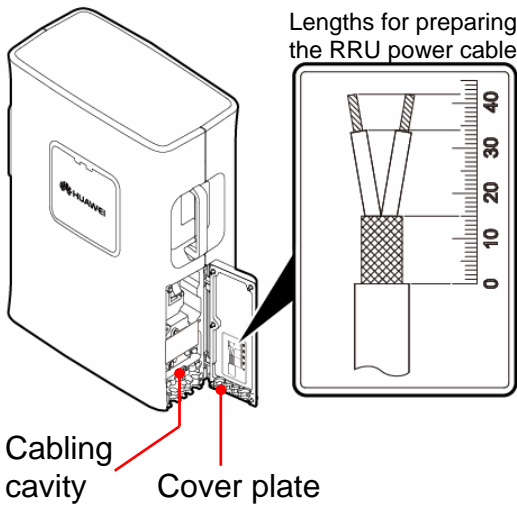
- Connect the DCDU-03B and the RRU using the LOAD0 or LOAD5 port, with a priority of LOAD0 > LOAD5.
- When the BBU and RRU are used indoors, do not ground the RRU power cable.
- The RRU power cable must be grounded if an RRU is installed outdoors. For details, see the appendix.
- For details about how to prepare an OT terminal, see the appendix.

RRU power cable



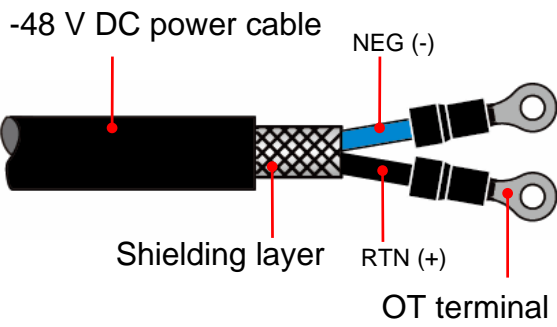
Bent OT terminal:



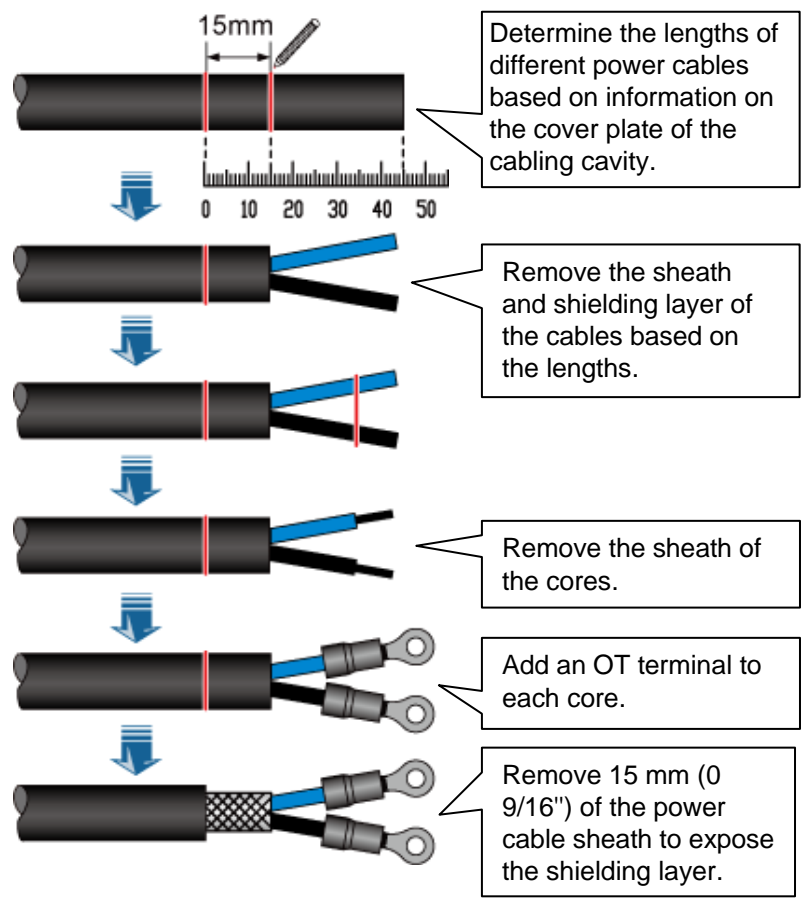


**CAUTION**  
Precisely follow the instructions on the cover plate on the cabling cavity and the installation guide when preparing the cable.

**1. OT terminal for RRU power cable**

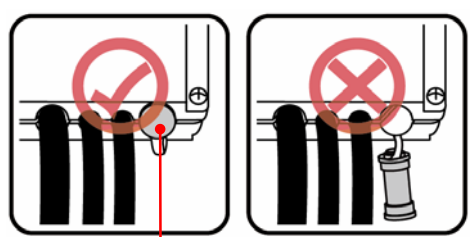
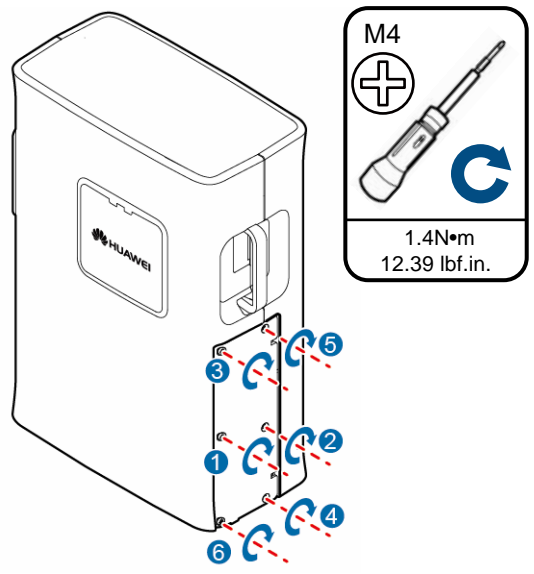


**2. To prepare the OT terminal for the RRU power cable, perform the following steps:**



**C Installing CPRI Optical Fibers**

- For details, see "Installing CPRI Optical Fibers Between the BBU3900 and the RRU3702" on page 22.
- Close the cabling cavity.

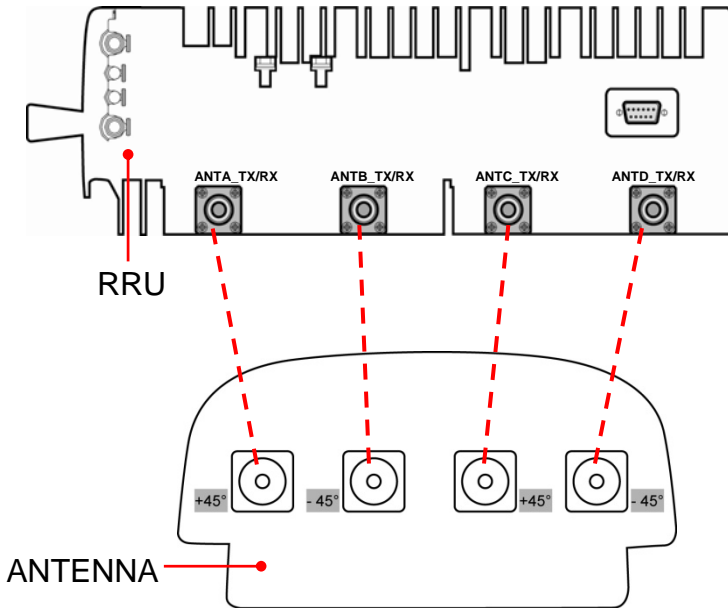


Waterproof block

**CAUTION**  
Fill vacant cable holes in the cabling cavity using waterproof blocks.

## d Installing the RF Jumper of the RRU3702

### 1 Connections between the 4T4R RRU and the 4-port antenna

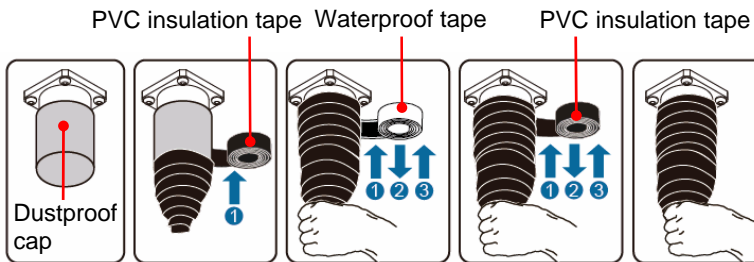


#### ⚠ CAUTION

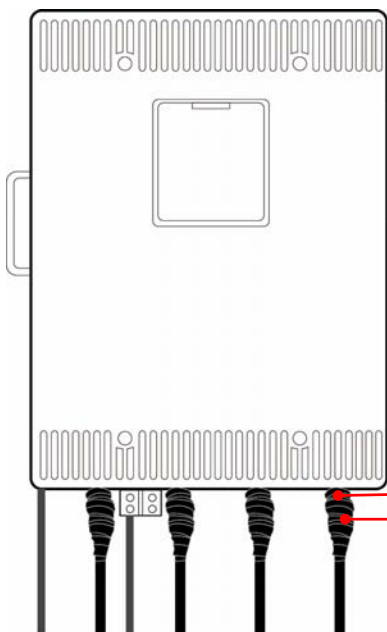
Identify the RF ports. The names of the RF ports are silk screened above the port. Connect the jumpers based on the connection relationship shown in the figure above.

Keep the dustproof caps on vacant feeder connectors.

Wrap the feeder connectors with waterproof tape for outdoor scenarios, as shown in the following figure.



### 2 Installing the RF jumper



#### ⚠ CAUTION

Before installing the RF jumper, measure the VSWR of the antenna system. For details, see "Measuring the VSWR of the Antenna System" on page 29.

#### 📖 NOTE

Take insulation and waterproof measures only for the RF jumpers connected to outdoor RRUs.

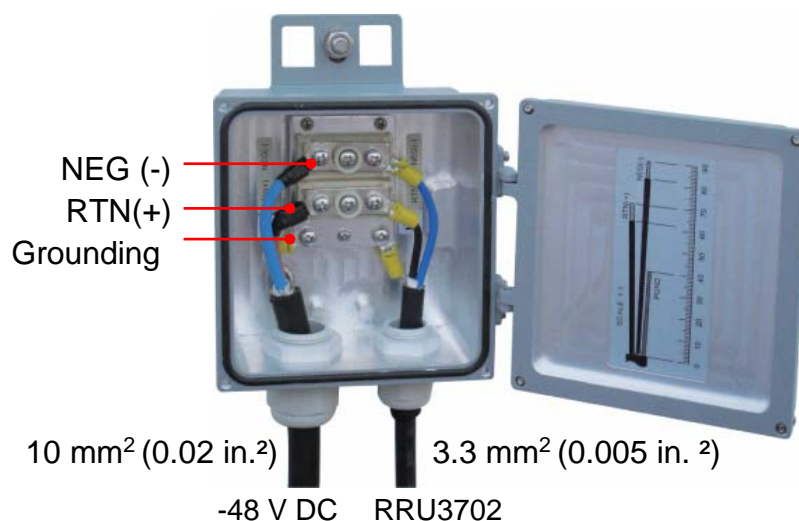
Secure the connector to the port using a wrench [torque: 1 N.m (8.85 lbf.in.)]. Wrap the connector with insulation tape and with waterproof tape.

- 1 ↑ Wrap a layer of insulation tape
- 2 ↑↑ Wrap three layers of waterproof tape
- 3 ↑↑↑ Wrap three layers of insulation tape



RF jumper

## Installing the Outdoor Cable Transfer Box



### NOTE

- When the distance between the RRU3702 and the DCDU or APM30H ranges from 6 m (19'-8 1/4") to 180 m (59'-6 5/8"), install an outdoor cable transfer box on the RRU side.
- The core area of the power cable between the outdoor cable transfer box and the DCDU or APM30H is 10 mm<sup>2</sup> (0.02 in.<sup>2</sup>).
- The core area of the power cable between the outdoor cable transfer box and the RRU is 3.3 mm<sup>2</sup> (0.005 in. <sup>2</sup>). The length of such a cable is 3 m (9'-10 1/8") to 5 m (16'-4 7/8").

## Measuring the VSWR of the Antenna System



Measure the VSWR of the antenna system using a Broadband Site Master.

Measure the VSWR at the point where the antenna system is connected to the RF port on the RRU.

### CAUTION

Do not connect an antenna system that has a VSWR of 1.5 or higher to the RRU.

## Installation Checklist for BBU

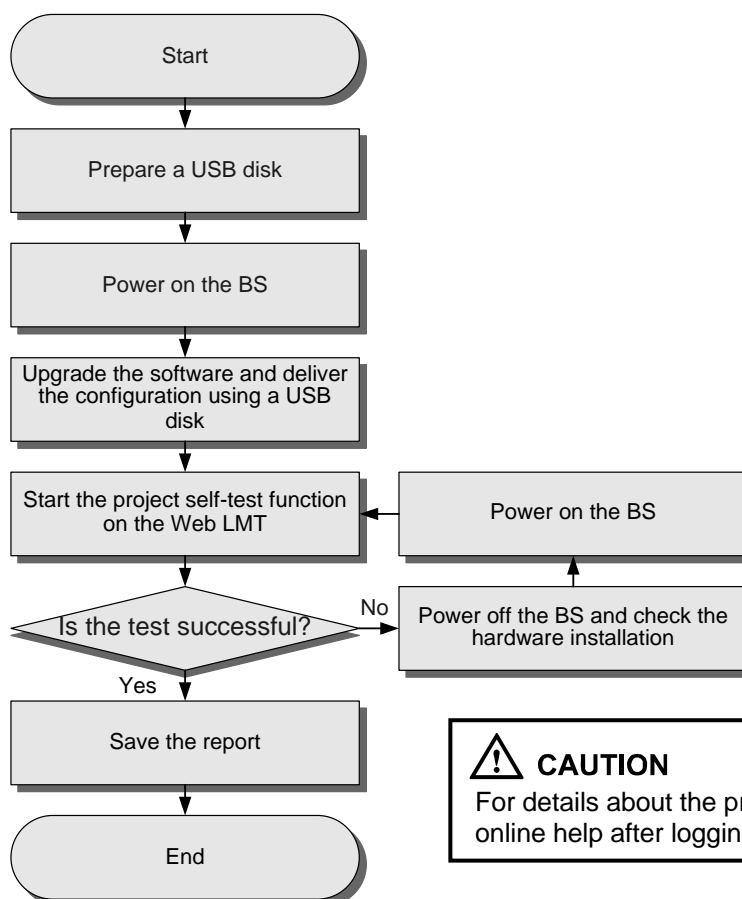
| No. | Item   |
|-----|--|
| 1   | All self-made PGND cables are copper-based and are of the correct wire diameters. No breaking devices, such as switches and fuses, are allowed for the electric connection of the grounding system. No short circuits are allowed. Each terminal on the ground bar connects with only one wiring terminal of the PGND cable. |
| 2   | The redundant part of the power cable or PGND cable is stripped off rather than coiled.  |
| 3   | The terminals at both ends of the power cable or PGND cable are securely soldered or crimped.  |
| 4   | The bare wires and the terminal handles at the wiring terminals are coated with heat-shrinkable tubes.   |
| 5   | The flat washer and the spring washer are well mounted on all OT terminals.  |
| 6   | All cables are connected securely and reliably. Pay special attention to the cable connections at the bottom of the cabinet.   |
| 7   | The cables are neatly and tightly bound. The cable ties are evenly spaced and face the same direction.   |
| 8   | The power cable, PGND cable, feeder, optical fiber, and the E1/T1/FE signal cable are bound separately with spacing greater than 3 cm (1 3/16").   |
| 9   | The cable layout facilitates maintenance and future capacity expansion. The bending radii of the cables meet the requirements.   |
| 10  | All the labels at both ends of the cables are legible.   |
| 11  | The extra length of the cable ties is cut and removed. The cut surfaces are smooth and have no sharp edges.  |
| 12  | The vacant connectors for the cables are properly protected.   |

## Installation Checklist for RRU

| No. | Item   |
|-----|--|
| 1   | The RRU and its mounting kits are securely installed.  |
| 2   | The cover plate is securely installed on the RRU cabling cavity.   |
| 3   | Waterproof blocks are installed in vacant cable troughs of the RRU cabling cavity. The cover plate of the cabling cavity is securely installed. The vacant RF ports are waterproofed and covered with waterproof caps. |
| 4   | The power cable and PGND cable are intact.   |
| 5   | The terminals at both ends of the power cable or PGND cable are securely soldered or crimped.  |
| 6   | The flat washer and the spring washer are securely mounted on all OT terminals.  |
| 7   | The power cable and the PGND cable are intact and correctly connected. They are not short-circuited.   |
| 8   | The power cable, PGND cable, feeder, optical fiber, and E1/T1/FE signal cable are bound separately with a minimum spacing of 3 cm (1 3/16").   |
| 9   | The signal cables are not damaged or broken, and the connectors are intact.  |
| 10  | Labels at both ends of each cable are correct, legible, and complete.  |

## Checklist for the Project Implementation

Perform a self-check after the project is complete.



### CAUTION

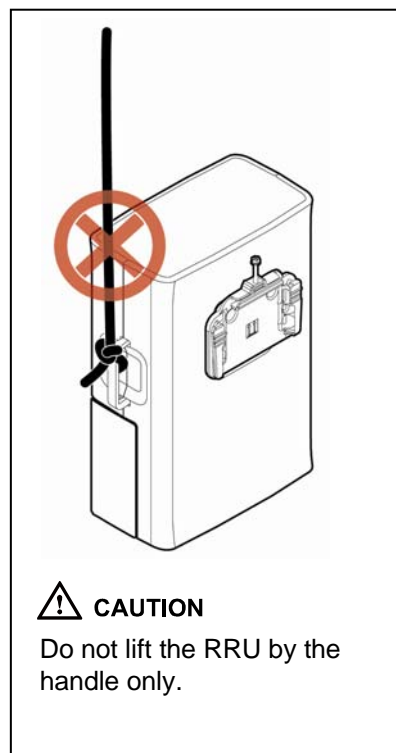
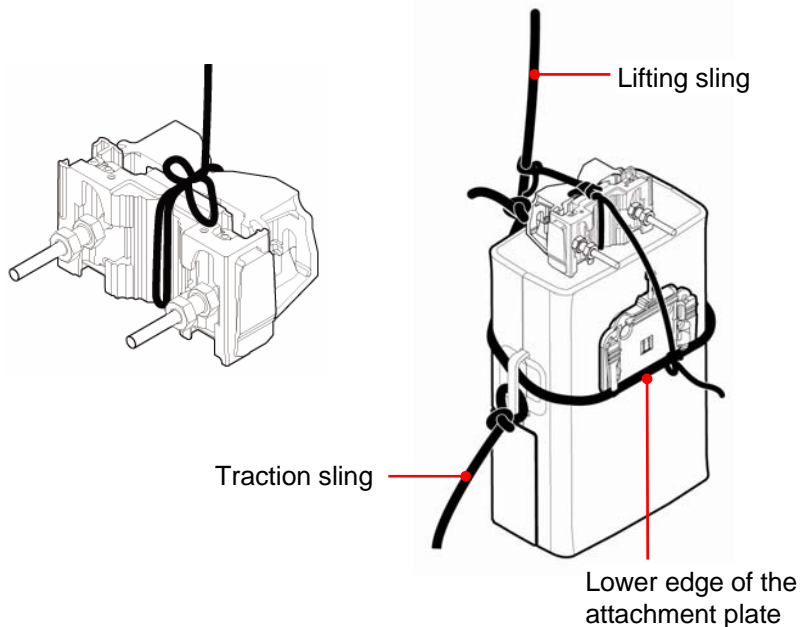
For details about the procedures, see the online help after logging in to the Web LMT.



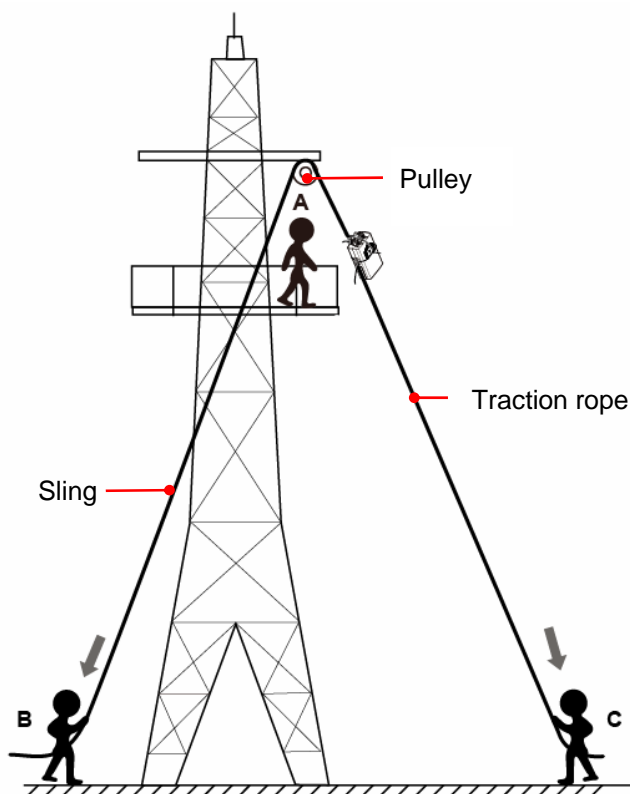
# Appendix

## C Hoisting the RRU3702 and Mounting Brackets onto the Tower

### 1 Bind the RRU with a sling.



### 2 Hoist the RRU3702 and mounting brackets onto the tower.



#### CAUTION

- When hoisting the RRU, protect it from colliding with the tower.
- The diameters for the sling and traction rope are about 20 mm (0 4/5") and be less than 25 mm (1"). Ropes must bear a weight more than four times the weight of an RRU.

#### NOTE

- Installer A climbs the tower and fixes the crown block onto the tower platform support. Installer A then inserts the hoist thread through the crown block.
- Installer C uses the sling to tie the RRU and the mounting brackets according to the figure above. Installer C then uses the traction rope to tie a knot at the handle of the RRU.
- Installer B pulls down the sling. Installer C pulls out the traction rope to prevent the RRU and the mounting brackets from colliding with the tower.
- Installer A holds on to the RRU and the mounting brackets, and then loosens the knot to release the items.
- The previous procedures for lifting an RRU is for reference only.

## b Indicators

### a BBU-Indicators on the BMPT

| Indicator | Color | Status   | Meaning   |
|-----------|-------|--|---|
| RUN       | Green | On   | There is power input but the board is faulty.   |
|           |       | Off  | There is no power input, or the board is faulty.  |
|           |       | Blinks at 0.5 Hz (on for 1s, off for 1s)       | The board is working normally.  |
|           |       | Blinks at 4 Hz (on for 0.125s, off for 0.125s) | The board is being loaded.  |
| ALM       | Red   | On   | An alarm is generated, and the board needs to be replaced.  |
|           |       | Off  | There is no alarm.  |
|           |       | Blinks at 0.5 Hz (on for 1s, off for 1s)       | An alarm is generated. Whether the board needs to be replaced is uncertain. It may be caused by a fault on the related board or port. |
| ACT       | Green | On   | Active mode   |
|           |       | Off  | Standby mode  |

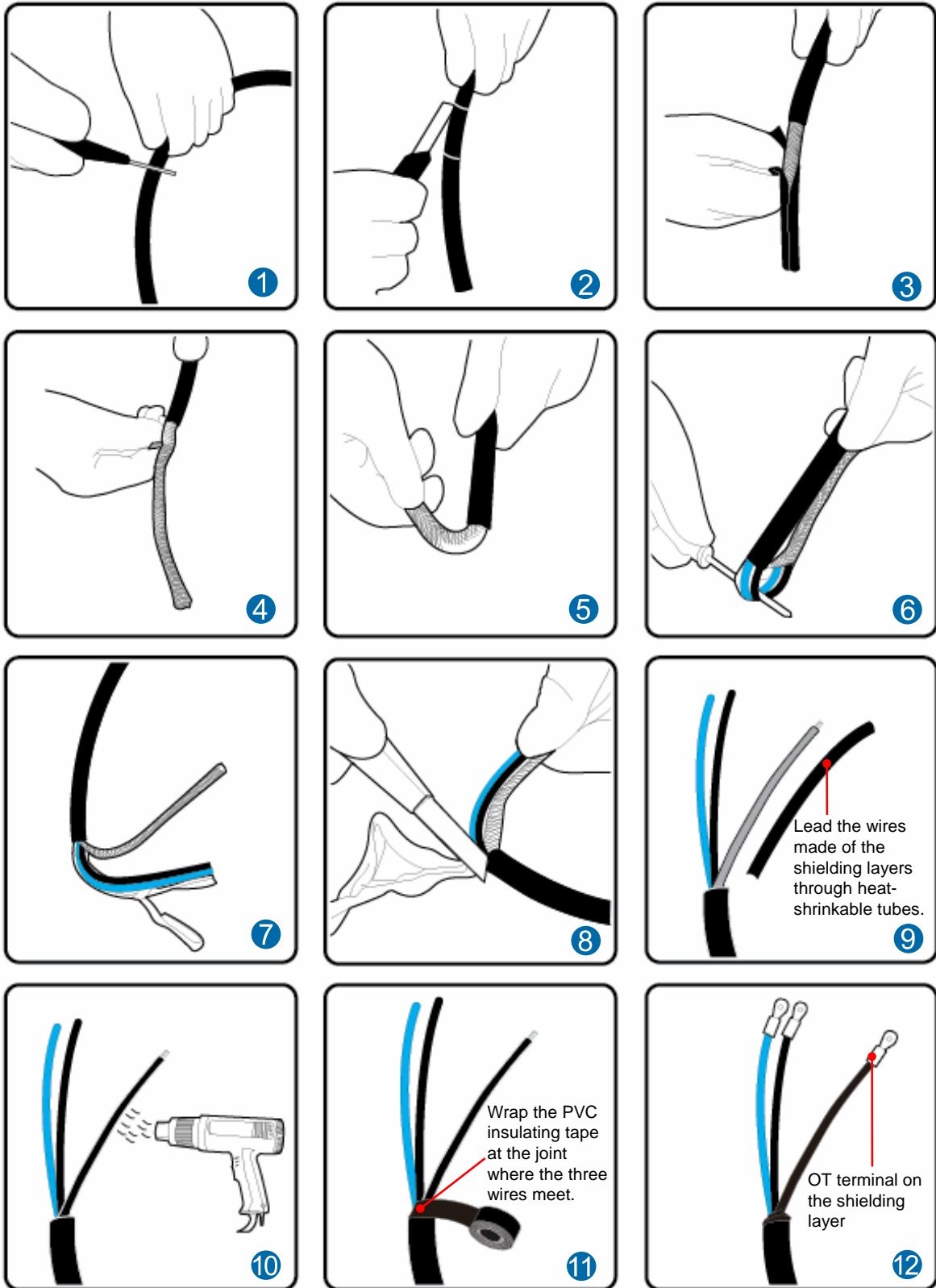
### b BBU-BBBI-Indicators of the RF ports on the baseband unit

| Indicator             | Color | Status | Meaning                        |
|-----------------------|-------|--------|--------------------------------|
| LINK (CPR10 to CPR12) | Green | On     | The link is operational.       |
|                       |       | Off    | The link is faulty.            |
| ACT (CPR10 to CPR12)  | Green | On     | Signals are normally received. |
|                       |       | Off    | No signal is received.         |

## c Indicators on the RRU3702

| Indicator | Color | Status   | Description  |
|-----------|-------|--|--|
| RUN       | Green | On   | There is power input but the board is faulty.  |
|           |       | Off  | No power input is available.   |
|           |       | Blinks at 0.5 Hz (on for 1s, off for 1s)       | The board is working normally.   |
|           |       | Blinks at 4 Hz (on for 0.125s, off for 0.125s) | The board is being loaded or not started.  |
| ALM       | Red   | On   | An alarm (except the standing-wave alarm) is generated and the board must be replaced.   |
|           |       | Off  | No alarm (except the standing-wave alarm) is generated.  |
|           |       | Blinks at 0.5 Hz (on for 1s, off for 1s)       | An alarm (except the standing-wave alarm) is generated. Whether the board needs to be replaced is uncertain. It may be caused by a fault on the related board or port. |
| TX_ACT    | Green | On   | The board is working properly (the transmit channel is active).  |
|           |       | Off  | The software version is being verified or the version verification fails.  |
|           |       | Blinks at 0.5 Hz (on for 1s, off for 1s)       | The version verification succeeds but the transmit channel is inactive.  |
| VSWR      | Red   | On   | A standing wave alarm is generated.  |
|           |       | Off  | No standing wave alarm is generated.   |
| CPR10     | Green | On   | The optical module is in position.   |
|           |       | Off  | The optical module is out of position.   |
| CPR11     | Green | On   | The optical module is in position.   |
|           |       | Off  | The optical module is out of position.   |

## d Preparing OT Terminals for a DCDU Power Cable

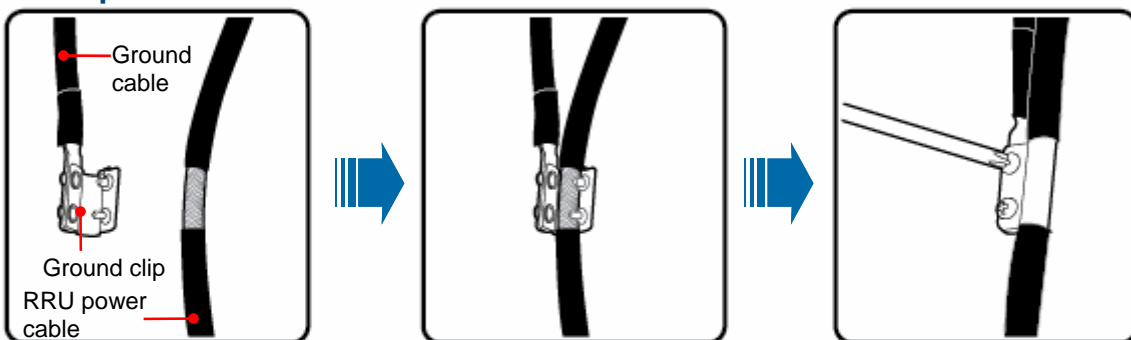


## e Installing a Ground Clip

1. Strip a sheath of 32 mm (1 1/4") from an RRU power cable using a wire stripper.



2. Install a ground clip on the exposed shield layer, and tighten the screws on the ground clip.



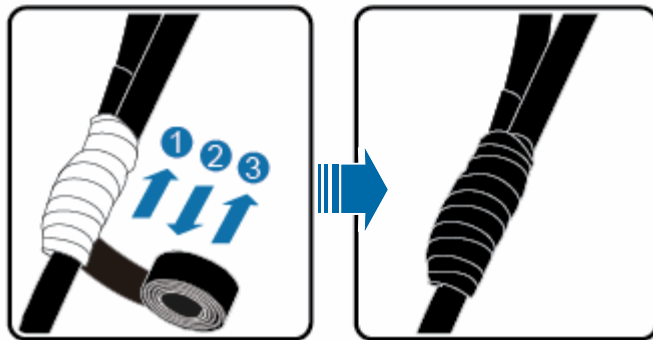
### CAUTION

- Ensure that the exposed shield layer must be longer than a ground clip.
- Do not clip the shield layer of an RRU power cable to a ground clip.

3. Wrap the ground clip using waterproof tape.



4. Wrap the ground clip using PVC insulation tape.



### NOTE

- Wrap three layers of tape following the sequence shown in the above figures. When wrapping tape, be sure that each layer of tape overlaps more than 50% of the preceding layer.
- The other end of the ground cable connecting to the ground clip is terminated with a one-hole OT terminal with an M8 bolt, and is connected to an external ground bar.

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