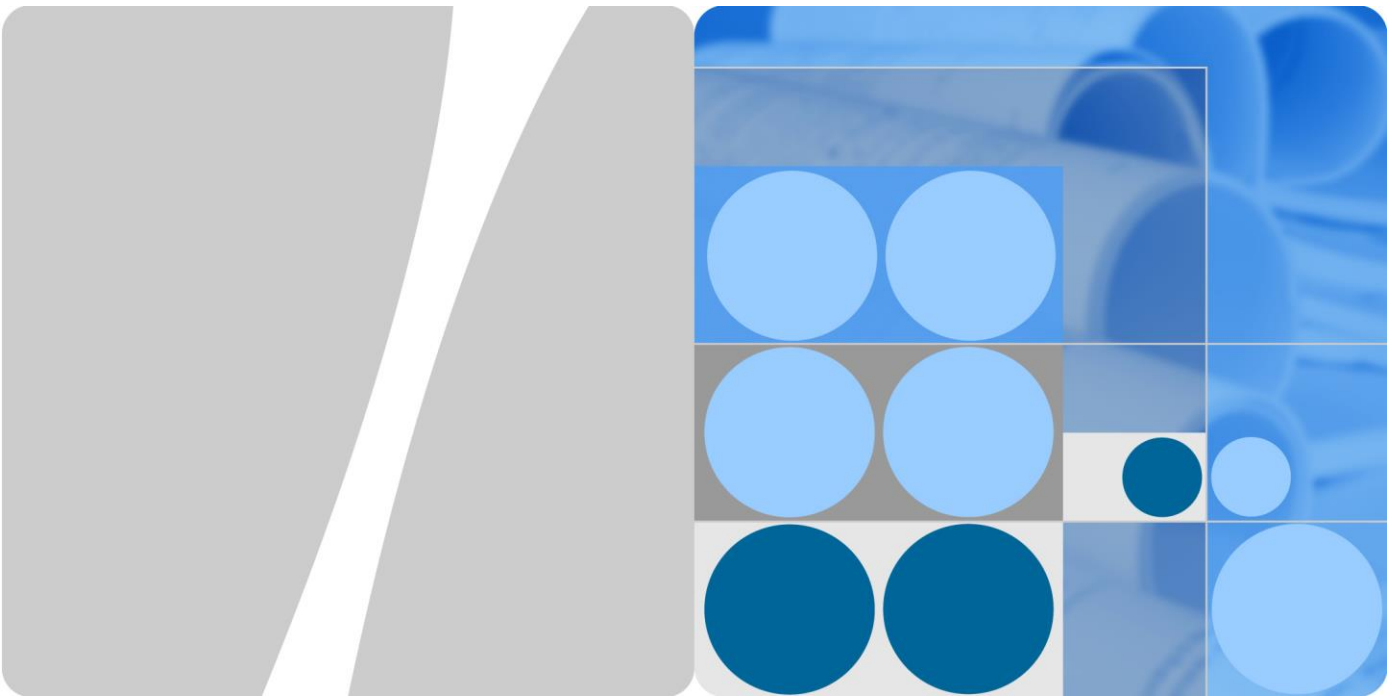


eAN3810A V100R001C00 Hardware Installation Guide

Issue	01
Date	2017-04-30

HUAWEI TECHNOLOGIES CO., LTD.

Trademarks and Permissions


and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The purchased products, services and features are stipulated by the contract made between Huawei and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: http://www.huawei.com

Email: support@huawei.com

1 eAN3810A Hardware Installation Guide

About This Chapter

Overview

This document describes the process of installing eAN3810A.

Product Version

NOTE
Unless otherwise stated, "eNodeB", "Pico", "eAN", and "AirNode" in this document refer to the 3810 series AirNode.

The 3810 series AirNode is a base station that provides communications services in Huawei OneAir solution. The following table lists the product name and product version related to the 3810 series AirNode.

Product Name	Product Version
eAN3810A	V100R001C00

Intended Audience

This document is intended for installation engineers.

Organization

1.1 Installation Preparations

Before starting the installation, you must obtain the required reference documents, tools, and instruments, and familiarize yourself with the skills required.

1.2 Information About the Installation

This section describes the information that you must be familiar with before installing a eAN3810A, including the eAN3810A hardward infomation, installation scenarios, installation space and environment requirements.

1.3 Unpacking the Equipment

This section describes how to unpack and check the delivered equipment to ensure that all the materials are included and intact.

1.4 Installation Process

This section describes the eAN3810A installation process.

1.5 Obtaining the ESN

Before installing the eAN3810A, record its electronic serial number (ESN) for future use during commissioning.

1.6 (Optional) Installing a Micro SD Card

This section describes how to install a micro SD card in the eAN3810A.

1.7 Installing the eAN3810A

This section describes the eAN3810A installation process.

1.8 Installing the Auxiliary Devices

This section describes the procedure and precautions for installing the auxiliary devices.

1.9 Installing Cables

This section describes the procedures for installing eAN3810A cables and auxiliary devices cables.

1.10 Checking Hardware Installation

eAN3810A hardware installation checking includes hardware and cable installation checking.

1.11 Power-On Check on the eAN3810A

This section describes the procedure for performing a power-on check on the eAN3810A.

1.12 Appendix

This section describes reference information during installation.

1.1 Installation Preparations

Before starting the installation, you must obtain the required reference documents, tools, and instruments, and familiarize yourself with the skills required.

1.1.1 Reference Documents

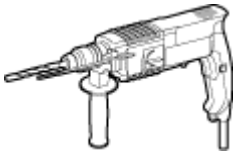
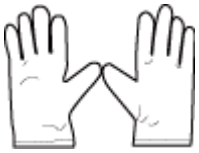
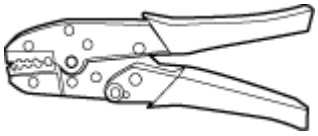
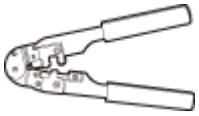
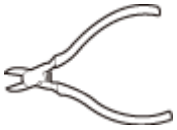
Before the installation, you must be familiar with reference documents.

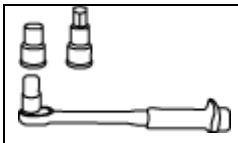
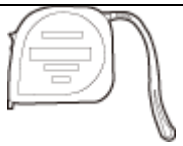
The following reference documents are required during eAN3810A installation:

- *Health and Safety*
- *Equipment Safety*
- *eAN3810A Hardware Description*

1.1.2 Tools and Instruments

You must prepare the following tools and instruments before the installation.

Hammer drill (a φ12 bit) 	ESD gloves 	Vacuum cleaner 
Heat gun 	Phillips screwdriver (M3 to M6) 	Flat-head screwdriver (M3 to M6) 
Rubber mallet 	COAX crimping tool 	Wire stripper 
Power cable crimping tool 	RJ45 crimping tool 	Diagonal plier 
Utility knife 	Level 	Network cable tester 
Adjustable wrench (size ≥ 32 mm [1.26 in.])  Torque wrench  Size: 16 mm (0.63 in.) and 22 mm (0.87 in.) Combination wrench  Size: 16 mm (0.63 in.) and 22 mm (0.87 in.)	Torque screwdriver   3mm or 5mm  (M3 to M6)  (M3 to M6)	Marker (diameter ≤ 10 mm [0.39 in.]) 
Torque socket (M6 or M10)	Multimeter	Measuring tape

		
Fixed pulley(weight-bearing capacity > 500 kg or 1102.5 lb) 	Lifting sling 	Ladder 

1.1.3 Requirements for Installation Personnel

This section describes requirements for installation engineers. They must be qualified and trained, and familiar with correct operation methods and safety precautions before performing any operations.

Before the installation, pay attention to the following items:

- Technical engineers must take Huawei training and be familiar with proper installation and operation methods.
- The number of installation personnel depends on the engineering schedule and installation environment. Generally, two to three persons are required. Generally, only three to five onsite personnel are necessary.

1.2 Information About the Installation

This section describes the information that you must be familiar with before installing a eAN3810A, including the eAN3810A hardward infomation, installation scenarios, installation space and environment requirements.

1.2.1 Hardware Device Information

This section describes the hardware information you should know before installing the eAN3810A.

eAN3810A hardware includes eAN3810A main equipment, auxiliary devices, mounting kits, and cables. For details, see sections in *eAN3810A Hardware Description*, which are listed in Table 1-1.

Table 1-1 Hardware information

Category	Sections in *eAN3810A Hardware Description*
eAN3810A main equipment	eAN3810A Exterior
	eAN3810A Ports

Category	Sections in *eAN3810A Hardware Description*
	eAN3810A Indicators
Auxiliary device	PSE
	Dock
Mounting kits	eAN3810A Mounting Kits
	Dock Mounting Kits
Cables	Cable List

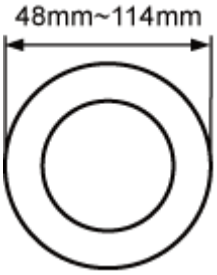
1.2.2 Installation Options and Restrictions

The eAN3810A can be installed on a wall or pole. Installation scenarios must meet heat-dissipation and waterproofing requirements of the eAN3810A.

Installation on a Pole

Figure 1-1 shows the diameter of a pole for installing an eAN3810A.

Figure 1-1 Diameter of a pole for installing a eAN3810A

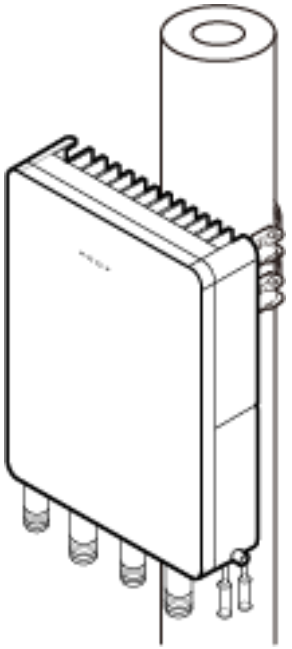


NOTICE

- The diameter of a pole for installing a eAN3810A ranges from 48 mm (1.89 in.) to 114 mm (4.49 in.). The recommended diameter is 60 mm (2.36 in.).
- The recommended thickness of the pole wall is 3.5 mm (0.14 in.) or above.

Figure 1-2 shows the eAN3810A installed on a pole.

Figure 1-2 A eAN3810A installed on a pole



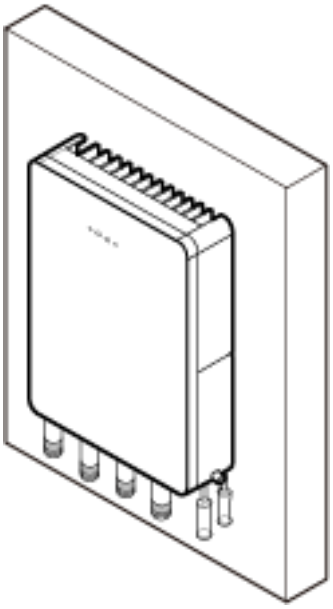
Installation on a Wall

The wall for installing eAN3810A must meet the following requirements:

- The wall can bear a load at least four times the weight of a eAN3810A.
- The screws must be tightened with a torque of 30 N·m. This ensures the screws work properly and the wall remains intact without cracks in it.

Figure 1-3 shows the eAN3810A installed on a pole.

Figure 1-3 A eAN3810A installed on a wall



1.2.3 Installation Clearance and Space Requirements

This section describes the recommended and minimum clearances for a eAN3810A.

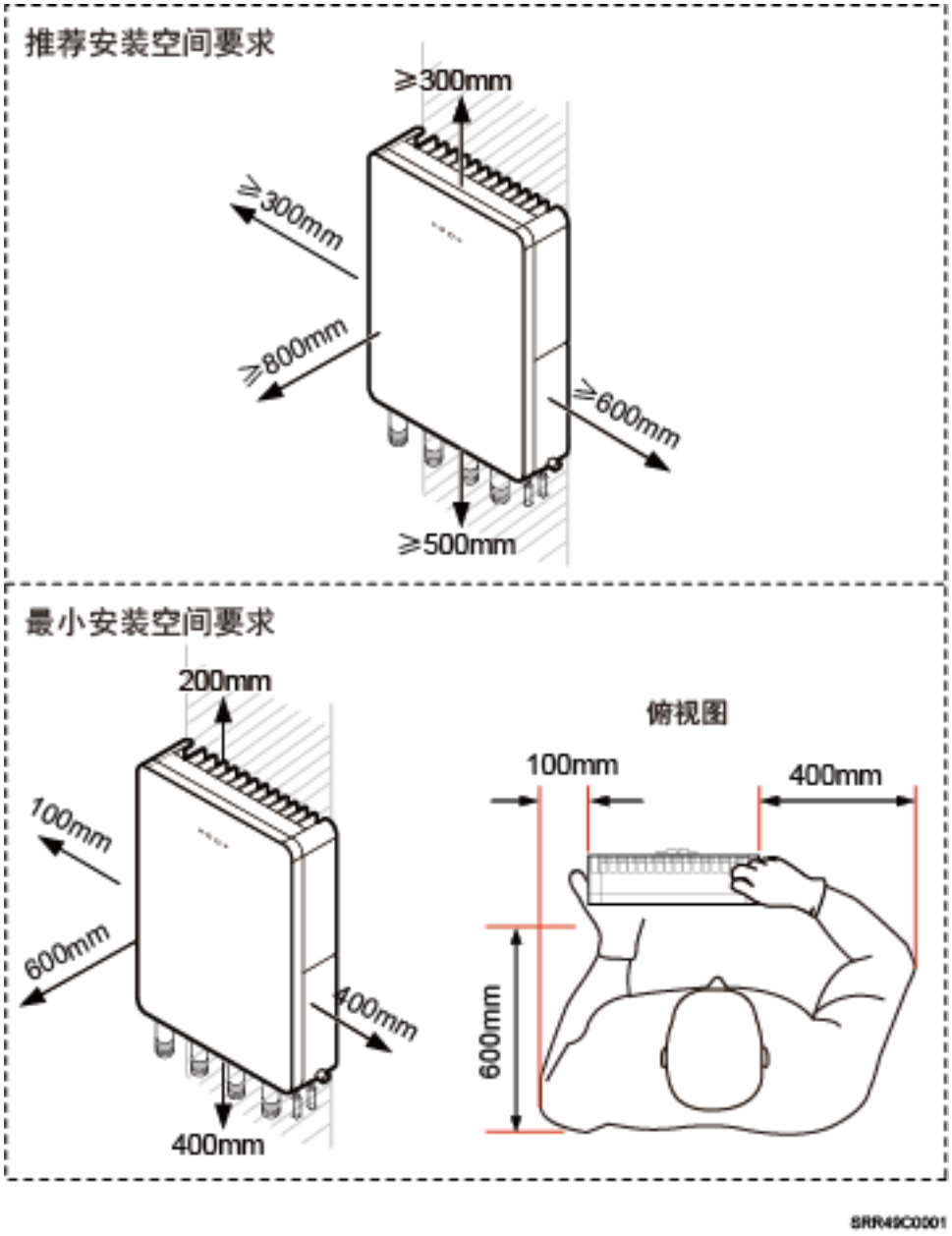
Clearance for a eAN3810A

When the eAN3810A is installed on a wall or pole, the minimum clearance is required for easy cabling and operation and maintenance (O&M). Based on the engineering practice, the recommendation for the installation clearance is provided.

- The recommended clearances are for customers, ensuring normal running and providing appropriate space for O&M. If installation space is sufficient, leave the recommended clearances after installing equipment.
- The minimum clearance ensures normal operation and heat dissipation, but O&M activities such as checking indicator status and opening the cover plate of a cabling cavity cannot be properly conducted. If installation space is restricted, leave the minimum clearance after installing equipment.

Figure 1-4 show the clearances for installing a eAN3810A.

Figure 1-4 Clearances for installing a eAN3810A



Installation Spacing Between eAN3810A

Figure 1-5 lists the horizonta spacing between eAN3810A.

Figure 1-5 Clearances for installing a eAN3810A

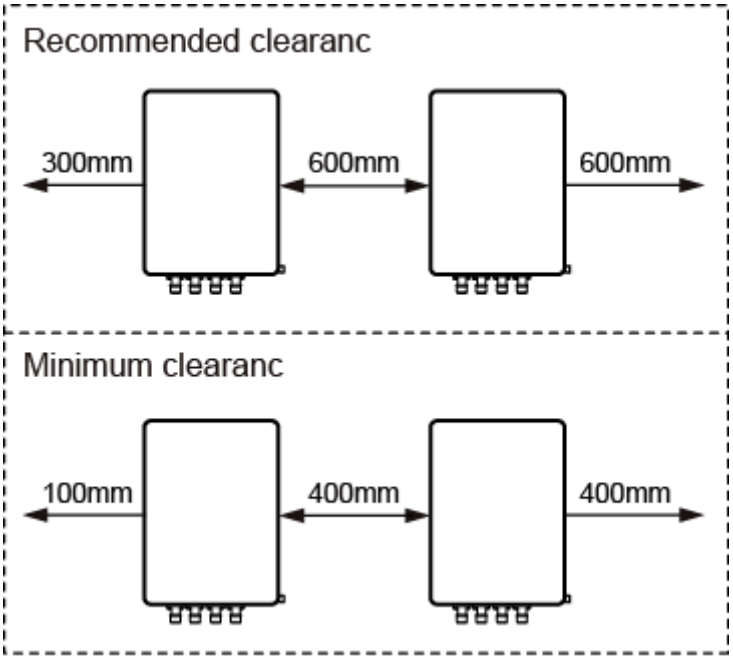
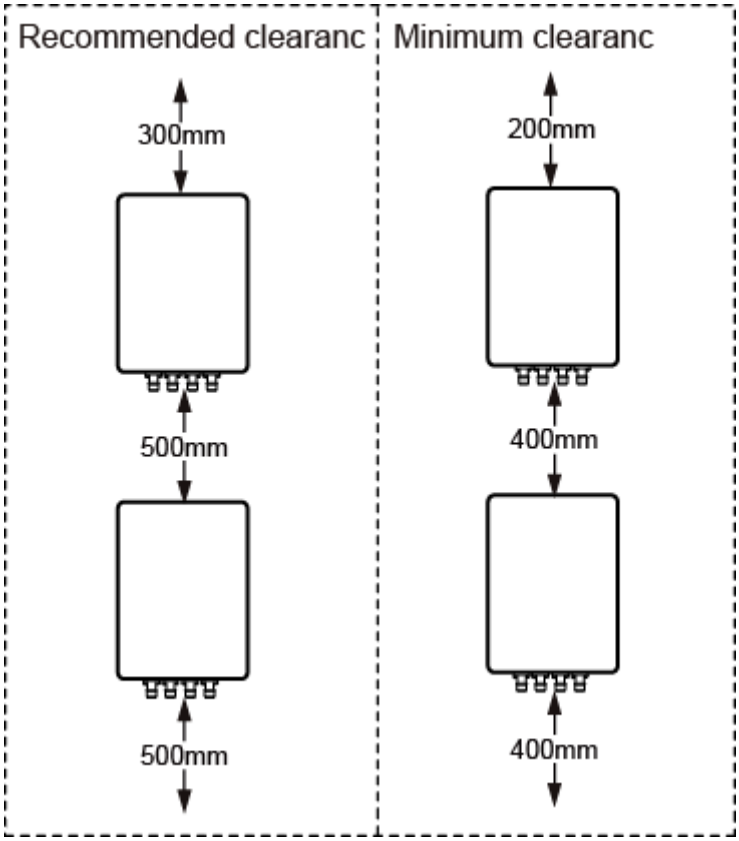


Figure 1-6 lists the vertical spacing between eAN3810A.

Figure 1-6 Clearances for installing a eAN3810A



1.2.4 Installation Environment Requirements

The installation environment of a eAN3810A involves the running environment specifications for the eAN3810A.

Running Environment Specifications

Table 1-2 shows the environment specifications for the eAN3810A.

Table 1-2 Environment specifications of eAN3810A

Item	Specifications
Operating temperature	-40ºC to +45ºC (with solar radiation) -40ºC to +50ºC (without solar radiation) **NOTE** At -40ºC to -20ºC, the AirNode can start up, but its performance cannot meet requirements. At -20ºC to +50ºC, the performance of the AirNode meets requirements.
Storage temperature	-40ºC to +70ºC
Relative humidity	5% RH to 95% RH

Item	Specifications
Absolute humidity	1 g/m3 to 30 g/m3
Atmospheric pressure	70 kPa to 106 kPa
Protection class	IP65

Requirements for the Installation Scenarios

To ensure proper heat dissipation of the eAN3810A, the following requirements must be met:

- The eAN3810A cannot be installed in an enclosed cabinet without a cooling system.
- The eAN3810A cannot be installed in an enclosed camouflage box.
- The eAN3810A cannot be installed in an enclosed equipment room without a cooling system.

NOTICE

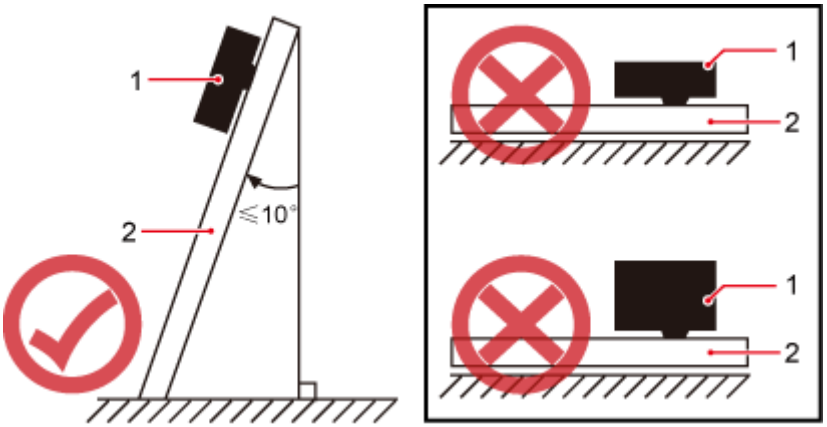
If the eAN3810A is inappropriately installed, heat dissipation of the eAN3810A deteriorates and the eAN3810A may not work properly, as shown in Figure 1-7.

Figure 1-7 Inappropriately installed eAN3810A

Requirements for the Installation methods

To ensure the heat dissipation of the eAN3810A and waterproofing of the ports at the bottom of the eAN3810A, the vertical deviation angle of a eAN3810A must be less than or equal to 10°, as shown in Figure 1-8.

Figure 1-8 Requirements for the vertical deviation angle of a eAN3810A



(1) eAN3810A (2) Installation support (pole or wall)

1.3 Unpacking the Equipment

This section describes how to unpack and check the delivered equipment to ensure that all the materials are included and intact.

Context

NOTE

When transporting, moving, or installing the equipment, components, or parts, you must:

- Prevent them from colliding with doors, walls, shelves, or other objects.
- Wear clean gloves, and avoid touching the equipment, components, or parts with bare hands, sweat-soaked gloves, or dirty gloves.

NOTICE

Power on an eAN3810A within 24 hours after unpacking it. If you power off an eAN3810A for maintenance, restore power to the eAN3810A within 24 hours.

Procedure

Step 1 Count the total number of the shipments.

If...	Then...
The total number of the components is consistent with that recorded in the packing lists on all packing boxes	Go to Step 2.

If...	Then...
The total number of the components is inconsistent with that recorded in the packing lists on all packing boxes	Report the problems and causes to the local Huawei office.

Step 2 Check the exterior of each packing box.

If...	Then...
The exterior of each packing box is intact	Go to Step 3.
It is damaged or soaked	Report the problems and causes to the local Huawei office.

Step 3 Check the type and quantity of the equipment in the boxes according to the packing list.

If...	Then...
The type and number are consistent with the packing list on each packing list	Sign the *Packing List* with the operator.
There is any shortage, wrong delivery, or damaged equipment	Report the problems and causes to the local Huawei office.

CAUTION

To protect the equipment from damage, keep the unpacked equipment and packing materials indoors. To help find out the cause of any damage in the future, take photos of the storeroom, rusted or eroded equipment, packing cases, and packing materials, and then file the photos.

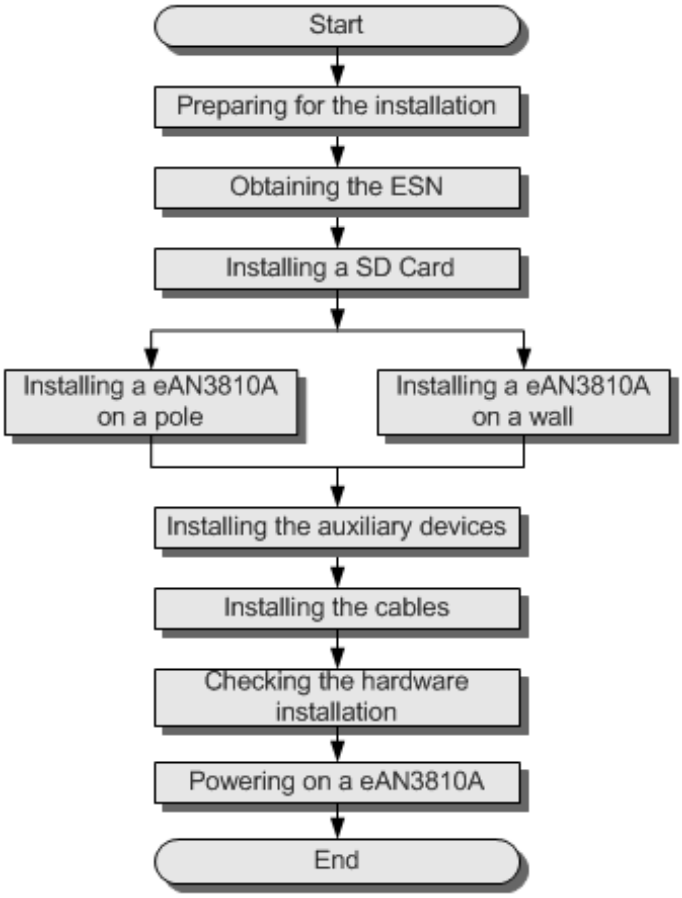
----End

1.4 Installation Process

This section describes the eAN3810A installation process.

Figure 1-9 shows the eAN3810A installation process.

Figure 1-9 eAN3810A installation process



1.5 Obtaining the ESN

Before installing the eAN3810A, record its electronic serial number (ESN) for future use during commissioning.

Context

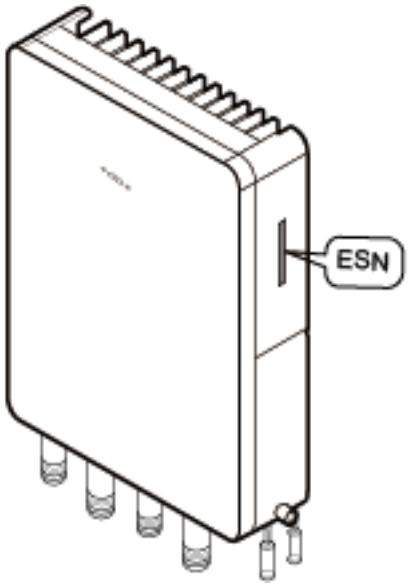
The ESN uniquely identifies a device and is required during commissioning.

Procedure

Step 1 Remove the backup ESN label from the surface of the eAN3810A. as shown in Figure 1-10.

NOTE
Before removing the backup SN label, photograph it.

Figure 1-10 Removing the ESN label



Step 2 Record the ESN by using the template described in section 1.12.1 ESN Collection Template, and report it to the eAN3810A commissioning personnel.

----End

1.6 (Optional) Installing a Micro SD Card

This section describes how to install a micro SD card in the eAN3810A.

Prerequisites

Software and configuration data files need to be prepared for the micro SD card to be installed. For detailed operations, see *eAN3810A Deployment Guide*.

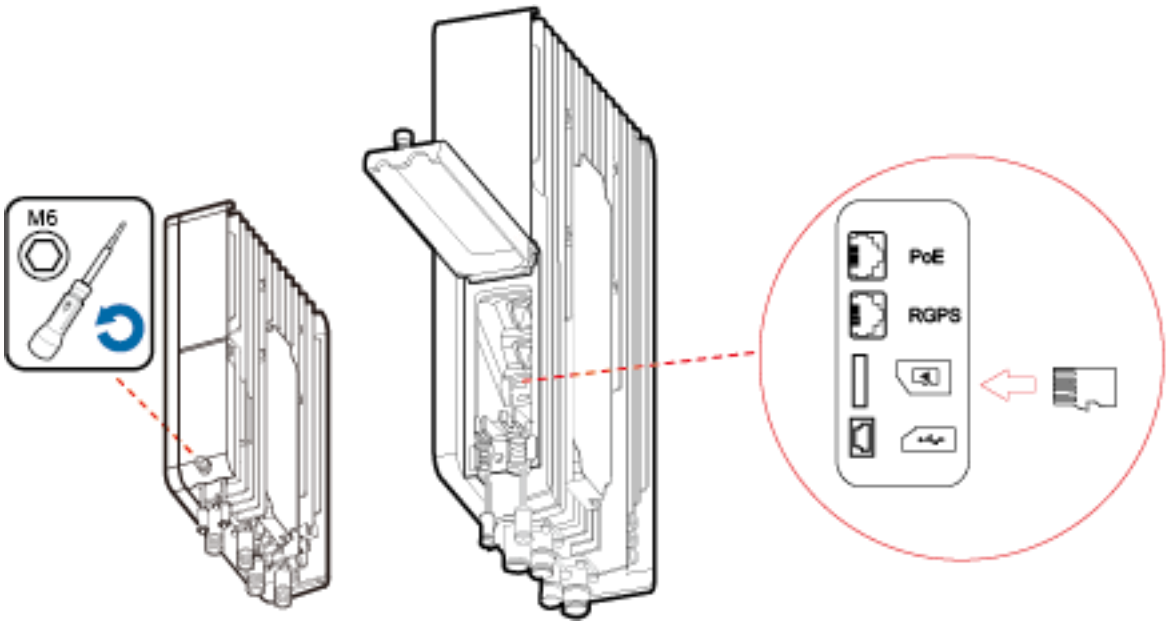
Procedure

Step 1 Wear ESD gloves.

Step 2 Use an M6 inner hexagon screwdriver to loosen a screw on the cabling cavity panel and open the cabling cavity on the side.

Step 3 Install a micro SD card in the micro SD card slot, as shown in Figure 1-11.

Figure 1-11 Installing a micro SD card



Step 4 Cover the plate for the cabling cavity and use the screwdriver to tighten the screw.

----End

1.7 Installing the eAN3810A

This section describes the eAN3810A installation process.

1.7.1 Installing eAN3810A on a Pole

This section describes the procedure and precautions for installing an eAN3810A on a pole.

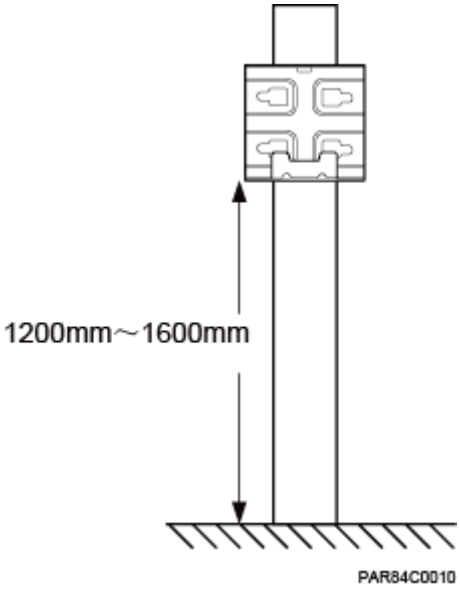
Context

- Do not stand an eAN3810A upright because the RF ports cannot support the weight of the eAN3810A.
- Place a foam pad or cardboard under an eAN3810A to protect the eAN3810A housing from damage during the installation.

Procedure

Step 1 Determine a position for installing the separate mounting kit, as shown in Figure 1-12.

Figure 1-12 Distance between the separate mounting kit and the ground

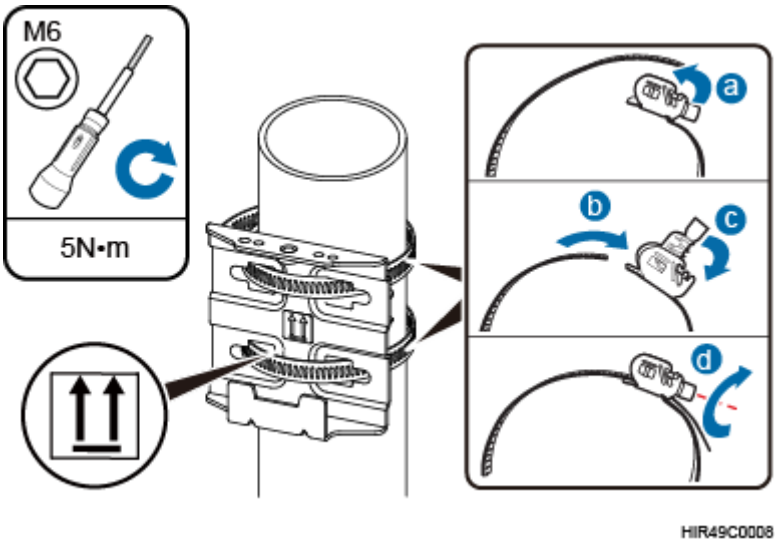


NOTE

It is recommended that the mounting kits be installed at a position 1200 mm (47.24 in.) to 1600 mm (59.06 in.) high above the ground.

Step 2 Install the mounting kit, as shown in Figure 1-13.

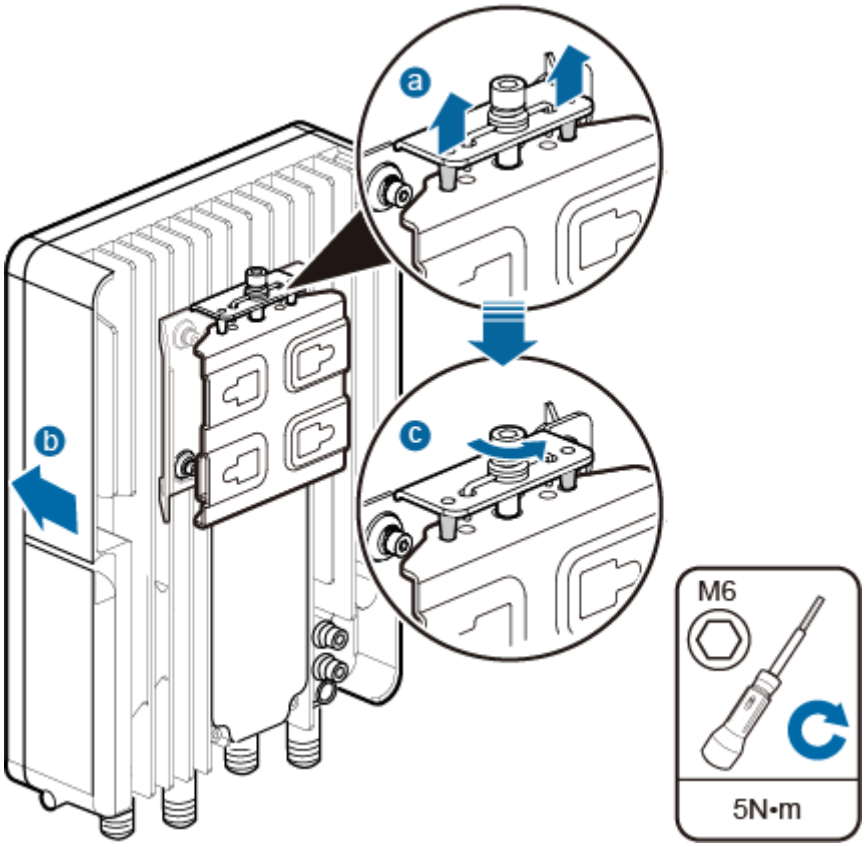
Figure 1-13 Installing the eAN3810A mounting kit



1. Determine a position for installing the eAN3810A. Then, place the separate mounting kit onto the pole, thread the hose clamp through the mounting kit, and encircle the pole with the hose clamp, as shown by illustrations a, b, and c in Figure 1-13.
2. Use an M6 inner hexagon screwdriver to tighten the bolt on each hose clamp to 7 N·m (61.96 lbf·in.) to secure the mounting kit, as shown by illustration d in Figure 1-13.

Step 3 Secure the eAN3810A onto the separate mounting kit, as shown in Figure 1-14.

Figure 1-14 Securing the eAN3810A onto the mounting kit



1. Hang the two dowels on the top of the eAN3810A attachment plate onto the mounting kit, and push the eAN3810A until it snaps into place, as shown by illustrations a and b in Figure 1-14.
2. Use the M6 inner hexagon screwdriver to tighten the screw on the top of the attachment plate to 5 N·m (44.25 lbf·in.), as shown by illustration c in Figure 1-14.

----End

1.7.2 Installing eAN3810A on a Wall

This section describes the procedure and precautions for installing an eAN3810A on a wall.

Context

The wall for installing eAN3810As must meet the following requirements:

- The wall must be able to bear a weight four times heavier than the eAN3810A's weight.
- Expansion bolts must be tightened to 30 N·m (265.52 lbf·in.) to ensure that the bolt assemblies work properly and the wall remains intact.

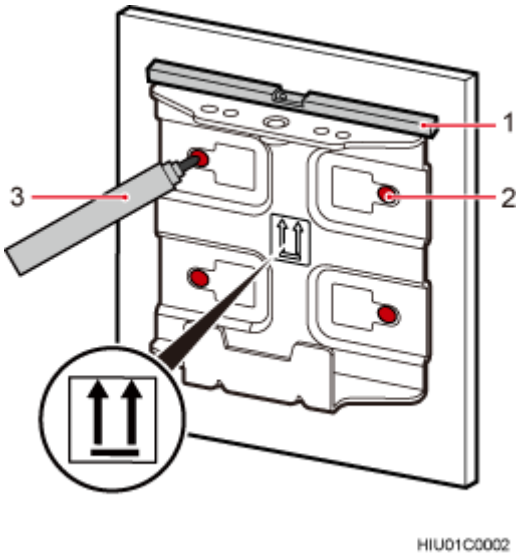
NOTICE

- Do not stand an eAN3810A upright because the RF ports cannot support the weight of the eAN3810A.
- Place a foam pad or cardboard under an eAN3810A to protect the eAN3810A housing from damage during the installation.

Procedure

Step 1 Determine a position for installing the eAN3810A on a wall, use a level to verify that the marking-off template is placed horizontally, and then use a marker to mark anchor points, as shown in Figure 1-15.

Figure 1-15 Marking anchor points



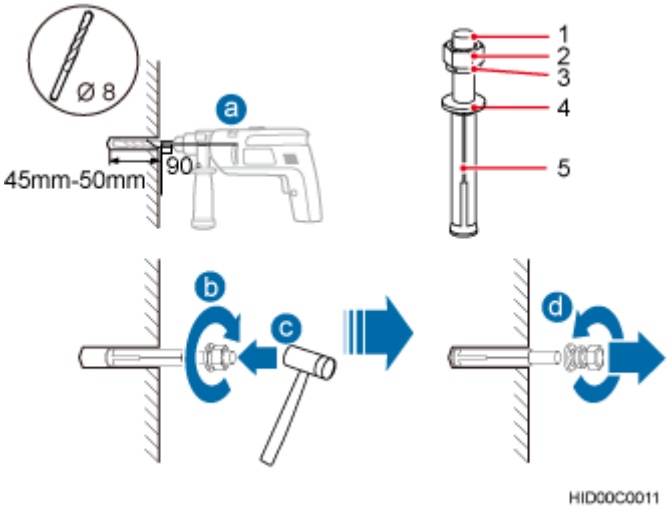
(1) Level (2) Tapped hole (3) Marker

NOTE

It is recommended that the separate mounting kit be 1200 mm (47.24 in.) to 1600 mm (62.99 in.) above the ground.

Step 2 Drill holes at the anchor points and install expansion bolts in the holes, as shown in Figure 1-16.

Figure 1-16 Drilling a hole and inserting an expansion bolt assembly



(1) M6x60 bolt (2) Nut (3) Spring washer (4) Flat washer (5) Expansion tube

1. Use a hammer drill with a φ8 bit to drill holes vertically at the marked anchor points. Ensure that the depth of each hole ranges from 45 mm (1.77 in.) to 50 mm (1.97 in.).

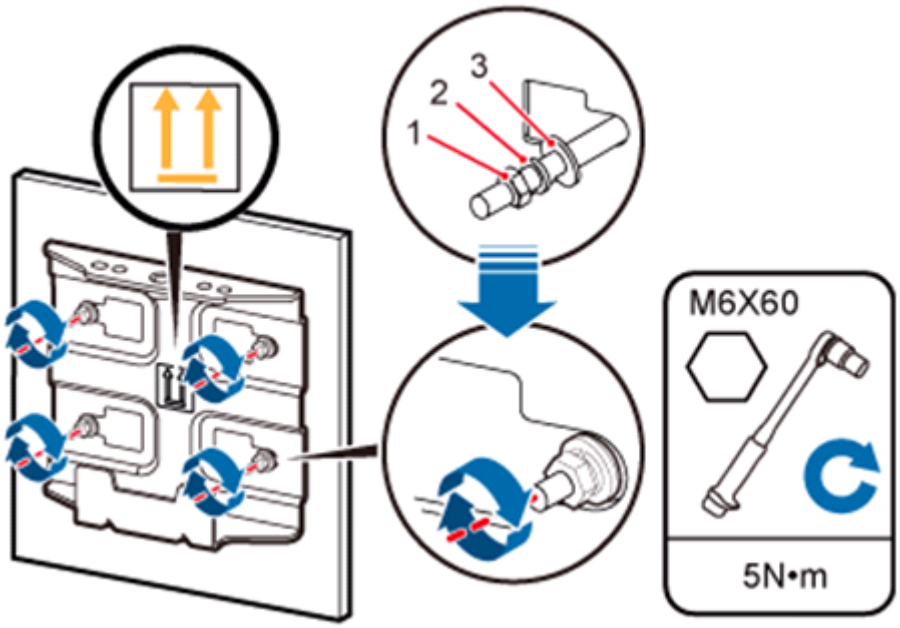
CAUTION

Take proper safety measures to protect your eyes and respiratory tract against the dust before drilling holes.

2. Use a vacuum cleaner to clear the dust out from inside and around the holes, and measure the distances between holes. If any of the holes is beyond the acceptable range, mark a new anchor point and drill a new hole.
3. Tighten the expansion bolts slightly, and place each expansion bolt vertically into each hole.
4. Use a rubber mallet to pound each expansion bolt until the corresponding expansion tube completely enters the hole. Leave 20 mm (0.79 in.) of the expansion bolt outside the wall.
5. Remove the M6x60 bolt, nut, spring washer, and flat washer in sequence.

Step 3 Place the mounting kit onto the wall, insert four M6x60 bolts into the tapped holes on the mounting kit, and tighten each bolt to 5 N·m (44.25 lbf·in.) to secure the mounting kit, as shown in Figure 1-17.

Figure 1-17 Securing the separate mounting kit

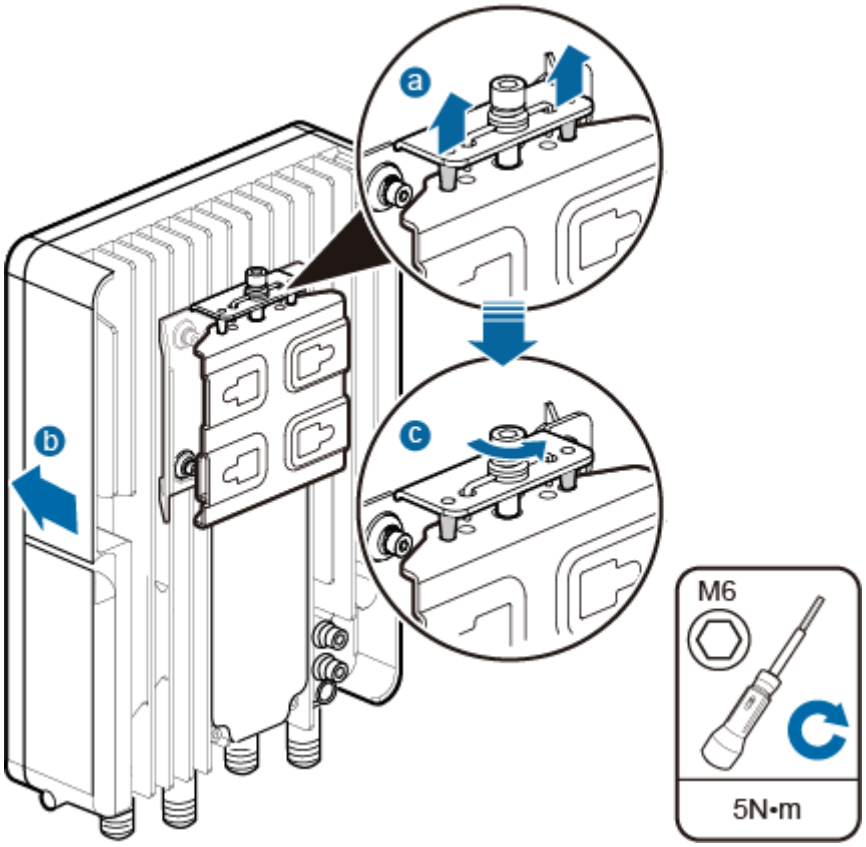


(1) Nut (2) Spring washer (3) Flat washer

Step 4 Hold the eAN3810A, hang the two dowels on the top of the eAN3810A attachment plate onto the separate mounting kit, and push the eAN3810A until it snaps into place, as shown by illustrations a and b in Figure 1-18.

Step 5 Use the M6 inner hexagon screwdriver to tighten the screw on the top of the separate attachment plate to 5 N·m (61.96 lbf·in.), as shown by illustration c in Figure 1-18.

Figure 1-18 Securing the eAN3810A onto the mounting kit



----End

1.8 Installing the Auxiliary Devices

This section describes the procedure and precautions for installing the auxiliary devices.

1.8.1 (Optional) Installing a Dock

This section describes the procedure and precautions for installing a dock.

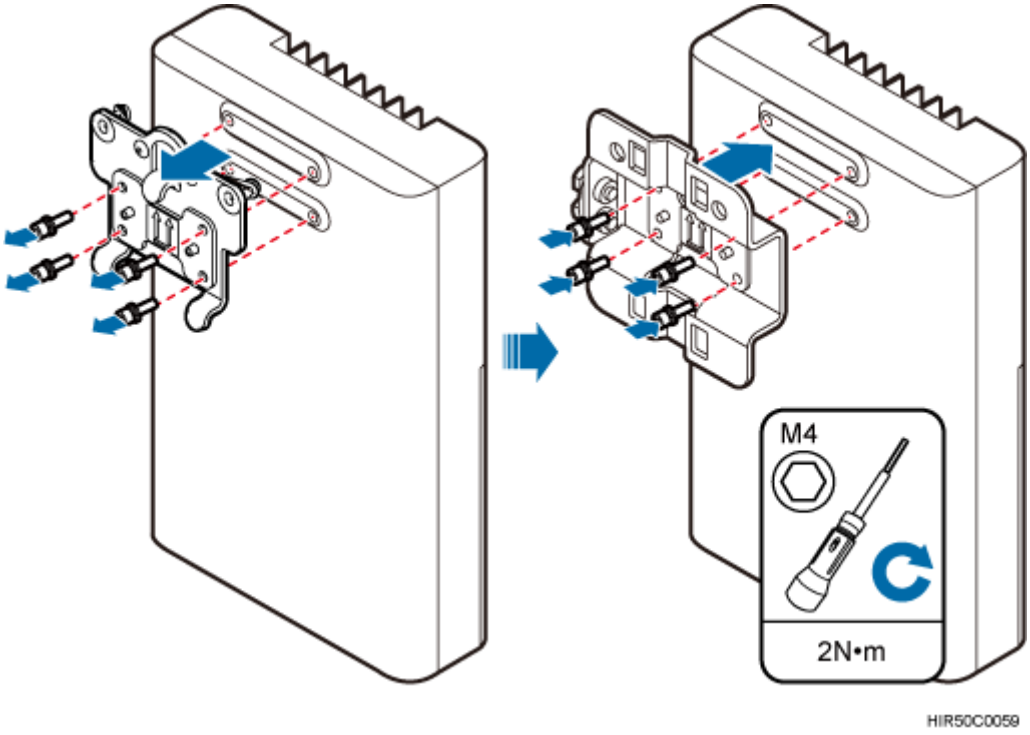
Installing a Dock on a Pole

This section describes the procedure and precautions for installing the Dock on a pole.

Procedure

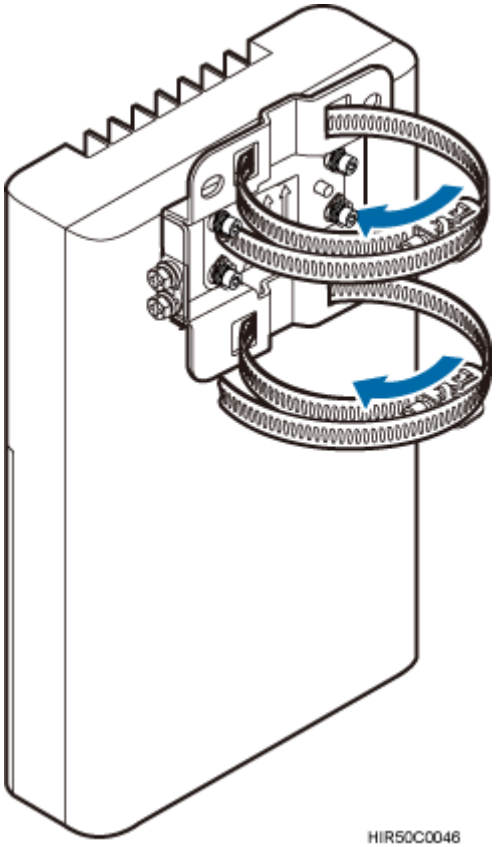
Step 1 Use an M4 inner hexagon screwdriver to remove the Dock integrated mounting bracket, install the Dock separated mounting bracket instead, and tighten the four screws to 2 N·m (17.70 lbf·in.), as shown in Figure 1-19.

Figure 1-19 Replacing the Dock mounting bracket



Step 2 Route two hose clamps through the up and down mounting holes on the Dock separate mounting bracket, but do not route the steel belts through the locks, as shown in Figure 1-20.

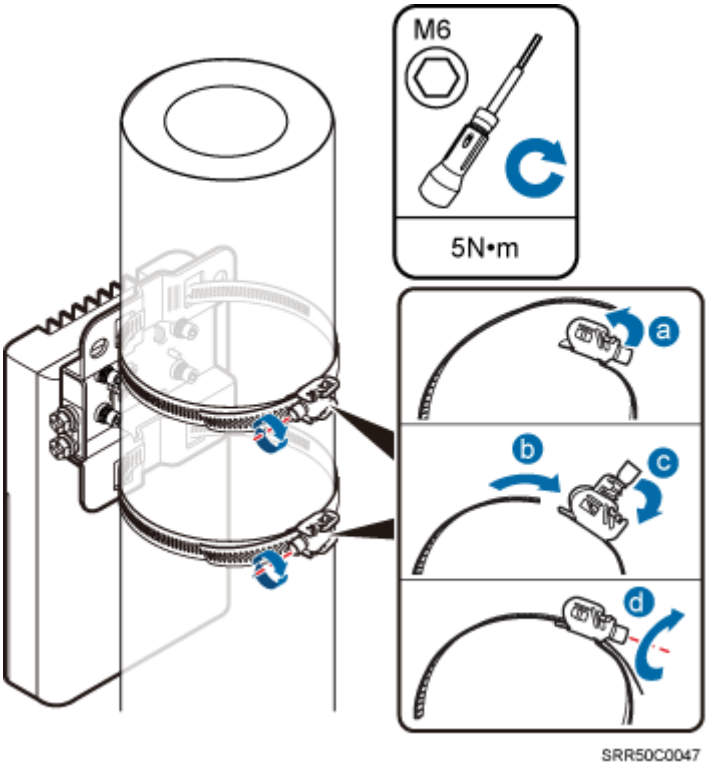
Figure 1-20 Routing hose clamps through the Dock separate mounting bracket



Step 3 Put the Dock in the installation position, route two hose clamps through the pole and the steel belts through the locking connectors, partially tighten the screws, and use an M6 inner hexagon torque screwdriver to tighten the screws to 5 N·m (44.25 lbf·in.), as shown in Figure 1-21.

Ensure that your body is close to the module when tightening hose clamps.

Figure 1-21 Tightening hose clamps



----End

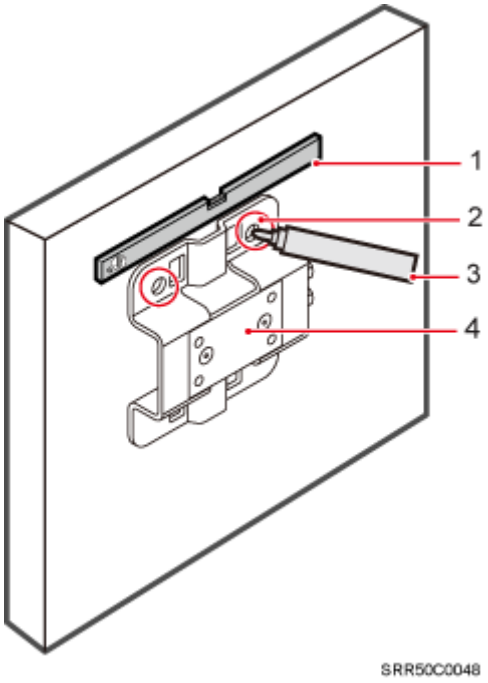
Installing a Dock on a Wall

This section describes the procedure and precautions for installing the Dock on a wall.

Procedure

Step 1 Place the Dock separate mounting bracket against the wall, use a level to verify that the mounting bracket is horizontally placed, and use a marker to mark anchor points, as shown in Figure 1-22.

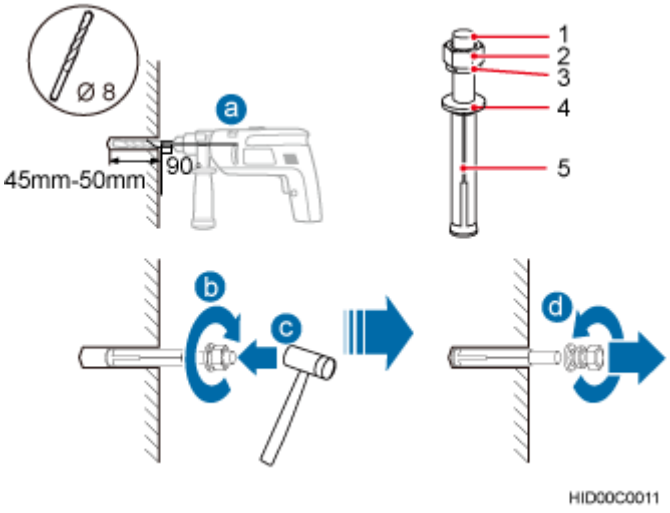
Figure 1-22 Marking anchor points



(1) Level (2) Mounting hole (3) Marker (4) Dock separate mounting bracket

Step 2 Drill holes at the anchor points, and install expansion bolt assemblies, as shown in Figure 1-23.

Figure 1-23 Drilling holes and installing expansion bolt assemblies



(1) M6x60 bolt (2) Nut (3) Spring washer (4) Flat washer (5) Expansion tube

1. Use a hammer drill with a Φ8 drill bit to drill holes perpendicularly with the wall at the marked anchor points. Ensure that the depth of each hole ranges from 45 mm to 50 mm (1.77 in. to 1.97 in.) and each hole is of the same depth.

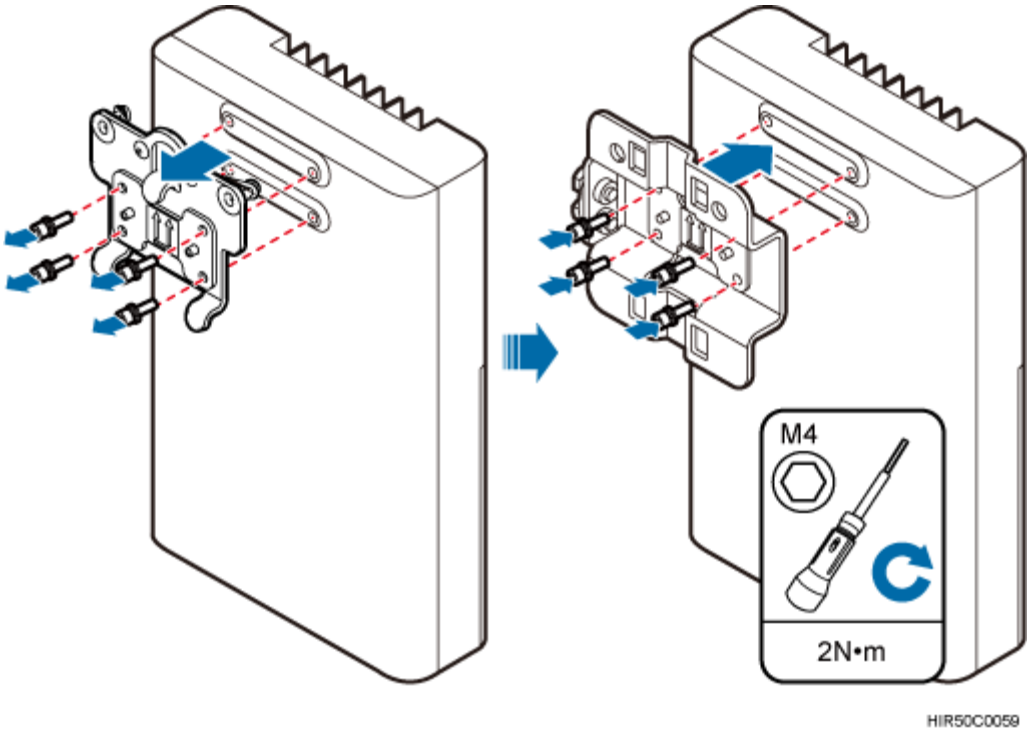
CAUTION

To prevent inhalation or eye contact with dust, take adequate preventive measures when drilling holes.

2. Use a vacuum cleaner to clear dust inside and around the holes, and then measure the inter-hole spacing. If the spacing is too wide or too narrow, drill holes again.
3. Tighten each expansion bolt slightly and place them perpendicularly into each hole.
4. Hit each expansion bolt using a rubber mallet to enable the expansion tube to enter the hole completely.
5. Remove the M6x60 bolt, nut, spring washer, and flat washer from each expansion bolt assembly in sequence.

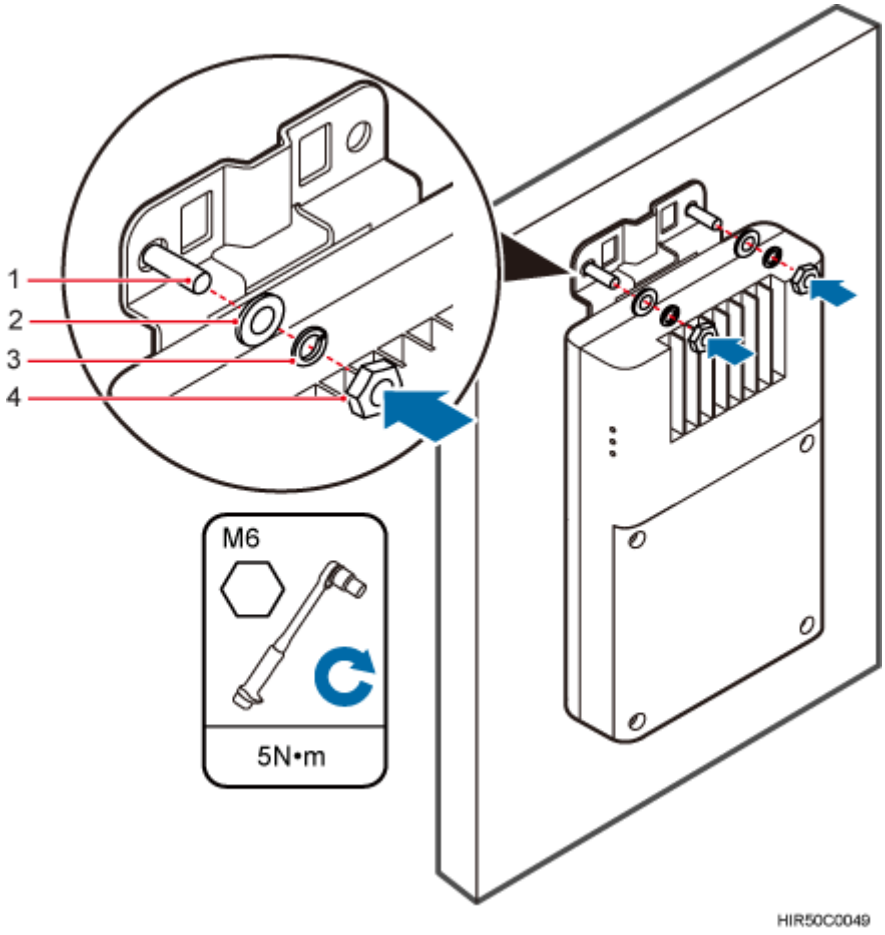
Step 3 Use an M4 inner hexagon screwdriver to remove the Dock integrated mounting bracket, install the Dock separated mounting bracket instead, and tighten the four screws to 2 N·m (17.70 lbf·in.), as shown in Figure 1-24.

Figure 1-24 Replacing the Dock mounting bracket



Step 4 Put the Dock to the installation position, install the separate mounting bracket on the expansion bolts, and use an M6 socket wrench to tighten the expansion bolts to 5 N·m (44.25 lbf·in.), as shown in Figure 1-25.

Figure 1-25 Fitting the Dock onto the wall



(1) Bolt	(2) Flat washer	(3) Spring washer	(4) Nut

----End

1.8.2 (Optional) Installing the PSE

This section describes the procedure and precautions for installing the PSE on a wall.

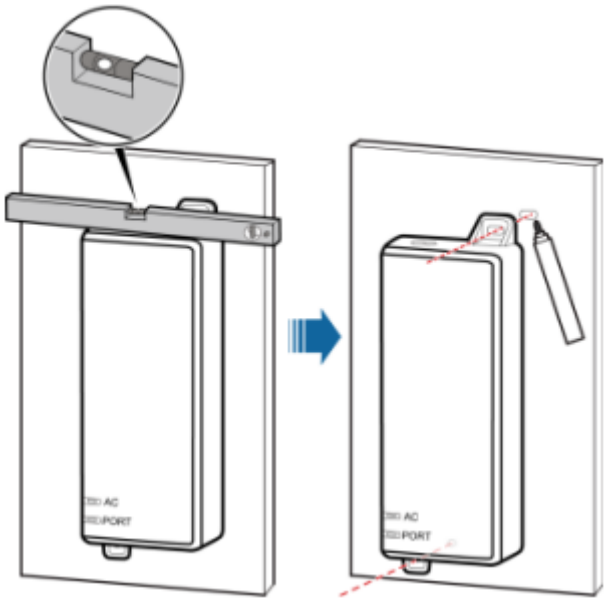
Context

The PSE can be installed only on an indoor wall.

Procedure

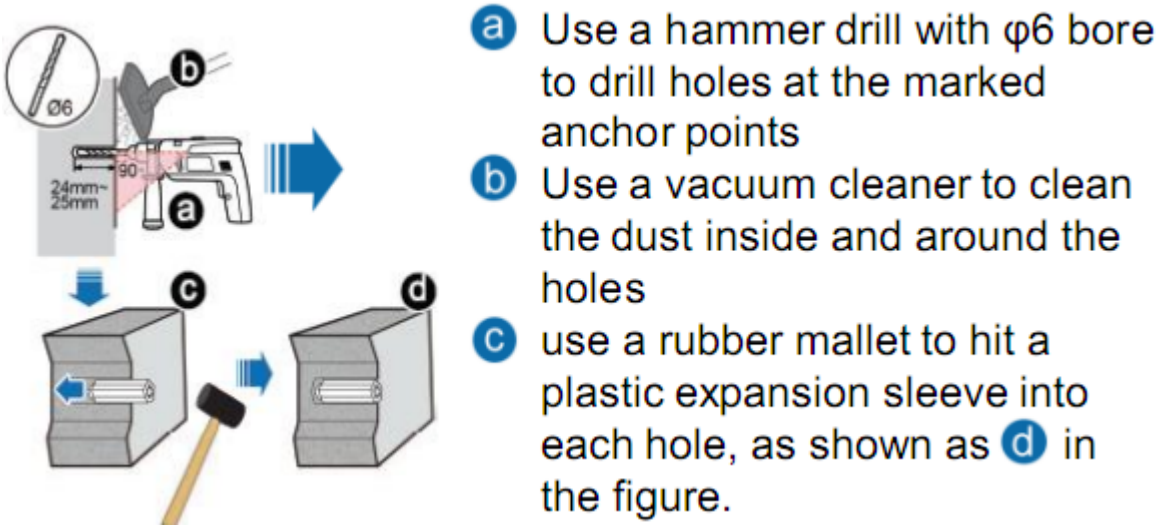
Step 1 Place the PSE against the wall, level it in the installation position, and mark anchor points.

Figure 1-26 Marking anchor points



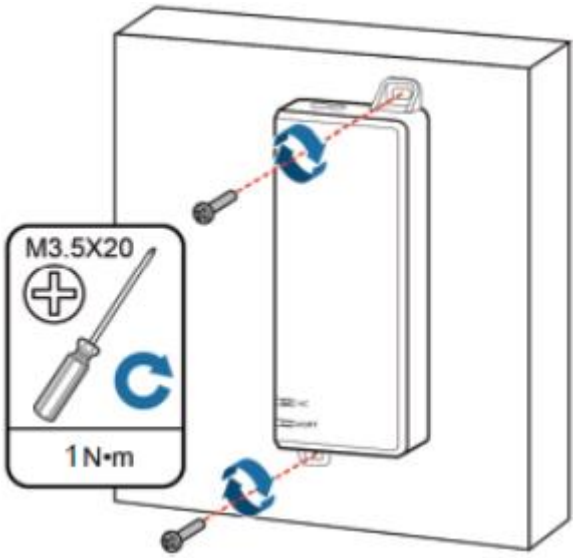
Step 2 Drill holes and install expansion bolts.

Figure 1-27 Drill holes and install expansion bolts



Step 3 Install the PSE

Figure 1-28 Install the PSE



----End

1.9 Installing Cables

This section describes the procedures for installing eAN3810A cables and auxiliary devices cables.

1.9.1 Cabling Requirements

Cables must be laid out according to the specified cabling requirements to prevent signal interference.

NOTE
If a cable listed below is not required, skip the cabling requirements of the cable.

General Cabling Requirements

Bending radius requirements

- The bending radius of a 7/8" feeder must be greater than 250 mm (9.84 in.), and the bending radius of a 5/4" feeder must be greater than 380 mm (14.96 in.).
- The bending radius of a 1/4" jumper must be greater than 35 mm (1.38 in.). The bending radius of a super-flexible 1/2" jumper must be greater than 50 mm (1.97 in.), and the bending radius of an ordinary 1/2" jumper must be greater than 127 mm (5.00 in.).
- The bending radius of a PGND cable must be at least three times its diameter.
- The bending radius of a signal cable must be at least five times its diameter.

Cable binding requirements

- Cables of the same type must be bound together.
- Different types of cables must be separately laid out and bound, with a minimum distance of 30 mm (1.18 in.) from each other.

- Cables must be bound tightly and neatly. The sheaths of cables must not be damaged.
- Cable ties must face the same direction, and those at the same horizontal line must be in a straight line.
- The excess of indoor cable ties must be cut off. The excess of 5 mm (0.197 in.) of outdoor cable ties should be reserved, and the cut surfaces must be smooth without sharp edges.
- After cables are installed, labels or nameplates must be attached to the cables at their ends, curves, and interconnection positions.

Security requirements

- When laying out cables, avoid sharp objects, for example sharp edges on the wall. If necessary, use tubes to protect the cables.
- When laying out cables, keep cables away from heat sources, or use heat insulation materials to insulate the cables from the heat sources.
- Reserve a proper distance (0.1 m [3.937 in.] is recommended) between equipment and cables especially at the cable curves to protect the cables and equipment.

Indoor cabling requirements

- Route each cable into the room through the feeder window.
- Reserve drip loops for all cables outside the feeder window before routing them into the room. Ensure that the radiuses of the drip loops are greater than or equal to the minimum bending radiuses of the cables.
- When routing a cable into the room, ensure that a person is assisting you in the room.
- Apply waterproof treatment to the feeder window.

Outdoor Cabling Requirements

- Protect outdoor cables against potential damage. For example, thread the cables through tubes.
- Cables to be protected include AC power cables, transmission cables, and cables laid out underground.
- Use cable clips to secure cables outdoors.
- Arrange cables neatly along the routing direction and use cable clips to secure the cables.
- Determine the positions where the clips are installed according to the actual situation. For example, 7/8" feeders are secured with clips at an interval of 1.5 m (4.92 ft) to 2 m (6.56 ft), and CPRI fiber optic cables and power cables are secured with clips at an interval of 1 m (3.28 ft) to 1.5 m (4.92 ft). Ensure that the clips are evenly spaced and in the same direction.
- When fastening cables with a clip, ensure that the cables are aligned neatly and are routed through the holes in the clip. Do not stretch the cables too tightly.
- When using clips to secure cables, tighten the screws on the clips after all cables are arranged and laid out.

Special Cabling Requirements

Cabling of PGND cables

- PGND cables for a base station must be connected to the same ground bar.
- PGND cables must be buried in the ground or routed indoors.

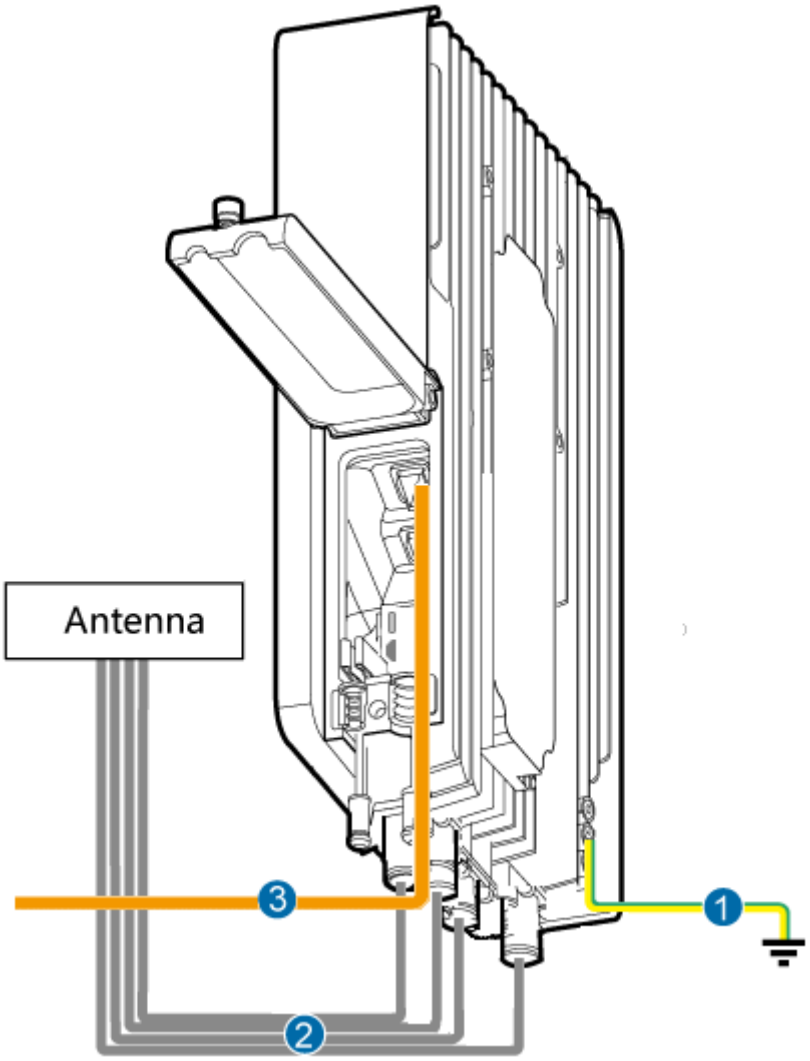
- The external conductor of the coaxial wire and the shield layer of the shielded cable must have proper electrical contact with the metal surface of the equipment which they are connected to.
- PGND cables and signal cables must be installed separately. A certain distance must be reserved between them to prevent interference from each other.
- Switches or fuses must not be installed on the PGND cables.
- Other devices must not be used for electrical connections of the PGND cables.
- All the metal parts in the housing of the equipment must be reliably connected to the ground terminal.

1.9.2 Cable Connections

This section describes eAN3810A cable connections.

Figure 1-29 shows the cable connections when an eAN3810A is installed.

Figure 1-29 Cable connections when an eAN3810A is installed



(1) PGND cable	(2) RF jumper	(3) Ethernet cable

1.9.3 Installing a PGND Cable

This section describes the procedure for installing a PGND cable.

Procedure

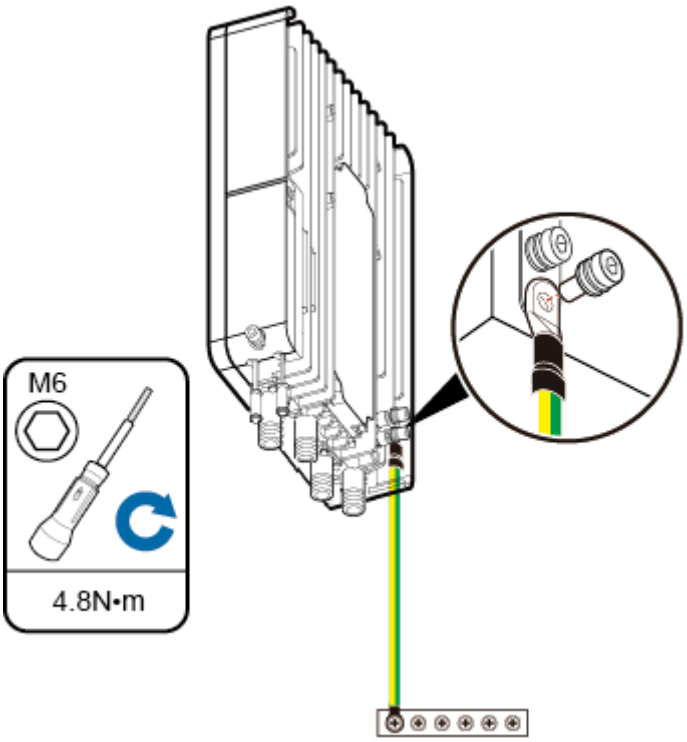
Step 1 Prepare a eAN3810A PGND cable.

1. Cut the cable to a length suitable for the actual cable route.
2. Add OT terminals to both ends of the cable.

Step 2 Install the eAN3810A PGND cable.

Connect one end of the PGND cable with an M6 OT terminal to the ground terminal at the eAN3810A bottom and the other end of the cable with an M8 OT terminal to the external ground bar, as shown in Figure 1-30.

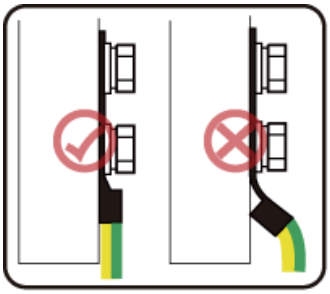
Figure 1-30 Installing a eAN3810A PGND cable



NOTE

Crimp OT terminals in correct directions, as shown in Figure 1-31.

Figure 1-31 Correct direction for crimping an OT terminal



Step 3 Label the installed cable.

NOTE
Follow the same procedure when installing a Dock PGND cable.

----End

1.9.4 Installing a RF Jumper

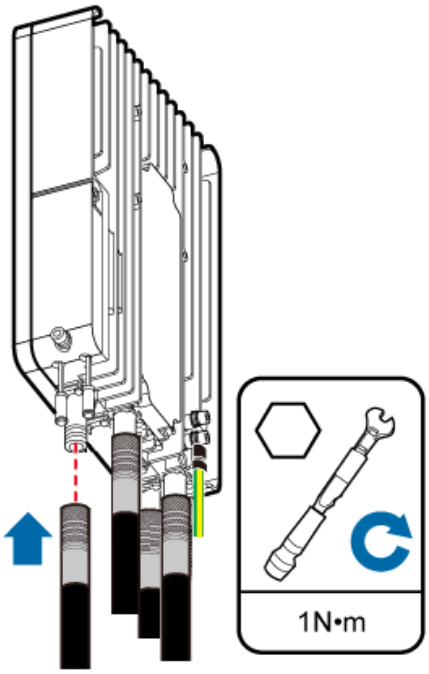
This section describes the procedure for installing an RF jumper.

Procedure

Step 1 Remove the dustproof cap from the ANT port to be used on the eAN3810A.

Step 2 Connect the type N male connector at one end of the eAN3810A RF jumper to the ANT port at the bottom of the eAN3810A in sequence, and use a torque wrench to tighten the connector to 1 N·m (8.85 lbf·in.), as shown in Figure1.

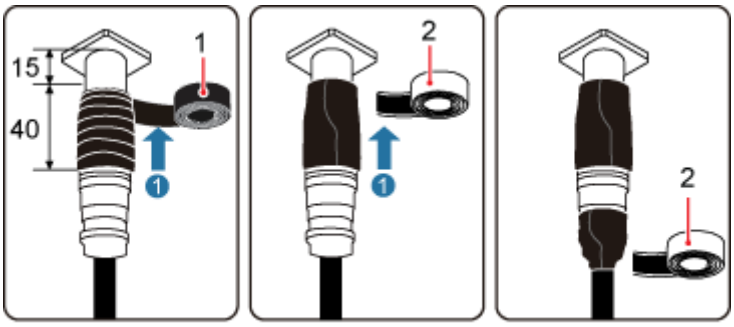
Figure 1-32 Installing an RF jumper



Step 3 Connect the other end of the eAN3810A RF jumper to the external antenna system.

Step 4 Waterproof the connector of the RF jumper by Waterproof tape, as shown in Figure2.

Figure 1-33 Waterproof the connector of the RF jumper by waterproof tape



(1) PVC insulation tape	(2) Waterproof tape

NOTICE

- During installation, ensure that no foreign substance, including sand, enters the waterproof tape.

1. Wrap a PVC insulation tape around the exposed area of the connector. The wrapped area is 15 mm away from the end of the connector, with a total length of 40 mm.
2. Ensure that dimensions (L x W) of the waterproof tape is 50 mm x 50 mm. Stretch the tape horizontally until it is twice of the original length and wrap it around the upper area of the connector.

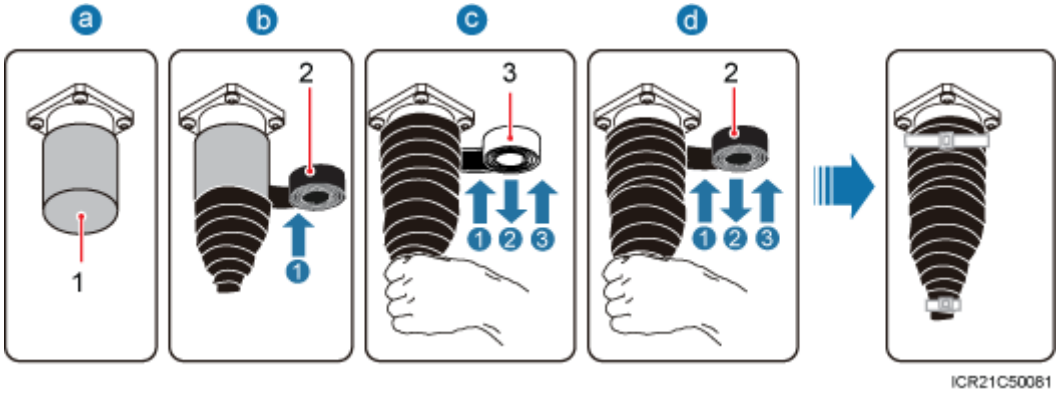
   Ensure that the upper end of the waterproof tape overlays that of the PVC insulation tape.

Step 5 Check the dustproof caps on antenna connectors. In outdoor scenarios, dustproof caps must be waterproofed, as shown in Figure3.

NOTICE

Do not remove dustproof caps from vacant antenna connectors.

Figure 1-34 Waterproofing a dustproof cap



(1) Dustproof cap (2) PVC insulation tape (3) Waterproof tape

1. Verify that dustproof caps are not removed.
2. Wrap one layer of PVC insulation tape on each connector from bottom up.
3. Wrap three layers of waterproof tape on each connector, first from bottom up, then from top down, and finally from bottom up. Wrap each layer of the tape around the connector tightly.
4. Wrap three layers of PVC insulation tape on each connector, first from bottom up, then from top down, and finally from bottom up. Wrap each layer of the tape around the connector tightly.

NOTE

- When wrapping waterproof tape, stretch the tape evenly until it is twice of the original length. When wrapping PVC insulation tape, do not stretch it.

- Wrap each layer of tape around each connector tightly and neatly, and ensure that the adhesive surface of each layer of tape overlaps more than 50% of the lower layer.
- When cutting off a cable tie, reserve a surplus length of 3 mm (0.12 in.) to 5 mm (0.20 in.).

----End

Follow-up Procedure

1. Route the cable by following the instructions in section cabling requirements and use cable ties to bind the cable.
2. Label the installed cable.

1.9.5 Installing an Ethernet Cable

This section describes how to install an Ethernet cable.

Context

- The Ethernet cable must be of Category 5e (enhanced) or higher. In addition, its cross-sectional area must be 24 AWG or larger and frame spread rating must be CM or higher.
- Both the cable and the RJ45 connectors are delivered, and they must be assembled onsite. You need to use a network cable tester to test the Ethernet cable connection.
- With the internal PoE module providing power, the maximum length of an Ethernet cable is 100 m.

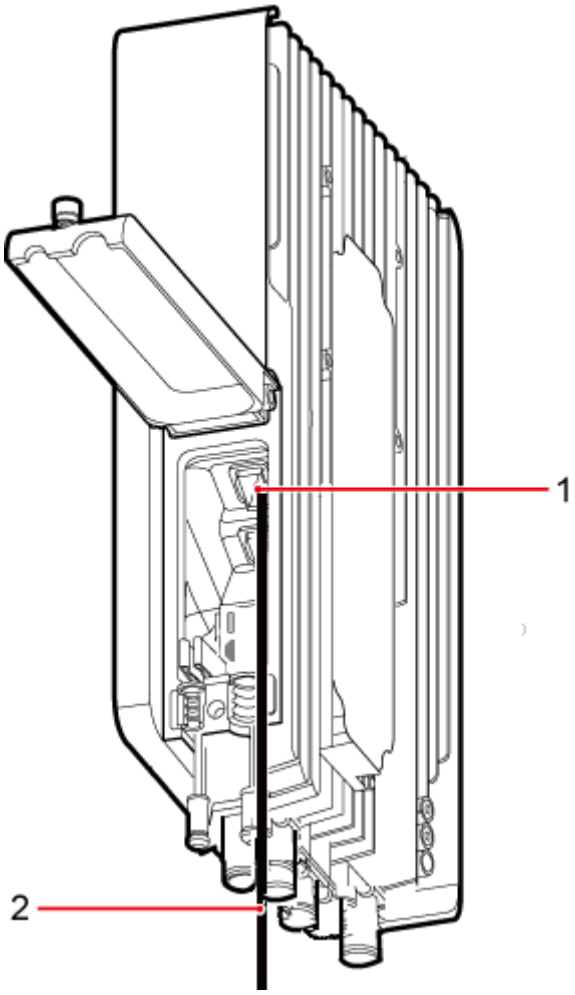
Procedure

Step 1 Make the Ethernet cables.

1. Assemble an RJ45 connector and an Ethernet cable.
2. Check whether the made RJ45 connector is qualified.
3. To complete the assembly of the other end, repeat Step 1.1 and Step 1.2.
4. Check whether the touch points on the connectors at both ends are normally conducted and well contacted and whether the connections are correct.

Step 2 Connect the RJ45 connector at one end of the Ethernet cable to the PoE port on the eAN3810A panel, and push the cables into the cable clips, as shown in Figure 1-35.

Figure 1-35 Installing an eAN3810A Ethernet cable



(1) PoE port on the eAN3810A panel	(2) Ethernet cable

Step 3 Connect the RJ45 connector at the other end of the Ethernet cable to auxiliary devices port.

----End

Follow-up Procedure

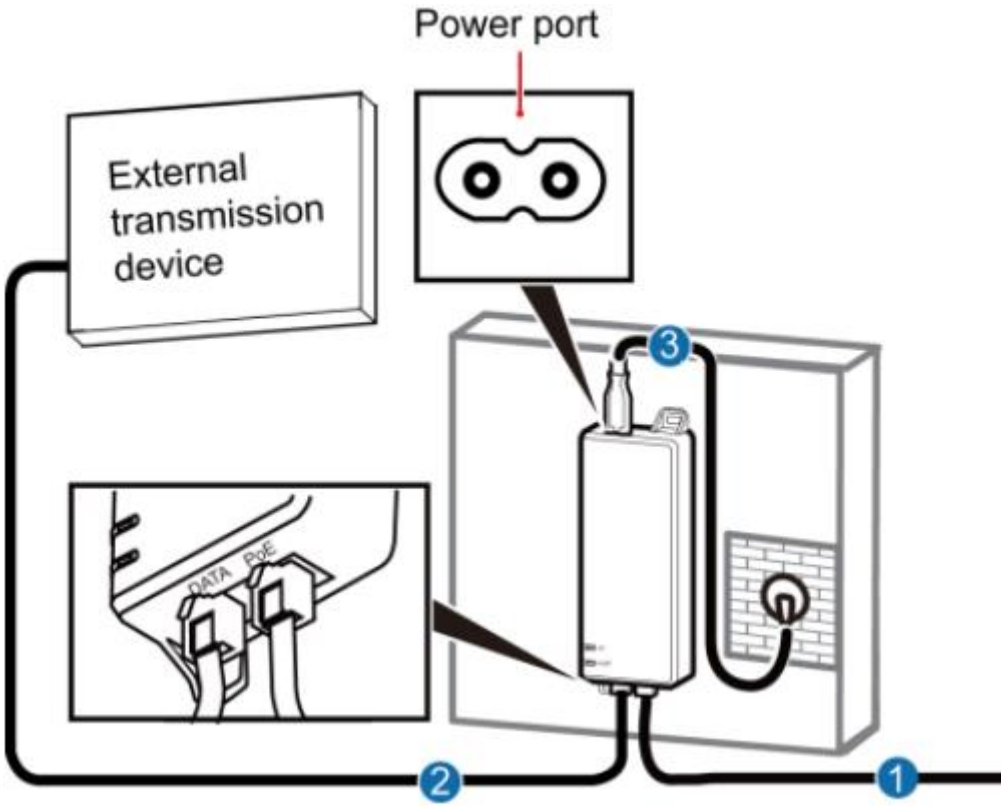
1. Route the cable, and then use a cable tie to bind the cable.
2. Label the installed cable.

1.9.6 (Optional) Installing the PSE Cable

This section describes the procedure and precautions for installing the PSE cables.

Figure 1-36 shows the cable connections when the PSE is installed.

Figure 1-36 Installing the PSE Cable



(1) Ethernet cable between eAN3810A and PSE	(2) Ethernet cable between PSE and External transmission device	(3) PSE Power cable (2m)

NOTE

The total length of cables connected between the eAN3810A, PSE, and external transmission device does not exceed 100 m.

1.9.7 (Optional) Installing the Dock Ethernet Cable

This section describes procedure and precautions for installing a Dock Ethernet cable.

Context

- The Ethernet cable must be of Category 5e (enhanced) or higher. In addition, its cross-sectional area must be 24 AWG or larger and frame spread rating must be CM or higher.
- Ethernet cables are not delivered, and they must be prepared onsite. You need to use a network cable tester to test the Ethernet cable connection.
- With the internal PoE module providing power, the maximum length of an Ethernet cable is 100 m.

Procedure

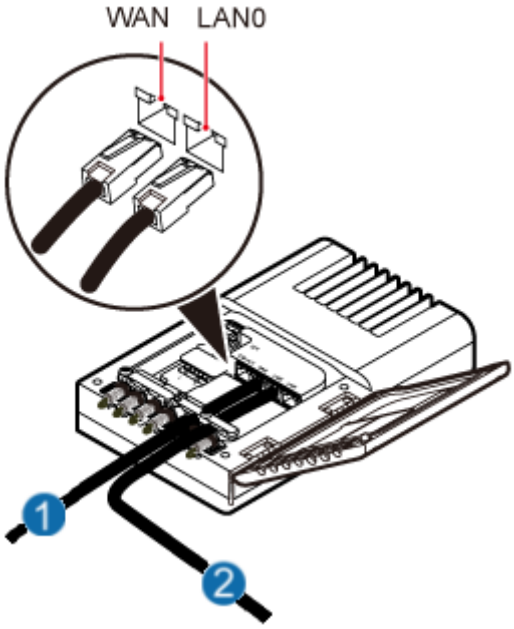
Step 1 Make the Ethernet cables.

1. Assemble an RJ45 connector and an Ethernet cable.

2. Check whether the made RJ45 connector is qualified.
3. To complete the assembly of the other end, repeat Step 1.1 and Step 1.2.
4. Check whether the touch points on the connectors at both ends are normally conducted and well contacted and whether the connections are correct.

Step 2 Installing the Dock Ethernet cable, as shown in Figure 1-37.

Figure 1-37 Installing the Dock Ethernet cable



(1) Ethernet cable between Dock and external transmission device	(2) Ethernet cable between eAN3810A and Dock

1. Connect one end of the assembled Ethernet cable to the **WAN** port in the cabling cavity of the Dock and the other end to the external transmission device.
2. Connect the other end of the Ethernet cable, which is connected to the **PoE** port on the eAN3810A, to the **LAN0** port in the cabling cavity of the Dock.

NOTICE

The eAN3810A must be connected to the LAN0 port on the Dock. Otherwise, you are not able to maintain the eAN3810A remotely.

----End

1.9.8 (Optional) Installing the Dock Power Cable

This section describes the procedure and precautions for installing a power cable. A Dock input power cable connects the Dock and an external power supply device to lead external

power into the Dock. A Dock cascading power cable is used for power supply cascading between two Docks.

Context

Table 1-3 lists the specifications of the two power cables.

Table 1-3 Power cable specifications

Cable		Color	One End	The Other End
Dock input power cable	L	Brown	Cord end terminal (1.5 mm_2)	Depends on the external power device
	N	Blue	Cord end terminal (1.5 mm_2)	Depends on the external power device
	PE	Yellow and green	Cord end terminal (1.5 mm_2)	Depends on the external power device
Dock cascading power cable	L	Brown	Cord end terminal (1.5 mm_2)	Cord end terminal (1.5 mm_2)
	N	Blue	Cord end terminal (1.5 mm_2)	Cord end terminal (1.5 mm_2)
	PE	Yellow and green	Cord end terminal (1.5 mm_2)	Cord end terminal (1.5 mm_2)

NOTE
The color and structure of the power cables differ in different countries and regions. The power cables purchased locally must conform to the local standards.

Procedure

Step 1 Make power cables.

1. Cut the cable to a length suitable for the actual cable route.
2. Add an OT terminal to one end of the cable, and add the corresponding power terminal to the other end according to external power supply device.
3. **Optional:** Add an OT terminal to each end of the Dock cascading power cable.

Step 2 Install power cables, as shown in Figure 1-38.

1. Open the protective cover of the power supply terminal.
2. Install Dock input power cables.

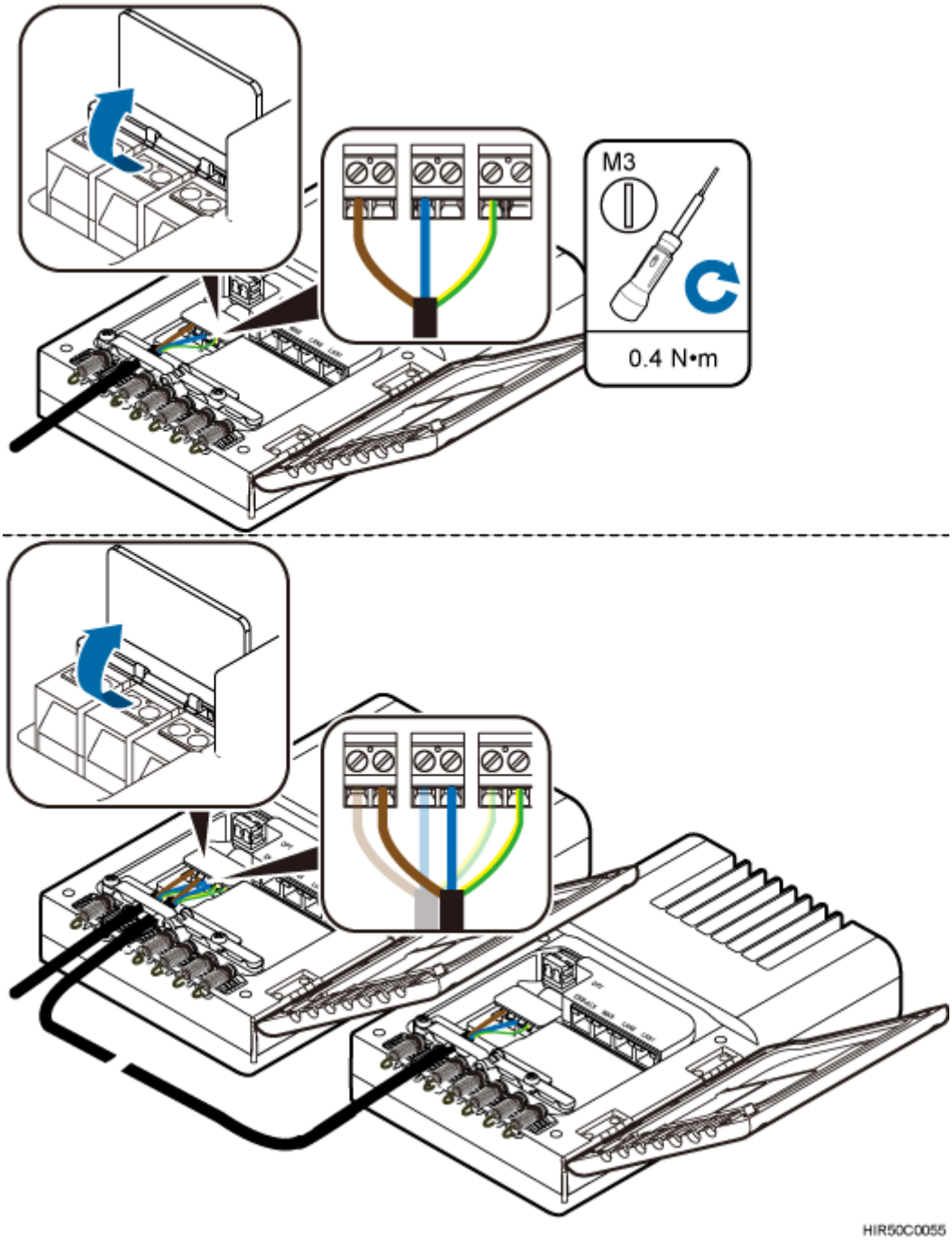
Use a flat-head screwdriver to loosen the left ports on the **L**, **N**, and **PE** wiring posts inside the Dock. Connect one end of each cable to the corresponding port on the left side and tighten the wiring posts. Connect the other end to external devices.

3. **Optional:** Install Dock cascading power cables.

   Use a flat-head screwdriver to loosen the right ports on the **L**, **N**, and **PE** wiring posts inside one Dock. Connect one end of each cable to the corresponding port on the right side and tighten the wiring posts. Connect the other end of cables to corresponding ports on the **L**, **N**, or **PE** wiring posts inside the lower-level cascaded Dock.

4. Restore the protective cover of the power supply terminal.

Figure 1-38 Installing power cables



NOTICE

The protective cover of the power supply terminal is automatically secured. After the procedure is complete, tap the protective cover to restore it.

----End

1.10 Checking Hardware Installation

eAN3810A hardware installation checking includes hardware and cable installation checking.

Table 1-4 lists the hardware installation checking items.

Table 1-4 Hardware installation checking list

No.	Item
1	The installation position of each device strictly complies with the engineering design and meets clearance requirements. Sufficient space is reserved for equipment maintenance.
2	The eAN3810A is securely installed.
3	The cover plate is securely installed on the eAN3810A cabling cavity.
4	Waterproof blocks are securely installed in vacant cable troughs of the eAN3810A cabling cavity, and the cover plate of the cabling cavity is securely installed. In addition, vacant RF ports are covered with dustproof caps and the caps are tightened.
5	Labels are correct, legible, and complete at both ends of each cable, feeder, and jumper.

Table 1-5 lists the check items of the signal cable connection.

Table 1-5 Checklist for the signal cable connection

No.	Item
1	The connectors of the signal cables must securely connected.
2	The connectors of the signal cables are intact.
3	The signal cables are intact.
4	The cable ties are evenly spaced. The signal cables are bound neatly with cable ties to proper tightness, and arranged at even intervals in the same direction.
5	The extra length of the cable ties is cut and removed. The cut surfaces of the indoor cables are smooth and have no sharp edges.
6	The cable layout facilitates maintenance and expansion.
7	Correct and clear labels are attached to both ends of the signal cables.

Table 1-6 lists the checking items for other cable connections.

Table 1-6 Checklist for other cable connections

No.	Item
1	The connectors of the other cables must securely connected.
2	Labels on the cables are legible and bound based on the engineering requirements. The cables must be bound tightly and neatly. The sheaths of the cables must not be damaged.
3	Positions for routing the cables must meet requirements of the engineering design.
4	There are no connectors or joints on each PGND cable. None of PGND cables can be short-circuited or reversely connected. In addition, these cables are not damaged or broken.
5	PGND cables are separately bound from other cables.
6	The protection grounding of the eAN3810A and the surge protection grounding of the building share one group of ground conductors.

1.11 Power-On Check on the eAN3810A

This section describes the procedure for performing a power-on check on the eAN3810A.

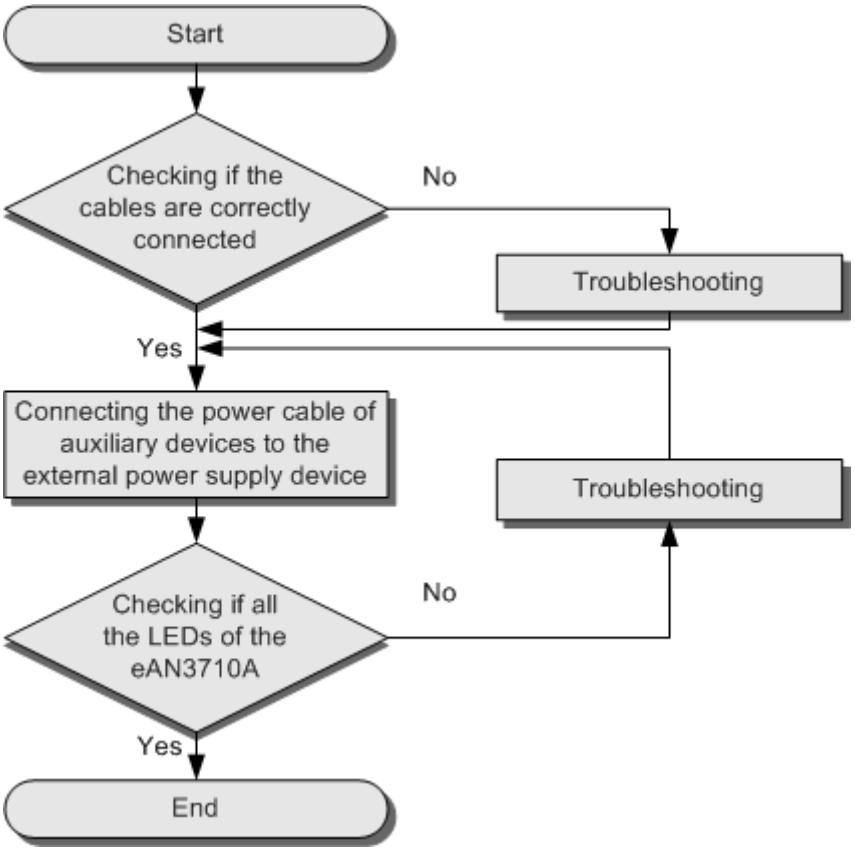
eAN3810A Power-On Check Procedure

NOTICE

After you unpack a eAN3810A, you must power on it within 24 hours. If you power off the eAN3810A for maintenance, you must restore power to it within 24 hours.

Figure 1-39 shows the eAN3810A power-on check procedure.

Figure 1-39 Power-on check procedure



Checking the Indicator Status

Table 1-7 Checking the indicator status

If...		then...
RUN	Steady white	The eAN3810A is running correctly.
ETH	Blinking white	
WIFI	Off	
LINK	Off	

NOTE

- During the eAN3810A startup, there is no need to observe the indicator status.
- During a start, the eAN3810A reads and writes the flash and therefore the indicators blinking quickly may blink irregularly for 1-2 seconds, which does not affect services.

1.12 Appendix

This section describes reference information during installation.

1.12.1 ESN Collection Template

This section describes the eAN3810A ESN collection template.

The ESN collection template is used to record the installation position, and ESN of the site at the initial installation stage to facilitate subsequent commissioning and maintenance. Table 1-8 shows the ESN collection template.

Table 1-8 ESN collection template

No.	Site Number	Site Name	Base Station ESN	Location Information
Sample	*xx*	*eAN_1*		*xx floor, xx building, xx mansion*

Note: The ESN collection template is essential to the engineering stage and subsequent maintenance, especially when multiple devices are installed at a short distance. This is because the template defines the radio network to access. Please maintain this template with caution.

1.12.2 Antenna Installation

This section describes the reference documents for installing the antenna system.

Related Document	Description
Antenna System (on Tower) Quick Installation Guide	This document describes the installation procedure and manhour requirements of the antenna system.
Antenna System (on Roof Pole) Quick Installation Guide	This document describes the installation procedures and methods of the antenna system on roof pole.
GPS Satellite Antenna System Quick	This document describes the installation procedures and methods of the GPS antenna

Related Document	Description
Installation Guide	system.