



ZXSDR R8882 L200

LTE Remote Radio Frequency Unit

User Manual

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About This Manual

Purpose

This manual gives introduction on the product description, technical indices, and product installation.

Intended Audience

- Hardware Installation Engineer
- Operation and Maintenance Engineer

Prerequisite Skill and Knowledge

To use this document effectively, users should have a general understanding of wireless telecommunications technology. Familiarity with LTE wireless network and its related components is helpful.

What is in This Manual

Chapter	Summary
Chapter 1, FCC Statement	Introduces the FCC statements that this device complies with
Chapter 2, Product Overview	Describes product characteristic, interfaces, indicators
Chapter 3, Product Technical Indices	Describes the technical indices of the product
Chapter 4, Product Installation	Describes installation and cable connection of the product

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Chapter 1

FCC Statement

FCC & IC Statement

This device complies with Part 15 of the [FCC](#) Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.



Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



Caution!

Changes or modifications to this unit not expressly approved by the party responsible for compliance will void the user's authority to operate the equipment. Any change to the equipment will void FCC and IC grant.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 6.24 m between the radiator & your body.

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Chapter 2

Product Overview

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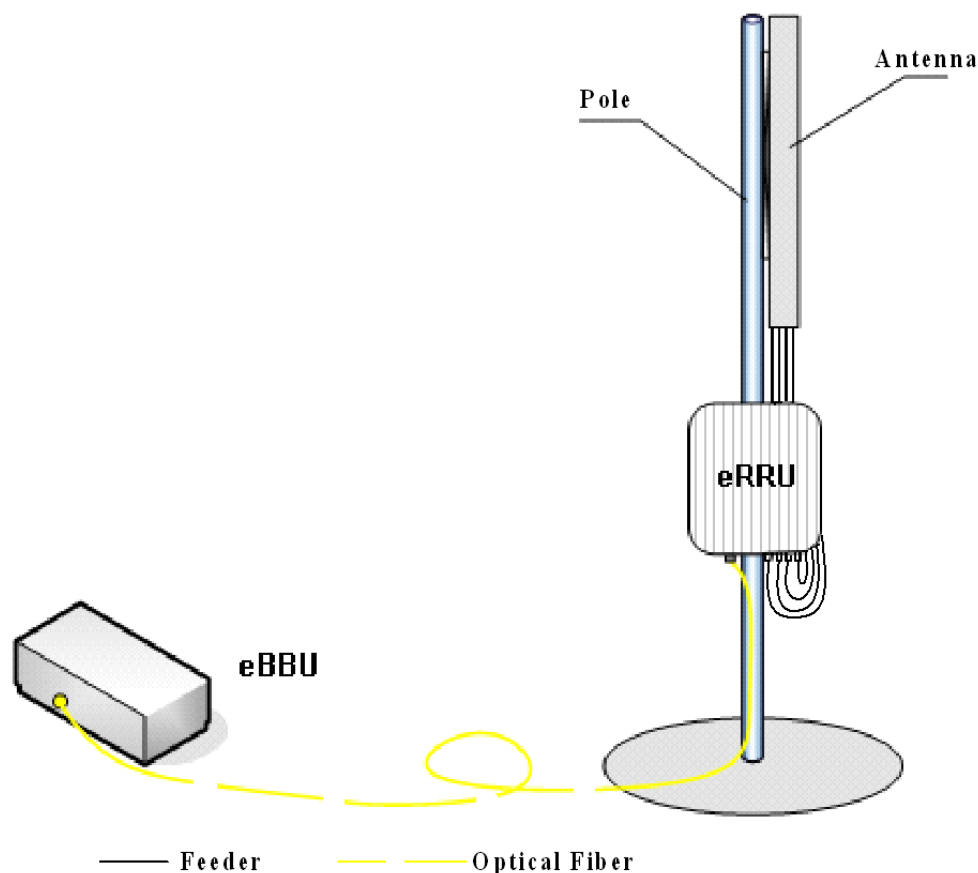
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2.1 Distributed eNodeB Solution

To supply customers with more competitive communication equipment and solution in the market, ZTE develops and promotes ZTE [SDR](#) eBBU (baseband unit) and [eRRU](#) (remote radio unit) distributed eNodeB solution timely, which jointly perform LTE eNodeB service.

ZTE distributed eNodeB solution is shown in [Figure 2-1](#).

Figure 2-1 ZTE Distributed eNodeB Solution



ZTE's LTE eBBU+eRRU distributed eNodeB solution has the following predominance:

1. Saving labor cost and engineering cost for networking.
eBBU+eRRU distributed eNodeB equipment is small in size, light in weight, and easy for transportation and engineering construction.
2. Fast networking, also saving the fees of renting equipment room.
eBBU+eRRU distributed eNodeB is applicable to various sites, such as mounted on steel tower, on building top, or on wall, etc. It's more flexible in selecting installation site, and not restricted by the space of equipment room. It can help operators to deploy network rapidly. It can also save the fees of renting equipment room, and the network operation cost.
3. Convenient in upgrade and capacity expansion; saving the initial stage cost of the network.
eRRU can be mounted as close to antenna as possible, to save the cost of feed cable and decrease the loss of feed cable. It also can enhance the output power of eRRU and increase the coverage.
4. Low power consumption, power-saving.

Compared with traditional eNodeB, eBBU+eRRU distributed eNodeB has lower power consumption, which can greatly reduce the investment and cost on electric power, and thus save the network operation cost.

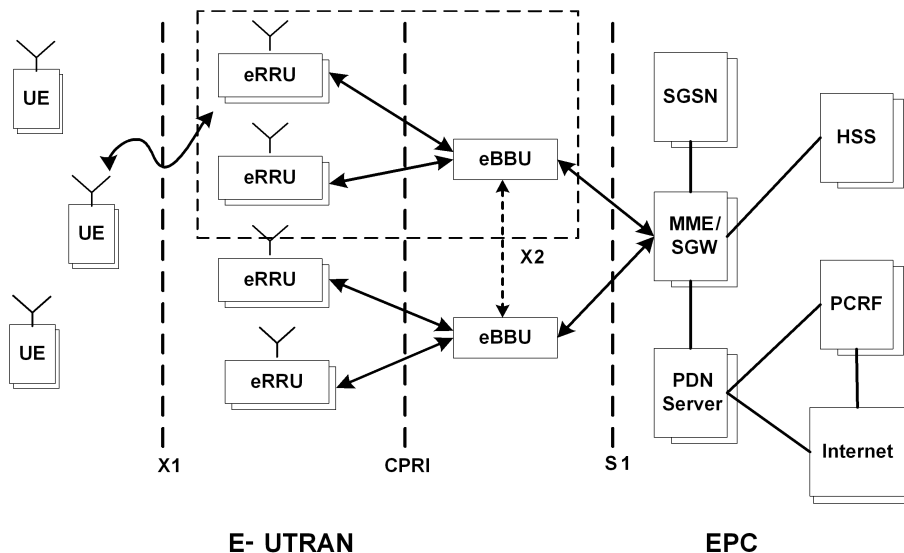
5. Distributed networking, making good use of operators' network resources supporting eBBU+eRRU distributed networking; supporting star networking mode between eBBU and eRRU.
6. Adopting a more perspective and generalized eNodeB platform.

eBBU adopts the platform designed for the future B3G and 4G. One hardware platform can realize different standard modes, and several standard modes can coexist in one eNodeB. In this way, operators' management can be simplified, and several eNodeBs to be invested can be integrated into one eNodeB (multimode eNodeB). The operators can select the evolution direction of the future network more flexibly.

2.2 Product Position in Network

ZXSDR R8882 L200 is a remote radio unit (eRRU) of distributed eNodeB. The signal is transmitted or received through ZXSDR R8882 L200 to and from base band processing unit for further processing through CPRI interface. By applying the distributed system, the feeder loss will be reduced when the remote radio unit is positioned close to the antenna. The coverage is enlarged with this solution.

Figure 2-2 Product Location



Note:

ZXSDR R8882 L200 covers R8882 L188, R8882 L708, R8882 L808, R8882 L268 and R8882 L718.

2.3 Product Features

Multi-Mode eRRU

ZXSDR R8882 L200 is fully software defined device. It supports multi-mode at the same frequency band simultaneously. Therefore, it fully satisfies operators' requirements of hybrid network deployment and long term evolution with the lowest cost.

MIMO Supported, Better Performance

R8882 L268 supports 2T4R (license needed), R8882 L188, R8882 L708, R8882 L808 and R8882 L718 support 2T2R, which can optimize spectrum efficiency greatly and improve network uplink performance. As a result, it brings better customer experience.

Higher Efficiency, Lower TCO

- ZXSDR R8882 L200's PA efficiency can reach up to 30% thanks to the most advanced Doherty PA, DPD linear technology.
- It supports dynamic adaptive PA power supply due to the output power, which reduces power consumption.

2.4 Product Functions

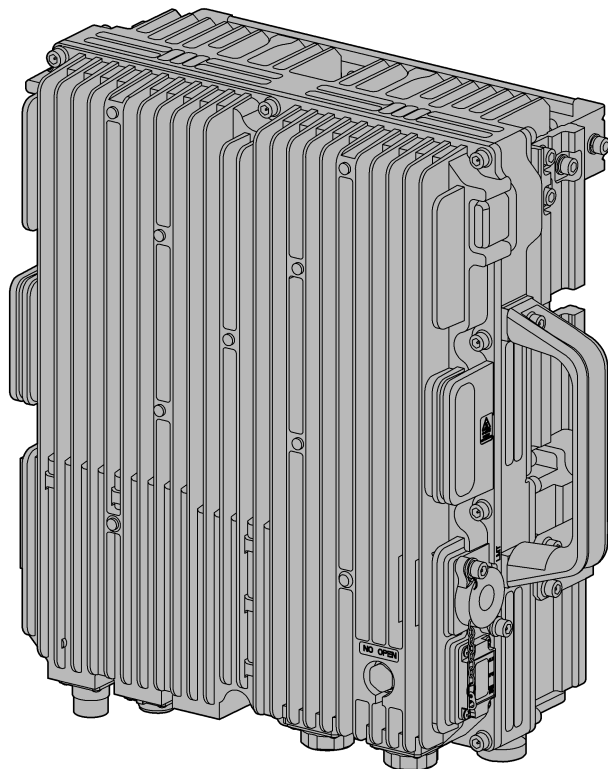
ZXSDR R8882 L200 is the remote radio unit of distributed base station. The signal is transmitted or received through ZXSDR R8882 L200 to/from base band processing unit for further processing via standard [CPRI](#) interface.

The product basic functions are listed below:

- Supports the configuration of 5 MHz, 10 MHz, 15 MHz and 20 MHz scalable bandwidth.
- Supports 2x2 MIMO on downlink.
- Supports [QPSK](#), [16-QAM](#), [64-QAM](#) on downlink, QPSK and 16-QAM on uplink.
- Supports transmission and receive power detection.
- Supports overload power protection for power amplifier.
- Supports power amplifier switching on/off function.
- ZXSDR R8882 L200 software failure will not affect the running of eBBU and other ZXSDR R8882 L200s which are connected to it.
- Supports field strength scanning, temperature query, VSWR query, dry contact, hardware/software resetting.

2.5 Product Appearance

The appearance of ZXSDR R8882 L200 is as shown in [Figure 2-3](#).

Figure 2-3 Product Overall Appearance

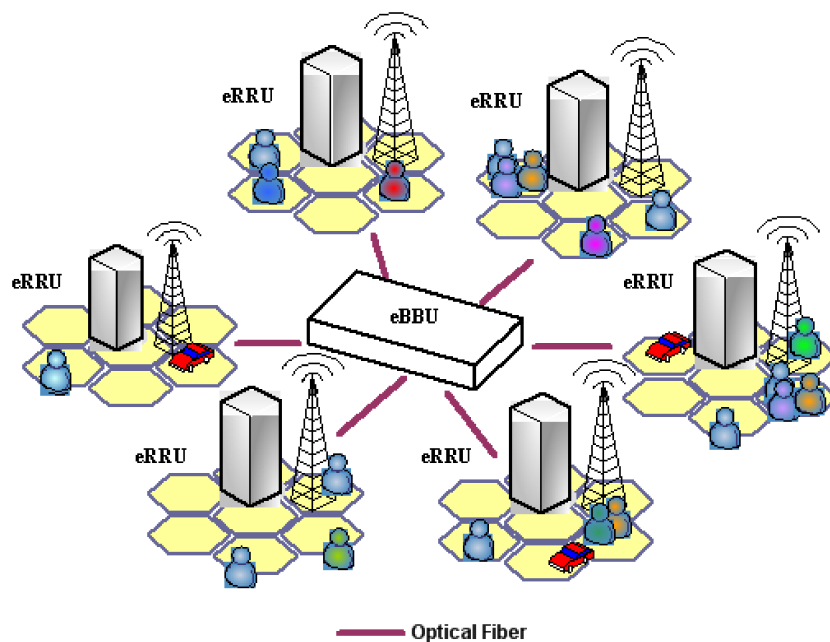
2.6 Installation Scenario

The ZXSDR R8882 L200 usually installed on wall or on pole or on gantry.

2.7 Product Networking

ZXSDR R8882 L200 supports star networking mode with eBBU, as shown in [Figure 2-4](#).

Figure 2-4 Star Networking Mode



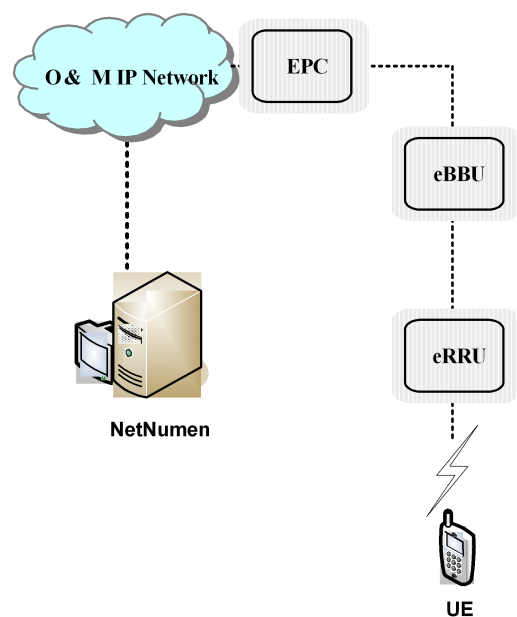
2.8 Operation and Maintenance Introduction

ZXSDR R8882 L200 supports system operation and maintenance remotely or locally.

Operate and Maintain System Remotely

Remotely operates and maintains system by using NetNumen management system, as shown in Figure 2-5.

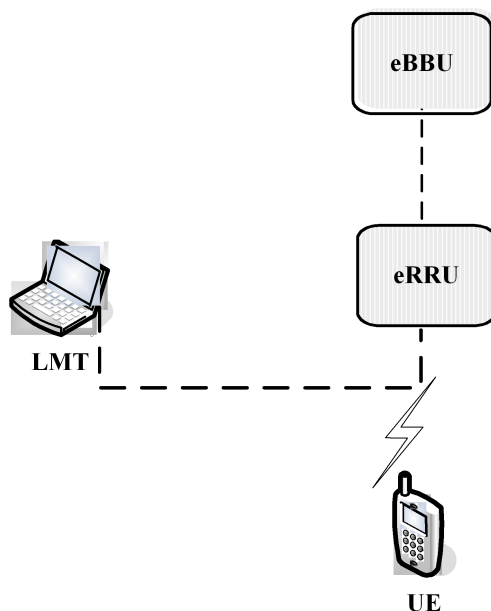
Figure 2-5 Operate and Maintain System Remotely



Operate and Maintain System Locally

locally operates and maintains system by using ZTE's Local Maintenance Terminal (LMT) software kit, as shown in Figure 2-6.

Figure 2-6 Operate and Maintain System Locally



2.9 Product External Interfaces

The ZXSDR R8882 L200 external interfaces are shown in Figure 2-7 and Figure 2-8.

Figure 2-7 Product External Interfaces and Grounding Terminal

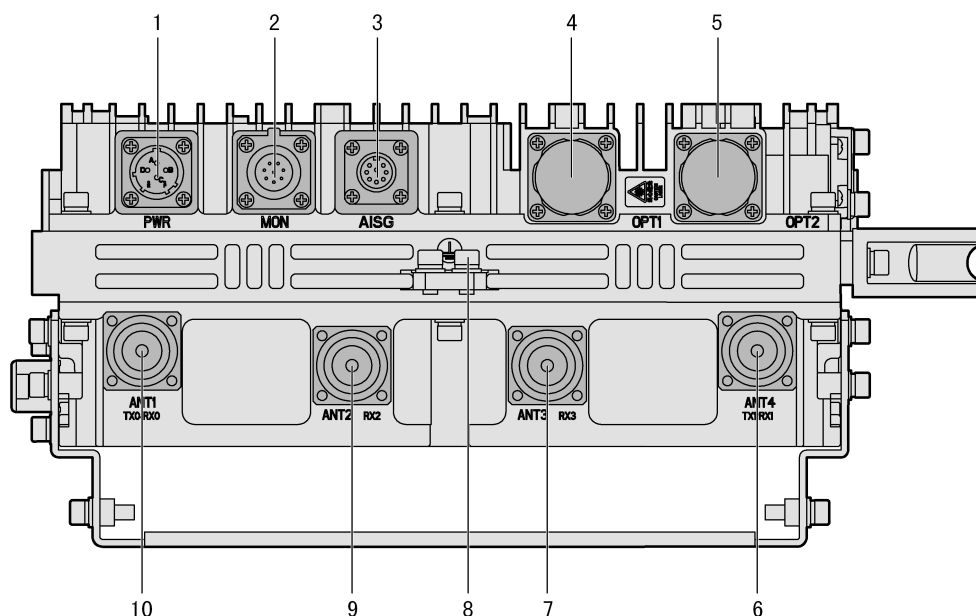


Figure 2-8 LMT Interface

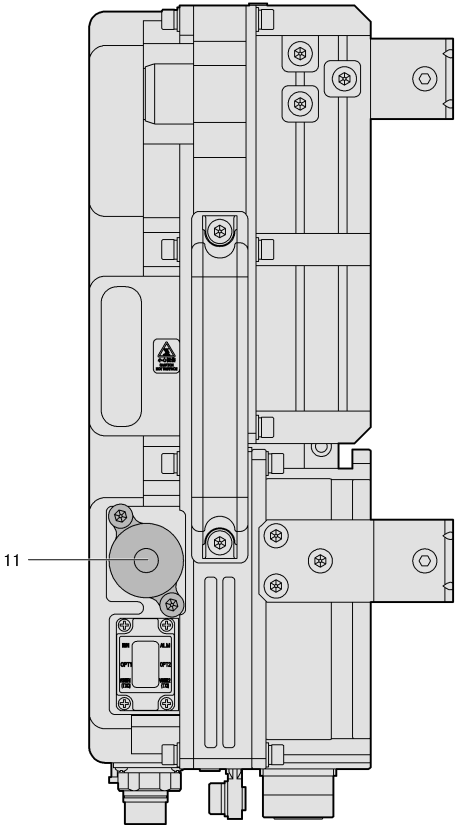


Table 2-1 shows the detailed description of all the external interfaces.

Table 2-1 Product External Interfaces Description

No.	Label	Interface/Terminal	Interface type/connector
1	PWR	Power interface/1 dry contact	DC interface: Connector XCG18T4K1P1-01+XC18FJJP1-10.5 Section area of cable is 1.5 mm ²
2	MON	485 Serial /2 dry contacts	8-cores socket (IEC 60130-9-ED)
3	AISG	AISG device interface	8-cores aviation socket
4	OPT1	eBBU Interface	LC type optical interface
5	OPT2	Reserved	LC type optical interface
6	ANT4(TX1/RX1)	Antenna TX/RX interface on channel 1	50 Ohm DIN-7/16 Connector
7	ANT3(RX3)	Antenna RX interface on channel 3	50 Ohm DIN-7/16 Connector
8		Grounding Terminal	-
9	ANT2(RX2)	Antenna RX interface on channel 2	50 Ohm DIN-7/16 Connector
10	ANT1(TX0/RX0)	Antenna TX/RX interface on channel 0	50 Ohm DIN-7/16 Connector
11	LMT	Operation and Maintenance Interface	8P8C Ethernet interface

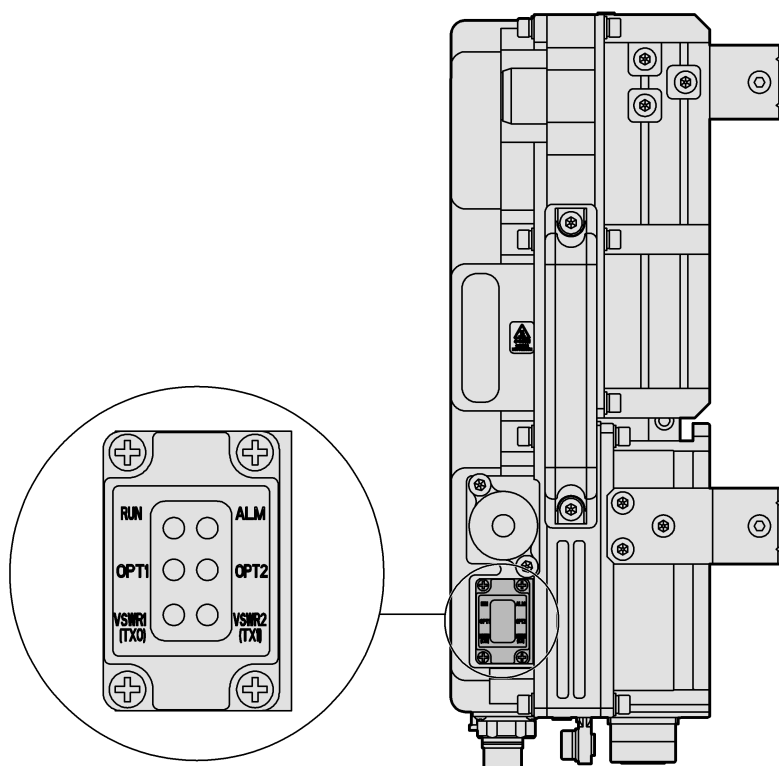
**Note:**

There are no ANT2 and ANT3 interfaces for L708 and L808.

2.10 Product Indicators

ZXSDR R8882 L200 provides six **LED** indicators, which are located at the right bottom side of the device. The LED indicators are used to show product working status and alarm status, as shown in [Figure 2-9](#).

Figure 2-9 Product Indicators



[Table 2-2](#) shows the detailed information of the indicators.

Table 2-2 Product Indicator Description

Name	Color	Meaning	Working Mode
RUN	Green	Running status	● Blinking every 1.5 second: physical link in the process of initialization ● Blinking every 0.07 second: the link between eBBU and eRRU is in the process of establishment, or the link is broken ● Blinking every 0.3 second: device is in good state

Name	Color	Meaning	Working Mode
ALM	Red	Alarm indicator	● Solid ON: there is alarm ● OFF: there is no alarm
OPT1	Green	Optical interface running indicator	● Solid ON: physical link is good, logical link is abnormal ● OFF: physical link is abnormal ● Blinking every 0.3 second: interface is in good state
OPT2	Green	Optical interface running indicator	● Solid ON: physical link is good, logical link is abnormal ● OFF: physical link is abnormal ● Blinking every 0.3 second: interface is in good state
VSWR1	Red	Transmission channel 1 VSWR indicator	● Solid ON: there are VSWR alarms ● OFF: there is no VSWR alarm
VSWR2	Red	Transmission channel 4 VSWR indicator	● Solid ON: there are VSWR alarms ● OFF: there is no VSWR alarm

Chapter 3

Product Technical Specifications

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3.1 Physical Indices

Item	Index
Dimension	380 mm x 320 mm x 140 mm (HxWxD)
Weight	20 kg

3.2 Working Environment

Item		Index
Working	Temperature	-40°C~55°C
	Relative Humidity	5%~100%
Storage	Temperature	-55°C~70°C
	Relative Humidity	5%~98%
Ground		≤5 Ω, earth resistance can be less than 10 Ω in thunder-less area where thunderstorm days is less than 20 days per year
Waterproof/Dustproof		IP65

3.3 Bandwidth

ZXSDR R8882 L200 supports 5 MHz, 10 MHz, 15 MHz and 20 MHz.



Note:

L708 does not support 20 MHz.

3.4 Power Requirements

The power supply of the ZXSDR R8882 L200 is -48 VDC (range: -37 VDC ~-57 VDC).

3.5 Power Consumption

The maximum power consumption of ZXSDR R8882 L200 is 330 W.

3.6 Transmission Index

ZXSDR R8882 L200 connects to eBBU through CPRI interfaces. The detailed information of the CPRI interface is shown in Table 3-1.

Table 3-1 CPRI Interface Index

Item	Quantity	Interface type	Speed	Standard
CPRI interface	2	SFP (LC)	2x3.072 Gbps or 2x2.4576 Gbps	CPRI V4.1

3.7 Performance Indices

Operation Frequency Band

- R8882 L188: 1730 MHz~1785 MHz(uplink)/1825 MHz~1880 MHz(downlink) or 1710 MHz~1765 MHz(uplink)/1805 MHz~1860 MHz(downlink)
- R8882 L268: 2500 MHz~2570 MHz(uplink)/2620 MHz~2690 MHz(downlink)
- R8882 L708: 698 MHz~716 MHz(uplink)/728 MHz~746 MHz(downlink)
- R8882 L808: 832 MHz~862 MHz(uplink)/791 MHz~821 MHz(downlink)
- R8882 L718: 777 MHz~798 MHz(uplink)/746 MHz~768 MHz(downlink)

Output Power

- R8882 L188, R8882 L708, R8882 L808, R8882 L718: 2x40 W
- R8882 L268: 2x30 W

Receiver Sensitivity

The receiver sensitivity of ZXSDR R8882 L200 is shown in [Table 3-2](#).

Table 3-2 Receiver Sensitivity

Channel bandwidth (MHz)	Reference measurement channel	Reference sensitivity power level (dBm)
5/10/15/20	FRC A1-3	-104

Transmission

- The maximum transmission distance is 10 kilometers.
- Supports two kinds of optical fiber interface mode: 2x3.072 Gbps and 2x2.4576 Gbps.

3.8 Electromagnetic Compatibility

The decision rule used in this section is describes as follows:

1. Rule A
 - A communication channel is set up for the test, and it is always available during the test.
 - FER of the forward channel and reverse channel are less than or equal to 1 during the test.
 - When the test task accomplished, equipment under test (EUT) works normally under pre-scheduled method, there is no information loss of user control function and the saved data, and the communication channel is still available.
 - If the EUT is a transmitter only, test should be done under idle-mode, and there is no unintentional radiation during the test.
2. Rule B
 - A communication channel is set up for the test, and it is always available during test.
 - EUT works normally under pre-scheduled method, there is no information loss of user control function and the saved data, and the communication channel is still available.
 - If the EUT is a transmitter only, test should be done under idle-mode, and there is no unintentional radiation during the test.

3. Rule R

There is no device damage or interference (such as software malfunction or protection device mis-operation) during the test. The EUT works normally under the defined boundary after transient electromagnetic incident.

Electronic Static Discharge Immunity

Item	Contact discharge	Air discharge	Decision Rule
Basic testing	6 kV	8 kV	Rule B
Enhanced testing	8 kV	15 kV	Rule R

RF Electromagnetic Field Radiation Immunity

Range	Feature	Field Strength	Decision Rule
80 MHz~800MHz	80%AM(1kHz)	10 V/m	Rule A
800 MHz~960 MHz	80%AM(1kHz)	10 V/m	Rule A
960 MHz~1400MHz	80%AM(1kHz)	10 V/m	Rule A
1400 MHz~2700 MHz	80%AM(1kHz)	10 V/m	Rule A
2700 MHz~6000 MHz	80%AM(1kHz)	10 V/m	Rule A

Electrical Fast Transient Burst Immunity

Item	Voltage	Repetition Frequency	Decision Rule
Basic test	±1 kV	5 kHz	Rule B
Enhanced test	±2 kV	5 kHz	Rule B

signal generator waveform 5/50ns

Lightning Tolerance

Signal Type	Nominal Required
Antenna feeder port	10 kA ± 5 times The 10 KA protection is guaranteed by the duplex of the RF module. An external lightning protection unit is needed for the higher protection other than 10 KA
DC power port (external SPD)	20 kA ± 5 times, Residual Voltage is less than 250 V. Shielded cable is used for the R8882 remote power supply
Signal port—dry contact	3KA
Signal port—RS485 signal	3KA
AISG power	5KA
Signal port—AISG 485 port	3KA

Radiation Transmission

Frequency range (MHz)	Quasi-peak limit (dBuV/m)	Distance (m)
30~230	30	10
230~1000	37	10
1G~3G	50	10
3G~6G	54	10

Power Conducted Transmission

Frequency range (MHz)	Sum limit(dBuV)	
	Quasi-peak	Average value
0.15~0.50	56~66	46~56
0.50~5	56	46
5~30	60	50

Signal Conducted Transmission

Frequency range	Sum limit	
	Quasi-peak	Average value
0.15 MHz~0.5 MHz	84 dBuV~74 dBuV (Voltage) or 40 dBuV~30 dBuA (Current)	74 dBuV~64dBuV (Voltage) or 30 dBuV~20 dBuA (Current)
0.5 MHz~30 MHz	74 dBuV (Voltage) or 30dBuA (Current)	64dBuV (Voltage) or 20dBuA (Current)

RF Electromagnetic Field Conducted Immunity

Frequency range	Voltage	Feature	Decision Rule
0.15 MHz~80 MHz	10 V	80%AM (1kHz)	Rule A

Surge Immunity

Site	Open circuit Voltage		
	Type	Wire—Wire	Wire—Ground
Indoor	DC power	0.5	1
	Long distance wire (wire length longer than 10 meters)	1	1
	Short distance wire (wire length less than 10 meters)	-	-

3.9 Reliability

Item	Characteristics
MTBF	≥34,0000 hours
MTTR	1 hour
Availability	≥99.999842%

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Chapter 4

Product Installation

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4.1 Safety Description

4.1.1 Safety Specifications Introduction

In order to avoid accidents, before installing or maintaining the ZXSDR R8882 L200, please read this manual carefully for safety issues. If there are any local safety specifications, use the safety specifications described in this manual as a supplement. If there is any conflict between them, please follow the local safety specifications.

The personnel who install or maintain the ZXSDR R8882 L200 must be equipped with knowledge of safety operation, technical training, correct knowledge of equipment operation and maintenance, and corresponding qualifications.

When installing or maintaining the ZXSDR R8882 L200, the operator must follow the precautions of the equipment and special instructions provided by ZTE CORPORATION.

Furthermore, the security issues listed in this manual are only friendly reminders by ZTE CORPORATION from safety point of view. ZTE is not responsible for any accident caused by violations of general safety operating requirements, or by violations of the design, production and use of equipment safety standards.

4.1.2 Safety Symbols

Common safety symbols are shown in [Table 4-1](#). These symbols are used to remind the user with safety matters when they maintain the equipment.

Table 4-1 Symbol type and meanings

Symbols	Meanings
	No Touch Sign: DO NOT touch
	General Warning Sign: General security issues

Symbols	Meanings
	Electric Shock Warning Sign: Beware of high voltage
	Antistatic Sign: The device is sensitive to electrostatic charge or static electricity
	Microwave Warning Sign: Be careful of strong electromagnetic fields
	Laser Warning Sign: Be careful of intense laser beam
	Burn Warning Sign: Be careful of high temperature

The general warning sign  falls into three safety severities: Danger, Warning and Caution, from major to minor. The severity is marked on the right of the symbol and detailed descriptions are placed under the symbol. Their formats and descriptions are shown as below.

 Danger!

Ignoring the safety warning may cause death or serious personal injuries, or equipment damage or breakdown.

 Warning!

Ignoring the safety warning may cause major serious injuries, equipment damage or service interruption.

 Caution!

Ignoring the safety warning may cause serious injuries, equipment damages or interruption of some services.

4.1.3 Safety Operation Guidance

Electrical Safety

1. Tool

When operating in the case of high voltage, use special tools. Do not use general tools.

2. Power Cable

- Cut off the power before installing or removing the power cable.
- Before connecting the power cable, make sure the cable connection and labels on the cable comply with the actual installation situation.



Danger!

- Do not install or remove the power cable when the power is ON.
 - Sparks or electric arc may happen when the power cable touches the conductor, which may cause fire or eye injury.
-

3. Drilling

- Unqualified drilling will damage the lines and cables in the cabinet. The metal splashes may enter the cabinet and cause the short circuit on the circuit board.
- When drilling on the cabinets is needed, wear insulating gloves and remove the cables inside the cabinet before the operation. Take care of your eyes when drilling, because metal splashes may hurt your eyes. Clean up the metal filings once the drilling is done.



Warning!

Do not drill on the cabinet at will.

4. Thunderstorm

During thunderstorm, strong electromagnetic field will be produced in the atmosphere. Thus, to avoid lightning strike, take lightning grounding measures on the equipment immediately.



Danger!

During thunderstorm, do not perform operations of high voltage, and do not perform operations on the iron tower or mast.

Antistatic

- The friction caused by human activities is the reason to produce the accumulation of electrostatic charge. In dry climates, electrostatic voltage carried by the human body can be accumulated up to 30 kV, which will be kept in the body for couple of hours. Operators carrying electrostatic charge will be discharged through the device, causing equipment damage.
- To avoid damaging sensitive components by human static electricity, before touching the devices, such as boards, circuit boards, IC chips, operators should wear antistatic wristband, and make sure the other end of wristband touches the ground.
- To protect people from accidental electric shock, a resistance over 1 MΩ should be added between the antistatic wristband and the ground.
- The antistatic wristband should be inspected periodically. Do not replace the electric wires on the wristband by any other unqualified ones.
- Those electrostatic sensitive boards or modules should not have any contact with the objects of electrostatic charge or which carries static electricity easily. For example, friction between the packages of insulating materials and transmission belt could make the components carrying static electricity. Damages may happen when it is discharged by contacting human body.
- Those electrostatic sensitive boards can be only contacted with qualified discharged materials, such as antistatic bag. Equipment components need to be stored or transported in the antistatic bags.
- Before the testing equipment is wired with boards or modules, it should be connected to ground for discharging.
- Do not place the boards or modules near strong DC magnetic field. For example, those monitors with Cathode-ray tube, safety distance is over 10 cm.



Caution!

Electrostatic charge produced by human body will damage the electrostatic sensitive components on the circuit board, such as Integrated Circuit (IC), etc.

Lifting Weights

- The adequate facilities with lifting capacity must be used for assembling, moving or replacing the heavy equipments.
- The staff for lifting operations are required to have qualified training. Lifting tools must have periodic inspection, and must be used when it is a complete tool kit. Ensure that the lifting tool can be firmly fixed on the fixture or load-bearing wall before any lifting operations. Use simplified commands to prevent misoperation.

**Warning!**

During lifting operations, do not walk at the bottom of any crane or lifting objects.

Plugging/Unplugging Boards or Modules

- To avoid crooking the pin on backplane, plug the boards or modules gently.
- Plug the boards or modules along the slot to prevent any short circuit.
- When carrying the boards or modules, do not touch the circuits, as well as the components, connection heads, slots on the boards.

Others

- Replacing the components or modifying the equipments may cause extra dangers.
- Do not replace the components or modify the equipments without authorization.
- From safety point of view, please contact ZTE CORPORATION for any queries.

**Caution!**

Do not perform maintenance or debugging inside the device, unless there is another qualified engineer working with you.

4.2 Device Unpacking and Inspection

4.2.1 Unpacking and Checking ZXSDR R8882 L200

Unpacking the Carton

ZXSDR R8882 L200 is transported in a carton.

1. Check the packaging for damage. If it is damaged, make an immediate complaint to the transport company.
2. Unpack the equipment and check if it is complete according to the packing list.

Inspecting the Device

Check the Device and make sure:

- There are no dents, protrusions, bendings, peelings, or marks on the surface.
- Fastening bolts are properly tightened in place.
- The fittings and accessories required for installation are matched and complete.
- Connector links are not broken or missing.

The supplier should be responsible for inspecting the devices and instruments that are easy to be damaged.

Separate the inspected parts by category.

4.2.2 Goods Handover

After equipment inspection both the parties should sign the Unpacking and Inspection Report with each party keeping a copy, with the top copy returned within seven days to the vendor.



Caution!

If any goods are found to be wrong, missing, or damaged, record the details on the form and ask for replacements.

4.3 Device Installation

4.3.1 Mounting Device on Wall

Context



Note:

The eRRU in this chapter are only for demonstrating installation scenario.

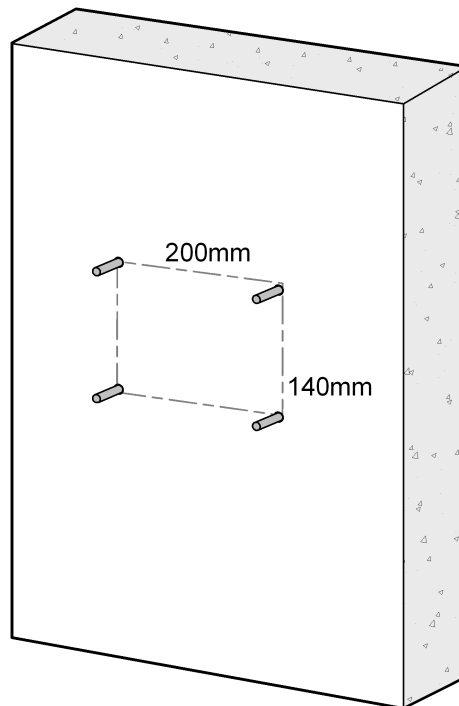
Prerequisite

Before installing R8882, you should at least leave the following space for product future maintenance.

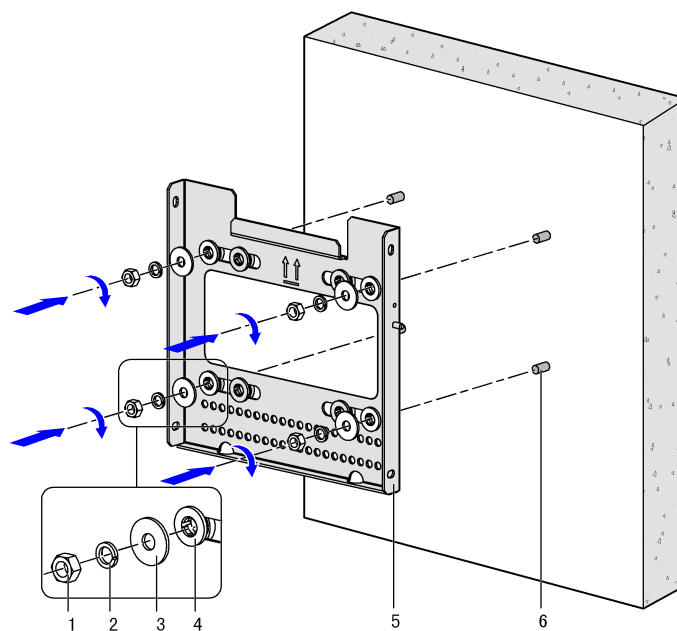
- Front side: 600 mm
- Back side: 40 mm
- Left and right side: 100 mm
- UP and down side: 250 mm

Steps

1. Mark on installation positions based on layout marking template on wall, as shown in [Figure 4-1](#), and then drill holes.

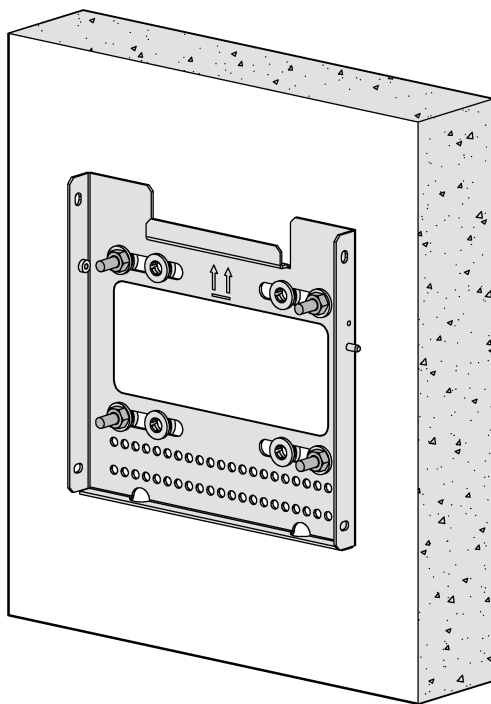
Figure 4-1 Template Hole Position

2. Fix the wall-mounting components onto the wall firmly with the bolts, as shown in [Figure 4-2](#).

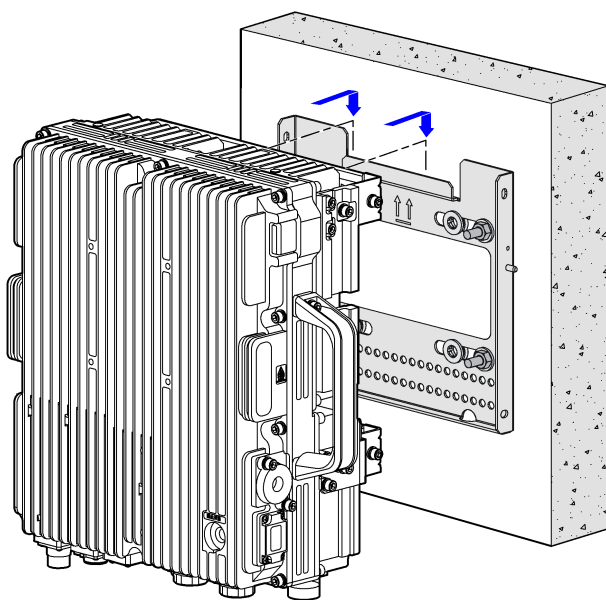
Figure 4-2 Installing Wall-mounting Components

- | | | |
|------------------|-----------------------------|-------------------|
| 1. Hex Bolt | 4. Insulation Washer | 6. Expansion Bolt |
| 2. Spring Washer | 5. Wall-Mounting components | |
| 3. Flat Washer | | |

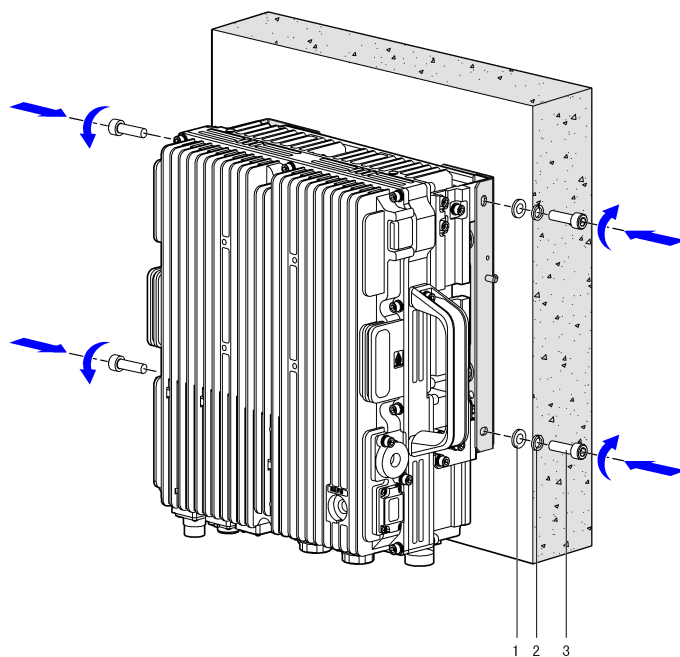
The wall-mounting components is installed on the wall, as shown in [Figure 4-3](#).

Figure 4-3 Wall-mounting Components Fixed on Wall

3. Hang the device on the wall-mounting components on the notch department, as shown in [Figure 4-4](#).

Figure 4-4 Hang the Device on the Wall-mounting Components

4. Mount the ZXSDR R8882 L200 onto the wall-mounting components, and then fasten it with the M6x20 bolts, as shown in [Figure 4-5](#).

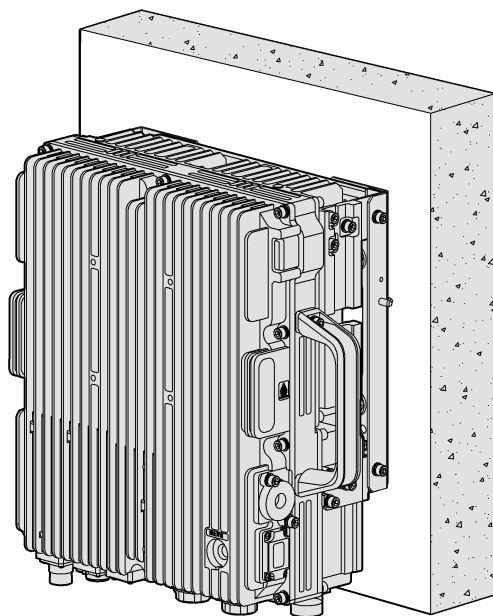
Figure 4-5 Fasten Device

1. Insulation washer

2. Spring washer

3. Bolt

The ZXSDR R8882 L200 is installed on wall, as shown in [Figure 4-6](#).

Figure 4-6 ZXSDR R8882 L200 Is Installed on Wall

– End of Steps –

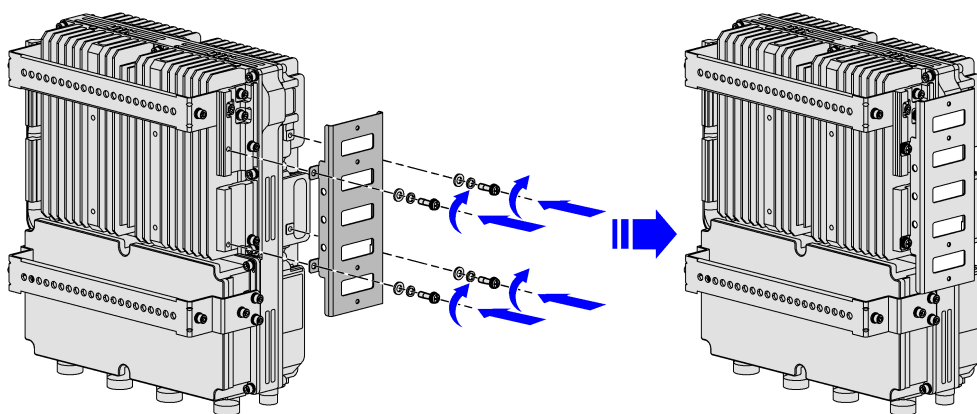
4.3.2 Mounting Device on Pole

4.3.2.1 Mounting One Device on Pole

Context

The installation accessory for the lightning protection box is needed to be attached in advance, as shown in [Figure 4-7](#).

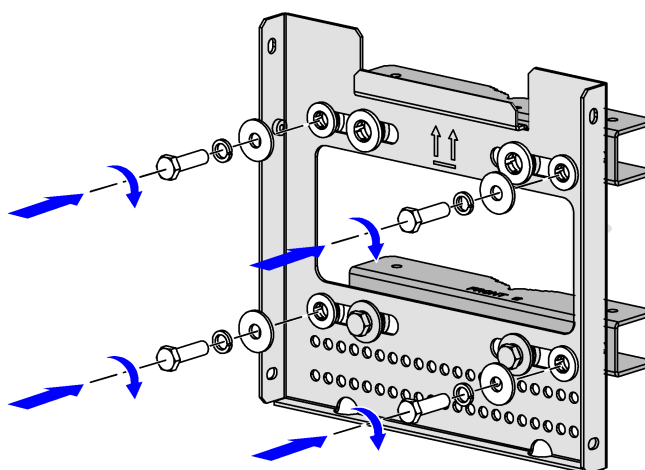
Figure 4-7 Attach Installation Accessory for Lightning Protection Box



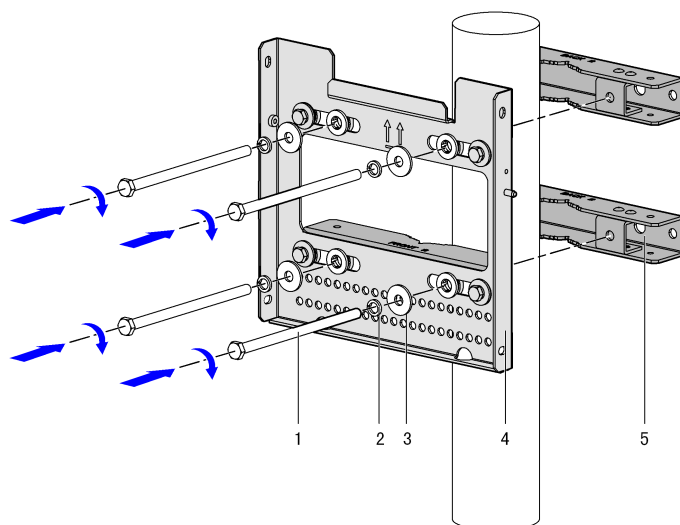
Steps

1. Fix the wall-mounting components and pole clip together, as shown in [Figure 4-8](#).

Figure 4-8 Fix Wall-mounting Components and Pole Clips

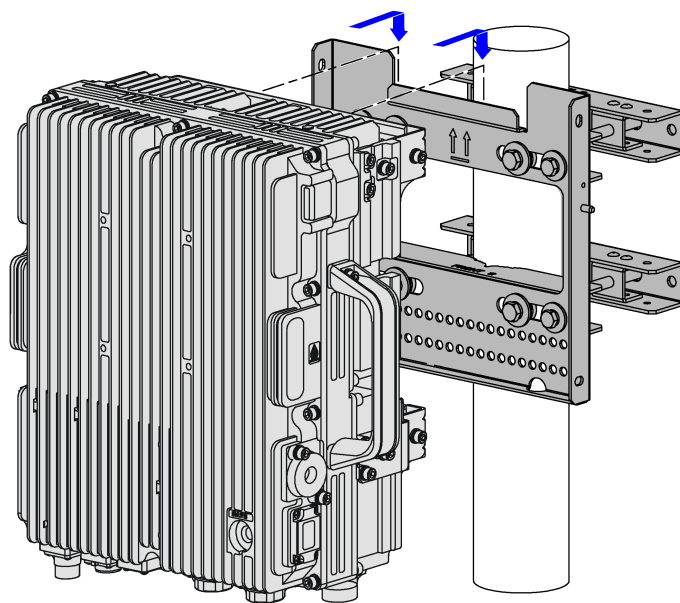


2. Fix the wall-mounting components and pole clips on the pole, as shown in [Figure 4-9](#).

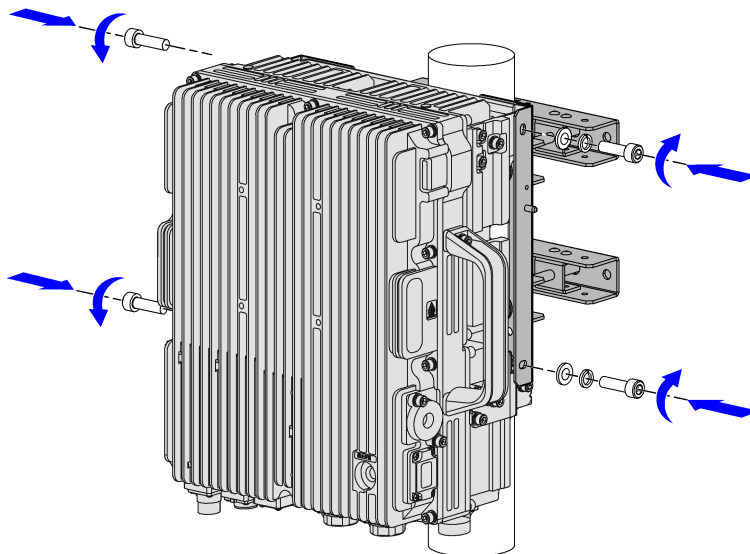
Figure 4-9 Fix Wall-mounting Components and Pole Clips on Pole

- | | |
|------------------|-----------------------------|
| 1. Bolt | 4. Wall-mounting components |
| 2. Spring washer | 5. Pole Clips |
| 3. Flat washer | |

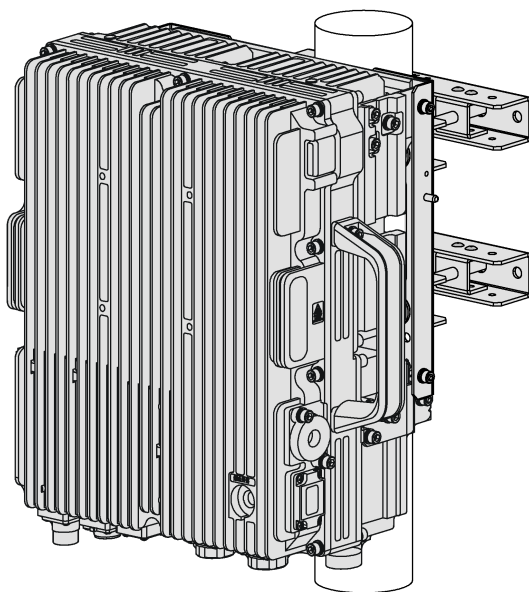
3. Hang the device on the notch part of the wall-mounting components, as shown in [Figure 4-10](#).

Figure 4-10 Hang the Device on the Wall-mounting Components

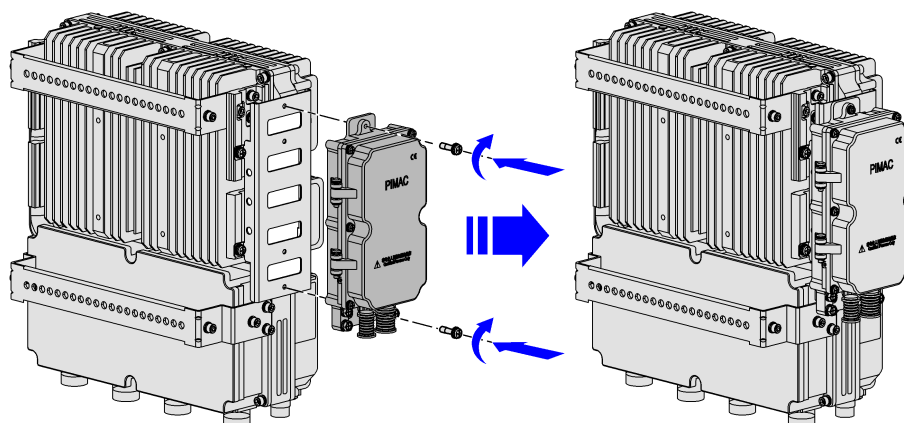
4. Fix the device on the wall-mounting components, as shown in [Figure 4-11](#).

Figure 4-11 Fix the Device on the Wall-mounting Components

ZXSDR R8882 L200 is installed firmly on the pole, as shown in [Figure 4-12](#).

Figure 4-12 ZXSDR R8882 L200 Is Installed on Pole

5. Align the lightning protection box to the hole of the installation accessory, and the fasten the screws, as shown in [Figure 4-13](#).

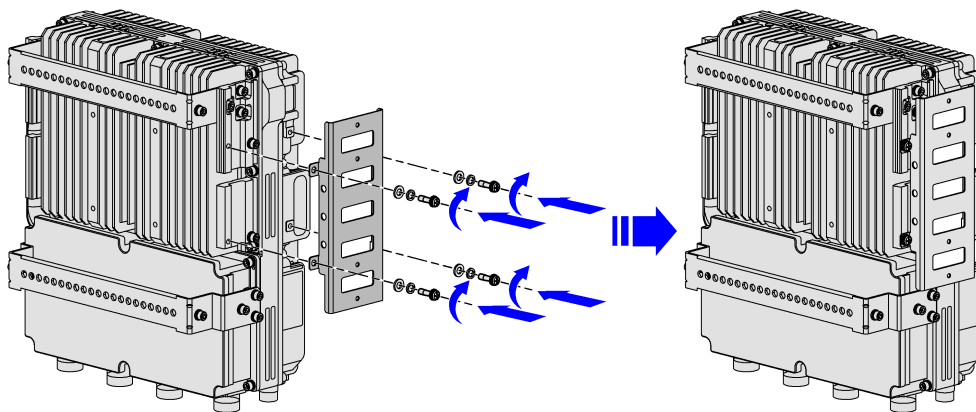
Figure 4-13 Attach Lightning Protection Box

– End of Steps –

4.3.2.2 Mounting Two Devices on Pole

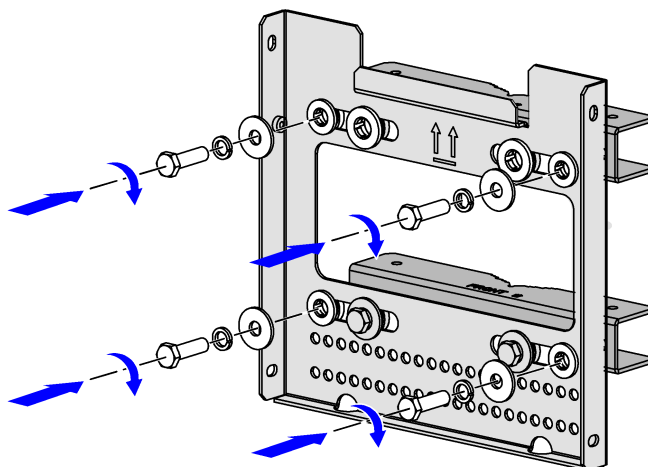
Context

The installation accessory for the lightning protection box is needed to be attached in advance, as shown in [Figure 4-14](#).

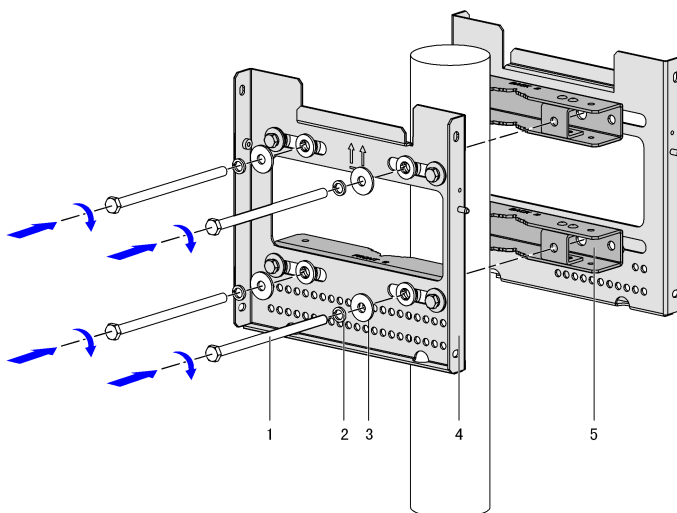
Figure 4-14 Attach Installation Accessory for Lightning Protection Box

Steps

1. Fix the wall-mounting components and pole clip together, as shown in [Figure 4-15](#).

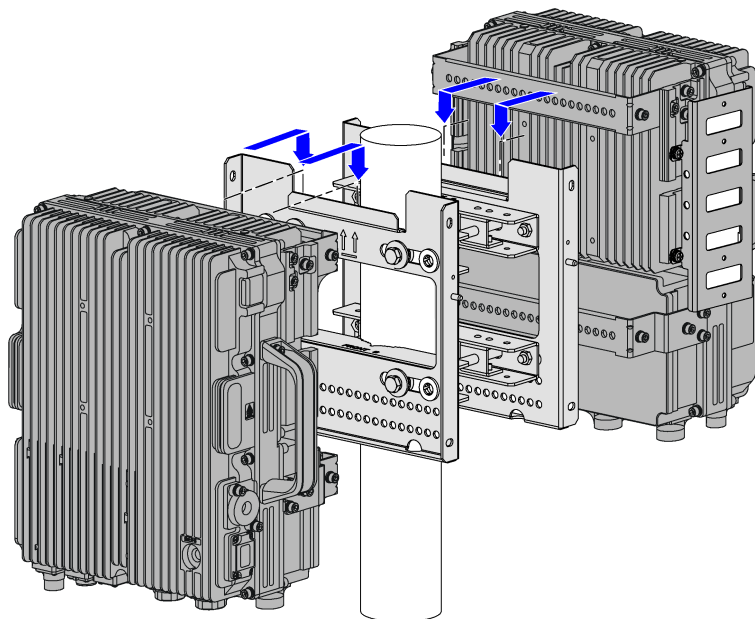
Figure 4-15 Fix Wall-mounting Components and Pole Clips

2. Fix the wall-mounting components and pole clips on the pole, as shown in [Figure 4-16](#).

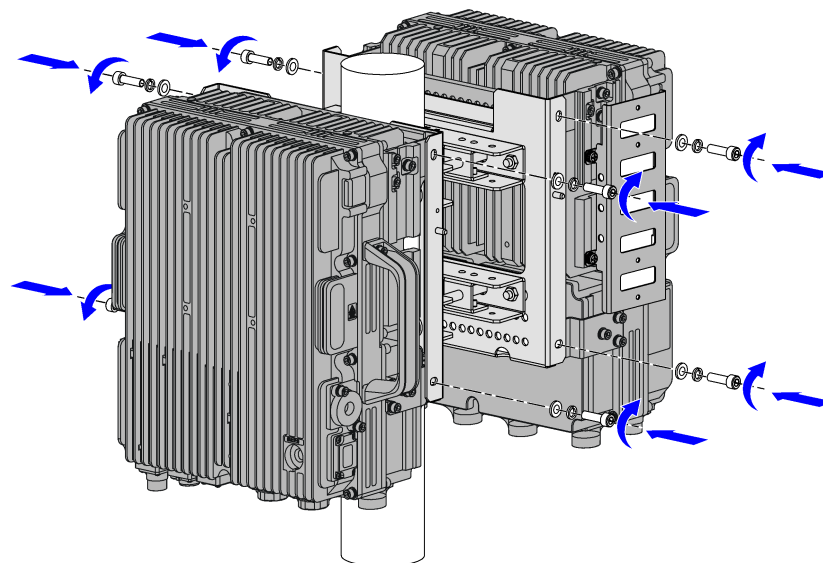
Figure 4-16 Fix Wall-mounting Components and Pole Clips on Pole

- | | |
|------------------|-----------------------------|
| 1. Bolt | 4. Wall-mounting components |
| 2. Spring washer | 5. Pole Clips |
| 3. Flat washer | |

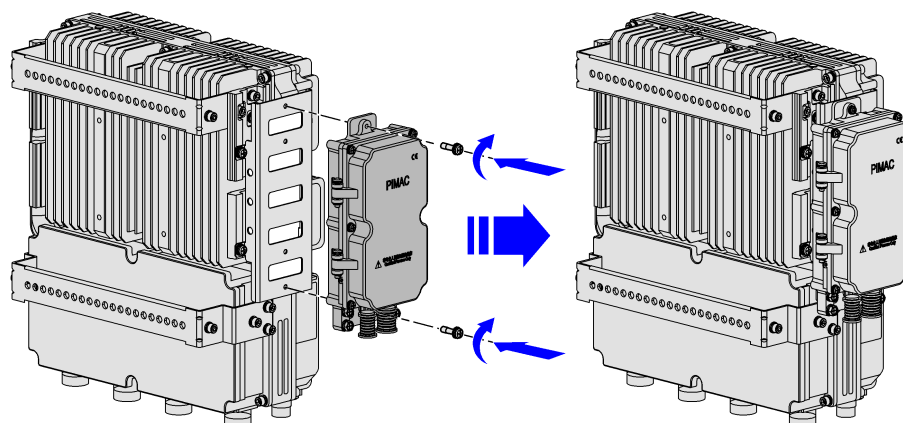
3. Hang the devices on the notch part of the wall-mounting components respectively, as shown in [Figure 4-17](#).

Figure 4-17 Hang the Devices on the Wall-mounting Components

4. Fix the devices on the wall-mounting components, as shown in [Figure 4-18](#).

Figure 4-18 Fix the Devices on the Wall-mounting Components

5. Align the lightning protection box to the hole of the installation accessory, and the fasten the screws, as shown in [Figure 4-19](#).

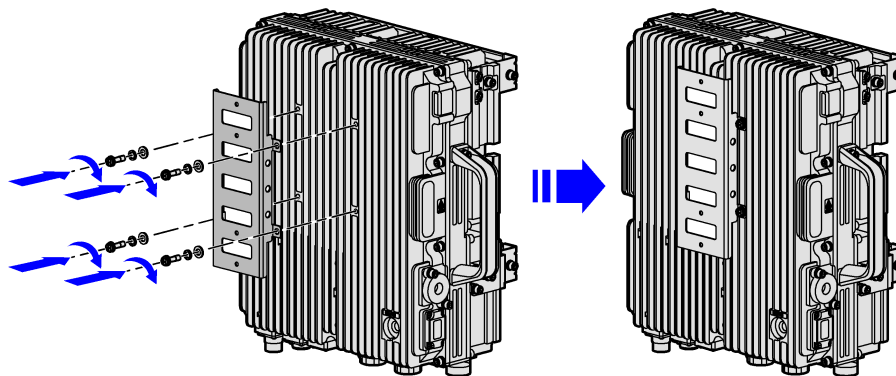
Figure 4-19 Attach Lightning Protection Box

– End of Steps –

4.3.2.3 Mounting Three devices on Pole

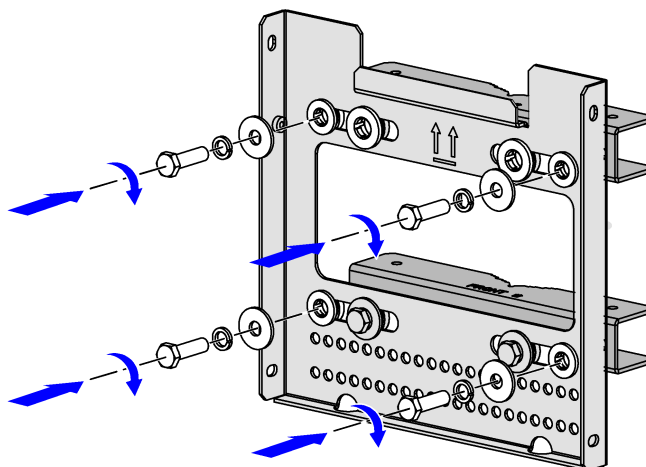
Context

The installation accessory for the lightning protection box is needed to be attached in advance, as shown in [Figure 4-20](#).

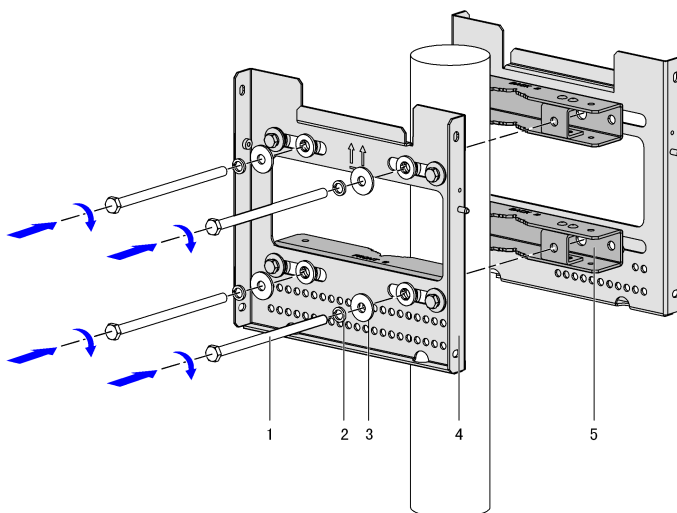
Figure 4-20 Attach Installation Accessory for Lightning Protection Box

Steps

1. Fix the wall-mounting components and pole clip together, as shown in [Figure 4-21](#).

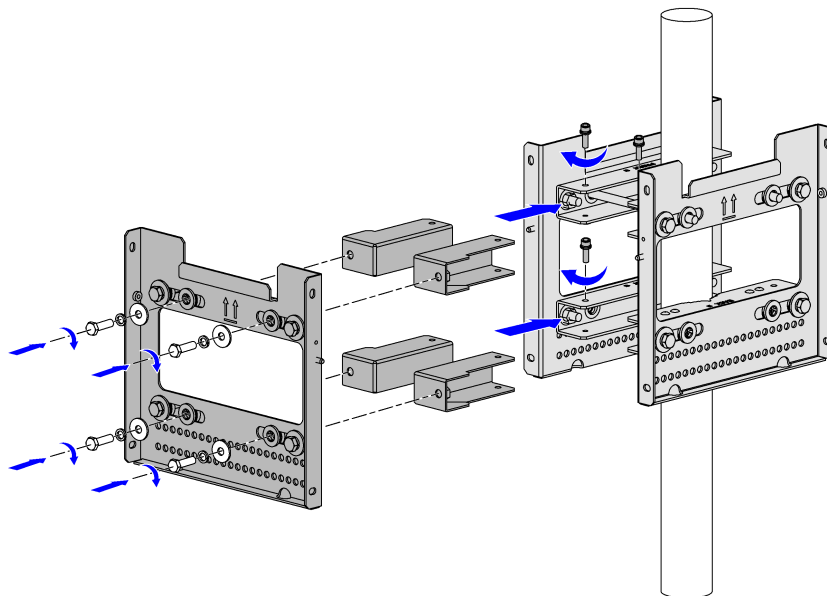
Figure 4-21 Fix Wall-mounting Components and Pole Clips

2. Fix the wall-mounting components and pole clips on the pole, as shown in [Figure 4-22](#).

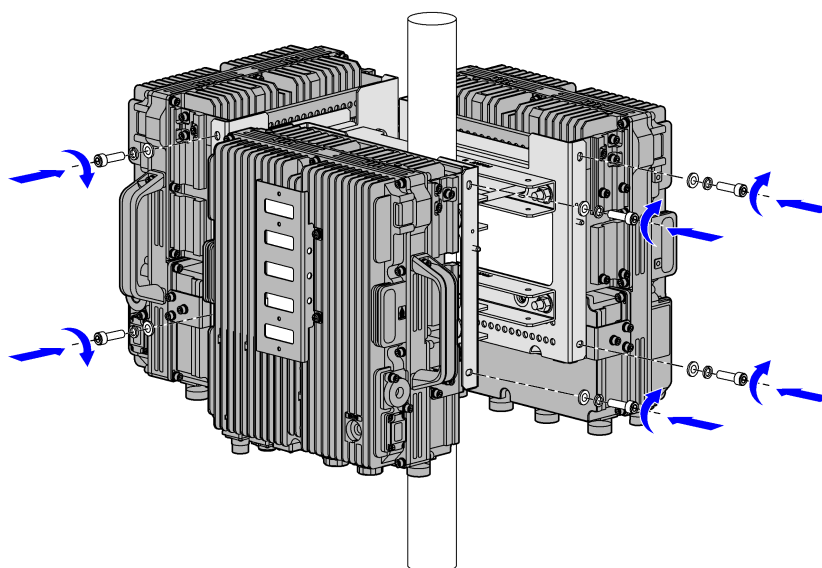
Figure 4-22 Fix Wall-mounting Components and Pole Clips on Pole

- | | |
|------------------|-----------------------------|
| 1. Bolt | 4. Wall-mounting components |
| 2. Spring washer | 5. Pole Clips |
| 3. Flat washer | |

3. Fix the third wall-mounting components by using the expansion components to the other two ones, as shown in [Figure 4-23](#).

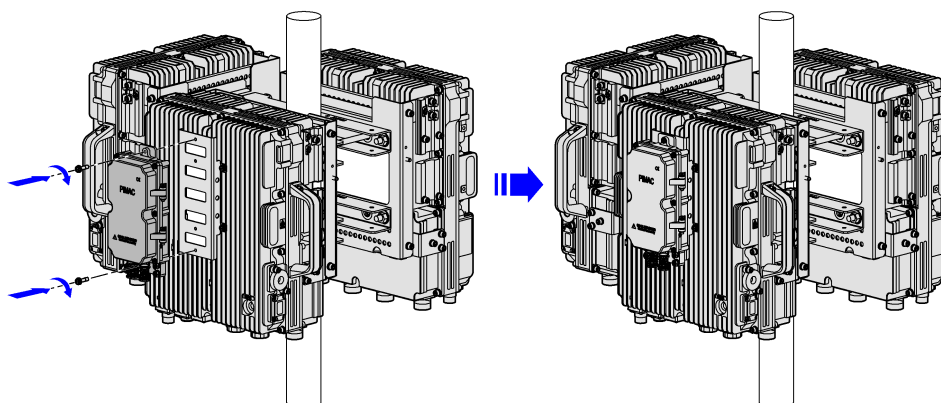
Figure 4-23 Fix the Third Wall-mounting Components

4. Hang devices on the notch part of the wall-mounting components respectively, as shown in [Figure 4-24](#).

Figure 4-24 Hang the Devices on the Wall-mounting Components

5. Align the lightning protection box to the hole of the installation accessory, and the fasten the screws, as shown in [Figure 4-25](#).

Figure 4-25 Attach Lightning Protection Box



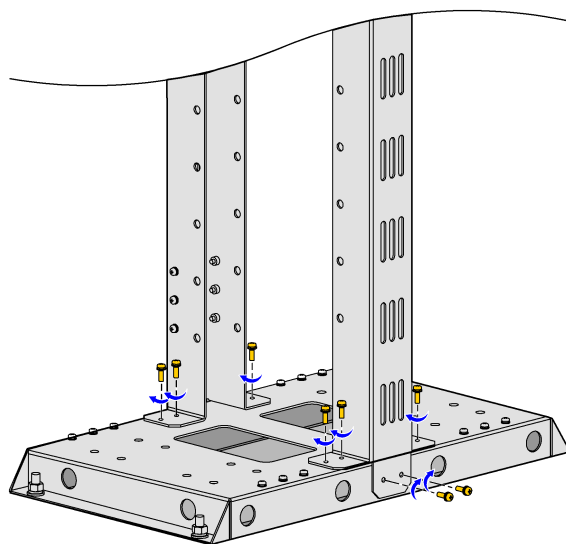
– End of Steps –

4.3.3 Mounting Device on Gantry

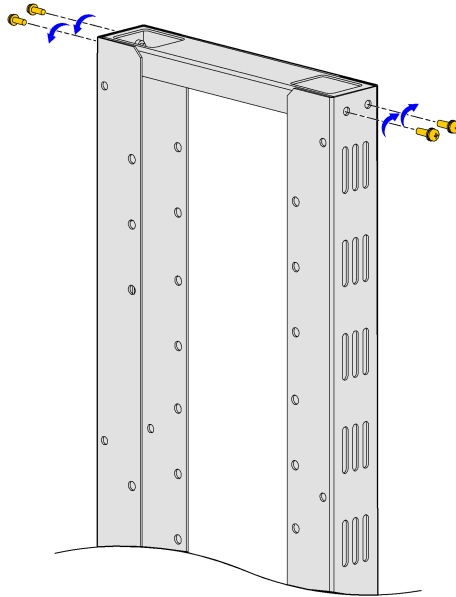
Steps

1. Assemble the gantry.
 - a. Install the vertical shaft and the bottom plate by using the M5x16 screw, as shown in Figure 4-26.

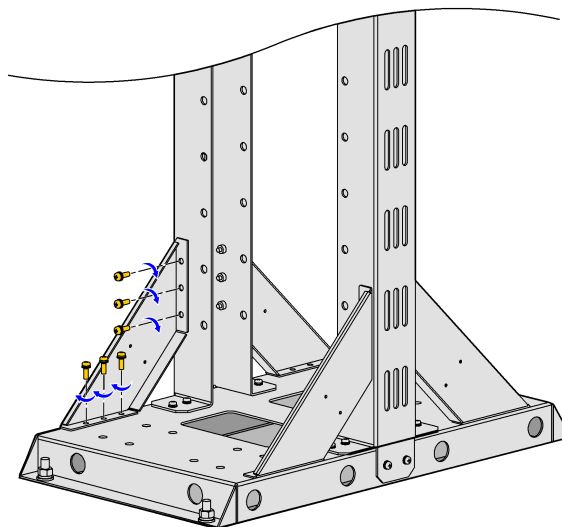
Figure 4-26 Install the Vertical Shaft and the Bottom Plate



- b. Fasten the vertical shaft and the cover plate by using the M5x16 screw, as shown in Figure 4-27.

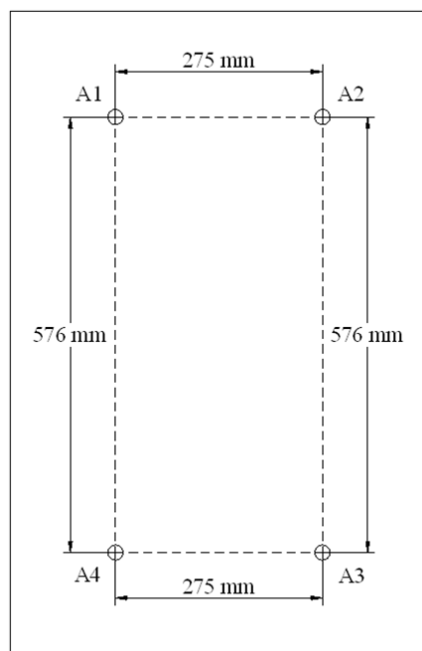
Figure 4-27 Fasten the Vertical Shaft and the Cover Plate

- c. Install the slanted rack by using the M5x16 screw, as shown in [Figure 4-28](#).

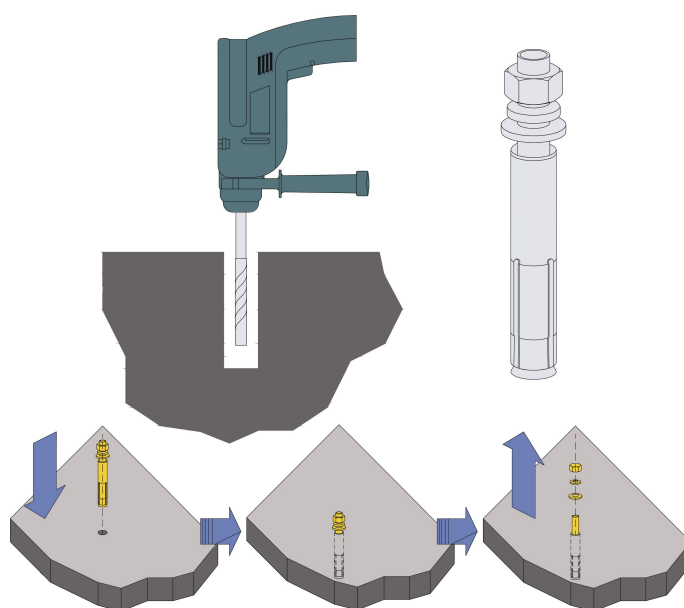
Figure 4-28 Install the Slanted Rack

2. Drill holes

- a. According to the engineering design drawing, determine the installation position of the gantry and mark installation holes by using the marking pen. [Figure 4-29](#) shows the installation holes of the gantry.

Figure 4-29 Mark the Drilling Holes Position

- b. Drill holes by using the electric percussion drill (drill bit: $\phi 12$) at the places where installation holes are marked. At the same time, use the vacuum cleaner to remove the dust generated during the drilling of holes.
- c. Put the expansion sleeve onto the metal cone of the expansion bolt, fasten the nut slightly, strike the expansion bolt into the installation hole by using the rubber hammer, fasten the nut tightly to make the bolt fully expanded, and then remove the nut, as shown in [Figure 4-30](#).

Figure 4-30 Install the Expansion Bolt

- 3. Install the gantry.

If the gantry is installed on the concrete floor, use the M10x100 expansion bolt, as shown in [Figure 4-31](#); if the gantry is installed on the wooden floor, use the M10x40 tapping screw, as shown in [Figure 4-32](#).

Figure 4-31 Install the Gantry on Concrete Floor

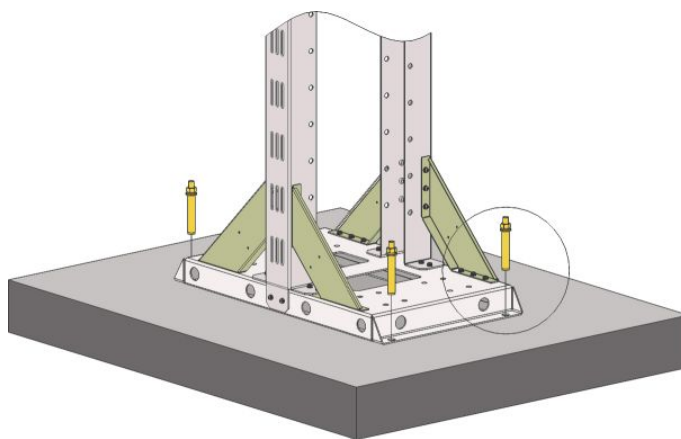
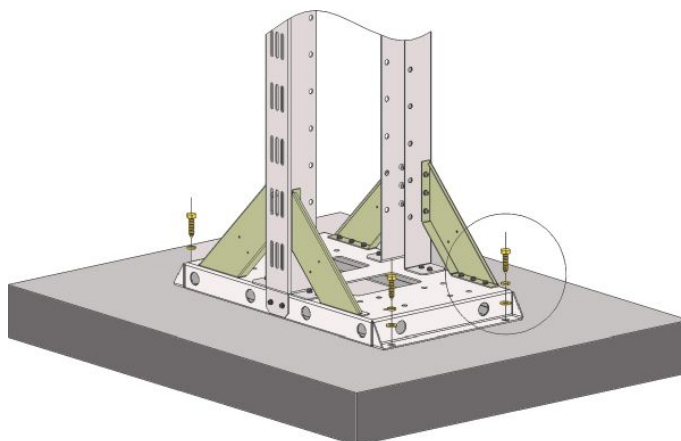
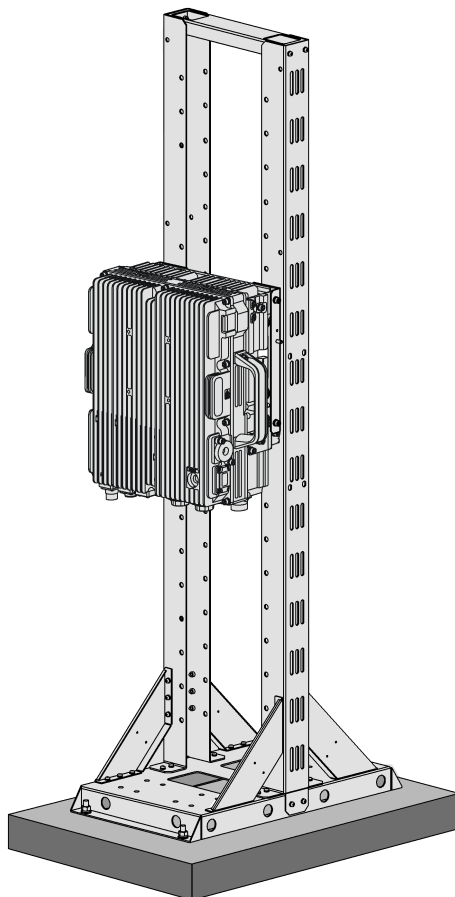


Figure 4-32 Install the Gantry on Wooden Floor



4. Install the wall-mounting components on the gantry.
5. Install the ZXSDR R8882 L200 on the wall-mounting components. The device is installed firmly on the gantry, as shown in [Figure 4-33](#).

Figure 4-33 ZXSDR R8882 L200 Is Installed on Gantry

**Note:**

A copper bar is needed to attach at the side of the gantry to connect to the grounding bar.

– End of Steps –

4.4 Cables Connection

4.4.1 Connection of External Cables

Table 4-2 describes the connection of ZXSDR R8882 L200 external cables.

Table 4-2 Connection of ZXSDR R8882 L200 External Cables

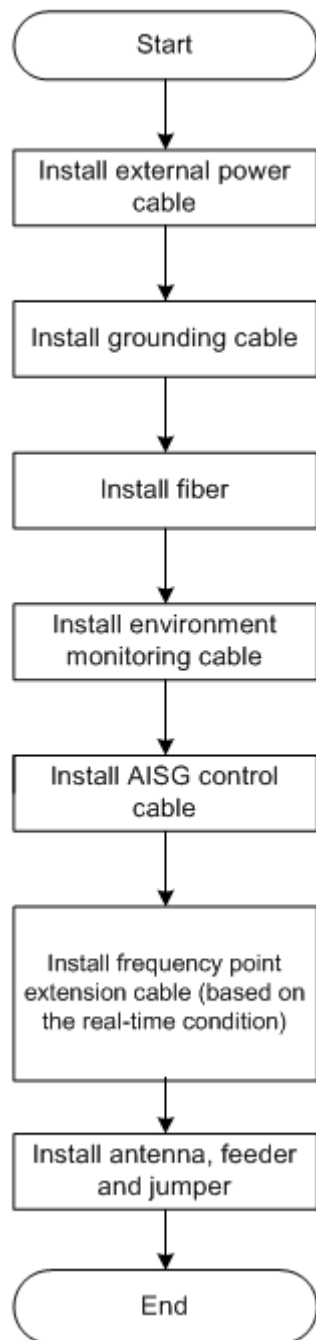
Cable type	Connection relation	Description
------------	---------------------	-------------

Power cable	Connects the ZXSDR R8882 L200 power interface to the power supply equipment interface	One end is circular 6-core cable connector (hole) with plastic cover, the other end is reserved for power cable and dry contact cable. The length of cable is based on the engineering survey.
Grounding cable	Connects one ZXSDR R8882 L200 ground bolt to the copper bar	The grounding cable is made up of strands of flame-retardant wire. The cross sectional area of ZXSDR R8882 L200 grounding cable is 16 mm ² . Copper lugs are crimped at both ends of the grounding cable.
Fiber	Connects to eBBU	-
Environment monitor cable	Connects the ZXSDR R8882 L200 environment monitor interface to the external monitor components or the dry contact.	For the environment monitor cable, end A is PIN header. End B, with 3m length in total, is made depending on the field engineering conditions.
AISG control cable	Connects the ZXSDR R8882 L200 debugging interface (AISG) to the control interface of electrical-adjustment antenna.	AISG is used to control the electrical-adjustment antenna.
Antenna jumper	Connects ZXSDR R8882 L200 to main feeder	The RF jumper usually uses the finished 1/2" jumper with 2m length. The jumper can be customized depending on actual conditions. One end of the jumper is N connector (male) and the other end is DIN connector (female).

4.4.2 External Cable Installation Flow

Figure 4-34 lists the installation flow of external cable. This flow can be adjusted based on actual conditions.

Figure 4-34 External Cable Installation Flow

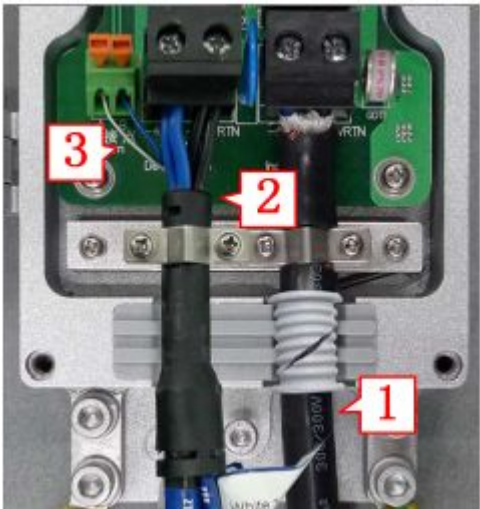


4.4.3 Connecting Power Cable

Context

Figure 4-35 shows power cable connection of PIMDC.

Figure 4-35 PIMDC Power Cable Connection



- 1. Power input cable of the PIMDC
- 2. Power input cable of the R8882
- 3. Dry contact cable

Figure 4-36 shows the power cable of ZXSDR R8882 L200.

Figure 4-36 Power Cable

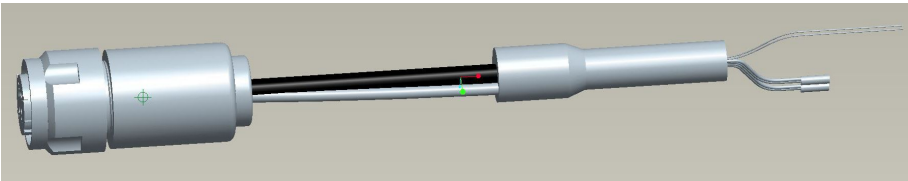


Table 4-3 describes the color and definition of inner core of the power cable.

Table 4-3 Color and Definition of Inner Core of the Power Cable

Core color	Definition	Signal Description
Blue	-48V	-48V
Blue	-48V	-48V
Black	-48 V GND	-48V ground
Black	-48 V GND	-48V ground
White	NODE_IN+	Dry contact
Brown	NODE_IN-	Dry contact

**Note:**

1. If the two-core cable is adopted, the blue core cable stands for -48 V and the black core cable stands for -48 V GND.
2. If the four-core cable is adopted, the two blue core cables connected in parallel stand for -48 V and the black core cables connected in parallel stand for -48 V GND.

Steps

1. Connect power cable from PIMDC to ZXSDR R8882 L200
 - a. Connect end A of power cable to the **PWR** interface of the ZXSDR R8882 L200.
 - b. Strip the protective coat of end B, and then connect the blue wires to **-48V** terminal and the black wires to **-48VRTN** terminal. Connect the white and blue dry contact wires to the **Alarm** terminals, as shown in [Figure 4-37](#).

Figure 4-37 PIMDC Connection (to R8882)



2. Connect power cable from PIMDC to lightning protection box
 - a. Peel off an appropriate length of insulating layer of the PIMDC power input cable.
 - b. Lead the end A of the cable through the waterproof plastic ring of the PIMDC, and then connect the blue wires to the **-48V** terminal and the black wires to the **-48VRTN** terminal. Fasten the power cable with a latch, as shown in [Figure 4-38](#).

Figure 4-38 PIMDC Connection (to Lightning Protection Box)**Note:**

This latch should be fully contacted with the shielded layer of the PIMDC input power cable.

- c. Connect the end B of the PIMDC input power cable to the output port of the indoor DC lightning protection box. Connect the blue wires to the **-48V** terminal and the black wires to the **-48VRTN** terminal.

**Note:**

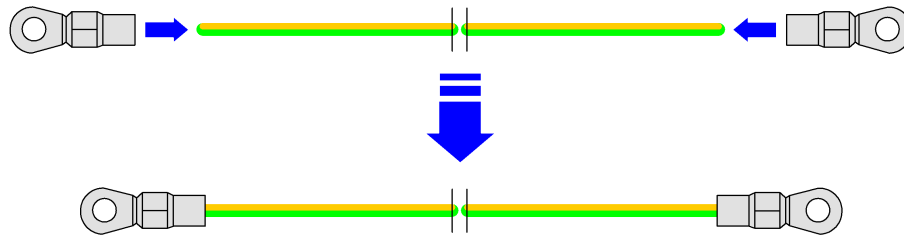
Power for sectors α , β , and γ are connected to SPD-1, SPD-2, and SPD-3 terminals respectively.

– End of Steps –

4.4.4 Connecting Grounding Cable

Context

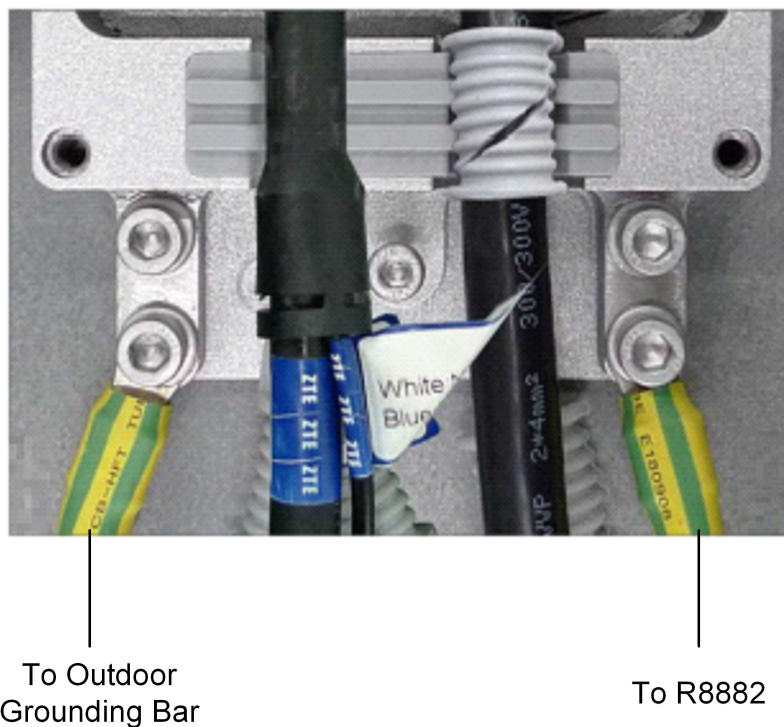
The grounding cable of ZXSDR R8882 L200 is made up of strands of flame-retardant wire. Copper lugs are needed to be crimped at both ends of the grounding cable in advance, as shown in [Figure 4-39](#).

Figure 4-39 Grounding Cable**Steps**

1. Connect one end of grounding cable to the grounding terminal of the device, as shown in [Figure 4-40](#).

Figure 4-40 R8882 Grounding Bar Connection

2. Connect the other end of the ground cable to PIMDC, and then connection the PIMDC to outdoor grounding bar, as shown in [Figure 4-41](#).

Figure 4-41 PIMDC Grounding Bar Connection

3. Attach the label on the grounding cable.
 4. Measure the grounding resistance and make sure it is less than 5 ohms.
- End of Steps –

4.4.5 Connecting Fiber Between eBBU and eRRU

Steps

1. Remove the protection cap from the optical fiber, and then detach the outer protection cover, as shown in [Figure 4-42](#).

Figure 4-42 Remove Protection Cap

2. Remove two white covers, as shown in [Figure 4-43](#).

Figure 4-43 Remove Covers

3. Insert the optical fiber into the **OPT1** port until it locks into place with a snap, as shown in [Figure 4-44](#).

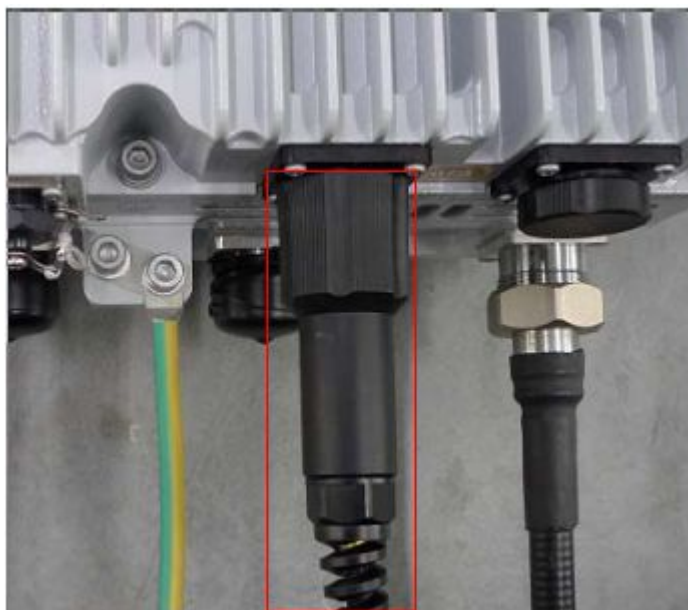
Figure 4-44 Insert Optical Fiber

4. Insert the transparent sleeve into the OPT port fully, as shown in [Figure 4-45](#).

Figure 4-45 Insert Transparent Sleeve

5. Tighten the outer protection cover fully.

Figure 4-46 Tighten Connection



6. Connect the optical fibers of sectors α , β , and γ to the **TX0/RX0**, **TX1/RX1**, and **TX2/RX2** ports of the BPL board located in the eBBU.

– End of Steps –

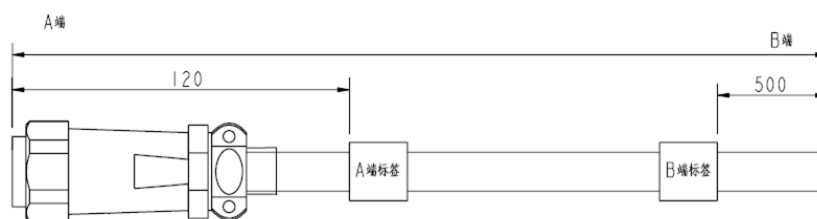
4.4.6 Connecting Environment Monitor Cable

Context

The environment monitor cable provides a 485 interface, used for ZXSDR R8882 L200 environment monitor. It also provides four extension accesses for external dry contact monitor.

End A is circular 8-core plug and end B is made depending on actual conditions. The total length is 3m. Figure 4-47 shows the structure of environment monitor cable.

Figure 4-47 Environment Monitor Cable



The connector, connecting the environment monitoring cable to ZXSDR R8882 L200, is 8-core straight welded connector (pin) mounted on panel. The connector appearance is shown in Figure 4-48.

Figure 4-48 Appearance of Environment Monitor Cable

The cable connector pins and connection are shown in [Table 4-4](#).

Table 4-4 Cable Pin Description

Pin	Core color	Signal Description
PIN1	Brown	Dry contact input, positive polarity
PIN2	Yellow	Dry contact input, negative polarity
PIN3	Blue	Dry contact input, positive polarity
PIN4	White	Dry contact input, negative polarity
PIN5	Green	Positive RS485 bus signal
PIN6	Grey	Negative RS485 bus signal
PIN7	Red	Positive RS485 bus signal
PIN8	Black	Negative RS485 bus signal

**Note:**

Connect the first dry contact of eRRU to outdoor DC lightning protection box.

Steps

1. Connect end A of environment monitor cable to environment monitor interface of ZXSDR R8882 L200 cabinet.
2. Connect end B of environment monitor cable to external monitor part or dry contact.
3. Attach the labels on end B.

– End of Steps –

4.4.7 Connecting AISG Control Cable

Context

[AISG](#) is used to control the electrical-adjustment antenna.

[Figure 4-49](#) shows the structure of AISG control cable.

Figure 4-49 Structure of AISG Control Cable

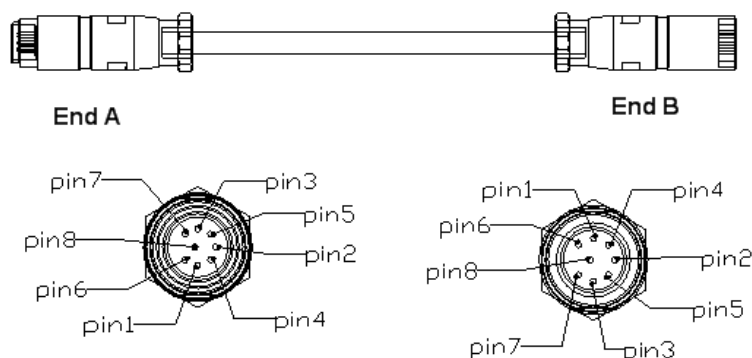


Table 4-5 describes the meaning of sequence number of AISG control cable.

Table 4-5 Meaning of Sequence Number of AISG Control Cable

Pins at end A	Pins at End B	Name	Meaning
PIN3	PIN1	RS485B	RS485-
PIN5	PIN2	RS485A	RS485+
PIN6	PIN3, PIN4	DC	DC output
PIN7	PIN5, PIN6	DC RTN	DC RTN
PIN1, PIN2, PIN4, PIN8		NC	Null

Steps

1. Connect end A to ZXSDR R8882 L200 debugging interface (AISG) and screw down the bolt.
2. Connect end B to the control interface of electrical adjustment antenna and screw down the bolt.

– End of Steps –

4.4.8 Connecting the RF Jumpers

Steps

1. Connect the A-ends of two RF jumpers to the **ANT1** and **ANT4** ports of the ZXSDR R8882 L200. Connect the B-end to the corresponding port of the main antenna.
2. Spiral-wrap two-layer ultraviolet-proof adhesive tape around the **ANT2** and **ANT3** ports, and then tighten them fully by using black ultraviolet-proof cable ties.

– End of Steps –

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Glossary

AISG

- Antenna Interface Standards Group
- 天线接口标准组

CPRI

- Common Public Radio Interface
- 通用公共无线接口

CRC

- Cyclic Redundancy Check
- 循环冗余校验

FCC

- Federal Communication Commission
- 联邦通信委员会 (美国)

LED

- Light Emitting Diode
- 发光二极管

QAM

- Quadrature Amplitude Modulation
- 正交幅度调制

QPSK

- Quadrature Phase Shift Keying
- 四相移相键控/正交移相键控

SDR

- Software Defined Radio
- 软件定义无线电设备

VSWR

- Voltage Standing Wave Ratio
- 电压驻波比

eBBU

- evolved Base Band Unit
- 演进的基带资源单元

eRRU

- evolved Remote Radio Unit
- 演进的远端射频单元