Table 4-6 Accessories for L-shape Support Installation

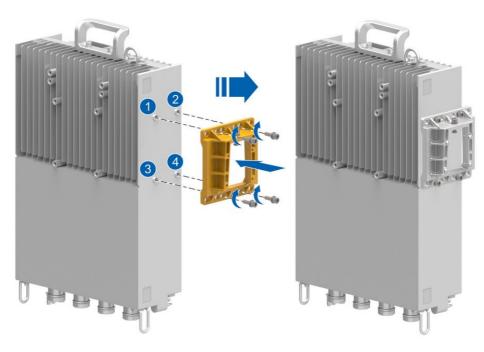| Name	External View
L-shape support	
Fixing clamp	
RRU support	

4-33

Steps

1. Secure the fixing clamp to the adapter plate with four M10 bolts and nuts with a torque of 40 N•m, see Figure 4-36.

    Figure 4-36 Securing the Fixing Clamp

2. Fix the RRU support to the back of the RRU with four M6 screws with a torque of 8 N•m, see Figure 4-37.
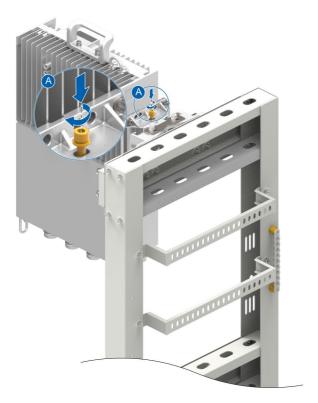
Figure 4-37 Installing the RRU Support

3. Install the RRU on the L-shape support along the guide rail of the fixing clamp and tighten the captive screw on the top of the RRU support with an M6 Allen hex wrench, see Figure 4-38.

Figure 4-38 Installing the RRU on the L-shape Support
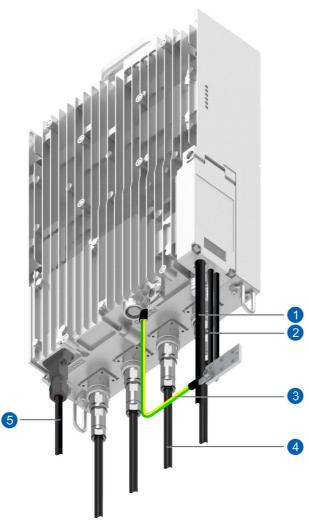

4-35

– End of Steps –

Chapter 5
Cable Installation

Cable List

Item		Local Equipment	Interconnected Equipment
Grounding Cable	External View		
	Connector Type	OT terminal	OT terminal
	Interconnected Port	Local grounding terminal of RRU	Grounding bar
DC Power Cable	External View		
	Connector Type	Tubular terminal	Cold-pressed terminal
	Interconnected Port	Local power terminal of RRU, made on site.	Used to connect DCPD, made on site.
Optical Cable	External View		
	Connector Type	DLC, LC	DLC, FC×2, LC, SC
	Interconnected Port (RRU-BBU)	Cable's RRU end connected to the OPT1	Cable's BBU end connected to the BBU
	External View		
	Connector Type	DLC, LC	DLC, LC
	Interconnected Port (RRU-RRU)	The OPT2 port of the upper-layer RRU	The OPT1 port of the lower-layer RRU
RF Cable	External View		
	Connector Type	DIN-type male connector	DIN-type male connector
	Interconnected Port	ANT port	Antenna's RF port

Item		Local Equipment	Interconnected Equipment
AISG Cable	External View		
	Connector Type	DB15 connector	AISG connector
	Interconnected Port	Local AISG/MON port of RRU	RCU's AISG port of the tunable antenna
MON Cable	External View		
	Connector Type	DB15 connector	Naked cables
	Interconnected Port	Local AISG/MON port of RRU	External monitoring device

Cable Connection Diagram

Figure 5-1 Cable Connection Diagram

1.   DC power cable   3.   Grounding cable   5.   AISG/MON Cable
2.   Optical cable   4.   RF Cable
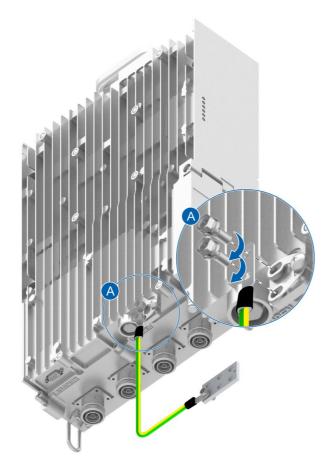
Table of Contents

5.1 Installing the Protective Grounding Cable

This procedure describes how to install the protective grounding cable. The protective grounding cable is a copper-core cable with a cross-sectional area of 16 mm^2.

5-3

Steps

1. Route the protective grounding cable from the indoor or outdoor grounding busbar to the RRU.

2. Crimp an OT terminal at the RRU end of the protective grounding cable.

3. Fix one end of the protective grounding cable to the grounding screw at the bottom of the ZXSDR R8854, see Figure 5-2.

Figure 5-2 Connecting the Protective Grounding Cable to the Grounding Busbar (Directly)

Note:

About 30 cm of the cable should droop freely before the cable is routed to the pole or cable tray.

4. Remove the rust on the grounding busbar and crimp an OT terminal at the other end of the protective grounding cable.

5. Connect the other end of the protective grounding cable to the grounding busbar and fix it to a bolt, see Figure 5-2.

6. Bundle and label the cable.

7. Apply antirust paint around the grounding bolts on the grounding busbar.

   – End of Steps –

5.2 Installing Antenna Feeder Cables

This procedure describes how to install an antenna feeder cable.

There are two types of antenna feeder cables, antenna feeders and jumpers. The distance between the RRU and the antenna determines how to install an antenna feeder cable. For details, refer to Table 5-1.
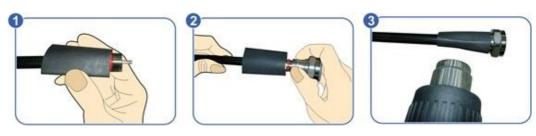
Table 5-1 Antenna Feeder Cable Installation

If...	Then...
The distance between the base station and the antenna is less than five meters	A feeder jumper is used.
The distance between the base station and the antenna is greater than five meters and less than 20 meters	A 1/2" feeder is used.

Steps

1. (Optional) Install a heat-shrink sleeve on the feeder connector if a feeder connector needs to be made on site, see Figure 5-3.

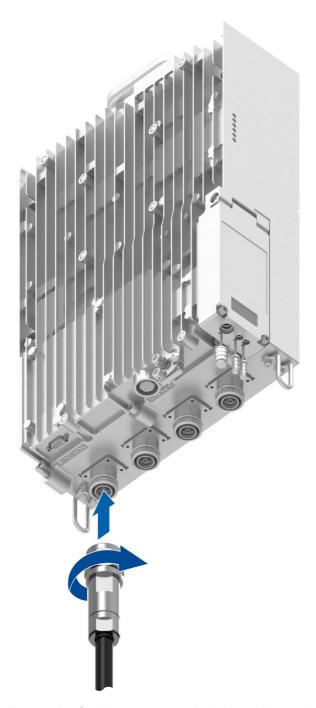**Figure 5-3 Making a Feeder Connector**

Note:

If the distance between the base station and the antenna is greater than five meters, both feeders and jumpers are used for connection. In this case, feeder connectors should be made on site.

2. Connect the feeder cable to the antenna feeder interface on the RRU chassis, see Figure 5-4.
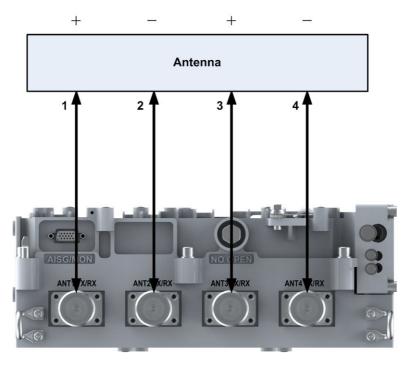
Figure 5-4 Installing Antenna Feeder Cables

3. Fasten the feeder connector clockwise with a adjustable wrench.

4. Protect the cable connectors against water. For details, refer to Chapter 10 Waterproofing Outdoor Connectors.

5. Lay the antenna feeder cable on the antenna side and bind it with black cable ties.

    The feeder should be laid vertically at least 200 mm from the lower edge of the device when it is led out from the bottom of the RRU chassis. It should not be bent. The minimum bending radius of the feeder should not be less than 20 times the feeder's radius. It is prohibited to coil the feeder.

5-6

6. Connect the other end of the feeder to the ANT interface on the antenna. Take waterproof measures.

7. Label the feeder cable with plastic.

8. Repeat steps 1 through 7 to install other feeder cables, see Figure 5-5.

Figure 5-5 ZXSDR R8854 Antenna Feeder Connection Diagram

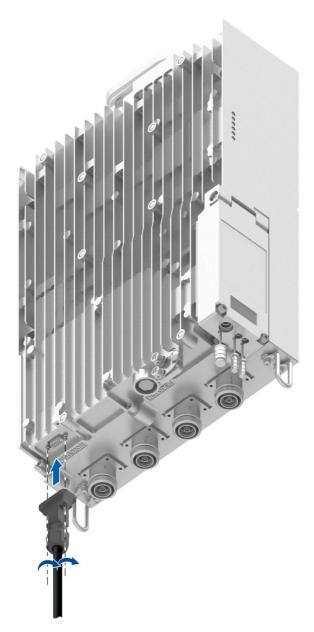**– End of Steps –**

5.3 Installing a Monitoring Cable

This procedure describes how to install a monitoring (MON) cable.

A monitoring cable is used to connect the dry contact interface of an external monitoring device.

Steps

1. Connect one end of the monitoring cable to the AISG/MON interface at the bottom of the ZXSDR R8854 chassis, see Figure 5-6.

Figure 5-6 Installing a Monitoring Cable

2. Connect the other end of the monitoring cable to the dry contact interface of the external monitoring device.

3. Bundle and label the cable.
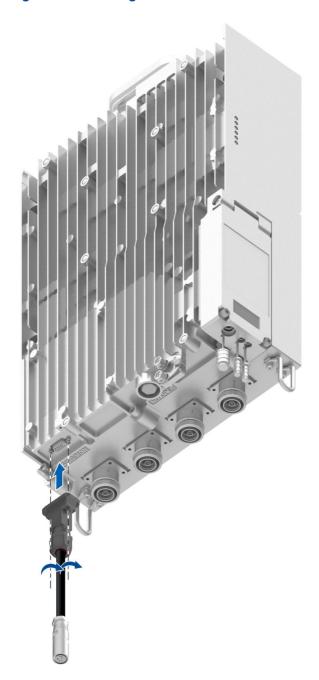
    – End of Steps –

5.4 Installing the AISG Cable

An AISG cable between the RF module and an RET antenna is used to transmit the signals to or from the RET antenna.

Steps

1. Connect one end of the AISG interface cable to the AISG/MON port on the ZXSDR R8854, see Figure 5-7.

    Figure 5-7 Installing the AISG Cable

2. Connect the other end to the AISG port on the RET antenna.

3. Bundle and label the cable.

    – End of Steps –

5-9

5.5 Installing the DC Power Input Cable

This procedure describes how to install the DC power input cable.

Context

The ZXSDR R8854 DC power connector supports power cables with the sectional area of 4 mm^2 or 6 mm^2. If the power cable with the sectional area of 10 mm^2 or 16 mm^2 must be used because the distance between theZXSDR R8854 and an external power supply is too long, a DC junction box (ODCPD1) is needed to connect the power cable to that with the section area of 4 mm^2 or 6 mm^2. For how to install the DC junction box (ODCPD1), refer to Chapter 9 Installing the DC Junction Box.

Steps

Open the maintenance window

1. Open the maintenance window at the side of the ZXSDR R8854, see Figure 5-8.
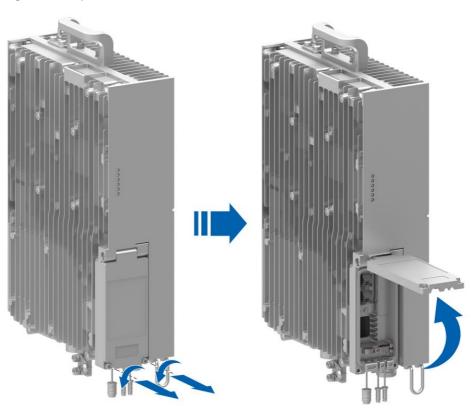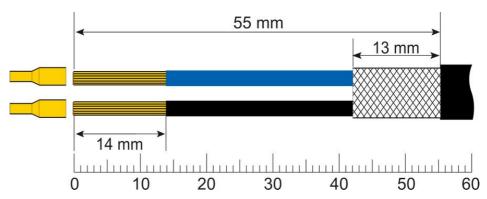
Figure 5-8 Open the maintenance window
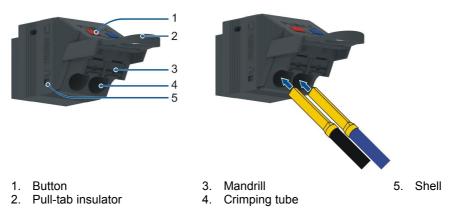

Making the Power Cable Connector

2. Follow the maintenance window diagram to tailor the naked shielding layer, child cables, and naked copper cores. Sheathe the tailored cooper cores with tubular terminals and use the crimping pliers to crimp these tubular terminals, see Figure 5-9.

5-10

Figure 5-9 Wire stripping the power cable

3. Pass the tubular terminal round the trimmed bare copper core and crimp the tubular terminal with the crimping pliers.

4. Confirm the polarity of the power connector's socket connected to the power cable.

5. Use the screwdriver to press the mandrill until it cannot rebound and stuff the tubular terminals into the crimping tube, see Figure 5-10. It is required that the leading ends of conductors be completely inserted and have a close contact with the inner bottom of the connector's plug.

Figure 5-10 Insert the crimped tubular terminal

1. Button	3. Mandrill	5. Shell
2. Pull-tab insulator	4. Crimping tube	

Note:

Standard assembly requires that tubular terminals cannot be pushed forward any more.

6. Press the red and blue buttons (you may use tools like screwdriver but are not allowed to use heavy tools like hammer, or the plug may be managed). The mandrill ejects automatically. If you pull the conductor with your hand but it does not fall down, it indicates the conductor is installed securely.

Connecting Power Cable on the RRU

7. In the maintenance window, use the cross screwdriver to unscrew the crimping clip and remove the waterproof plug, see Figure 5-11.

Figure 5-11 Unscrew the crimping clip

8. Insert the conductor plug into the power port inside the maintenance window, see Figure 5-12. Push the plug forward unit you hear the sound of "click". If you shake the plug shell but it does not loosen or fall down (you are not allowed to pull the plug's pull-tab at this time), it indicates that the plug is installed securely and locked closely.

Figure 5-12 Insert the power cable

9. Use the crimping clip to crimp the naked part of the shielding layer, secure the power cable at the original waterproof plug, and ensure that the naked part has a close contact with the crimping clip.

> **Note:**
>
> The top edge of the power cable's black outer sheath shall align with the bottom edge of the crimping clip and shall not be lower than the top edge of the card slot.

10. Wrap the power cable along the pole or cable try and use black ties to bundle and secure it.
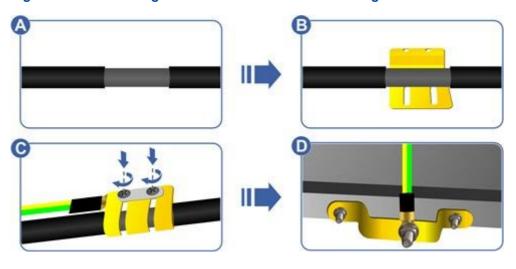
    If the DC Junction Box (ODCPD1) is equipped, refer to Chapter 9 Installing the DC Junction Box.

Earthing the Power Cable

11. Connect the power cable to the grounding busbar through a grounding kit based on the location of the baseband cabinet connected to the other end of the power cable, see Figure 5-13.

If...	Then...
The baseband cabinet is installed outdoors	Connect the power cable to the outdoor grounding busbar through the grounding kit before the cable is led into the cable inlet hole of the outdoor cabinet.
The baseband cabinet is installed indoors	Connect the power cable to the grounding busbar through the grounding kit before the cable is led into the room and near the feeder window. ● Protect the grounding kit against water with the "1+3+3" solution if the power cable is earthed before being led into the feeder window, refer to Chapter 10 Waterproofing Outdoor Connectors. ● Wind the grounding kit with two layers of insulating tape if the power cable is earthed after being led into the feeder window. The grounding cable is connected to the outdoor grounding busbar.

Figure 5-13 Connecting the Power Cable to the Grounding Kit
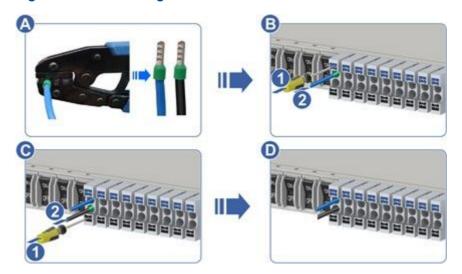

📚 **Note:**

When a grounding kit is used, the angle between the grounding cable and the power cable cannot be upward or be greater than 15 degrees. If the grounding kit is away from the feeder window, the grounding cable should be routed toward the feeder window along the downward direction of the power cable.

Connecting the Power cable of the Power Supply Equipment

12. Use a tubular terminal to make the connector of the AC power cable at the BBU side, and then connect the AC power cable to the DC output port of the DCPD, see Figure 5-14.

Figure 5-14 Connecting the Power Cable to the DCPD

When you make the connector of the DC power cable, cut off the exposed shielded layer after stripping off the cable end and bind the connector with a heat shrink tube or insulating tape.

13. Label the power cable at both ends.

– End of Steps –

5.6 Installing an Optical Fiber Cable

This procedure describes how to install an optical fiber cable.

Steps

Installing Optical Fiber
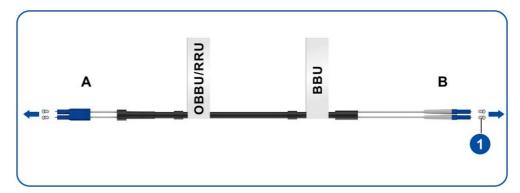
1. Open the crimping clip at the left side of the maintenance window, see Figure 5-15.

Figure 5-15 Open the crimping clip

2. Remove the cable tie at one end of the corrugated pipe marked as "RRU" by using the diagonal pliers.

3. Remove the white dust cap of the optical cable connector, see Figure 5-16.

Figure 5-16 Remove the white dust cap

1. White dust cap

5-15

Note:
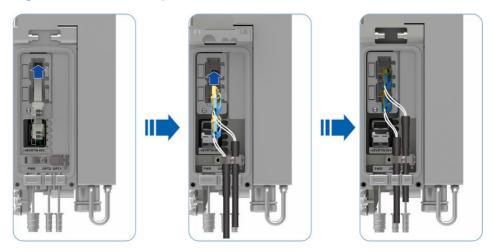
Do not remove the dust cap during the storage, transportation, and routing before installation.

4. Insert the optical module into the ports OPT1 and OPT2 of the RRU. Align the connector with the optical interface module, and insert it. When you hear the sound of "bang", it indicates that the optical cable connector is installed properly, see Figure 5-17.

Figure 5-17 Insert the optical cable

Note:
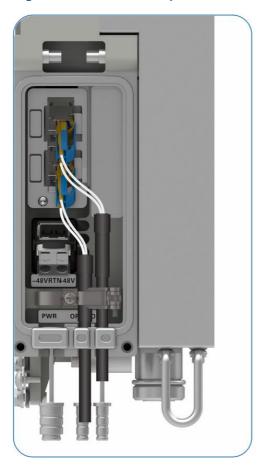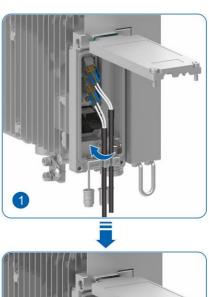
In the case of cascaded connection with RRUs, use an optical fiber for cascading connection to connect the OPT2 port of upper-level RRU and the OPT1 port of lower-level RRU.

5. Secure the optical cable at the crimping clip in the wiring cavity, see Figure 5-18.

In the case of one optical cable, install it to the outgoing slot at the right side and use a waterproof rubber plug to block the other slot.

Figure 5-18 Secure the optical cable

Note:

In the maintenance window, there shall be a certain arc between the optical cable connector and the optical cable. The bending radius shall be larger than 40 mm.

6. Bundle and fix the optical fiber cable.

    The outdoor optical fiber cable should be laid vertically at least 200 mm from the lower edge of the device when it is led out from the bottom of the RRU chassis. The optical fiber cable should not be bent. The optical fiber cable is then fixed onto the pole or cable tray. Coil the excess part of the optical fiber cable in a diameter of 300 mm to 400 mm and then bind the fiber coil to an appropriate position (for example, the wire spool on the BBU) with black cable ties.

7. Remove the cable tie at one end of the corrugated pipe marked as "BBU" by using the diagonal pliers and install it to the optical junction box or BBU.

8. Hang the plastic label of optical cable.

Close the maintenance window

9. Put the remaining waterproof plugs back to their original positions after installing all power cables and fibers. Close the panel of maintenance window and install the screws securely to avoid water penetration.

⚠️ **Caution!**

The screws must be fastened to prevent water intrusion.

– End of Steps –

5.7 Unused Interface Protection

After installing all cables, you need to protect all unused interfaces on the ZXSDR R8854.

Steps

1. Check an unused interface.

   Check whether an unused interface is covered with a dustproof cap. If not, cover it with a dustproof cap.

2. Waterproof a dustproof cap.

   Wrap it with a black double-layer ultraviolet-proof tape: the first layer from top down, the second layer from bottom up according to the direction of tightening the interface. Make sure that the wrapped tape is flush with the lower surface of the cap. Tighten the edge of the tape with a cable tie.

   – End of Steps –

Chapter 6
Post-Installation Check

Item	No.	Description
Equipment Installation	1	Install the equipment according to the site survey's design drawing and ensure that the equipment is within 45° protection of the lightning arrester.
	2	Ensure that the installation sequence of RRU parts is correct and install the main equipment securely.
	3	Ensure that the crimping clip closely presses the naked part of the power cable's shielding layer in the maintenance window.
Grounding and Waterproofing	4	Ensure that the RRU, outdoor power cable, and feeder's grounding point comply with relevant requirements.
	5	Check the antenna feeder's "1+3+3" waterproof protection and ensure that the maintenance window is securely installed to avoid water penetration.
	6	Ensure that the grounding card's cable is routed downwards, the angle between the grounding lead and the feeder is not larger than 15°. Remove the rust on the terminal of the grounding cable before it is connected.
Cable Routing	7	Ensure a 20 cm vertical cable routing for RRU connectors and antenna connectors, and that the protection caps of all unused RRU connectors are tightly screwed.
	8	Ensure that the remaining antenna feeders are wound into "S" or "8" shape and the remaining fibers are wound on the wire spool and stored in a proper place.
	9	Ensure that a water trap is made for the cable that is led into the equipment room and the lowest point of the water trap is 10 to 20 cm lower than the bottom edge of the inlet port at the feeder window.
	10	Ensure that outdoor cables are bundled by using black ties and a section of 2 - 3 threads (3 - 5 cm) is reserved.
	11	Ensure that all cables are connected securely and labels are hanged properly at both ends.
	12	Ensure that cables are routed properly and straightly, without any crossing, obvious ups, downs and skews, or fly wire.

Chapter 7
Power-on Inspection
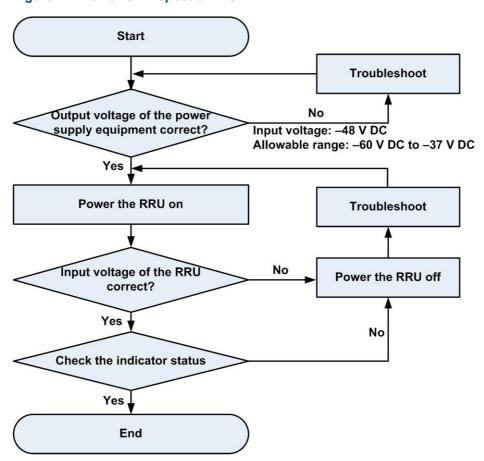
The ZXSDR R8854 is powered on after installation. If any errors are found, you must troubleshoot the ZXSDR R8854.

Context

Figure 7-1 shows the power-on inspection flow of the ZXSDR R8854.

Figure 7-1 Power-on Inspection Flow

Steps

1. Connect the power supply equipment to the ZXSDR R8854, or switch on the air circuit breaker of the lightning protection box.

7-1

2. Power the device on at 30-second intervals in order of cells to avoid current surge. Check whether or not the fiber cables in a cell are connected properly through the indicators on the BBU.

– End of Steps –

Chapter 8
Closure

After installation, perform the following operations:

- Put tools in order.

  Put the tools used during the installation back in right positions.

- Collect unexpected materials.

  Collect unexpected materials and hand them over to the customer.

- Remove waste materials.

  Remove waste materials and clean the environment.

- Complete the installation report.

  Complete the installation report and submit the installation report to the person in charge.

  If the site is operating properly, notify the operation and maintenance engineers that the installation is completed.

Chapter 9
Installing the DC Junction Box

This procedure describes how to install the DC junction box (ODCPD1).
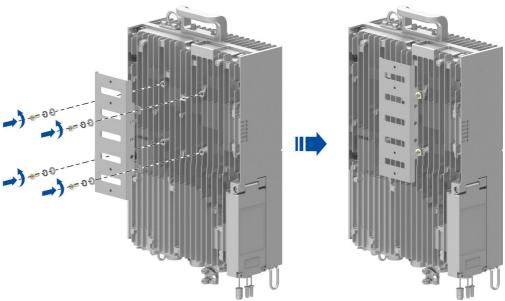
TheZXSDR R8854 DC power connector cannot be connected to the power cable with the sectional area of 10 mm^2 or 16 mm^2. If the power cable with the sectional area of 10 mm^2 or 16 mm^2 must be used because the distance between the ZXSDR R8854 and an external power supply is too long, a DC junction box (ODCPD1) is needed to connect the power cable to that with the section area of 4 mm^2 or 6 mm^2.

Steps

Installing the ODCPD1

1. Fix the mounting bracket of the ODCPD1 to the ZXSDR R8854 with four screws, see Figure 9-1.

Figure 9-1 Fixing the Mounting Bracket of the ODCPD1

> ⚠ **Caution!**
>
> The ODCPD1 can be installed by the back or the side. The installation position of it should ensure that it can be opened at a 90° angle at least for easy maintenance.

2. Fix the ODCPD1 to the mounting bracket with two screws included with the ODCPD1, see Figure 9-2.

Figure 9-2 Fixing the ODCPD1 Junction Box

Installing the Power Cable
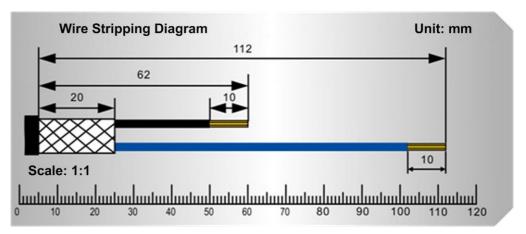
3. Open the cover plate of the ODCPD1, see Figure 9-3.

Figure 9-3 Opening the Cover Plate of the ODCPD1

9-2
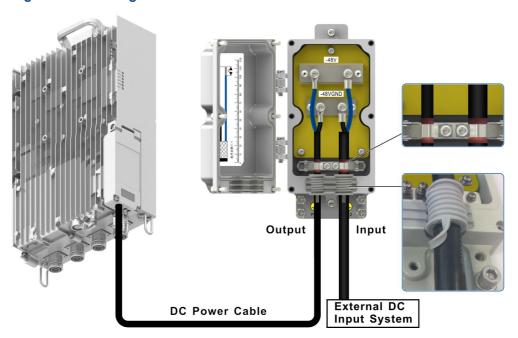
4. Make the ends of the power cable according to the diagram on the inner side of the cover plate, see Figure 9-4. Crimp the OT terminals of the external DC power input cable and the DC power cable connector of the RRU. The part between the shielded layer and the OT terminal must be wrapped with insulation tape.

Figure 9-4 Making a DC Power Cable Connector

5. Pass the DC power cable through the waterproof plug of the ODCPD1 and fix it to the correct terminal, see Figure 9-5.

Figure 9-5 Securing the DC Power Cable

6. Close the cover plate of the ODCPD1 and evenly tighten the six waterproof screws on the cover plate, see Figure 9-6.

Figure 9-6 Closing the Cover Plate of the ODCPD1

⚠️ **Caution!**
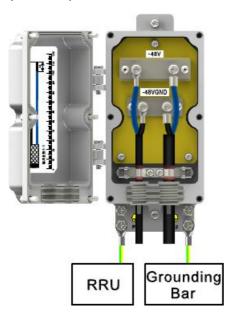
The screws must be fastened to prevent water intrusion.

7. Connect the other end of the DC power cable to the RRU and the external power supply equipment respectively.

8. Bundle and label the cable.

Installing the Protective Grounding Cable

9. Install the grounding cable from the RRU to the ODCPD1, and the grounding cable from the ODCPD1 to the grounding bar, see Figure 9-7.

9-4

Figure 9-7 Connecting the Protective Grounding Cable to the Grounding Busbar (ODCPD1)

– End of Steps –

Chapter 10
Waterproofing Outdoor Connectors

Waterproofing outdoor connectors is a "1+3+3" process, that is, wrapping one layer of PVC insulating tape, three layers of waterproof insulating tape, and three layers of PVC insulating tape around a connector.

The PVC insulating tape is used to prevent connectors from damage, ageing, and water ingress.

Steps

1. Clean the cable connector and ensure that no dirt or oil stain exists on the connector.

2. Wrap a layer of electric insulation tape.

   After a cable connector is connected, wrap the connector with the insulation tape downwards in the direction that the connector is tightened, with each round covering half of the previous round, see Figure 10-1. Ensure that the part about 10 mm to the connector end is wrapped with the insulation tape. When wrapping the connector, stretch the tape with proper force.
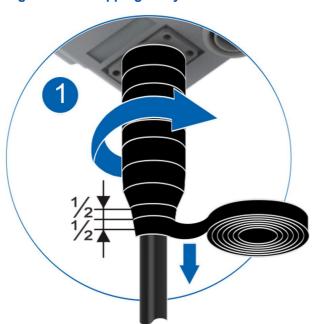
   Figure 10-1 Wrapping a Layer of Electric Insulation Tape

3. Wrap three layers of waterproof tape.

Extend the waterproof tape until its width is 50% to 75% of the original width.

Wrap three layers of waterproof tape in the direction that the connector is tightened to prevent the connector from loosening. Wrap the connector upwards for the first layer, downwards for the second layer, and then upwards again for the third layer, with each round covering about one third of the previous round to prevent the ingress of rainwater, see Figure 10-2. Do not cut off the tape before the connector is fully wrapped with three layers. Ensure that the part wrapped with the waterproof tape is more than 20 mm in length.

After wrapping the connector with the waterproof tape, grip and pinch the wrapped part repeatedly with both hands to make the waterproof tape securely stuck to the cable and the cable connector.

Figure 10-2 Wrapping Waterproof/UV Resistance Tape

⚠ **Caution!**

The outermost layer of tape shall be applied from the bottom up to avoid water penetration.

4. Wrap three layers of UV resistance tape.

Wrap the connector with three layers of UV resistance tape in the same direction of wrapping waterproof tape, see Figure 10-2. Pay attention to the following when wrapping a cable:
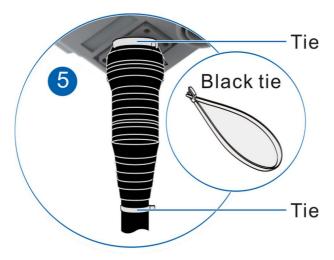
- The UV resistance tape should be stretched and wrapped with proper force to prevent it from being stretched too much.
- The upper-layer tape covers 1/2 the bottom-layer tape in length.
- The wrapping length of the UV resistance tape must be 10 mm longer than that of the waterproof tape. Wrap three layers.

After wrap three layers, grip and pinch both the UV resistance tape and waterproof tape to ensure that they are securely adhered.

5. Secure the tape's two ends.

After applying the tape, use black ultraviolet-proof ties to securely bundle the tape's two ends, as shown in Figure 10-3. Use the diagonal pliers to cut off the excessive ties and reserve a section of 3 mm at the mouth. This avoids tape expansion under high temperature.

Figure 10-3 Fixing Both Ends

– End of Steps –

Chapter 11
Installing a Gantry
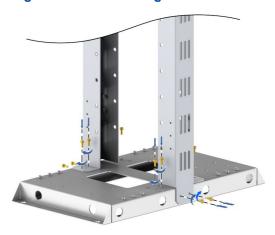
This procedure describes how to install a gantry.

Steps

Assembling a Gantry

1. Fix two posts to two sides of the base frame with 12 M5 × 16 screws, see Figure 11-1.

   Figure 11-1 Assembling the Post and Base Frame

2. Fix the top beam to the posts with four M5 × 16 screws, see Figure 11-2.

   Figure 11-2 Tightening the Post and Top Beam

3. Install the two supporting plates with six M5 × 16 screws respectively, see Figure 11-3.

11-1
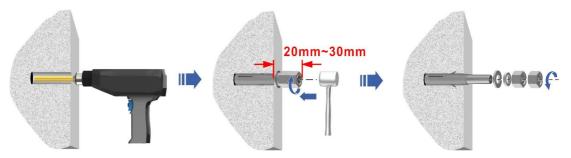
Figure 11-3 Assembling the Supporting Plate

Drilling Holes and Installing Expansion Bolts

4. Mark the hole positions with a drilling template and marker pen.

5. Drill holes at the marked positions with an electric percussion drill (12 mm in diameter) and remove the chippings with a vacuum cleaner, see Figure 11-4.

Figure 11-4 Drilling Holes and Installing Expansion Bolts

Fixing the Gantry

6. Fix the gantry in one of the following ways:

If...	Then...
Install the gantry on a concrete baseplate	Fix the gantry with M10 × 100 expansion bolts, see Figure 11-5.
Install the gantry in a shelter	Fix the gantry with M10 × 40 self-tapping screws, see Figure 11-6.

Figure 11-5 Fixing the Gantry to a Concrete Baseplate
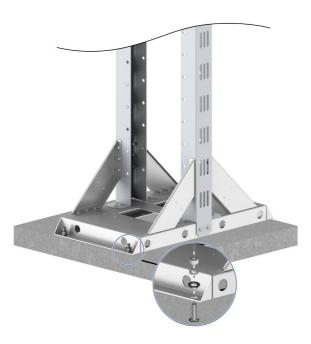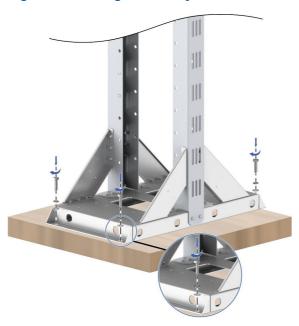
Figure 11-6 Fixing the Gantry to a Shelter

– End of Steps –

11-3

Chapter 12
Labeling Specifications

Labels include indoor and outdoor labels.

- Outdoor labels are hangtags that are delivered with the device.
- Indoor labels are the self adhesive paper-printed labels that may need to be produced at site if necessary.

Labels must meet the following requirements:

- The special paster of ZTE Corporation must be used for paper labels.
- Contents on rack row labels and column labels should meet the engineering design requirements.
- Boards should not be labeled and identifiers on a board should not be altered.
- All labels should be attached to face the same direction. The side that indicates where the cable is connected to should face upward or towards the operation and maintenance position for the convenience of being read.
- All cables such as the power cable, grounding cable, transmission cable, and feeder should be labeled at both ends.
- For optical fibers, network cables, and trunk cables, an indoor label should be pasted 20 mm away from the connector at both ends each.
- Outdoor labels should be secured with cable ties at the same height and direction.

Figures

I

II

Tables

Glossary

AISG
- Antenna Interface Standards Group

BBU
- Base Band Unit

DC
- Direct Current

MON
- Monitor

PVC
- Polyvinyl Chloride

RRU
- Remote Radio Unit