

## **ZXSDR R8854**

## Macro Radio Remote Unit Hardware Installation

Version: 1.0

**ZTE CORPORATION** 

No. 55, Hi-tech Road South, ShenZhen, P.R.China

Postcode: 518057 Tel: +86-755-26771900 Fax: +86-755-26770801 URL: http://support.zte.com.cn E-mail: 800@zte.com.cn

#### LEGAL INFORMATION

Copyright © 2017 ZTE CORPORATION.

The contents of this document are protected by copyright laws and international treaties. Any reproduction or distribution of this document or any portion of this document, in any form by any means, without the prior written consent of ZTE CORPORATION is prohibited. Additionally, the contents of this document are protected by contractual confidentiality obligations.

All company, brand and product names are trade or service marks, or registered trade or service marks, of ZTE CORPORATION or of their respective owners.

This document is provided "as is", and all express, implied, or statutory warranties, representations or conditions are disclaimed, including without limitation any implied warranty of merchantability, fitness for a particular purpose, title or non-infringement. ZTE CORPORATION and its licensors shall not be liable for damages resulting from the use of or reliance on the information contained herein.

ZTE CORPORATION or its licensors may have current or pending intellectual property rights or applications covering the subject matter of this document. Except as expressly provided in any written license between ZTE CORPORATION and its licensee, the user of this document shall not acquire any license to the subject matter herein.

ZTE CORPORATION reserves the right to upgrade or make technical change to this product without further notice. Users may visit the ZTE technical support website http://support.zte.com.cn to inquire for related information. The ultimate right to interpret this product resides in ZTE CORPORATION.

#### **Revision History**

Revision No.	Revision Date	Revision Reason	
R1.3	2018–01–03	<ul> <li>Updated the way to bundle the RRU in 2.2 Precautions for Device Hoisting.</li> <li>Updated thefollowing sections: 4 RRU Installation, 4.1 Installing an RRU on a Wall, 4.2 Installing a Single RRU on a Pole, 4.3 Installing Two RRUs on a Pole, 4.5 Installing an RRU on a Gantry, 4.6 Installing an RRU on a L-shape Support.</li> <li>Added new section: 4.4 Installing a Single RRU in Pole Hoop-Mounted Mode.</li> </ul>	
R1.2	2016-07-30	Added scald protection information in Section 2.3 Installation Precautions	
R1.1	2016-06-20	<ul> <li>Updated "5.2 Installing Antenna Feeder Cables"</li> <li>Updated "5.5 Installing the DC Power Input Cable"</li> <li>Added "Appendix A Installing the DC Junction Box"</li> </ul>	
R1.0	2016-04-06	First edition	

Serial Number: SJ-20160405141455-003

Publishing Date: 2018-01-03 (R1.3)

# **Contents**

About This Manual	ا
Chapter 1 Installation Flow	1-1
Chapter 2 Installation Preparations	2-1
2.1 Precautions for Device Transport	2-1
2.2 Precautions for Device Hoisting	2-1
2.3 Installation Precautions	2-4
2.4 Instruments and Meters List	2-6
2.5 Installation Space Requirement	2-7
Chapter 3 Unpacking and Inspection	3-1
Chapter 4 RRU Installation	4-1
4.1 Installing an RRU on a Wall	4-5
4.2 Installing a Single RRU on a Pole	4-11
4.3 Installing Two RRUs on a Pole	4-17
4.4 Installing a Single RRU in Pole Hoop-Mounted Mode	4-22
4.5 Installing an RRU on a Gantry	4-27
4.6 Installing an RRU on a L-shape Support	4-32
Chapter 5 Cable Installation	5-1
5.1 Installing the Protective Grounding Cable	5-3
5.2 Installing Antenna Feeder Cables	5-5
5.3 Installing a Monitoring Cable	5-7
5.4 Installing the AISG Cable	5-8
5.5 Installing the DC Power Input Cable	5-10
5.6 Installing an Optical Fiber Cable	5-15
5.7 Unused Interface Protection	5-18
Chapter 6 Post-Installation Check	6-1
Chapter 7 Power-on Inspection	7-1
Chapter 8 Closure	8-1
Chapter 9 Installing the DC Junction Box	9-1
Chapter 10 Waterproofing Outdoor Connectors	10-1
Chapter 11 Installing a Gantry	11-1
Chapter 12 Labeling Specifications	12-1

Figures	
Tables	\
Glossary	VI

## **About This Manual**

#### **Purpose**

This manual describes how to install the ZXSDR R8854.

#### **Intended Audience**

This manual is intended for:

- Installation engineers
- Maintenance engineers

#### What Is in This Manual

This manual contains the following chapters.

Chapter 1, Installation Flow	Describes the installation flow of the ZXSDR R8854.
Chapter 2, Installation Preparations	Describes preparations before equipment installation.
Chapter 3, Unpacking and Inspection	Describes precautions about equipment unpacking and inspection.
Chapter 4, RRU Installation	Describes how to install the ZXSDR R8854.
Chapter 5, Cable Installation	Describes how to install external cables for the ZXSDR R8854.
Chapter 6, Post-Installation Check	Describes how to inspect hardware installation.
Chapter 7, Power-on Inspection	Describes how to inspect the operation of the ZXSDR R8854 after the ZXSDR R8854 is powered on.
Chapter 8, Closure	Describes the operations that need to be implemented after all hardware components are installed.
Chapter 9, Installing the DC Junction Box	Describes how to install the DC junction box.
Chapter 10, Waterproofing Outdoor Connectors	Describes the procedure for connecting and waterproofing the outdoor connectors.
Chapter 11, Installing a Gantry	Describes how to install a gantry.
Chapter 12, Labeling Specifications	Describes how to correctly use outdoor and indoor labels.

#### **Conventions**

This manual uses the following conventions.

Italics	Variables in commands. It may also refer to other related manuals and documents.

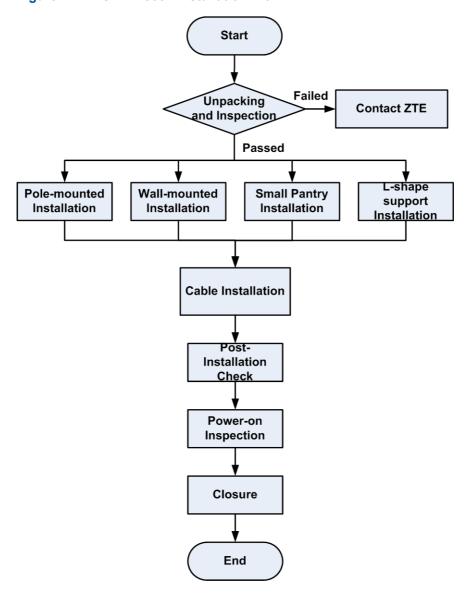
Bold	Menus, menu options, function names, input fields, option button names, check boxes, drop-down lists, dialog box names, window names, parameters, and commands.
Constant width	Text that you type, program codes, filenames, directory names, and function names.
[]	Optional parameters.
{}	Mandatory parameters.
1	Separates individual parameters in a series of parameters.
	Danger: indicates an imminently hazardous situation. Failure to comply will result in death or serious personal injury.
	Warning: indicates a potentially hazardous situation. Failure to comply can result in death or serious personal injury.
	Caution: indicates a potentially hazardous situation. Failure to comply can result in moderate or minor personal injury.
0	Notice: indicates equipment or environment safety information. Failure to comply can result in equipment damage, data loss, equipment performance degradation, environmental contamination, or other unpredictable results.
	Note: provides additional information about a topic.

# Chapter 1

# **Installation Flow**

For the installation flow of the ZXSDR R8854, see Figure 1-1.

Figure 1-1 ZXSDR R8854 Installation Flow



# Chapter 2

# **Installation Preparations**

Before installing the ZXSDR R8854, installation engineers should check the installation environment and deliver an *Environment Acceptance Report*.

Installation parts, tools, and instruments should be available before installation.



#### Caution!

The ZXSDR R8854 must be powered on within 24 hours after it is unpacked.

The power-off duration of the ZXSDR R8854 must not be greater than 24 hours during maintenance.

#### **Table of Contents**

Precautions for Device Transport	2-1
Precautions for Device Hoisting	
Installation Precautions	
Instruments and Meters List	2-6
Installation Space Requirement	2-7

### 2.1 Precautions for Device Transport

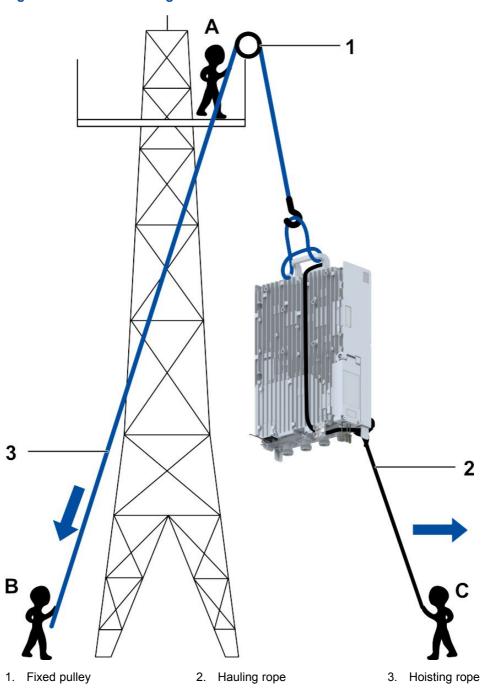
- A device must be transported with the outer packing container to protect the device from scratches.
- After the packing container is removed on site, the device must be protected when you move or store it. For example, when a device is stored temporarily, cushioning materials must be put under the bottom of the device to avoid direct contact with the ground and surrounding objects.
- When you transport a device, cushioning materials such as foamed plastic and paperboard must be used to protect the device from scratches. When you lift a device up, the device must be dragged properly to avoid collision with other objects.

## 2.2 Precautions for Device Hoisting

The information provided is used for reference when it is necessary to hoist the RRU.

 Installer A on the tower secures the fixed pulley to the tower, and passes the hoisting rope through the fixed pulley down to the ground, see Figure 2-1.

Figure 2-1 Device Hoisting





#### Caution!

Installer A on the tower cannot loosen the fixed rope until he confirms that the device is securely placed on the tower platform.

2. Installer C on the ground binds the RRU tightly, see Figure 2-2.

Figure 2-2 Binds the RRU







Pass the hoisting rope through the handle and hoisting hole.

Pass the hauling rope through the handle on the top of the RRU, avoiding the RRU mounting bracket, and get the rope stuck between the grounding point and the protection block at the bottom of the RRU. Bundle the RRU with the rope between the grounding point and the protection block at the bottom of the RRU, ensuring that the RRU is bundled firmly.

- 3. Installer B on the ground drags the hoisting rope downwards. At the same time, installer C pulls the hauling rope out wards to protect the device from colliding with the tower when the device reaches the mounting platform, see Figure 2-1.
- 4. Lift the properly-packed engineering materials used for tower mounting onto the tower in the manner mentioned above.

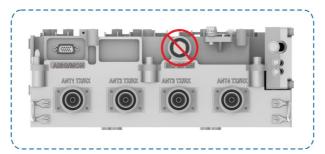


Never lift the engineering materials by binding them directly to the hoisting repe.

### 2.3 Installation Precautions

1. Do not open the equipment's airtight part, see Figure 2-3.

Figure 2-3 Do Not Open the Airtight Part



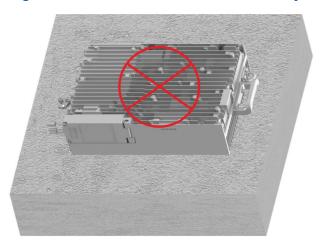
- 2. The RRU box has a layer of rustproof paint that protects it from being scratched during transportation and installation.
- 3. Do not install any port upwards, see Figure 2-4.



Figure 2-4 Do Not Install Any Port Upwards

4. Do not use the horizontal installation mode, see Figure 2-5.

Figure 2-5 Do Not Install the RRU Horizontally



- 5. The device must be installed in a special area where protection measures are taken and only maintenance personnel under the control of the responsible unit can enter.
- 6. Before maintaining the device, power off the device to cool it down. The device cannot be operated until the case temperature is below 70 °C to avoid scald.



The duration for cooling the device down after power-off cannot be longer than the maintenance time. The duration for waiting for the cooldown should be determined through testing.

### 2.4 Instruments and Meters List

Table 2-1 lists the instruments and meters required for installing the ZXSDR R8854.

**Table 2-1 Instruments and Meters List** 

Item	List
General-purpose instruments	Measuring and ruling instruments: 5 m steel tape, 1 m ruler, gradienter, marker, drilling template
	Drilling instruments: Electric percussion drill (auxiliary drill bits) and vacuum cleaner
	Tightening instruments: Cross screwdrivers (M3–M6), Allen key (M5–M6), adjustable wrench (M10), and torque wrench
	Small instruments: Snipe-nose pliers, diagonal pliers, vices, file, hacksaw, and hydraulic pressure pliers

Item	List
	Auxiliary instruments: Chain wheel, Ladder, Rope, scissors, slip-proof gloves, safety helmet, connector card, paintbrush, and hot air blower
Special-purpose instruments	Multi-functional crimping pliers and feeder connector knife
Meters	Digital multimeter, VSWR tester, earth resistance tester, base station tester, compass, field strength tester (for special purpose), and spectrum analyzer (for special purpose)

## 2.5 Installation Space Requirement

Figure 2-6 shows the recommended space for installing ZXSDR R8854.

Figure 2-6 Recommended Space for Installing ZXSDR R8854 (in mm)

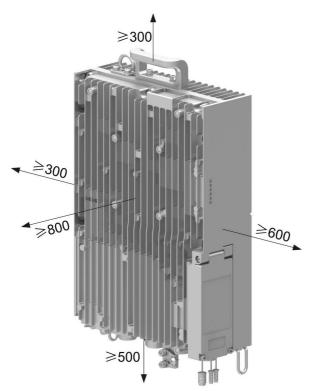
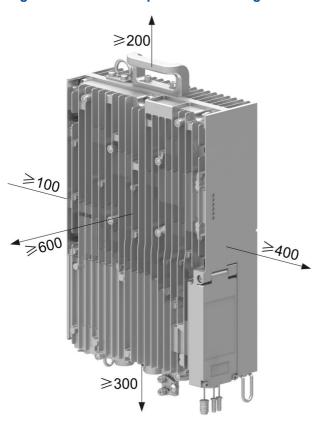


Figure 2-7 shows the minimum space for installing ZXSDR R8854.

Figure 2-7 Minimum Space for Installing ZXSDR R8854 (in mm)



## Chapter 3

# **Unpacking and Inspection**

#### **Counting Goods**

- Verify that the packaging boxes are intact. If any damage is found, contact the transport company immediately.
- Unpack the boxes and verify that the goods are consistent with the inspection checklist.
- Verify that the chassis is in good condition without scratches, peeling paint, blisters, or stains.
- Verify that the accessories required for the installation are correct and complete.

#### **Equipment Handover**

After the examination of goods, the engineering supervisor and the operator's representative should sign the *Unpacking Acceptance Report*. The *Unpacking Acceptance Report* is made in duplicate, and kept by both parties. The engineering supervisor must send the *Unpacking Acceptance Report* back to the representative office within seven days for archiving.

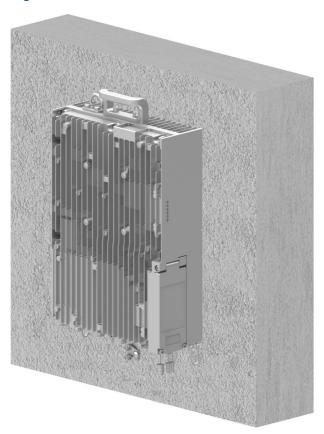
# Chapter 4

# **RRU Installation**

The ZXSDR R8854 can be installed in the following ways:

Wall-mounted installation, see Figure 4-1.

Figure 4-1 Wall-Mounted Installation



• Pole-mounted installation, see Figure 4-2, Figure 4-3 and Figure 4-4.

Figure 4-2 Pole-Mounted Installation of a Single RRU

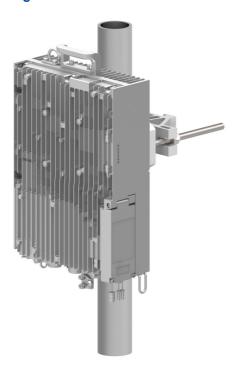


Figure 4-3 Pole-Mounted Installation of Two RRUs

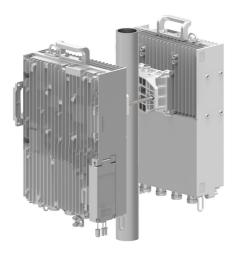
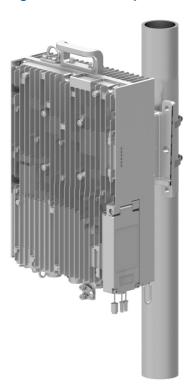


Figure 4-4 Pole Hoop-Mounted Installation of a Single RRU



• Gantry-mounted installation, see Figure 4-5.

**Figure 4-5 Gantry-Mounted Installation** 



• L-shape support installation, see Figure 4-6.

Figure 4-6 L-shape Support Installation



#### **Table of Contents**

Installing an RRU on a Wall	4-5
Installing a Single RRU on a Pole	4-11
Installing Two RRUs on a Pole	4-17
Installing a Single RRU in Pole Hoop-Mounted Mode	4-22
Installing an RRU on a Gantry	4-27
Installing an RRU on a L-shape Support	4-32

## 4.1 Installing an RRU on a Wall

An RRU can be installed on a wall when used indoors, outdoors, or in a high-speed rail scenario.

This procedure describes how to install the ZXSDR R8854 on a wall.

#### Context

For a description of the accessories used for installing an RRU on a wall, refer to Table 4-1.

**Table 4-1 Accessories for Wall-Mounted Installation** 

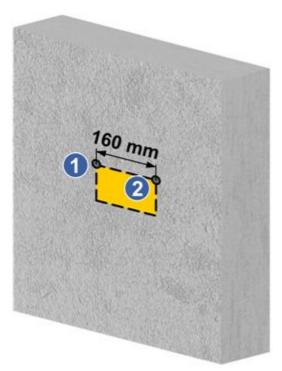
Name	External View
Fixing clamp	
RRU support	

#### **Steps**

#### **Drilling a Hole**

1. Mark the hole positions on the wall with a drilling template, see Figure 4-7.





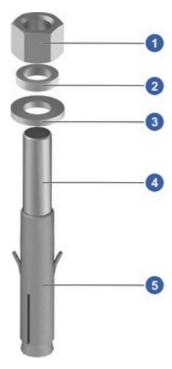
2. Drill an 80 mm-deep hole in the marked position with a  $\phi$ 12 drill bit. Make sure that the hole is vertical to the wall and remove dust with a vacuum cleaner during drilling.

#### **Installing an Expansion Bolt**

Install an expansion bolt, see Figure 4-9.

Figure 4-8 shows an external view of an expansion bolt.

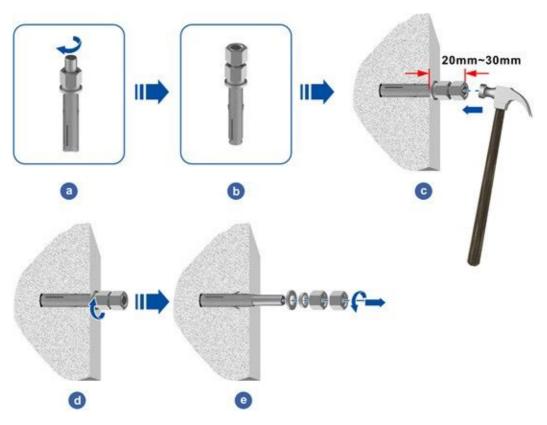
Figure 4-8 External View of an Expansion Bolt



- 1. Nut
- 2. Spring washer
- 3. Flat washer
- 4. Bolt

5. Expansion tube

Figure 4-9 Installing an Expansion Bolt

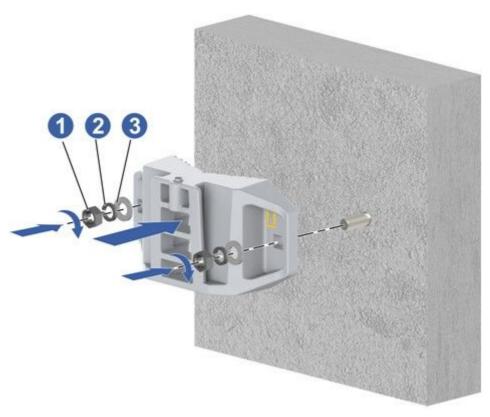


Step	Description
а	Slightly turn the expansion bolt clockwise to prevent it from moving freely.
b	Before hammering the expansion bolt with a claw hammer, take a nut with the same specifications as the nut of this expansion bolt and turn the nut until the top of nut is flush with that of the expansion bolt to avoid damaging the thread during hammering.
С	Hammer the expansion bolt into the installation hole with a claw hammer.
d	Fasten the nut near the expansion tube clockwise to allow the expansion bolt to fully expand.
е	Loosen the nut counterclockwise and remove the nut, spring washer, and flat washer in turn for use during subsequent installation.

#### **Installing the Fixing Clamp**

4. Secure the fixing clamp to the wall with a torque of 40 N•m, with the nuts, spring washers, and flat washers removed from the expansion bolts, see Figure 4-10.

Figure 4-10 Securing the Fixing Clamp



1. Nut 2. Spring washer 3. Flat washer

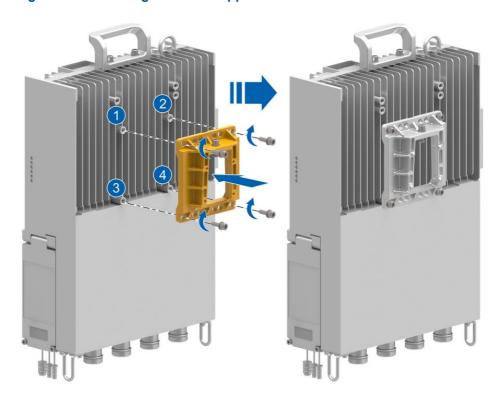


The yellow arrow on the fixing clamp should point upwards during installation.

#### Securing the RRU

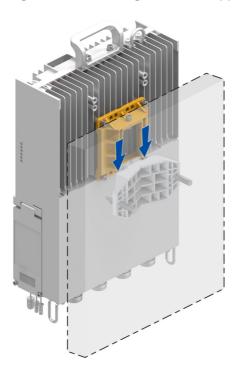
5. Fix the RRU support to the back of the RRU with four M6 screws with a torque of 8 N•m, see Figure 4-11.

Figure 4-11 Installing the RRU Support



6. Install the RRU support to the fixing clamp, see Figure 4-12.

Figure 4-12 Installing the RRU Support to the Fixing Clamp



7. Tighten the captive screw on the top of the RRU support with an M6 Allen hex wrench, see Figure 4-13.

Figure 4-13 Securing the RRU



- End of Steps -

### 4.2 Installing a Single RRU on a Pole

A single RRU can be installed on a round pole ( $\phi$ 40–120 mm), a channel steel pole ( $\phi$ 60–100 mm), or an angle steel pole ( $\phi$ 63–100 mm).

The following description and procedure are based on round pole-mounted installation. Figure 4-14 and Figure 4-15 show channel steel pole-mounted installation and angle steel pole-mounted installation respectively.

Figure 4-14 Channel Steel Pole-Mounted Installation

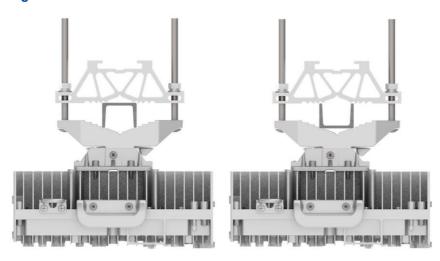
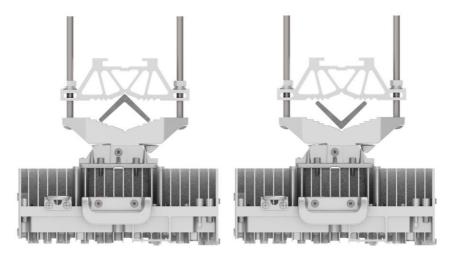


Figure 4-15 Angle Steel Pole-Mounted Installation

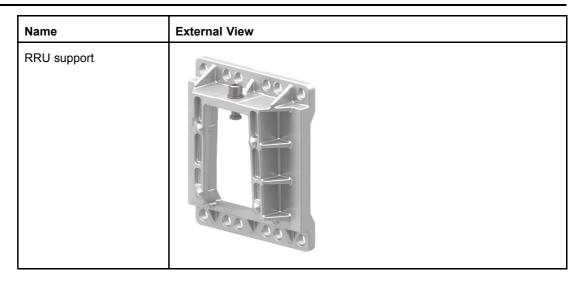


#### Context

For a description of the accessories used for installing a single RRU on a pole, refer to Table 4-2.

**Table 4-2 Accessories for Single-RRU Pole-Mounted Installation** 

Name	External View
Pole component (pole-mounted mode of a single RRU)	

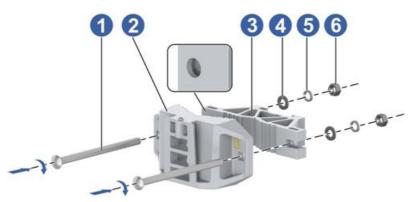


#### **Steps**

#### **Fixing the Pole Mount Assembly**

1. Insert an M10 screw through the installation hole on the one side of the fixing clip, and install the plat washer, spring washer, and nut on the other side of the hole, see Figure 4-16.

Figure 4-16 Assembling the Pole Mount Assembly



- 1. Screw
- 2. Fixing clip

- 3. Installation bracket
- 4. Flat washer
- 5. Spring washer
- 6. Nut
- 2. Assemble the pole component to the pole through the U-shape open side of the installation bracket, and then install the screw into the U-shape slot, see Figure 4-17.

Figure 4-17 Installing the Pole Mount Assembly (1)





When installing the fixing clip, ensure that the yellow arrow of the fixing clip is upward.

3. Tighten the nuts on both sides of the pole component with an adjustable wrench to fix the pole component on the pole, see Figure 4-18.

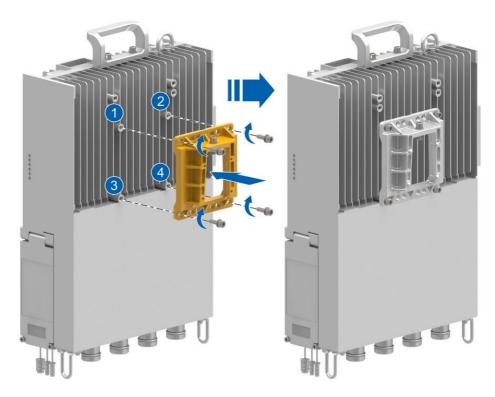


Figure 4-18 Installing the Pole Mount Assembly (2)

#### **Installing the RRU Support**

4. Fix the RRU support to the back of the RRU with four M6 screws with a torque of 8 N•m, see Figure 4-19.

Figure 4-19 Installing the RRU Support



Securing the RRU

5. Mount the ZXSDR R8854 to the pole component along the rail of the fixing clip, see Figure 4-20.

Figure 4-20 Installing the RRU on the Pole Mount Assembly



6. Tighten the captive screw on the RRU support with an M6 inner-hexagon wrench to fix the ZXSDR R8854, see Figure 4-21.

Figure 4-21 Securing the RRU



- End of Steps -

## 4.3 Installing Two RRUs on a Pole

This procedure describes how to install two RRUs on a pole. The procedure for installing two RRUs on a pole is similar to that for installing a single one.

#### Context

For a description of the accessories used for installing two RRUs on a pole, refer to Table 4-3.

**Table 4-3 Accessories for Two-RRU Pole-Mounted Installation** 

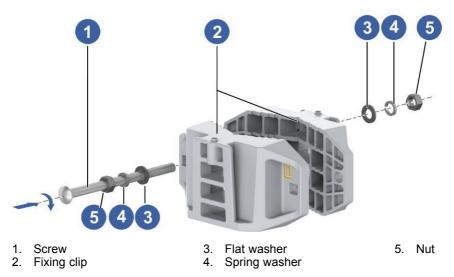
Name	External View
Pole component (pole-mounted mode of two RRUs)	
RRU support	

#### **Steps**

#### **Fixing the Pole Mount Assembly**

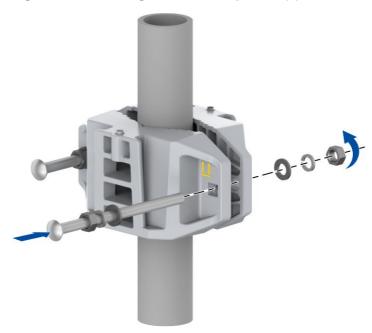
1. Insert an M10 screw through the installation hole on the one side of the fixing clip, and install the plat washer, spring washer, and nut on the other side of the hole, see Figure 4-22.

Figure 4-22 Assembling the Pole Component



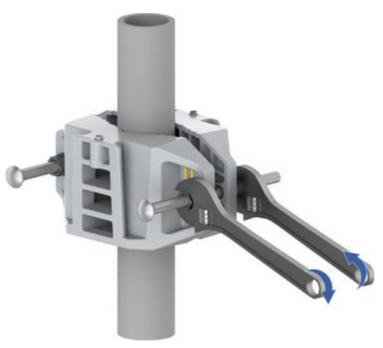
2. Assemble the pole component to the pole, and install the screw on the other side of the fixing clip, see Figure 4-23.

Figure 4-23 Installing the Pole Component (1)



3. Tighten the nuts on both sides of the pole component with an adjustable wrench with a torque of 40 N m to fix the pole component on the pole, see Figure 4-24.

Figure 4-24 Installing the Pole Component (2)



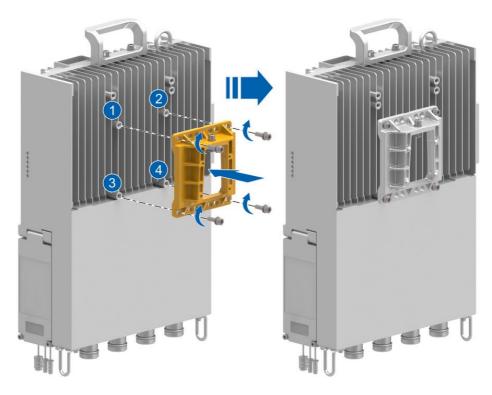


When tightening the nuts, you need to adjust the position of the screws and ensure that the exposed lengths of the screws on both sides of the fixing clip are the same. Otherwise, RRU installation may be affected.

#### **Installing the RRU Support**

4. Fix the RRU support to the back of the RRU with four M6 screws with a torque of 8 N•m, see Figure 4-25.

Figure 4-25 Installing the RRU Support



#### **Securing the RRUs**

5. Install the two RRUs on the pole mount assembly along the guide rails on the fixing clamps respectively, see Figure 4-26.



Figure 4-26 Installing the RRUs on the Pole Mount Assembly

6. Tighten the captive screws on the top of all the RRU supports with an M6 Allen hex wrench respectively, see Figure 4-27.

Figure 4-27 Securing the RRUs



- End of Steps -

# 4.4 Installing a Single RRU in Pole Hoop-Mounted Mode

This procedure describes how to install the ZXSDR R8854 through pole hoops. This installation mode is applicable to the pole with the diameter of 120 mm-380 mm.

#### Context

For the required installation accessories of pole hoop-mounted mode, refer to Table 4-4.

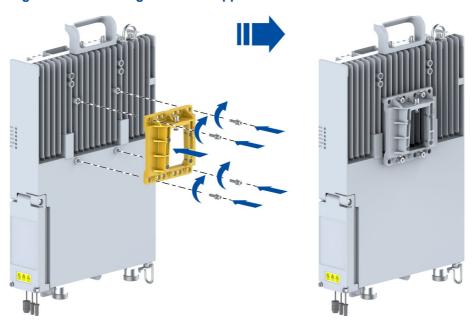
Table 4-4 Installation Accessories of Pole Hoop-Mounted Installation Mode of a Single RRU

Accessory	Overview
Fixing clip	
Pole hoop	
ZXSDR R8854 support	

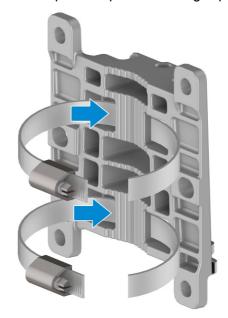
### **Steps**

1. Install the RRU support to the rear panel of the ZXSDR R8854 with four M6 screws, see Figure 4-28.

Figure 4-28 Installing the RRU Support



- 2. Install the fixing clip to the pole, see Figure 4-29.
  - a. Install pole hoops to the fixing clip.



b. Fix the fixing clip on the pole through the pole hoops.



c. Tighten the screws on the pole hoops.



Figure 4-29 Installing the Fixing Clip to the Pole



3. Mount the ZXSDR R8854 to the fixing clip on the pole along the rail of the fixing clip, see Figure 4-30.

Figure 4-30 Mounting the ZXSDR R8854



4. Tighten the captive screw on the RRU support with an M6 inner-hexagon wrench to fix the ZXSDR R8854, see Figure 4-31.

Figure 4-31 Tightening the Captive Screw



- End of Steps -

### 4.5 Installing an RRU on a Gantry

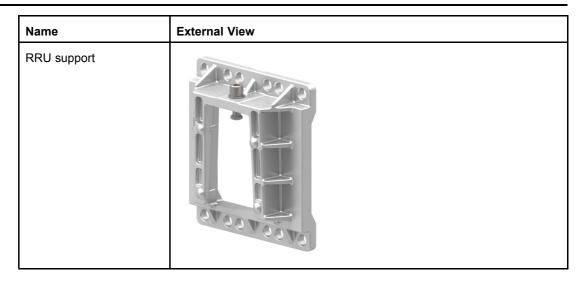
This procedure describes how to install an RRU on a gantry.

#### Context

For a description of the accessories used for installing an RRU on a gantry, refer to Table 4-5.

**Table 4-5 Accessories for Gantry-Mounted Installation** 

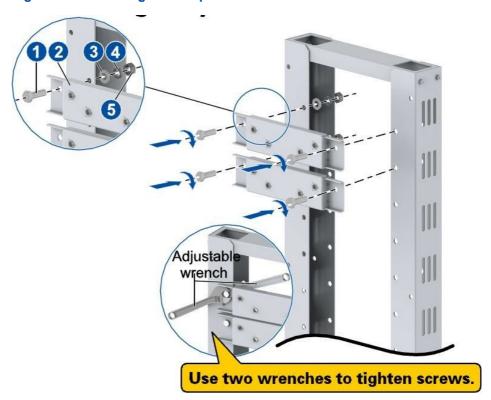
Name	External View
Gantry	
Fixing clamp	
Adapter plate	



### **Steps**

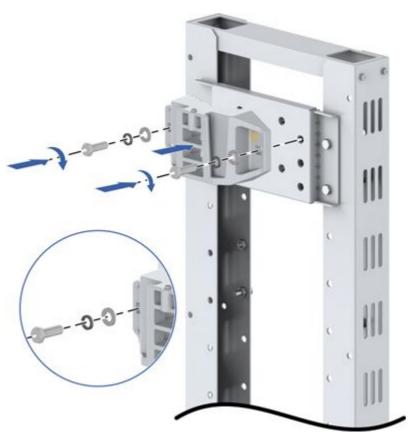
1. Fix the adapter plate to the gantry with four M8 bolts and nuts with a torque of 20 N•m, see Figure 4-32.

Figure 4-32 Installing the Adapter Plate



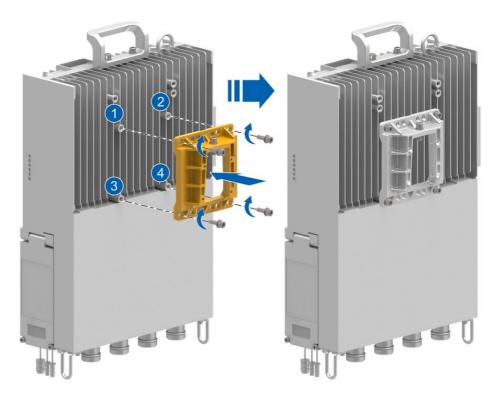
- 1. Bolt
- 2. Adapter plate
- 3. Flat washer
- Spring washer
- 5. Nut
- 2. Secure the fixing clamp to the adapter plate with four M10 bolts and nuts with a torque of 40 N•m, see Figure 4-33.

Figure 4-33 Securing the Fixing Clamp



3. Fix the RRU support to the back of the RRU with four M6 screws with a torque of 8 N•m, see Figure 4-34.

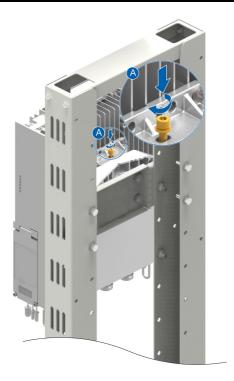
Figure 4-34 Installing the RRU Support



4. Install the RRU on the gantry 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 4-35.

Figure 4-35 Installing the RRU on the Gantry





- End of Steps -

# 4.6 Installing an RRU on a L-shape Support

This procedure describes how to install an RRU on a L-shape support.

#### Context

For a description of the accessories used for installing an RRU on a L-shape support, refer to Table 4-6.