RRU3908 V2

V100R003

Hardware Maintenance Guide

Issue　　01

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Contents

Figures

Tables

About This Document

Purpose

This document describes the routine maintenance items for the RRU3908 hardware, such as equipment maintenance and power-on and power-off operations. It also describes the procedures for replacing components and modules.

Product Version

The following table lists the product version related to this document.

Product Name	Product Version
RRU3908 V2 (hereinafter referred to as RRU3908)	SRAN V100R003
	eRAN V100R002C00

Intended Audience

This document is intended for:

- System engineers
- Site maintainers

Organization

1 Changes in the RRU3908 V2 Hardware Maintenance Guide

This chapter describes the changes in the *RRU3908 V2 Hardware Maintenance Guide*.

2 Maintenance Items for the RRU

The maintenance items for the RRU are equipment surface, equipment cleanliness, and LEDs.

3 Powering On and Powering Off the RRU

This describes how to power on and power off the RRU. When powering on the RRU, you should check the power supply voltage of the RRU and the status of the LEDs on the RRU. When powering off the RRU, you can perform normal power-off or emergency power-off operation based on field requirements.

4 Replacing the RRU

The RRU, a remote radio unit, forms a distributed BTS with the BBU.

5 Replacing the Optical Module

The optical module implements optical-electrical conversion, thus enabling optical transmission between the RRU and other devices. You need to remove the optical cable before replacing the optical module. Replacing the optical cable disrupts the transmission of CPRI signals.

Conventions

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
⚠ DANGER	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazard with a medium or low level of risk, which if not avoided, could result in minor or moderate injury.
⚠ CAUTION	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
☞ TIP	Indicates a tip that may help you solve a problem or save time.
📖 NOTE	Provides additional information to emphasize or supplement important points of the main text.

General Conventions

The general conventions that may be found in this document are defined as follows.

Convention	Description
Times New Roman	Normal paragraphs are in Times New Roman.
Boldface	Names of files, directories, folders, and users are in **boldface**. For example, log in as user **root**.
Italic	Book titles are in *italics*.
Courier New	Examples of information displayed on the screen are in Courier New.

Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
Boldface	The keywords of a command line are in **boldface**.
Italic	Command arguments are in *italics*.
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x | y | ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[x | y | ...]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x | y | ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[x | y | ...]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.

GUI Conventions

The GUI conventions that may be found in this document are defined as follows.

Convention	Description
Boldface	Buttons, menus, parameters, tabs, window, and dialog titles are in **boldface**. For example, click **OK**.
>	Multi-level menus are in **boldface** and separated by the ">" signs. For example, choose **File** > **Create** > **Folder**.

Keyboard Operations

The keyboard operations that may be found in this document are defined as follows.

Format	Description
Key	Press the key. For example, press **Enter** and press **Tab**.
Key 1+**Key 2**	Press the keys concurrently. For example, pressing **Ctrl**+**Alt**+**A** means the three keys should be pressed concurrently.
Key 1, **Key 2**	Press the keys in turn. For example, pressing **Alt**, **A** means the two keys should be pressed in turn.

Mouse Operations

The mouse operations that may be found in this document are defined as follows.

Action	Description
Click	Select and release the primary mouse button without moving the pointer.
Double-click	Press the primary mouse button twice continuously and quickly without moving the pointer.
Drag	Press and hold the primary mouse button and move the pointer to a certain position.

1 Changes in the RRU3908 V2 Hardware Maintenance Guide

This chapter describes the changes in the *RRU3908 V2 Hardware Maintenance Guide*.

01(2010-04-10)

This is the draft release.

2 Maintenance Items for the RRU

The maintenance items for the RRU are equipment surface, equipment cleanliness, and LEDs.

Table 2-1 describes the maintenance items for the RRU.

Table 2-1 Maintenance items for the RRU

Item	Checking Frequency	Operation	Reference Standard
Equipment surface	Monthly or quarterly	Check whether the surface of the equipment is damaged and whether the label on the equipment is legible.	None.
Equipment cleanliness	Monthly or quarterly	Check whether the equipment is clean.	The surface of the equipment is clean
LEDs	Monthly or quarterly	Check whether the LEDs on the equipment are functional.	For details on the status of the LEDs, see RRU Indicators.

3 Powering On and Powering Off the RRU

About This Chapter

This describes how to power on and power off the RRU. When powering on the RRU, you should check the power supply voltage of the RRU and the status of the LEDs on the RRU. When powering off the RRU, you can perform normal power-off or emergency power-off operation based on field requirements.

3.1 Powering On the RRU
You need to power on the RRU and check the running status of the RRU according to the status of the LEDs.

3.2 Powering Off the RRU
This describes how to power off the RRU and check the RRU status. The RRU power-off is classified into normal power-off and emergency power-off.

3.1 Powering On the RRU

You need to power on the RRU and check the running status of the RRU according to the status of the LEDs.

Prerequisite

- The hardware and cables of the RRU are installed.

- If DC power is used, the input voltage ranges from -36 V DC to -57 V DC.

- If AC power is used, the input voltage ranges from 100 V AC to 240 V AC.

Context

⚠ **CAUTION**

The RRU must be powered on within 24 hours after being unpacked. If the RRU needs to be powered off for maintenance, the duration of the power-off state cannot exceed 24 hours

Procedure

Step 1 Power on the RRU.

⚠ **DANGER**

Do not look into the optical module after the RRU is powered on.

Step 2 Wait for three to five minutes, and then check the status of the LEDs on the RRU. For details, see RRU Indicators.

📖 **NOTE**

If RRUs are connected in cascading mode, check the status of the LEDs on each RRU.

Step 3 Take corresponding actions according to the status of the LEDs.

If ...	Then ...
The RRU works properly	End the power-on operation.
The RRU is faulty	Rectify the fault, and then go to **Step 1**.

----End

3.2 Powering Off the RRU

This describes how to power off the RRU and check the RRU status. The RRU power-off is classified into normal power-off and emergency power-off.

Procedure

Step 1 Choose normal power-off or emergency power-off based on different situations.

If...	Then...
The RRU needs to be powered off in the case of an equipment swap or a foreseeable regional blackout	Go to **Step 2** to perform the normal power-off.
An emergency such as an electric spark, smoke, or water immersion occurs in the RRU	Go to **Step 3** to perform the emergency power-off.

Step 2 Set the corresponding MCB on the auxiliary power device for the RRU to **OFF**.

📖 **NOTE**

If RRU modules are cascaded, take the impact on the lower-level RRU module into consideration when you power off an RRU module, so as to avoid disrupting ongoing services.

Step 3 Cut off the external input power of the auxiliary power device for the RRU. If time permits, set the corresponding MCB on the device to **OFF**.

----End

4 Replacing the RRU

The RRU, a remote radio unit, forms a distributed BTS with the BBU.

Prerequisite

- The tools and materials, such as an ESD wrist strap, M4 screwdriver, M6 screwdriver, wrench, waterproof tape, and insulating tape are ready.
- The quantity of faulty RRUs are confirmed, and new RRUs are ready.

Procedure

Step 1 Power off the RRU. For details, see **3.2 Powering Off the RRU**.

**Step 2** Wear an ESD wrist strap or a pair of ESD gloves.

> ⚠ **WARNING**
>
> Take proper ESD protection measures, for example, wear an ESD wrist strap or a pair of ESD gloves, to prevent electrostatic damage to the boards, modules, or electronic components.

Step 3 Loosen the screw for protecting the cabling cavity on the cover plate by using the M4 screwdriver, and then open the cabling cavity of the RRU by lifting the handle on the cover plate.

Step 4 Record all the cable connections on the panel of the board to be replaced.

Step 5 Disconnect the cables from the ports in the cabling cavity and on the bottom panel.

Step 6 Loosen the captive screws on the two contact pieces of the main bracket by using the M4 screwdriver, as shown in **Figure 4-1**.

Figure 4-1 Loosening the captive screws on the main bracket
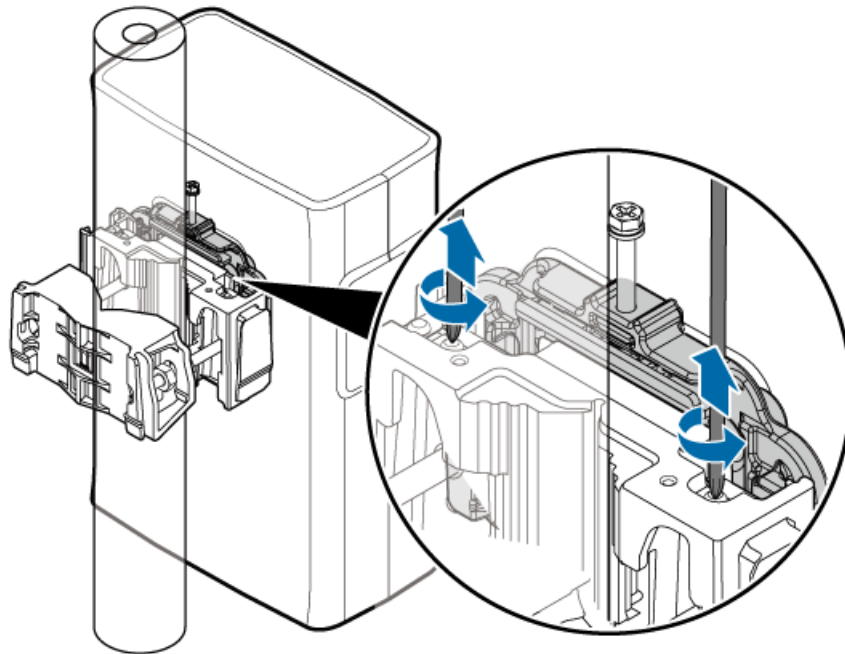
Step 7 Use an M6 screwdriver to tighten the screw on the adapting piece of the RRU, as shown in **Figure 4-2**. Using the screw only for removing the RRU, loosen the connection between the adapting piece and the main bracket, and then lift the bottom of the RRU to remove the RRU, as shown in **Figure 4-3**.
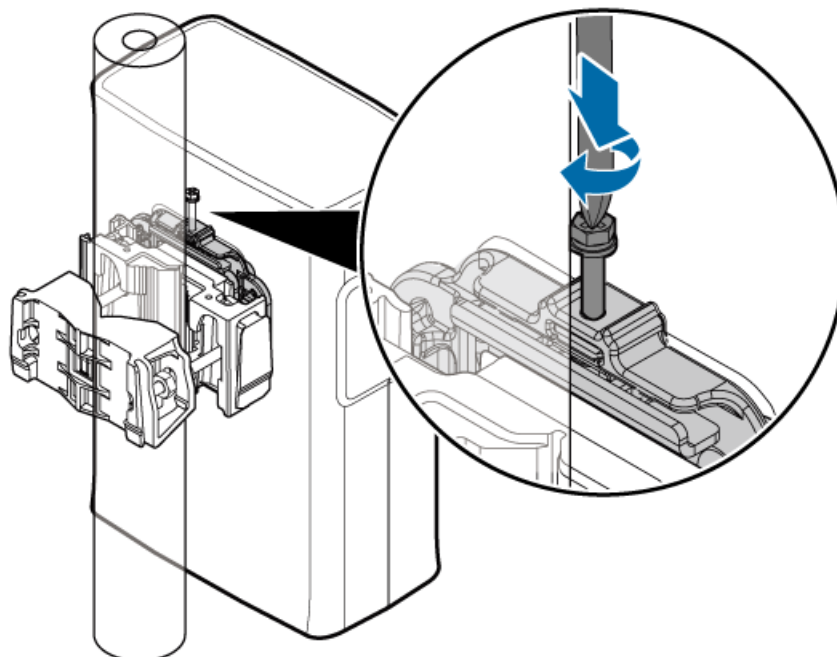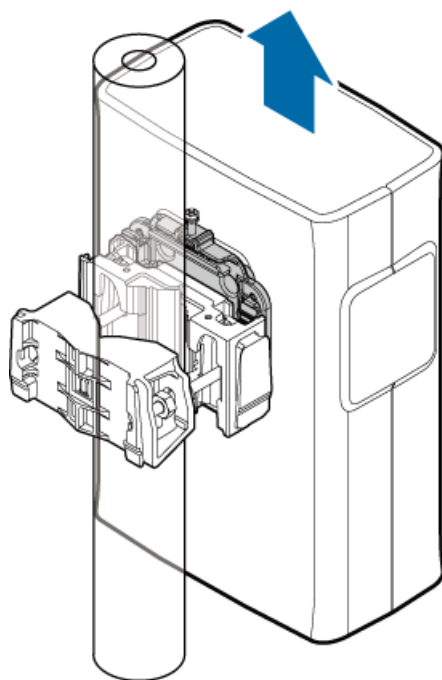
Figure 4-2 Tightening the screws on the adapting piece

Figure 4-3 Lifting the bottom of the RRU

Step 8 Tighten the captive screws on the two contact pieces of the main bracket until the tightening torque reaches 1.4 N·m.

Step 9 Install a new RRU, and then waterproof the RRU.

Step 10 Insert all the cables to be connected to the RRU, and then check that the idle cables trough in the cabling cavity are fitted with waterproof fillers.

Step 11 Close the cover plate of the cabling cavity of the RRU, and then tighten the screw for protecting the cabling cavity on the cover plate until the tightening torque reaches 1.4 N·m.

Step 12 Power on the RRU. For details, see **3.1 Powering On the RRU**.

Step 13 Check whether the new RRU is functional according to the status of the LEDs on the RRU. For details about the LEDs, see RRU Indicators.

Step 14 Take off the ESD wrist strap or gloves, and then pack up all the tools.

----End

Postrequisite

- Place the replaced RRU into the ESD box or bag. Then, place the ESD box or bag into a carton padded with foam or into the packing box of the new RRU.

- Fill in the fault form with the details of the replaced component.

- Contact the local Huawei office to handle the faulty component.

5 Replacing the Optical Module

The optical module implements optical-electrical conversion, thus enabling optical transmission between the RRU and other devices. You need to remove the optical cable before replacing the optical module. Replacing the optical cable disrupts the transmission of CPRI signals.

Prerequisite

- The types and quantity of faulty optical modules are confirmed, and new optical modules are ready.

- The tools and materials, such as an ESD wrist strap or ESD gloves, ESD box or bag, M4 screwdriver, and wrench are ready.

Context

- The optical modules are installed on the CPRI0 and CPRI1 ports of the RRU.

- The optical module is hot-swappable.

- It takes about five minutes to replace the optical module of the RRU, which involves disconnecting the optical cables, removing the faulty optical module, inserting a new optical module, reconnecting the optical cables, and waiting for the CPRI links to resume.

Procedure

Step 1 Wear an ESD wrist strap or a pair of ESD gloves.

WARNING

Take proper ESD protection measures, for example, wear an ESD wrist strap or a pair of ESD gloves, to prevent electrostatic damage to the boards, modules, or electronic components.

Step 2 Loosen the screw for protecting the cabling cavity on the cover plate by using the M4 screwdriver, and then open the cabling cavity of the RRU by lifting the handle on the cover plate.

Step 3 Record the connections of the optical modules and optical cables.

Step 4 Remove the DB15 connector from the alarm cable, press down the latch on the optical connector, and then remove the connector from the faulty optical module.

⚠ **WARNING**

Do not look into the optical fiber with unprotected eyes after the optical cable is removed from the optical fiber.

Step 5 Turn the puller of the optical module outwards, and then pull the puller until the optical module is removed from the RRU.

Step 6 Install the new optical module onto the RRU.

Step 7 Insert the optical connector into the new optical module.

Step 8 According to the status of the LEDs on the CPRI0 and CPRI1 ports, determine whether the CPRI links resume. For details about the LEDs, see RRU Indicators.

Step 9 Reinstall the DB15 connector on the alarm cable, close the cover plate for the cabling cavity of the RRU, and then tighten the protection screw on the cover plate for the cabling cavity of the RRU until the tightening torque reaches 1.4 N·m.

Step 10 Take off the ESD wrist strap or gloves, and then pack up all the tools.

----End

Postrequisite

- Place the replaced optical module into the ESD box or bag. Then, place the ESD box or bag into a carton padded with foam or into the packing box of the new module.

- Fill in the fault form with the details of the replaced component.

- Contact the local Huawei office to handle the faulty optical module.