



RRU3808

Hardware Description

Issue 09

Date 2012-09-13

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About This Document

Purpose

This document provides reference for planning and deploying an RRU3808 (referred to as RRU in this document). It presents the exterior and describes the ports, functions, cable types, connector specifications, and cable connections of the RRU.

Product Versions

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

Product Name	Product Version
DBS3900	V100R004C00 and later versions
DBS3800 WCDMA	V100R013C00 and later versions
DBS3900 WCDMA	V200R013C00 and later versions
DBS3900 LTE	V100R003C00 and later versions

Intended Audience

This document is intended for:

- Base station installation engineers
- System engineers
- Site maintenance engineers

Organization

[1 Changes in the RRU3808 Hardware Description](#)

This chapter describes the changes in the *RRU3808 Hardware Description*.

[2 RRU Introduction](#)

This chapter describes the function and exterior of the RRU as well as the ports and indicators on the RRU.

3 RRU Cables

This chapter describes RRU cables.






4 RRU Auxiliary Devices

This chapter describes RRU auxiliary devices.

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 .
<i>Italic</i>	Book titles are in <i>italics</i> .
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 .
<i>Italic</i>	Command arguments are in <i>italics</i> .
[]	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.

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1 Changes in the RRU3808 Hardware Description

This chapter describes the changes in the *RRU3808 Hardware Description*.

09 (2012-09-13)

This is the ninth official release.

Compared with issue 08 (2012-06-29), this issue includes the following new information:

- [2.3 RRU Technical Specifications](#)

Compared with issue 08 (2012-06-29), this issue includes the following changes:

Topic	Change Description
2.2 RRU Functions	Added the logical structure figure of the RRU.
3.2 RRU PGND Cable	Changed the length information of the cables.
3.3 RRU Power Cable	
3.5 RRU RF Jumper	Added the length information of the cables.

Compared with issue 08 (2012-06-29), no information is deleted from this issue.

08 (2012-06-29)

This is the eighth official release.

Compared with issue 07 (2012-04-16), this issue does not include any new information.

Compared with issue 07 (2012-04-16), this issue includes the following changes:

Topic	Change Description
3.2 RRU PGND Cable	Added the length information of the cables.

Topic	Change Description
3.3 RRU Power Cable	
3.6 RRU AISG Multi-Wire Cable	
3.7 RRU AISG Extension Cable	
3.1 RRU Cable List	Optimized the contents in this section.

Compared with issue 07 (2012-04-16), no information is deleted from this issue.

07 (2012-04-16)

This is the seventh official release.

Compared with issue 06 (2012-01-10), this issue does not include any new information.

Compared with issue 06 (2012-01-10), this issue includes the following change:

Topic	Change Description
3.1 RRU Cable List	Deleted the information of SFP High-Speed Cable for Cascading RRUs.

Compared with issue 06 (2012-01-10), no information is deleted from this issue.

06 (2012-01-10)

This is the sixth official release.

Compared with issue 05 (2011-09-15), this issue includes the following new information:

- [2.2 RRU Functions](#)

Compared with issue 05 (2011-09-15), this issue does not include any changes.

Compared with issue 05 (2011-09-15), no information is deleted from this issue.

05 (2011-09-15)

This is the fifth official release.

Compared with issue 04 (2011-07-30), this issue does not include any new information.

Compared with issue 04 (2011-07-30), this issue includes the following change:

Topic	Change Description
2.4 RRU Ports	Optimized the description of the port for transmitting RET signals.

Compared with issue 04 (2011-07-30), no information is deleted from this issue.

04 (2011-07-30)

This is the fourth official release.

Compared with issue 03 (2011-06-10) and issue 01 (2011-04-10), this issue does not include any new information.

Compared with issue 03 (2011-06-10) and issue 01 (2011-04-10), this issue includes the following change:

Topic	Change Description
3.6 RRU AISG Multi-Wire Cable	Optimized the description of the RRU AISG multi-wire cable.

Compared with issue 03 (2011-06-10) and issue 01 (2011-04-10), no information is deleted from this issue.

03 (2011-06-10)

This is the third official release for eNodeB V100R003C00.

Compared with issue 02 (2011-03-15), this issue does not include any new information.

Compared with issue 02 (2011-03-15), this issue includes the following change:

Topic	Change Description
2.5 RRU Indicators	Optimized the status and meanings of CPRI indicators.

Compared with issue 02 (2011-03-15), no information is deleted from this issue.

02 (2011-03-15)

This is the second official release for eNodeB V100R003C00.

Compared with issue 01 (2011-01-20), this issue does not include any new information.

Compared with issue 01 (2011-01-20), this issue does not include any changes.

Compared with issue 01 (2011-01-20), the following information is deleted from this issue:

Topic	Deletion Cause
Technical informations of the RRU	The contents are the same as that in the <i>eRAN2.1 DBS3900 LTE Product Description</i> .

01

2011-04-10

This is the first official release for MBTS V100R004, WCDMA-NodeB V100R013, and WCDMA-NodeB V200R013.

Compared with draft A (2011-01-30), this issue does not include any modification.

2011-01-20

This is the first official release for eNodeB V100R003C00.

Compared with draft A (2010-12-15), this issue does not include any new information.

Compared with draft A (2010-12-15), this issue includes the following change:

Topic	Change Description
3.2 RRU PGND Cable	Optimized the figure of the RRU PGND cable.

Compared with draft A (2010-12-15), no information is deleted from this issue.

Draft A

2011-01-30

This is the draft for MBTS V100R004, WCDMA-NodeB V100R013, and WCDMA-NodeB V200R013.

Compared with MBTS V100R003C00, WCDMA-NodeB V200R012C00, and WCDMA-NodeB V100R012C00, this issue does not include any new information.

Compared with MBTS V100R003C00, WCDMA-NodeB V200R012C00, and WCDMA-NodeB V100R012C00, this issue includes the following change:

Topic	Change Description
2.4 RRU Ports	Changed the title RRU Panels to RRU Ports.

Compared with MBTS V100R003C00, WCDMA-NodeB V200R012C00, and WCDMA-NodeB V100R012C00, no information is deleted from this issue.

2010-12-15

This is the draft for eNodeB V100R003C00.

2 RRU Introduction

About This Chapter

This chapter describes the function and exterior of the RRU as well as the ports and indicators on the RRU.

[2.1 RRU Exterior](#)

This section describes the exterior and dimensions of an RRU.

[2.2 RRU Functions](#)

This section describes the main functions of the RRU.

[2.3 RRU Technical Specifications](#)

This section describes technical specifications of an RRU, including supported modes, frequency bands, RF specifications, engineering specifications, and antenna capabilities.

[2.4 RRU Ports](#)

This section describes ports on the RRU panels. An RRU has a bottom panel, cabling cavity panel, and indicator panel.

[2.5 RRU Indicators](#)

This section describes six indicators on an RRU. They indicate the running status.

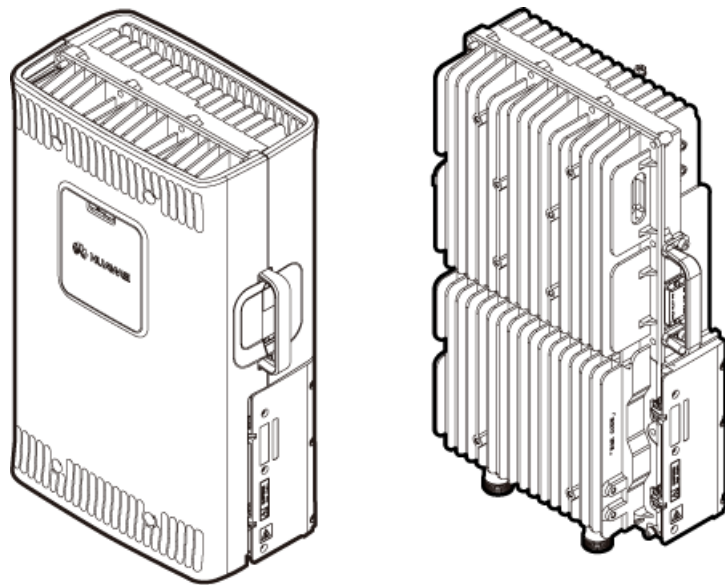
2.1 RRU Exterior

This section describes the exterior and dimensions of an RRU.

Figure 2-1 shows an RRU.

The RRU on the left has a housing, and the RRU on the right does not have a housing.

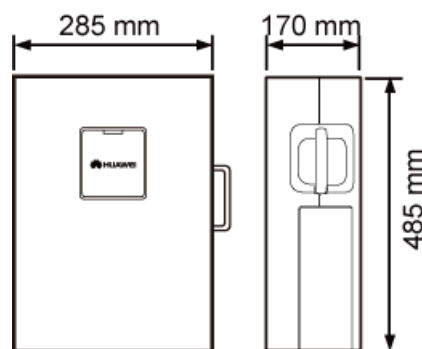
Figure 2-1 RRU exterior



PIR06C0001

Figure 2-2 shows RRU dimensions.

Figure 2-2 RRU dimensions



PIR06C0005

2.2 RRU Functions

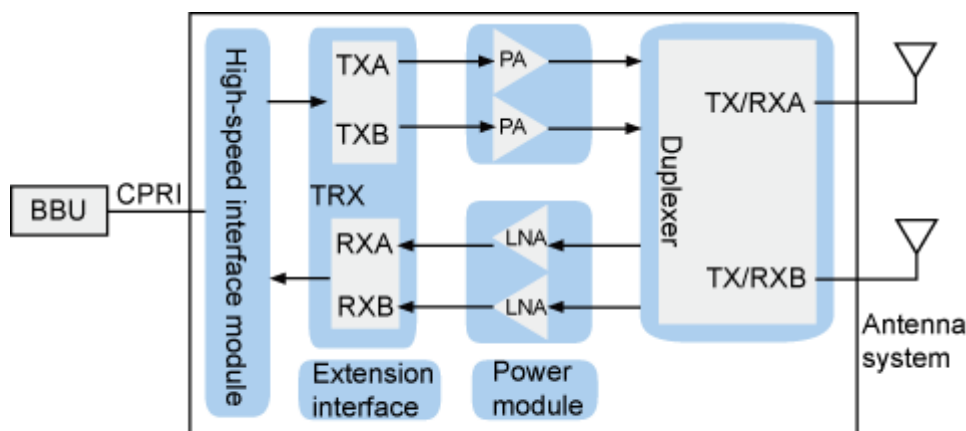
This section describes the main functions of the RRU.

The Remote Radio Unit (RRU) performs the following functions:

- Receives downlink baseband data from the BBU and sends uplink baseband data to the BBU.
- Receives RF signals from the antenna system, down-converts the signals to intermediate frequency (IF) signals, amplifies the IF signals, and performs analog-to-digital conversion. The transmit (TX) channel filters downlink signals, performs digital-to-analog conversion, and up-converts RF signals to the TX band.
- Multiplexes receive (RX) and TX signals on the RF channel, which enables these signals to share the same antenna path. It also filters the RX and TX signals.
- Provides a built-in Bias Tee (BT). The built-in BT couples RF signals and OOK signals and transmits them through the TX/RX port A. The built-in BT also supplies power to the tower mounted amplifier (TMA).

An RRU consists of a high-speed interface unit, signal processing unit, power amplifier, and dual-duplexer. **Figure 2-3** shows the logical structure of the RRU.

Figure 2-3 Logical structure of the RRU



PIR00C0002

2.3 RRU Technical Specifications

This section describes technical specifications of an RRU, including supported modes, frequency bands, RF specifications, engineering specifications, and antenna capabilities.

For details about technical specifications of an RRU, see section "Technical Specifications of RRUs" in the *3900 Series Base Station Technical Description*.

2.4 RRU Ports

This section describes ports on the RRU panels. An RRU has a bottom panel, cabling cavity panel, and indicator panel.

Figure 2-4 shows the ports on the RRU panels.

Figure 2-4 Ports on the RRU panels

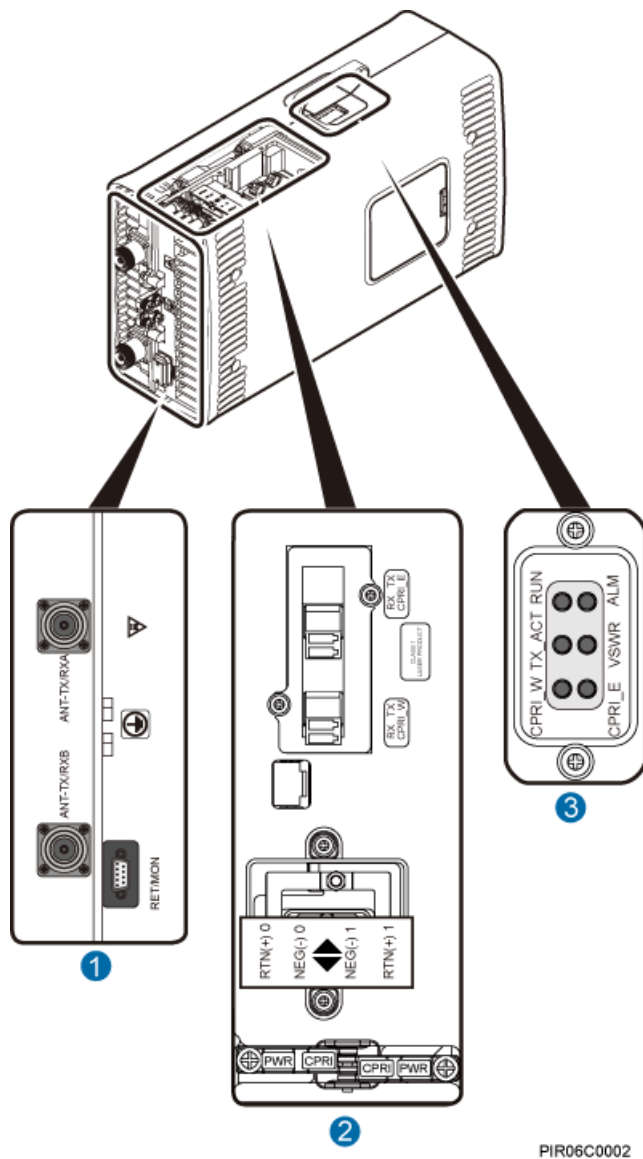


Table 2-1 describes ports and indicators on the RRU panels.

Table 2-1 Ports and indicators on the RRU panels

Item	Silkscreen	Description
(1) Ports at the bottom	ANT-TX/RXA	TX/RX port A, supporting RET signal transmission
	ANT-TX/RXB	TX/RX port B
	RET/MON	Communication port for the RET antenna, supporting RET signal transmission
(2) Ports in the cabling cavity	CPRI_E	Eastbound optical port
	CPRI_W	Westbound optical port
	RTN(+) 0	Main power supply socket
	NEG(-) 0	
	RTN(+) 1	Power supply socket for cascaded RRUs
	NEG(-) 1	
(3) Indicators	RUN	For details, see 2.5 RRU Indicators .
	ALM	
	TX_ACT	
	VSWR	
	CPRI_W	
	CPRI_E	

 **NOTE**

The RET ports to be used are determined by the software configuration.

2.5 RRU Indicators

This section describes six indicators on an RRU. They indicate the running status.

For detailed positions of RRU indicators, see [2.4 RRU Ports](#).

[Table 2-2](#) describes RRU indicators.

Table 2-2 RRU indicators

Silkscreen	Color	Status	Description
RUN	Green	Steady on	There is power supply, but the module is faulty.

Silkscreen	Color	Status	Description
		Steady off	There is no power supply, or the module is faulty.
		Blinking (on for 1s and off for 1s)	The module is running properly.
		Blinking (on for 0.125s and off for 0.125s)	Software is being loaded to the module, or the module is not started.
ALM	Red	Steady on	Alarms are generated, and the module must be replaced.
		Blinking (on for 1s and off for 1s)	Alarms are generated. The alarms may be caused by the faults on the related boards or ports. Therefore, you need to locate the fault before deciding whether to replace the module.
		Steady off	No alarm is generated.
TX_ACT	Green	Steady on	The module is running properly with TX channels enabled or the software is being loaded without RRU running.
		Blinking (on for 1s and off for 1s)	The module is running properly with TX channels disabled.
VSWR	Red	Steady off	No Voltage Standing Wave Ratio (VSWR) alarm is generated.
		Steady on	VSWR alarms are generated on the ANT-TX/RXA port.
		Blinking (on for 1s and off for 1s)	VSWR alarms are generated on the ANT-TX/RXB port.
		Blinking (on for 0.125s and off for 0.125s)	VSWR alarms are generated on the ANT-TX/RXA and ANT-TX/RXB ports.
CPRI_W	Red or green	Steady green	The CPRI link is functioning properly.
		Steady red	An optical module fails to transmit or receive signals because the optical module is faulty or the fiber optic cable is broken.
		Blinking red (on for 1s and off for 1s)	The CPRI link is out of lock because of failure in clock lock between two modes or mismatched data rates over CPRI ports.
		Steady off	The optical module cannot be detected, or the CPRI cable is not connected properly.

Silkscreen	Color	Status	Description
CPRI_E	Red or green	Steady green	The CPRI link is functioning properly.
		Steady red	An optical module fails to transmit or receive signals because the optical module is faulty or the fiber optic cable is broken.
		Blinking red (on for 1s and off for 1s)	The CPRI link is out of lock because of failure in clock lock between two modes or mismatched data rates over CPRI ports.
		Steady off	The optical module cannot be detected, or the CPRI cable is not connected properly.

3 RRU Cables

About This Chapter

This chapter describes RRU cables.

[3.1 RRU Cable List](#)

This section describes RRU cable connections.

[3.2 RRU PGND Cable](#)

An RRU PGND cable connects an RRU and a ground bar, ensuring the proper grounding of the RRU. The maximum length of the RRU PGND cable is 8 m (26.25 ft).

[3.3 RRU Power Cable](#)

The RRU power cable is a -48 V DC shielded cable. It feeds -48 V DC power to an RRU. The default length of an RRU power cable is 50 m (164.04 ft).

[3.4 CPRI Fiber Optic Cable](#)

CPRI fiber optic cables are classified into multi-mode fiber optic cables and single-mode fiber optic cables. They transmit CPRI signals.

[3.5 RRU RF Jumper](#)

The 1/2" RRU RF jumper transmits and receives RF signals between an RRU and an antenna. A fixed-length RF jumper used by an RRU is 2 m (6.56 ft), 3 m (9.84 ft), 4 m (13.12 ft), 6 m (19.68 ft), or 10 m (32.81 ft) long. A variable-length RF jumper used by an RRU has a maximum length of 10 m (32.81 ft).

[3.6 RRU AISG Multi-Wire Cable](#)

An RRU AISG multi-wire cable connects an RRU and an RCU to transmit control signals from a base station to an RET antenna. When the RRU is connected to the RET antenna, an AISG multi-wire cable transmits RS485 signals. The length of the AISG multi-wire cable is 5 m (16.40 ft).

[3.7 RRU AISG Extension Cable](#)

When the distance between an RRU and an RCU is longer than 5 m (16.4 ft), an AISG multi-wire cable is not long enough to connect the RRU and the RCU. In this case, an AISG extension cable is used to extend the AISG multi-wire cable for transmitting RS485 signals. The length of the AISG extension cable is 15 m (49.21 ft).

3.1 RRU Cable List

This section describes RRU cable connections.

Table 3-1 lists RRU cables.

Table 3-1 RRU cables

Cable	One End		The Other End	
	Connector	Installation Position	Connector	Installation Position
3.2 RRU PGND Cable	OT terminal (M6, 16 mm ² or 0.025 in. ²)	Ground terminal on the RRU	OT terminal (M8, 16 mm ² or 0.025 in. ²)	Ground terminal on the ground bar
3.3 RRU Power Cable	OT terminal (M4, 3.3 mm ² or 0.005 in. ²), complying with North American standards OT terminal (M4, 4 mm ² or 0.006 in. ²), complying with European standards	NEG(-) and RTN(+) ports on the RRU	Tool-less female connector (pressfit type)	One of RRU0 to RRU5 ports on the EPU or EPS
			OT terminal (M4, 3.3 mm ² or 0.005 in. ²), complying with North American standards	One of LOAD0 to LOAD5 ports on the DCDCU
			OT terminal (M4, 4 mm ² or 0.006 in. ²), complying with European standards	One of LOAD4 to LOAD9 ports on the PDU
3.4 CPRI Fiber Optic Cable	DLC connector	CPRI_W port on the RRU	DLC connector	UMTS only (UO) mode: CPRI port on the WBBP in the BBU
		CPRI_E port on the RRU		LTE only (LO) mode: CPRI port on the LBBP in the BBU
3.5 RRU RF Jumper	DIN male connector	ANT-TX/RXA or ANT-TX/RXB port on the RRU	DIN male connector	Antenna system

Cable	One End		The Other End	
	Connector	Installation Position	Connector	Installation Position
3.6 RRU AISG Multi-Wire Cable	Waterproofed DB9 male connector	RET/MON port on the RRU	Standard AISG female connector	Standard AISG male connector on the RCU or on the AISG extension cable
3.7 RRU AISG Extension Cable	Standard AISG male connector	Standard AISG female connector on the AISG multi-wire cable	Standard AISG female connector	Standard AISG male connector on the RCU

3.2 RRU PGND Cable

An RRU PGND cable connects an RRU and a ground bar, ensuring the proper grounding of the RRU. The maximum length of the RRU PGND cable is 8 m (26.25 ft).

Exterior

An RRU PGND cable is green or green and yellow with a cross-sectional area of 16 mm² (0.025 in.²). This cable has an OT terminal at each end. **Figure 3-1** shows an RRU PGND cable.

Figure 3-1 PGND cable



(1) OT terminal (M6, 16 mm² or 0.025 in.²)

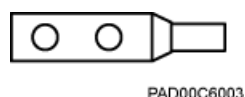
(2) OT terminal (M8, 16 mm² or 0.025 in.²)

NOTE

- If the customer prepares the PGND cable, a copper-core cable with a cross-sectional area of 16 mm² (0.025 in.²) or larger is recommended.
- One OT terminal must be added to each end of the PGND cable onsite.
- You can determine the color of the cable and whether to use corresponding two-hole OT terminals based on local regulations.

Figure 3-2 shows a two-hole OT terminal.

Figure 3-2 Two-hole OT terminal



3.3 RRU Power Cable

The RRU power cable is a -48 V DC shielded cable. It feeds -48 V DC power to an RRU. The default length of an RRU power cable is 50 m (164.04 ft).

Exterior

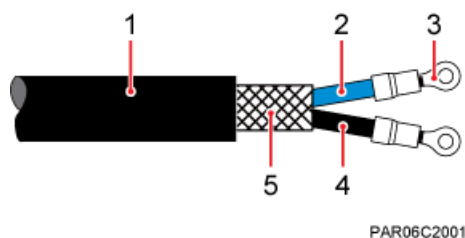
NOTE

Quote the corresponding extension package if you want to purchase RRU power cables of the following lengths:

- Longer than 50 m (164.04 ft) and shorter than or equal to 100 m (328.08 ft)
- Longer than 100 m (328.08 ft) and shorter than or equal to 150 m (492.12 ft)

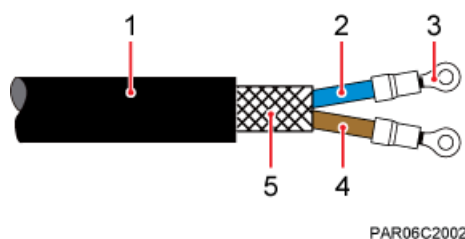
There are two types of RRU power cables in terms of cross-sectional areas: 3.3 mm² (0.005 in.²) (12 AWG) complying with North American standards and 4 mm² (0.006 in.²) complying with European standards, as shown in [Figure 3-3](#) and [Figure 3-4](#) respectively. An OT terminal needs to be added to each end of the RRU power cable onsite.

Figure 3-3 RRU power cable (1)



- | | | |
|--------------------------|------------------|-----------------|
| (1) -48 V DC power cable | (2) NEG(-) | (3) OT terminal |
| (4) RTN(+) | (5) Shield layer | - |

Figure 3-4 RRU power cable (2)



- | | | |
|--------------------------|------------|-----------------|
| (1) -48 V DC power cable | (2) NEG(-) | (3) OT terminal |
|--------------------------|------------|-----------------|

(4) RTN(+) (5) Shield layer -

Pin Assignment

The DC power input cable is a 2-wire cable. [Table 3-2](#) and [Table 3-3](#) describe the pin assignment for the wires of a DC power input cable.

Table 3-2 Pin assignment for the wires of a DC power input cable (North American Standards)

Wire	Color
NEG(-)	Blue
RTN(+)	Black

Table 3-3 Pin assignment for the wires of a DC power input cable (European Standards)

Wire	Color
NEG(-)	Blue
RTN(+)	Brown

3.4 CPRI Fiber Optic Cable

CPRI fiber optic cables are classified into multi-mode fiber optic cables and single-mode fiber optic cables. They transmit CPRI signals.

NOTE

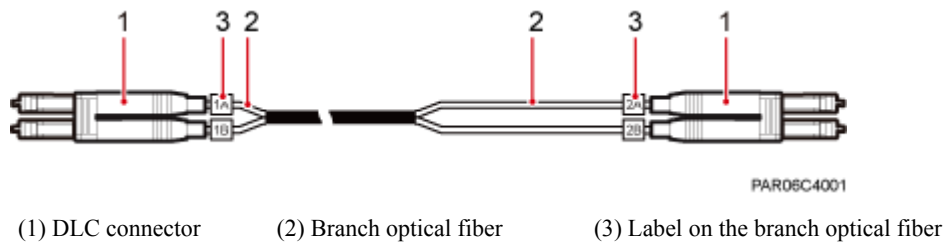
- An ODF can be used when the distance between a BBU and an RRU or the distance between interconnected RRUs is longer than 100 m (328.08 ft).
- A single-mode fiber optic cable connects a BBU to an ODF or connects an ODF to an RRU.

The maximum length of a CPRI fiber optic cable is 150 m (492.12 ft) When the fiber optical cable connects a BBU and an RRU. The length of a CPRI fiber optic cable is 10 m (32.81 ft) when the fiber optical cable connects two RRUs.

Exterior

[Figure 3-5](#) shows a fiber optic cable between a BBU and an RRU or between RRUs, with a DLC connector at each end.

Figure 3-5 Fiber optical cable between a BBU and an RRU or between RRUs



When a fiber optical cable connects a BBU and an RRU, the optical fibers on the BBU side and RRU side are 0.34 m (0.013 in.) and 0.03 m (0.0012 in.) long, respectively. When a fiber optical cable connects two RRUs, the optical fibers on both RRU sides are 0.03 m (0.0012 in.) long.

Figure 3-6 shows the connections for a CPRI fiber optic cable between a BBU and an RRU.

Figure 3-6 Connections for a CPRI fiber optic cable between a BBU and an RRU

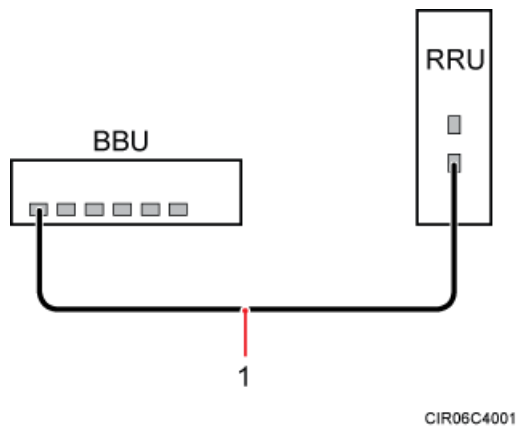
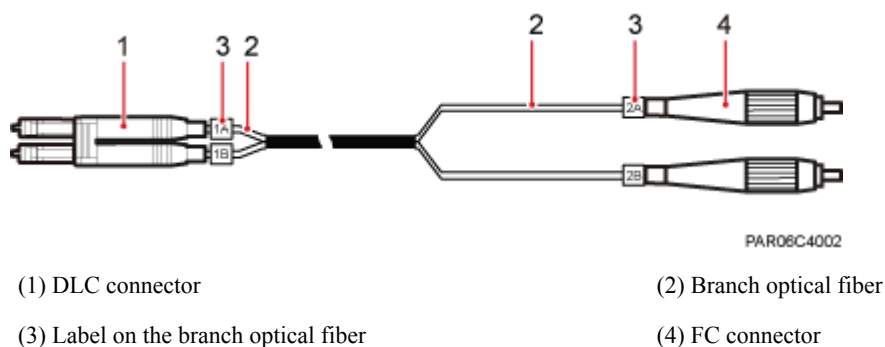


Figure 3-7 shows a single-mode fiber optic cable between a BBU and an ODF or between an ODF and an RRU, with a DLC connector at one end and an FC connector at the other end.

Figure 3-7 Single-mode fiber optic cable between a BBU and an ODF or between an ODF and an RRU

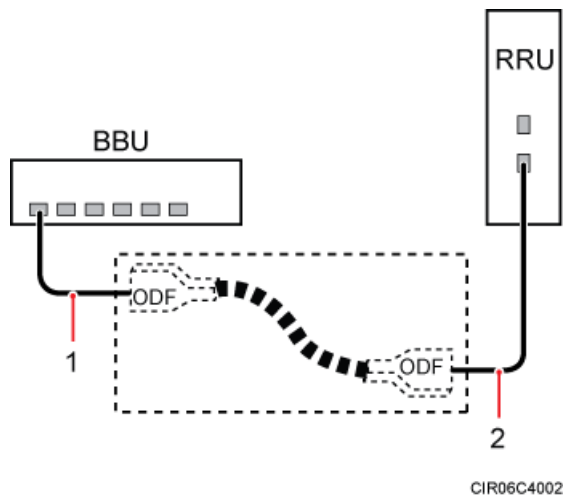


When a single-mode fiber optic cable connects a BBU and an ODF, the optical fibers on the BBU side and ODF side are 0.34 m (0.013 in.) and 0.8 m (0.031 in.) long, respectively.

When a single-mode fiber optic cable connects an ODF and an RRU, the optical fibers on the RRU side and ODF side are 0.03 m (0.013 in.) and 0.8 m (0.031 in.) long, respectively.

Figure 3-8 shows the connections for a single-mode CPRI fiber optic cable between a BBU and an ODF or between an ODF and an RRU.

Figure 3-8 Connections for a single-mode fiber optic cable between a BBU and an ODF or between an ODF and an RRU



(1) Single-mode CPRI fiber optic cable between a BBU and an ODF
(2) Single-mode CPRI fiber optic cable between an ODF and an RRU

NOTE

A CPRI fiber optic cable must be connected to optical modules in the CPRI ports. A multi-mode fiber optic cable and single-mode fiber optic cable are connected to multi-mode optical modules and single-mode optical modules, respectively.

Pin Assignment

Table 3-4, **Table 3-5**, and **Table 3-6** describe the labels on and recommended connections for fiber optic cables of an optical assembly.

Table 3-4 Labels on and recommended connections for optical fibers of an optical assembly between a BBU and an RRU

Label	Connected To
1A	CPRI RX port on the RRU
1B	CPRI TX port on the RRU
2A	TX port on the BBU
2B	RX port on the BBU

Table 3-5 Labels on and recommended connections for optical fibers of a fiber optic cable between RRUs

Label	Connected To
1A	CPRI RX port on RRU 1
1B	CPRI TX port on RRU 1
2A	CPRI TX port on RRU 0
2B	CPRI RX port on RRU 0

Table 3-6 Labels on and recommended connections for optical fibers of a single-mode optical assembly between a BBU and an ODF or between an ODF and an RRU

Label	Connected To
1A	RX port on the BBU or CPRI RX port on the RRU
1B	TX port on the BBU or CPRI TX port on the RRU
2A	ODF
2B	ODF

3.5 RRU RF Jumper

The 1/2" RRU RF jumper transmits and receives RF signals between an RRU and an antenna. A fixed-length RF jumper used by an RRU is 2 m (6.56 ft), 3 m (9.84 ft), 4 m (13.12 ft), 6 m (19.68 ft), or 10 m (32.81 ft) long. A variable-length RF jumper used by an RRU has a maximum length of 10 m (32.81 ft).

NOTE

- When the distance between an RRU and an antenna is within 10 m (32.81 ft), connect one end of the RF jumper to the ANT-TX/RXA or ANT-TX/RXB port at the RRU bottom, and connect the other end to the antenna.
- When the distance between the RRU and the antenna exceeds 10 m (32.81 ft), it is recommended that connect one end of the RF jumper to the ANT-TX/RXA or ANT-TX/RXB port at the RRU bottom, and connect the other end to the feeder. Then, connect the other end of the feeder to the antenna.
- If the customer prepares the RF jumper, the length of the RF jumper should be as short as possible and not exceed 2 m (6.56 ft).

Exterior

An RF jumper has a DIN male connector at one end and a customized connector at the other end.

Figure 3-9 shows an RF jumper with a DIN male connector at each end.

Figure 3-9 RF jumper



(1) DIN male connector

3.6 RRU AISG Multi-Wire Cable

An RRU AISG multi-wire cable connects an RRU and an RCU to transmit control signals from a base station to an RET antenna. When the RRU is connected to the RET antenna, an AISG multi-wire cable transmits RS485 signals. The length of the AISG multi-wire cable is 5 m (16.40 ft).

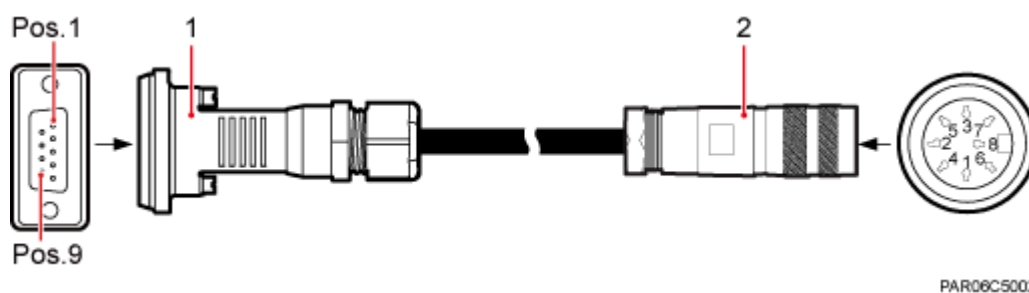
NOTE

An RCU is a driving motor used for the phase shifter in the RET antenna. It receives control commands from a base station and runs the commands to drive the stepper motor. Using a gear, the stepper motor drives the adjustable phase shifter in the antenna and changes the downtilt angle.

Exterior

An AISG multi-wire cable has a waterproofed DB9 male connector at one end and a standard AISG female connector at the other end, as shown in [Figure 3-10](#).

Figure 3-10 AISG multi-wire cable



(1) Waterproofed DB9 male connector

(2) Standard AISG female connector

Pin Assignment

[Table 3-7](#) describes the pin assignment for the wires of an AISG multi-wire cable.

Table 3-7 Pin assignment for the wires of an AISG multi-wire cable

X1 End (Pin of the Waterproofed DB9 Male Connector)	X2 End (Pin of the Standard AISG Female Connector)	Color	Type	Description
X1.1	X2.1	White and blue	Twisted pair	+12 V
		Blue		
X1.3	X2.3	White and orange	Twisted pair	RS485 B
X1.5	X2.5	Orange		RS485 A
X1.4	X2.4	White and green	-	GND
X1.9 and X1.4 are interconnected.	-	-	-	GND
-	X2.1 and X2.6 are interconnected.	-	-	+12 V
-	X2.4 and X2.7 are interconnected.	-	-	GND

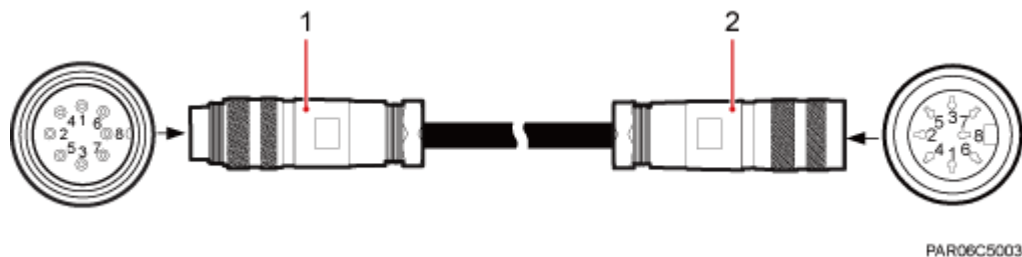
3.7 RRU AISG Extension Cable

When the distance between an RRU and an RCU is longer than 5 m (16.4 ft), an AISG multi-wire cable is not long enough to connect the RRU and the RCU. In this case, an AISG extension cable is used to extend the AISG multi-wire cable for transmitting RS485 signals. The length of the AISG extension cable is 15 m (49.21 ft).

Exterior

An AISG multi-wire cable has a standard AISG male connector at one end and a standard AISG female connector at the other end, as shown in [Figure 3-11](#).

Figure 3-11 AISG extension cable



(1) Standard AISG male connector

(2) Standard AISG female connector

Pin Assignment

Table 3-8 describes the pin assignment for the wires of an AISG extension cable.

Table 3-8 Pin assignment for the wires of an AISG extension cable

X1 End (Pin of the Standard AISG Male Connector)	X2 End (Pin of the Standard AISG Female Connector)	Color	Type	Description
X1.1	X2.1	White and blue	Twisted pair	+12 V
		Blue		
X1.7	X2.7	White and orange	Twisted pair	DC Return A
		Orange		
X1.3	X2.3	White and green	Twisted pair	RS485 B
X1.5	X2.5	Green		RS485 A
X1.6	X2.6	White and brown	Twisted pair	+24 V
		Brown		

4 RRU Auxiliary Devices

About This Chapter

This chapter describes RRU auxiliary devices.

4.1 IFS06

An Indoor Floor installation Support (IFS06) is used for installing indoor RRUs.

4.2 OCB

An Outdoor Cable Conversion Box (OCB) interconnects cables of different core diameters. Power cables shipped with RRUs cannot support long-distance power supply. Therefore, when power supply is far from the equipment, cables with large core diameters are used, and an OCB connects these cables and RRU power cables.

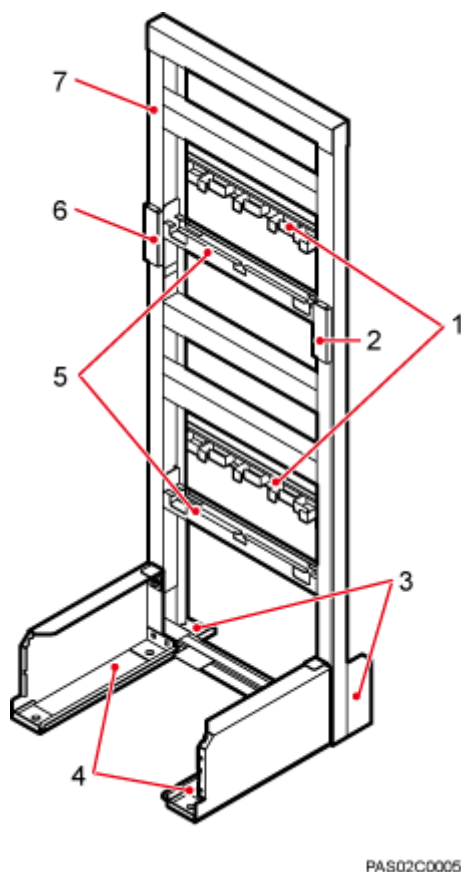
4.1 IFS06

An Indoor Floor installation Support (IFS06) is used for installing indoor RRUs.

Exterior

Figure 4-1 shows an IFS06.

Figure 4-1 IFS06



(1) Cable tray	(2) Ground bar 2	(3) Rear foot	(4) Front foot
(5) Adjustable beam	(6) Ground bar 1	(7) Main frame	-

Function

- It can be installed on the ground.
- It supports the installation of six RRUs.
- The upper and lower adjustable beams on an IFS06 can be moved up and down to fit for heights of RRUs.

Specifications

Table 4-1 describes IFS06 specifications.

Table 4-1 IFS06 specifications

Item	Specification
Dimensions (H x W x D)	1730 mm (79 in.) x 600 mm (23.62 in.) x 600 mm (23.62 in.)
Weight	45 kg (99.23 lb)

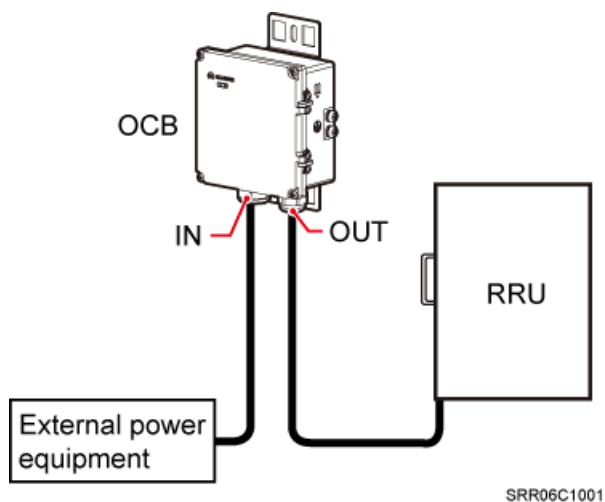
4.2 OCB

An Outdoor Cable Conversion Box (OCB) interconnects cables of different core diameters. Power cables shipped with RRUs cannot support long-distance power supply. Therefore, when power supply is far from the equipment, cables with large core diameters are used, and an OCB connects these cables and RRU power cables.

Application Scenario of an OCB

Figure 4-2 shows the application scenario of an OCB.

Figure 4-2 Application scenario of an OCB



For details about the structure, functions, installation, and maintenance of an OCB, see the *OCB User Guide*.