



BTS3202E LTE

V100R004C00

Hardware Description

Issue **Draft A**

Date **2011-07-30**

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About This Document

Purpose

This document provides reference for planning and deploying an BTS3202E. It presents the exterior and describes the ports, functions, cable types, connector specifications, and cable connections of the BTS3202E.

Product Version

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

Product Name	Product Version
BTS3202E LTE (referred to as the BTS3202E in this document)	V100R004C00

Intended Audience

This document is intended for:

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

Organization

[1 Changes in the BTS3202E LTE Hardware Description](#)

This chapter describes the changes in the *BTS3202E LTE Hardware Description*.

[2 BTS3202E Overview](#)

This chapter presents the BTS3202E exterior and describes the ports and indicators on the BTS3202E.

[3 BTS3202E Cables](#)

This chapter provides BTS3202E cable exteriors and describes the pin assignments for the wires of the cables and installation positions for the cables.

4 BTS3202E Auxiliary Devices

This chapter describes the BTS3202E 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 BTS3202E LTE Hardware Description

This chapter describes the changes in the *BTS3202E LTE Hardware Description*.

Draft A (2011-07-30)

This is the draft.

2 BTS3202E Overview

About This Chapter

This chapter presents the BTS3202E exterior and describes the ports and indicators on the BTS3202E.

[2.1 BTS3202E Exterior](#)

The BTS3202E has a modular design with its ports on the bottom.

[2.2 BTS3202E Ports](#)

The BTS3202E ports are on the bottom, and the indicators are in the indicator on the front.

[2.3 BTS3202E Indicators](#)

A BTS3202E has six indicators, which indicate the running status of the BTS3202E.

2.1 BTS3202E Exterior

The BTS3202E has a modular design with its ports on the bottom.

Figure 2-1 shows the BTS3202E. The BTS3202E on the left has a housing, and the BTS3202E on the right does not have a housing. The camouflage shell is optional.

Figure 2-1 BTS3202E

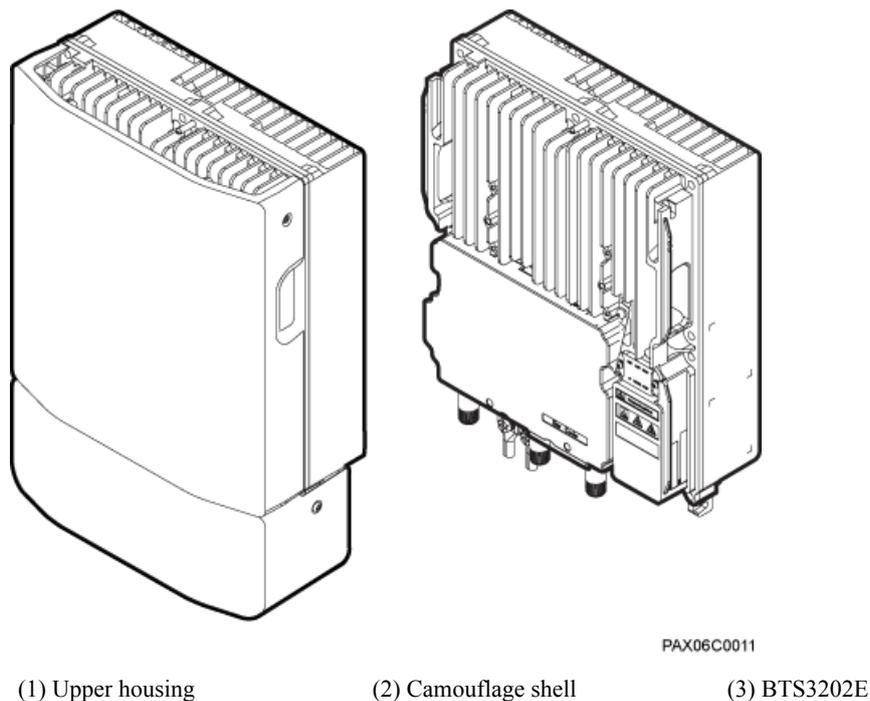


Figure 2-2 shows the dimensions of a BTS3202E without a housing, and **Figure 2-3** shows the dimensions of a BTS3202E with a housing.

Figure 2-2 Dimensions of a BTS3202E without a housing

 **NOTE**

The figure shows the dimensions of the two types of BTS3202E.

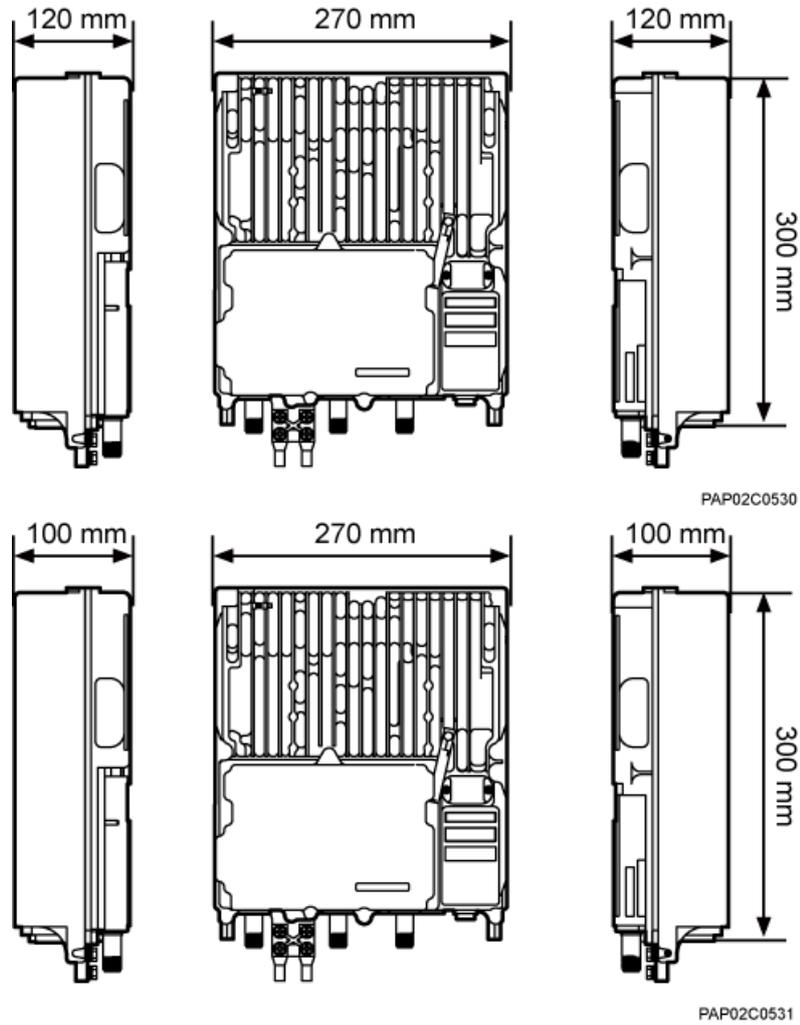
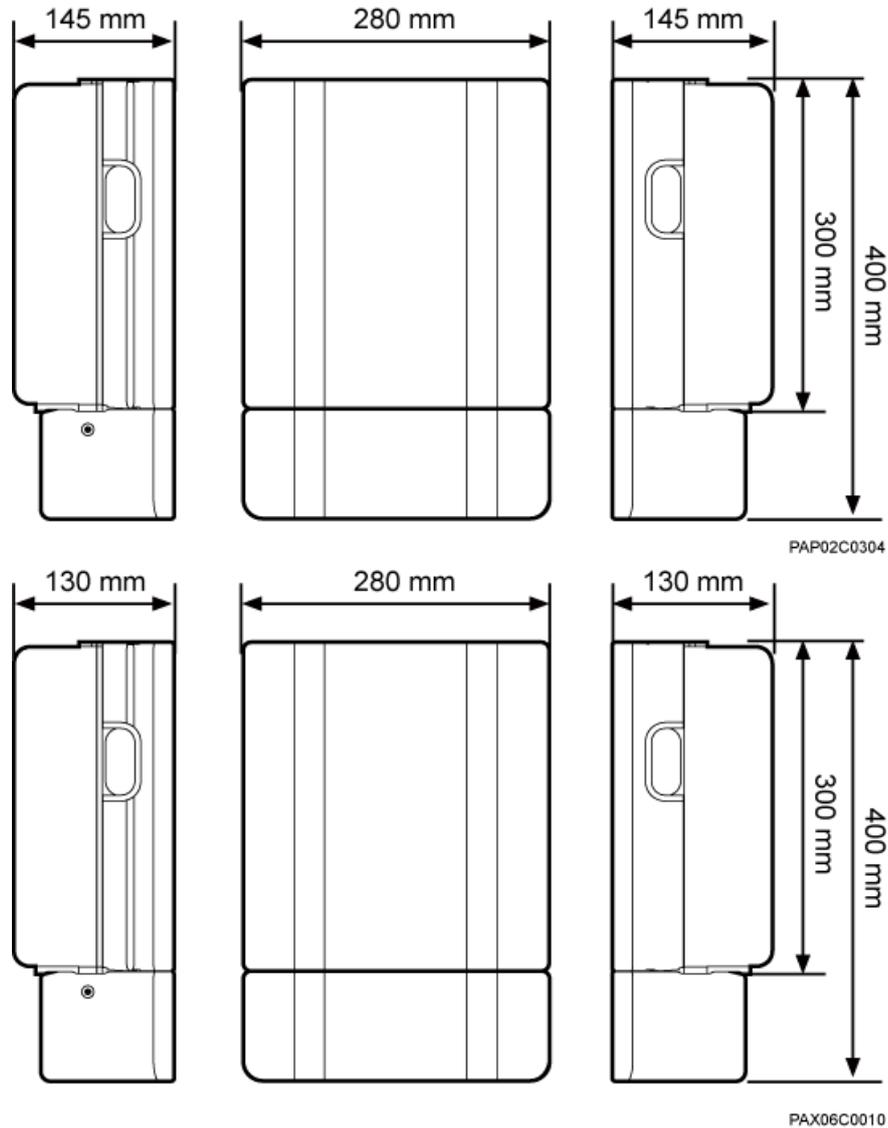


Figure 2-3 Dimensions of a BTS3202E with a housing and antennas

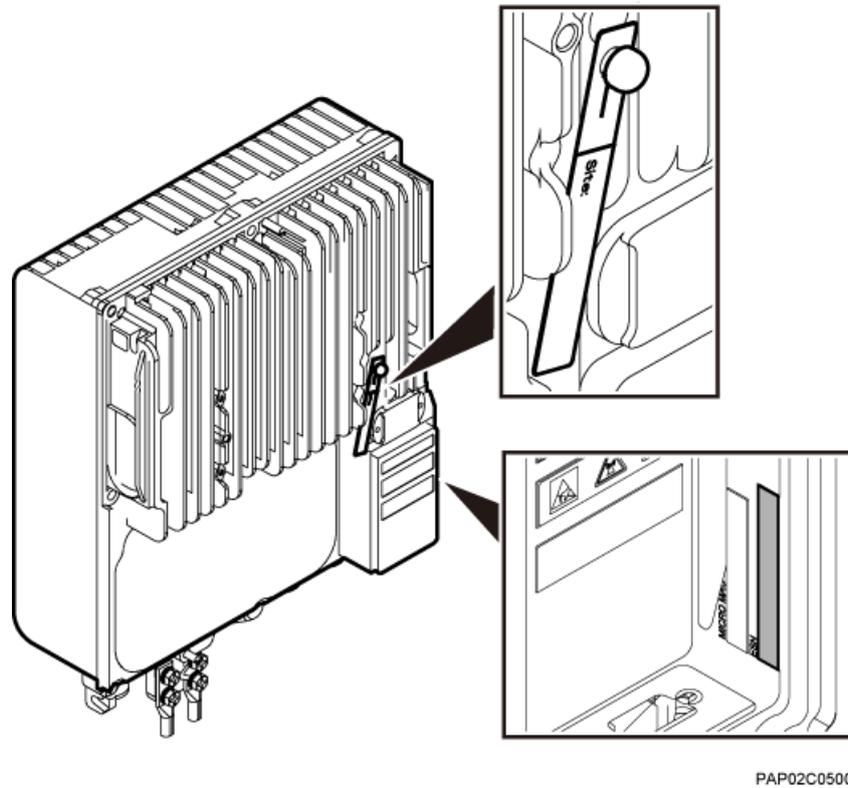
NOTE

The figure shows the dimensions of the two types of BTS3202E.



The electronic serial number (ESN) identifies a unique network element (NE), which is used during commissioning. The ESN is printed on a label, as shown in [Figure 2-4](#).

Figure 2-4 ESN position

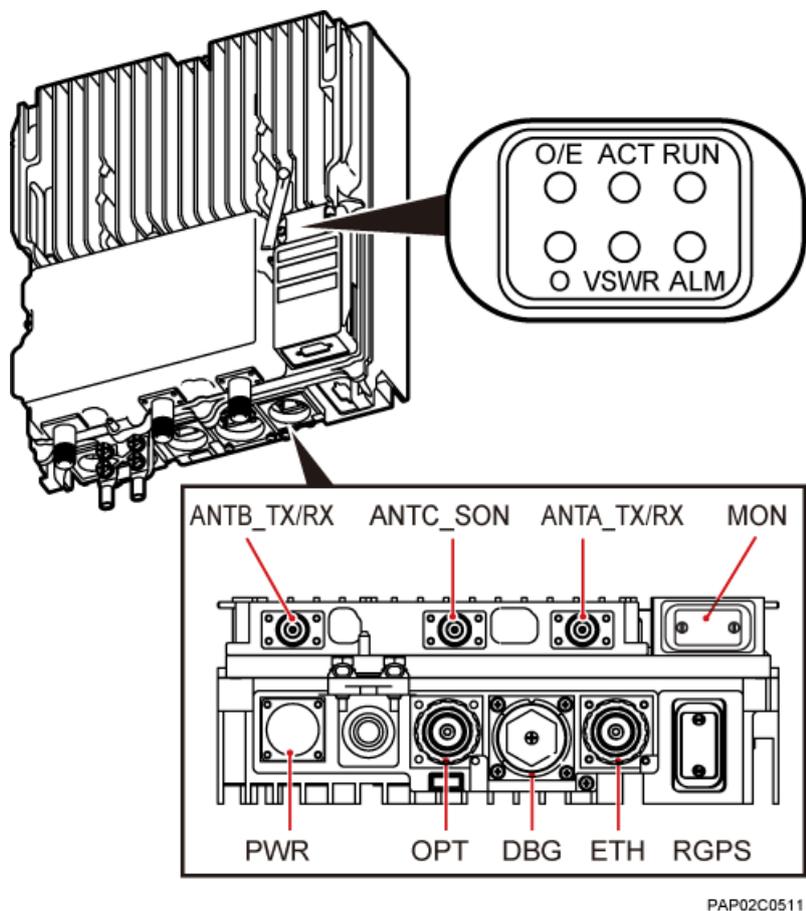


2.2 BTS3202E Ports

The BTS3202E ports are on the bottom, and the indicators are in the indicator on the front.

Figure 2-5 shows the positions of the BTS3202E ports and indicators.

Figure 2-5 Positions of the BTS3202E ports and indicators



PAP02C0511

Table 2-1 describes the BTS3202E ports and indicators.

Table 2-1 BTS3202E ports and indicators

Item	Label	Description
Ports	ANTA_TX/RX	TX/RX port A
	ANTB_TX/RX	TX/RX port B
	ANTC_SON	SON antenna port
	ETH	FE/GE electrical port
	OPT	FE/GE optical port
	RGPS	RGPS port
	MON	Environment monitoring port for an RS485 input and four dry contact inputs.
	PWR	Power supply port

Item	Label	Description
	DBG	Port for commissioning, clock test, or software upgrade
Indicators	RUN	For details, see 2.3 BTS3202E Indicators .
	ALM	
	ACT	
	VSWR	
	O/E	
	O	

2.3 BTS3202E Indicators

A BTS3202E has six indicators, which indicate the running status of the BTS3202E.

For details about the indicator positions on the BTS3202E panel, see [2.2 BTS3202E Ports](#).

[Table 2-2](#) describes BTS3202E indicators.

Table 2-2 BTS3202E indicators

Indicator	Color	Status	Description
RUN	Green	Steady on	There is power supply, but the BTS3202E is faulty.
		Off	There is no power supply, or the BTS3202E is faulty.
		Blinking (on for 1s and off for 1s)	The BTS3202E is working properly.
		Blinking (on for 0.125s and off for 0.125s)	Software is being loaded to the BTS3202E, or the BTS3202E is not started.
ALM	Red	Steady on	Alarms are generated, and the BTS3202E 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, the necessity for BTS3202E replacement is uncertain.
		Off	No alarm is generated.
ACT	Green	Steady on	The BTS3202E is working properly with TX channels enabled.

Indicator	Color	Status	Description
		Blinking (on for 1s and off for 1s)	The BTS3202E is working properly with TX channels disabled.
VSWR	Red	Off	No VSWR alarm is generated.
		Blinking red (on for 1s and off for 1s)	VSWR alarms are generated on the ANTB_TX/RX port.
		Steady red	VSWR alarms are generated on the ANTA_TX/RX port.
		Blinking red (on for 0.125s and off for 0.125s)	VSWR alarms are generated on the ANTA_TX/RX and ANTB_TX/RX ports.
O/E	Green	Steady on	The ETH port is connected properly.
		Blinking (on for 0.125s and off for 0.125s)	The ETH port is transmitting or receiving data.
		Off	The ETH port is connected improperly.
O	Green	Steady on	The OPT port is connected properly.
		Blinking (on for 0.125s and off for 0.125s)	The OPT port is transmitting or receiving data.
		Off	The OPT port is connected improperly.

3 BTS3202E Cables

About This Chapter

This chapter provides BTS3202E cable exteriors and describes the pin assignments for the wires of the cables and installation positions for the cables.

[3.1 BTS3202E Cables](#)

There are different cables used for BTS3202E connections.

[3.2 BTS3202E PGND Cables](#)

The BTS3202E PGND cable connects a BTS3202E and a ground bar, ensuring proper grounding of the BTS3202E.

[3.3 BTS3202E Power Cable](#)

A BTS3202E power cable feeds AC power to a BTS3202E from an external power device.

[3.4 Alarm Cable for the BTS3202E](#)

The BTS3202E alarm cable, transmits alarm signals from an external device to a BTS3202E so that the base station monitors the operating status of external devices. This cable is optional.

[3.5 RGPS Signal Cable](#)

The RGPS signal cable is used to synchronize clock signals between the BTS3202E and the Remote Global Positioning System (RGPS). The cable is optional.

[3.6 FE/GE Fiber Optic Cable](#)

A fast Ethernet or gigabit Ethernet (FE/GE) fiber optic cable transmits fiber signals between a BTS3202E and a transmission device. This cable is optional.

[3.7 FE/GE Cable](#)

The fast Ethernet or gigabit Ethernet (FE/GE) cable transmits baseband signals between an BTS3202E and a transmission device through a routing device. This cable is optional.

[3.8 BTS3202E RF Jumper](#)

The superflexible 1/2" radio frequency (RF) jumper used by the BTS3202E transmits and receives RF signals.

3.1 BTS3202E Cables

There are different cables used for BTS3202E connections.

Table 3-1 describes the BTS3202E cables.

Table 3-1 BTS3202E cables

Cable	One End		The Other End	
	Connector	Installation Position	Connector	Installation Position
3.2 BTS3202E PGND Cables	OT terminal (M6, 16 mm ²)	Ground terminal for the BTS3202E	OT terminal (M6, 16 mm ²)	AC surge protection box (SPB)
			OT terminal prepared onsite to match the ground bar	Ground terminal on the ground bar
3.3 BTS3202E Power Cable	Round 3-pin connector	PWR port on the BTS3202E	OT terminal (M4, 1.5 mm ²)	AC SPB
	OT terminal (M4, 4 mm ²)	AC SPB	Bare wire	Power device
	Round 3-pin connector	PWR port on the BTS3202E		
3.4 Alarm Cable for the BTS3202E	DB15 male connector	MON port on the BTS3902E	Bare wire	External monitoring device
3.5 RGPS Signal Cable	DB15 female connector	RGPS port on the BTS3202E	Round 12-pin connector	Remote Global Positioning System (RGPS)
3.6 FE/GE Fiber Optic Cable	DLC connector	OPT port on the BTS3202E	DLC connector	External transmission device
3.7 FE/GE Cable	RJ45 connector	ETH port on the BTS3902E	RJ45 connector	External transmission device

Cable	One End		The Other End	
	Connector	Installation Position	Connector	Installation Position
3.8 BTS3202E RF Jumper	Type N connector	ANTA_TX/ RX, ANTB_TX/ RX, or ANTC_SON port on the BTS3202E	Type N connector	Antenna system

3.2 BTS3202E PGND Cables

The BTS3202E PGND cable connects a BTS3202E and a ground bar, ensuring proper grounding of the BTS3202E.

Exterior

The PGND cable is green and yellow with a cross-sectional area of 16 mm². Both ends of the cable are OT terminals. If a customer prepares the PGND cable, a copper-core cable with a cross-sectional area of not less than 16 mm² is recommended. [Figure 3-1](#) shows the PGND cable.

Figure 3-1 PGND cable



(1) OT terminal (M6, 16 mm²)

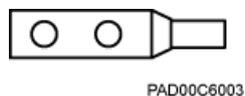
NOTE

- When an AC surge protection box is configured, a PGND cable connects the surge protection box to the BTS3202E to implement the equipotential bonding of the surge protection box and the BTS3202E. Another PGND cable connects the AC surge protection box and a ground bar, ensuring proper grounding of the AC surge protection box.
- One end of the PGND cable connected to the BTS3202E or AC surge protection box is an M6 OT terminal. The other end connected to the ground bar is an OT terminal added onsite.

OT terminals must be added to both ends of the PGND cable onsite. You can determine the color of the cable and whether to use two-hole terminals in compliance with local regulations.

[Figure 3-2](#) shows a two-hole terminal.

Figure 3-2 Two-hole terminal



3.3 BTS3202E Power Cable

A BTS3202E power cable feeds AC power to a BTS3202E from an external power device.

Exterior

Figure 3-3 shows the power cable between a BTS3202E and a power device when no AC surge protection box is configured. The cross-sectional area of the power cable is 1.5 mm².

Figure 3-3 Power cable between a BTS3202E and a power device

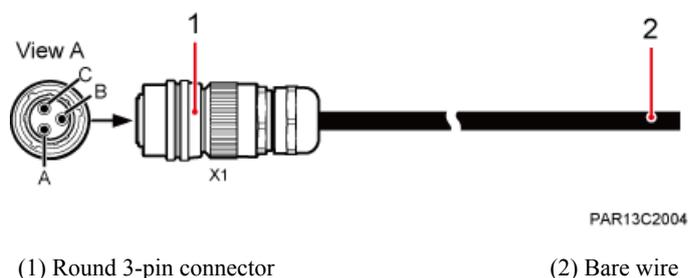


Figure 3-4 shows the power cable between a BTS3202E and an AC surge protection box, which is already configured. The cross-sectional area of the power cable is 1.5 mm².

Figure 3-4 Power cable between a BTS3202E and an AC surge protection box

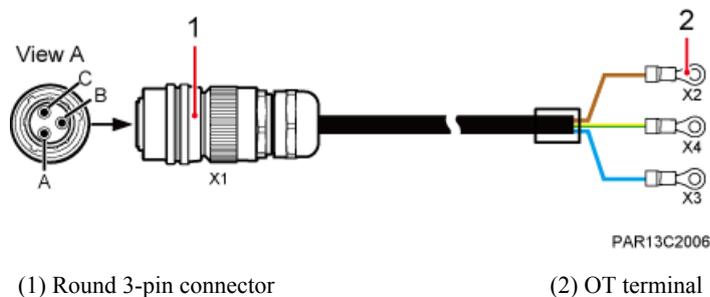
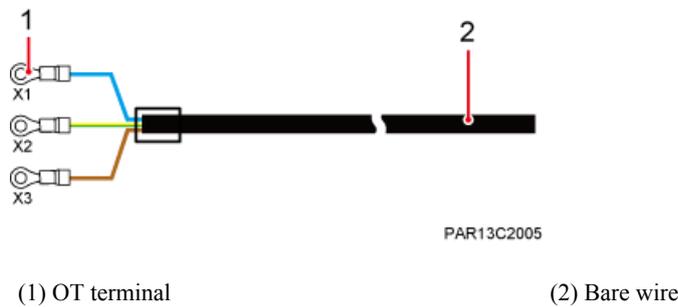


Figure 3-5 shows the power cable between a power device and an AC surge protection box, which is already configured. The cross-sectional area of the power cable is 4 mm².

Figure 3-5 Power cable between an AC surge protection box and a power device



Pin Assignment

Table 3-2 describes the pin assignment for the wires of the power cable between a BTS3202E and a power device.

Table 3-2 Pin assignment for the wires of the BTS3202E power cable (AC surge protection box not configured)

BTS3202E End	Power Device End	Wire Color	Description
X1.A	Bare wire	Brown	L
X1.C		Blue	N
X1.B		Yellow and green	PE

Table 3-3 describes the pin assignment for the wires of the power cable between a BTS3202E and an AC surge protection box.

Table 3-3 Pin assignment for the wires of the BTS3202E power cable (AC surge protection box configured)

BTS3202E End	AC Surge Protection Box End	Wire Color	Description
X1.A	X2	Brown	L
X1.C	X3	Blue	N
X1.B	X4	Yellow and green	PE

Table 3-4 describes the pin assignment for the wires of the power cable between an AC surge protection box and a power device.

Table 3-4 Pin assignment for the wires of the power cable between an AC surge protection box and a power device

AC Surge Protection Box End	Power Device End	Wire Color	Description
X3	Bare wire	Brown	L
X1		Blue	N
X2		Yellow and green	PE

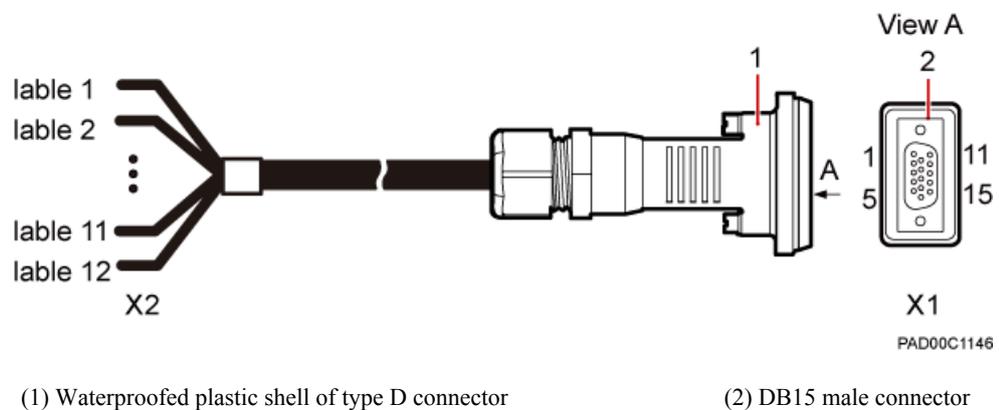
3.4 Alarm Cable for the BTS3202E

The BTS3202E alarm cable, transmits alarm signals from an external device to a BTS3202E so that the base station monitors the operating status of external devices. This cable is optional.

Exterior

Figure 3-6 shows the alarm cable for the BTS3202E.

Figure 3-6 Alarm cable for the BTS3202E



(1) Waterproofed plastic shell of type D connector

(2) DB15 male connector

Pin Assignment

Table 3-5 describes the pin assignment for the wires of the alarm cable.

Table 3-5 Pin assignment for the wires of the alarm cable for the BTS3202E

X1	X2	Color	Description	Port on the X2 End
X1.1	X2.1	Blue and white	Twisted pair	SWITCH_H1
X1.6	X2.2	Blue		GND
X1.2	X2.3	Orange and white	Twisted pair	SWITCH_H2

X1	X2	Color	Description	Port on the X2 End
X1.7	X2.4	Orange		GND
X1.3	X2.5	Green and white	Twisted pair	SWITCH_H3
X1.8	X2.6	Green		GND
X1.4	X2.7	Brown and white	Twisted pair	SWITCH_H4
X1.9	X2.8	Brown		GND
X1.11	X2.9	Blue and red	Twisted pair	PSU 485 TX-
X1.12	X2.10	Blue		PSU 485 TX+
X1.13	X2.11	Orange and red	Twisted pair	PSU 485 RX-
X1.14	X2.12	Orange		PSU 485 RX+
Shield				

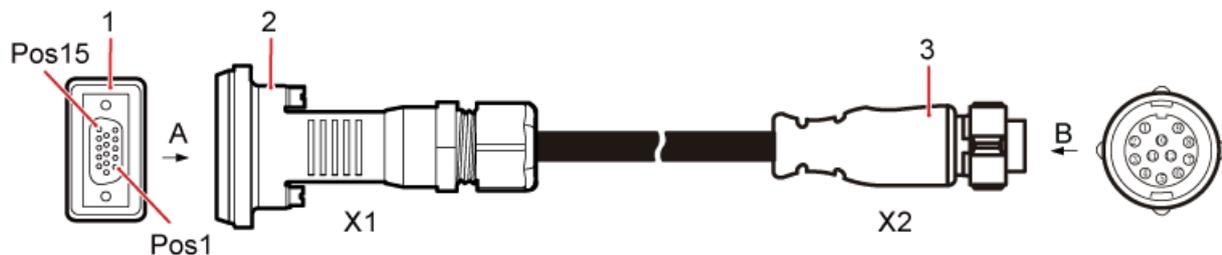
3.5 RGPS Signal Cable

The RGPS signal cable is used to synchronize clock signals between the BTS3202E and the Remote Global Positioning System (RGPS). The cable is optional.

Exterior

Figure 3-7 shows an RGPS signal cable.

Figure 3-7 RGPS signal cable



(1) DB15 female connector (2) Waterproofed type-D connector with a plastic shell (3) Round 12-pin connector

Pin Assignment

Table 3-6 describes the pin assignment for the wires of the RGPS signal cable.

Table 3-6 Pin assignment for the wires of the RGPS signal cable

X1	X2	Color	Description
X1.1	X2.9	Blue and white	Twisted pair
X1.6	X2.1	Blue	
X1.14	X2.5	Orange and white	Twisted pair
X1.13	X2.4	Orange	
X1.12	X2.3	Green and white	Twisted pair
X1.11	X2.2	Green	
X1.2	X2.11	Brown and white	Twisted pair
X1.7	X2.12	Brown	

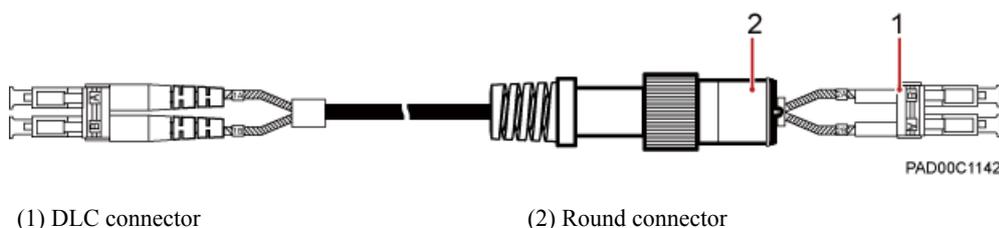
3.6 FE/GE Fiber Optic Cable

A fast Ethernet or gigabit Ethernet (FE/GE) fiber optic cable transmits fiber signals between a BTS3202E and a transmission device. This cable is optional.

Exterior

The FE/GE fiber optic cable has a DLC connector and round connector at one end and a DLC connector at the other end, as shown in [Figure 3-8](#).

Figure 3-8 FE/GE fiber optic cable



(1) DLC connector

(2) Round connector

3.7 FE/GE Cable

The fast Ethernet or gigabit Ethernet (FE/GE) cable transmits baseband signals between an BTS3202E and a transmission device through a routing device. This cable is optional.



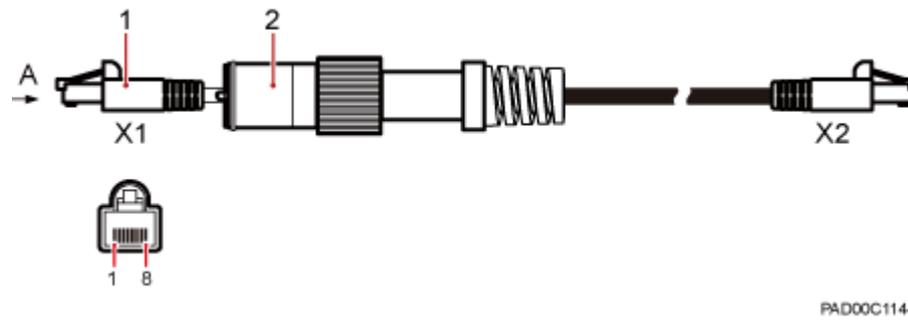
NOTE

The FE/GE cable can be used between two devices for a distance of less than 100 m.

Exterior

The FE/GE Ethernet cable is a shielded straight-through cable with an RJ45 connector and round connector at one end and an RJ45 connector at the other end, as shown in [Figure 3-9](#).

Figure 3-9 FE/GE cable



(1) RJ45 connector

(2) Round connector

Pin Assignment

Table 3-7 describes the pin assignment for the wires of the FE/GE cable.

Table 3-7 Pin assignment for the wires of the FE/GE cable

Pin on the RJ45 Connector	Wire Color	Wire Type	Pin on the RJ45 Connector
X1.2	Orange	Twisted pair	X2.2
X1.1	White and orange		X2.1
X1.6	Green	Twisted pair	X2.6
X1.3	White and green		X2.3
X1.4	Blue	Twisted pair	X2.4
X1.5	White and blue		X2.5
X1.8	Brown	Twisted pair	X2.8
X1.7	White and brown		X2.7

3.8 BTS3202E RF Jumper

The superflexible 1/2" radio frequency (RF) jumper used by the BTS3202E transmits and receives RF signals.

Exterior

One end of the RF jumper is a type N connector, and the other end is connected to the antenna system.

Figure 3-10 shows an RF jumper with a type N connector at each end.

Figure 3-10 RF jumper



(1) Type N connector

4 BTS3202E Auxiliary Devices

About This Chapter

This chapter describes the BTS3202E auxiliary devices.

[4.1 IFS06](#)

An Indoor Floor installation Support (IFS06) is used for installing indoor BTS3202Es.

[4.2 AC Surge Protection Box](#)

An AC surge protection box implements surge protection for AC input power.

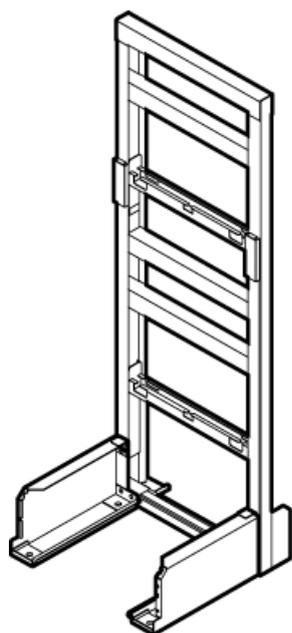
4.1 IFS06

An Indoor Floor installation Support (IFS06) is used for installing indoor BTS3202Es.

Exterior

Figure 4-1 shows an IFS06.

Figure 4-1 IFS06



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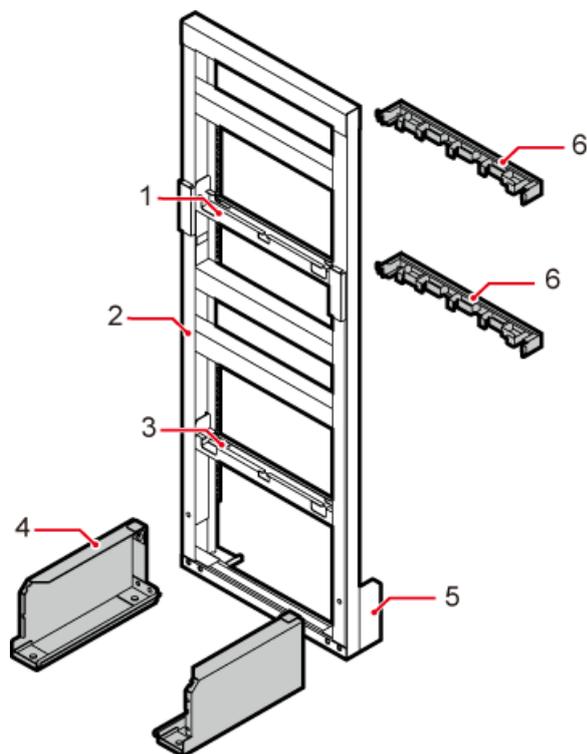
Function

- It can be installed on the ground.
- It supports the installation of four BTS3202Es.
- It supports the installation of two BTS3202Es.
- The upper and lower adjustable beams on an IFS06 can be moved up and down to fit for heights of RRUs.

Structure

The IFS06 consists of the main frame, cable tray, upper and lower adjustable beams, and front and rear feet, as shown in **Figure 4-2**.

Figure 4-2 IFS06 structure



PAS02C0002

- | | | |
|---------------------------|----------------|---------------------------|
| (1) Upper adjustable beam | (2) Main frame | (3) Lower adjustable beam |
| (4) Front foot | (5) Rear foot | (6) Cable tray |

Specifications

Table 4-1 describes IFS06 specifications.

Table 4-1 IFS06 specifications

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

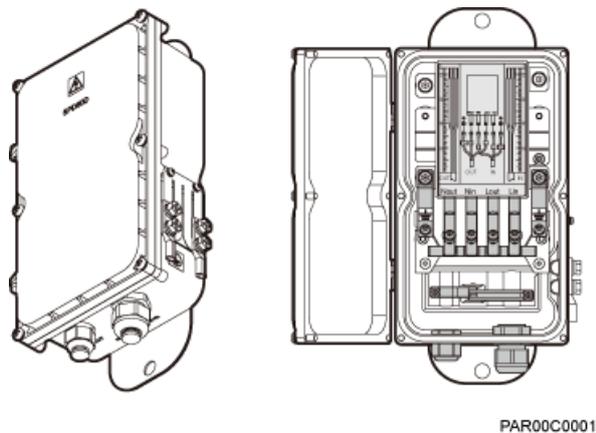
4.2 AC Surge Protection Box

An AC surge protection box implements surge protection for AC input power.

Exterior

Figure 4-3 shows an AC surge protection box.

Figure 4-3 Surge protection box



Specifications

Table 4-2 shows the specifications of an AC surge protection box.

Table 4-2 Specifications of an AC surge protection box

Item	Specification
Dimensions	240 mm (9.45 in.) x 140 mm (5.51 in.) x 75 mm (2.95 in.) (H x W x D)
Installation option	On a pole, on a wall, or on a wood pole
Surge protection capability	60 kA (8/20 us) in differential mode/common mode

Ports

Table 4-3 describes the ports on an AC surge protection box.

Table 4-3 Ports on an AC surge protection box

Item	Label	Description
Ports on the bottom panel	IN	Port for the AC input power cable between the onsite power device and the AC surge protection box
	OUT	Port for the AC output power cable between the AC surge protection box and the BTS3202E
Ports on the side panel	-	Port for the external ground cable
	-	Port for the BTS3202E ground cable

Item	Label	Description
Ports on the cabling cavity panel	Nout	Wiring terminal for a power cable
	Nin	
	Lout	
	Lin	