

NOKIA

**Nokia InSite Base Station
Maintenance, DRAFT**

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About this document

This document gives instructions on the maintenance of Nokia InSite Base Station (BTS and power supply unit). Read carefully *Nokia InSite BTS Warnings and Cautions* in this User Manual before starting the maintenance work. In the case of an alarm, see *Alarm Descriptions*.

This document covers the following:

- periodical maintenance measures
- replacing the power supply unit battery
- replacing the power supply unit fuse
- LED indications
- Using Nokia BTS Manager

See Software release documentation for SW updating instructions.

2

General

This chapter describes the general issues that must be considered when doing maintenance work on Nokia InSite Base Station.

2.1 Fault reporting

Report all damages, failures and faults to Nokia using the Failure Report Form provided by Nokia Customer Service Center (CSC).

Note

You can save the alarm information with the Nokia BTS Manager to a log file on your PC.

2.2 Site folder

A site folder contains site-specific information required on the site. The site folders include installation, commissioning and integration check lists. The exact contents of the site folders are defined by the customer project.

It is the responsibility of the customer to maintain and archive site-specific documents.

2.3 Maintenance procedure



General maintenance procedure is the following:

1. When arriving at a site, check that all cables are properly connected and that they are not damaged. Check that the power supply unit fuse has not burnt.
2. Check the tools needed for the type of maintenance. See the tools list given in *Installation*. You should always have the Nokia BTS Manager PC and PC-cable with you.
3. Keep the BTS and power supply unit in their delivery packages until installation.
4. After installation, keep some of the packing material for sending a faulty BTS or power supply unit to service. Recycle the remaining material.
5. Perform the maintenance actions as specified in this document.

3


Periodic maintenance

This chapter describes the periodic maintenance of Nokia InSite Base Station.


3.1 Periodic maintenance of BTS and power supply unit

This section describes the periodic maintenance measures of the BTS and power supply unit.

3.1.1 Air circulation

 **Caution**


To maintain proper circulation of air, the air inlets and outlets of the BTS and power supply unit must not be obstructed.

 **Caution**

Do not cover the BTS or power supply unit.

3.1.2 Cleaning

The BTS and power supply unit covers must be cleaned of dust, whenever necessary. Use a slightly damp cloth and mild detergent.

 **Caution**

Do not wipe the BTS or power supply unit with a wet cloth.

In dusty conditions, the cooling fins under the antenna cover may need brushing.

3.1.3 Cabling

When arriving at a site for maintenance purposes, it is always good to check that the power and transmission cables are properly connected and that they are not damaged.

If you need to check the quality of Abis connection, you can do it by choosing 'Measurements' on the Transmission menu of the Nokia BTS Manager.

The following values are recommended for HDSL:

Line attenuation: 0-30 dB

Noise Margin: 16-3 dB

The following values are recommended for E1:

Line attenuation: 0-6 dB

If the values are out of limits, you should check the cable type, the length of the cable, the connections and the equipment at the other end. The maximum length of cable for HDSL is 2 km (1.24 miles) and for E1 100 m (110 yd).

3.1.4 Measurement environment

External measurement equipment can be used for measuring e.g. the phase error/frequency error, sensitivity or the power level of the BTS. This section describes the generic measurement environment and procedure.



For measuring the phase error/frequency error, sensitivity or the power level of the BTS, do the following:

1. Disconnect the antenna and the antenna connector. (For instructions, see *Requirements for Installation and Operation*).
2. Connect the external measurement device to the antenna connector in the BTS.
3. Connect the BTS's 13 MHz connector to the external reference input in the external measurement device.

4. Connect Nokia BTS Manager PC to the BTS's LMP port.
-

Note

This test can be done only with a commissioned BTS.

5. Start the Nokia BTS Manager, choose the 'Test' menu on the menu bar and select the 'Send BCCH carrier' command.
-

Note

If you receive the error message 'No TRX in configuring state', choose the 'Use current' command on the 'BTS SW' menu. With this command, the BTS will become operational without Abis connection.

4

Maintaining the power supply unit

This chapter describes the maintenance of the power supply unit.



WARNING

Potentially lethal voltages!

Disconnect the AC plug from the socket outlet before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shocks!

Disconnecting the AC plug is not necessary when replacing the battery of the power supply unit.



WARNING

Opening the back cover of the power supply unit is strictly forbidden!

4.1 Replacing the battery of the power supply unit

This chapter describes how to replace the battery of the power supply unit.

The battery of the power supply unit can withstand 600 cycles (recharge rounds). However, it is recommended that the battery be changed within 3 years. The battery can also be changed if the battery back-up time during a power outage seems too short.

The lifetime of the battery depends on the ambient temperature and the quality of the electrical network.

**Caution**

Use only the NiMH 6HR-SCC 7.2V battery which is provided by Nokia.

**Remove the old battery from the power supply unit as follows:**

1. Open the power supply unit cover as shown in 1 of Figure 1.
2. Disconnect the battery cord. See 2 of Figure 1.
3. Loosen the DC cable which is guided around the guiding pins. You do not have to disconnect the DC connector. See 3 of Figure 1.
4. Open the screw which is holding the battery support bridge in place. Remove the battery support bridge and the old battery. See 4 of Figure 1.

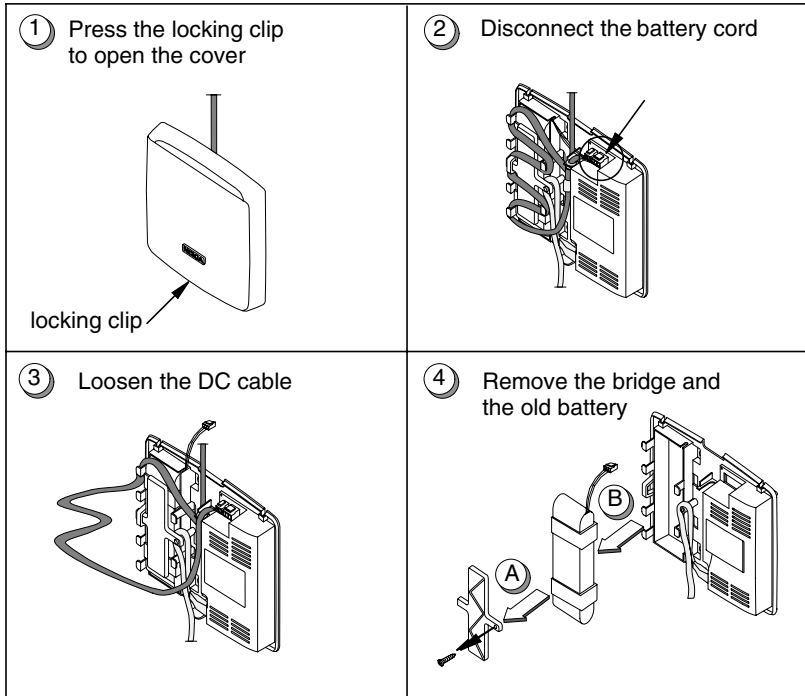


Figure 1. Removing the old battery from the power supply unit



Install the new battery into the power supply unit as follows:

1. Take the new battery and place it in the battery bay. See 1 of Figure 2. The battery label should remain visible in the lower part of the battery bay. The battery connection cord should be in its slot in the upper right corner of the battery bay.

2. Connect the battery connection cord to the 3-pin connector, and install the battery support bridge as shown in 2 of Figure 2.
-

Note

DC cabling depends on the installation location of the power supply unit. Two different ways are illustrated in 3 of Figure 2.

3. Guide the DC cable around the guiding pins, if needed. Push the strain relief of the cable to the slot beside the connector. Connect the DC cable to the 2-pin connector. See 3 of Figure 2.
4. There are two exit holes for the cables in the power supply unit. Arrange the cables so that they come out through the exit holes.

Install the power supply unit cover. First, press down the upper edge, then the lower edge, until the locking clip locks the cover on. See 4 of Figure 2.

5. Dispose of the old battery properly.
-



Caution

The battery is a NiMH rechargeable battery, and it must be recycled or disposed of properly. Do not dispose of the battery in fire!

Note

If the power supply unit is not working after replacing the battery, check the battery fuse and replace it, if necessary. Check also the condition of the cables. If the power supply unit is still not working, replace the whole power supply unit. For installation instructions, see *Installation*.

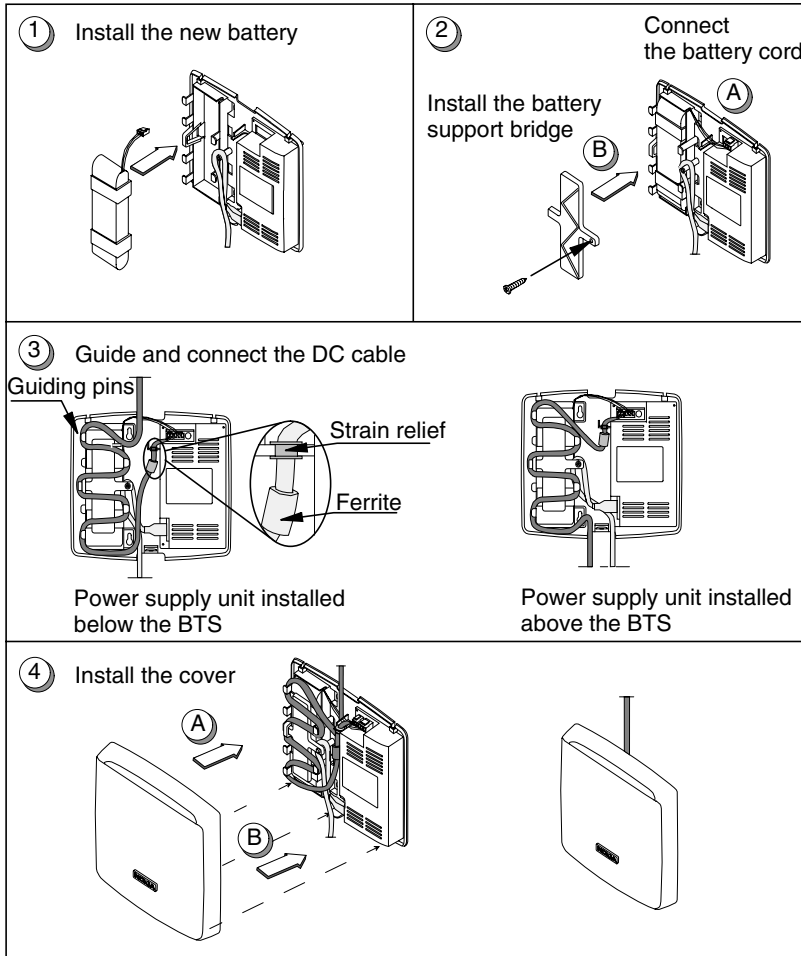


Figure 2. Installing the new battery into the power supply unit

4.2 Replacing the battery fuse

This chapter describes how to replace the battery fuse.



WARNING

Potentially lethal voltages!

Disconnect the AC plug from the socket outlet before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shocks!

The fuse may burn if there is a short circuit in the BTS or in the DC cable. If the fuse has burnt, the power supply unit will still supply power from the AC/DC converter to the BTS.

Remove the object which is causing the short circuit in the output, and replace the fuse.

Figure 3 shows the location of the fuse. The fuse is located beside the battery connector.

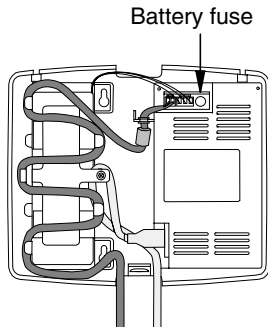


Figure 3. Location of the battery fuse

**Replace the battery fuse as follows:**

1. Disconnect the power supply unit from the mains outlet.
2. Open the power supply unit cover.
3. Disconnect the battery cord and the DC cable from their power supply unit connectors. Check the battery connector and the DC connector for short circuit.

In the case of short circuit, replace the battery or the DC cable. DC cable is available as a spare part from Nokia. If there is no short circuit, reconnect the battery cord and the DC cable.

4. Replace the battery fuse. Use only the subminiature fuse, the type of which is TR5 (T6.3 A/250 VAC). The fuse is available as a spare part from Nokia.
5. Install the power supply unit cover.
6. Connect the power supply unit to the mains outlet.

Note

If the power supply unit is not working after replacing the fuse, replace the power supply unit. Check also the charge level of the battery and change the battery, if necessary.

5 LED indications

In addition to the alarms which a network element can produce, most functional entities also have LED indicators. These indicators display the current state of the equipment as a quick on-site reference.

5.1 LED indications

The LED indications are specified in Table 1.

Table 1. LED indications

Location	Colour	Description	Lit	Flashing
Centre	Green	Power	Power supply on	BTS DC supply voltage level: AC is off and the battery voltage is too low or the battery is being charged
Left	Green	Call On	At least one call on	Dummy BCCH transmission on
Centre	Red	Device Error	BTS initialisation in progress (LED is switched off when CONF_COMPLETE message is sent to BSC)	BTS internal error
Right	Red	Transmission Error	-	Abis link initialisation or Abis disconnected (LED is switched off when TRXSIG LAPD link is properly established)

Note

You can disable the LEDs by choosing 'Disable LEDs' on the Objects menu of the Nokia BTS Manager.

6

Using Nokia BTS Manager

This chapter gives instructions on how to get started with Nokia BTS Manager. Nokia BTS Manager is used for local management of the BTS. It is assumed here that the user knows how to use Windows 95/98 or NT4.0 software.

6.1 Starting and exiting Nokia BTS Manager session

The installation program of the manager SW creates a Nokia BTS Manager icon on the desktop and defines its parameters. For more information on the installation, refer to the Nokia BTS Manager online Help or the instructions on the Nokia BTS Manager CD-ROM sleeve.



Start the BTS Manager as follows:

1. Double-click the BTS Manager icon on the desktop.
2. Enter the BTS Manager password if BTS Manager password checking is on (only in Windows 95/98 environment).
3. Enter the BTS password if BTS password checking is on. The software continues execution only if the BTS accepts the entered password.

The Nokia BTS Manager starts with the Supervision, Alarms and BTS Events windows opened. Also, the software checks the BTS configuration and displays it in the Supervision window.

If there is no connection to the BTS, only the BTS Events window is displayed. Check the communications parameters. In this case, check also that the LMP cable is connected to the same COM port that is defined in the BTS Manager.

You can define different Manager options and communications parameters when starting to work with the Nokia BTS Manager.

Note

The Nokia BTS Manager must be connected to the BTS in order to make the BTS password checking possible. If no connection exists, password checking is not applicable.

To exit the Nokia BTS Manager, choose the EXIT command on the File menu.

6.2 Using Help

The Nokia BTS Manager software has a convenient, context-sensitive online Help facility for getting information about a task you are going to perform, a feature you might want to know more about, or a command you may want to use.

To get Help

- press F1
- click the Help button on the toolbar
- choose Nokia BTS Manager command on the Help menu or
- click the Help button in any dialog box.

In the Help Topics window you can see three tabbed pages: Contents, Index and Find.

Contents

The Contents page displays a list of topics organized in books by category.

Index

The Index page lists keywords in alphabetical order through which different topics can be reached.

Find

The Find page provides a full-text search functionality that allows you to search for any word or phrase in the Help file.

To exit Help, press ESC or ALT+F4.

Note

If the BTS is connected, also the Help Topics for Transmission Unit Manager is available in the Help menu.
