

NOKIA

Nokia InSite Base Station Installation, DRAFT

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About this document

This document describes the installation of Nokia InSite Base Station (BTS and power supply unit). Read carefully *Warnings and Cautions* and *Requirements for Installation and Operation* in this User Manual before starting the installation.

The following information can be found in this document:

- contents of the Nokia InSite Base Station delivery
- installation equipment
- work order
- how to unpack the delivery
- how to prepare the cables for Nokia InSite Base Station
- how to install Nokia InSite Base Station on a wall
- how to complete the installation



Caution

Installation, commissioning and maintenance measures concerning any Nokia Base Station (BTS) may be performed only by properly trained and authorised personnel.

Note

‘Nokia InSite Base Station’ refers to the base station and the power supply unit.

2

Contents of the delivery

The contents of the Nokia InSite Base Station delivery are presented in this Chapter.

2.1 Nokia InSite Base Station delivery

2.1.1 BTS delivery

The following items are always included in the BTS transportation package:

- Nokia InSite Base Station (BTS)
- four softening pads for protecting the installation surface
- five pozidrive anchor screws (3.5 x 40) and anchor plugs (6 x 30 mm): three for fixing the BTS on a wall, and two for fixing the power supply unit on a wall.
- 2 cable clips for keeping the cables in place on the backside of the BTS
- Nokia InSite Base Station Quick Reference Guide

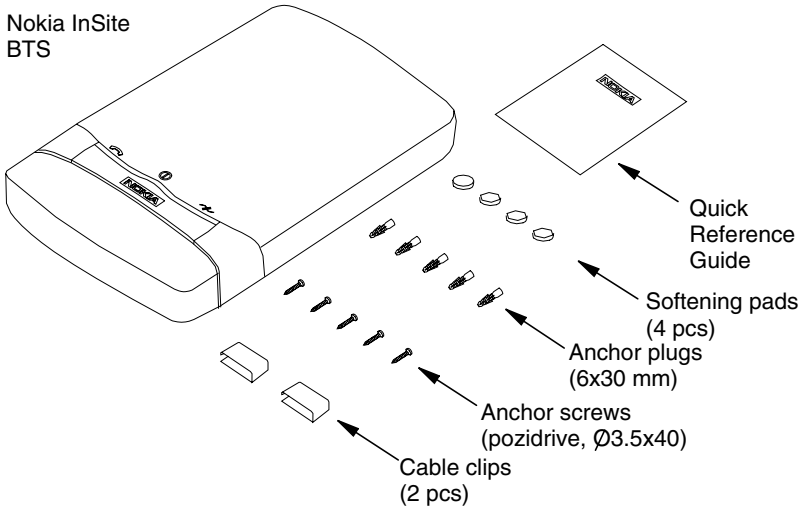


Figure 1. BTS package contents

Note

Some wall materials may require special screws and anchor plugs, which are supplied by the customer.

2.1.2 Power supply unit delivery

The following items are always included in the power supply unit transportation package:

- power supply unit
- battery for the power supply unit
- DC power cable
- AC cord set

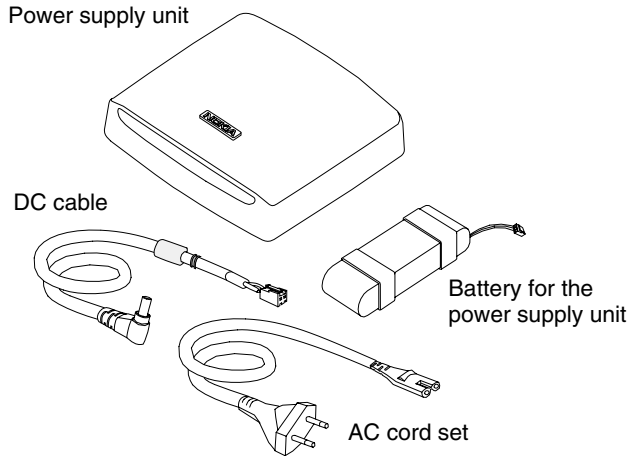


Figure 2. Power supply unit package contents

Note

The battery of the power supply unit is delivered unattached to the unit in the power supply unit package, and it shall be installed into the power supply unit according to the installation procedure described in this document.

Note

There are variations in the socket outlets in different parts of the world. If the AC plug is not a correct one for the socket outlet, the customer shall provide the AC cord set locally.

Note

The two pozidrive anchor screws (3.5 x 40) and anchor plugs (6 x 30 mm) for fixing the power supply unit on a wall are included in the BTS transportation package.

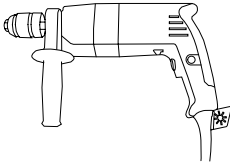
3

Installation equipment

This Chapter specifies the equipment that is recommended for the installation of Nokia InSite Base Station but is not included in the delivery.

Additional equipment needed when installing Nokia InSite Base Station:

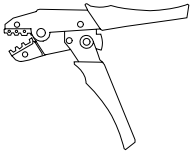
- ladder (depending on the circumstances on the site)
- spirit level for checking the horizontal straightness (needed when marking the fixing points for the BTS and power supply unit)
- spike tool for marking the fixing points to the wall through the packing cardboard template
- drill with 6 mm bits
- pozidrive screwdriver
- tool for crimping, cutting and stripping the cables
- LMP cable for connecting the manager PC to the BTS



Drill with 6 mm bits



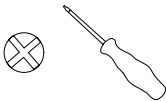
Ladder



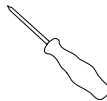
Crimping tool



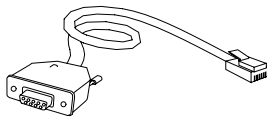
Spirit level



Pozidrive screwdriver



Spike tool



LMP cable

Figure 3. Installation tools

4

Unpacking

Note

Do not dispose of the packing cardboard as the template inside of it will later be used for marking the fixing points for the BTS and power supply unit.

4.1 Unpacking the BTS



To unpack the BTS:

1. Open the packing cardboard around the BTS.

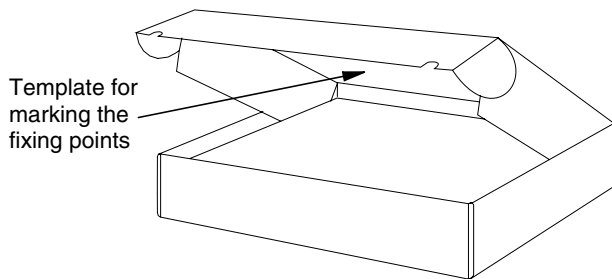


Figure 4. Template inside the BTS package

**Caution**

Handle Nokia InSite Base Station with care. Do not drop Nokia InSite Base Station or the package containing it.

Note

Handle the plastic covers with clean hands.

2. Remove the protective plastic bag around the BTS.
3. Inspect the BTS surface visually for any defects.
4. Take the mounting kit plastic bag out of the package.
5. Check the completeness of the delivery (see Chapter 2 in this document).

4.2 Unpacking the power supply unit

**To unpack the power supply unit:**

1. Open the transportation package.
2. Inspect the power supply unit surface visually for any defects.
3. Take the battery, the DC cable and the AC cord set out of the package.

5 Preparing the cables

This section describes the process of connecting the wires in the E1, HDSL and LMP cables to the connector pins.

5.1 Preparing the E1 cable

For preparing the E1 cable, see Figure 5 and Table 1.

Note

When you prepare the E1 cable, make sure that you crimp the connectors in a correct way at both ends. Check the pin order in Figure 5 and Table 1.

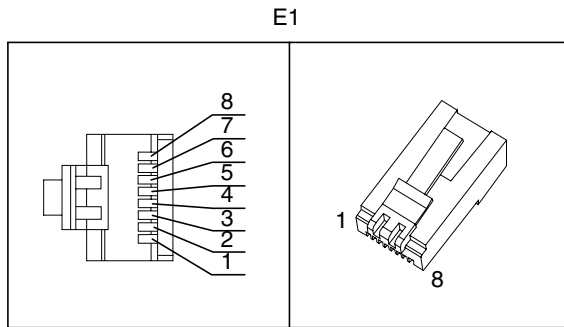


Figure 5. E1 connector (RJ45)

Table 1. E1 connector: pin mapping

E1 (RJ45)	Signal name
1	Frame Clock Output (+)
2	Frame Clock Output (-)
3	E1 line in ¹
4	E1 line in ¹
5	E1 line out ²
6	E1 line out ²
7	Frame Number Output (+)
8	Frame Number Output (-)
¹ Line in indicates the signal received by InSite BTS. ² Line out indicates the signal transmitted by InSite BTS.	

5.2 Preparing the HDSL cable

For preparing the HDSL cable(s), see Figure 6 and Table 2.



Caution

To reduce the risk of fire, use only No. 26 AWG (0.4 mm diameter) or larger telecommunication line cord.

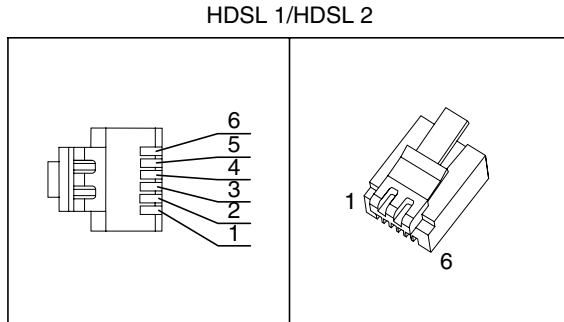


Figure 6. HDSL 1/HDSL 2 connectors (RJ11)

Table 2. HDSL 1/HDSL 2 connectors: pin mapping

HDSL 1/HDSL 2 (RJ11)	Signal name
1	Not connected
2	Not connected
3	Line
4	Line
5	Not connected
6	Not connected

5.3 Preparing the LMP cable

For preparing the LMP cable, see Figures 7 and 8, and Table 3.

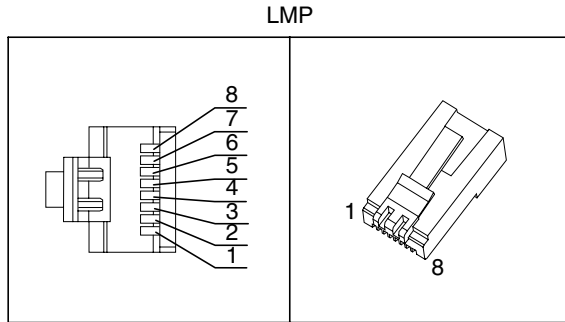


Figure 7. RJ45 connector of the LMP cable

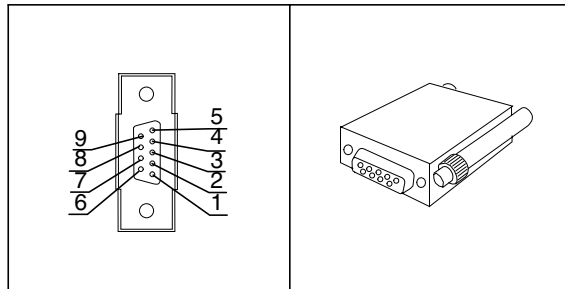


Figure 8. D9 connector of the LMP cable

Table 3. LMP connectors: pin mapping

LMP (RJ45)	Signal name	D9
1	DSR (always active)	6
2	Not connected	1
3	DTR	4
4	GND	5
5	RX	2
6	TX	3
7	Not connected	8
8	RTS (not used)	7

6

Installing Nokia InSite Base Station

This Chapter instructs how to install the Nokia InSite Base Station. For more information on the requirements for installation and operation, see *Requirements for Installation and Operation*.

! Caution

Installation, commissioning and maintenance measures concerning any Nokia Base Station (BTS) may be performed only by properly trained and authorised personnel.

! Caution

Nokia InSite BTS and the power supply unit can only be installed in a vertical position. This is for the cooling to work properly, and it is also vital for the power supply battery lifetime. Nokia InSite BTS or the power supply unit must not be installed upside down.

! Caution

Do not install Nokia InSite BTS or the power supply unit in direct sunlight or in a place where water may drop on the device (for example under air-conditioning equipment).

! Caution

Fluorescent lamps may interfere with the infrared (IR) port of the BTS if located closer than 2 m (6.6 ft) below the BTS (with lamps facing upwards). Fluorescent lamps can, however, be installed to the sides or above the BTS because of the narrow IR port beam width.

Note

Plan carefully where you want to install Nokia InSite BTS and power supply unit. The length of the cable that connects the BTS and the power supply unit is 1.5 m (4.9 ft). Take this into account when planning the installation locations.

The minimum distance between Nokia InSite BTS and the power supply unit is 150 mm (5.9 in). For more information on space requirements, see *Requirements for Installation and Operation*.

Note

The power supply unit can be installed below or above the BTS, or, it can be hidden above the suspended ceiling. See Figure 9.

Note

Installing the power supply unit above the suspended ceiling shall be in accordance with all applicable national wiring rules.

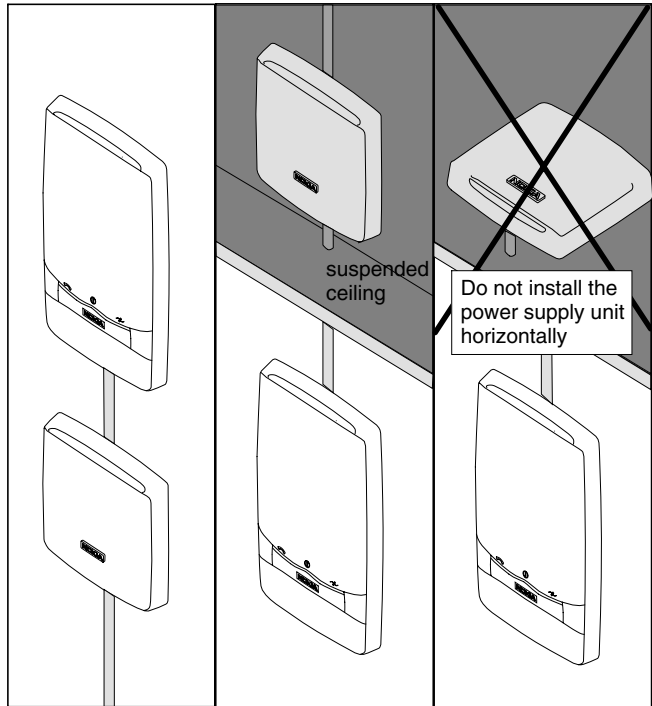


Figure 9. Examples of Nokia InSite Base Station installation

6.1 Marking the fixing points and inserting the screws to the wall



WARNING

When choosing the installation location and drilling the holes, make sure that you do not damage any cables that may be routed behind the wall.



To mark the fixing points and to insert the screws, do the following:

1. Mark the fixing points to the wall.

Use the template that is inside the BTS packing cardboard. Use a spirit level to make sure that the template is horizontal before marking the fixing points. See Figure 10.

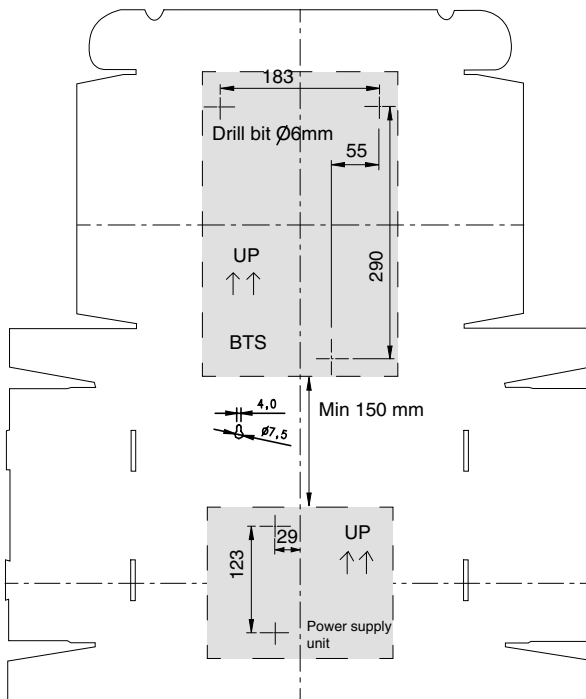


Figure 10. Template for marking the fixing points (inside the BTS packing cardboard)

2. Repeat the above step for the power supply unit. The markings for the power supply unit holes are also on the BTS packing cardboard template. See Figure 10.
3. Drill holes to the wall where the fixing points are marked and insert the anchor plugs and fixing screws into the holes. If the wall material is soft, just insert the fixing screws into the fixing points.
4. Tighten the screws sufficiently so that the BTS and the power supply unit can hang on them until the screws are tightened later. Leave a 15 mm (0.6 in) space between the BTS screw heads and the wall, and a 5 mm (0.2 in) space between the power supply unit screw heads and the wall. See Figure 11.

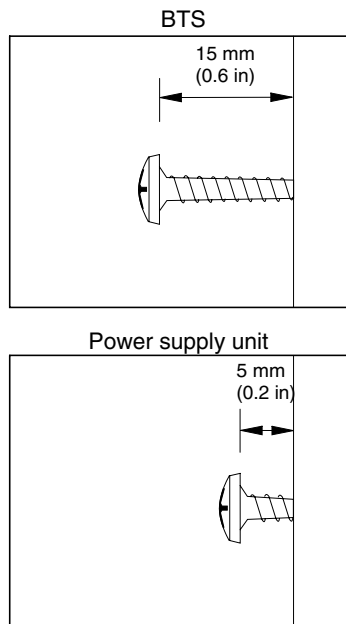


Figure 11. Space between the screw heads and the wall

6.2 Installing the BTS on a wall



To install the BTS on a wall:

1. Remove the connector cover and the antenna cover by pressing gently. The pressing locations are shown in 1 of Figure 12. Lift the antenna cover upwards and pull the connector cover downwards.
2. Insert the softening pads to the backside of the BTS. See 2 of Figure 12.
3. Connect the BTS cables according to the chosen transmission configuration. See 3 of Figure 12.
4. Guide the cables via the slot in the BTS. See 4 of Figure 12.

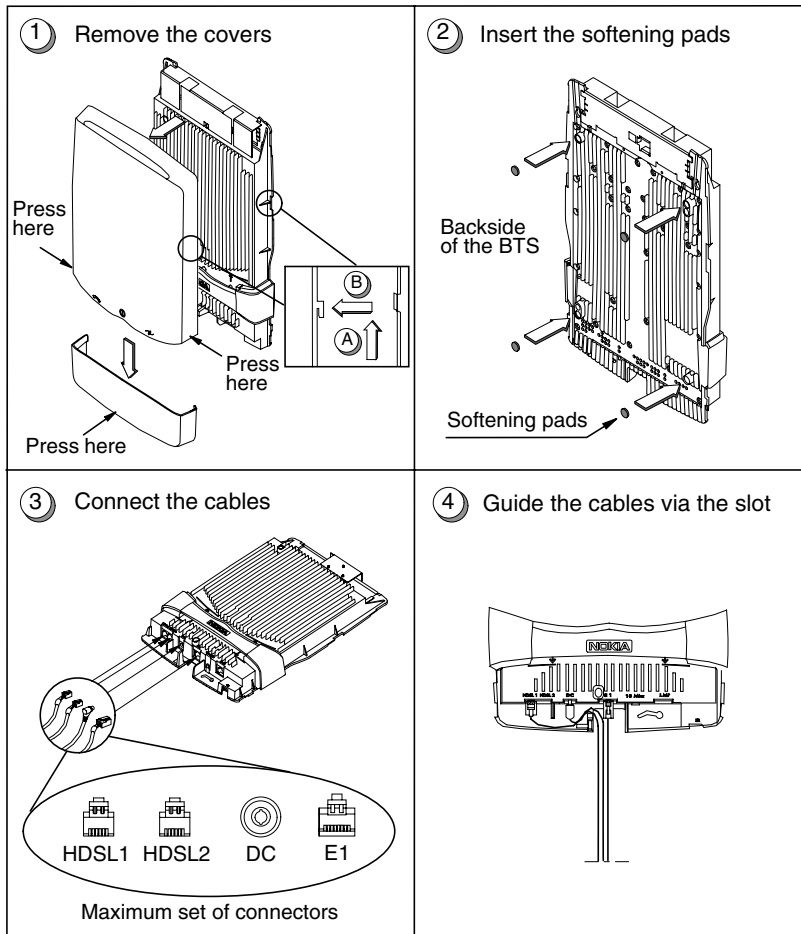


Figure 12. Installing the BTS (continues in Figure 13)

5. If you are going to route the cables upwards, use the cable clips to hold the cables in place on the backside of the BTS. See 5 of Figure 13. If you are routing the cables downwards, proceed to step 6.

6. Lift the BTS on the wall. Tighten the upper BTS fixing screws. Before tightening the lower screw, you can still adjust the horizontal straightness of the BTS. Tighten the lower BTS fixing screw. See 6 of Figure 13.
7. Install the antenna cover. First, put the lower edge of the cover on the alignment line of the BTS. Press the cover down. See 7 of Figure 13.
8. Install the connector cover. First, put the upper edge of the cover on the alignment line of the BTS. Push the cover up. See 8 of Figure 13.

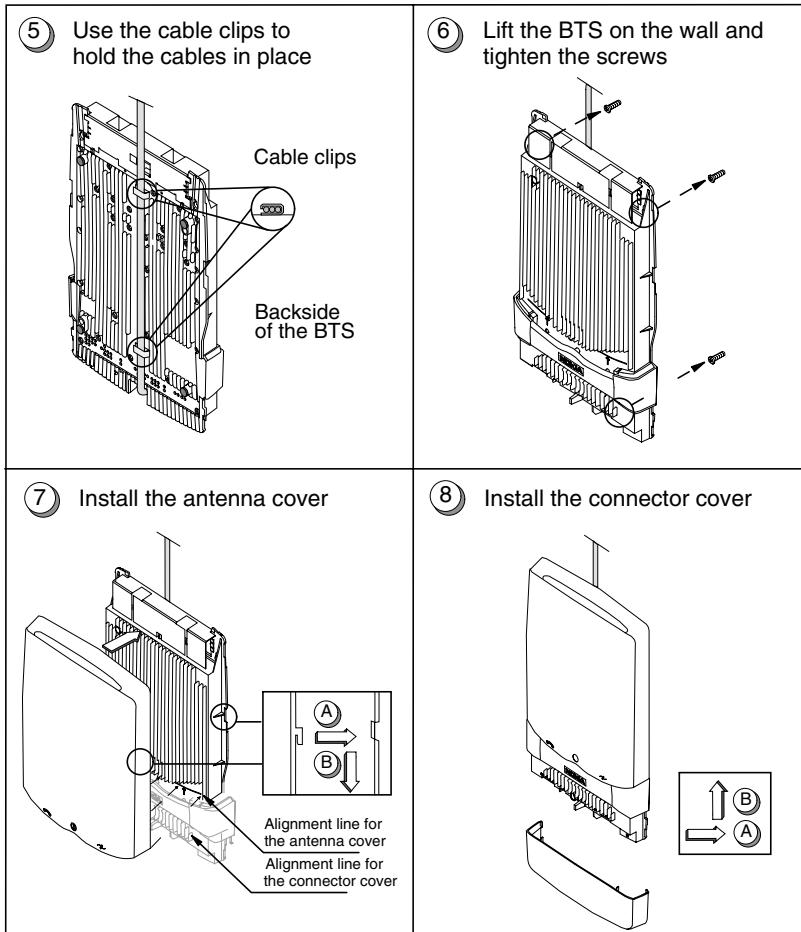


Figure 13. Installing the BTS (continued from Figure 12)

6.3 Installing the power supply unit on a wall



WARNING

MAINS VOLTAGE! Follow all applicable national legislation when working with the power supply.

The AC cord set shall be in accordance with all applicable national wiring rules.

The mains plug will act as a disconnecting device for AC mains and no other AC disconnecting device is needed. The power is always ON when the mains power cable (AC cable) is connected!

The power supply unit feeds power to the BTS even after the AC has been disconnected. To stop the power feeding, the DC cable has to be disconnected also.

Note

The socket outlet should be installed near the equipment and be easily accessible.

Note

Nokia InSite Base Station must only be used with Nokia power supply unit PBU-11.




To install the power supply unit on a wall:

Note

First, see section 7.1 for marking the fixing points and inserting the screws to the wall.

1. Open the front cover by pressing the locking clip. See 1 of Figure 14.


 **Caution**

Do not use any sharp tools to open the cover because it could damage the unit.

Note

Do not install the battery yet, because you will have to guide the AC cable around the screw tower for strain relief. (See step 5 in this procedure.)

2. Lift the unit on the wall. If the power supply unit will be installed below the BTS, guide the HDSL and E1 cables under the power supply unit before tightening the power supply unit fixing screws. See 2 of Figure 14. Tighten the power supply unit fixing screws.
3. Open the screw which is holding the battery support bridge in place. Use a pozidrive driver. Remove the battery support bridge. See 3 of Figure 14.
4. Take the battery and place it in the battery bay so that the battery label remains 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. Connect the battery connection cord to the 3-pin connector. See 4 of Figure 14.

 **Caution**

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

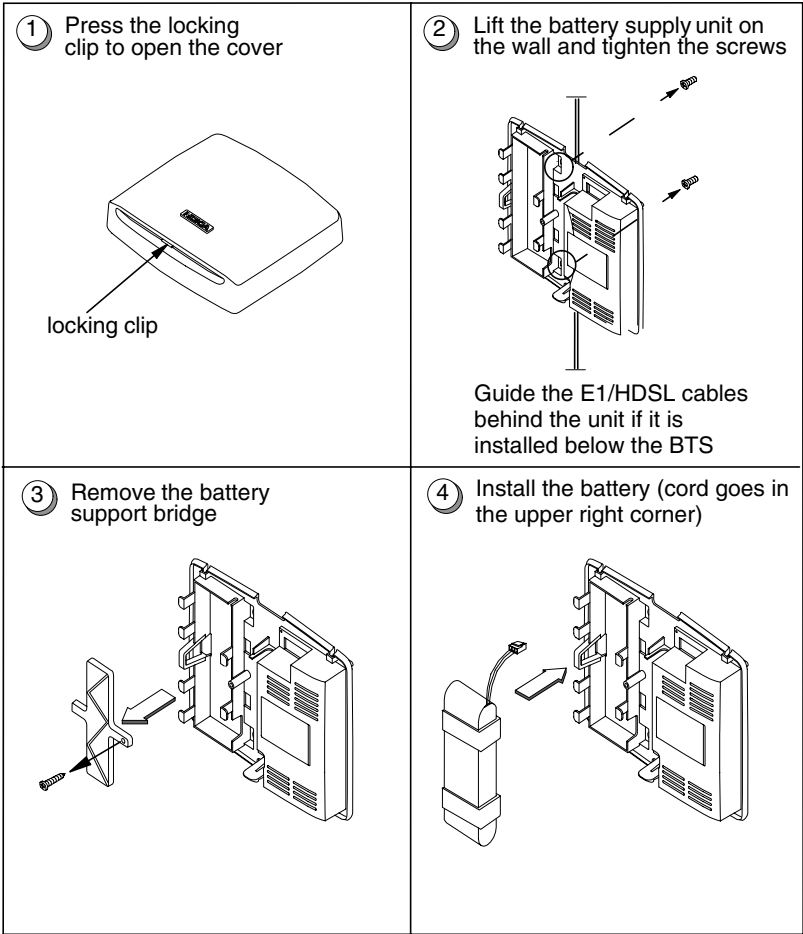


Figure 14. Installing the power supply unit (continues in Figure 15)

- 5. Connect the AC connector to the power supply unit. Guide the AC cable around the screw tower. See 5 of Figure 15.

6. Install the battery support bridge and tighten the screw using a pozidrive driver. See 6 of Figure 15.
7. Take the DC cable (the cable for connecting the power supply unit and the BTS) and put the excess cable around the guiding pins. Push the strain relief of the cable to the slot beside the connector. Connect the DC cable to the 2-pin connector. See 7 of Figure 15.

**Caution**

Use only the Nokia InSite Base Station DC cable which is provided by Nokia. Do not cut or otherwise modify the DC cable.

Note

DC cabling depends on the installation location of the power supply unit. Two different ways are illustrated in 7 of Figure 15.

8. 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 8 of Figure 15.

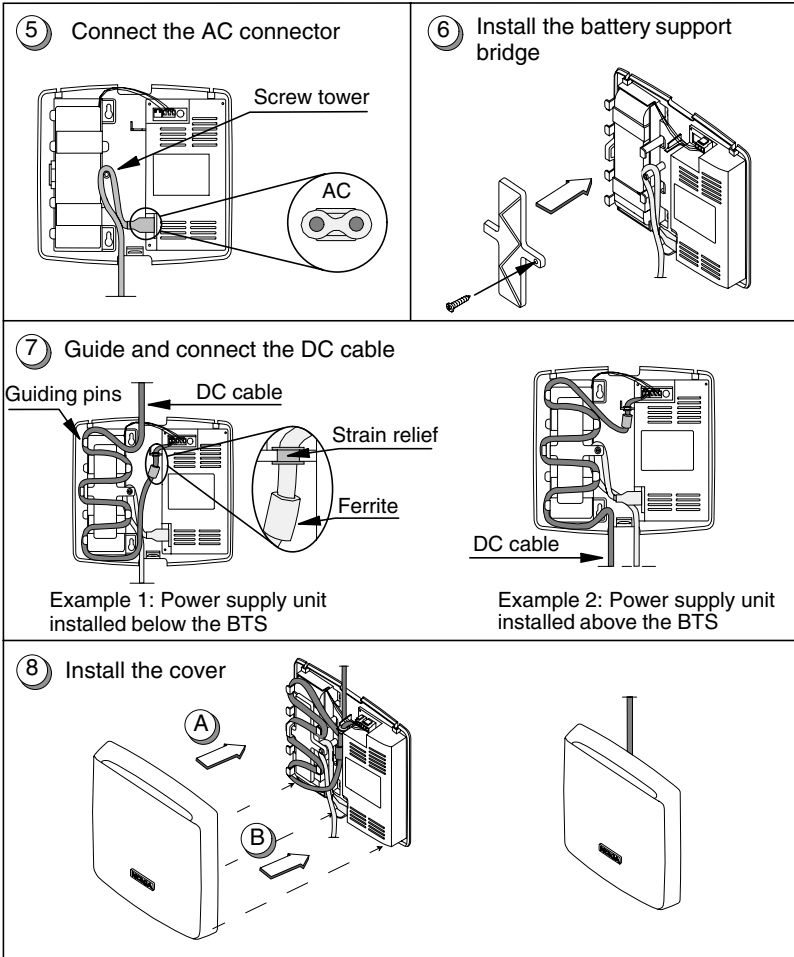


Figure 15. Installing the power supply unit (continued from Figure 14)

9. Install the cable covers, if needed.

Note

If there is a need to install cable covers below the BTS, install a coupler fitting below the BTS connector cover. This way, it is easier to remove the BTS connector cover in the commissioning phase.

Note

An example of a cable cover is 'Panduit LD5', and an example of a coupler fitting is 'Panduit CF5'. However, the requirements set by the supplier must be taken into account.



WARNING

Follow all applicable national regulations when choosing the possible cable cover types and installing the cable covers.

10. Connect the transmission cables. See Figure 16.

Note

The E1 interface of Nokia InSite Base Station is designed to be used only with indoor telephone/data cabling. It must not be directly connected to wires that are leaving the building without any additional equipment (e.g. Nokia InHub or an ETSI-compatible leased line terminal.)

11. Connect the power supply unit to the mains outlet with the AC cable. See Figure 16.

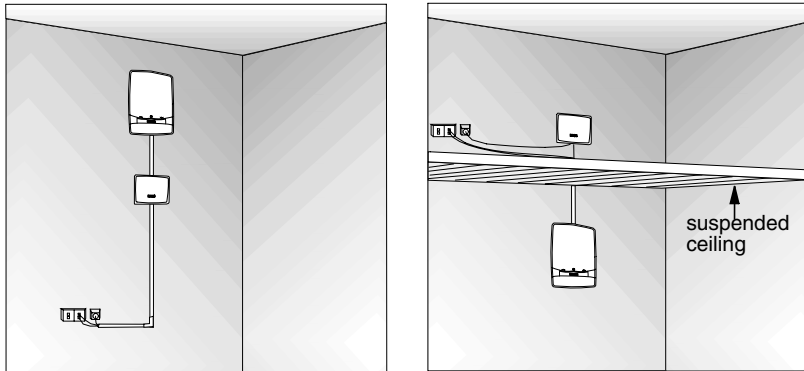


Figure 16. Connecting Nokia InSite Base Station to the mains outlet



Caution

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

6.4 Completing the installation



To complete the installation, do the following:

1. Check that all the cables are properly connected.
2. Check that the BTS and power supply unit covers are properly installed.
3. Clean the site. Recycle any applicable material.
4. Commission the BTS as specified in *Commissioning*.