Installation Guide
IP-DECT Base Station and IP-DECT Gateway

Contents

1   Introduction

This document describes how to install the following device:

- IPBS [1]
- IPBL [2]

The document is intended for service technicians.

For information on how to operate the device, see the applicable Installation and Operation Manual for the device.

For information about supported PBXs contact your supplier.

1.1   Abbreviations and Glossary

Base Station	Common name for IPBS, DECT Base Station (BS3x0) and TDM-DECT Base Station.
DECT	Digital Enhanced Cordless Telecommunications: global standard for cordless telecommunication.
DECT Base Station	Another name for *BS3x0*
TDM-DECT Base Station	Another name for DB1.
GUI	Graphical User Interface
IP	Internet Protocol: global standard that defines how to send data from one computer to another through the Internet
IPBL	Previously called *IP-DECT Gateway* or, more commonly, as "the Blade"
IPBS	Also referred to as *IPBS Base Station*. Previously called *IP-DECT Base Station*
LAN	Local Area Network: a group of computers and associated devices that share a common communication line.
PBX	Private Branch Exchange: telephone system within an enterprise that switches calls between local lines and allows all users to share a certain number of external lines.
RFP	Radio Fixed Part. DECT base Station part of the DECT Infrastructure.
RSTP	Rapid Spanning Tree Protocol

1.In previous documentation, *IPBS Base Station* (or *IPBS*) was sometimes referred to as *IP-DECT Base Station*.
2.IIn previous documentation, *IPBL* was sometimes referred to as *IP-DECT Gateway*.

2 Description

This section gives a general description of the following devices:

2.1 IPBS1

The following versions of the IPBS1 are available:

- IPBS1 with internal antenna
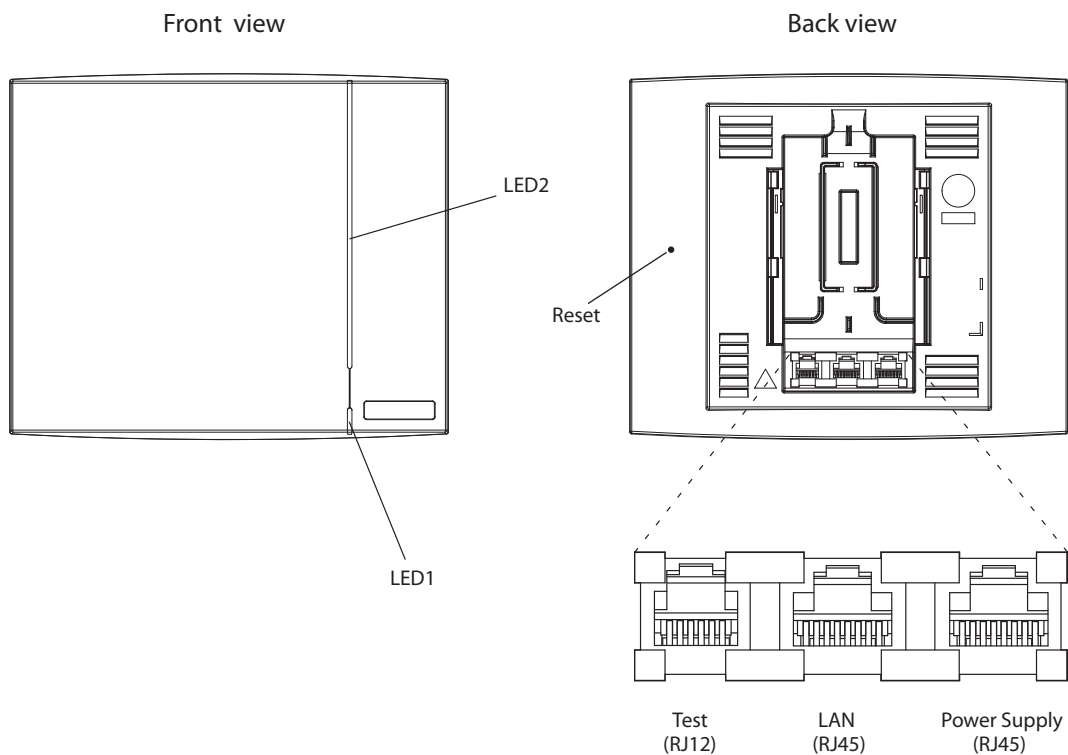- IPBS1 with external antennas

2.1.1 IPBS1 with Internal Antenna

Figure 1. IPBS1 Overview

Contents of the Box

The box in which the IPBS1 is packed contains:

- An IPBS1 with integrated antennas
- A mounting bracket
- Two screws with wall plugs

Power Distribution

The IPBS1 can be powered using the following methods:

- Power over Ethernet, IEEE 802.3af
- A local AC-adapter

NOTE: For more information about power distribution, see 3.3 *Power the Base Station* on page 25.

Software

The software in the IPBS1 can be updated by downloading new software without disconnecting the equipment. The new software is stored in flash memory. For information on how to update the software in the IPBS1, see the applicable Installation and Operation Manual for the IPBS1.

Connectors

- Two 8-pin RJ45 modular jacks for LAN/PoE and powering
- A 6-pin RJ12 modular jack for factory testing

LEDs

Status of LED1 (lower LED)	Description
Steady Green	Operational
Flashing fast amber	Download of firmware in progress.
Steady Amber	TFTP mode
Alternating red/green	No Ethernet connection

Status of LED2 (upper LED)	Description
Not lit	IPBS1 operational and no traffic on the IPBS1.
Steady green	IPBS1 operational and traffic on the IPBS1.
Flashing slow green	Fully occupied with traffic.
Flashing red	No air synchronization - searching for air sync candidates.
Flashing fast red	Download of RFP software in progress.
Alternating red/green	RFP not initialized.

2.1.2 IPBS1 with External Antennas

The IPBS1 is available with two omni-directional external antennas. Other external antennas can be mounted as well. This section contains the differences between the IPBS1 with internal and external antennas. For all other information see 2.1.1 *IPBS1 with Internal Antenna* on page 2.

Contents of the Box

The box in which the IPBS1 is packed contains:

• An IPBS1 for external antennas
• Two antennas
• A mounting bracket
• Two screws with wall plugs

NOTE: The IPBS1 cannot be mounted with the antennas pointing downwards as the mounting bracket does not support it.

Insert the antennas into the IPBS1 before following the installation instructions in 3.2 *Install the Base Station* on page 18.

2.2 IPBS2

The following versions of the IPBS2 are available:

- IPBS2 with internal antenna
- IPBS2 with external antennas

The IPBS2 is backward compatible with the IPBS1 when it comes to coverage, functionality, accessories and mounting bracket. If an old IPBS1 has to be replaced you just reuse the mounting bracket and install the IPBS2.
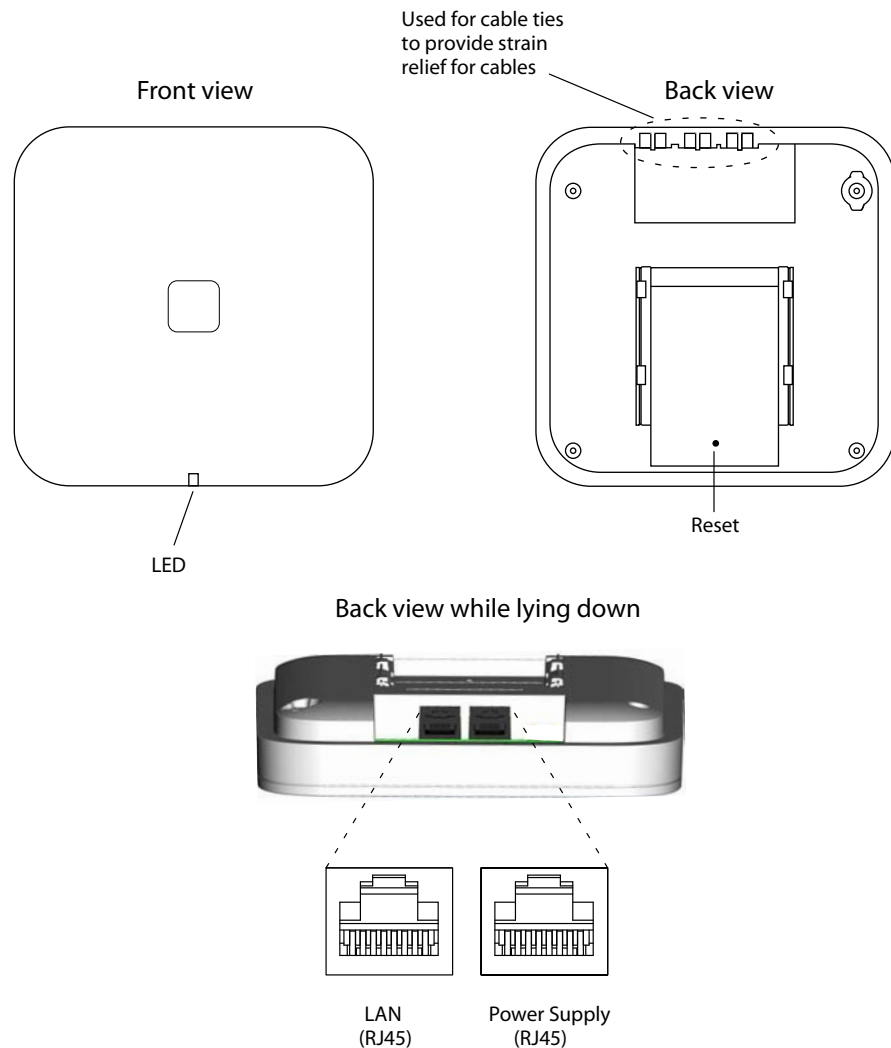
2.2.1 IPBS2 with Internal Antenna

Figure 2. IPBS2 Overview

Contents of the Box

The box in which the IPBS2 is packed contains:

- An IPBS2 with integrated antennas
- A mounting bracket
- Two screws with wall plugs

Power Distribution

The IPBS2 can be powered using the following methods:

• Power over Ethernet, IEEE 802.3af
• A local AC-adapter

NOTE: For more information about power distribution, see 3.3 *Power the Base Station* on page 25.

Software

The software in the IPBS2 can be updated by downloading new software without disconnecting the equipment. The new software is stored in flash memory. For information on how to update the software in the IPBS2, see the applicable Installation and Operation Manual for the IPBS2.

Connectors

• Two 8-pin RJ45 modular jacks for LAN/PoE and powering

LEDs

The IPBS2 has one RGB LED to indicate status. This section describes the different indications and when they shall be used. In the illustrations below: Each blink pattern is represented by a number of blocks where each block is 100 ms. Light grey blocks means that the LED is off. Whenever the indication is changed the new pattern always starts from the first block.

Idle/OK	Solid blue.	IPBS2 operational and no traffic on the IPBS2.
Starting up/ searching	100 ms blue, 100 ms off.	The IPBS2 is in start-up phase, e.g. waiting for parameters from PARI Master, or is searching for air synchronization, or the radio is disabled.
Active traffic	400 ms off, 2000 ms blue.	IPBS2 operational and traffic on the IPBS2.
Fully occupied for speech traffic	400 ms red, 2000 ms blue.	Fully occupied with traffic.
Software download	400 ms blue, 600 ms off.	Download of firmware in progress.

Mini firmware	100 ms yellow, 100 ms off.	The IPBS2 is in mini firmware mode.
TFTP mode	Solid yellow.	TFTP mode.
Error	100 ms red, 100 ms off.	No Ethernet connection.
Fatal error	Solid red.	Fatal hardware error.
Deployment: Good sync	2000 ms blue, 400 ms yellow.	The IPBS2 is in deployment mode and has good air sync coverage.
Deployment: Bad sync	400 ms blue, 600 ms off, 400 ms blue, 600 ms off, 400 ms yellow.	The IPBS2 is in deployment mode and does not have adequate air sync coverage.
Deployment: No sync	2000 ms red, 400 ms yellow.	The IPBS2 is in deployment mode and has no air sync coverage.

2.2.2   IPBS2 with External Antennas

This section contains the differences between the IPBS2 with internal antenna and the IPBS2 with external antennas. For all other information see 2.2.1 *IPBS2 with Internal Antenna* on page 5.

Back view while lying down
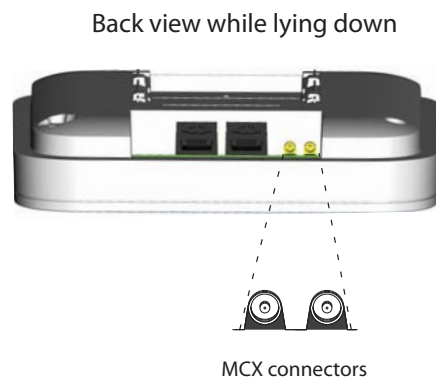
MCX connectors

Figure 3. IPBS2 with MCX connectors for external antennas.

Contents of the Box

The box in which the IPBS2 is packed contains:

- An IPBS2 with external antennas.
- A mounting bracket
- An antenna bracket
- Two antenna coaxial cables.
- Two antennas.
- Four screws with wall plugs

2.3 IPBL

The following versions of the IPBL are available:

- IPBL IP-DECT Gateway VAC/VDC (for 110/230 VAC or 48 VDC)
- IPBL IP-DECT Gateway VDC (for 48 VDC)

2.3.1 Overview
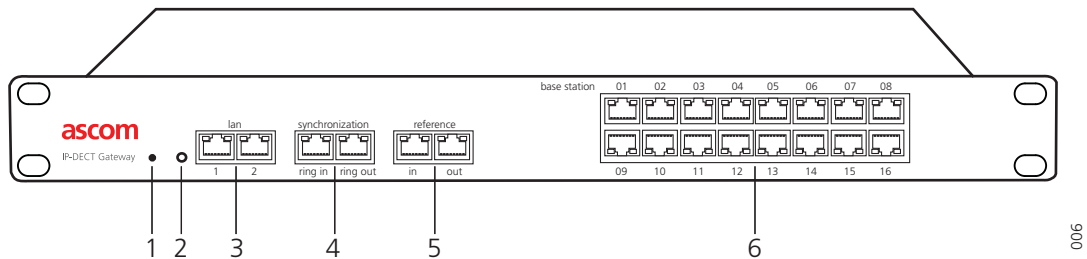
Figure 4. Overview of the IPBL

Pos.	Name	Function
1	Reset	Resets the IPBL. For information on how to use the reset button, see the applicable Installation and Operation Manual for the IPBL.
2	Status LED	Indicates the status on the IPBL.
3	Lan	10BASE-T/100BASE-T Ethernet interface. LAN1 port must be used in the IP-DECT system (LAN2 port is for administration only). Note: This is not applicable when RSTP is used. For information about RSTP, see the applicable Installation and Operation Manual for the device.
4	Synchronization	Sync ring in and sync ring out interfaces.
5	Reference	Reference sync in and reference sync out interfaces.
6	Base station 01-16	ISDN U_{PN} DECT base station interfaces.

2.3.2 Power Supply

The power supply are located at the rear of the IPBL. The IPBL can be powered using the following alternatives:

- 110/230 VAC (*only IPBL IP-DECT Gateway VAC/VDC*)
- 48 VDC

NOTE: For more information, see 4.3 *Power the IPBL* on page 31.

Software

The software in the IPBL can be updated by downloading new software without disconnecting the equipment. The new software is stored in flash memory. For information on how to update the software in the IPBL, see the applicable Installation and Operation Manual for the IPBL.

2.3.3 LED indication

Status LED	Description
Not lit	Not powered, status is not defined.
Flashing slow green	When pressing the reset button.
Flashing fast green	Firmware update or clear config after long reset.
Steady green	Status OK, system is fully operational.
Steady red	Status Fail, system error condition.
Steady amber	System is in TFTP server mode.

Base station LED	Description
Not lit	No U_{PN} link established.
Flashing	U_{PN} link established (activated state), RFP is not operational.
Steady	RFP is fully initialised and operational.

Base station LED	Description
Not lit	No speech activity in RFP.
Flashing	All speech channels occupied in RFP.
Steady	Speech activity in RFP.

Sync/Ref sync LED	Description
Not lit	No sync communication established.
Steady	Communication established.

Sync/Ref sync LED	Description
Not lit	Sync port not selected as input sync source.
Flashing	Sync port selected as input sync source but the sync signal is not in sync.
Steady	Sync port selected as input sync source and the sync signal is in sync.

Lan LED	Description
Not lit	No link.
Flashing	Link present and network activity.
Steady	Link present, but no network activity.

Lan LED	Description

Not lit	10 Mbps operation.
Steady	100 Mbps operation.

2.4 BS3x0

The following versions are available:

• BS330 with Internal antenna
• BS340 with External antennas

Front view   Back view

Test   Data/Power   Data/Power
(RJ12)   (RJ45)   (RJ45)
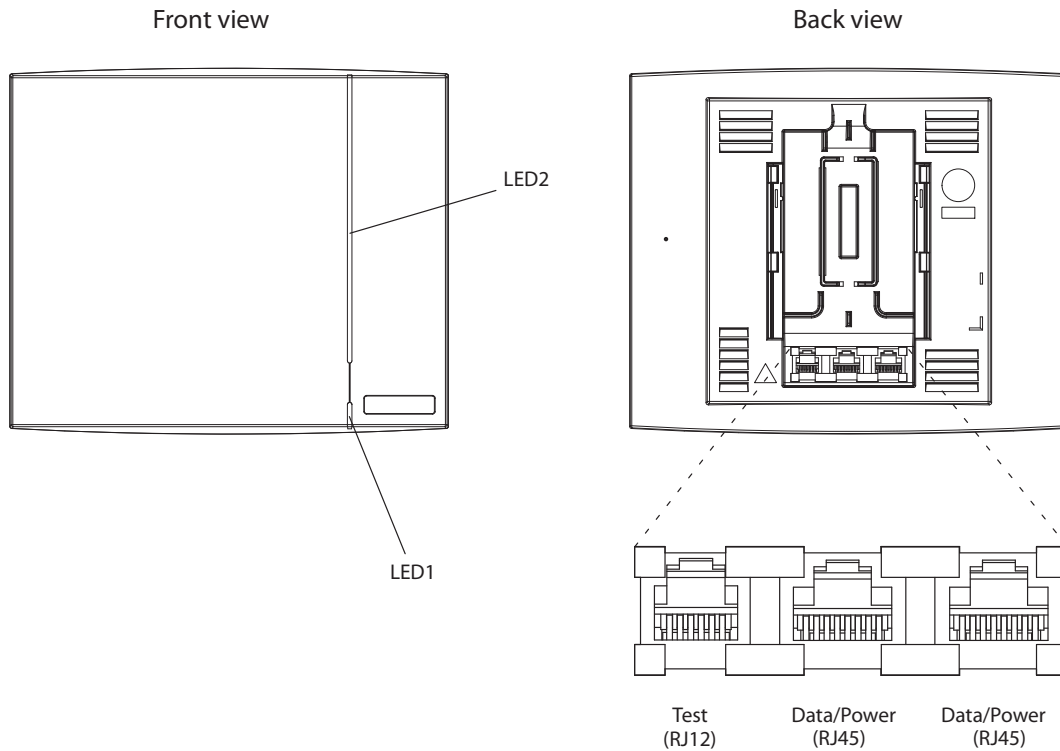
Figure 5. BS3x0 Overview

Contents of the Box

The box in which the base station is packed contains:

• A base station
• Two antennas (only base station with external antenna)
• A mounting bracket
• Two screws with wall plugs

Power Distribution

The base station can be powered using the following methods:

• From the IPBL via the Express Powering Pair (EPP) and data pairs
• With a local AC-adapter

NOTE: For more information about power distribution, see 3.3 *Power the Base Station* on page 25.

Software

The software in the BS3x0 can be updated by downloading new software without disconnecting the equipment. The new software is stored in flash memory. For information on how to update the software in the BS3x0, see the applicable Installation and Operation Manual for the BS3x0.

Connectors

• Two 8-pin RJ45 modular jacks for data and powering
• A 6-pin RJ12 modular jack for factory testing

LEDs

Status of LED1 (lower LED)	Description
Steady Green	Power LED

Status of LED2 (upper LED)	Description
Not lit	Base station operational and no traffic on the base station.
Flashing green	Fully occupied with traffic.
Steady green	Base station operational and traffic on the base station.
Flashing amber	Software is being downloaded to the base station
Steady amber	Base station is OK, but not available (self-test, not initialized, no communication with IPBL)

2.5 DB1

The following versions of the DB1 are available:

• DB1 with internal antenna
• DB1 with external antennas

The DB1 is backward compatible with the BS3x0 when it comes to coverage, functionality, accessories and mounting bracket. If an old BS3x0 has to be replaced you just reuse the mounting bracket and install the DB1.

2.5.1 DB1 with Internal Antenna

Used for cable ties to provide strain relief for cables

Front view

Back view

LED

DIP switch

Back view while lying down
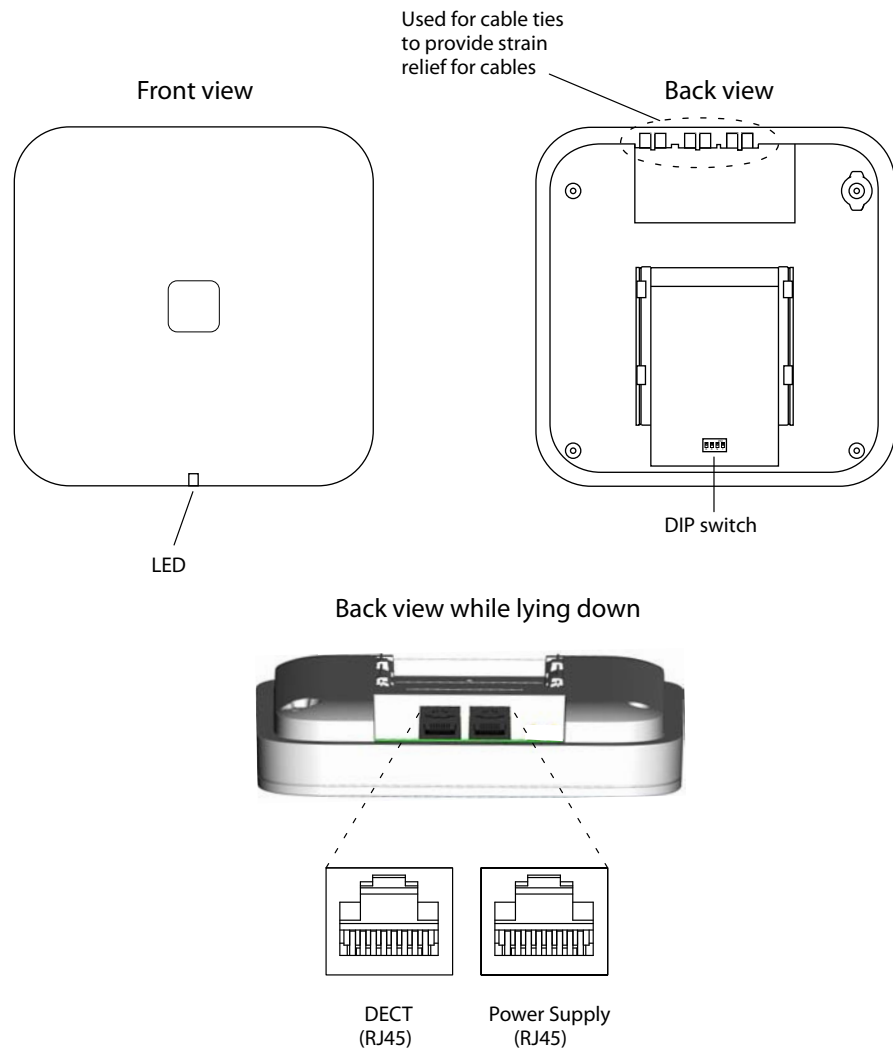
DECT
(RJ45)

Power Supply
(RJ45)

Figure 6. DB1 Overview

Contents of the Box

The box in which the DB1 is packed contains:

• A DB1 with integrated antennas
• A mounting bracket
• Two screws with wall plugs

Power Distribution

The DB1 can be powered using the following methods:

• From the IPBL via the Express Powering Pair (EPP) and data pairs
• With a local AC-adapter

NOTE: For more information about power distribution, see 3.3 *Power the Base Station* on page 25.
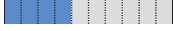
Software

The software in the DB1 can be updated by downloading new software without disconnecting the equipment. The new software is stored in flash memory. For information on how to update the software in the DB1, see the applicable Installation and Operation Manual for the DB1.

Connectors

• Two 8-pin RJ45 modular jacks for data and powering

LEDs

The DB1 has one RGB LED to indicate status. This section describes the different indications and when they shall be used. In the illustrations below: Each blink pattern is represented by a number of blocks where each block is 100 ms. Light grey blocks means that the LED is off. Whenever the indication is changed the new pattern always starts from the first block.

Idle/OK	Solid blue.	DB1 operational and no traffic on the DB1.
Starting up	100 ms blue, 100 ms off.	The DB1 is in start-up phase, i.e. waiting to be initialized by the IPBL.
Active traffic	400 ms off, 2000 ms blue.	DB1 operational and traffic on the DB1.
Fully occupied for speech traffic	400 ms red, 2000 ms blue.	Fully occupied with traffic.
Software download	400 ms blue, 600 ms off.	Download of firmware in progress.

Error	100 ms red, 100 ms off.	U_{PN} layer 1 communication error.
Fatal error	Solid red.	Fatal hardware error.

DIP Switches

The DIP switches can be found on the back of the DB1, see figure 6 on page 14.

Note: DIP switch 3 and 4 shall be set to ON.

Set DIP switch 1 and 2 to ON or OFF as follows:

DIP switch 1: ON DIP switch 2: ON	DB1 Standard (Europe, Africa, Middle East, Australia, New Zealand and Asia) for use with DECT in the 1880-1900 MHz frequencies.
DIP switch 1: ON DIP switch 2: OFF	DB1 SA (South America) for use with DECT in the 1910-1930 MHz frequencies.
DIP switch 1: OFF DIP switch 2: OFF	DB1 NA (North America) for use with DECT in the 1920-1930 MHz frequencies.

2.5.2   DB1 with External Antennas

This section contains the differences between the DB1 with internal antenna and the DB1 with external antennas. For all other information see 2.5.1 _DB1 with Internal Antenna_ on page 14.
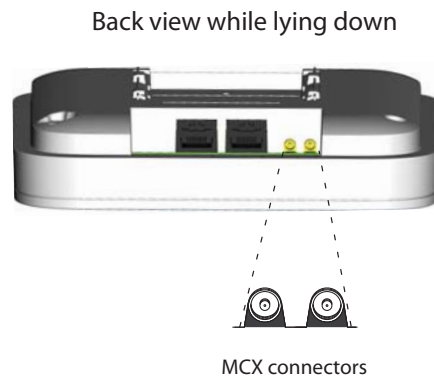
Figure 7. DB1 with MCX connectors for external antennas.

Contents of the Box

The box in which the DB1 is packed contains:

- A DB1 with external antennas.
- A mounting bracket
- An antenna bracket
- Two antenna coaxial cables.
- Two antennas.

• Four screws with wall plugs

2.6   AC-adapter

The AC-adapter is used to power a base station locally.

NOTE: The maximum length of cable from adapter must not exceed 10 meters.

Versions (different type of mains plug)

For European countries except U.K.	Art. no.: 130137B	Order. no.: BSX-0013
For U.K.	Art. no.: 130136B	Order. no.: BSX-0014
For NA	Art. no.: 130138A	Order. no.: BSX-0015
For Australia	Art. no.: 130139B	Order. no.: 660263

IMPORTANT: If local power supply is used for the RFPs, the EPP cable pair must NOT be connected.

3   Installation of the Base Station

This section describes how to install the IPBSs, BS3x0 and DB1. All three base stations can be fixed to a wall, a ceiling, a pole or a beam, by means of the mounting bracket included. When fixing the base station to a wall or ceiling the included plugs and screws must be used. When fixing it to a pole or beam a strap or a flexible metal band must be used, this is not included.

NOTE: It is recommended to mount the Base Station at least 30 cm away from a metal surface.

3.1   Base Station Cabling

Recommended base station cable is a standard CAT5 unshielded ethernet cable with minimum 26 AWG copper conductors, this cable is also used for powering the base station. It is assumed that installation personnel know how to crimp RJ45 connectors to a cable.

NOTE: Since the distance between the base station and the wall is limited, a RJ45 modular jack without cable retention must be used.

NOTE: Ensure that during the installation of an base station, each base station is given an extra length (5-10 metres) of cable because it is possible that it will have to be moved for one reason or another.

3.2   Install the Base Station

The base station can be mounted vertically or horizontally. Mount the base station at places and positions as determined in the base station plan, see the applicable System Planning documentation for IP-DECT. The base station must be placed in a way that it is not facing large metal objects such as large heating pipes.

3.2.1   Fix the Mounting Bracket to a Wall

Fix the mounting bracket (see figure 8 on page 19) to the wall as follows:

1   Hold the mounting bracket with its flat side against the wall with the text 'TOP' upwards and mark the two holes. The minimum distance between the upper hole and the ceiling or any object above the base station must be at least 65 mm for IPBS1/BS3x0 and 100 mm for IPBS2/DB1, see figure 8 on page 19. If the distance is less than 65/100 mm, the base station cannot be slid onto the bracket.

2   When using wall plugs: Drill the two holes using a ∅ 6 mm drill and insert the included wall plugs.

3   Position the mounting bracket with its flat side to the wall and fasten it with the two included ∅ 3.5 mm screws.
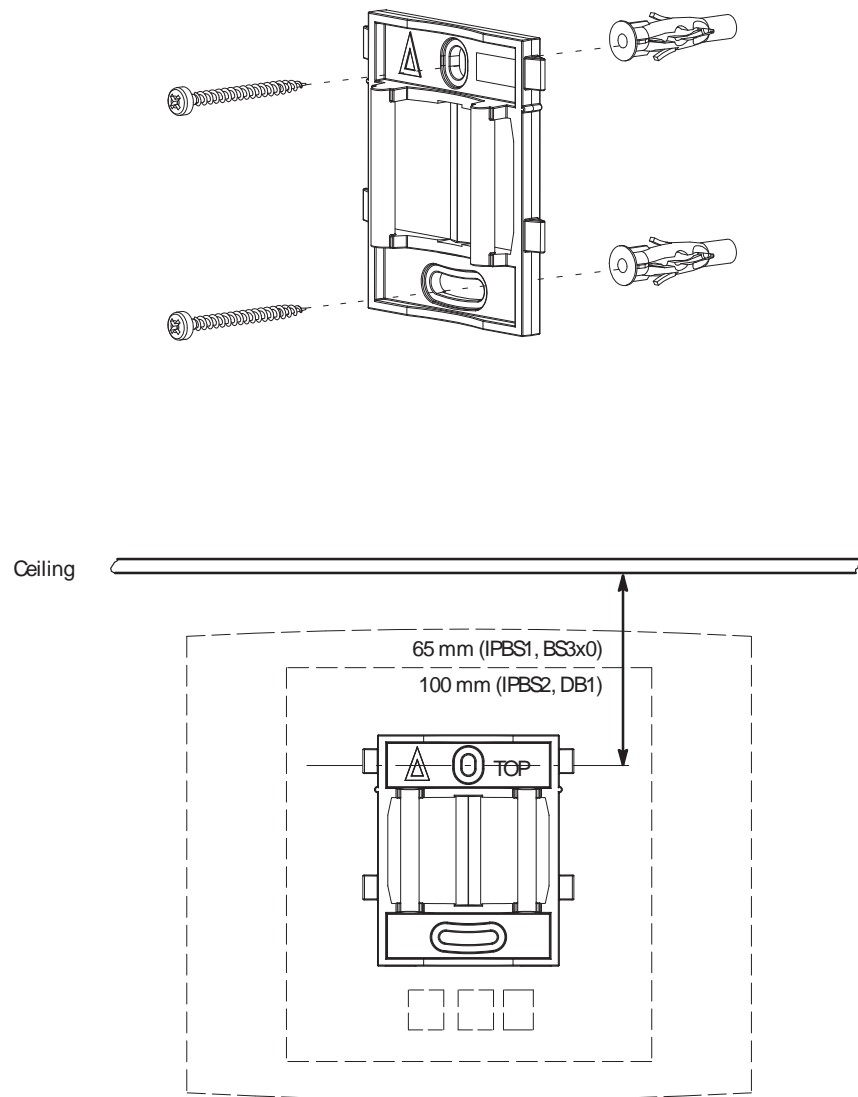
Figure 8. Fixing the mounting bracket to a wall.

3.2.2 Fix the Mounting Bracket to a Ceiling

Fixing to a ceiling is done in the same way as the a wall, see *3.2.1 Fix the Mounting Bracket to a Wall*. When the base station has to be positioned above a suspended ceiling, make sure that the front of the base station points downwards.

3.2.3 Fix the Mounting Bracket to a Pole or Beam

The mounting bracket can be fixed to a pole (diameter ≥ 45 mm) or a beam (wider than 50 mm) by means of a strap or flexible metal band less than 30 mm wide. The strap or flexible metal band is not included in the box.

1   Fix the mounting bracket to a pole or beam using the metal band, see figure 9 on page 20.

Tied wrongly

012
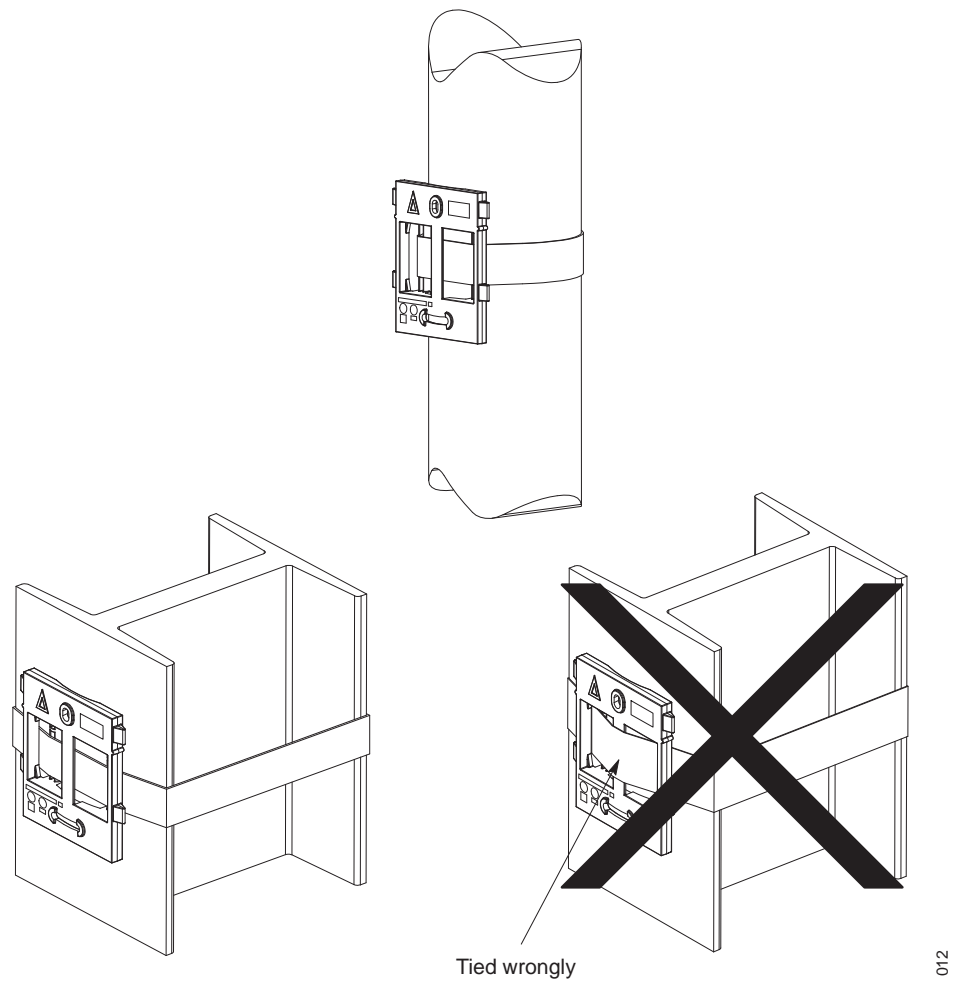
Figure 9. Fixing the mounting bracket to a pole or beam.

3.2.4   Use the Cable Ducts for IPBS1

When the base station IPBS1 is mounted to the wall, cable ducts can be used to route the wiring through.

1   Fix the cable duct to the wall in one of the positions shown in figure 10 on page 21.
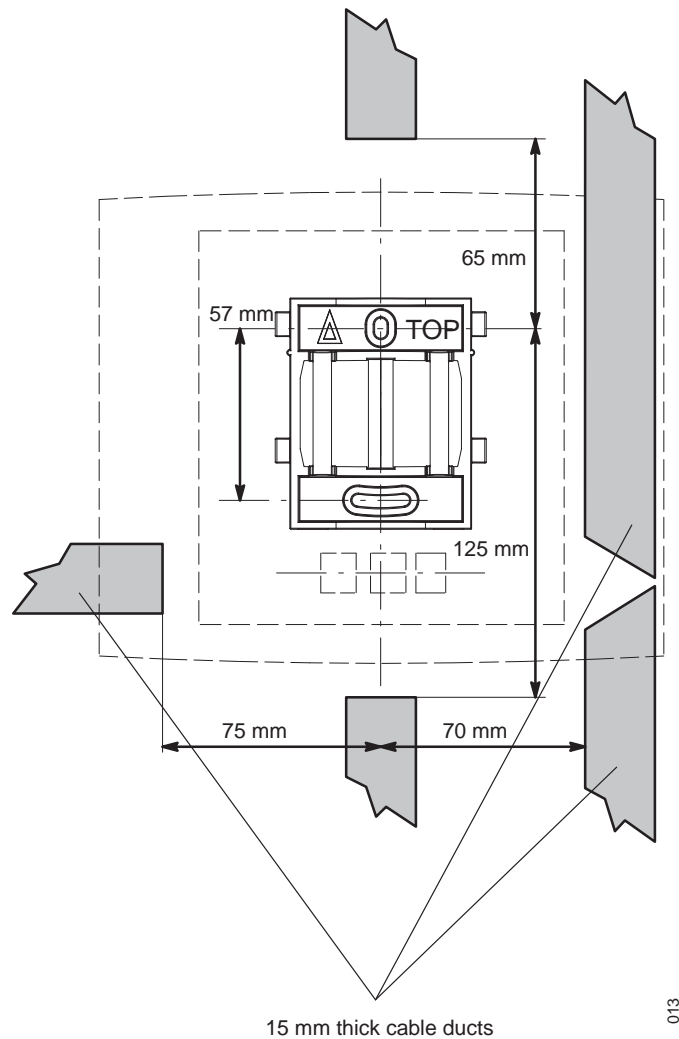
Figure 10. Minimum distances between a cable duct and the mounting bracket

3.2.5   Connect External Antennas (only IPBS2 and DB1)

1   Position the included antenna bracket above the mounting bracket with a minimum distance of 74 mm (250 mm maximum) and mark the two holes for the antenna bracket, see figure 11 on page 22 (1).

2   When using wall plugs: Drill the two holes using a ⌀ 6 mm drill and insert the included wall plugs.

3   Position the antenna bracket to the wall and fasten it with the two included ⌀ 3.5 mm screws.

4   Mount the two included coaxial cables on the antenna bracket, see figure 11 on page 22 (2). Fasten the coaxial cables with the lock nuts which are found on the coaxial cable antenna connectors.

5   Mount the antennas on the antenna connectors (2).

6   Connect the coaxial cables to the MCX connectors on the base station.

Back view while lying down

MCX connectors
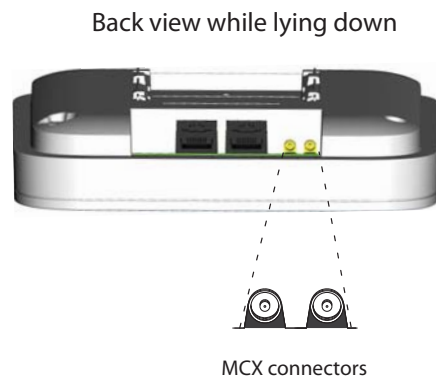
7   Mount the base station (3), see 3.2.9 *Mount the Base Station* on page 24.
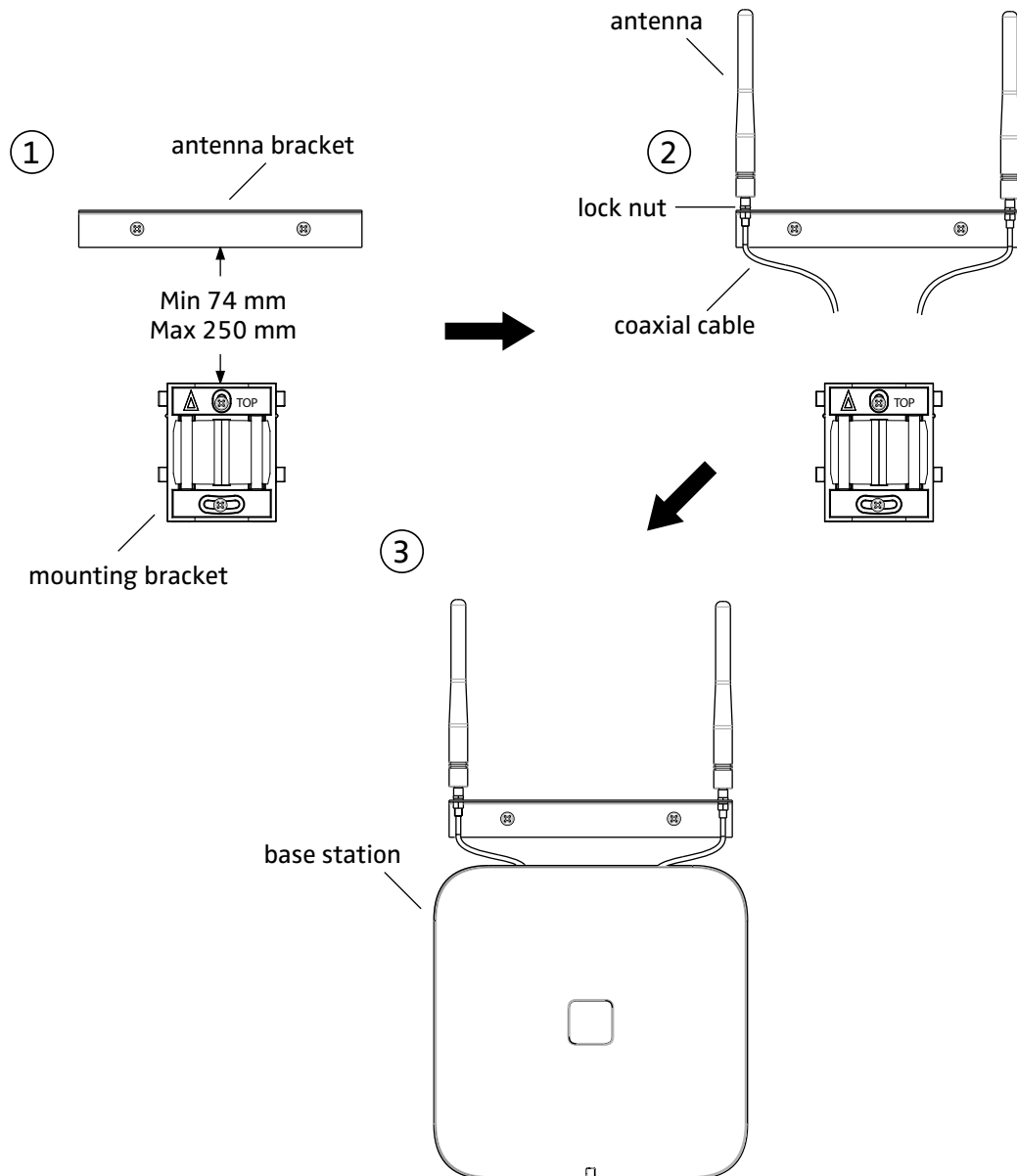
Figure 11. Connect external antennas.

3.2.6   Secure the Cable

For safety reasons secure the base station cable to a convenient point at about 30 cm from the base station.

If for some reason the base station drops, it is secured by the cable.

3.2.7   Pinning

1   Cut the cable to the correct length and connect the cable to a RJ45 modular jack.

2   For information on the pinning of the data jack see the following:

- IPBS, *Pin the IPBS Cable* on page 23.
- BS3x0 and DB1, *Pin the BS3x0/DB1 Cable* on page 24.

Do **not** plug the connector in the base station yet!

NOTE: Since the distance between the base station and the wall is limited, a RJ45 modular jack without cable retention must be used.

Pin the IPBS Cable
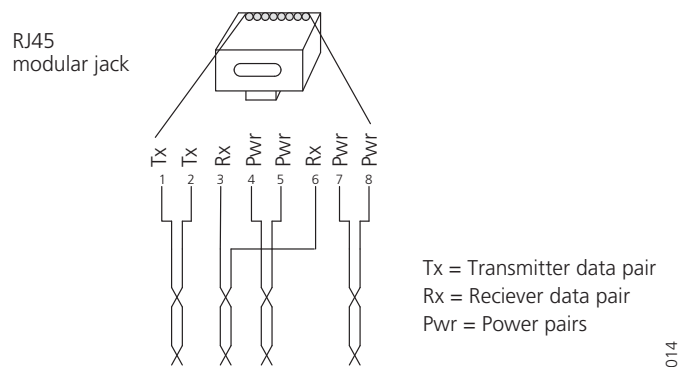
Figure 12. Connector pinning of the LAN/PoE connector, power feed over the spare cable pairs.
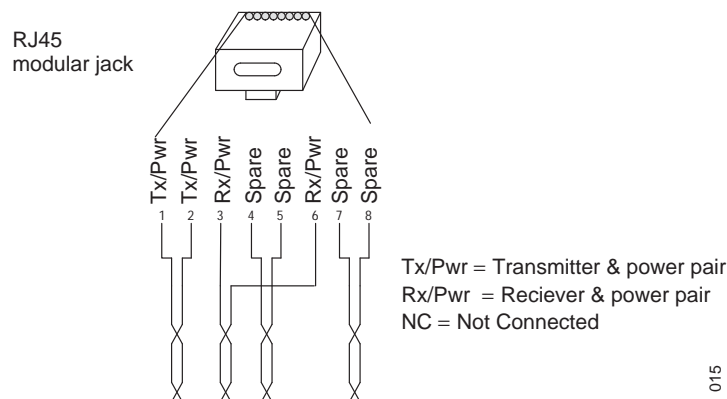
Figure 13. Connector pinning of the LAN/PoE connector, power feed over the Rx/Tx data cable pairs.

Pin the BS3x0/DB1 Cable
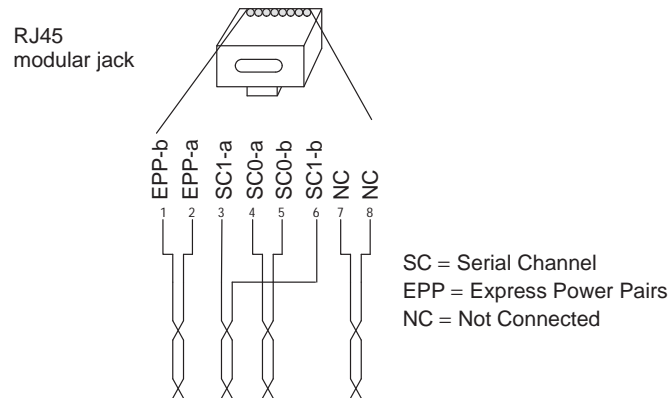
Figure 14. Connector pinning of the Data connector

IMPORTANT: If local power supply is used, the EPP cable pair must NOT be connected.

3.2.8   Connect the Base Station Cables

1   Only for IPBS1: If it is required that the cables enter the base station centrally from above, guide the cables through the recess in the middle of the base station as shown below.
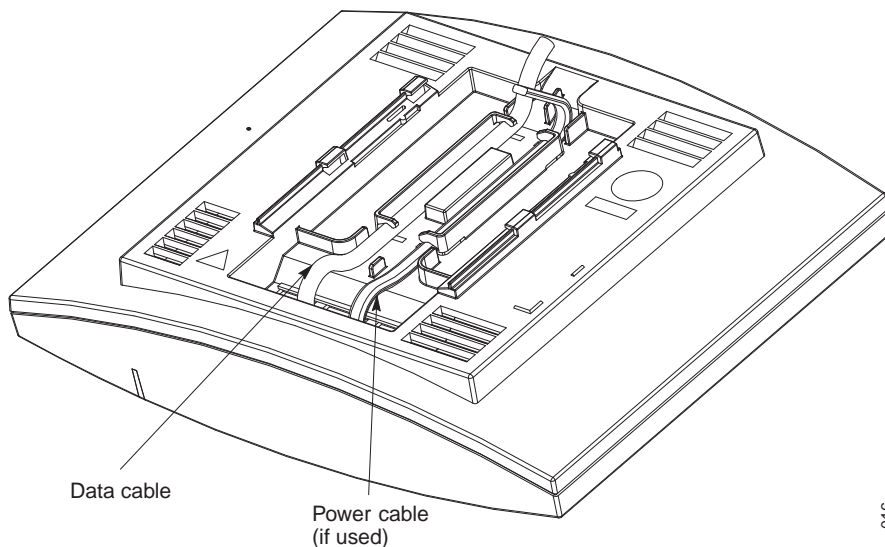
2   Plug the modular jack of the data cable into one of the data/power connectors.

3   When an AC-adapter is used:

- Plug the modular jack of the AC-adapter in one of the data/power connectors.
- Plug the AC-adapter into a wall-outlet.

3.2.9   Mount the Base Station

Hold the base station flat against the mounting bracket and move it downwards until it clicks, see below.
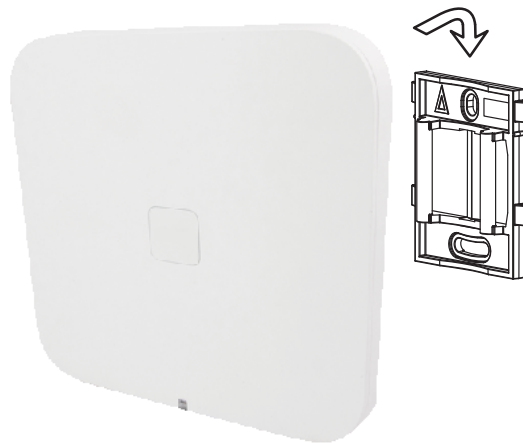
Figure 15. Mounting of the IPBS.

3.3   Power the Base Station

The base station is powered the following ways:

- Power over Ethernet (only IPBS).
- Power over Express Powering Pairs (EPP) and data pairs (only BS3x0 and DB1)
- By a local power supply.

NOTE: Do not power the base station using both power supplies. Parallel powering will not harm the base station but it can disturb the signalling.

3.3.1   Power the IPBS over Ethernet

The IPBS supports Power over Ethernet, IEEE 802.3af, class 2. The power source will allocate 7W to the IPBS. This must be regarded when planning the powering of the IPBSs so that the power limit of the PoE power source is not exceeded.

The PoE standard supports two ways of feeding the power:

1   Power over the Rx/Tx data pairs.
2   Power over the spare cable pairs.

Both power feed methods are supported in the IPBS, it is also insensitive to change of the polarity.

3.3.2   Power the BS3x0 and DB1 over Express Powering Pair (EPP) and data pairs

When a base station is powered remotely via the IPBL, the maximum length between the base station and the IPBL depends on the supply voltage, the number of twisted pairs used and the wire size. The length of the cable should never exceed "data-limited" length of the cable, see Appendix A. *RFP Power Consumption* on page 35.

3.3.3   Power the Base Station with a Local Power Supply

Powering the base station with a local power supply can be done using the second data/power inlet on the base station. The base station can be powered individually by an AC-adapter. The AC-adapter is provided with an 8-pin RJ45 plug that can be plugged into the *Power Supply* jack. For specification see 2.6 *AC-adapter* on page 17.

NOTE: Only approved power supply according to valid editions of EN/IEC/CSA/UL/AU/NZS 60950 is to be used when the base station is powered by a local power supply.

4 Installation of the IPBL

This section describes how to install the IPBL.

4.1 Install the IPBL

IMPORTANT: To keep the same functionality of the system, do not mix different RFPs, Core (KRCNB 201) with Worf (KRCNB 30x and BS3x0), on the same IPBL. The reason this will not work is prolonged preamle is supported by Worf RFPs but not by Core RFPs. When the handset receive capacity information from the RFPs, including prolonged preamble and multicast, it assumes that all RFPs are of the same type as the first RFP it receives data from.
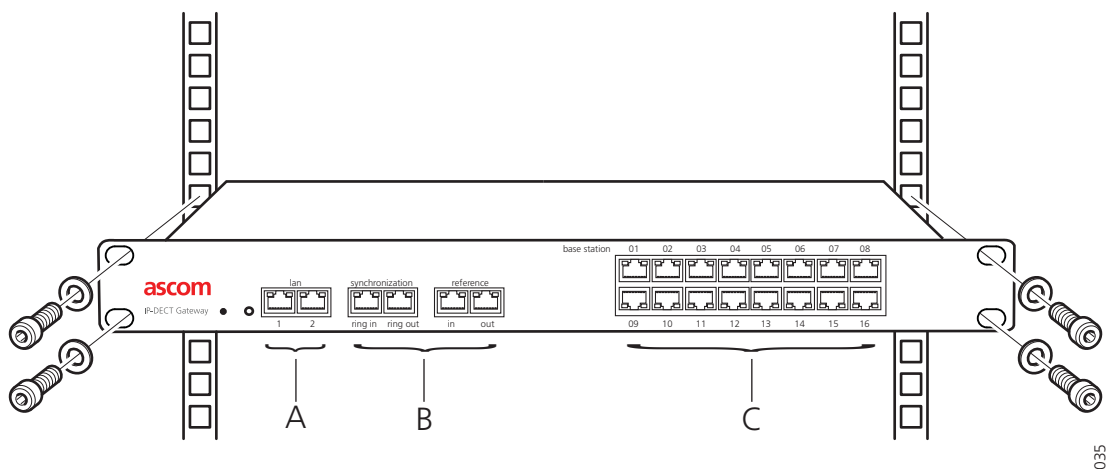
Figure 16. Install the IPBL

The main steps of the installation is described below:

1 Install the IPBL in a standard 19" rack.

2 Pin the cables, see *4.2 Pin the IPBL Cable* on page 29.

3 Attach the power cable, see *4.3 Power the IPBL* on page 31.

4 Connect the cables in the following order:

  • Ethernet cable (A) LAN1 port must be used in the IP-DECT system (LAN2 port is for administration only). Note: This is not applicable when RSTP is used. For information about RSTP, see the applicable Installation and Operation Manual for the device.
  • Synchronization cable (ring sync, reference sync) (B)
  • Base station cable (RFP cable) (C)

IMPORTANT: The connected RFPs must not be connected to protective earth.

5 Monitor the total current consumption from the IPBL's GUI (Graphical User Interface). For information on how to monitor the total current consumption, see section *Environment* in the applicable Installation and Operation Manual for the IPBL.

Make sure that the total current consumption does not exceeds the following values:

- Max current consumption is 1,9/0,9 A when supplied with 110/230 VAC.
- Max current consumption is 5,2 A when supplied with 48 VDC.

Note: The IPBL current consumption is 0,3 A and is included in max current consumption.

For more information of power consumption of the RFPs, see Appendix A. *RFP Power Consumption* on page 35.

4.2   Pin the IPBL Cable

All data cables used for the IPBL is standard CAT5 unshielded cable. It is assumed that installation personnel know how to crimp these connectors to a cable.

4.2.1   Synchronization Cable

The maximum cable length between two IPBLs must not exceed 2000 meters.

1   Cut the cable to the correct length.

2   Connect the cable to a RJ45 modular jack. For information on pinning, see Figure 17 and Figure 18.

3   Label the cable.

Sync IN

RJ45
modular jack

Sign Tx + Sign Tx - Sign Rx + Rx + Rx - Sign Rx - Tx + Tx -
1   2   3   4   5   6   7   8

Tx = Transmitter data pair
Rx = Reciever data pair
Sign = Signalling

026
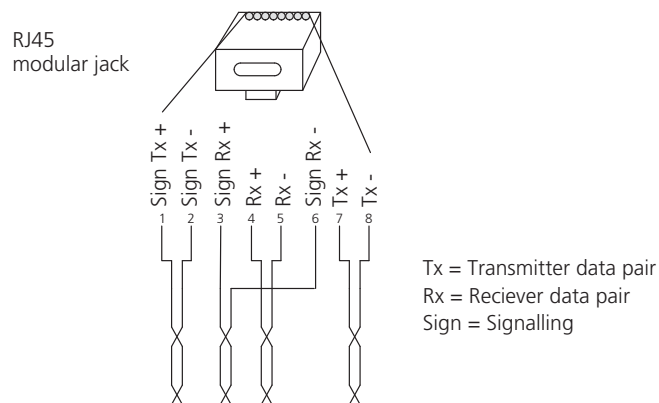
Figure 17. Connector pinning of the Sync IN cable

Sync OUT

RJ45
modular jack

Sign Rx + Sign Rx - Sign Tx + Tx + Tx - Sign Tx - Rx + Rx -
1   2   3   4   5   6   7   8

Tx = Transmitter data pair
Rx = Reciever data pair
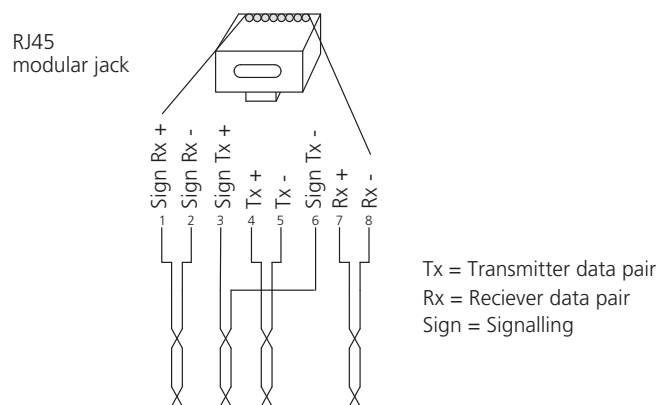Sign = Signalling

027

Figure 18. Connector pinning of the Sync OUT cable

4.2.2 RFP Cable

The RFP cable connects the IPBL with the RFPs. The maximum cable length between IPBL and a single RFP must not exceed 1500 meters.

NOTE: Ensure that during the installation, each RFP is given an extra length (5-10 metres) of cable because it is possible that it will have to be moved for one reason or another.

1   Cut the cable to the correct length.

2   Connect the cable to a RJ45 modular jack. For information on the pinning, see below.

IMPORTANT: If local power supply is used for the RFP, the EPP cable pairs must NOT be connected.

RJ45
modular jack

EPP -b	EPP -a	SC1 -a	SC0 -a	SC0 -b	SC1 -b	NC	NC
1	2	3	4	5	6	7	8

EPP= Express Power pairs
SC = Data pair lead
NC= Not Connected

028
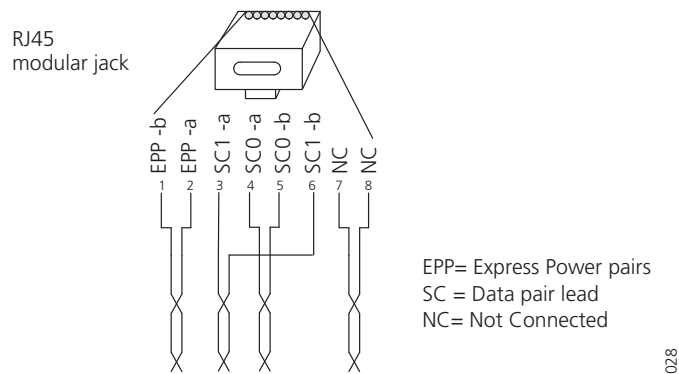
3   Label the cable.

4.2.3 LAN Cable

NOTE: The TX/RX crossover/straight cable feature does not work in the IPBL. It must be a straight cable between the IPBL and the switch port.

1   Cut the cable to the correct length.

2   Connect the cable to a RJ45 modular jack. For information on the pinning, see below.

RJ45
modular jack

Ethernet A +	Ethernet A -	Ethernet B +	NC	NC	Ethernet B -	NC	NC
1	2	3	4	5	6	7	8

NC = Not Connected

029
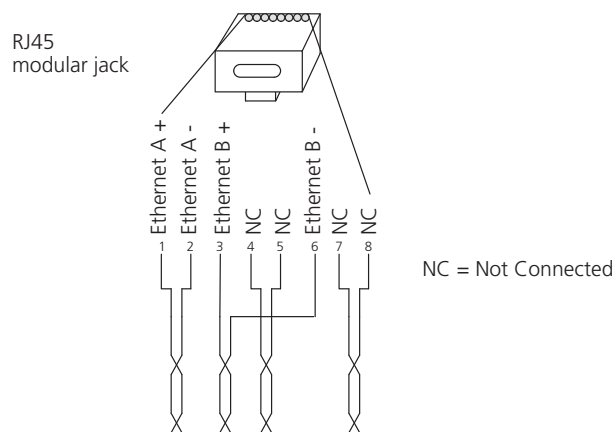
3   Label the cable.

4.3 Power the IPBL

The IPBL power supply connectors are located at the rear. The power supply feeds both the IPBL and the connected RFPs. There are two alternatives to power the IPBL:

- 110/230 VAC, 60/50 Hz
- 48 VDC

4.3.1 110/230 VAC

The 110/230VAC (100 – 240 VAC) power input is protected against overload by a 4A fuse. The IEC 60320 type C14 (male) connector consists of:

- live lead (1)
- neutral lead (2)
- protective earth (3)
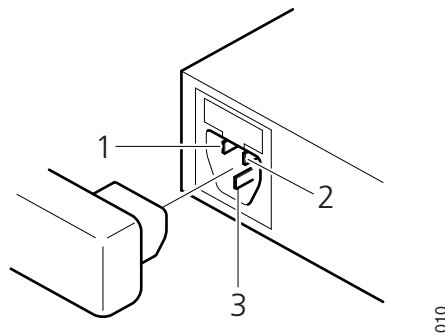
Figure 19. Pinning of the 110/230 VAC power supply

1   Connect the power cable on the IPBL.

2   Connect the power cable in a wall socket with protected earth.

      The IPBL is switched on.

4.3.2   48 VDC

The 48 VDC (42 – 56 VDC) power input includes a fuse on the 48 VDC input to protect against overload. The IPBL also has a protection circuit to protect both the IPBL and the external power supply from damages caused by the user reversing the input terminals during installation.
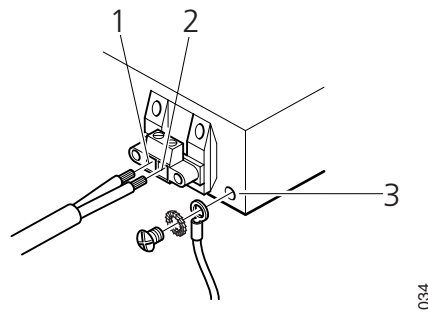
Figure 20. Pinning of the 48 VDC power supply

NOTE: A ground cable must be fastened to the protective earth (3) when 48 VDC is used as power source.

1   Fasten the ground cable to the protective earth (3) using the attached M4 screw (Philips) and washer.

2   Cut the power cable to the correct length.

    The recommended wire size diameter is 1 mm (18 AWG).

3   Attach the positive lead to (1).

4   Attach the negative lead to (2).

5   Connect the power cable to 48 VDC power source.

5   Related Documents

Installation and Operation Manual for IP-DECT Base Station and IP-DECT   TD 92579EN
Gateway

Document History

For details in the latest version, see change bars in the document.

Version	Date	Description
Ver. A	31 May 2013	First released version.
B	15 October 2014	Updated section *DIP Switches* on page 16. (Issue IPDECT-1328) Updated section 3 *Installation of the Base Station* on page 18 regarding that it is recommended to mount the Base Station at least 30 cm away from a metal surface. (Issue IPDECT-1625)

Appendix A. RFP Power Consumption

The tables below show power consumption for a base station connected to and powered from the IPBL.

The maximum cable length for base stations connected to the IPBL must **not** exceed 1500 meters.

A.1 KRCNB 201

Cable length (metres)	0.4 mm wire size (∅)	0.4 mm wire size (∅)	0.5 mm wire size (∅)	0.5 mm wire size (∅)	0.6 mm wire size (∅)	0.6 mm wire size (∅)
	Without EPP	With EPP	Without EPP	With EPP	Without EPP	With EPP
0	7.5	7.5	7.5	7.5	7.5	7.5
100	7.9	7.8	7.8	7.7	7.7	7.6
200	8.3	8.0	8.0	7.8	7.8	7.7
300	8.9	8.3	8.3	8.0	8.0	7.8
400	9.8	8.7	8.7	8.2	8.2	7.9
500	11.3	9.2	9.2	8.5	8.4	8.0
600	-	9.8	9.8	8.7	8.6	8.2
700	-	10.7	10.7	9.0	8.8	8.3
800	-	12.3	12.3	9.4	9.1	8.4
900	-	-	-	9.8	9.5	8.6
1000	-	-	-	10.3	9.9	8.8
1100	-	-	-	11.1	10.4	8.9
1200	-	-	-	12.3	11.1	9.1
1300	-	-	-	-	12.1	9.3
1400	-	-	-	-	-	9.6
1500	-	-	-	-	-	9.9

Table 1 Power consumption (watts) of base stations and cabling when powered from the IPBL.

A.2 BS3x0 and DB1

Cable length (metres)	0.4 mm wire size (∅)	0.4 mm wire size (∅)	0.5 mm wire size (∅)	0.5 mm wire size (∅)	0.6 mm wire size (∅)	0.6 mm wire size (∅)
	Without EPP	With EPP	Without EPP	With EPP	Without EPP	With EPP
0	5.0	5.0	5.0	5.0	5.0	5.0
100	5.2	5.1	5.1	5.1	5.1	5.1
200	5.3	5.2	5.2	5.1	5.1	5.1
300	5.6	5.3	5.3	5.2	5.2	5.1
400	5.8	5.5	5.5	5.3	5.3	5.2
500	6.1	5.6	5.6	5.4	5.4	5.2
600	6.5	5.8	5.8	5.5	5.4	5.3
700	7.1	6.0	6.0	5.6	5.5	5.3
800	8.1	6.2	6.2	5.7	5.6	5.4
900	-	6.5	6.5	5.8	5.7	5.4
1000	-	6.9	6.9	5.9	5.8	5.5
1100	-	7.3	7.3	6.1	5.9	5.6
1200	-	8.1	8.1	6.2	6.1	5.6
1300	-	-	-	6.4	6.2	5.7
1400	-	-	-	6.6	6.4	5.8
1500	-	-	-	6.9	6.6	5.8

Table 2 Power consumption (watts) of base stations and cabling when powered from the IPBL
Table 3