

# Mitel Base Station & IPBL, Installation Guide



## Abbreviations and Glossary

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DECT	Digital Enhanced Cordless Telecommunications Global standard for cordless telephony.
TDM-DECT Base Station	Another name for BS3x2.
GUI	Graphical User Interface The interface between a user and a computer application.
IP	Internet Protocol Global standard that specifies the format of datagrams and the addressing scheme. This is the principal communications protocol in the Internet Protocol suite.
IPBL	IP-DECT Gateway
IPBS	IP-DECT Base Station or IPBS Base Station.
LAN	Local Area Network
PBX	Private Branch Exchange A telephone system within an enterprise that switches calls between local lines, and allows all users to share a certain number of external lines. Also referred to as Call Manager.
RFP	Radio Fixed Part DECT base station part of the DECT Infrastructure. TDM-DECT base station connected to an IPBL or the local RFP part in an IPBS.

## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
<b>2</b>	<b>Description .....</b>	<b>2</b>
2.1	IPBS1 .....	2
2.2	IPBS2/IPBS3 .....	4
2.3	IPBL.....	7
2.4	BS3x0 .....	9
2.5	BS3x2 .....	11
2.6	AC-adapter.....	14
<b>3</b>	<b>Installation of the Base Station.....</b>	<b>16</b>
3.1	Base Station Cabling .....	16
3.2	Install the Base Station .....	16
3.3	Power the Base Station.....	23
<b>4</b>	<b>Installation of the IPBL .....</b>	<b>25</b>
4.1	Install the IPBL.....	25
4.2	Pin the IPBL Cable .....	26
4.3	Power the IPBL.....	27
4.4	Fans Replacement .....	28
<b>Appendix A</b>	<b>RFP Power Consumption .....</b>	<b>29</b>
A.1	BS3x0 and BS3x2 .....	29
A.2	BS3x0 version 4H and BS3x2.....	29
<b>Appendix B</b>	<b>Related Documents .....</b>	<b>31</b>



## 1 Introduction

This document describes how to install the following device:

- IPBS<sup>1</sup>
- IPBL<sup>2</sup>

The document is intended for service technicians.

For information on how to operate the device, see the *13/1531-ANF90114 Mitel IP-DECT\_System (12.1.5) Installation and Operation.pdf*.

For information about supported PBXs contact your supplier.

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

## 2 Description

This section gives a general description of the following devices:

- IPBS1, see [2.1 IPBS1, page 2](#)
- IPBS2 and IPBS3, see [2.2 IPBS2/IPBS3, page 4](#)
- IPBL, see [2.3 IPBL, page 7](#)
- BS3x0, see [2.4 BS3x0, page 9](#)
- BS3x2, see [2.5 BS3x2, page 11](#)

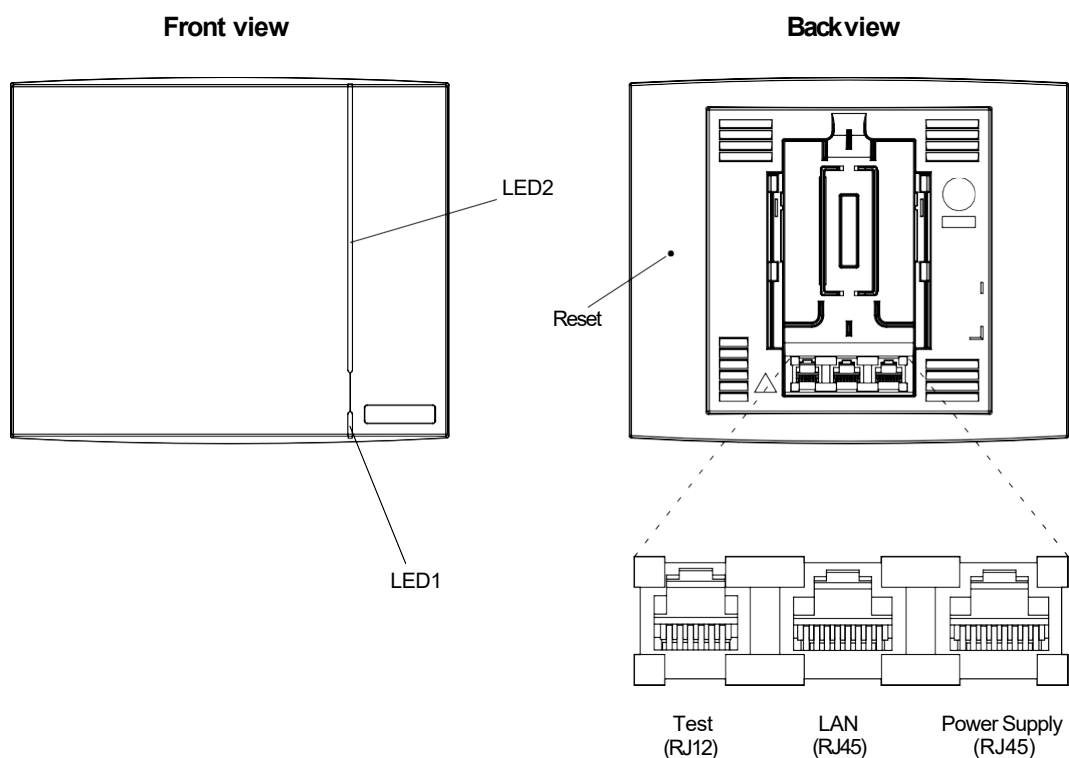
### 2.1 IPBS1

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



005

#### 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-adaptor



For more information about power distribution, see [3.3 Power the Base Station, page 23](#)

**Software**

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, 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



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, page 16](#).

## 2.2 IPBS2/IPBS3

The following versions of the IPBS2 and IPBS3 are available:

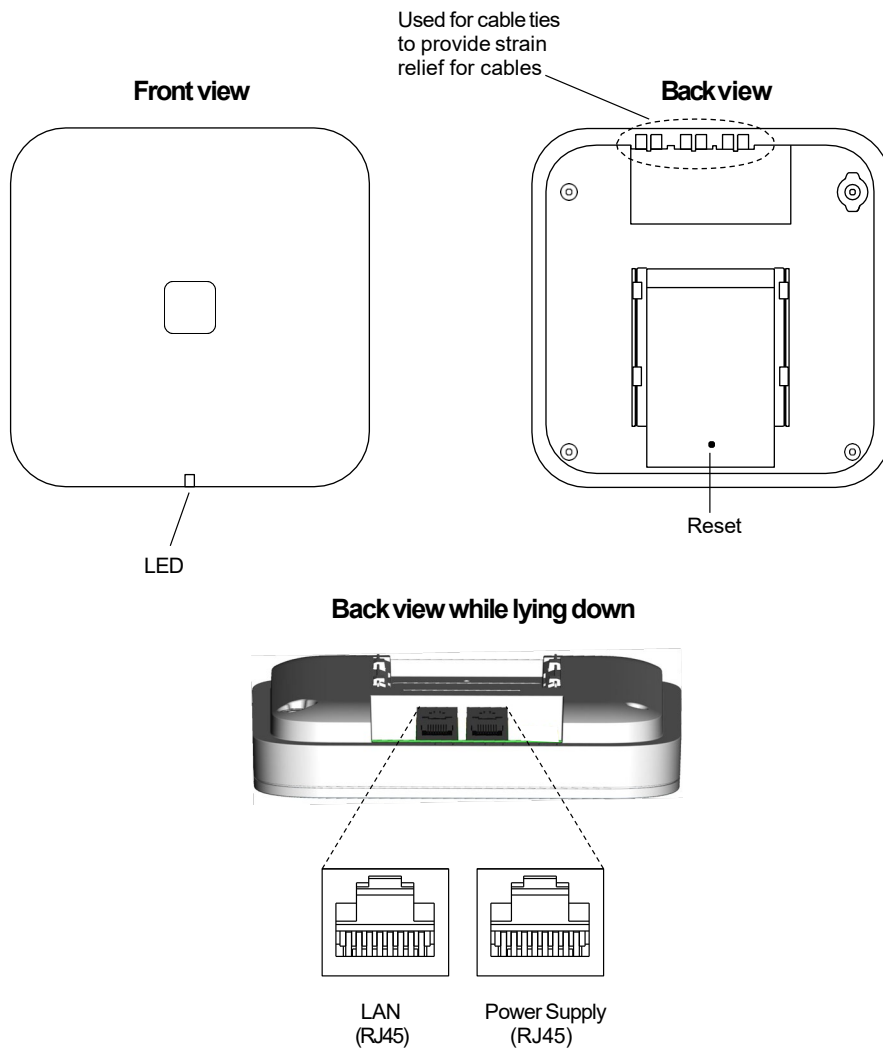
- IPBS2 with internal antenna
- IPBS2 with external antennas
- IPBS3 with internal antenna
- IPBS3 with external antennas

The IPBS2/IPBS3 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/IPBS3.



### 2.2.1 IPBS2/IPBS3 with Internal Antenna

Figure 2. IPBS2/IPBS3 Overview



#### Contents of the Box

The box in which the IPBS2/IPBS3 is packed contains:

- An IPBS2/IPBS3 with integrated antennas
- A mounting bracket
- Two screws with wall plugs

#### Power Distribution

The IPBS2/IPBS3 can be powered using the following methods:

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



For more information about power distribution, see [3.3 Power the Base Station, page 23](#).

## Software







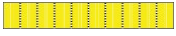



For information on how to update the software in the IPBS2/IPBS3, see the applicable Installation and Operation Manual for the IPBS2/IPBS3.



## Connectors

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

## LEDs

The IPBS2/IPBS3 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.

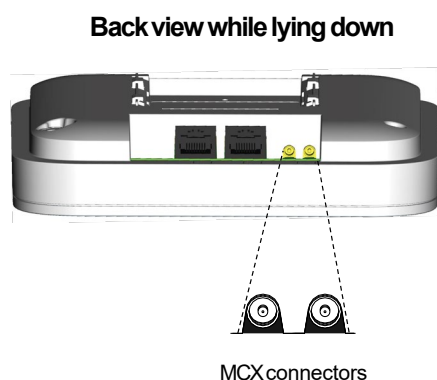
<b>Idle/OK</b>	Solid blue. 	IPBS2/IPBS3 operational and no traffic on the IPBS2/IPBS3.
<b>Starting up/searching</b>	100 ms blue, 100 ms off. 	The IPBS2/IPBS3 is in start-up phase, e.g. waiting for parameters from PARI Master, or is searching for air synchronization, or the radio is disabled.
<b>Active traffic</b>	400 ms off, 2000 ms blue. 	IPBS2/IPBS3 operational and traffic on the IPBS2/IPBS3.
<b>Fully occupied for speech traffic</b>	400 ms red, 2000 ms blue. 	Fully occupied with traffic.
<b>Software download</b>	400 ms blue, 600 ms off. 	Download of firmware in progress.
<b>Mini firmware</b>	100 ms yellow, 100 ms off. 	The IPBS2/IPBS3 is in mini firmware mode.
<b>TFTP mode</b>	Solid yellow. 	TFTP mode.
<b>Error</b>	100 ms red, 100 ms off. 	No Ethernet connection.
<b>Fatal error</b>	Solid red. 	Fatal hardware error.
<b>Deployment: Good sync</b>	2000 ms blue, 400 ms yellow. 	The IPBS2/IPBS3 is in deployment mode and has good air sync coverage.

<b>Deployment: Bad sync</b>	400 ms blue, 600 ms off, 400 ms blue, 600 ms off, 400 ms yellow. 	The IPBS2/IPBS3 is in deployment mode and does not have adequate air sync coverage.
<b>Deployment: No sync</b>	2000 ms red, 400 ms yellow. 	The IPBS2/IPBS3 is in deployment mode and has no air sync coverage.

### 2.2.2 IPBS2/IPBS3 with External Antennas

This section contains the differences between the IPBS2/IPBS3 with internal antenna and the IPBS2/IPBS3 with external antennas. For all other information see [2.2.1 IPBS2/IPBS3 with Internal Antenna, page 5](#).

Figure 3. IPBS2/IPBS3 with MCX connectors for external antennas.



### Contents of the Box

The box in which the IPBS2/IPBS3 is packed contains:

- An IPBS2/IPBS3 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:

### 2.3.1 Overview

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 <sub>PN</sub> 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)



For more information, see [4.3 Power the IPBL, page 27](#).


### 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 <sub>PN</sub> link established.
Flashing	U <sub>PN</sub> 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.

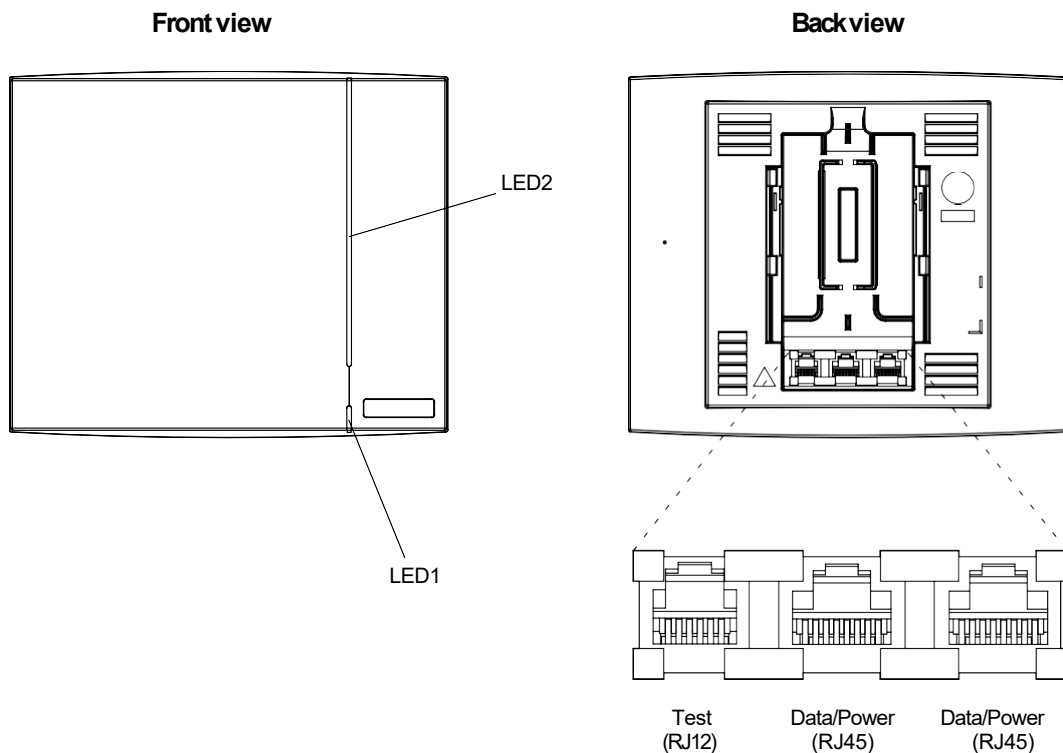
Lan LED 	Description
Not lit	10 Mbps operation.
Steady	100 Mbps operation.

## 2.4 BS3x0

The following versions are available:

- BS330 with Internal antenna
- BS340 with External antennas
- BS330-9131 (EU) with Internal antenna
- BS330-9134 (US) with Internal antennas
- BS340-9131 with External antenna

Figure 4. BS3x0 Overview



007

### 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/PBX via the Express Powering Pair (EPP) and data pairs
- With a local AC-adaptor



For more information about power distribution, see [3.3 Power the Base Station, page 23](#).

### 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/PBX)

**2.5 BS3x2**

The following versions of the BS3x2 are available:

- BS3x2 with internal antenna
- BS3x2 with external antennas

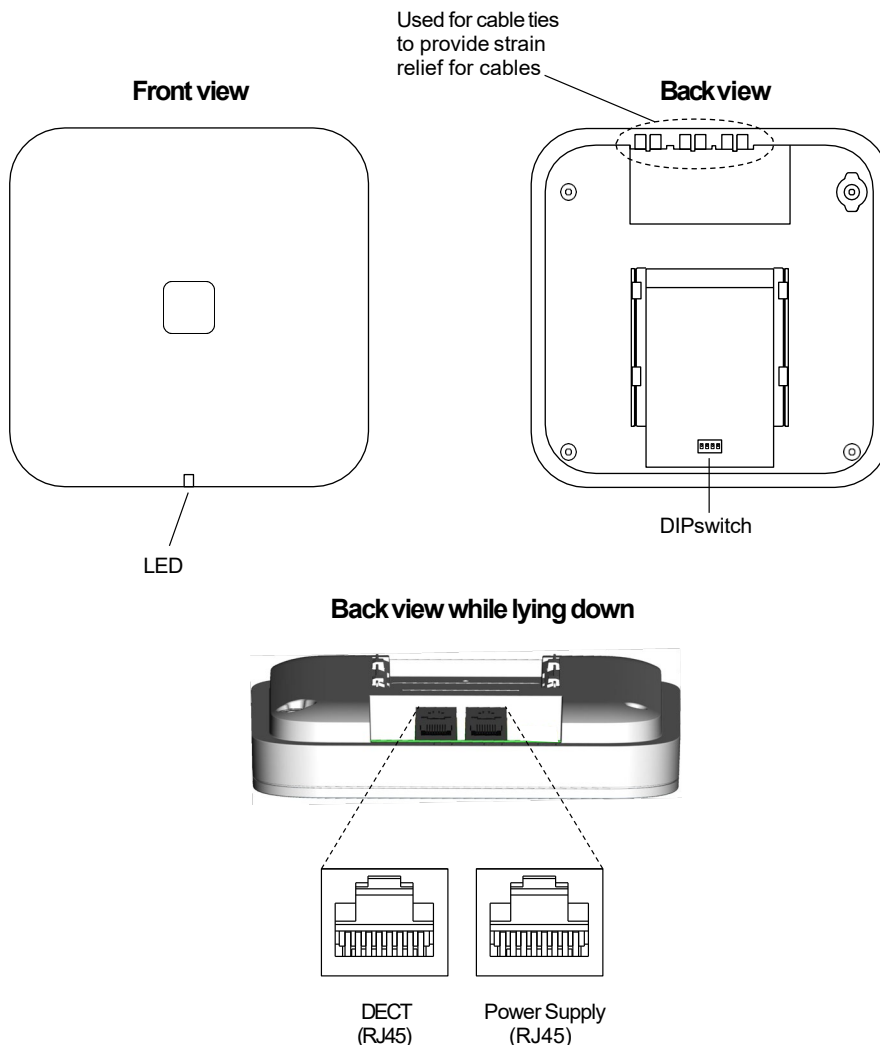
The BS3x2 is backwards compatible with the BS3x0 when it comes to coverage, functionality, accessories and mounting bracket. If an old BS3x0 has to be replaced you just reuse the mounting bracket and install the BS3x2.

Certain HW revisions are not backwards compatible with all SW versions. The article numbers can be found on the label at the back of the device.

- BS3x2 -\*\*A supports version R3E and later.
- BS3x2 -\*\*A/3A and later supports version R4A and later.

### 2.5.1 BS3x2 with Internal Antenna

Figure 5. BS3x2 Overview



#### Contents of the Box

The box in which the BS3x2 is packed contains:

- A BS3x2 with integrated antennas
- A mounting bracket
- Two screws with wall plugs

#### Power Distribution

The BS3x2 can be powered using the following methods:

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



For more information about power distribution, see [3.3 Power the Base Station, page 23](#).



## Software

The software in the BS3x2 can be updated by downloading new software without disconnecting the equipment.

Certain HW revisions are not backwards compatible with all SW versions. The article numbers can be found on the label at the back of the device.








- BS3x2 -\*\*A supports version R3E and later.
- BS3x2 -\*\*A/3A and later supports version R4A and later.

## Connectors

Two 8-pin RJ45 modular jacks for data and powering

## LEDs

The BS3x2 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.

<b>Idle/OK</b>	Solid blue. 	BS3x2 operational and no traffic on the BS3x2.
<b>Starting up</b>	100 ms blue, 100 ms off. 	The BS3x2 is in start-up phase, i.e. waiting to be initialized by the IPBL/PBX.
<b>Active traffic</b>	400 ms off, 2000 ms blue. 	BS3x2 operational and traffic on the BS3x2.
<b>Fully occupied for speech traffic</b>	400 ms red, 2000 ms blue. 	Fully occupied with traffic.
<b>Software download</b>	400 ms blue, 600 ms off. 	Download of firmware in progress.
<b>Error</b>	100 ms red, 100 ms off. 	U <sub>PN</sub> layer 1 communication error.
<b>Fatal error</b>	Solid red. 	Fatal hardware error.

## DIP Switches



When connected to IPBL, frequency settings are defined by IP-DECT system and DIP switches are ignored.

The DIP switches can be found on the back of the BS3x2, see [Figure 5. BS3x2 Overview, page 12](#).



DIP switch 3 and 4 shall be set to ON.

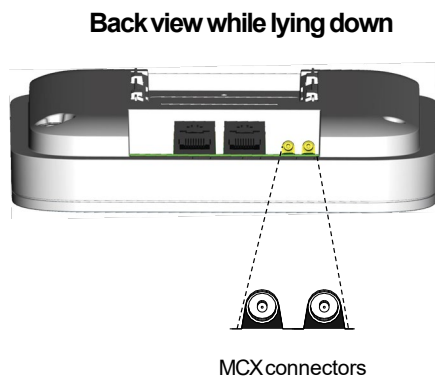
Set DIP switch 1 and 2 to ON or OFF as follows:

DIP switch 1: ON DIP switch 2: ON	1880-1900 MHz (Europe, Africa, Middle East, Australia, New Zealand and parts of Asia)
DIP switch 1: OFF DIP switch 2: ON	1900-1920 MHz
DIP switch 1: ON DIP switch 2: OFF	1910-1930 MHz (South America)
DIP switch 1: OFF DIP switch 2: OFF	1920-1930 MHz (North America)

### 2.5.2 BS3x2 with External Antennas

This section contains the differences between the BS3x2 with internal antenna and the BS3x2 with external antennas. For all other information see [2.5.1 BS3x2 with Internal Antenna, page 12](#).

Figure 6. BS3x2 with MCX connectors for external antennas.



### Contents of the Box

The box in which the BS3x2 is packed contains:

- A BS3x2 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.



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

**Versions (different type of mains plug)**

For European countries except UK	Order. no.: BSX-0013
For UK, Australia and North America	Order. no.: 660538



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 BS3x2. 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.



It is recommended to mount the Base Station at least 30 cm away from a metal surface and at least 2,5 m from WiFi access points.

#### 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.



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



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

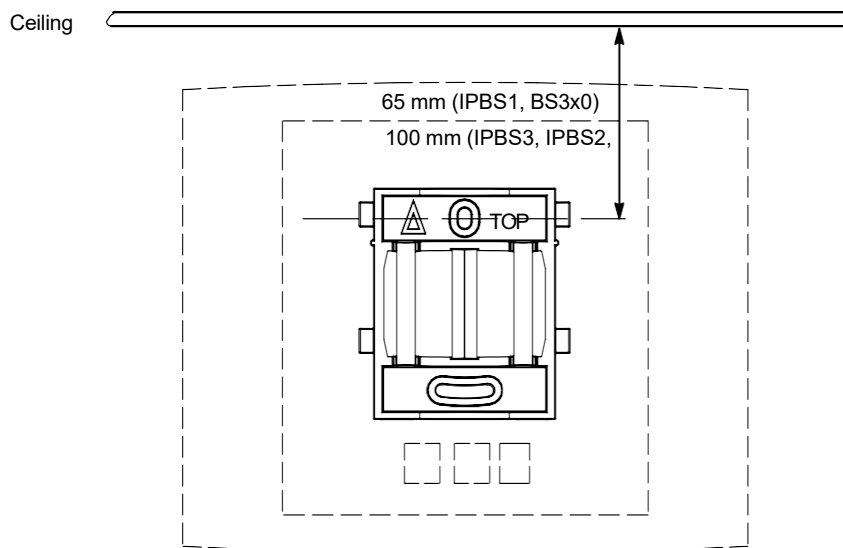
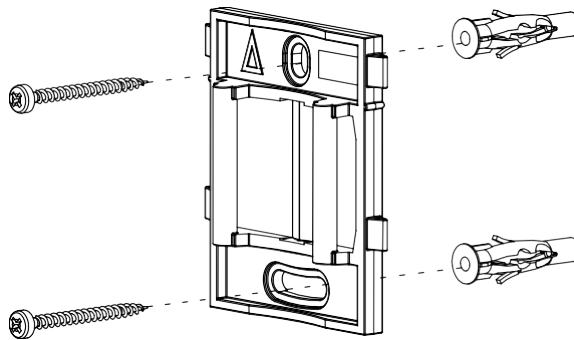
##### 3.2.1 Fix the Mounting Bracket to a Wall



For all wall/ceiling material except plywood and solid wood, use the supplied anchors.

Fix the mounting bracket (see [Figure 7. Fixing the mounting bracket to a wall., page 17](#)) 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/IPBS3/BS3x2, see [Figure 7. Fixing the mounting bracket to a wall., page 17](#). 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  $\varnothing$  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  $\varnothing$  3.5 mm screws.

*Figure 7. Fixing the mounting bracket to a wall.*

011



It is critical that the mounting bracket is securely and firmly attached to the wall or ceiling, this is especially important if it is mounted more than 2 m above the floor:

- Make sure that there is a significant increase of the required torque when the screws are fully engaged.
- Test that the mounting bracket is securely attached by firmly pulling the back-plate from the wall/ceiling.

### 3.2.2 Fix the Mounting Bracket to a Ceiling

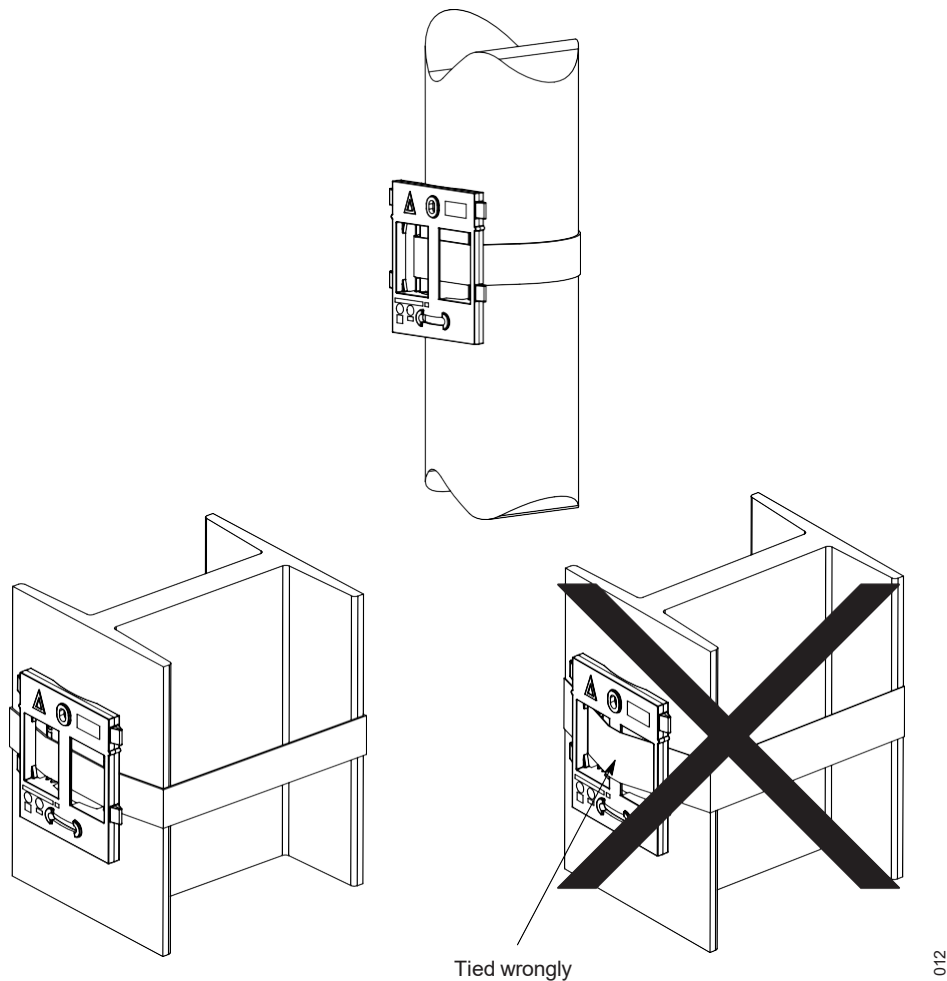
Fixing to a ceiling is done in the same way as the a wall, see [3.2.1 Fix the Mounting Bracket to a Wall, page 16](#). When the base station has to be positioned above a suspended ceiling, make sure that the front of the base station points downwards.

### 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 8. Fixing the mounting bracket to a pole or beam.](#), page 18.

*Figure 8. Fixing the mounting bracket to a pole or beam.*

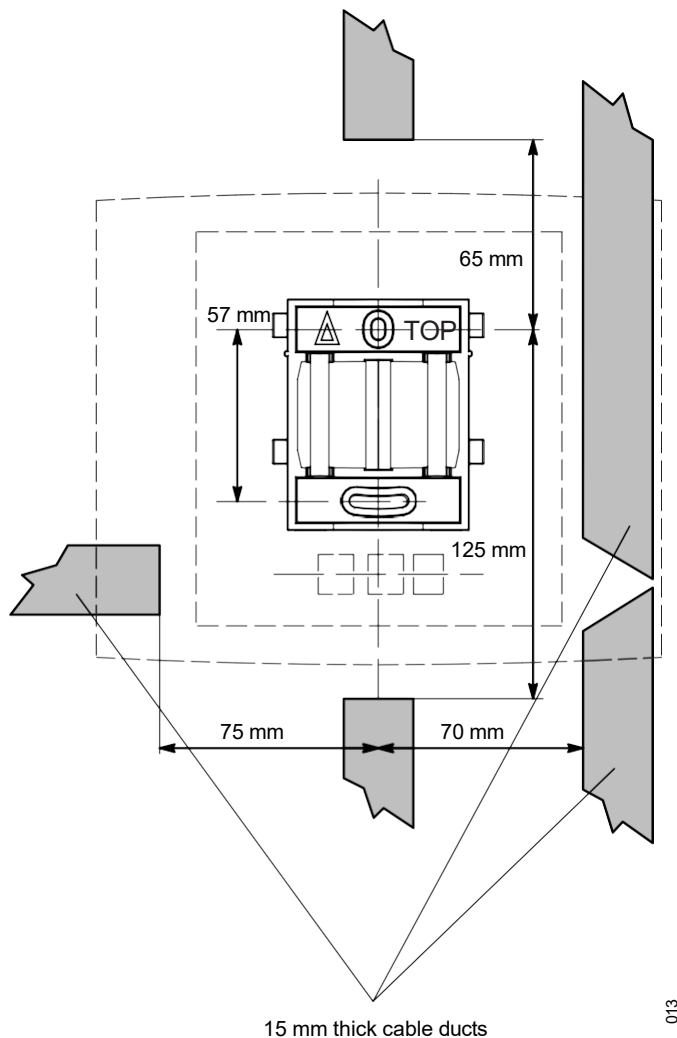


### 3.2.4 Use the Cable Ducts for IPBS1

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

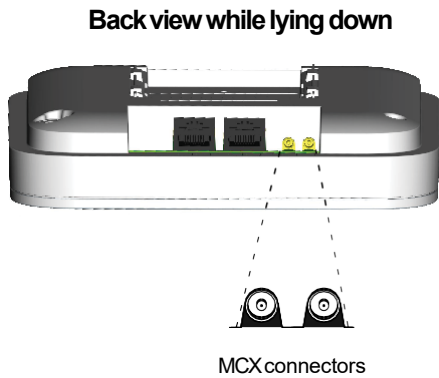
1. Fix the cable duct to the wall in one of the positions shown in figure 11 on page 27.

Figure 9. Minimum distances between a cable duct and the mounting bracket



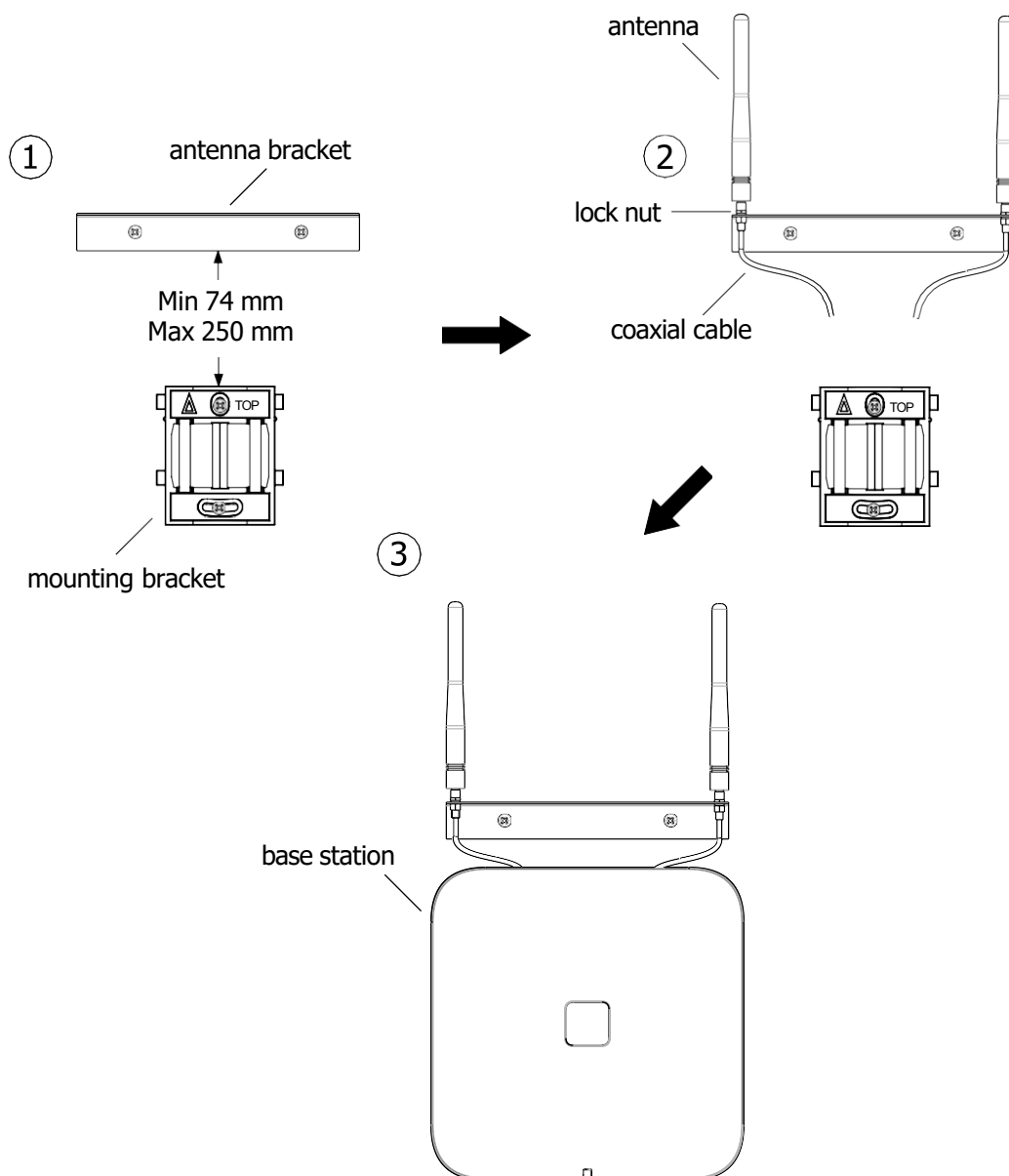
### 3.2.5 Connect External Antennas (only IPBS2, IPBS3 and BS3x2)

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 10. Connect external antennas., page 20](#) (1).
2. When using wall plugs: Drill the two holes using a  $\varnothing$  6 mm drill and insert the included wall plugs.
3. Position the antenna bracket to the wall and fasten it with the two included  $\varnothing$  3.5 mm screws.
4. Mount the two included coaxial cables on the antenna bracket, see [Figure 10. Connect external antennas., page 20](#) (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.



7. Mount the base station (3), see [3.2.9 Mount the Base Station, page 22](#).

Figure 10. 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.*
  - BS3x0 and BS3x2, *Pin the BS3x0/BS3x2 Cable.*

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



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 11. Connector pinning of the LAN/PoE connector, power feed over the spare cable pairs.

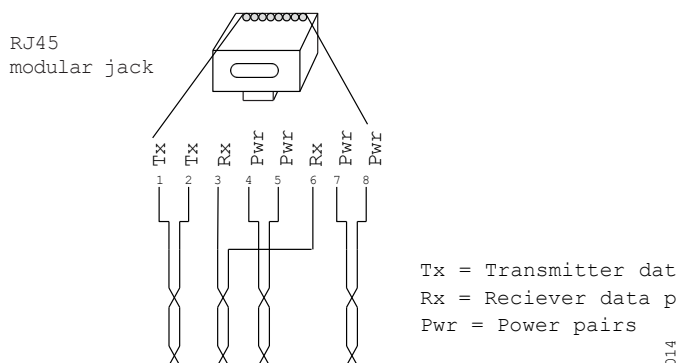
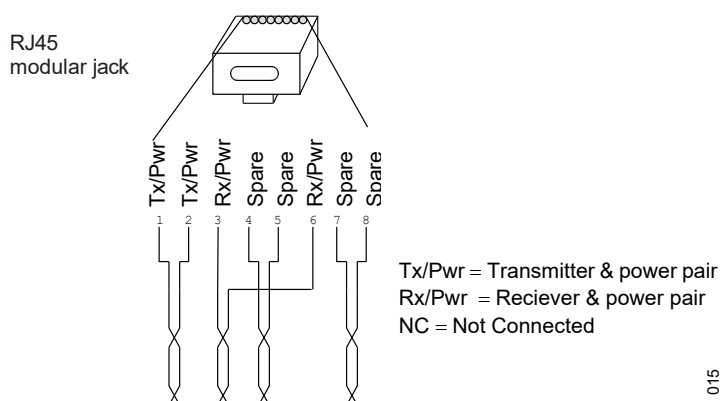
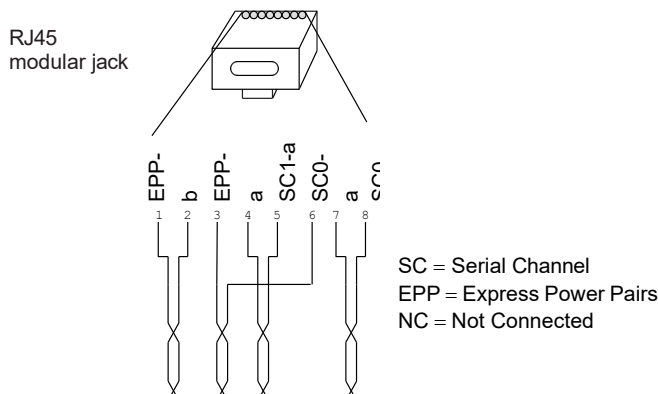


Figure 12. Connector pinning of the LAN/PoE connector, power feed over the Rx/Tx data cable pairs.



### Pin the BS3x0/BS3x2 Cable

Figure 13. Connector pinning of the Data connector



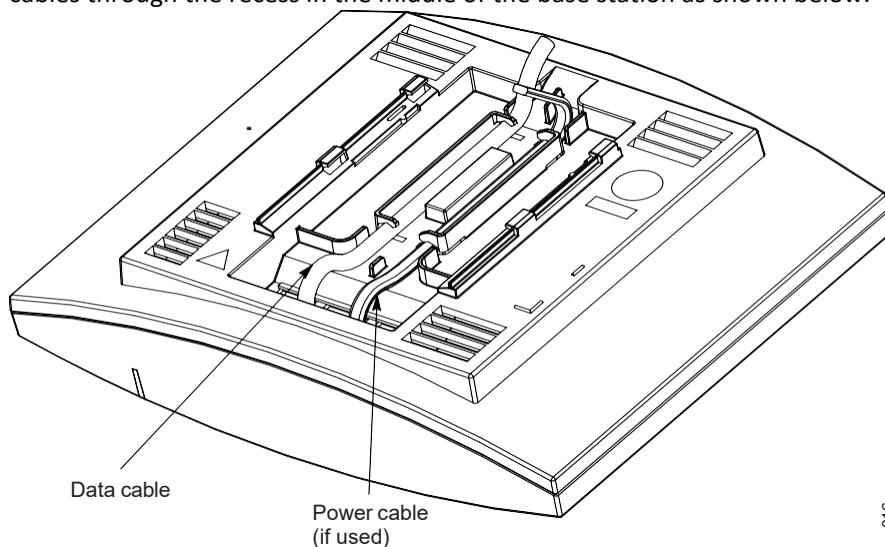
008



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.



016

2. Plug the modular jack of the data cable into one of the data/power connectors.
3. When an AC-adaptor is used:
  - Plug the modular jack of the AC-adaptor in one of the data/power connectors.
  - Plug the AC-adaptor 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 14. 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 BS3x2)
- By a local power supply.



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 BS3x2 over Express Powering Pair (EPP) and data pairs

When a base station is powered remotely via the IPBL/PBX, the maximum length between the base station and the IPBL/PBX 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, page 29](#).

#### 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-adaptor. The AC-adaptor is provided with an 8-pin RJ45 plug that can be plugged into the Power Supply jack. For specification see [2.6 AC-adaptor, page 14](#).



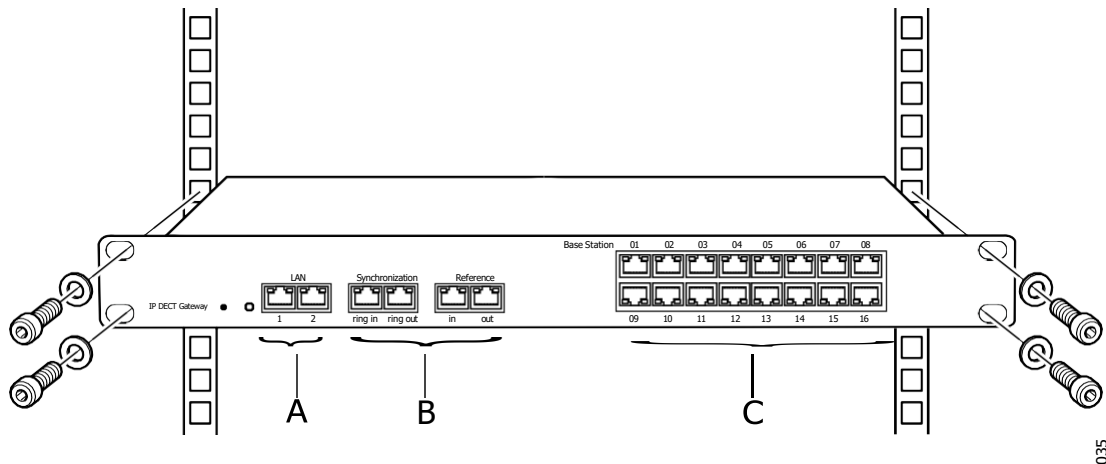
Only approved power supply according to valid editions of EN/IEC/CSA/UL/AU/NZS 62368-1 is to be used when the base station is powered by a local power supply.

## 4 Installation of the IPBL

This section describes how to install the IPBL.

### 4.1 Install the IPBL

Figure 15. 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, page 26](#).
3. Attach the power cable, see [4.3 Power the IPBL, page 27](#).
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)



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:



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, page 29](#).

## 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.

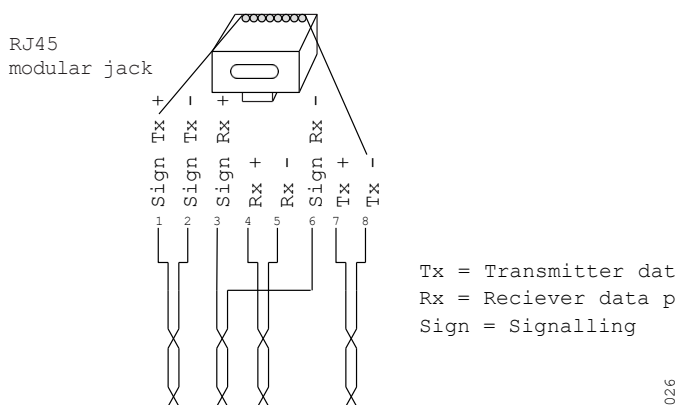
### 4.2.1 Synchronization Cable

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 16. Connector pinning of the Sync IN cable, page 26](#) and [Figure 17. Connector pinning of the Sync OUT cable, page 26](#).
3. Label the cable.

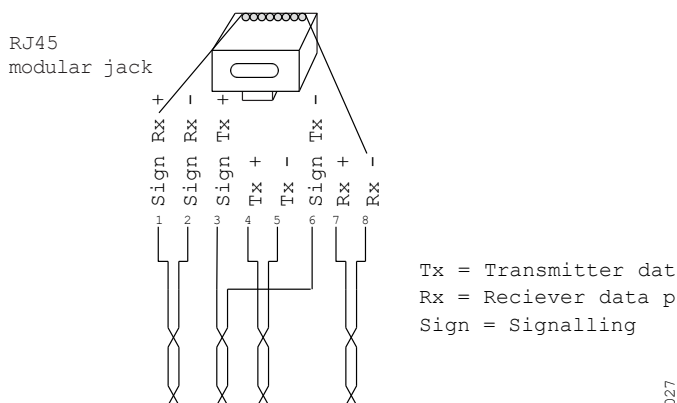
#### Sync IN

Figure 16. Connector pinning of the Sync IN cable



#### Sync OUT

Figure 17. 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.

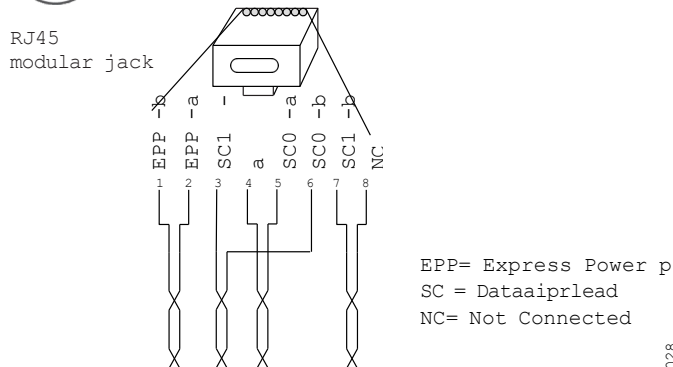


Ensure that during the installation, each RFP is given an extra length (5-10 metres) of cable because it is possible that it will have to be moved for one reason or another.

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



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



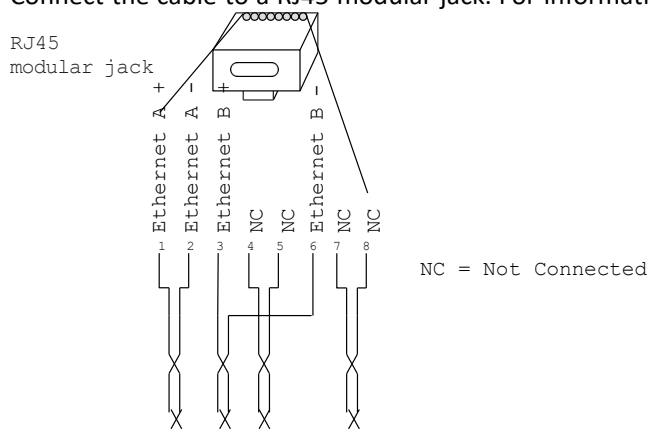
3. Label the cable.

#### 4.2.3 LAN Cable



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.



3. Label the cable.

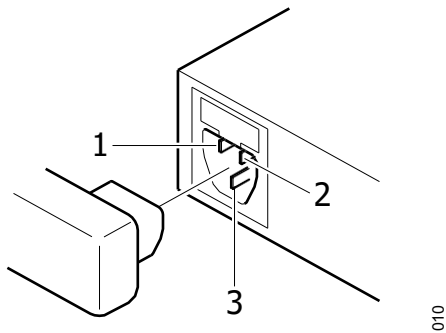
### 4.3 Power the IPBL

#### 4.3.1 110/230 VAC

The IEC 60320 type C14 (male) connector consists of:

- live lead (1)
- neutral lead (2)
- protective earth (3)

Figure 18. 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.

#### 4.4 Fans Replacement



It is highly recommended to replace all fans at the same time.

All fans in a unit must move the air in the same direction.

To replace IPBL fans do as follows:

1. Turn off power to the unit and disconnect the cables.
2. Remove all 20 screws that holds the upper cover. The screw head is TX10.
3. Remove the existing fans.
4. Install the new fans while making sure that:
  - For new units: the arrow on the fans in pointing out from the casing.
  - For old units: the arrow on the fan should point in to the casing.
5. Put back the upper cover and reconnect all cables back to the unit.



## Appendix A RFP Power Consumption

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

The maximum cable length for base stations connected to the IPBL/PBX must not exceed 1700 meters.

The cable length limitation of the ethernet 802.3 10/100 base-T is 100 metres.

### A.1 BS3x0 and BS3x2

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

Cable length (metres)	0.4 mm wire size (Ø)	0.4 mm wire size (Ø)	0.5 mm wire size (Ø)	0.5 mm wire size (Ø)	0.6 mm wire size (Ø)	0.6 mm wire size (Ø)
	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

### A.2 BS3x0 version 4H and BS3x2

**Table 2 Power consumption (watts) of base stations and cabling when powered from the PBX.**

Cable length (metres)	0.4 mm wire size (Ø)	0.4 mm wire size (Ø)	0.5 mm wire size (Ø)	0.5 mm wire size (Ø)	0.6 mm wire size (Ø)	0.6 mm wire size (Ø)
	Without EPP	With EPP	Without EPP	With EPP	Without EPP	With EPP
0	2.0	2.0	2.0	2.0	2.0	2.0

**Table 2 Power consumption (watts) of base stations and cabling when powered from the PBX.  
 (continued)**

100	2.0	2.0	2.0	2.0	2.0	2.0
200	2.1	2.0	2.0	2.0	2.0	2.0
300	2.1	2.1	2.1	2.0	2.0	2.0
400	2.1	2.1	2.1	2.1	2.1	2.0
500	2.2	2.1	2.1	2.1	2.1	2.0
600	2.2	2.1	2.1	2.1	2.1	2.1
700	2.3	2.2	2.2	2.1	2.1	2.1
800	2.3	2.2	2.2	2.1	2.1	2.1
900	2.4	2.2	2.2	2.1	2.1	2.1
1000	2.5	2.3	2.3	2.2	2.2	2.1
1100	2.6	2.3	2.3	2.2	2.2	2.1
1200	2.7	2.3	2.3	2.2	2.2	2.1
1300	2.8	2.4	2.4	2.2	2.2	2.1
1400	2.9	2.4	2.4	2.2	2.2	2.1
1500	3.2	2.5	2.4	2.3	2.3	2.2
1600	3.7	2.5	2.5	2.3	2.3	2.2
1700	-	2.6	2.5	2.3	2.3	2.2

## **Appendix B                      Related Documents**

*13/1531-ANF90114 Mitel IP-DECT\_System (12.1.5) Installation and Operation.pdf*