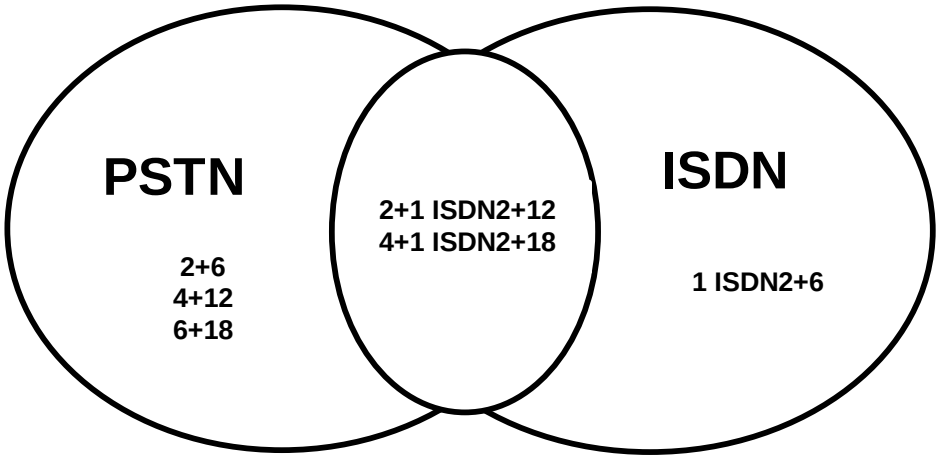
BT Inspiration
Installation & Maintenance
Manual

Version 2
September 1999

Introduction

This document describes the practices to be adopted by field engineers during installation and maintenance of BT Inspiration. A more detailed description of the product, along with customer programmable facilities and features, may be found in the Owner s Manual, which should be read in conjunction with this document.

General overview



- The BT Inspiration can be connected to both PSTN and ISDN networks
- The BT Inspiration is a hybrid PABX / key-system, which may be equipped with a Featurephone, or approved apparatus
- The BT Inspiration is modular in construction and can be upgraded by adding various system expansion modules
- The BT Inspiration allows connection to ISDN 2 and analogue MF or LD exchange lines.
- The BT Inspiration may be configured with one or two internal S-Bus interfaces for connection to approved ISDN apparatus.
- The BT Inspiration is a versatile easy to use system which is easy to install and maintain

Safety and Precautions

Safety precautions and switch on

After installing the CCU and all cabling, ensure that the following points are checked before switching the mains power on:

- The mains socket outlet shall be installed near the equipment and shall be easily accessible.
- There is a reliable earth at the mains supply socket earth pin.
- The cabled extensions have a telephone or Featurephone connected.
- The CCU PCB cover has been replaced, if it was previously removed.
- Switch on the mains power and allow at least eight seconds for the CCU to go through its power up routine.

Electrostatic precaution (ESP)

The BT Inspiration contains electrostatic components. To ensure long term reliability of the system, electrostatic precautions should be taken when handling any of the system module PCB s.
A connector is provided on the MDF for connection of ESP straps.
If a functional earth is connected to the system it can be used for electrostatic precautions (ESP).

CAUTION *The mains protective earth should not be used for electrostatic precautions (ESP)*

Initial installation procedures

Basic equipment required

Item	Quantity	Item code	Description
BT Inspiration 2+6 CCU	1	455385	Analogue system with 2 analogue lines and 6 extensions
BT Inspiration 4+12 CCU	1	455386	Analogue system with 4 analogue lines and 12 extensions
BT Inspiration 6+18 CCU	1	455387	Analogue system with 6 analogue lines and 18 extensions
BT Inspiration 1xISDN +6 CCU	1	455388	ISDN system with 1 ISDN2 line and 6 extensions
BT Inspiration 2+1xISDN +12 CCU	1	455389	Mixed system with 2 analogue lines, 1 ISDN2 line and 12 extensions
BT Inspiration 4+1xISDN + 18 CCU	1	455340	Mixed system with 4 analogue lines, 1 ISDN2 line and 18 extensions

Individual Items

Individual Item Description	Max. Number allowed per system	Item code	Description
BT Inspiration Featurephone	18	455371	Fully handsfree Featurephone which may be connected to every extension position
PSTN Expansion Card	4	455379	A card which provides 2 analogue exchange lines
ISDN Expansion Card	5	455380	A card which provides 1 ISDN 2e line. It can also be used to provide internal ISDN interfaces.
Extension Expansion Card	2	455378	The card provides 6 additional extension positions. It also provides a connector for the PSTN or ISDN expansion card.
BT Inspiration Voice Mail	1	455373	This provides up to 80 minutes of voice storage for extension voice boxes and the system answering machine.
BT Inspiration Base Motherboard	1	463218	Main circuit board for the system
BT Inspiration Door Intercom	1	455375	A door intercom unit which can be connected to extension position 23
External serial port V24	1	455376	This provides an interface to a printer or PC for Call logging
BT Inspiration ISDN Clocking Card	1	455492	This card allows the system to operate on the ISDN network Used in conjunction with the ISDN Expansion Card
Battery Back up	1	455382	An externally mounted unit which can house a battery to give one hours full back up in the event of a power failure
BT Inspiration Call Manager	18	455372	One can be provided for each Featurephone and it allows the phone to be controlled from a PC.
BT Inspiration Hotel Software upgrade	1	463073	Pack containing V24 module, serial cable, 9-25 way D-type adapter and Hotel upgrade user documentation

Power Supply Unit P.S.U	1	455384	Mains connected power supply unit
CCU Cover Kit	1	455493	Replacement for damaged CCU covers

Apparatus approved for connection to the BT Inspiration	**As required**	**Description**
Master line jack units without GDTs	1 per extension and Central bell	
6 wire 0.5 mm cable	As required	
BT 80A	Doorstrike and Public Address (PA) systems	Doorstrike and PA Not available from BT

Maintenance Kit

All maintenance parts are available in as individual items. A kit containing the following items is also available:-

BT INSPIRATION MTC KIT (Item code 462913)

Inspiration PSU, Inspiration Base Motherboard, Inspiration ISDN Clocking Card, Inspiration ISDN Expansion Card, Inspiration PSTN Expansion Card and the Inspiration Extension Expansion Card.

Installing the CCU

Location for Central Control Unit (CCU)

The CCU is intended for installation in a residential or office-type environment. It needs to be mounted at a convenient working height on a dry flat wall. The normal height is 1 metre from the floor to the bottom of the CCU case.

CAUTION Do not site the CCU where it will be subjected to excessive levels of heat, dust damp or high humidity. Locating the equipment near sources of electromagnetic radiation such as heavy electrical switch-gear, lift machinery or electric arc welders should be specifically avoided.

Allow at least 100 mm of free space all around the CCU for ventilation and 310 mm to the right or underneath the CCU for the addition of the Battery Back Up unit.

The CCU needs to be within approximately two meters, of a dedicated mains power supply outlet. The CCU must not share the same mains supply socket with any other electrical appliance.

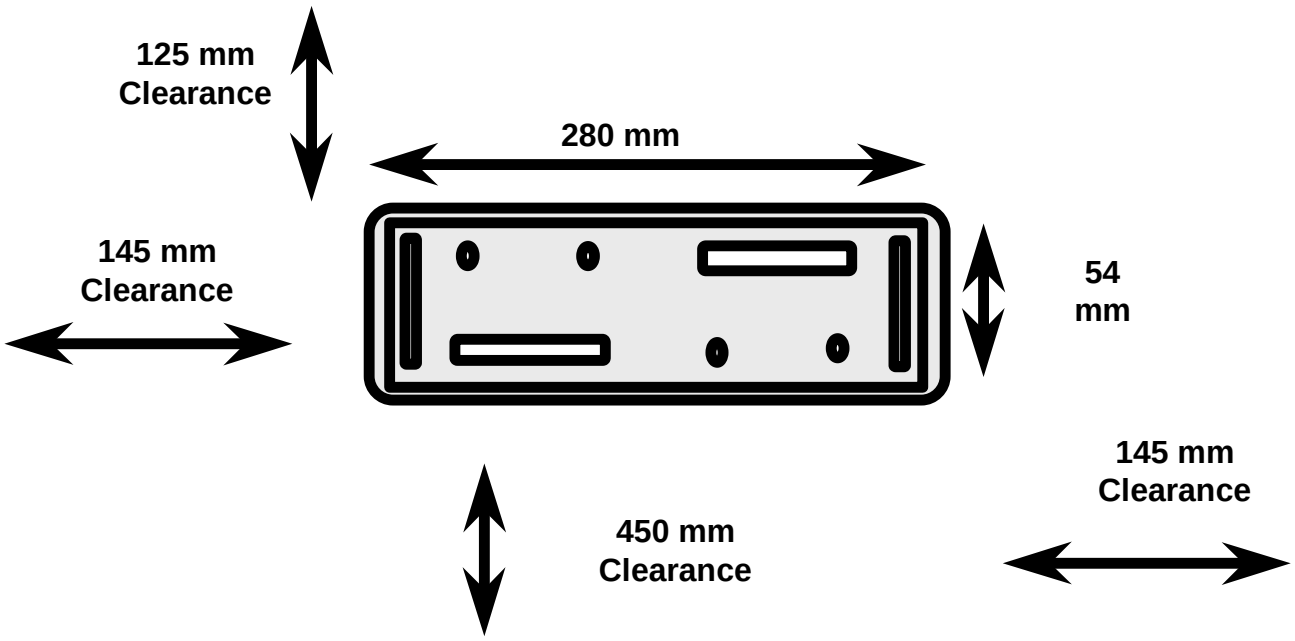
Mounting the CCU

When a suitable location has been found, mark the screw locations on the mounting surface using the mounting bracket provided.

If the CCU is being mounted on masonry or plasterboard, suitable wall plugs must be used. Drill and plug four holes in the wall at the marked locations. The holes should be deep enough to accept a 2.5cm screw.

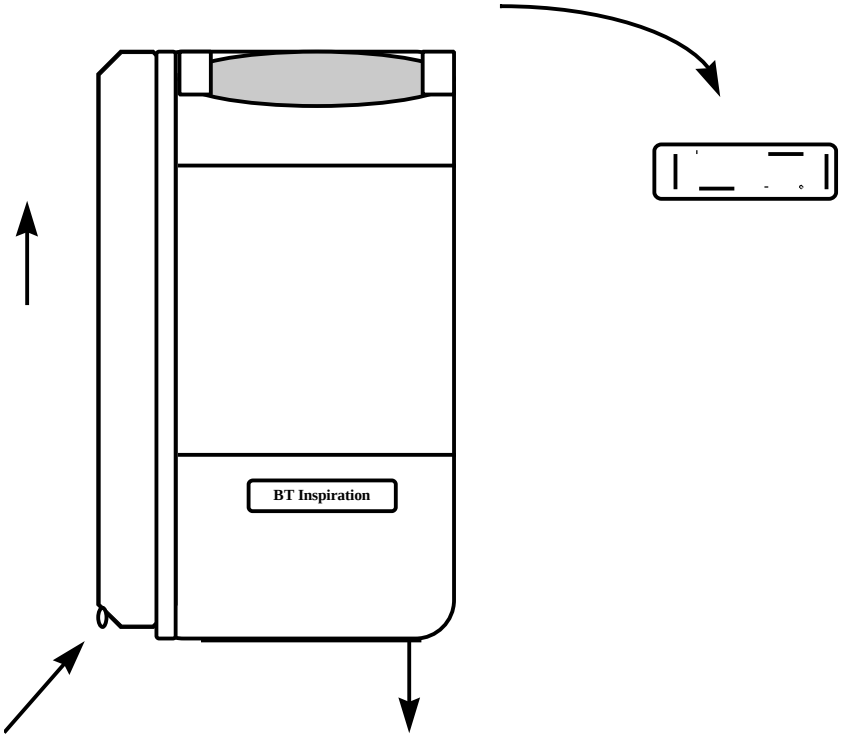
CCU Mounting bracket

The main unit is mounted on a wall using the bracket supplied and should have top and side clearance as shown.



Locate the CCU onto the wall-mounting bracket
by sliding it down into position

Slide the MDF cover
off, by moving it upwards

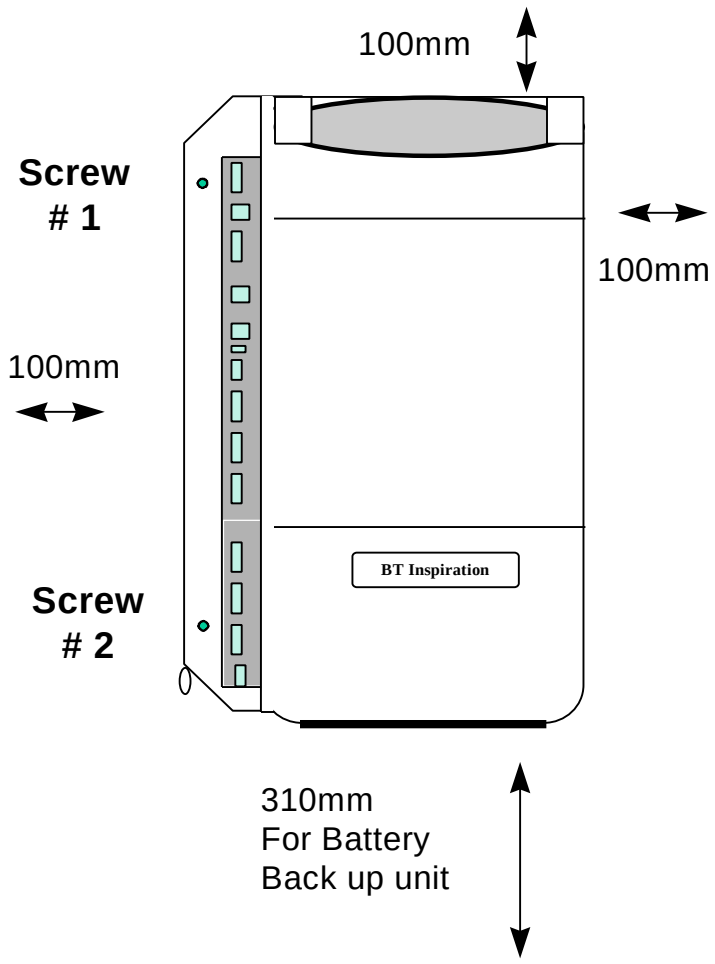


Remove the MDF cover retaining screw.

Connect the system to the mains supply

Securing the CCU to the wall

Locate and mark the position of the Fixing screws at the top and bottom of the MDF area. Remove the unit. Drill and plug the screw holes, deep enough to accept a 2.5cm (one inch) No. 8 round-head screw. Relocate the unit on the bracket and screw home the fixing screws. Ensure that there is sufficient space around the CCU to allow adequate ventilation.

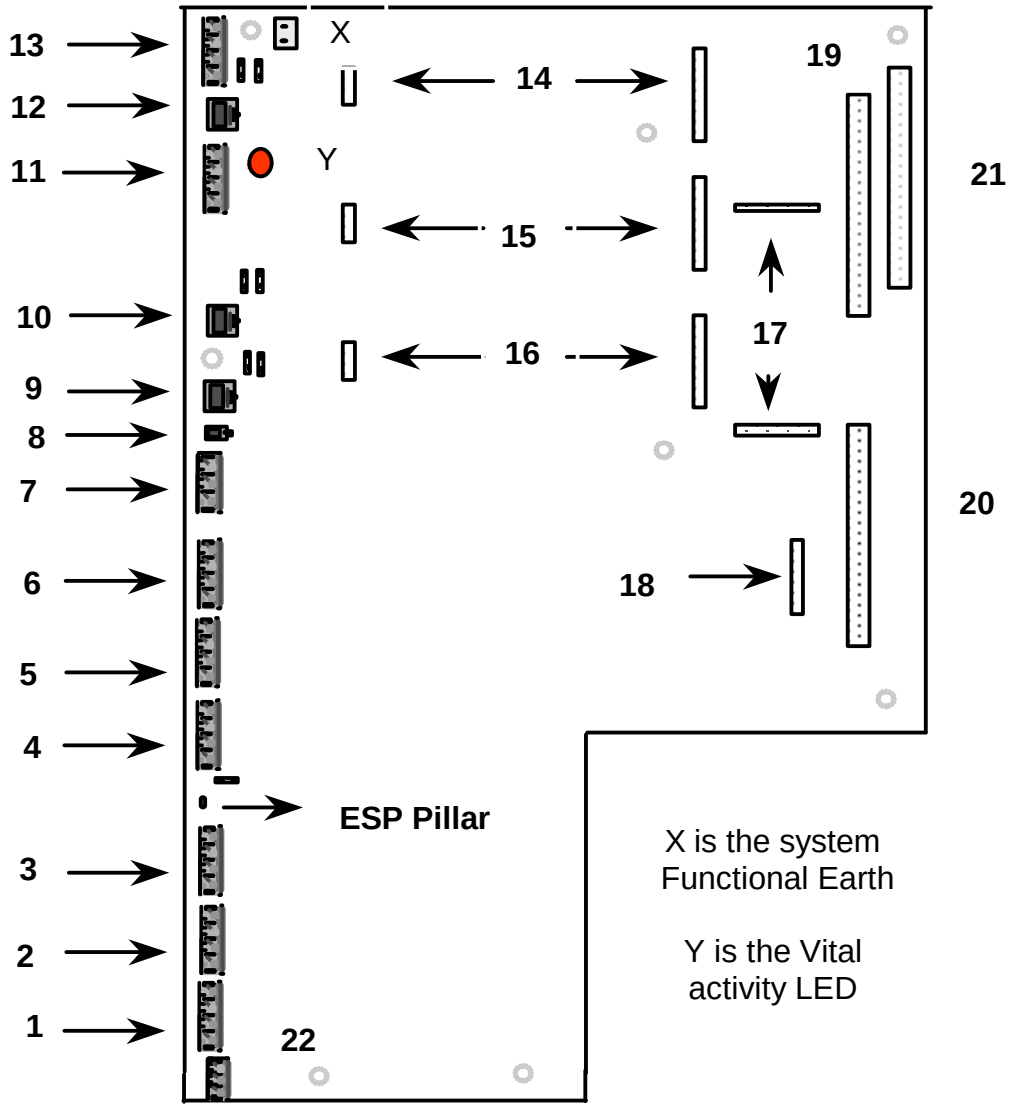


Caution

At no time should any system module be removed or inserted when power is applied to the system. Always isolate the mains supply when installing and/or upgrading system module hardware

Note: When fitting a Battery Backup Unit (BBU), there are two similar screw holes to those on the main CCU, located on the left hand side of the BBU base. These screw holes are used to secure the BBU to the wall when it has been positioned correctly on the wall-mounting bracket. Please refer to the Battery Backup Unit section of this guide.

Base Motherboard



Base motherboard connector definition table

1. Krone IDC connection	Extension 20 position
2. Krone IDC connection	Extension 21 position
3. Krone IDC connection	Extension 22 position/long line extension
4. Krone IDC connection	Extension 23 position/Door Intercom
5. Krone IDC connection	Extension 24 position
6. Krone IDC connection	Extension 25 position
7. Krone IDC connection	Central Bell connection
8. RJ11 connection	V24 call logging interface connection
9. RJ45 connection	Internal S-Bus connection
10. RJ45 connection	Second To connection
11. Krone IDC connection	PSTN line 3&4 connection
12. RJ45 connection	First To connection
13. Krone IDC connection	PSTN line 1&2 connection
14. Main board connector	PSTN/ISDN expansion card connection
15. Main board connector	PSTN/ISDN expansion card connection
16. Main board connector	Internal So expansion card (ISDN) connection
17. Main board connector	ISDN clocking card connection
18. Main board connector	Voice Module connection
19 & 20. Main board connector	Extension expansion card connection
21. Main board connection	Secondary connection (for future use)
22. Krone IDC connection	Door strike relay connection

System Modules and expansion cards

There are a number of modules which can be installed onto the Base Motherboard:

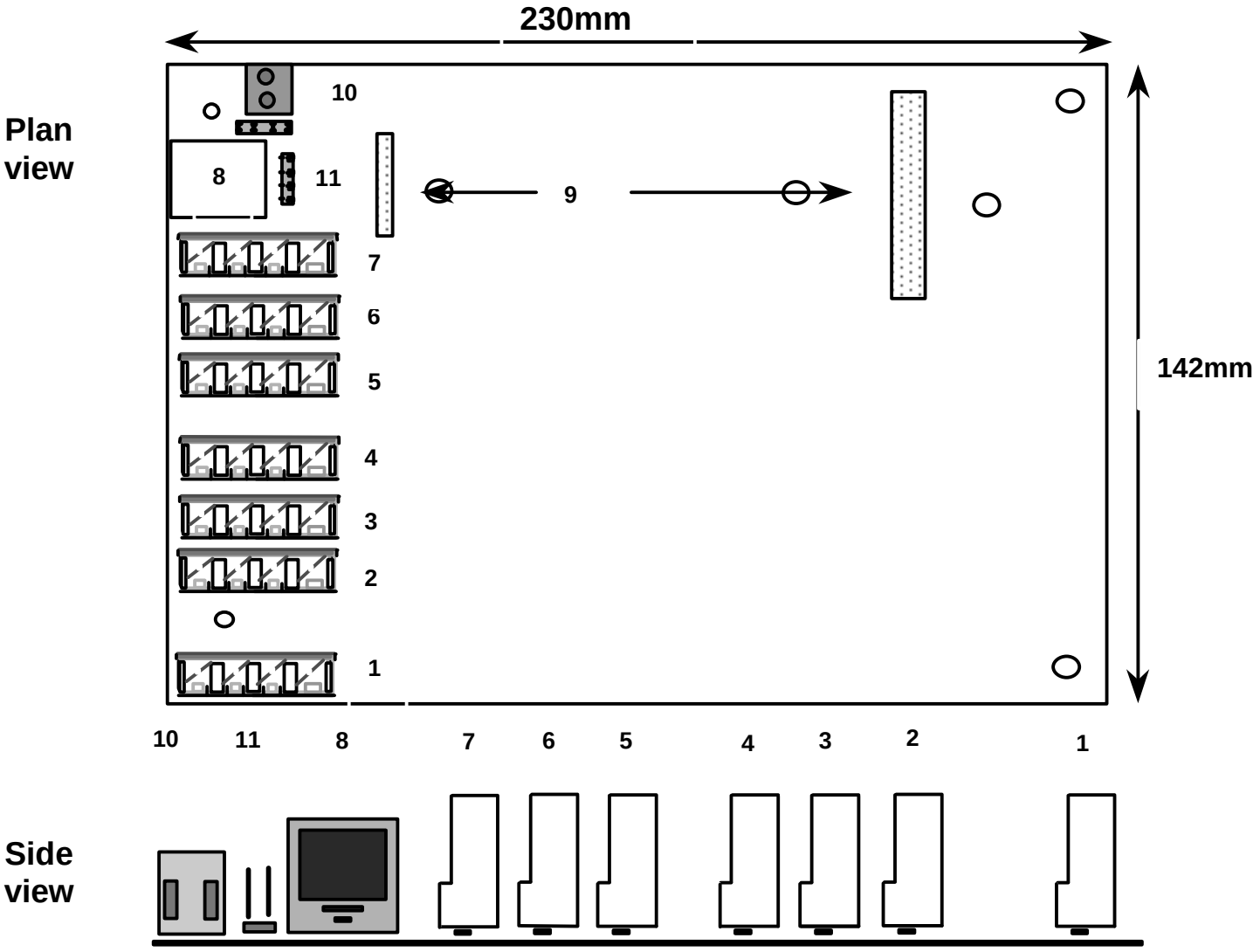
- Extension expansion card. This provides six extensions and a connector for a network expansion card, ISDN or PSTN.

- PSTN expansion card. This card provides two analogue exchange lines.

- ISDN Expansion card. This card provides one ISDN2 interface. The same card is used for the network T_0 and the internal S bus. Links located on the ISDN Expansion card must be relocated to change the interface from T_0 to S bus operation.

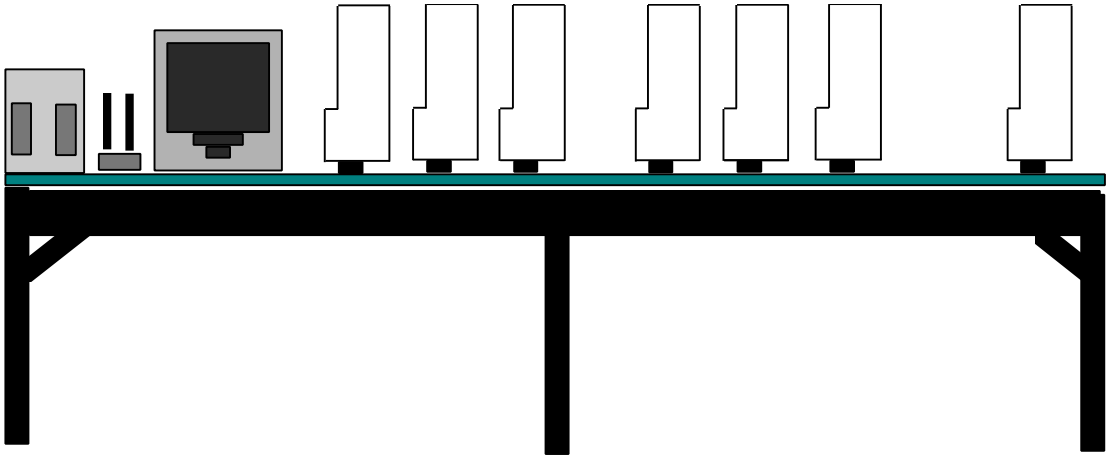
- Voice module single channel. Only one of these modules can be inserted in a unit. It provides up to 80 minutes voice storage. When equipped a system answering machine can be enabled and each extension can be provided with a voice box. A minimum of two minutes storage is allocated automatically to each programmed extension. The remaining capacity is dynamically allocated.

Extension expansion card



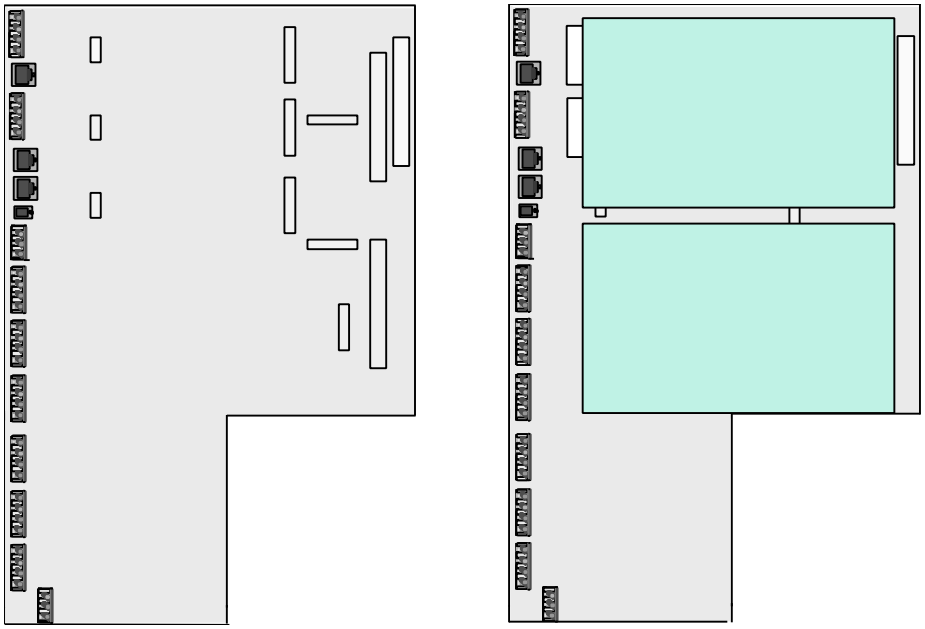
1. Krone IDC connection	First Extension position
2. Krone IDC connection	Second Extension position
3. Krone IDC connection	Third Extension position
4. Krone IDC connection	Fourth Extension position
5. Krone IDC connection	Fifth Extension position
6. Krone IDC connection	Sixth Extension position
7. Krone IDC connection	PSTN line connector (Supports 2 lines)
8. RJ45 connection	ISDN connector
9. Interface socket	ISDN/PSTN expansion module position
10. Screw terminal connector	Functional Earth connector
11. Jumper straps	ISDN options

Extension expansion board column support



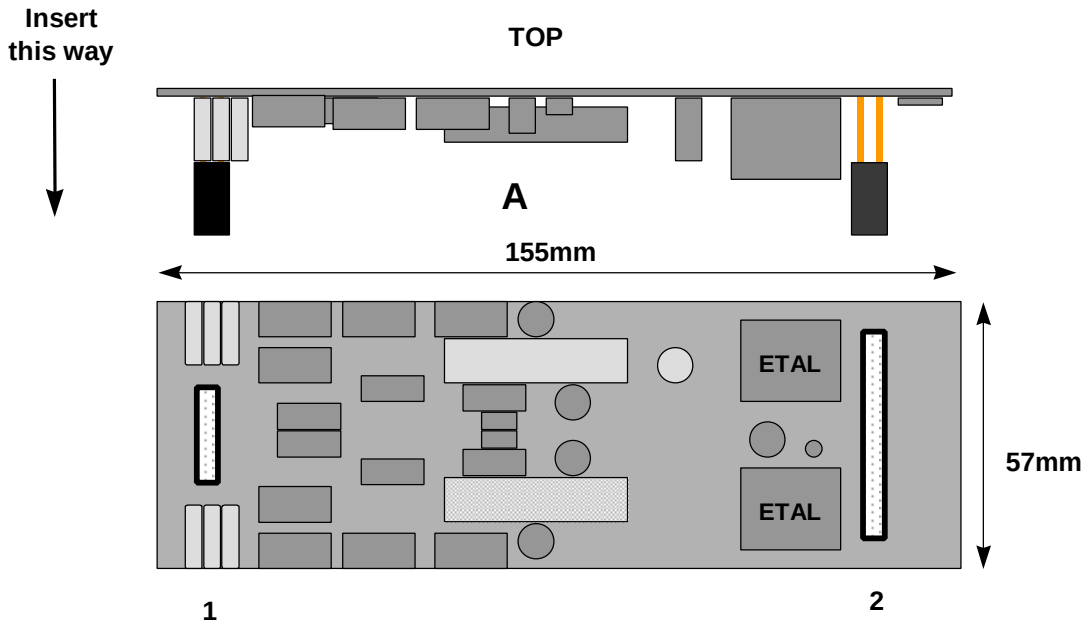
Ensure the Extension expansion card is fitted with the column support located under the line termination points.

Allowed extension expansion card locations



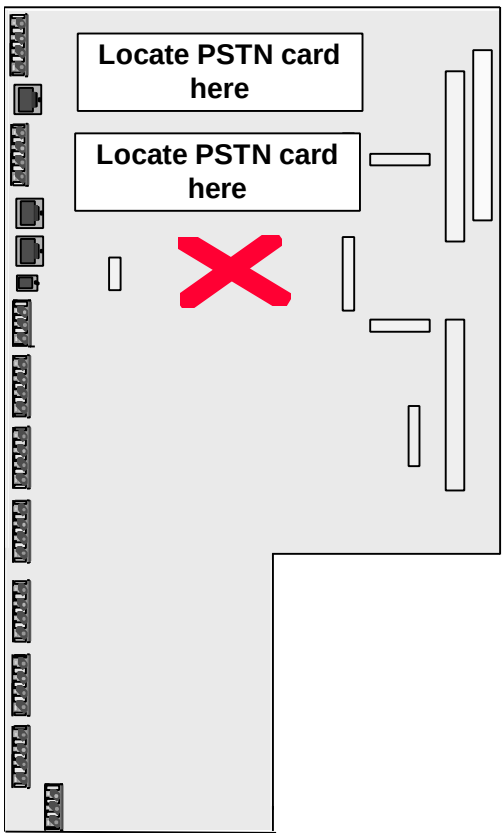
PSTN Expansion card

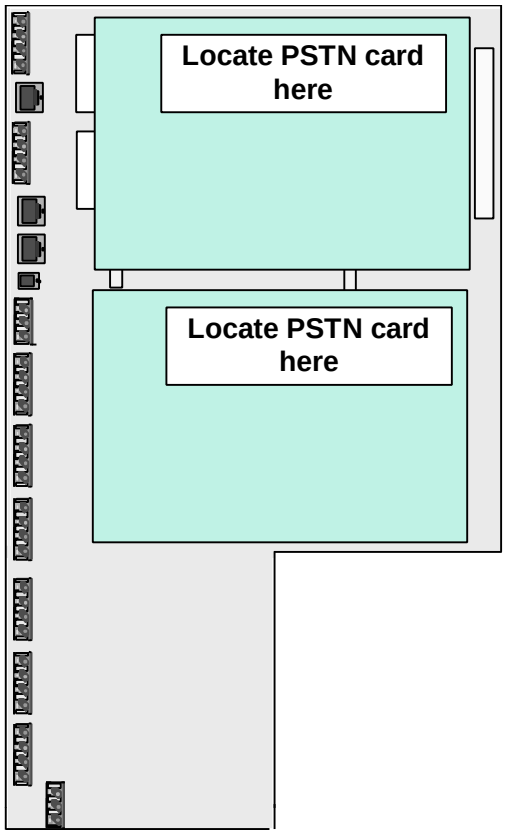
NOTE :
This card allows the BT Inspiration to utilize two analogue trunk lines. Unless this card is fitted no analogue line access is possible when using the switch. There are no single line cards available on the BT Inspiration. When only one line is in use the second line must be disabled using system programming.



Locate the PSTN expansion card into connectors 14 and 15 on the Base Motherboard or connector 9 on the Extension Expansion board

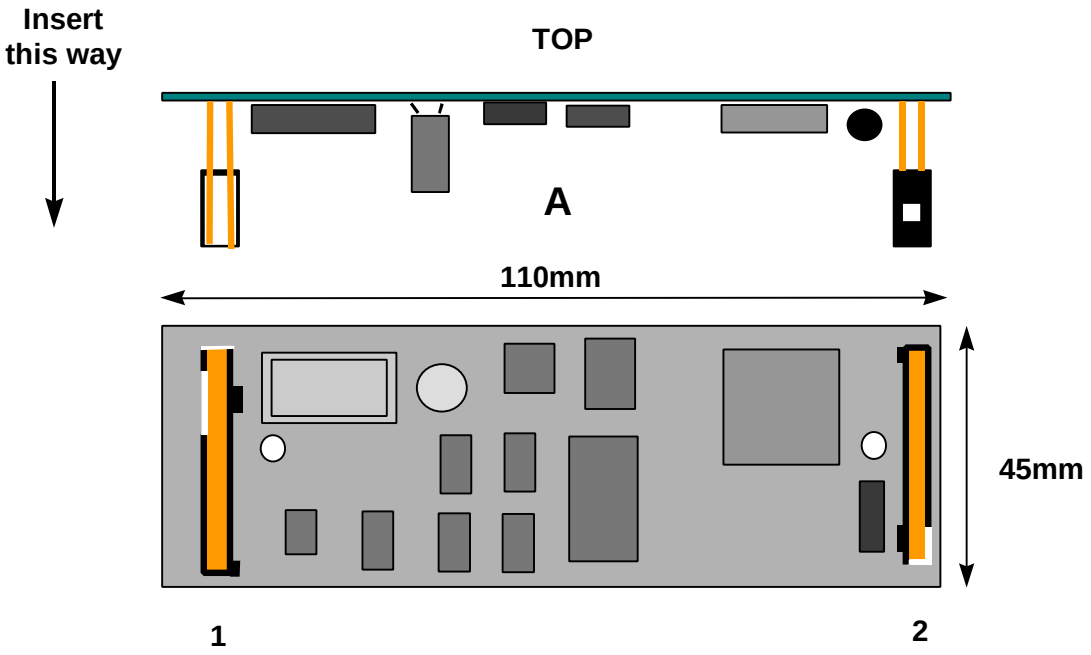
Allowed PSTN Expansion card locations





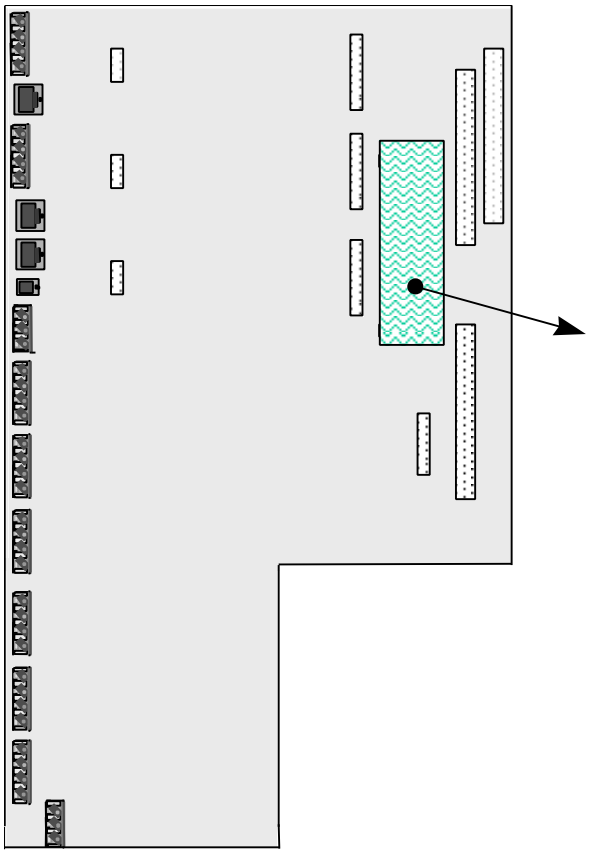
ISDN clocking card

A system, originally supplied as an analogue system, can be upgraded to an ISDN unit by installing the ISDN clocking card



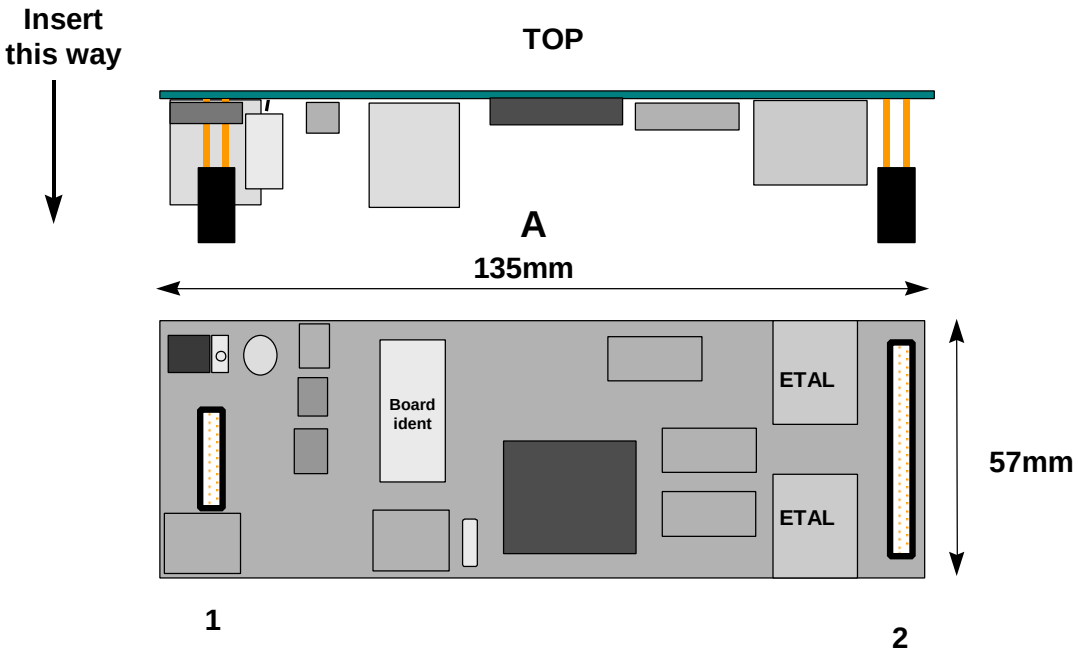
Locate the ISDN clocking card into slot 17 on the Base Motherboard, observing the insertion keys on the Base Motherboard connectors

ISDN clocking card location



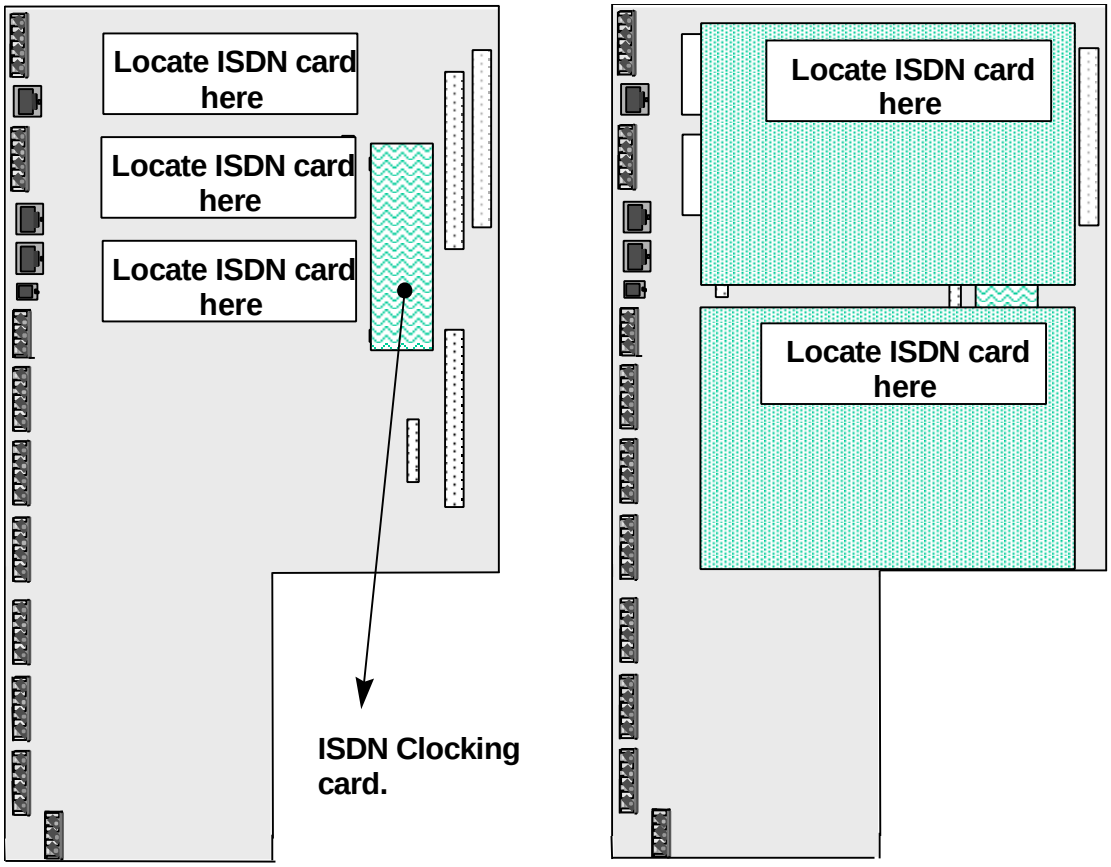
ISDN clocking card. Must be fitted when using ISDN. The module connects to the Base Motherboard in one direction only. This is determined by keys on the edge connectors.

ISDN Expansion card



Locate the ISDN expansion card into connectors 14,15 and 16 on the Base Motherboard, or connector 9 on the extension expansion card

Allowed locations of ISDN expansion card



The ISDN clocking card must be fitted when using the ISDN network

System ISDN settings

The system can be configured with five ISDN interfaces. Two of these can be configured for internal So operation. The So interfaces provide ISDN to-the -desk, allowing users to send voice and data information over the ISDN network.

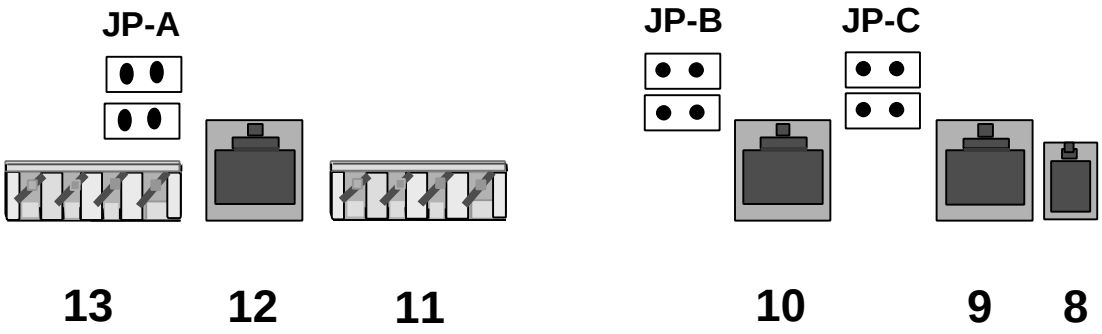
Terminating resistors

The ISDN interfaces on the Base Motherboard are fixed. Connectors 10 and 12 are for network interfaces (T_0) and location 9 is for an internal S-Bus (So interface). Each of the T and S interface connectors has two jumpers above the RJ45 connector, JP-A, JP-B and JP-C. These are used to insert or remove a 100 ohm termination from each of the interfaces. Inserting the jumpers, terminates the line with 100 Ohms. The unit is delivered with the jumpers connected across the two pins (the 100 ohm termination provided)

In normal operation the NTE provides termination on one end of the S-Bus. Consequently the So interface must always have the terminating resistor JP-C connected (the So interface emulates the NTE).

In situations where the BT Inspiration is not required to provide the S-Bus 100 ohm termination on the To interfaces, the jumpers JP-A and JP-B may be removed. It is recommended the link be inserted on one of the pins to ensure it is not lost.

Base motherboard connections



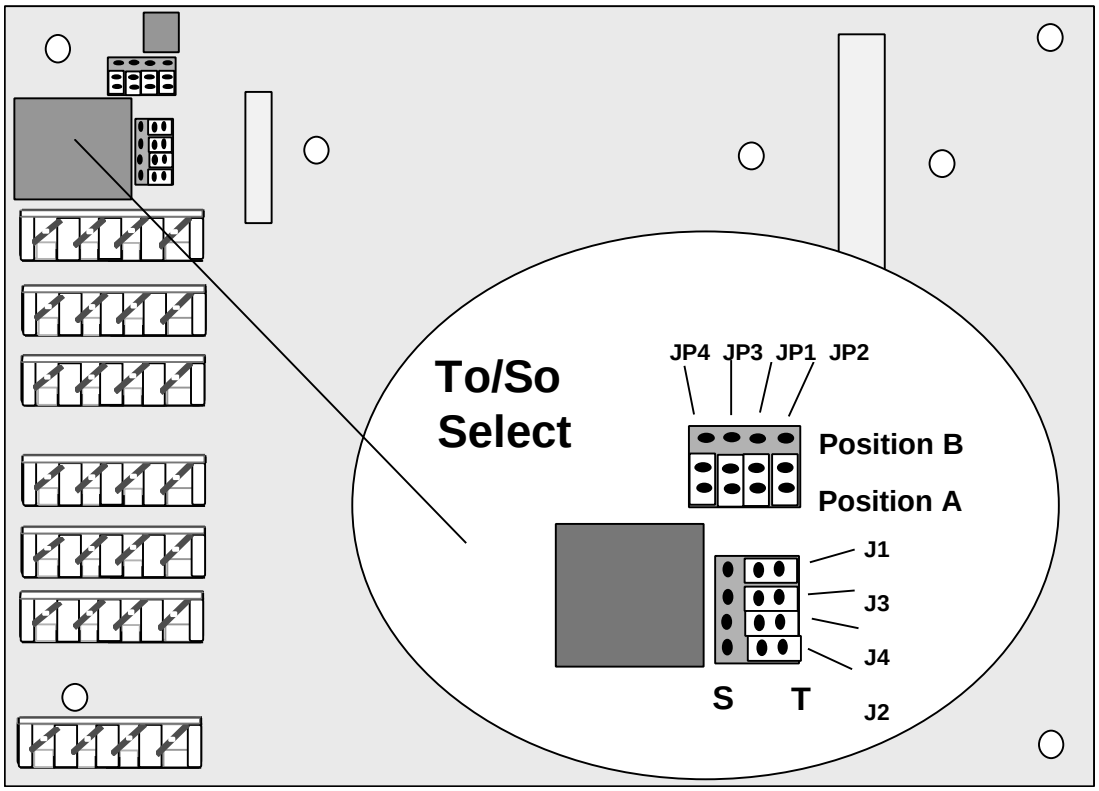
The Base Motherboard provides the default So slot (slot 16 - See the Base Motherboard section of this guide). As the system can provide two So interfaces, the second So can be provided by an ISDN interface card connected to either of the extension expansion boards.

Only one of the extension expansion cards can be set for So operation

Extension Expansion card connections

There are two sets of four jumpers on the extension expansion card, which provide ISDN/S-Bus setup options when an ISDN expansion card is connected into slot 9.
The four jumpers at the back of the RJ45 connector (J1,J3, J4 and J2) must be moved to the S position for So operation. In default the jumpers are set in the T position for To operation.
When changing the jumper settings from the default position, the system must also be programmed from T to S operation. See the owners manual for the programming details.
There are four jumpers beside the RJ45 connector. JP-2 and JP-1 are the 100 ohm terminating resistors (connected in default mode).

The expansion board ISDN interface can provide a 40 Volt supply to connected ISDN devices. Up to four devices (maximum) can be powered by this 40 Volt supply, on each S-Bus. The option to provide or remove this voltage supply is available on the extension expansion board by inserting or removing jumpers. Please see the following diagram.

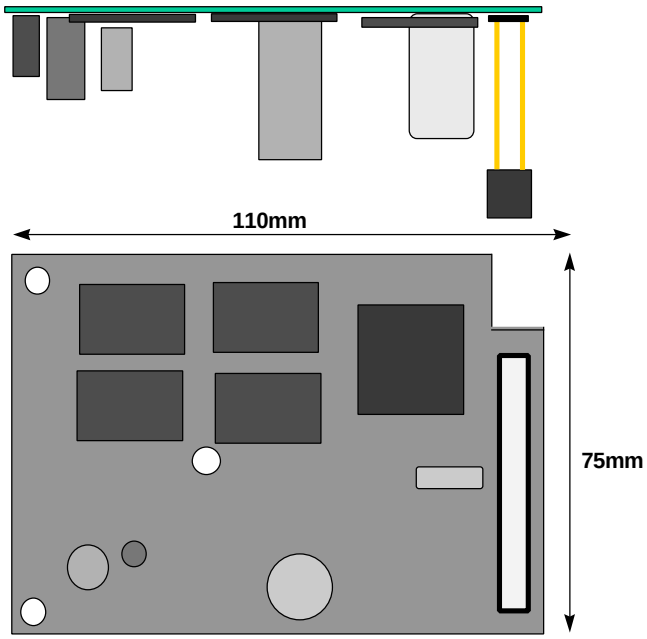


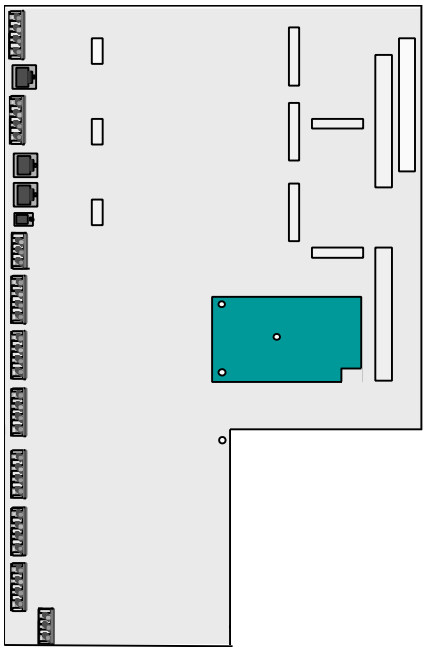
	JP-1 **Terminating Resistor**	JP-2 **Terminating Resistor**	JP-3 **ISDN So 40V Supply**	JP-4 **ISDN So 40V Supply**
Position A	100 Ohm out	100 Ohm out	No So 40V	No So 40V
Position B	100 Ohm in	100 Ohm in	40V supplied	40V supplied

S/T operation

For J1 to J4 - Move all the Jumpers to the T position for To operation (default) or to the left S position for So operation

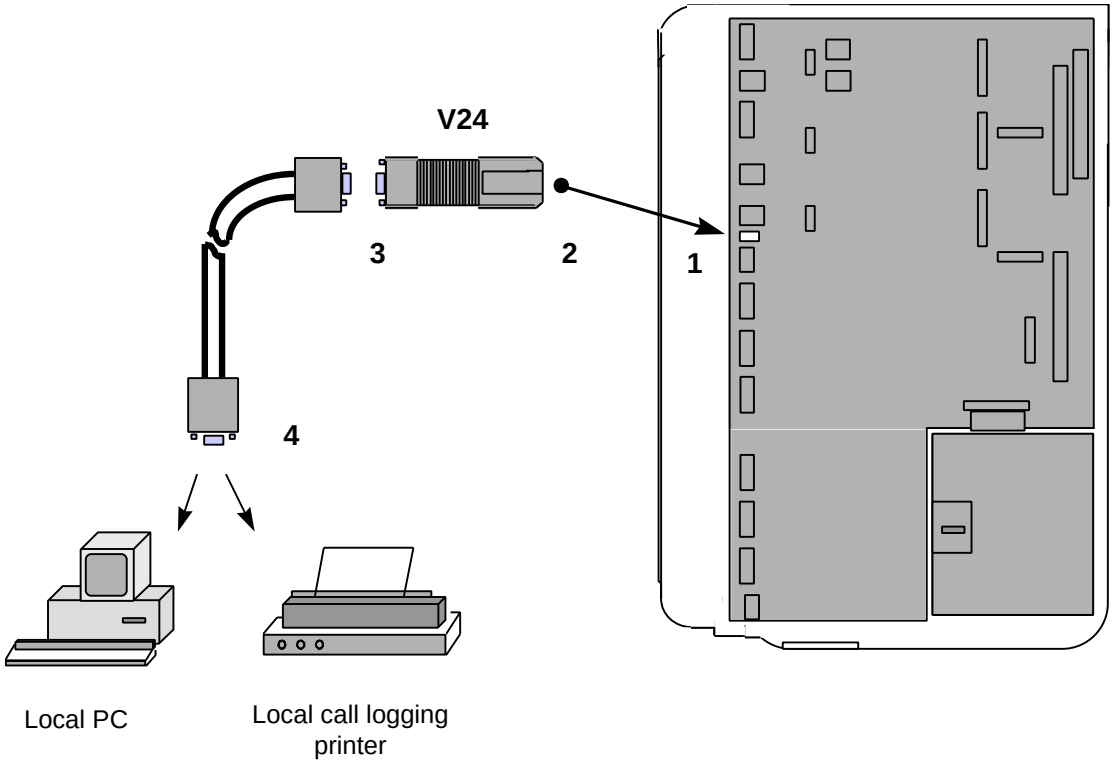
Voice Mail





Locate the Voice Mail card in slot 18 on the main board

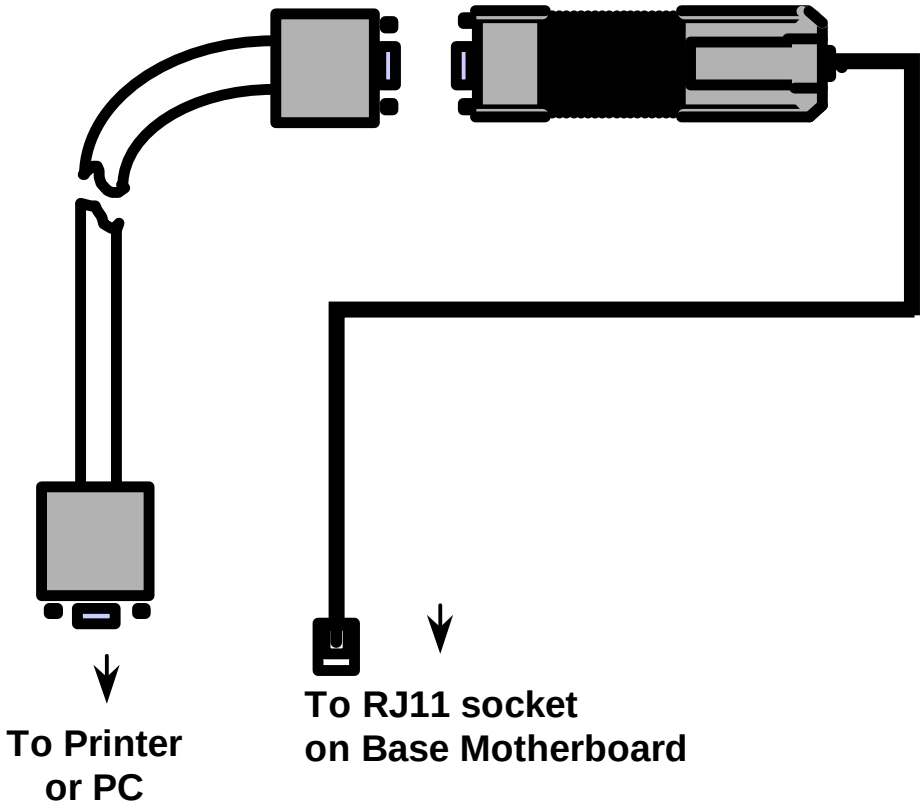
External Serial port



1. RJ11 Connector	V24 interface in the Base Motherboard
2. RJ11 Socket	External port input from switch
3. RS-232 9 way male to female connection	RS 232 external serial port output from switch
4. RS-232 9 way male connection	Serial cable connection to terminal device

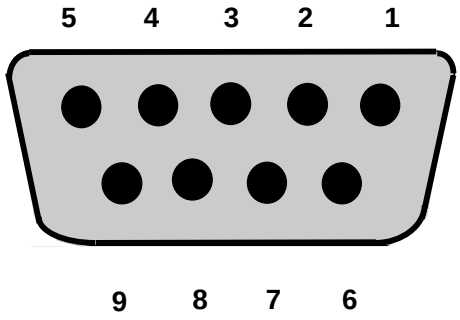
Note
The cable connection from the switch to the external serial module is via a cable, 1 meter in length. This cable connects the external serial module to connector 8 on the Base Motherboard.

External serial port cable and connectors



External serial port Pin-out

Female 9-Way connector which plugs in to a local printer or PC

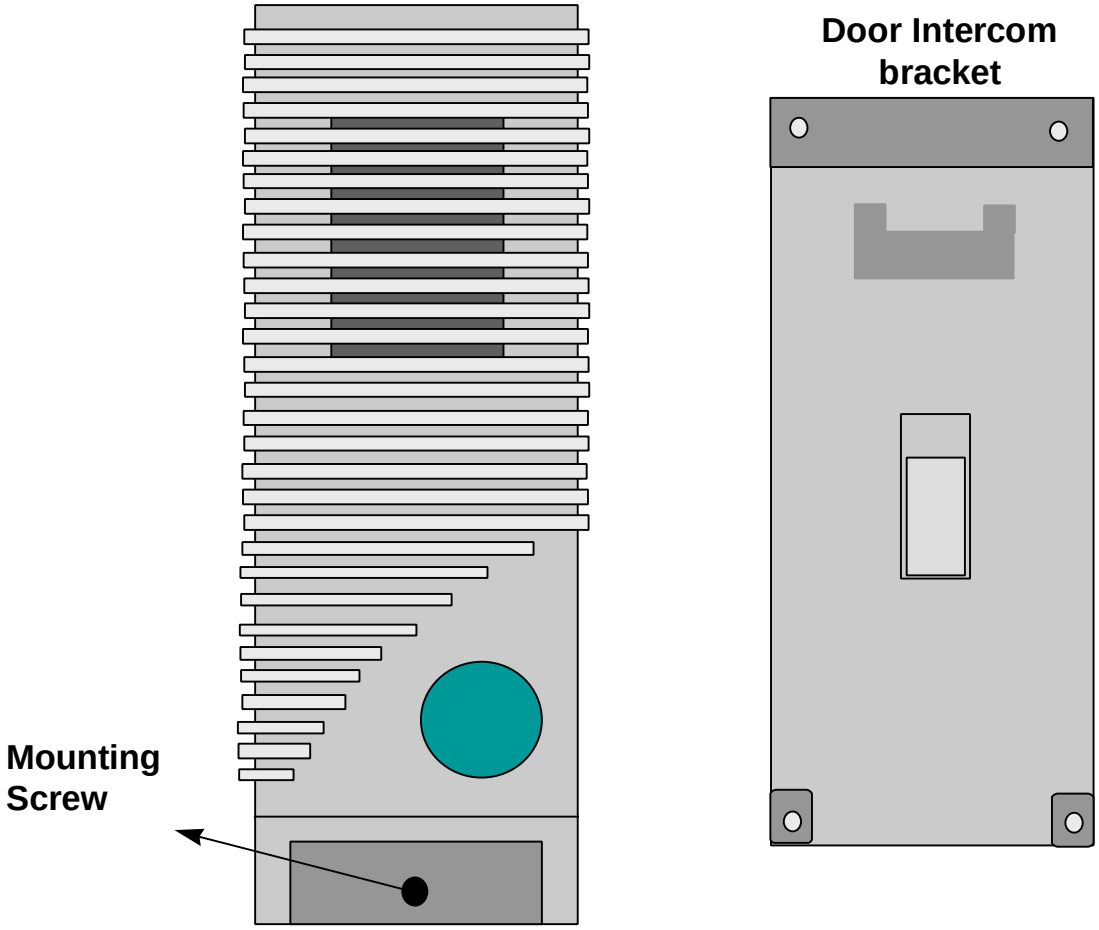


Note
A standard, commercially available, DB-9 to DB-25 way converter connector will operate with the external serial port when connecting to equipment which is not fitted with a DB-9 connector as standard.

9 Way D-Type connector Pin Description	**Equivalent 25 way D-Type Pin Description**
Pin 1 - DCD Data Carrier Detect Pin	Pin 8
Pin 2 - Receive Data Pin	Pin 3
Pin 3 - Transmit Data Pin	Pin 2
Pin 4 - DTR Data Terminal Ready	Pin 20
Pin 5 - Signal Ground	Pin 7
Pin 6 - DSR Data Set Ready	Pin 6
Pin 7 - RTS Request to send	Pin 4
Pin 8 - CTS Clear to send	Pin 5
Pin 9 - RI Ring Indicate	Pin 22

Door Intercom

The Door Intercom must connect to the extension 23 position on the Base Motherboard.



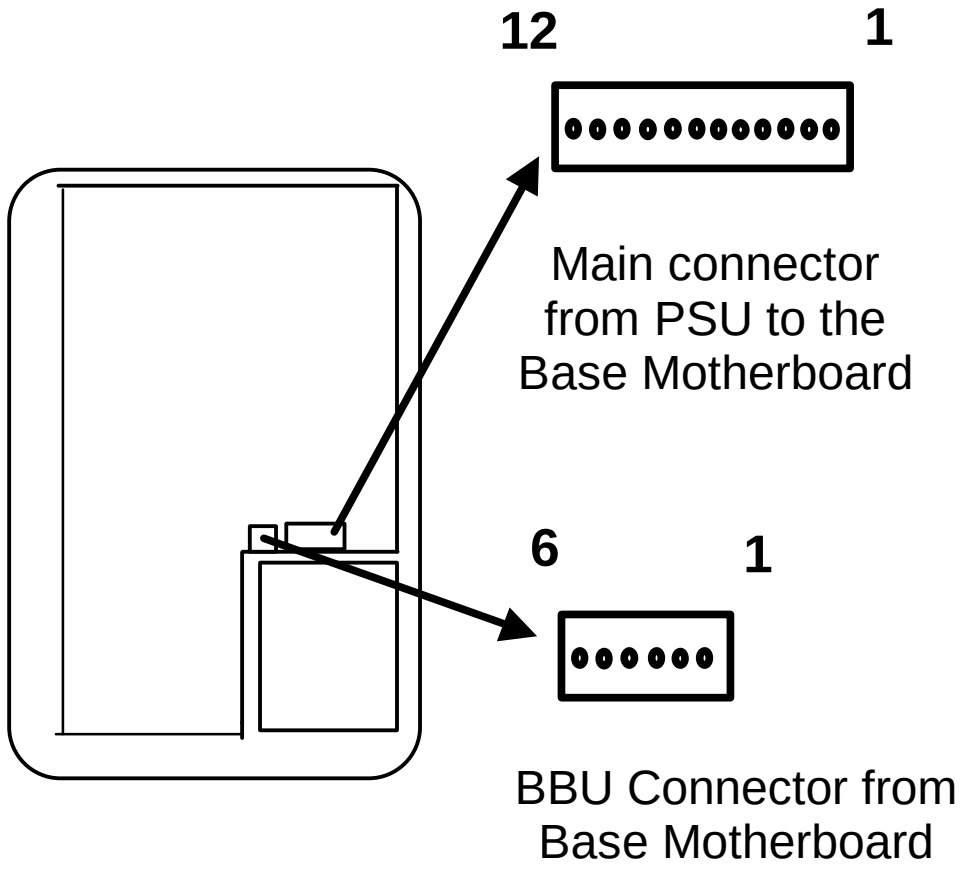
Connect the single pair from the Door Intercom to the AB connections on extension 23.

The Door Intercom must be programmed in the System. See the owners manual for the programming details.

Replacement of system Printed Circuit Board (PCB) modules

- Record the system configuration and administration programming.
- Disconnect the power including the Battery Backup Unit.
- Unplug the Expansion Cards (if fitted).
- Ensure all extension, and ISDN line cabling, is tagged, to ensure it can be correctly reconnected.
- Disconnect the extension and ISDN line cables.
- Remove the PCB.
- Insert any expansion PCBs on the replacement PCB.
- Reconnect the extension and ISDN line cabling.
- Reconnect the power.
- Reprogram the system as required.

Power supply



Main Connector

Pin No.	Definition	Test Output
Pin 1	Ringing switch	N/A
Pin 2	-31 Volts Analogue	With respect to Pin 3 output +9Volts +/- 5%
Pin 3	-40 Volts Digital	Reference Pin for output voltages
Pin 4	-35 Volts	With respect to Pin 3 output +5Volts +/- 3%
Pin 5	-45 Volts	With respect to Pin 3 output -5Volts +/- 5%
Pin 6	0 Volt Protect	N/A
Pin 7	Protective Earth	Connected to system protective earth
Pin 8	-40V Analogue	As pin 3
Pin 9	Ringing source	N/A
Pin 10	N/C	N/A
Pin 11	-40V Volts Protect	With respect to Pin 12 -40Volts Internal S-Bus supply
Pin 12	0 Volts Protect	Reference pin for internal S-Bus supply

BBU Connector

Pin 1	0 Volts	Reference pin for pin 2
Pin 2	49 Volts	With respect to pin 1 output 49Volts +/- 2Volts
Pin 3	Not used	N/A
Pin 4	0 Volts	Reference pin for pin 6
Pin 5	Not used	N/A
Pin 6	41.5 Volts	With respect to pin 4 output 41.4Volts +/- 1.5Volts

Replacing a power supply unit

Before replacing the power supply, please verify that the mains fuse and the power supply fuse have not blown. **See Caution below.**

The mains fuse is a standard 250 Volt 3A device
The power supply fuse is a 20mm 250V 1.6A HT device (anti-surge ceramic body, high rupture capacity)
The Battery back up charging circuit in the BBU case has a fuse on the circuit board
20mm 6.3A H T device. See next section for battery isolation fuse.

The power supply fuse is located beside the mains lead screw terminal connectors on the power supply circuit board, which is located under the power supply cover.

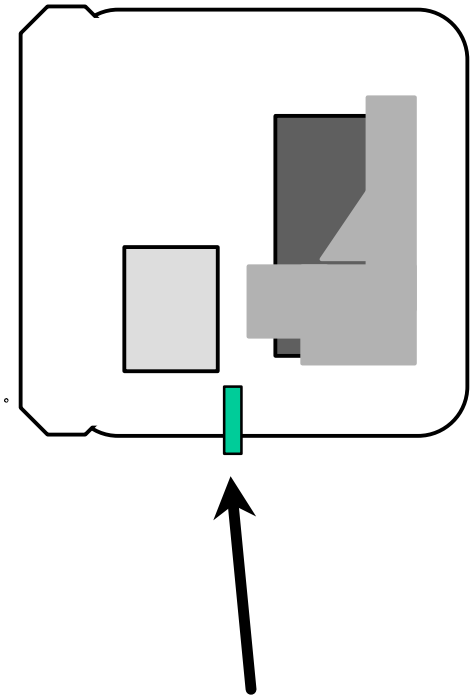
CAUTION

The power must be disconnected before removing or installing the PSU

- Disconnect the power.
- Disconnect the battery if fitted (See previous instructions).
- Remove the power supply cover.
- Disconnect the mains lead.
- Disconnect the lead to the main PCB.
- Unscrew the two retaining screws and lift out the PCB.
- Re-insert the new power supply.
- Insert the two retaining screws.
- Reconnect the lead to the main PCB.
- Reconnect the mains lead.
- Replace the power supply cover.
- Reconnect the power.
- Reconnect the Battery Backup Unit (If fitted)

Connecting the Battery Backup Unit to the System

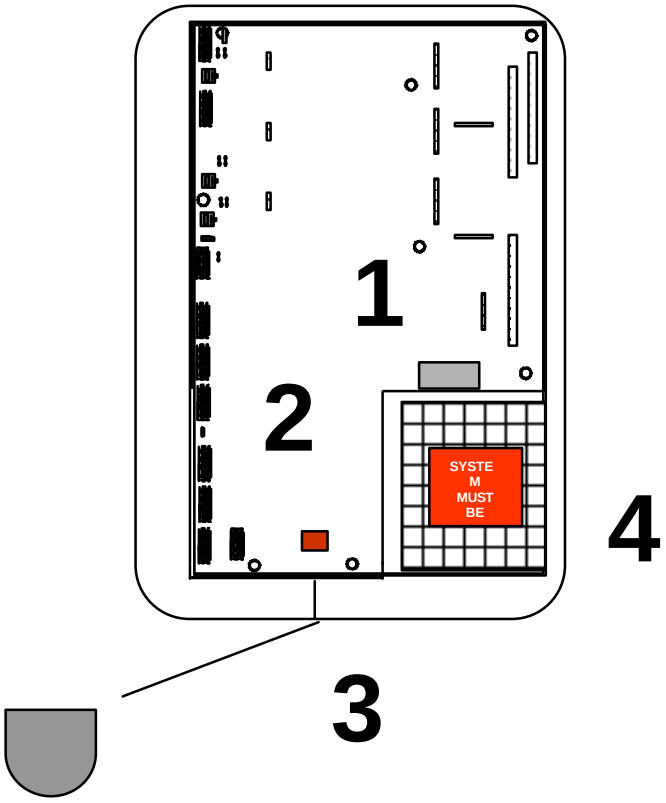
Caution - Battery Back Unit with the cover removed



When connecting or replacing the BBU remove the fuse (10 Amp 250V [F]) at the bottom of the unit. Replace ONLY when the BBU cable has been connected or disconnected to/from the Base Motherboard

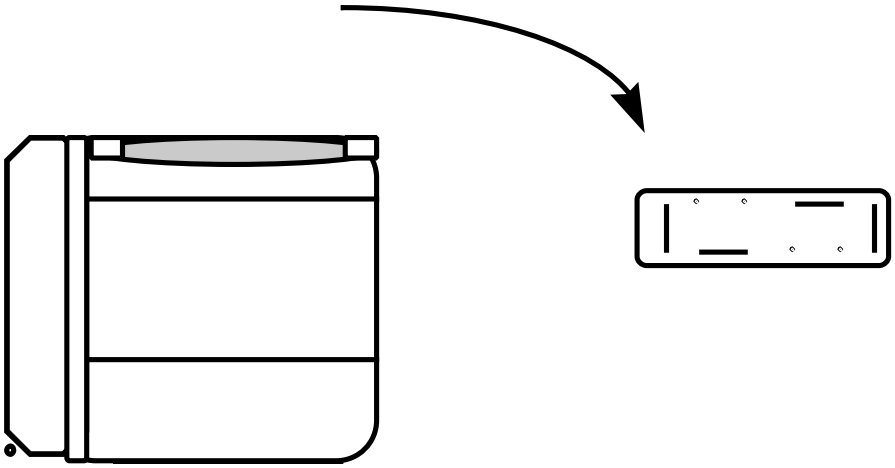
When fitting the battery back up unit

1. Ribbon cable to Base Motherboard	Power supply to system
2. Battery backup cable socket	Keyed connector for BBU cable (when fitted)
3. Break out section for BBU cable	Removable plastic moulding
4. Power supply anti shock cover	Removable when mains supply is isolated



Break-out section

Mounting the Battery Backup unit

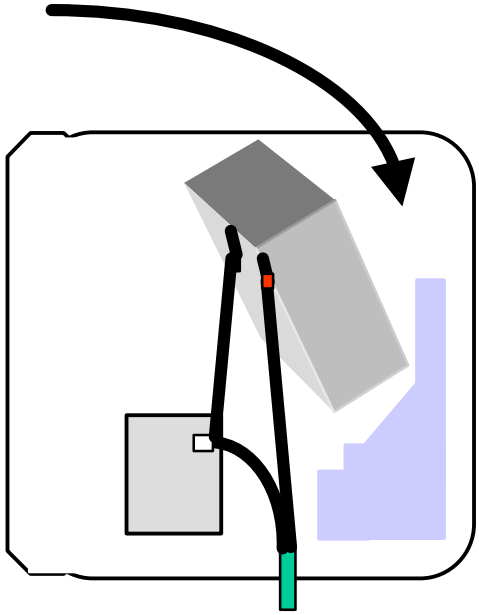


The Battery back up unit is mounted on a similar bracket to that on the main CCU. Please refer to the section of this manual referring to the fixing of the CCU. The Battery Backup unit (BBU) contains a 7.2 Ahr rechargable Battery. This battery sits in a bracket within the BBU case.

Connecting/Disconnecting the Battery

Insert the battery, bottom-first into the mounting bracket
using clockwise motion

The cable connecting the positive terminal of the battery to the BBU circuit board is attached via the fused (see above), keyed connector. Unplug the connector from the circuit board, before inserting or removing the battery and then connect/disconnect the battery terminals. When work on inserting or removing the battery is complete, reconnect the cable to
the circuit board replace the cover and then the fuse.



Extension Port (22)

This port is designed to work up to a distance of 2 kilometers away from the main unit and is approved for connection of 2-wire external extensions using PTO network cabling. Extension 22 should be the only extension using this cable

Cable limitations:

- 2-wire external extension = 2 kilometers maximum cabling distance or 3 dB at 1600 Hz.
- The cable route should not be exposed to high voltage surges (e.g. Lightning)

Note *- These figures are assuming a cabling conductor size of 0.5 mm copper diameter.*

Central Bell

It should be noted that the BT Inspiration is provided with a connector for a Central Bell. This is a single pair on which ringing is supplied. The Central bell can be provided by running a cable pair from the Central Bell IDC see position 7 on Base Motherboard to a master line jack unit. Bells/tone callers can then be connected to the line jack unit or hard-wired to LJU terminals 3 and 5.

Doorstrike

The Doorstrike port provides a closed relay contact when in the operated condition. The relay contact is designed for low voltage DC equipment and should not be used for any voltages greater than those specified within the technical specification.

Note:

All internal extensions terminated within the customers premises should connect into standard line jack units. When extension 22 is using the long line facility (Max. 2 Km from the CCU) an earthed line surge protector should be fitted to the line.

General cabling and wiring information

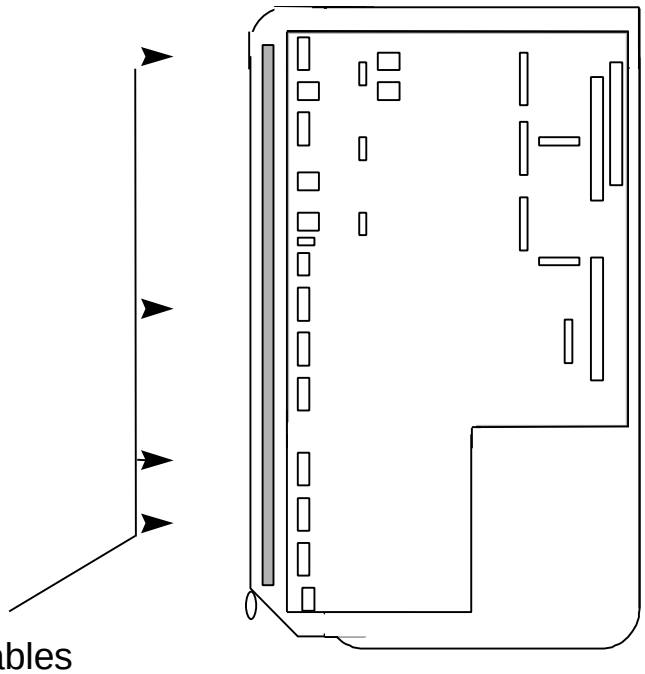
Do not exceed the following resistance limit when connecting extensions to the CCU (0.5 mm tinned copper conductor).
100 ohms or 500 metres for Featurephone extensions
200 ohms or 1.4 Km for standard 2-wire telephone extensions
336 ohms or 2 kilometres for 2-wire extension connected to extension position 22.

Great care should be taken when selecting the cable routes to ensure that the cabling complies with current cabling requirements.

The extension and ISDN line cables must be of twisted-pair construction using insulated tinned copper wires of nominal 0.5 mm cross-sectional area. It is important that this size and type of wire is used as incorrect types could result in unreliable connections.

The extension and ISDN line cables enter the CCU at the bottom left-hand side of the CCU when viewed from the front of the case. Remove the punch-outs and pass the cables through the cable entry hole in the CCU case. The cables should then be passed through the cable retaining straps until adjacent to the relevant connectors.
There are punch-outs for the ISDN and V24 connectors.
The cables should remain sheathed inside the CCU housing within reach of the connector. Guide the cables neatly into the channel space between the connector and the CCU case side, ensuring that there is sufficient clearance between the cables and the CCU case lid.

MDF Wiring technique



Install cables along the left hand side of the Base Mother-board (area in grey) and connect to required terminals

Cable access via break-out panel on bottom left of CCU housing

Connecting the extensions

Note *- Only four wires per extension are connected at the CCU; spare wires must be neatly laid back away from the connectors. To prevent cross-talk or interference, cable pairs should not be split or the spare wire of cable pairs used.*

Protection of the CCU and telephones against high voltage surges is recommended where extensions and external cabling are likely to be subjected to induced high voltage surges such as lightning.

Analogues Extensions are numbered 20 to 37.

Run cable from the CCU to each extension telephone location. Pass the cable through the cable entry hole in the CCU and terminate the extension wiring in accordance with he table below

CCU pairs	Function	Master LJU Pin - Out
A	Speech	Pin 2
B	Speech	Pin 5
C	Data	Pin 1
D	Data	Pin 6

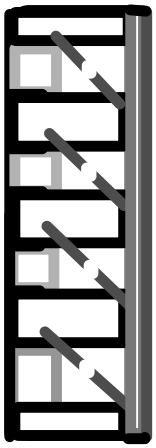
Standard 4-Wire IDC Krone

A Speech - LJU Pin 2

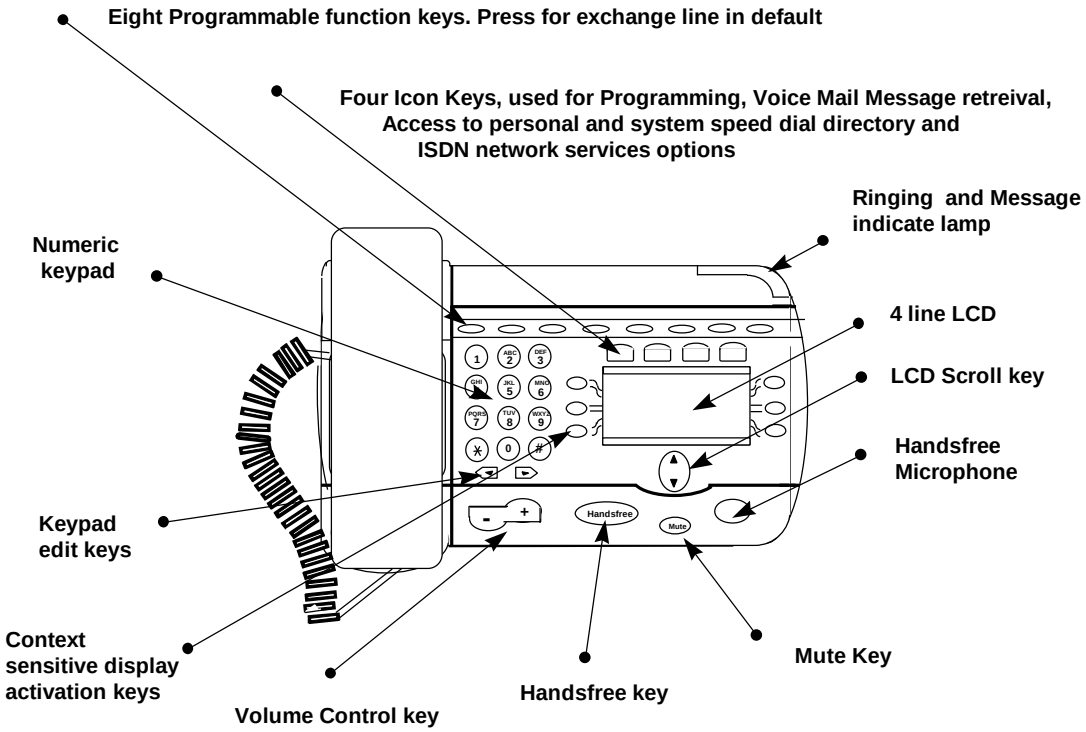
B Speech - LJU Pin 5

C Data - LJU Pin 1

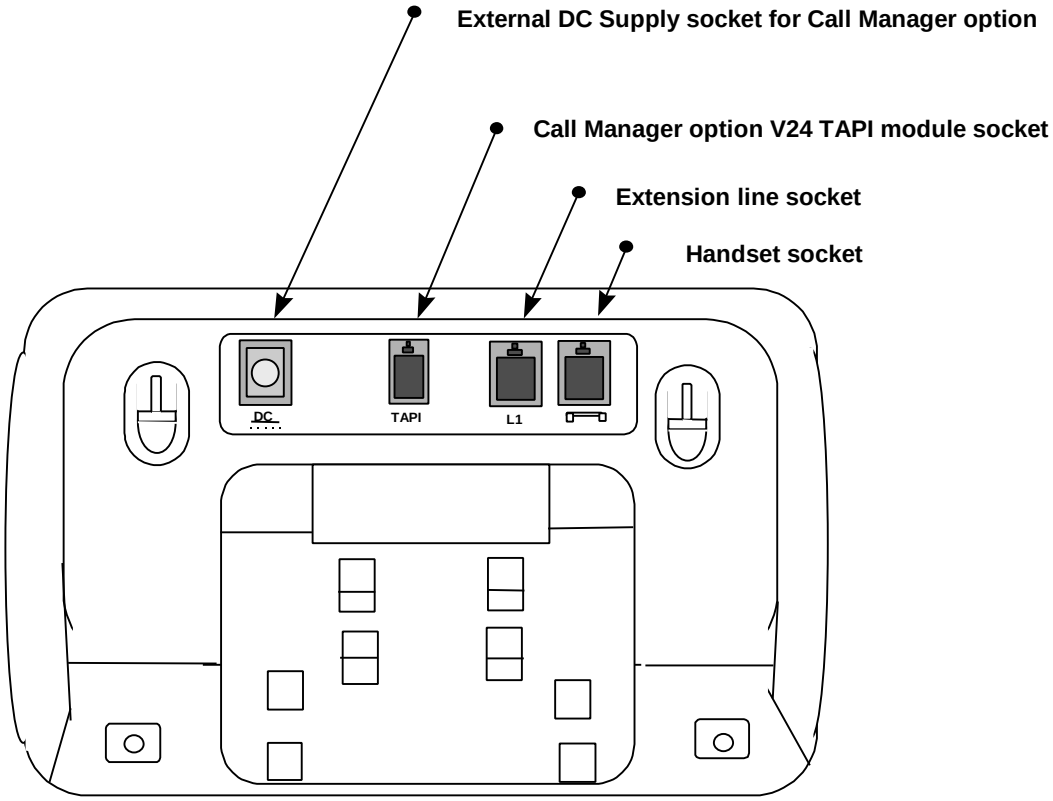
D Data - LJU Pin 6



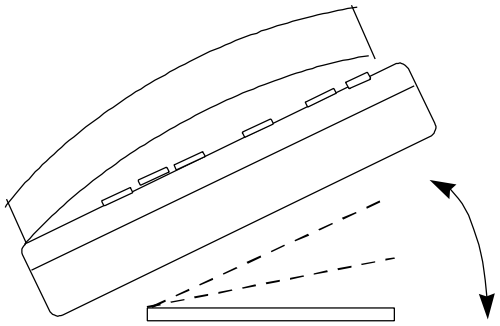
Featurephone



Featurephone connections

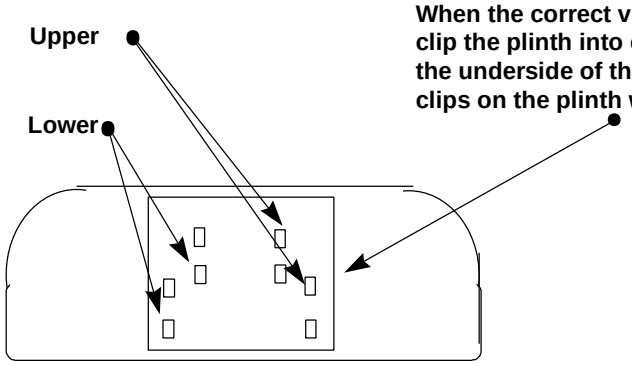


Attaching the Featurephone desk plinth

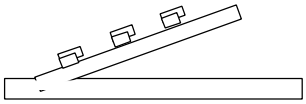


The Featurephone may be attached to the desk plinth at two angles. One angle elevates the display to a higher level.

When the correct viewing angle has been verified clip the plinth into either the lower or upper slots on the underside of the Featurephone. There are retaining clips on the plinth which allow the correct angle selection



Plan view of plinth



Side view of plinth

Wall mounting a Featurephone

Locate, drill and plug the two screw locations as shown. The holes should be deep enough to accept a 2.5 cm screw. Screw in the two screws, leaving 3 or 4 mm protruding. Remove the plinth from the base of the phone and locate the two keyhole slots on the base of the phone over the two screws. The plinth is not used.

Locate the two mounting screws 158mm apart and slide the Featurephone down onto them by aligning the screw head retaining holes correctly

The handset retaining clip, located directly below the hookswitch, must be reversed so that the handset is secure when the phone is wall mounted.

Power fail

When planning the extension wiring for the system, consideration should be given to the use and location of Featurephones and two wire extensions where they may be used in power fails situations.

PSTN

In the event of a total system power failure at least 50% of the equipped lines are switched to extensions. Lines 1 and 2 are power failed to extensions 24 and 25 the last two extensions on the basic unit. Line 5 is power failed to extension 31 and Line 7 to extension 37, the last extensions on each of the expansion boards.

NOTE:

If lines are power failed to extension positions equipped with Featurephones the user must replace the Featurephone with a standard two-wire phone to answer or make calls. FEATUREPHONES CANNOT BE USED IN POWER FAIL

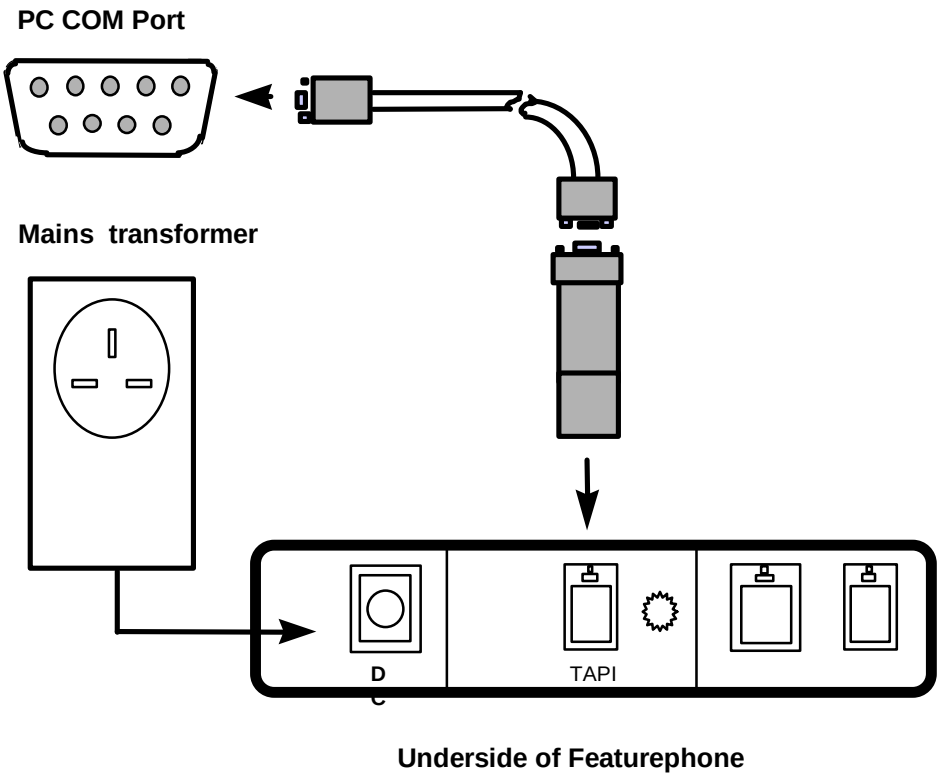
Line Position	**Power fail extension**
Line 1	Extn.24
Line 2	Extn 25
Line 5	Extn.31
Line 7	Extn 37

Each board with PSTN exchange line capability is equipped with a power fail circuit path

ISDN

In the event of a total system failure, the ISDN lines will not operate. ISDN devices can be connected directly to the ISDN NTE or the SO bus, and work independently of the system.

Call manager



Call manager is a PC based application which allows the customer to control their Featurephone from a PC. The application is customer configurable and is loaded from several application disks which the customer receives with their Call Manager equipment.

Note:
The local Featurephone must be within 3 metres of a mains supply socket in order to operate with Call Manager. The Featurephone must be within 3 metres of the local PC in order to connect the communications cables.

The TAPI Kit is composed of:

- The V24 Call manager module module
- A RS-232 serial cable equipped with 9 way connectors (PC to TAPI mod)
- A TAPI cable equipped with RJ11 connectors (TAPI mod to Featurephone)
- Diskettes containing the Call Manager software.
- A quick guide

Environment

The software will run on Windows 95. The minimum recommended hardware on which the application runs is a Pentium P75 with 8MB PC. Call Manager for Windows 98 will be available in November 99.

Bit Rate:	19.2k bit/s full duplex
Flow Control:	No FC
Bits:	8 bits/no parity
Interface Pins:	Transmit, Receive, Ground.

Hotel upgrade

The BT Inspiration Hotel upgrade offers system options to customers in the Hotel/Hospitality industry. The facilities are not available in default mode and have to be switched on remotely by the BT Inspiration SSC in Manchester.

The BT Inspiration Hotel Upgrade is only available on systems with revision 1.98 software or higher.

When enabled the following information is displayed on Extension 20 Featurephone.

All system Featurephones display the word "Hotel" on the top line of the display. Featurephones on guest extensions do not display a menu and operate as a normal two wire handsfree telephone.

The Hotel software is shipped in a standard BT Inspiration system. It is not a separately shipped item. The customer orders the Hotel package, they receive a V24 module and cable with a 9 to 25 way serial port converter and a document pack containing the ***BT Inspiration Hotel Facilities User Guide*** and guest extension user guides.

The hotel package must be enabled from the BT Inspiration SSC. Contact 0800 671322.

Note: the Hotel package options are not available in default mode.

When the package is enabled the following features may require programming

1. Allocation of Guest/Administration extensions
2. Setting call charges
3. Setting the dial codes for call charge bands
4. Programming the hotel name
5. Allocating class of service for non-guest phones
6. Enabling the available forms of call logging
7. Programming the message waiting off time

*(see the **BT Inspiration Hotel Facilities User Guide** for details)*

The V24 module and cable shipped to the customer site connects directly to the BT Inspiration CCU. The RJ 11 socket is under the first stage MDF cover. This is the standard BT Inspiration V24 socket. No additional socket is available.

The package requires a serial printer or PC to be connected to the system in order to print out bills and log calls made to and from the system.
The printer/PC is NOT provided with the system.

Cabling to the printer /PC is provided for using the V24 module and cable.

The data rate from the system for the purposes of call logging and phone bill printing is selectable at 4800 BPS, 9600 BPS or 19200 BPS. These are programmable selections on the BT Inspiration.

The data format is 8 bits no parity and 1 stop bit

Printer management and maintenance is not supported by the BT Inspiration SSC

If connected to a PC there must be a call logging package or terminal emulation application running on the machine in order to log the information being sent from the system

PC applications performing these functions are NOT provided with the system

PC applications are not supported from the BT Inspiration SSC

The user documentation contains all the information required to operate and program the system.

If the system is located away from the printer or PC and the V24 cable is too short, an additional serial cable will have to be run. This is NOT provided with the system

The BT Inspiration Hotel package is always sold with at least one Featurephone. This can be used to programme system features

Changing a guest phone to an administration phone or vice versa requires the class of service to be changed. See the BT Inspiration Owners Guide for information on this feature

Guest phones should not be associated with loop calling lines, as the call charging is based on line reversal and it is not applicable to loop calling lines

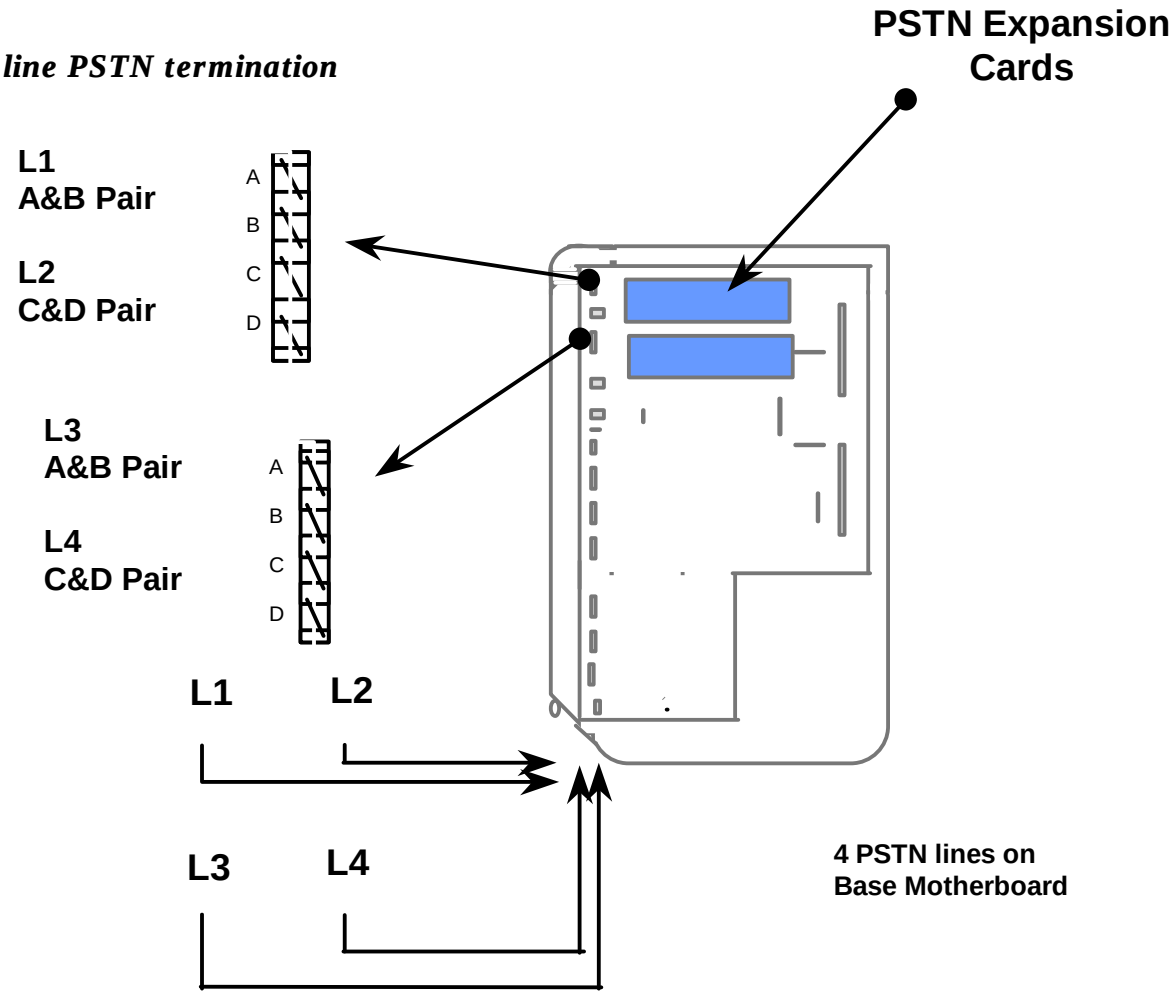
A cold reset will revert the system back to normal operation. This will require the BT Inspiration SSC to remotely connect to the system to enable the Hotel package

Connecting to the network

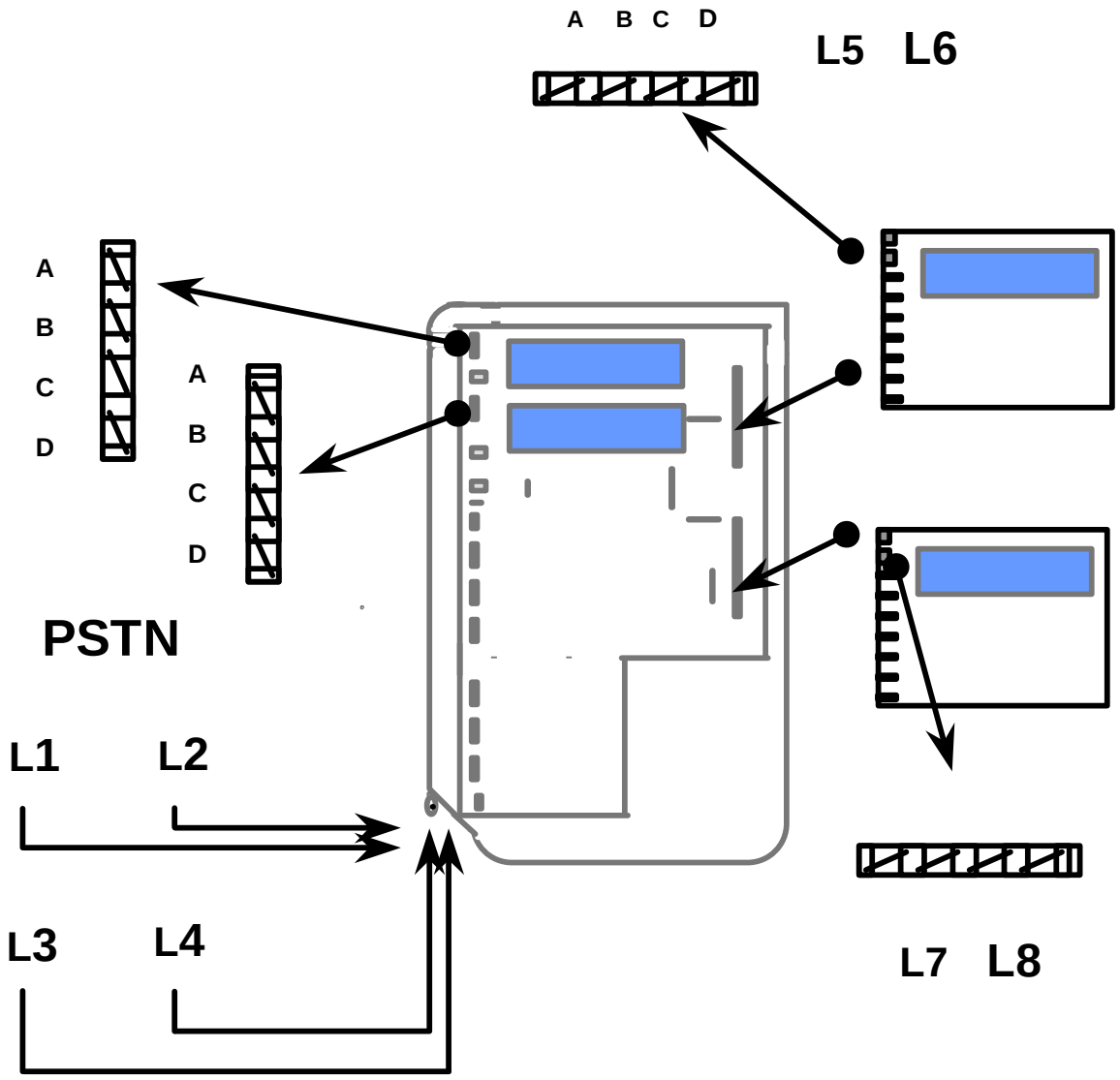
Analogue/PSTN lines

The same IDC Krone connector type is used when terminating analogue lines as is used for terminating the extensions. In this case the first A-B pair is used to terminate one line and the second C-D pair is used to terminate the second line.

4 line PSTN termination

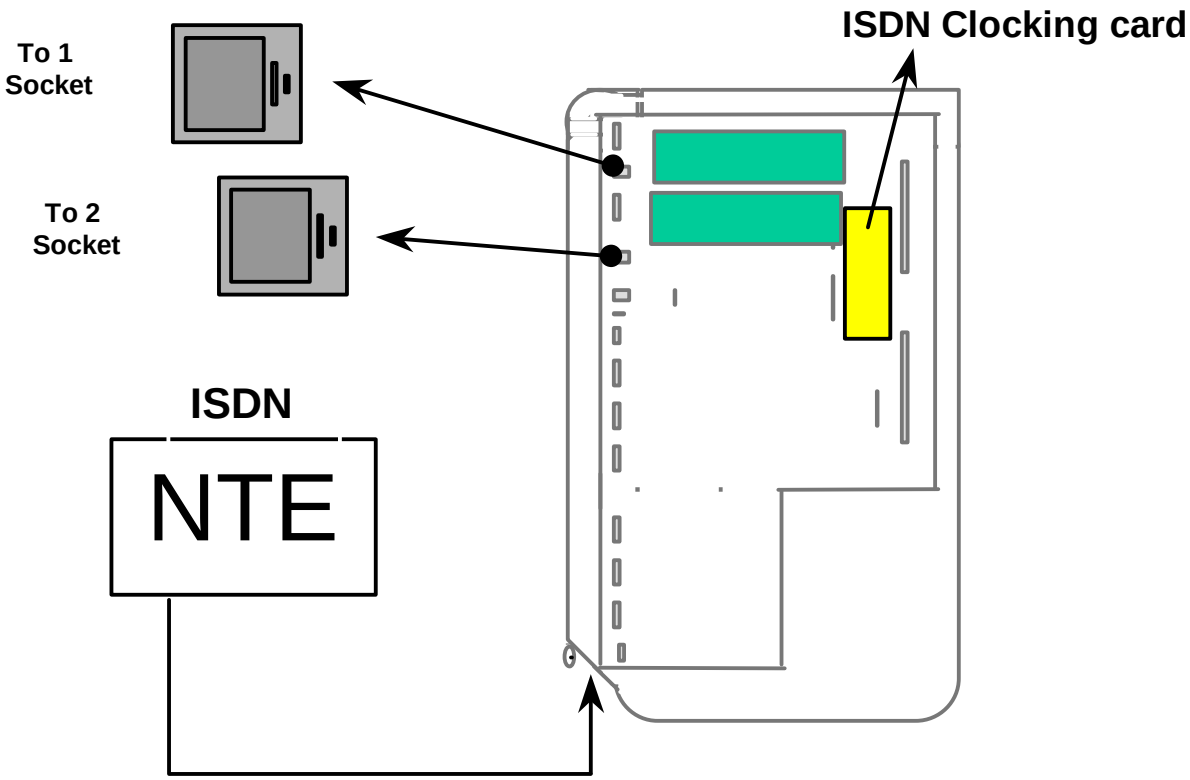


5 to 8 Line 12- 18 extension system



The extension expansion card provides an IDC Krone connection for lines 5&6 on the first expansion card and lines 7&8 on the second expansion card. This IDC Krone connector is located at position 7 (See the section on the extension expansion card in this manual). The system may be configured with eight analogue/PSTN lines.

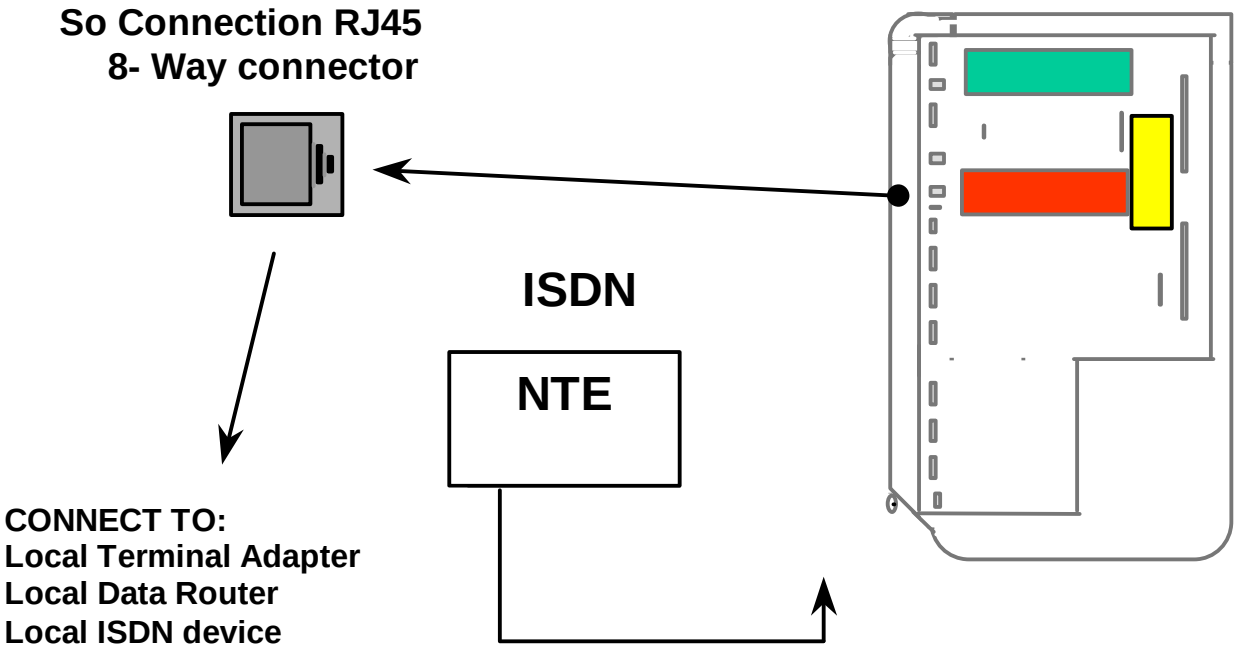
ISDN Lines



Connect an ISDN cable from the Network terminator to the RJ45 socket on the base motherboard

The extension expansion card provides an RJ45 connection for a third basic rate ISDN2 line on the first expansion card and a fourth basic rate ISDN2 on the second expansion card. This RJ 45 connector is located at position 8 (See the section on the extension expansion card in this manual). The system may be configured with four basic rate lines.

S-Bus terminating socket



Connect an ISDN cable from the Network terminator to the To 1 RJ45 socket on the Base Motherboard

Installation completion & power up

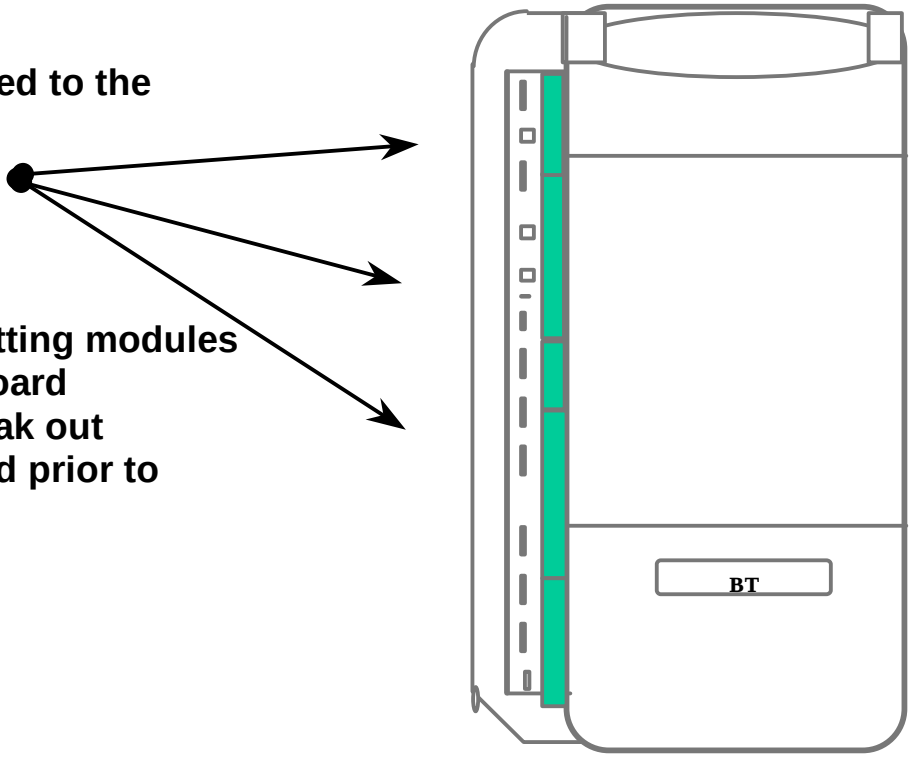
When the installation is complete please carry out the following procedures

Wiring and module insertions

- Ensure using suitable ESP, that all system module PCB s are secured correctly and that all column supports are fitted to their relevant positions
- Visually verify all Krone IDC punch down terminations on positions fitted with Featurephones and standard 2-wire POTS phones
- Ensure there are no screws or metal objects loose within the CCU housing as this may cause damage on power up
- Refit the CCU cover

Break out sections on CCU cover allow space for expansion cards fitted to the Base Motherboard.

When upgrading or refitting modules onto the Base Motherboard ensure the relevant break out panel has been removed prior to refitting the CCU cover



Power up and test

- Ensure the mains plug is fitted with a 3A cartridge fuse
- Ensure there is a reliable mains earth in the supply socket outlet. This can be done using a 13A socket earth loop impedance tester

Switch on

- Power up the system by inserting the mains plug
- Wait 8-10 seconds for the system power up routine to be complete. During this period you will hear several clicks from the working system as relays are energized
- Check that the vital activity LED on the Base Motherboard is flashing
- The Featurephones display the product name and software revision for about 1.5 seconds

Commissioning

1. Remove any anti-scratch protective film from Featurephone LCDs
2. Label up all Featurephones and other telephones.
3. Ensure that all Featurephones provide dialling tone, ringing and Handsfree (loud speaking) facilities. Check that the display is not showing corrupt information.
4. Reset the system to default
5. Check that all other telephones are connected for dialling and ringing.
6. Make essential changes from the default, for example:

PSTN System
Equipped Exchange lines
Disconnect unused extensions

ISDN System
Equipped Exchange lines
Disconnect unused extensions

Enable features on the system for specific configurations

PSTN System
Enable DISA
Fax Detect
VoiceMail (Answer machine on I/C lines)
Program Door Intercom
Program PA position
Forward Recall - If system is piggy-backed
MF/LD signalling

ISDN System
P to P or P to MP
Set BASE MSN & DDI index numbers
CLI Routing
VoiceMail (Answer machine on ISDN lines)
Program Door Intercom
Program PA position
PBX access - If system is piggy-backed

Note
As the BT Inspiration can support both ISDN and PSTN , it may be necessary to enable features for ISDN and PSTN options on the same system.

Recommendations for Customer Training

As part of the installation, the customer is entitled to a 30 minute, system familiarization tutorial. This should cover the following,

- Use of the Featurephone menus and associated keys
- Taking, making and transferring calls on Featurephones and two-wire phones
- Accessing system programming

The customer may wish to use the 30 minutes to explain a selection of other features, such as,

- Call transferring capabilities
- Programming Featurephone keys
- Time and date programming
- System and /or personal speed dial programming
- Incoming call handling
- Call restriction, class of service parameters
- Extension reset facilities
- Connecting modems, fax machines, EPOS machines, etc.
- Use of Voice module features

The features should be explained by using the BT Inspiration Quick Reference Guide and the Owners handbook.
Ensure the customer has a Quick Reference Guide for each extension and one copy of the owners handbook.

The customer familiarization sign off from, must be, completed. This should contain all the relevant customer details and be signed by the customer. The completed form must be faxed or sent to the BT Inspiration SSC.

Maintenance

The method of fault isolation is by PCB/module substitution. Only the faulty PCBs/modules should be returned to the manufacturer for repair. **Full units must not be returned.**

It is imperative that a fault report be fully filled and attached to the PCB/module sent back for repair. The fault should be described thoroughly.

Troubleshooting

All faults can normally be traced quite readily to a particular PCB. Prior to replacing any PCB, fault conditions should be checked to see if they are caused by programming, or mis-operation. The Featurephone display will often indicate which system features have been set.

- **System not initializing**
  Check that all system cards have been properly installed with all connectors fully located

- **No incoming calls**
  Check that all phones programmed to ring are not programmed for DND or Divert

- **Extension outgoing locked**
  If you cannot get outgoing access on a 2-wire telephone, move a Featurephone to the extension. If it shows EXTN LOCK the extension has been locked and you will need the lock code to unlock it.

- **No extension dial tone**
  Check that the extension has not been disconnected through programming

- **Not seizing a line for outgoing calls**
  Check if the line has been programmed for incoming calls only.
  Check if the line is equipped in programming**.**
  Check that the key is programmed for line access

- **Featurephone shows "Waiting for SYNC"**- Extension not properly terminated at IDC

- **Door Intercom not operating**
  Check Door Intercom link is located correctly.
  Check the Door Intercom programming.

- **Phone reset**
  Remember the simple phone reset code 157 which can be dialled from any extension phone.

- **System reset**

  - **Reset:** To do a warm reset of the BT Inspiration, enter the programming mode and choose System, Reset Options, and Reset

  - **Reset to default:** To do a cold reset of the BT Inspiration, enter the programming mode and choose System, Reset Options, and Reset to Default. **WARNING: this will reset <u>ALL</u> programming to factory default.**

Technical Specification

Type of System	Hybrid / PBX
ISDN line	ISDN 2e
ISDN line Capacity	3
Terminals	Featurephone or Standard 2-wire Telephone
Internal Speech Paths	3
Extension Capacity	18
Systemphone Capacity	18
Standard 2-wire Apparatus Capacity	18
Extension Loop Resistance	100 Ohms (0.7Km) 4 wire Featurephones 200 Ohms (1.4Km) 2 wire phones and 336 Ohms 2km Extension 22 only
System REN	20
Extension REN	2 (See above for system Max.)
Extension Cabling	Standard 4 Wire Twisted pair 0.5 mm2 cu
Central Control Unit	Height 450 mm Width 304.5 mm Depth 71.6 mm Weight 2.5 Kg
Battery case	Height 250 mm Width 304.5 mm Depth 21.6 mm Weight less than 1Kg
Battery	12 V / 7.2Ah
Mains Supply Voltage	220-240V 50Hz
Maximum Power Consumption	75 Watts
ISDN line Signalling	ISDN 2e
Standard 2-wire Telephone Signalling	MF
Standard 2-wire Telephone Recall Signal	Timed Break
Call Logger Interface	V24 Port 4800 Baud, 8 bit, No Parity, 1 Stop Bit.
Music on Hold	External calls only
Tone on Hold	200 ms on 200ms off 200ms on 3. 4 sec off
Central Bell	Separate Port. Ringing applied
System Speed Dials	Max. 200
Extension Current and Voltage Feed	Voice - 40 volts 25mA Constant Current Data - 40 volts 10 mA Constant Current
Dial Tone Duration	20 sec
Programming	Systemphone (default extension 20)
PC Programming / Remote Access	Remote by B- Channel
Ringing voltage / frequency	70 V RMS 25 Hz
Ringing Cadences	Incoming call 400ms on 200ms off 400ms on 2.0s off Internal call 1s on 2s off Door Intercom call 400ms on 200ms off 200 on 2.2s off Call recalling 1ss on 400ms off 400 on 1.2 off
Tone Frequencies	425 Hz ± 15 Hz unless stated otherwise
Tone Cadences	Dial Tone Continuous tone of 440Hz ±5% and350Hz ±5% combined Special Dial tone 800ms on 800ms off of 440Hz ±5% and350Hz ±5% combined

	Ringback Tone 400ms on 200ms off 400ms on 2sec off Busy Tone 400ms on 400ms off Congestion Tone 100ms on 100ms off Hold Tone 200ms on 200ms off 200ms on 3.4 sec off Conference tone One burst of 400ms. NU tone Continuous tone Call waiting tone 100ms on 4.9 s off
Environmental Requirements	Normal working temperature 0°C to 45°C Working humidity (non condensing) 10% to 80% Storage temperature -20°C to +70°C Storage humidity 10% to 90%
Doorstrike Relay Contact	Max Rating 24 Volts DC 2 Amps
Safety and Protection	EN60950 EN41003 and EN300-047
system software EPROM	Flash 4 Mb; access-time < 120 ns
Music on Hold or Courtesy service EPROM	1 or 2 Mb:

Configuration Table

	2+6 PSTN	**1T6**	**4+6 PSTN**	**2T6**	**412 PSTN**	**2T12**
Equivalent to		2+6		4+6		412
Base Motherboard	1	1	1	1	1	1
PSTN Expansion module	1	n/a	2	n/a	2	n/a
ISDN Expansion module as To	n/a	1	n/a	2	n/a	2
ISDN Expansion module as So	n/a	1 optional	n/a	1 optional	n/a	1 optional
ISDN clocking card	n/a	1	n/a	1	n/a	1
VoiceMail module	optional	optional	optional	optional	optional	optional
Battery Backup unit	optional	optional	optional	optional	optional	optional
Extension expansion module	n/a	n/a	n/a	n/a	1	1
Call Manager	optional	optional	optional	optional	optional	optional
V24	optional	optional	optional	optional	optional	optional

	612 PSTN	**3T12**	**618 PSTN**	**3T18**	**2+6& 1To**	**212&1To**
Equivalent to		612		618	4+6	412
Base Motherboard	1	1	1	1	1	1
PSTN Expansion module	3	n/a	3	n/a	1	1
ISDN Expansion module as To	n/a	3	n/a	3	1	1
ISDN Expansion module as So	n/a	1 optional	n/a	2 optional	1 optional	1 optional
ISDN clocking card	n/a	1	n/a	1	1	1
VoiceMail module	optional	optional	optional	optional	optional	optional
Battery Backup unit	optional	optional	optional	optional	optional	optional
Extension expansion module	1	1	2	2	n/a	1
Call Manager	optional	optional	optional	optional	optional	optional
V24	optional	optional	optional	optional	optional	optional

	2+6&2To	**212&2To**	**412&1To**	**412&2To**	**612&1To**	**618&1To**
Equivalent to	612	612	612	812	812	818
Base Motherboard	1	1	1	1	1	1
PSTN Expansion module	1	1	2	2	3	3
ISDN Expansion module as To	2	2	1	2	1	1
ISDN Expansion module as So	1 optional	1 optional	1 optional	1 optional	1 optional	1 optional
ISDN clocking card	1	1	1	1	1	1
VoiceMail module	optional	optional	optional	optional	optional	optional
Battery Backup unit	optiional	optional	optional	optional	optional	optional
Extension expansion module	1	1	1	2	2	2
Call Manager	optional	optional	optional	optional	optional	optional
V24	optional	optional	optional	optional	optional	optional

	418&2To	818 PSTN	2T18	418&1To	4T18
Equivalent to	818	818	418	618	818
Base Motherboard	1	1	1	1	1
PSTN Expansion module	2	4	n/a	1	n/a
ISDN Expansion module as To	2	n/a	2	1	4
ISDN Expansion module as So	1 optional	n/a	2 optional	2 optional	1 optional
ISDN clocking card	1	n/a	1	1	1
VoiceMail module	optional	optional	optional	optional	optional
Battery Backup unit	optional	optional	optional	optional	optional
Extension expansion module	2	2	2	2	2
Call Manager	optional	optional	optional	optional	optional
V24	optional	optional	optional	optional	optional

Power & Environmental Requirements

Mains voltage supply	240V ± 10%.
Power consumption	75 watts.
Normal working temperature range	0^0C to $+40^0$C
Extreme working conditions	-15^0C to $+55^0$C
Working humidity (non condensing)	10% to 80%
Storage temperature range	-20^0C to $+70^0$C
Storage humidity	10% to 90%
CCU housing clearance	100 mm
Battery Back up clearance	310 mm