

For installers and maintainers
of the BT Revelation

NOT TO BE SHOWN OUTSIDE BT



BT Revelation
ISDN Access Unit
Installation and Maintenance manual

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BT Revelation

Installation of the ISDN Access Unit

Introduction

The ISDN Access Unit is an optional upgrade available on the BT Revelation. When the unit is installed on a BT Revelation it enables voice services on ISDN 2 lines to be accessed by phones connected to the system.

The Access Unit connects in parallel to any other ISDN device connected on the S₀ bus. Data calls may be made on the ISDN 2 lines by connecting the ISDN devices e.g. a PC with an ISDN card, in parallel with the Revelation IAU.

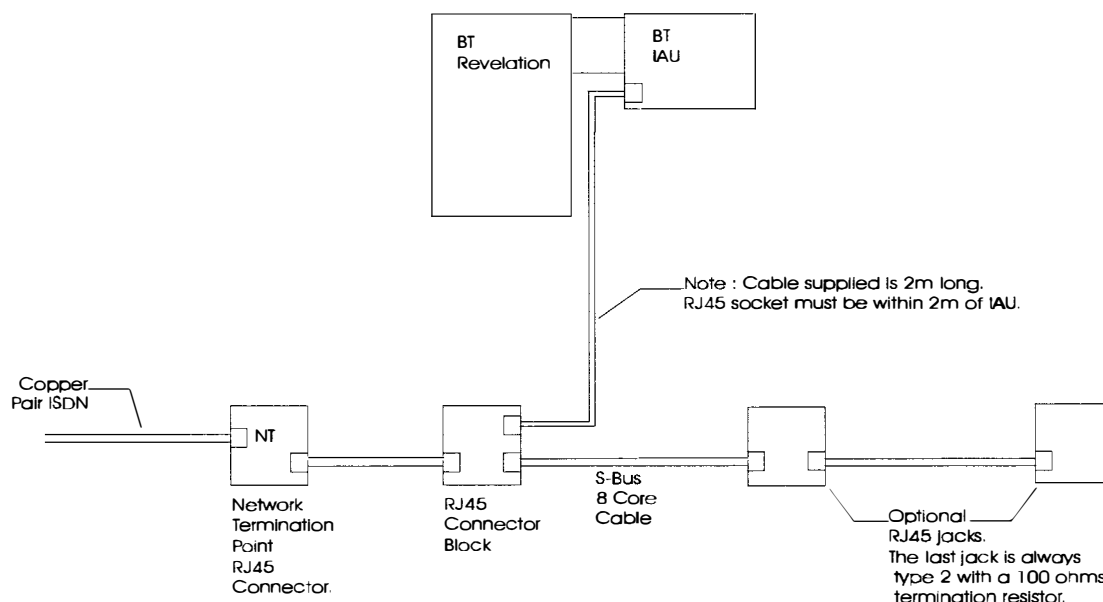
The status of any B channel connected to the ISDN Access unit is indicated on the Line leds on all systemphones connected to the BT Revelation. This is very useful in cases where other ISDN devices are using the ISDN lines .

The ISDN Access unit is designed to respond to voice calls only. It will not respond to any data calls.

NOTE :

If an incoming call is answered by another device on the S₀ bus the systemphone line leds may not indicate that the B channels are busy.

Typical BT Revelation ISDN2 (IAU) Schematic



Equipment List

Item	Quantity	Item Code	Description
BT Revelation ISDN Access Unit and RJ45 line cord	1	870865	Upgrade Unit which allows one ISDN 2 BRA to be connected to the BT Revelation
BT Revelation ISDN Expansion Module and RJ45 line cord	1	870866	Expansion Module mounted in the ISDN Access Unit which gives access to a second ISDN 2 BRA

NOTE:

The ISDN Access Unit may also be supplied with an EPROM containing the software required for the main CCU. This will allow the ISDN upgrade to work.

Installation

Changing the Main unit EPROM

The main CCU EPROM must be replaced with the correct EPROM software release. In most cases the latest release of CCU software will be supplied with the ISDN upgrade unit.

- Locate and remove the main CCU EPROM
- Insert the new EPROM and ensure that all the legs are inserted correctly in the holder.

CAUTION:

The EPROM must be inserted with the correct orientation. The notch on the EPROM must be next to the right hand side of the main PCB.

Mounting the ISDN Access Unit

The ISDN Access Unit is supplied with the same mounting bracket as the Revelation CCU.

Using the Template provided, locate drill and plug the mounting holes. The holes should be deep enough to accept a one inch No. 10 round head screw or its metric equivalent.

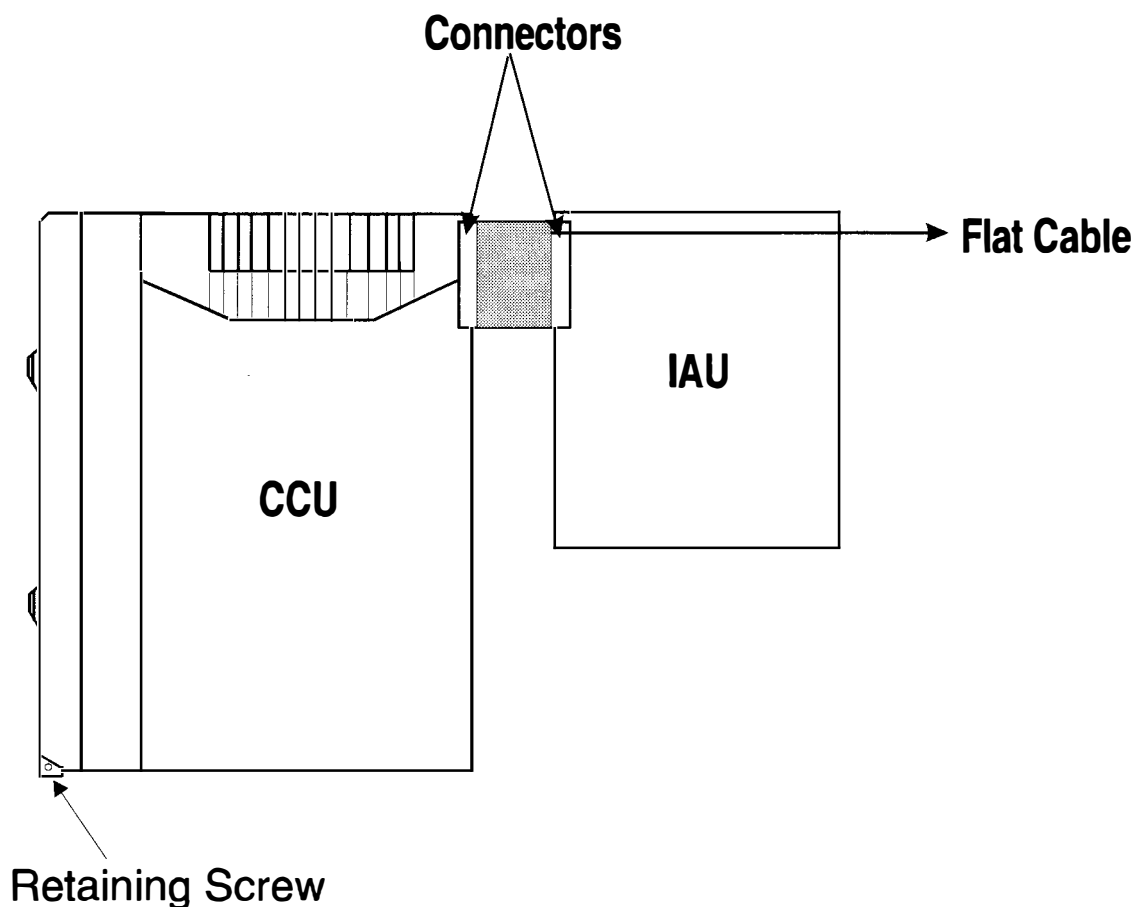
It is important that the template is used as the unit must be accurately located to enable it to be connected to the Main CCU.

CAUTION:

The power must be disconnected from the system before any expansion PCBs or modules are inserted.

CAUTION:

Before handling the expansion modules or PCBs ensure that you are wearing ESP which is connected to the ESP pillar located in the MDF area.



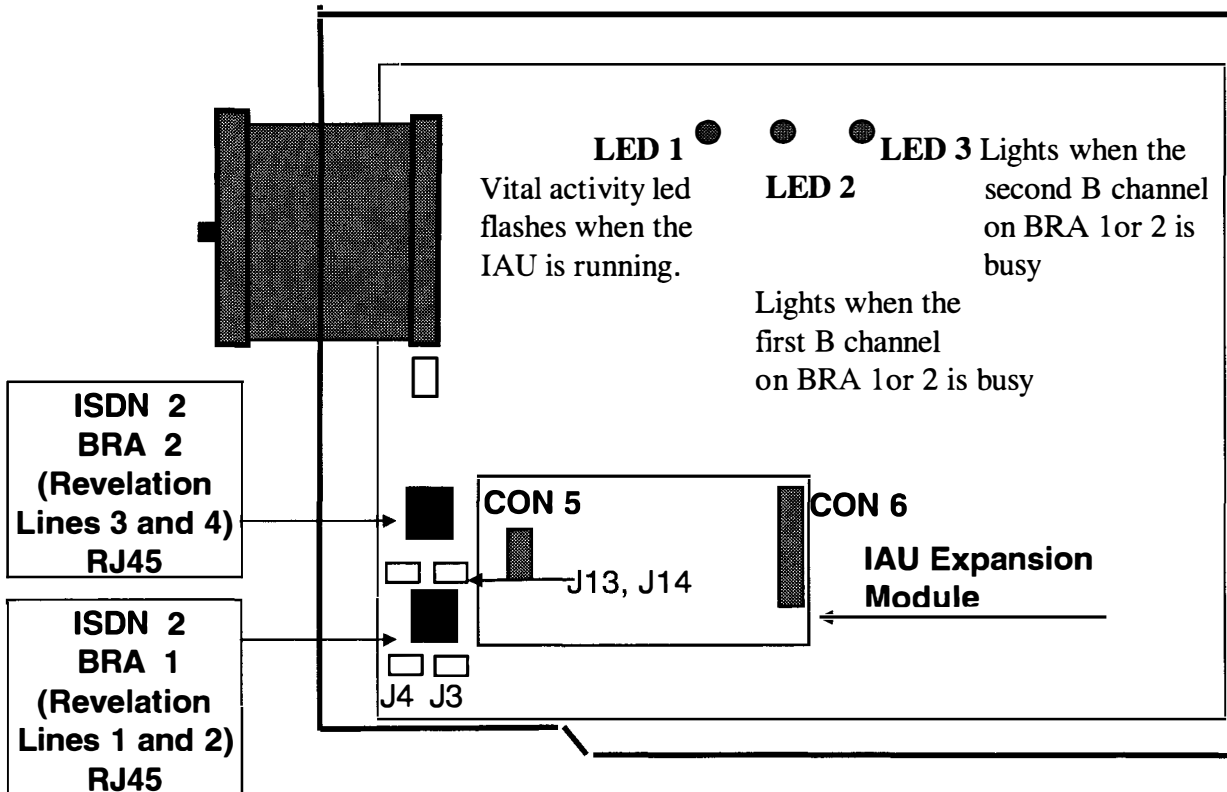
Connecting the ISDN Access Unit.

The ISDN Access unit is connected to the main unit with a 60 way flat cable which is inside the connector cover of the Access Unit

- Disconnect the power from the Main CCU.
- Remove the connector cover from the ISDN Access Unit.
- Remove the MDF and Main Unit cover from the Main CCU.
- Remove the top 1+3 board if it is installed.
- Locate and press home the flat cable on the ISDN connector in the Main CCU.

Installing the ISDN Expansion Module

With both covers removed from the ISDN Access Unit locate and press home the Expansion Module on connectors 5 and 6.



CAUTION:

The expansion module is installed with the component side facing up. If you meet resistance when installing the module check that you have it the right way up.

Connecting the ISDN 2 Lines

The two ISDN BRAs may be connected to any of the S₀ bus LJUs using leads with RJ45 connectors. It is recommended that the BT Revelation is connected to the first LJU on the S₀ bus.

The first ISDN 2 BRA is connected to the lower RJ45 connector in the IAU.

The second ISDN 2 BRA is connected to the upper RJ45 connector in the IAU. (Note that an ISDN Expansion Module is required for the second ISDN BRA to work).

Note

The IAU has built in 100 Ohms termination resistors. In the majority of installations these should remain disconnected as the termination resistors are provided within the furthest LJU (type 2) of the S₀ bus.

The termination resistors should only be connected when the ISDN bus has NO termination resistor provided i.e. structured cabling.

In this case the Revelation IAU should be connected to the furthest LJU on the S₀ bus and the links connected.

CONNECTION:- The termination resistors are connected by installing link J3 and J4 for the first ISDN 2 BRA and J13 and J14 for the second ISDN 2 BRA.

Powering Up

Replace all covers and power up the CCU. The power for the ISDN Access Unit is provided from the CCU.

When the unit is powered up with the ISDN Access Unit installed, lines 1 and 2 are automatically programmed as having access to the first two B channels on the first ISDN 2 BRA.

If the Expansion module is inserted then lines 3 and 4 must be programmed for access to the second ISDN 2 BRA (Code 76517 57).

CAUTION

When one ISDN BRA is connected to lines 1 and 2, Lines 3 and 4 may be connected to PSTN lines. If two ISDN 2 Bras are connected then no PSTN lines may be connected to the unit.

BT Revelation ISDN Programming Codes

Feature	Code	Default Settings
ISDN B Channel programming	76517-57	The first ISDN 2 BRA is programmed for line 1 and 2.
Allocating MSN Numbers to extensions	76517- *4	No numbers are allocated
CLIR Programming	70 xxx 30	No extensions programmed
COLR Programming	70xxx 31	No extensions programmed
ISDN 2 PABX lines	76517 - *6	Not programmed
3.1 kHz ISDN calls	70xxx 32	No extensions programmed
Point to Point or Point to Multipoint	76517- *7	Both lines are Point to Multipoint.

Programming

ISDN 2 Access Programming

On powering up with the ISDN Access Unit installed, the first ISDN 2 access is automatically programmed.

Programming Code	Display shows	Enter lines to be added or deleted
76517 57	57 12--	1/2/3/4

It should be noted that it is not possible to enter one B channel only. Entering 1 or 2 programmes the first ISDN 2 Access and entering 3 or 4 programmes the second ISDN 2 access.

Allocating MSN numbers to extensions

This code specifies the extension to be rung when a particular MSN or DDI number is called.

Up to 10 MSN are normally provided on each ISDN2 line. The unit is capable of supporting 12, one for each extension.

Each number can be programmed to ring a single extension or a group of extensions. More than one number can, if required, be programmed to ring the same extension or group of extensions.

Code	Display shows	Enter ISDN 2 Access number 1 = (lines 1&2) or 2 = (lines 3&4)	Enter the Index Number 01-12	Enter the MSN Number (up to 10 digits)
76517- *4	*4	*4 1	01(see note)	1 01 123456

Press handsfree	Enter the extension number (* for Bell)	Press # to continue
01	01 20	*4

This example shows an MSN / DDI 123456 with index 01 associated with extension 20. When this number is called extension 20 will ring.

If a bell is programmed, enter * as the extension number and 1 to enable the bell or 0 to disable it.

CAUTION

For CLIP purposes, when an extension originates a call on an ISDN 2 line, the MSN with the lowest index number is transmitted. If an extension is not associated with any of the MSNs then the Base Number (Index 00) is transmitted. For COLP when an extension answers the call the MSN with the lowest index number is transmitted. If no MSN is associated with the extension then the Base number is transmitted.

CAUTION

The BASE Number for each ISDN 2 line is programmed by entering the Index number 00 and then entering the number. If the extension has no MSN Index number and no Base number is programmed, then the network default number for the ISDN BRA will be transmitted.

Note 1

If an MSN is allocated and no extensions are programmed to ring then incoming calls will ring the extensions programmed to ring for the line. (BRA 1 = Lines 1 and 2, BRA 2 = Lines 3 and 4). The extensions are programmed in the Administration programming - Incoming ringing Telephones day and night service.

Note 2

If an MSN is allocated to one extension and a central bell, the bell will not ring. If the central bell is required then two or more extensions and the bell must be allocated to the MSN.

Note 3

On default, there are no MSN numbers programmed and the IAU will respond to all incoming ISDN voice calls on the ISDN 2 line. If any MSN numbers are programmed, the system will respond to those numbers programmed and will ignore all others.

CLIR Programming

The system may be programmed to inhibit the sending of the Calling Line Identity on an extension by extension basis for calls over the ISDN. The default is that the CLI information is sent.

Code	Enter extension Numbers 20-31
70 xxx 30	20

CAUTION

For CLIR to operate an MSN or DDI number must be programmed for the extension

COLR Programming (ETSI)

The system may be programmed to inhibit the sending of the Connected Line Identity on an extension by extension basis.

Code	Enter extension Numbers 20-31
70 xxx 31	20

The default is that the information is sent.

PABXs with ISDN2 Extensions

The standard mode of operation is that 40 volts is supplied on each ISDN 2 BRA. When operating behind some PABXs (ISDN 2 extensions) the 40 volts is not supplied. In these cases the following programming should be carried out.

Code	Enter 0/1
76517 *6	0/1

0 is set in default i.e. 40 volts is supplied.

from ISDN

Programming extensions for 3.1 kHz ISDN calls.

Extensions with fax machines or modems associated with them must be programmed for 3.1 kHz ISDN calls to allow the fax and modem tones to be transmitted correctly through the ISDN network on ETSI lines.

Code	Extension 20-31
70111 32	20-31

CAUTION

This service must not be set for BTNR lines

P-P and P-MP Programming

It is programmable as to whether the Basic Rate interface is to work in Point To Point or Point to Multipoint mode.

Code	ISDN 2 line 1 or 2	0 for P-P 1 for P-MP
76517 *7	1/2	0/1

In default all lines are Point to Multipoint. Point to Point working is required for DDI.

Note:- No other ISDN devices can be connected on the S₀ bus when Point to Point working is configured.

Customer familiarisation

When the ISDN Access Unit is installed you should:-

- Ensure that the customer has the new Owner's Handbook (supplied with the IAU) which describes the new facilities provided .
- Show a customer how to make a call using Enbloc dialling. This will demonstrate the speed of dialling over ISDN lines.

Fault Location

The method of fault localisation is by PCB / Module substitution. All faults can normally be traced quite readily to a particular PCB. However some fault conditions should be checked to see if they are related to the operation on the ISDN network or are caused by programming.

Exchange line dial tone not always provided when a line is seized

If the Base number is not programmed or an MSN is not allocated to the extension then dial tone is returned when a line is seized. If however a Base number is programmed or an MSN is allocated to the extension then dial tone is not provided

when a line is seized. This does not apply to ETSI lines when dial tone is returned in all cases.

CLIR is not working

The network service profile should be checked to ensure the service is provided. If the service is provided then ensure that the Base number or an MSN number is allocated to the BRA or extension.

COLP or COLR not working

These services are not provided on BTNR lines.

Calls from one extension failing

Check if the extension is programmed for 3.1 kHz operation (Code 70111 32). This service should not be set for BTNR lines.

No incoming caller ID

Check the network service profile to ensure the service is provided.

Technical Information

ISDN Access Unit	Maximum of 2 x ISDN 2 BRA
ISDN 2 Basic Rate Access	BTNR 191 or ETSI
Bearer Services	64 kHz speech and 3.1 kHz audio services
Exchange Line Configuration	1 x ISDN 2 + 1 Analogue Line 1 x ISDN 2 + 2 Analogue Lines 2 x ISDN 2
ISDN Services Supported	(MSN) Multiple Subscriber Numbering (DDI) Direct Inward Dialling (CLID) Calling Line Identity Services (CLIP) Calling Line Identity Presentation (CLIR) Calling Line Identity Restriction (COLP) Connected Line Presentation (COLR) Connected Line Presentation Restriction

Regulatory Information

The IAU complies with the Euro ISDN standard as defined by ETS- 300 153 (NET 3 Part 1) and ETS - 300 104 (NET 3 Part 2).

The product is approved to CTR3, NET3 and CTS2. It is approved under the terms of the Telecommunications Terminal Equipment Directive (91/263/EEC).

Glossary

BRA	- Basic Rate Access
BTNR	- BT Network Requirements
CCU	- Central Control Unit
COLP	- Connected Line Presentation
COLR	- Connected Line Presentation Restriction
CLI	- Calling Line Identity
CLIP	- Calling Line Identification Presentation
CLIR	- Calling Line Identification Restriction
DDI	- Direct Dialling In
ETSI	- European Telecommunication Standards Institute
IAU	- BT Revelation - ISDN Access Unit
ISDN	- Integrated Services Digital Network
LED	- Light Emitting Diode
NT	- Network Termination
MSN	- Multiple Subscriber Number

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