



DECT

Installation Manual

Contents

Introduction	3	Introduction	36
General	3	Phonebook	36
DECT in Summary	4	Debug	36
The DECT System	5	Preferences	37
Site Surveys.....	8	System Diagnostics and Testing.....	43
Introduction	8	Base Stations Signal Checks.....	43
Base Station Coverage: In Theory	9	Handset Software Version	43
Base Station Coverage: In Practice	10	Battery Condition	43
Using the Site Survey Kit.....	11	MSF Messages	44
Preparing for Installation	14	Overview.....	44
Tools Required	14	Composing Messages	45
Additional Parts Required.....	14	Sending Messages	45
PBX Restrictions	14	Message Groups	46
Environmental requirements	15	INDeX Integration	47
Power Supply Requirements.....	15	Overview.....	47
Cabling & Trunking Requirements.....	15	Mobile Twin Numbers	47
EMC Requirements.....	15	DECT Integration	48
Installation	16	IP Office Integration	49
Unpacking	16	DECT Integration	49
Installing the DECT Control Unit (DCU)	16	DECT Configuration Software.....	51
Installing a DECT Expansion Board (DEB)	17	Repeater Base Stations	56
Installing DECT Alog Boards (DAB)	18	Introduction.....	56
Installing DECT Base Stations (DBS).....	21	Locating Repeater Base Stations	56
Base Station Cable Measurement.....	23	Installing a Repeater.....	57
Altering DAB (IWU) Card Settings.....	24	The Repeater Setup Program.....	58
Registering Handsets.....	25	Linked DECT Systems	60
Subscribing Handsets	26	Introduction.....	60
Switching Between Systems	27	Upgrading Existing DECT Systems	60
Auto Subscribing Handsets	27	Installing a Linked DECT System	61
Removing a Subscription	28	Programming a Linked DECT System using CCFP	61
Subscribing Non-INDeX Handsets	28	Programming a Linked DECT System using SIO	62
System Testing & Handover.....	29	Eprom Replacement.....	63
Using Windows CCFP Administration	30	Using SIO	64
The CCFP Administration Program	30	Introduction.....	64
Installing CCFP Admin	30	Installing SIO	64
Starting CCFP Admin - Direct Connection	31	Running SIO	64
Changing the Communications Configuration	32	SIO Commands	65
Starting CCFP Admin - Modem Connection.....	33	Editing the DECT Database via SIO	68
MSF Status	34	Appendices	69
Status Message	34	DECT Cables.....	69
Uploading Flash Software	34	Summary of Installing a New System	70
Base Stations Cable Measurement.....	34	System Details Form	71
Altering DAB Settings.....	34	Handset Details	71
Registering Handsets.....	35	Index.....	73
Subscribing Handsets	35		
Saving and Loading Files	35		
Printing the Setting.....	35		
Exiting CCFP Administration	35		
CCFP Options Menus	36		

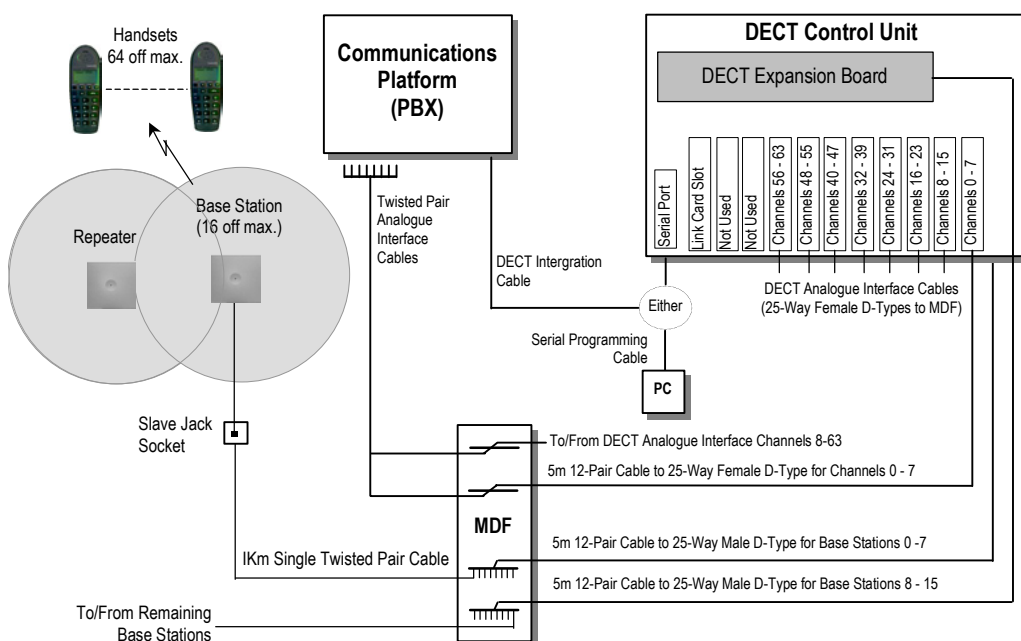
Introduction

General

This manual covers the installation, maintenance and programming of an DECT system. It is intended for use by installers and maintainers who have successfully completed an appropriate DECT training course.

Note: The CCFP programming (see page 30) software is Version 6. This manual is based on Version 5. However, as Version 6 is a bug fix only of Version 5, this manual also supports Version 6.

The DECT is a cordless telephone system designed to work with most PABX switch systems. It provides the PABX with integrated support for cordless handsets.



A basic DECT Control Unit (DCU) can support up to 8 Base Stations (with a max. of 4 simultaneous calls per base station) and up to 32 simultaneous calls. With the addition of an Expansion Board a DCU will support an additional 8 Base Stations and hence up to 64 simultaneous calls. A Repeater Base Station can be added to a Base station and hence extend the range of coverage for each Base Station (see page 56). Each handset requires a dedicated two-wire link between the DECT Control Unit and the PABX. These are provided by DECT Alog Boards (DAB), each supports 8 channels with 8 DAB slots within the Control Unit.

The addition of Link Cards and a Link cable allows two DCU's to operate together as a single system (one DCU is designated as the master, the other as the slave). This increases the system capacity to 32 Base Stations and 128 handsets. For full details see Linked DECT Systems on page 60.

DECT conforms to the DECT Generic Access Profile (GAP) requirements. This allows other GAP handsets to be used on the system (only Avaya handsets can utilize the full feature set of INDeX). It also allows the DECT handsets to be used on other GAP compatible DECT systems.

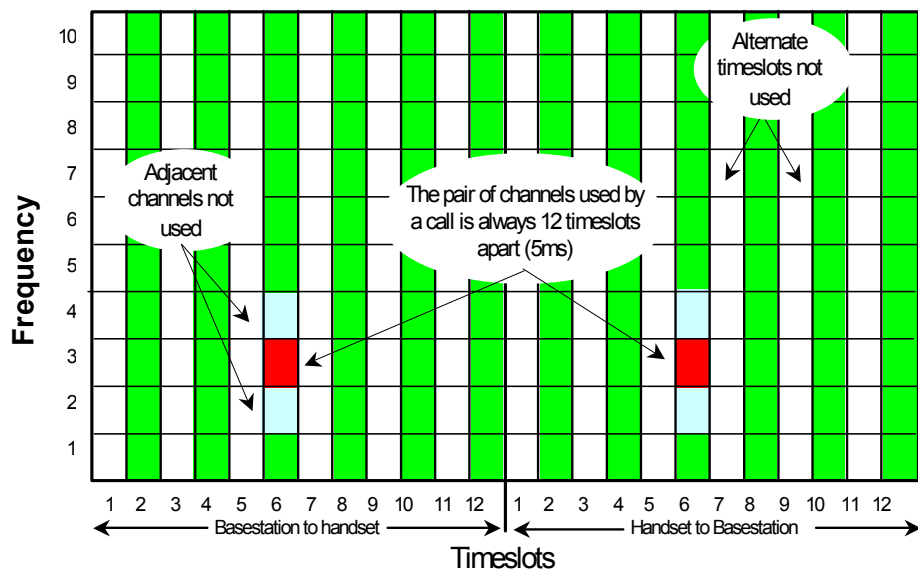
Approvals:

- Electric: TBR 6 (DECT RF).
- Access Profile: TBR22 (GAP) Layer 1.
- EMC: ETS 300 329 (CE Labeling).

DECT in Summary

The DECT (Digital Enhanced Cordless Technology*) uses cellular radio methods to handle multiple handsets on the same system at the same time. It is designed for high density local area usage.

The DECT system uses the frequency band of 1.88GHz to 1.9GHz. It employs FDMA (Frequency Division Multiple Access) to divide the band into 10 separate carrier frequencies. TDMA (Time Division Multiple Access) further sub-divides each carrier frequency into 24 time slots. Twelve slots are used for send and 12 for receive, i.e. two slots are required per conversation on the carrier frequency. This is called TDD (Time Division Duplex). The combination of a frequency and a timeslot pair is called a channel and equates to one active call (when a handset is idle it does not use a channel).



The above method gives 120 call channels available to a DECT system (10 x 24 channels, 2 channels per call).

During a conversation, a handset continuously compares the speech quality obtained in its time slot to that in the same time slot on another carrier frequency. If the current signal falls below acceptable limits and the other band is better, the handset will change over to that band.

DECT systems use DCS/DCA (Dynamic Channel Selection/Allocation) to resolve availability of channels between handsets and base stations. These processes allow a high density of handsets (on the same or different DECT systems) to operate in the same area (provided sufficient base station channels are available).

Speech within DECT is digitised using ADPCM (Adaptive Differential Pulse Code Modulation). Traditional PCM digitises speech by sampling at time intervals and assigning a value to the amplitude at each time interval. This sequence of amplitude values is then sent as a digital signal. In ADPCM information is only sent when there is a difference in amplitude. This requires more processing electronics but allows lower signal rates to be used for the same speech quality.

*Originally DECT stood for "Digital European Cordless Telephony" but this was changed as use of the standard spread beyond the European market.

The DECT System

This section gives a brief overview of the elements within the DECT system.

DECT Control Unit (DCU)

This unit contains a motherboard with eight DECT Alog Board (DAB) slots. The motherboard itself supports 8 DECT Base Stations. A DECT Expansion Board (DEB) can be added to increase the number of supported base stations to 16.

Each DCU has a unique serial number that identifies the system to handsets.

The unit is designed to be wall mounted. It is supplied with a mounting bracket, 2m mains power cable, 5m MDF connection cable and system configuration disk.

- **Size:** 400mm wide x 316mm high x 155mm deep (add 200mm clearance on all sides for access).
- **Power:** Requires a 230V 50Hz mains power supply. Specify mains plug type when ordering. Rated at 150VA.

DECT Analogue Board (DAB)

Up to eight of these boards can be installed onto the Control Unit motherboard. Each supports 8 two-wire links from the DECT system to the PBX (via the MDF panel). There are two variants of this board, the DAB for loop break recall operation and the DAB-ER for earth-break recall operation.

Each card is supplied with a 5m cable for connection to the MDF panel.

DECT Expansion Board (DEB)

This board attaches to the motherboard of the DECT Control Unit. It provides support for an additional 8 base stations. The board includes an integral lead and connector socket for the external cable connection.

The DEB is supplied with two PCB support pillars and a 5m cable for connection to the MDF.

DECT Base Station (DBS)

These units support up to 4 simultaneous handset calls each. There are two versions of the DBS available; a standard DBS and an enhanced DBS.

A standard DBS uses even timeslots (*see page 4*).

An enhanced DBS uses odd time slots (*see page 4*).

Hence, by using a combination of standard and enhanced DBSs, higher density DECT environments can be deployed. The recommended limit of DBSs in one area, with a combination of standard and enhanced DBS, is seven (with ratios of 3:4 or 4:3). If all standard or all enhanced DBSs are used, then the recommended limit of DBSs in one area is four (*see page 10*).

Using standard telephony cable base stations can be placed at up to 2km from the DECT. Base stations units are designed for wall mounting.

* Older style BDSs (supplied prior to autumn 2001) can only be placed at up to 1km from the DECT.

Each base station is supplied with a 1.5m line cord for connection to a Slave Jack Socket (not supplied).

- **Size:** 100mm wide x 100 high x 40mm deep (inc. wall mounting bracket).

Repeater

A Repeater works in conjunction with a Base Station to extend that Base Station's area of coverage. A directional aerial can be added to increase the distance from the associated Base Station (up to 1km line of sight).

Each Repeater is programmed to associate with a particular Base Station using a Repeater Setup program. The Repeater can handle up to two simultaneous calls. These calls are 'borrowed' from the Base Station. Hence, each call routed via the Repeater reduces the number of calls that the Base Station can handle.

The Repeater does not need any wiring connection to the Base Station or DECT. The Repeater is designed for wall mounting and is supplied with a plug top PSU fitted with 2 mtrs of cable.

- **Size:** 100mm wide x 100 high x 40mm deep (inc. wall mounting bracket).
- **Power:** Power from a 230V, 50Hz plug top PSU, (9VDC, 300mA).

Link Kit

Use of a pair of Link Cards and a Link Cable allows two DCU's to operate as a single system (see *Linked DECT Systems* on page 60).

20DT Handset

Each handset is supplied with a User Guide and battery.

- **Weight:** 121g $\pm$ 10g including battery.
- **Size:** 143mm x 48mm x 26mm.
- **Power:** Fully charged battery; 10 hours speech, 90 hours standby.
Full battery recharge, 3.5 hours in handset charging slot.

Note: A label, located beneath the battery pack, provides both the handset registration number and the software level.

Single Chargers

The single chargers are designed as a free-standing desk units. There are two designs of single charger. One has slots for charging the battery whilst in the handset (normal charge). The other has an additional battery only charging slot (quick charge).

The single chargers are supplied with a mains power supply unit appropriate to the ordering country.

- **Size:** 65mm wide x 60mm high x 95mm deep.
- **Power Supply:** Single 220V 50Hz mains power supply.

Multi Charger

The multi-charger supports normal charging of up to 4 handsets (DH1/2 handsets only). Each slots has its own charging and charged LED's. The unit can be used either as a free standing desk unit or wall mounted.

The unit is supplied with a mains power supply unit appropriate for the ordering country.

Accessories

Other accessories such as vibrating clips and headset adapters are available.

Site Surveys

Introduction

The site survey is the most crucial part of any DECT installation. It is the stage at which future success or failure of the installation will probably occur.

Most issues of customer satisfaction will stem from the site survey and the resultant positioning of the base stations.

From the customer's point of view, two keys factors must be assessed:

- **The area of coverage required:**
- **The number of simultaneous users within different areas:**
Each base station can support 4 simultaneous calls. There is no problem with having more than one base station in the same area (see *Base Station Coverage: In Practice on page 10*).

During the site survey, you will be attempting to determine two factors to achieve the customers requirements:

- **The number of base stations required.**
- **Their best positioning.**

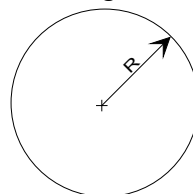
To fulfill this you need to obtain the following details:

- **Building Measurements:**
Accurate building plans are an essential aid to both the site survey and also for later fault analysis.
- **Signal Strength: (RSSI - Radio Signal Strength Indication)**
From potential base station positions, what is the range of the base station signal at sufficient signal strength for reliable operation.
- **Speech Quality: (Q52)**
Interference, weak signals and reflected signals lead to errors in the digital voice signal that cannot be corrected. From potential base station position, what is the range before the bit error rate becomes unacceptable.

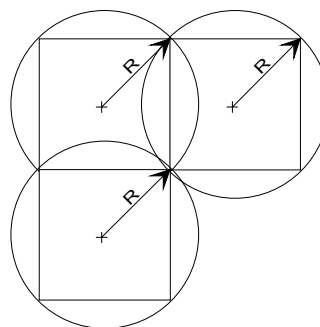
Base Station Coverage: In Theory

Given ideal open field conditions, the range between a handset and base station can be up to 600 metres. Within a building, with signal strength being absorbed and reflected signals giving increased error rates, the effective range is more realistically between 50 metres and 150 metres.

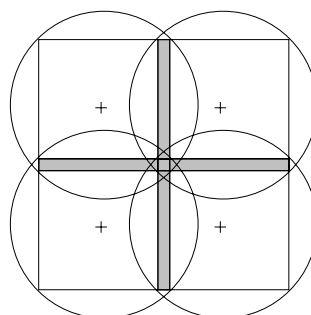
A single base stations area of coverage is πR^2 .



With multiple base stations working together, areas of coverage intersect. Each base station provides main coverage for an area $2 \times R^2$ (the square areas below). Naturally the base station signal still goes outside that area but normally calls are handed over to the next base station at that stage.



In the worst case, call handover from one base station to another can take up to 10 seconds to complete. Thus for handset users moving at normal walking pace, base station coverage areas need to overlap by at least 10 metres to ensure successful call hand-over.



All the above assumes a lot of things:

- That each base station has sufficient free channels. If there is no free channel for a call handover, the handset will remain with its current base station until out of range and the call is lost.
- That the building structure is even such that the base station has the same range in all directions.
- That base stations only operate in 2-dimensions. In reality the signal forms a sphere rather than a circle.

Base Station Coverage: In Practice

In practice, no rules can be given for base station coverage. Coverage is affected by too many factors that are unique to each site. We can only guide you as to those things that are likely to affect base station coverage.

Obvious causes of signals problems:

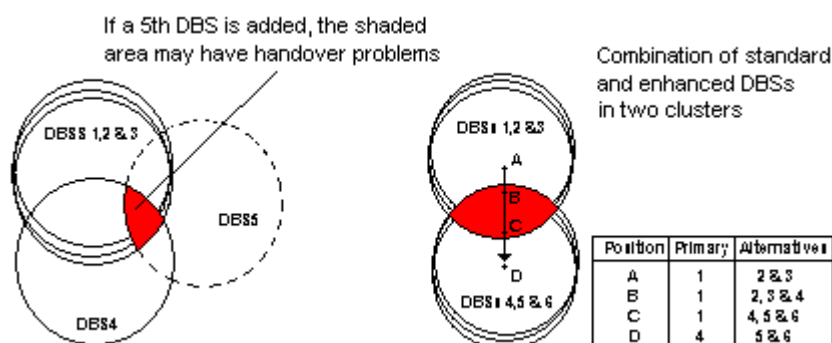
- Metal surfaces.
- Concrete thickness greater than one metre.

Beware of:

- **Windows with reflective film/specialised glass: (eg Pilkington 'K')**
These produce increased signal reflection and reduced signal pass-through.
- **Wire Meshes and Grills with apertures of less than 4cm:**
These block signals as effectively as continuous metal sheet.
- **Fire Doors:**
These block the signals. In multi-occupancy building such as hotels the high number of fire-doors may be a problem.
- **Stair Wells:**
In modern office buildings, stair wells frequently combine concrete building supports, fire doors and the intervening floor material, making them a special problem.
- **Screened Rooms:**
Typically found in offices involved with TV, video and radio production, but also possible in computer centers.

Base station overlap areas:

- In overlap areas, the signal from one base station is getting weak and so the handset will start call handover to the next base station. However this process can take up to 10 seconds. In overlap areas look out for items such as closing doors that might suddenly block the already weak signal before handover is completed.
- To calculate the overlap required, based on the handset user's speed, allow 10 seconds to guarantee handover.
- Remember that base stations located on different floors will add to the number of overlaps.
- Ideally base stations should be a minimum of 25 to 40 metres apart.
- The number of base station signals which can be monitored by DECT Handsets is four.
- Do not put more than 3 DBSs in a cluster for the purpose of maximising call capacity, i.e. within 25cm of each other.



Opportunities to be aware of:

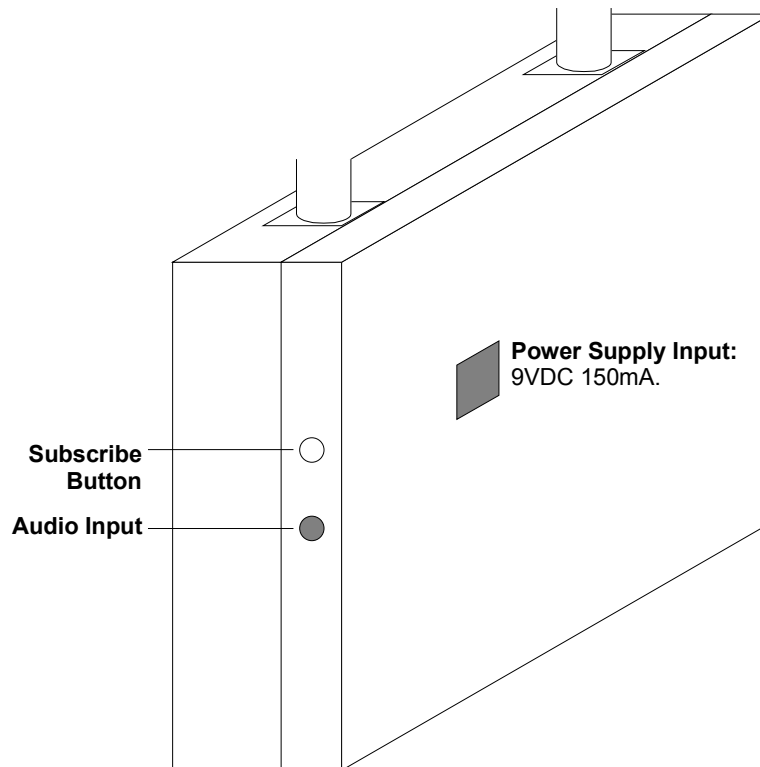
- In multi-storey buildings, if the building construction allows, a base station on one floor can also serve the floor above or below.

Using the Site Survey Kit

Guidance on where to start the survey and order in which to do a survey is difficult, each case is unique and much relies on experience. Ensure that conditions are as near to normal as possible, ie. if possible do the survey on a normal working day when the building is in use. Check which areas you can enter and when.

The Survey Base Station

This is an DECT Base Station that is able to transmit without requiring a connected DCU. It is supplied with a suitable mains power supply unit. As well as providing an RSSI/Q52 signal it can accept audio input via a 3.5mm audio-jack input for a manual audio quality check.



- **Power Socket:**
The Survey Base Station is supplied with a suitable power supply terminated with an RJ11 connector. The connector uses Pin 6 (-ve) and Pin 5 (+ve) to provide a 9V dc, 150mA supply.
- **Audio In Socket:**
Standard 3.5 mono jack socket input.
- **Subscribe Button:**
If pressed and held for 3 seconds, puts the Survey Base Station in subscribe mode for the following minute. The base stations system ID is printed on its back. Its account number is 12345678.

Site surveys may also be done using an DECT Demonstration Kit. In which case the survey process is the same except handset subscription (see *Subscribing Handsets on page 26*).

Subscribing to the Survey Base Station

Up to eight handsets can be subscribed to the Survey Base Station. All these handset can display the RSSI signal quality simultaneously but only one can receive the audio input at any time. Normally only one handset is subscribed to the Survey Base Station.

1. Connect the Survey Base Station connected to it's power supply and switch on.
2. Turn the handset on and use the following step to assign it a number between 1 and 8. Dial ***99972*x** where **x** is the number between 1 and 8 (each handset must have a unique number). Then press ✓.
3. Press **MENU** and the > key until **LOGIN** appears and then press ✓. **SELECT LOGIN** appears.
4. Press the > key until required **SYSTEM** number (1-4) appears then press ✓.
5. Press > until **SUBSCRIPTION REMOVE** appears, then press ✓.
6. Enter the password (default 0000) and press ✓ to display **SUBSCRIPTION REMOVE?** Press ✓ to display any previously entered System ID (appears below **SYSTEM X** where X = 1 to 4). Remove previously subscribed ID by pressing ✓.
7. You are returned to **SUBSCRIPTION CREATE**. Press ✓ to begin subscription.
8. The handset is now searching for a system to which it can subscribe. Press and hold the subscribe button on the Survey Base Station for three seconds. The Survey Base Station will then stay in subscribe mode for one minute.
9. Use the < and > buttons to display the ID numbers of available DECT systems found by the handset. Look for the ID number of the Survey Base Station (printed on the back of the Survey Base Station) and then press ✓.
10. Use the < and > to select which system you want the Survey Base Station assigned as and then, at the **AC:** prompt, enter **12345678** and press ✓.
11. **SUBSCRIPTION WAIT** appears. When successfully subscribed, the handset bleeps. Should **SUBSCRIPTION FAILED** appear, repeat from step 5 removing any previously subscribed ID for the **SYSTEM** number you are attempting to subscribe too.

Performing the Survey

Position the Survey Base Station in the potential position for a base station installation. Connect the power supply. If possible also connect an audio source via either the telephone line or audio jack sockets.

1. With a subscribed handset on-hook, dial ***99981*** and press **ENTER**.
2. The handset display shows the signal quality.
RPN: 01 *<Base station number.*
Q52: 52 *<Speech quality.*
RSSI: 64 *<Signal strength.*
3. Take the handset off-hook as this will ensure more realistic figures.
 - If you have connected an audio source you will hear it whilst off-hook. Use this facility to check the audio quality (only one handset can be off-hook and receive the audio source at any time).
4. Check the boundaries of the Survey Base Stations coverage where **Q52 is greater than 52** and **RSSI is greater than 64**. Mark this area on the building plans and check that you have entered all areas that the base station might have to serve.
5. Repeat this process with the Survey Base Station in a new location. Check that the **overlap between coverage areas is at least 10 metres**.
6. To return the handset to normal operation, press and hold **<** until you hear a short bleep.

Preparing for Installation

Tools Required

General:

- 6.5mm Flared slothead screwdriver.
- No.1 Phillips Crosspoint.
- Cutter/knife for cable ties.
- Cable ties - 3mm x 50mm.
- Drill and masonry drill bits
- Tape measure (up to 500mm).
- Spirit level.
- Digital voltmeter (DVM).

Programming:

- Windows 3.x/95/200 or NT PC with serial port supporting 9.6K baud minimum (19.2K preferred).

Additional Parts Required

The following items are required in addition to those supplied by Avaya.

DECT Control Unit: (DCU)

- 4 x No. 6 Round head screws plus suitable wall fixings.
- 8 x MDF Connection pairs.
- 1 x DCU Programming/Integration cable as required (see page 69)

DECT Expansion Board: (DEB)

- 8 x MDF Connection Pairs.

per DECT Base Station: (DBS)

- 2 x No. 6 Round head screws plus suitable wall fixings.
- 1 x Slave jack socket
- Single-twisted pair cable (Type CW1308) from MDF to slave jack socket.

per DECT Alog Interface Card: (DAB or DAB-ER)

- 8 x MDF Connection Pairs.

PBX Restrictions

Collective Ringing Groups:

Including a large number of DECT handsets in a collective ringing group can cause unpredictable results.

Power Fail Circuits:

DECT DAB circuits are not approved for direct connection to PSTN analogue trunks. This is not a problem when connected via a PBX except if a PBX directly connects some analogue extensions to analogue trunks during PBX power failures (*see Power Fail Circuits on page 20*).

Environmental requirements

The planned locations for all parts of the system must meet the following requirements:

- Check that the area is a well ventilated area, having a temperature range of 0°C to +40°C and a humidity range of 10% to 90% non-condensing.
- Check there are no flammable materials in the area.
- Check there is no possibility of flooding.
- Check that no other machinery or equipment needs to be moved first.
- Check that it is not an excessively dusty atmosphere.
- Check that the area is unlikely to suffer rapid changes in temperature and humidity.
- Check for the proximity of strong magnetic fields, sources of radio frequency and other electrical interference.
- Check there are no corrosive chemicals or gasses.
- Check there is no excessive vibration or potential of excessive vibration, especially on the cabinet mounting surface.

Power Supply Requirements

The DECT Control Cabinet is designed to operate from a standard 230V ($\pm 10\%$), 50Hz single-phase main supply rated at 10A maximum. The system is rated at 150VA for power consumption.

The use of a UPS to support the system during mains power failure is highly recommended. This equipment also provides mains conditioning for the system. Contact Avaya for details of preferred and tested suppliers and models

Cabling & Trunking Requirements

All cables and wires should be run through protective trunking or ducts wherever possible.

Unless otherwise stated, all devices connect using standard telephone cable (type CW1308). This can be single or multiple pair cable.

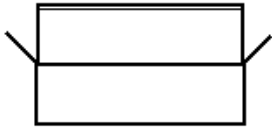
EMC Requirements

The DECT system is EMC approved and carries CE mark approval. For a particular installation to be EMC compliant, it must meet the following requirements at all times:

- Only EMC approved equipment must be used.
- You must install all units with their covers in place.
- The mains supply **must** provide an earth connection.

Installation

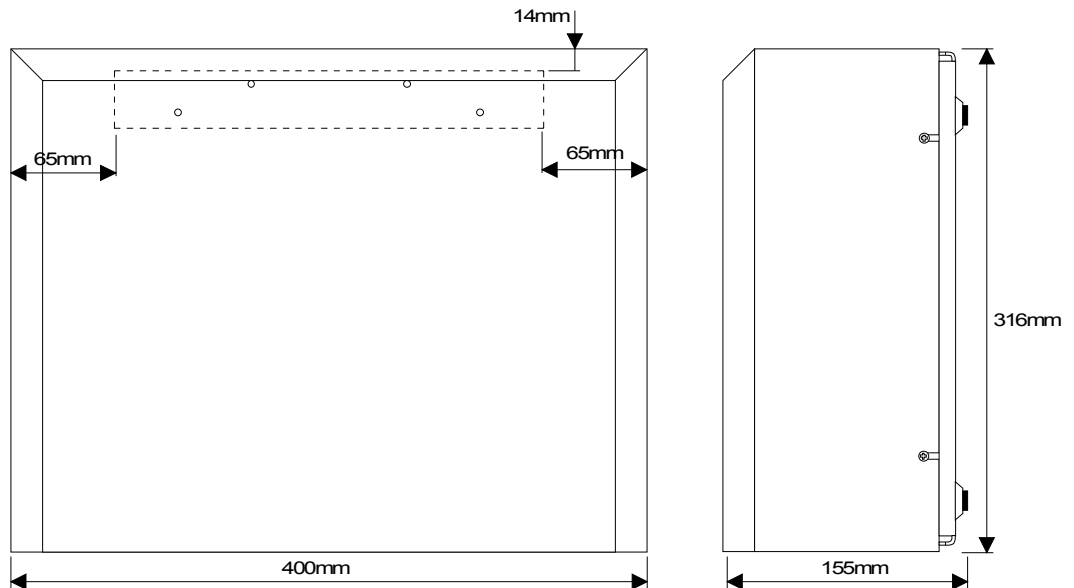
Unpacking



1. Do not start unpacking until the equipment is at the site of installation.
2. Before unpacking check for any signs of damage that has occurred during transit. If any damage exists bring it to the attention of the carrier.
3. Check all cartons against the packing slip. Report any errors or omissions to the dealer who supplied the equipment.
4. Whilst unpacking the equipment, retain all the packaging material. Fault returns are only accepted if repackaged in the original packaging.
5. Visually inspect each item and check that all the necessary documentation and accessory items have been included. Report any errors or omissions to the dealer who supplied the equipment.
6. Ensure you read and understand any documentation included with any item.

Installing the DECT Control Unit (DCU)

The Control Unit is supplied with a 2m power cable for mains power supply connection. It is also supplied with a 5m cable for connection to the MDF and a software disk(s).



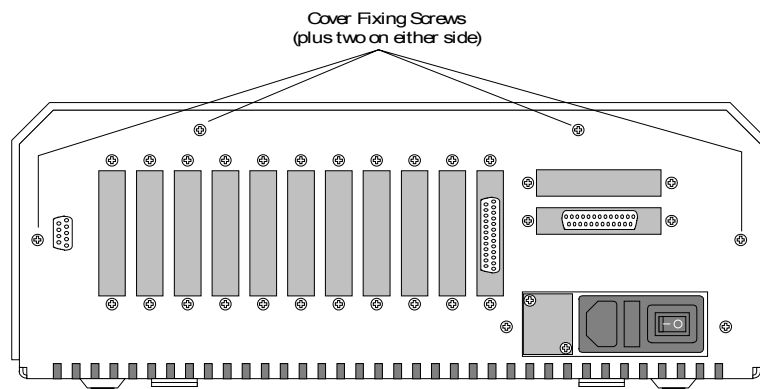
1. Check the proposed position of the Control Unit:
 - Mains power supply within 2 metres.
 - MDF for Base Station and PABX interconnections within 5 metres.
 - Allow 200mm's clearance on all sides of the cabinet.
2. Use the mounting bracket as a template to mark the required holes (*see the diagram above*). Ensure that the bracket is level.
3. Attach the bracket to the wall using No.6 round head screws at all four fixing points.
4. Place the Control Unit onto the mounting bracket and check that it is securely held by the bracket.
5. Connect the mains lead supplied to the mains power supply.

Installing a DECT Expansion Board (DEB)

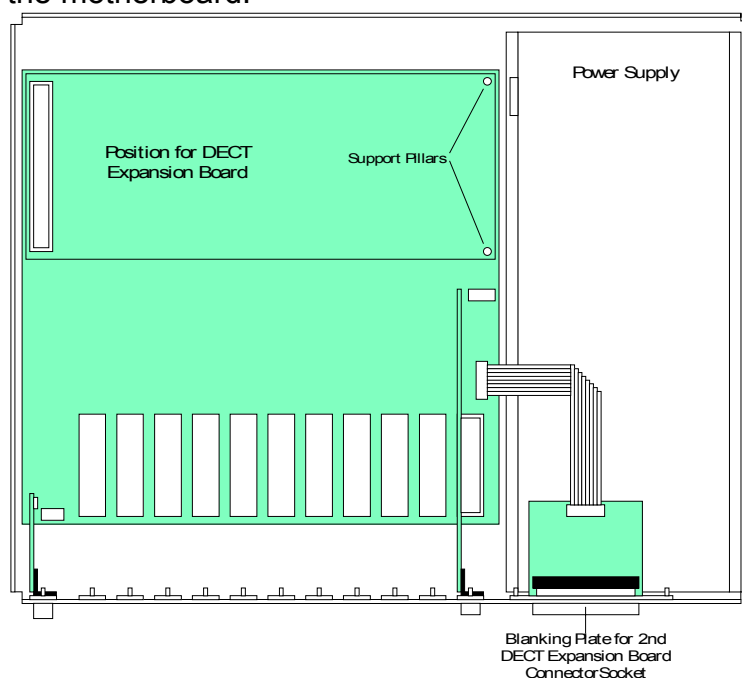
The basic control unit can support eight Base Stations. The DECT Expansion Board (DEB) allows it to support another eight. It installs onto the Control Unit motherboard. The DECT Expansion Board supplied with a 5m cable for connection to the MDF, internal connector socket lead and two support pillars.

To install the DECT Expansion Board:

1. Disconnect the Control Unit from the mains power supply.
2. Remove the cabinet cover by removing the screws on either side and four screws on the base.



3. Insert the two plastic pillars supplied with the DECT Expansion Board into the motherboard.



4. Plug the DECT Expansion Board onto the motherboard.
5. Remove the blanking plate above the existing Base Station cable connector. Replace it with the connector socket supplied as part of the DECT Expansion Board.
6. Unless adding DECT Alog Boards (*see Installing DECT Alog Boards (DAB) on page 18*), replace the Control Unit cover and reconnect the main power supply.

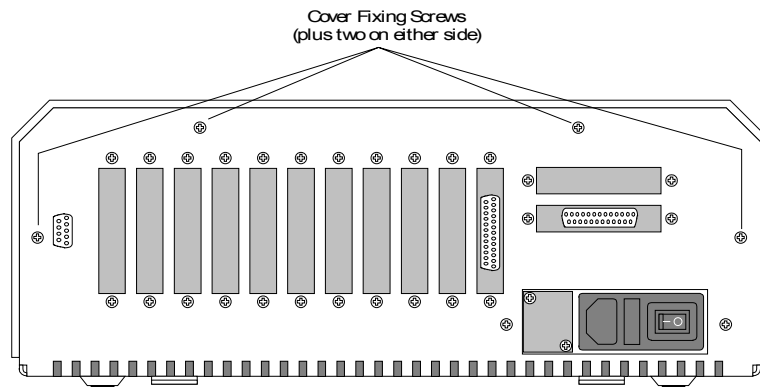
Installing DECT Alog Boards (DAB)

The Control Unit has eleven slots for device cards. From the right, the first 8 slots are for DECT Alog Boards (DAB or DAB-ER), i.e. two-wire links to the PBX.

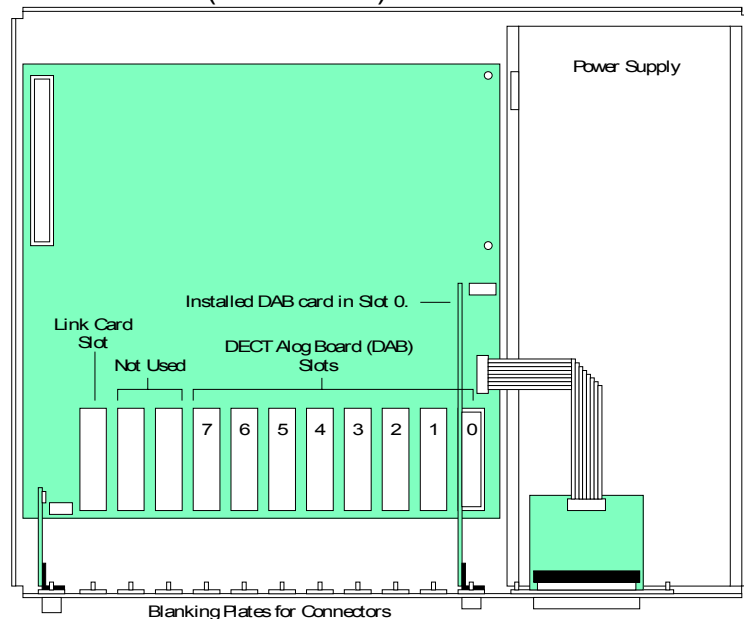
The DAB is used for timed break recall (TBR) analogue links and is the board used for connections to switch analogue circuits. The DAB-ER is used when earth recall analogue links are required though the DAB-ER can also support TBR.

Each DAB or DAB-ER card is supplied with a 5m cable for connection to the MDF panel.

1. Disconnect the Control Unit from the mains power supply.
2. If necessary remove the cabinet cover by removing the screws on either side and four screws on the base.



3. Working from the right, remove the blanking plate from the first available slot (Slots 0 to 7).



4. Insert the card into the slot.
5. Repeat this process for any other Alog Interface Board being installed.
6. Replace the cabinet cover and secure the cover screws.

Connecting a DAB Card to the MDF

This section currently only covers connection of DAB cards and not DAB-ER boards (see *Connecting a DAB-ER Card to the MDF on page 20*). Each board is supplied with a 5 metre cable for connection to the MDF.

1. Attach the DAB Cable (12-pair cable with 25-way female D-type connector) to the base of the DAB Card.
2. At the MDF, wire the pairs as shown below to the PBX two-wire circuits.
 - We strongly recommend that all eight pairs are connected even if not being used. This simplifies later system expansion.
 - Do not connect INDeX 32-pair cable wires into the same connection strips as the INDeX DCU/DEB cable. These have differing wire diameters which may lead to poor wire contact.

<u>Channel</u>	<u>Pin - Wire Pair</u>	<u>Channel</u>	<u>Pin - Wire Pair</u>
Channel 0	14 - White/Blue. 01 - Blue/White.	Channel 4	20 - White/Slate. 07 - Slate/White.
Channel 1	15 - White/Orange. 03 - Orange/White.	Channel 5	21 - Red/Blue. 09 - Blue/Red.
Channel 2	17 - White/Green. 04 - Green/White.	Channel 6	22 - Red/Orange. 23 - Orange/Red.
Channel 3	18 - White/Brown. 06 - Brown/White.	Channel 7	24 - Red/Green. 12 - Green/Red.

3. Ensure that the cable, the wire pairs and the MDF panels are clearly labeled.
4. Configuration of the two-wire extension depends on the PBX type. The default settings of the DAB assume the following signaling (*which are compatible with a defaulted INDeX two-wire circuit*):
 - **Ring frequency:** 20-60Hz.
 - **Recall mode:** Loop break - 100ms.
 - **Dial Mode:** DTMF.
 - **Dial Tone Filter:** 303-549Hz.
 - These values can be altered for each DAB channel through the system database.
5. Use the System Details form at the back of the manual to record PBX extension numbers against the matching DAB and channel numbers.

Connecting a DAB-ER Card to the MDF

This section currently only covers connection of DAB-ER cards and not DAB boards (*see Connecting a DAB Card to the MDF on page 19*). Each board is supplied with a 5 metre cable for connection to the MDF.

1. Attach the DAB Cable (12-pair cable with 25-way female D-type connector) to the base of the DAB-ER Card.
2. At the MDF, wire the pairs as shown below to the PBX two-wire circuits.
 - Do not connect INDeX 32-pair cable wires into the same connection strips as the INDeX DCU/DEB cable. These have differing wire diameters which may lead to poor wire contact.

<u>Channel</u>	<u>Pin - Wire Pair</u>	<u>Channel</u>	<u>Pin - Wire Pair</u>
Channel 0	14 - White/Blue (A). 01 - Blue/White (B). 02 - Red/Slate (Earth).	Channel 4	20 - White/Slate (A). 07 - Slate/White (B). 08 - Black/Blue (Earth).
Channel 1	15 - White/Orange (A). 03 - Orange/White (B). 16 - Black/Orange (Earth).	Channel 5	21 - Red/Blue (A). 09 - Blue/Red (B). 22 - Red/Brown (Earth).
Channel 2	17 - White/Green (A). 04 - Green/White (B). 05 - Slate/Red (Earth).	Channel 6	22 - Red/Orange (A). 23 - Orange/Red (B). 11 - Blue/Black (Earth).
Channel 3	18 - White/Brown (A). 06 - Brown/White (B). 19 - Orange/Black (Earth).	Channel 7	24 - Red/Green (A). 12 - Green/Red (B). 25 - Brown/Red (Earth).

3. Ensure that the cable, the wire pairs and the MDF panels are clearly labelled.
4. Configuration of the two-wire extension depends on the PBX type.

Note: When installed the DAB-ER defaults to TBR, to change the recall mode you must alter the database settings (*see Altering DAB (IWU) Card Settings on page 24*).
5. Use the System Details form at the back of the manual to record PBX extension numbers against the matching DAB and channel numbers.

Power Fail Circuits

For BABT approvals, all PBX systems with analogue trunk connections must meet certain power fail requirements. These require that at least 20% of analogue trunks automatically connect directly to analogue two-wire extension sockets during power failures.

Due to regulatory approval restrictions on DECT systems, INDeX DECT DAB channels are not approved for direct connection to the PSTN (this is not due to any technical restrictions). As a result, DAB channels must not be connected to analogue PBX extensions which connect directly to analogue trunks during PBX power failures.

Installing DECT Base Stations (DBS)

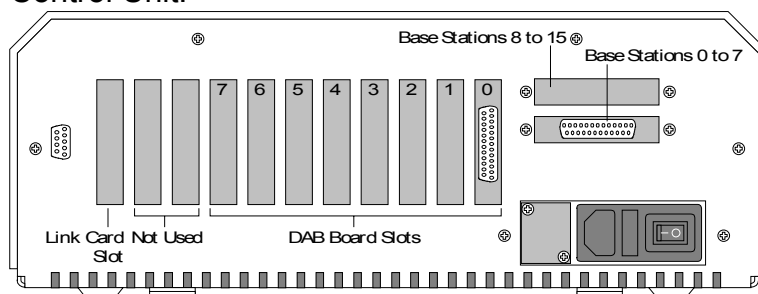
Correct positioning of Base Stations is vital to the performance of the whole system. Before installing any DECT Base Station, ensure that you have accurate plans for its location. If possible consult with the person who performed the site survey.

Before installing any Base Station check the PCS levels shown on its labels. All the Base Stations within a system **must** have the same PCS levels. Record this on the System Details Form at the back of the manual.

Control Unit to Base Station Connection

Using CW1308 cable, Base Stations can be placed up to 1Km from the MDF. Each Base Station requires a Slave Jack Socket (see *country variants Note on page 22*) located within 1.5m of the planned Base Station position (the same as DT extensions).

1. Attach the Base Station Connector Cable (5 metre 12-pair cable with 25-way male D-type connector) to the Base Station socket under the Control Unit.



2. Connect the cable to the MDF as indicated below. Note that wire polarity is not important.
 - It is strongly recommend that you connect all eight pairs even if not required. This allows for later system expansion and maintenance. The remaining wire pairs are not used.

<u>Base Station</u>	<u>Pin - Wire</u>	<u>Base Station</u>	<u>Pin - Wire</u>
Station 0 (8)	01 - White/Blue 14 - Blue/White	Station 4 (12)	05 - White/Slate 18 - Slate/White
Station 1 (9)	02 - White/Orange 15 - Orange/White	Station 5 (13)	06 - Red/Blue 19 - Blue/Red
Station 2 (10)	03 - White/Green 16 - Green/White	Station 6 (14)	07 - Red/Orange 20 - Orange/Red
Station 3 (11)	04 - White/Brown 17 - Brown/White	Station 7 (15)	08 - Red/Green 21 - Green/Red

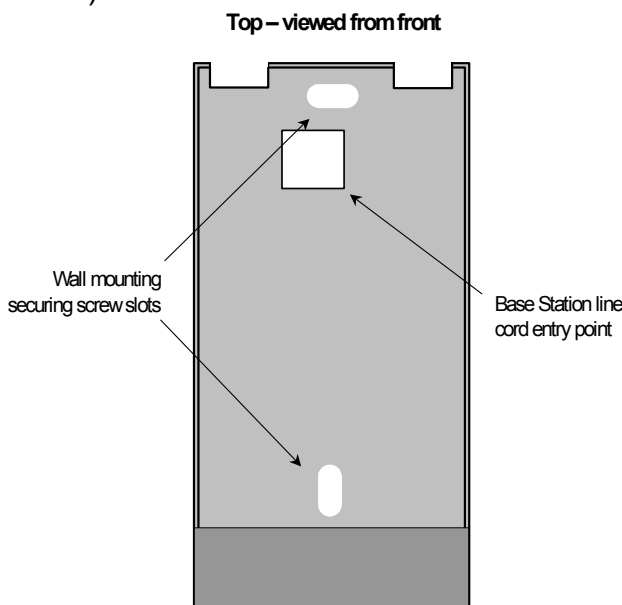
3. From the MDF, use single-twisted pair cable (Type CW1308) to connect each pair to a Slave Jack Socket (see *country variants Note on page 22*) located within 1.5 metres of the intended position of the Base Station. Connect the wire pair across pins 3 and 4 of the jack socket.

Mounting the Base Station

Each Base Station is supplied with 1.5mtrs of cable for connection to the slave jack socket (see page 3).

To mount a Base Station, perform the following:

1. Check the proposed position of the Base Station and ensure that there is a minimum of 200mm's clearance on all sides of the Base Station.
2. Use the Base Station Wall Mounting Bracket (see figure below) as a template to mark the required holes. Ensure that the Base Station is level. Drill and insert the wall fixings for the No. 6 round-head screws.
3. Run the Base Station line cord through the access hole before fixing the bracket to the wall with the two No. 6 round head screws.
4. Push the Base Station line cord into it's socket on the Base Station.
5. Slide the Base Station onto the mounting bracket (a firm push is required to slide the Base Station lugs over the pins on the wall mounting bracket).



6. Connect the base station line cord from the base station to the slave jack socket provided for the base station.

Note: For country variants, use the following table:

Socket Type	Pins
LJU 2/3A	3 & 4
RJ45	4 & 5
RJ11	3 & 4

7. Connect, using twisted pairs cable, the slave jack socket to the MDF (see pages 19 and 20 for MDF wiring).

Configuring the Base Stations

For the system to function correctly, it must measure the cable delay on signals to and from each Base Station. Whilst this process is being performed the system cannot handle calls (see *Base Station Cable Measurement* on page 23).

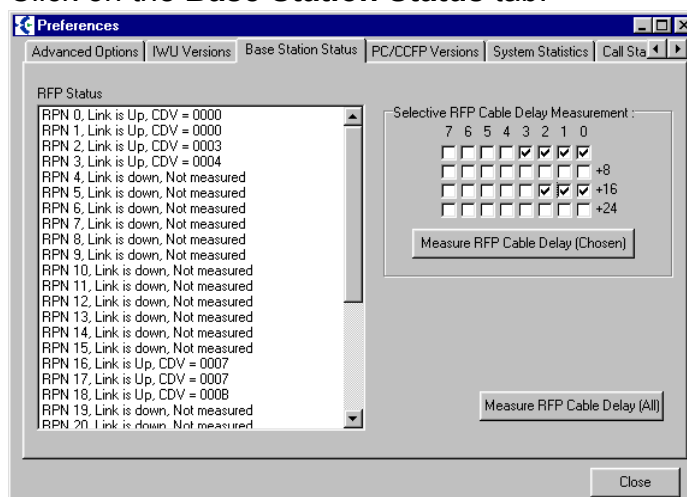
Base Station Cable Measurement

The cable distance between the Control Unit and the Base Stations introduce signal delays for which the system must adjust. Whenever a Base Station is added or moved, a process of measuring the cable delays must be performed.

Measuring cable delays

Note: During this process all the handsets lock for a few minutes and the system will do a reset.

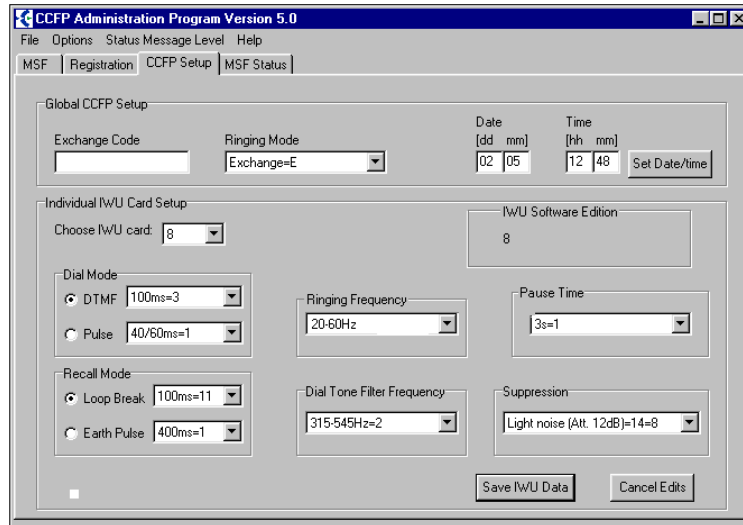
1. Start CCFP (see page 31).
2. Select **Options** and then **Preferences**.
3. Click on the **Base Station Status** tab.



4. The page shows the current status of the base stations and the measured cable delays. Options exist to select and measure specific cable delays or to select and measure all cable delays.
5. To re-measure selected cable delays, tick the appropriate box and click on **Measure RFP Cable Delay (Chosen)**. To re-measure the all cable delays click on **Measure RFP Cable Delay (All)**.

Altering DAB (IWU) Card Settings

The **CCFP Setup** page of CCFP Administration allows the individual configuration of IWU cards in the system plus some system wide (Global) values. Alter the settings to match those required by the PABX analogue connections.



Global CCFP Setup

- **Exchange Code:**

This digit is prefixed to dialing from the DECT handsets (the default is 0). When used in conjunction with an INDeX switch, **leave this field blank** as all call routing is done by ARS on the INDeX switch.

- **Ringing Mode:**

Select **Exchange** ringing unless this causes problems.

- **Date & Time:**

Shown as day, month, hours and minutes in 24-hour format. The system does not use a year setting.

- **Recall Mode:**

By default all DAB cards including DAB-ER use Loop Break. Ensure that DAB-ER cards are reset to Earth Pulse after installation unless required otherwise.

Individual IWU Card Setup:

To return a DAB (IWU) card to default state use the **Options | Preferences | Advanced Options** menu to select and then default the card. Most of these settings should only be altered to match the analogue lines to which the DAB (IWU) is attached. The only settings which may require adjustment is the Suppression box.

- **Suppression:**

The DAB Boards supports various levels of noise suppression for different environments. If a value is selected which is not supported by the particular PCS Level of the DAB Board, a message to that effect is displayed.

- **Save IWU Data/Cancel Edits:**

Changes to individual DAB Boards are saved to the DCU when **Save IWU Data** is clicked. The original settings, when the DCU was last accessed, are restored for the individual DAB Board when **Cancel Edits** is clicked.

Registering Handsets

The **Registration** page of CCFP Administration Program (see page 30 for *installation*) displays all the settings for handsets. The top section of the screen shows all the available channels and the handset settings. The lower part of the screen shows the settings for an individual channel. This menu also provides options to **Delete** or **Move** users.

	IwU	Ch	Serial No.	AC No.	Name	Local No.	Standby Text	Presentation Text
1	0		00077 0050619		eddie	4470	dect 4470	eddie 4470
1	1		00077 0056365		index rm2	4473	dect 4473	index rm2 4473
1	2		00077 0050616		index rm3	4474	dect 4474	index rm3 4474
1	3		00077 0054043		jamie L	4475	dect 4475	jamie 4475
1	4		00077 0050621		index rm1	4476	dect 4476	index rm1 4476
1	5		00077 0074376		exhib.rm	4477	dect 4477	french test
1	6		00077 0050731		brad	4478	dect 4478	brad 4478
1	7		00077 0050618		helpdesk	4465	dect 4465	helpdesk 4465

Choose User (At Location): IWU: 1 Channel: 5

Delete User: [Delete]

Move User (To location): IWU: 0 Channel: 0 [Move]

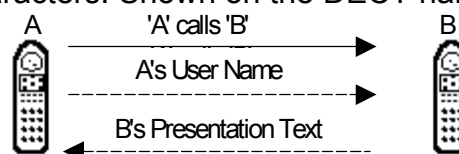
Current User Data:

Serial No.	AC No.	Username	Local No.	Standby text	Presentation text
00077 0074376		exhib.rm	4477	dect 4477	french test

[Edit]

Editing User Settings:

1. In the **Choose User (At Location)** section select the **IWU** and **Channel**.
2. In the **Current User Data** section select:
 - **Serial No.:**
The handset serial number. This is found on a label covered by the handset battery. It consists of a 5 digit handset type and then a 7 digit handset number separated by a space.
 - For other GAP compatible DECT handsets it is possible to discover the serial number (see *Subscribing Non-INDeX Handsets on page 28*).
 - **AC No.:**
An option account code of up to 7 digits. If set then the account code is entered by the handset as part of the subscription process.
 - **User Name*:**
Up to 10 characters. Shown on the DECT handset called by the user.
 - **Local No.:**
The handsets extension number on the attached PBX.
 - **Standby Text*:**
Up to 10 characters. Shown when idle but in range of a base station.
 - **Presentation Text*:**
Up to 10 characters. Shown on the DECT handset calling the user.



***INDeX PBX:** Though overridden by DECT Integration, it is still sensible to set these options.

Subscribing Handsets

Once a handset details have been entered into the Registration screen of CCFP Administration, the handset can be subscribed to the system.

Enabling Subscription

1. Run CCFP Administration.
2. Check that the handset details have been correctly entered.
3. Select **Options** and then **Preferences**. Click on the **Advanced Options** tab. Click on **Allow Subscription** (a tick mark appears when allowed).
4. Use the appropriate process below to subscribe the handset.
5. After subscribing the handset(s), switch **Allow Subscription** off (no tick mark).

To subscribe an INDeX 20DT Handset

It is recommended to only subscribe one handset at a time and that all previously subscribed System IDs are removed prior to subscribing for the first time (see *Removing a Subscription on page 28*).

1. Press **MENU** and then > until **LOGIN** appears, then press ✓. **SELECT LOGIN** appears
2. Press > until **SUBSCRIPTION CREATE** appears, then press ✓.
3. **SEARCH ID** appears. Press > until required system **ID** number appears.
(The system ID is printed on the back of the Compact DECT Base Station).
The handset displays the ID's of any systems in range. If there are several systems locally, use < and > to display the different ID numbers found.
4. When the required system ID is displayed, press ✓.
5. Press > until **CREATE SYSTEM 1** appears, press > until required **SYSTEM** number appears.
6. When the required **SYSTEM** number appears.
7. **AC: _ _ _ _ _** also appears.
If required enter an Account Code and/or press ✓.
8. **SUBSCRIPTION WAIT** appears. If for some reason your handset cannot subscribe it displays **FAILED**. Press ✓ to try again from step 2 above or press **MENU** to stop.
9. When successfully subscribed, your handset beeps and your extension number is displayed.

Switching Between Systems

If the phone has been subscribed to several systems, you must select which system to currently use. For multi-site working this only needs to be performed once at each site provided that **AUTO** is selected when creating a system (see below).

1. Press **MENU** and then > until **LOGIN** appears, then press ✓. **SELECT LOGIN** appears, press ✓.
2. Press > until required **SYSTEM** number appears.
3. When the required **SYSTEM** number appears, press ✓. Your handset beeps and **SELECT LOGIN**.
Either, press **MENU** to exit, or , for multi-site working, press ✓.
4. For multi-site working, you must visit each site and allocate a discrete system number to it. E.g. for site 1, allocate **SYSTEM 1** and for site 2, allocate **SYSTEM 2**, etc.
5. Where multi-site working is required, press > until required **AUTO** appears and press ✓. (You only need to do this once at an site).
6. Your handset beeps and **SELECT LOGIN** is displayed.
7. Press **MENU** to exit.

Auto Subscribing Handsets

When moving between two locations, both equipped with DECT systems, you can set a handset to automatically subscribe to the other DECT system provided that the handset at been registered on **both** systems (consult your system manager for details).

To set auto subscription on a 20DT Handset

1. Press **MENU** and then > until **LOGIN** appears, then press ✓. **SELECT LOGIN** appears
2. Press ✓ **CURRENT SYSTEM** and the **ID** of that system appears.
3. Press > until **AUTO LOGIN** and then press ✓ to finish.

Removing a Subscription

If necessary, you can remove a subscription from the handset. **Do not do this lightly** as you may not be able to re-subscribe without assistance from your System Maintainer.

1. Press **MENU** and then > until **LOGIN** appears, then press ✓.
2. **SELECT LOGIN** appears.
3. Press > until required **SUBSCRIPTION REMOVE** appears, then press ✓.
4. Enter your password and press ✓.
5. **SUBSCRIPTION REMOVE** appears, press ✓ and then press > until the system you wish to remove appears
6. Press ✓ again to remove the system.
7. If the system removed was the one currently in use, you need to **LOGIN** to another system (see page 27).
8. Press **MENU** to finish.

Subscribing Non-INDeX Handsets

GAP compatible DECT handsets can be subscribed to the DECT system. To do this you will require the original handset manufacturers instructions for subscribing that handset.

A difficulty may arise in determining the serial number of the handset so that it can be registered on the DECT systems prior to subscription.

To determine a handset's serial number

1. Set the DECT system to allow *subscription* (see *Subscribing Handsets on page 26*).
2. Go to the CCFP programs **Status** page and set the **Status Level** to **Level 2** (see *MSF Status on page 34*).
3. From the non-DECT handset attempt to subscribe to the DECT system using the handset manufacturer's instructions. The subscription will fail as the handset is not registered in the DECT database but during the attempt its serial number will be displayed in the **Receive Status** display.
4. Note the serial number and add the handset to the registered handsets (see *Registering Handsets on page 25*). You should now be able to subscribe the handset.

System Testing & Handover

After completing installation and handset subscription, perform the following checks:

- Make test calls from all handsets.
- With a call connected, move through the areas that should be covered by base stations. Check that no unexpected 'black spots' exist.

Ensure that the customer is satisfied with the installation. Make sure they are aware of the following:

- **Reporting Faults:**
Make the customer aware of the details required when reporting any faults. Since this a cordless system, details of the handset user's location at the time of a fault is crucial. Maintaining a record of the location of faults may reveal black spots or high usage areas.
- **Hearing Aids:**
Make the customer aware that all cordless and mobile telephone systems can cause background hissing on some hearing aids.
- **Safety Areas:**
Make sure the customer is aware of their responsibility to indicate to handset users any areas where handsets should not be used and should be switched off for reasons of safety. The 20DT handsets are not classified as 'intrinsically safe electrical equipment' (a special classification for electrical equipment for use in hazardous areas).

Using Windows CCFP Administration

The CCFP Administration Program

The CCFP Administration program is Version 8. The CCFP Administration program (see *Uploading Flash Software on page 34*) is a Windows program for the on-line editing and management of the live DECT system database.

Programming requires a PC with a 9-pin D-type serial port or a suitable adapter (see *DCU to PC Programming Cable on page 69*). Alternatively modems can be used for remote connection (see *DCU to Modem Programming Cable on page 69*).

Note: Version 5 of the CCFP Administration program contains instructions/fields that are specific to Linked DECT Systems. When using Version 5 of the CCFP Administration program on a Solo DECT System, ignore any additional instruction/field error messages. Version 5 of the CCFP Administration program automatically determines and displays a message stating if DECT is a 'Solo' or 'Master/Slave' configuration.

Installing CCFP Admin

The CCFP Admin program is supplied on floppy disks as a self-installing program. It is also available from the web site (<https://emea-businesspartner.avaya.com/index.asp>) as a self-extracting file.

Important Note: When first started, the CCFP program requires access to the first setup disk (or the files from that disk) to complete its installation.

Windows 95/NT

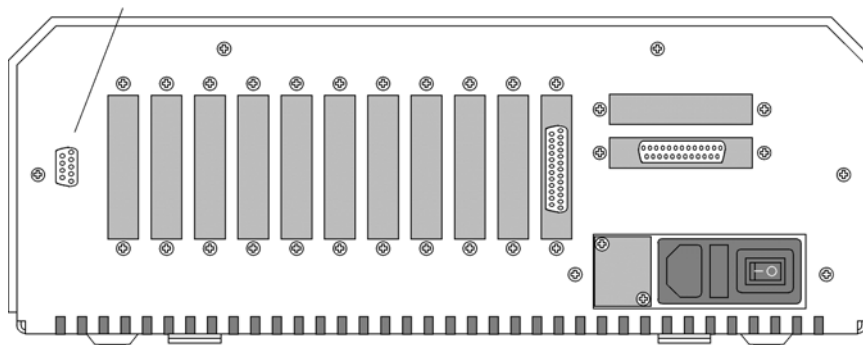
1. Insert the first floppy disk.
2. Click on **Start**. Select **Settings** and then **Control Panel**.
3. Select **Add/Remove Programs**.
4. In the **Add/Remove Programs Properties** menu click on the **Install/Uninstall** tab. Click on the **Install** button.
5. Windows will scan the floppy disk for a suitable installation file.
6. When it has located the file **setup.exe** on the floppy disk, click on **Finish**.
7. Follow the on-screen instructions for installing the CCFP Admin program.
8. Start the CCFP program and follow the instructions to complete installation.

Starting CCFP Admin - Direct Connection

Starting CCFP Administration

1. Ensure that the DECT Control Unit is on and that the serial programming cable (see page 69) is connected to it.

Serial Port for either DECT Integration or Programming Cables



2. Locate and click on the CCFP Administration icon.
Windows 95/NT: Located in Start | Programs | CCFP Administration.
3. A start-up display appears. The base of the display shows the current communications settings that will be used to connect with the DECT system.
4. The moving bar across the display allows approximately 10 seconds to change the communication settings (see Changing the Communications Configuration on page 32) before it attempts to make the connection with the DECT system.
5. A configuration display appears. It will state either:
Solo system detected
or
Master/Slave system detected
Ensure that the correct system configuration has been selected.
6. After a caution message, the main **CCFP Administration** screen appears.
 - If the connection is okay, the screen shows handset **Registration** page. The progress indicator at the top-right of the screen shows the progress in copying down the DECT system's settings.
 - If the connection is not okay, the screen shows the **Status** page with a sequence of ---TIMEOUT--- messages. Use **File | Exit** to close the program and then check the serial port, serial cable and DECT system.
 - If **Error 5** appears, then another device is using the COM port.

Changing the Communications Configuration

1. Whilst the start-up display is shown, clicking on **Change communications configuration** pauses the startup and display the **Communications Setup** menu.

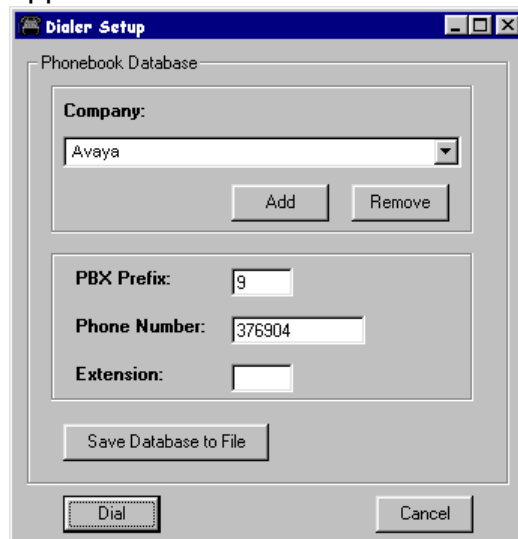


2. Set the **Com.** port to match the serial port of your PC connected to your DECT system (for direct serial cable connection) or modem (for remote modem connection to the DECT system).
3. Set the **Connection:** to the type of connection required.
4. Click on **Ok** to return to the CCFP Administration startup display.

Starting CCFP Admin - Modem Connection

Starting CCFP Administration

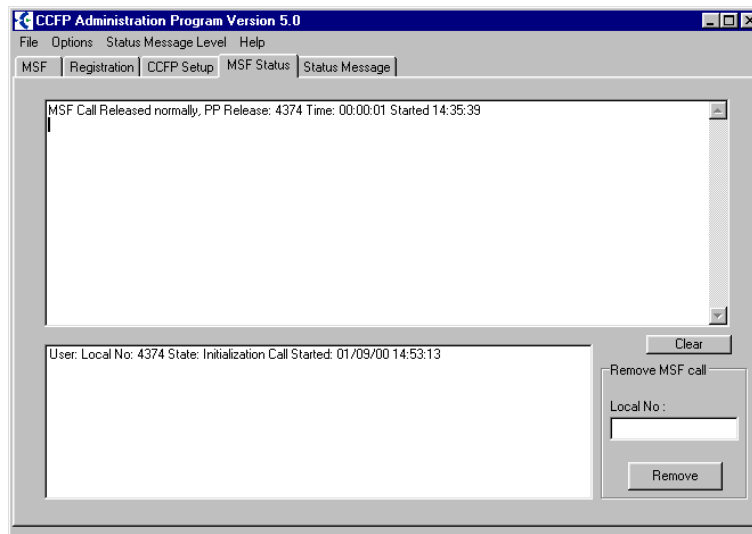
1. Check that your modem is on and connected.
2. Locate and click on the CCFP Administration icon.
Windows 95/NT: Located in Start | Programs | CCFP Administration.
3. A start-up display appears. The base of the display shows the current communications settings that will be used to connect with the DECT system.
4. The moving bar across the display allows approximately 10 seconds to change the communication settings (see Changing the Communications Configuration on page 32 before it attempts to make the connection with the DECT system).
5. A configuration display appears. It will state either:
 - Solo System Configuration Detected or
 - Master/Slave System Configuration Detected
 Ensure that the correct system configuration has been selected
6. After a caution message, the main **CCFP Administration** screen appears with the Status page displayed.
7. In the Modem control section, select **Dial Number**. **Dialer Setup** appears.



- Use this menu to select the DECT system you want to dial. Use the **Add** and **Remove** buttons to create and delete entries. If you do make any changes ensure that you select **Save Database to File** to save them.
 - With the Company to which you want to connect displayed, click on **Dial**. The Dialer Setup menu will close.
8. Watch the Receive Status display to check on the modem connection progress.
 - If **CONNECT** appears then the modem link has been established and you can start DECT programming by clicking on **Proceed**.
 - If **CONNECT** does not appear there is a problem with establishing a modem link that must be checked. Use **File | Exit** to close the program and then check the serial port, serial cable and DECT system.
 9. After clicking on **Proceed** the screen shows handset **Registration** page. The progress indicator at the top-right of the screen shows the progress in copying down the DECT system's settings.

MSF Status

The **MSF Status** page shows messages coming from the DECT system to handsets. The level of status messages can be altered to show more or less information.



Checking & changing the Status Level

1. Select **Status Message Level**.
2. To see the current status level select **View Curent Status Level**.
3. To change the status level select from one of the levels (0-3) displayed.
4. Note that the level resets to **Level 0** at the end of any CCFP Administration session.

Status Message

The **Status Message** page will display, in real time, the system activities. E.g. handset subscription, base station handovers and handset connection options, etc. selected previously in MSF Status on page 34.

Uploading Flash Software

Occasionally upgrade software for the DECT DCU may be supplied in the form of a "flash.ktb" file or similar for upload to the system.

Note: Uploading new software will cause the system to restart and end any current calls. You must also ensure that any pre-requisites for the new software (such as appropriate hardware and software PCS levels) have been met.

1. From the CCFP menu bar select **Options** and then **Preferences**.
2. Select the **Advanced Options** tab. Click on the **Transfer Flash Program to CCFP**.
3. Use the file menu to select the .ktb file to upload.

Base Stations Cable Measurement

See Base Station Cable Measurement on page 23.

Altering DAB Settings

See Altering DAB (IWU) Card Settings on page 24.

Registering Handsets

See *Registering Handsets* on page 25.

Subscribing Handsets

See *Subscribing Handsets* on page 26.

Saving and Loading Files

It is possible to save and load files using the CCFP Administration program. This section details saving settings in plain text file format (.dat and .msf files).

The CCFP program also provides options for saving and loading binary files (.ktb). These are not detailed and should only be used under the guidance of Avaya.

Saving Current Settings (.dat and .msf text files)

1. To save the current system settings select either the **Registration** or **CCFP Status** pages. To save the MSF Messages select the MSF page.
2. Select **File** and then either **Save** or **Save as**.
3. The current settings will be saved in the form of a '.dat' file, the MSF messages as a '.msf' file.

Loading Settings (.dat and .msf text files)

WARNING:

As CCFP Administration is used to edit the live DECT system database, opening a system settings file on the PC will immediately upload those settings to the connected system. Therefore use this option with caution and ensure that the file being opened is correct for that system.

1. To open current system settings select either the **Registration** or **CCFP Status** pages. To open a set of MSF Messages select the **MSF** page.
2. Select **File** and then **Open**.

Printing the Setting

You can use the CCFP program to print a copy of the system settings. The results is a printed copy of the system's .dat file.

1. Select either the **Registration** or **CCFP Status** pages.
2. Select **File** and then **Print** to print or **Print Setup** to select the printer options.

Exiting CCFP Administration

It is important that you exit and close CCFP Administration by using the **File | Exit** option from the menu bar only. This ensure proper closing of the serial link, especially on modem connections.

CCFP Options Menus

Introduction

Options has three available choices-

- Preferences.
- Phonebook.
- Debug.

Phonebook

This option is used for editing the Phonebook in the External Services.

To add a new entry, press the new **Entry** button or choose the empty line at the bottom of the list. When all the information has been compiled, press the **Add Entry** button. To alter an existing entry, choose the entry in the list, make any relevant changes and press the **Edit entry** button. Press delete to remove highlighted entry.

Debug

The Debug Screen offers-

- View DECT Handset PCS tab.
- The PCS of all the connected DECT Handsets.
- View Base Station PCS tab.
- The Base Stations connected to the system.

Note:

PCS 2 and PCS 3 Base Stations cannot be connected together on the same DCU.

RFP Load Flash tab should be avoided until further notice from Avaya.

RFP No	Status	Sync. Method	SW Part No.	SW Pcs
0	Normal Operation	1		03
1	Normal Operation	1		03
2	Normal Operation	1		03
3	Normal Operation	1		03
4	Link Down	0		
5	Link Down	0		
6	Link Down	0		
7	Link Down	0		
8	Not Installed	0		
9	Not Installed	0		
10	Not Installed	0		

It can be seen that there are four operational Base Stations at software PCS3 and four Base Stations are currently down.

Preferences

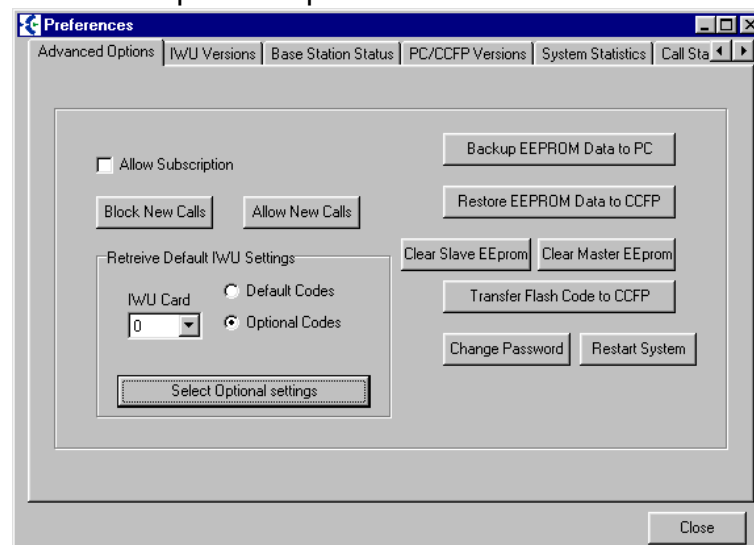
Several functions exist in **Preferences** as follows:

- Advanced Options.
- IWU (DAB) Versions.
- Base Station Status.
- PC/CCFP Version.
- System Statistics.
- Call Statistics.
- Diagnostics.
- Link Setup.

Advanced Options

The following options area available:

- Country optional settings for DAB (IWU) cards. Setting of a new country variant can be assigned to any DAB (IWU) card or ALL DAB cards fitted.
- Backup and transfer of DCU system database and configuration setup.
- Clear EEPROM data from both the Master and Slave DCU or Solo DCU
- Flash software upload.
- Blocking and allowing all calls.
- Password protection for remote access.
- Subscription Request.

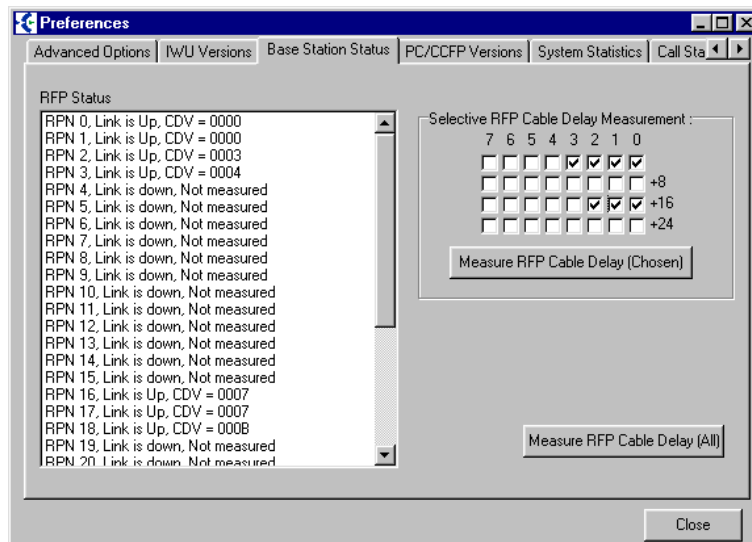


IWU / DAB Versions

Status of each DAB card fitted to the DCU current PCS level can be displayed.

Base Station Status

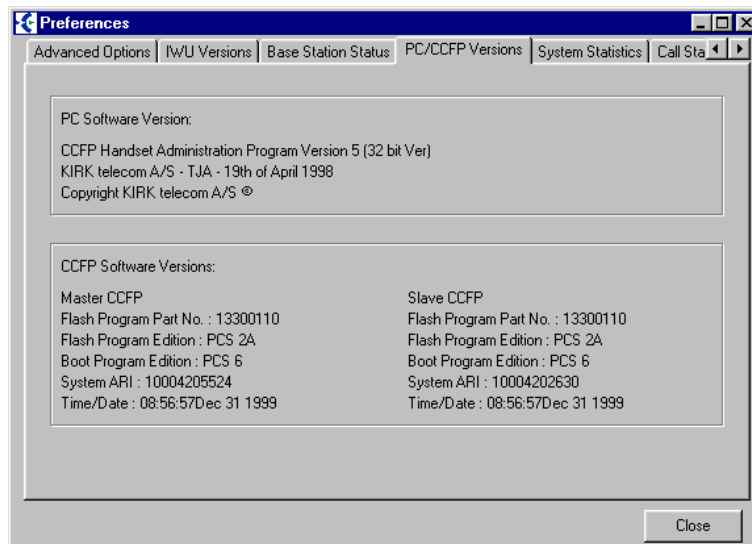
The ability to run Cable Delay for Base Stations fitted to the DCU unit is available from this page. Current on screen status and Cable Delay Value of each fitted Base Station are displayed. An option to measure All Base stations exists.



Base Station Cable Delay is required to be performed on every DCU installation as it synchronizes all the Base Stations to the DCU for correct operation and hand-over.

PC/CCFP Version.

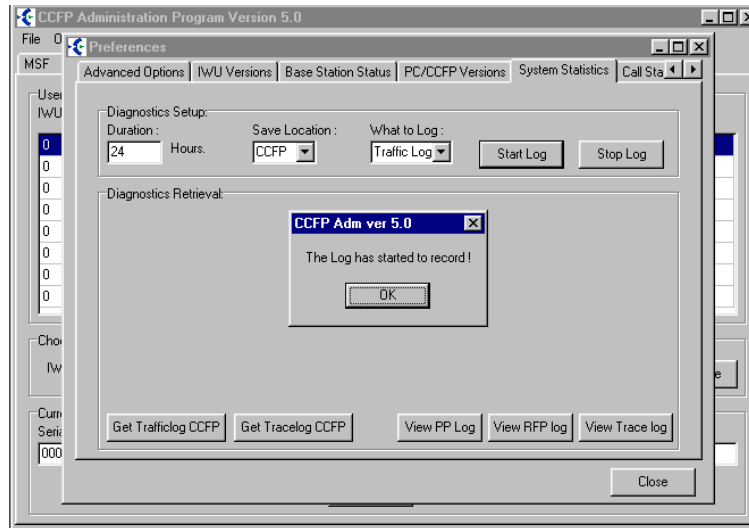
This page can show the DCU current operational flash and boot program editions and systems ARI.



Note:

Running subscription from a DH Handset to a Master/Slave DCU subscription requests the MASTER ARI even if the DH Handset is fitted to the Slave DCU

System Statistics.

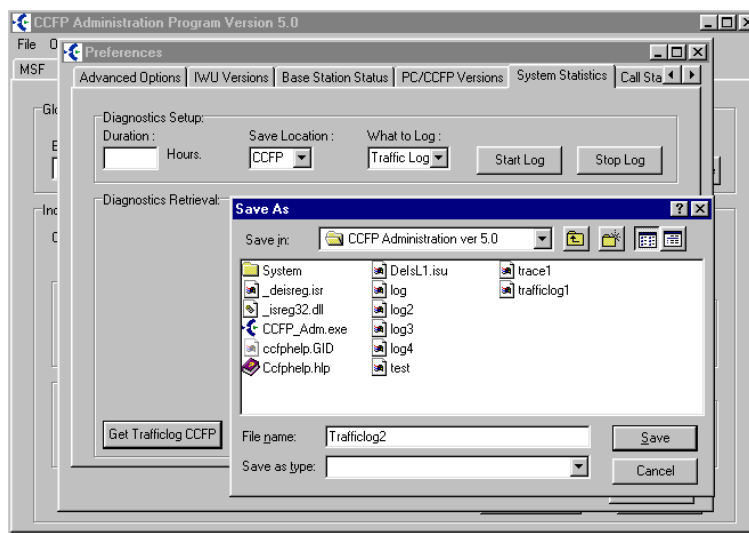


The CCFP Administration Program V5 offers a comprehensive statistics package that allows diagnosis operation of the DCU

- Traffic Log/Activity of the DH Handsets fitted and measurements in Erlangs.
- Trace Log/Activity of the Base Stations fitted including handovers.

A log will run for the duration period entered in the **Diagnostic Setup/Duration** box. The log file is held within the DCU. Before viewing is allowed, the duration period must elapse or the log is stopped. Use the **What to Log** box to select required log.

Selecting either **Get Trafficlog CCFP** or **Get Tracelog CCFP** will download the log to your PC. A file name for the log must be given as shown below.

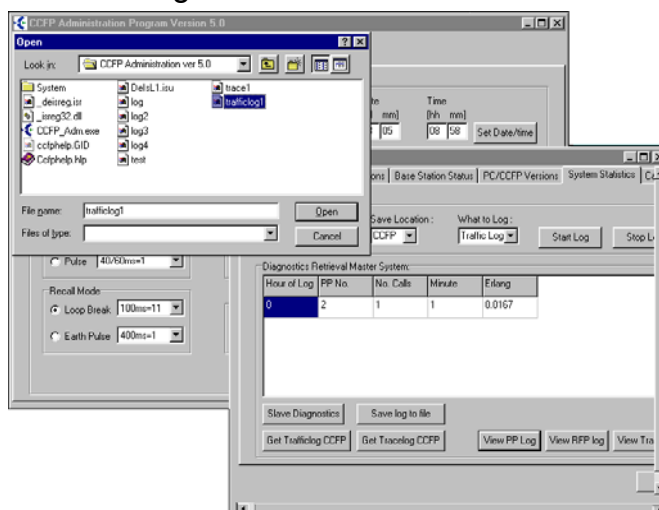


The file type can be left blank. Choose **Save** to save in the CCFP Administration Program V5 folder.

When finished CCFP Administration Program V5 will prompt **Download Completed/OK**. Click on **OK** to continue.

To display logs:

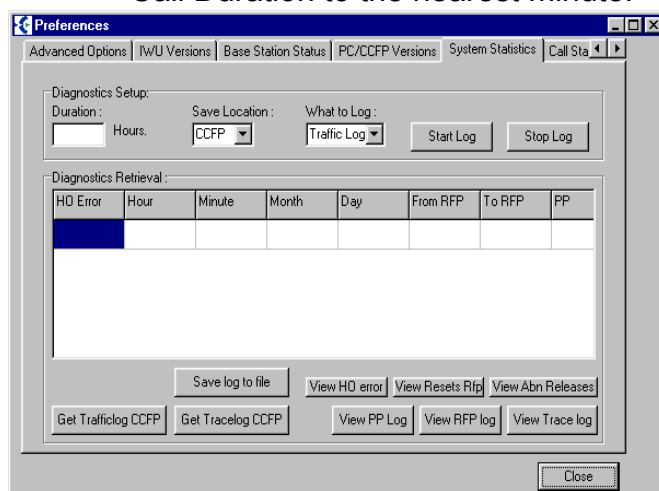
When download has been completed, select either View PP Log, RFP Log or Trace Log.

**View PP Log-**

- Hours of Log duration.
- DH (PP – Portable Part) DAB location number on the DCU.
- Total number of Calls.
- Duration of calls to the nearest minute.
- Erlang Calculation.

View RFP Log-

- Hours of Log.
- RPN/Base Station Activity.
- Channel Connection.
- Total Calls.
- Call Duration to the nearest minute.

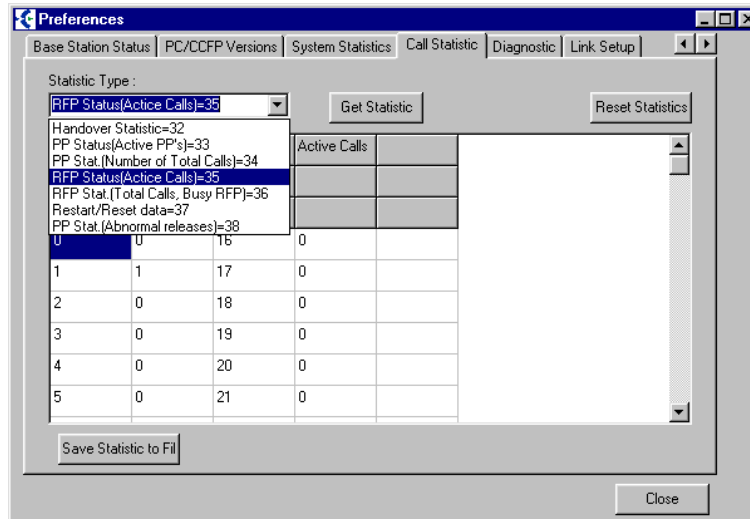
**View Trace log.**

- Hand Over Errors.
- Duration (Hours, Minutes, Month, Day).
- Hand Over from Base Station to Base Station.
- DH Handset applicable.

The CCFP Administration Program V5 has the ability to view Base Station (RFP) resets and DH Handset Abnormal Releases. Abnormal Release is when the DCU. sees a non- recognized DH Clear down; EG. A call in progress and the battery goes flat on the DH Handset, or when a DH may move out of signal coverage and clears whilst a call is in progress.

Call Statistics.

The CCFP Administration Program V5 allows real time 'snap-shot' statistics of the DCU activity.



- Hand-over between Base Stations.
- DH Handset Status.
- DH Totals.
- Base Station Status.
- Base Station Activity Totals.
- Restarts of the DCU
- DH Handsets Abnormal Releases.

System Diagnostics and Testing

Base Stations Signal Checks

The handsets can be used to check the signal strength and quality being received.

1. With the handset on-hook, dial ***99981*** and press **ENTER**.
2. The handset display should be similar to that shown below.

RPN: 01 03

Q52: 52

RSSI: 64

- **RPN** is the Base Station number.
 - **Q52** refers to the speech quality (error rate) of the signal received from a Base Station. Only the speech quality of the first available base station is displayed. A value of 52 or greater is acceptable.
 - **RSSI** refers to the signal strength from each base station. A value of 30 or greater is acceptable.
3. Put the handset off-hook, this gives more accurate and realistic survey figures.
 4. To clear the display press **<** until you hear a short bleep.

Handset Software Version

The handset can provide details of its internal software version. It is unlikely that you will need these details except if requested by the handset supplier.

1. With the handset on-hook, dial ***99982*** and press **ENTER**.
2. The handset display should be similar to that shown below.

1329 8100

SW PCS: 4

3. To clear the display press **MENU** twice.

Battery Condition

The handset can display its battery charge. This appears as a set of eight blocks across the display. Solid blocks indicate charge and empty blocks indicate discharged. If three blocks or less appear then the handset should be recharged.

For handsets of software PCS 4 the battery state can also be checked via the **MENU** key options.

1. With the handset on-hook, dial ***99985*** and press **ENTER**.
2. To clear the display press **<** for a few seconds.

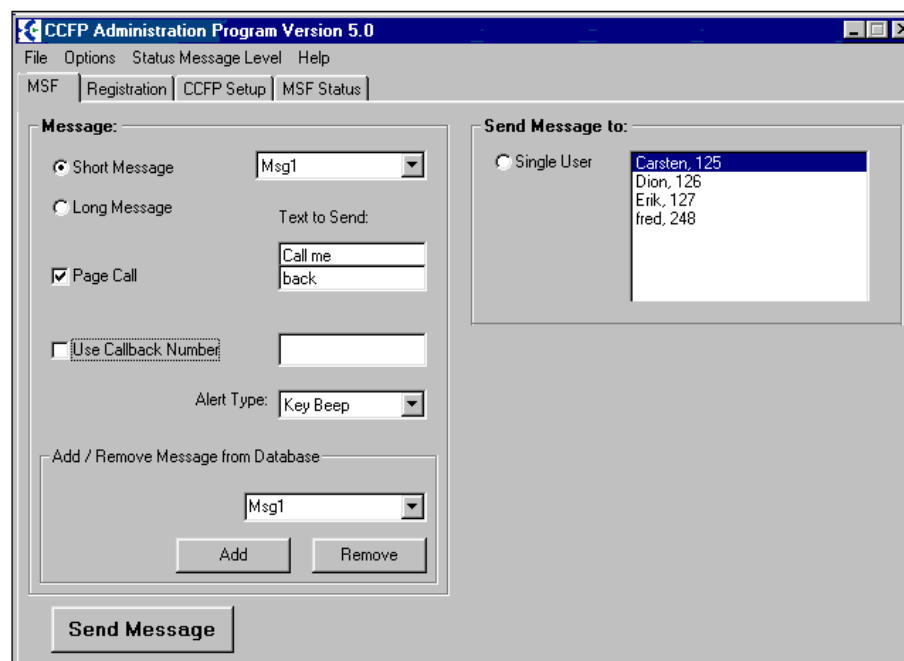
MSF Messages

Overview

DECT systems of SW PCS 4+ support the sending of text messages to handsets. This can be done during voice calls without breaking the call and can include page and callback options. To receive MSF messages the 20DT handsets must also be SW PCS 4+.

The process of composing and sending messages is controlled by the **MSF** page of CCFP Administration. This page allows you to setup a library of messages. Use the **Message** panel to set up the message(s) and the **Send message to** panel to allocate handsets. On completion click on **Send Message**.

When **MSF** is first accessed a prompt is given which provides the option to download all the DAB user data available to the DCU.



The set of messages are stored as a file on the PC and not on the DECT system on the DECT (see *Saving and Loading Files on page 35*).

The activity of messages set up on the **MSF** page can be viewed, in real time using the **MSF Status** page (see *MSF Status on page 34*).

Composing Messages

You can use the right-hand side of the MSF page to compose messages.

Adding or removing messages

1. Select either Short Message or Long Message.
2. Use the text box at the base of the page to select an existing message or enter a new message name.
3. Click on Add or Remove.

Editing a message's settings

1. Select either Short Message or Long Message.
2. Use the text box next to the message type to select the message to alter.
3. Change the settings as required.
 - Text to send
This is the text message to display on the handset.
 - Page Call (*short messages only*)
With this option off, the handset user must press Enter after the alert to see the message. When this option is on the message is displayed immediately after the alert.
 - Use Callback Number (*short messages with page call on only*)
When on, the message includes a callback number and when the handset user presses the  key, that number is dialled.
 - Alert Type
This option set the ringing/tone used by handsets to indicate the message. Note that the Vibrator option does not work with normal handsets.

Sending Messages

You can use the left-hand side of the MSF page to select the message required and alter its settings if necessary (*see page 44*). Once a message has been 'sent', you can check its progress in the Status page (*see MSF Status on page 34*).

Sending to a single handset

1. Click on **Single user** and in the user list highlight the user name.
2. Click on **Send Message**.

Sending to a group

1. Click on **Group** and select the group name.
2. Click on **Send Message**.

Message Groups

You can use the MSF page to create groups of users to which you can then send the same message.

Creating a group

1. Click on **Group**.
2. In the text box enter a name for the group and then click on the **Add** button below the text box. You can now add and remove members from the group.

Adding members to a group

1. Highlight the user name you want to add in the list at the top of the page.
2. Click on the **Add** button below the list of current member in the group.

Removing members from a group

1. Highlight the user name to remove in the list of current group members.
2. Click on the **Remove** button below the list of current members in the group.

Removing a group

1. Click on **Group** and select the group name.
2. Click on the **Remove** button below the group name.

INDeX Integration

Overview

The DECT system can be used with most PBX's that provide analogue extension connections. However, when used with the INDeX PBX, the DECT system is able to access a range of additional features.

- **Mobile Twin Numbers:**
Allows DECT handsets to be associated with switch terminals for parallel ringing and diverts.
- **DECT Integration:**
Allows 20DT handsets to display CLI/alpha tagging information from the INDeX PBX and to access the INDeX's directory of system speed dials/extensions.

Mobile Twin Numbers

INDeX Level 7.2+ provides a **Mobile Twin Number** option. This option allows the directory number of a DECT handset to be associated with the directory number of another terminal (e.g. a fixed desk telephone).

The use of **Mobile Twin Number** requires entry of a **Mobile numbers** switch licence on the INDeX.

When used, having a mobile twin number has the following effects:

- Calls to the fixed terminal also cause the DECT handset to ring.
- If either the fixed terminal or DECT handset are busy callers receive busy tone (or follow the fixed terminal's divert on busy if set).

To enable mobile number use:

1. From the **Main Menu** select **System** and then **Switch Licences**.
2. Select **Mobile numbers** and enter the licence key.

To associate a DECT handset with a fixed terminal:

1. From the **Main Menu** select **Terminal (Level 7.2+)** or **User (Level 8.0+)** and enter the directory number of the fixed extension.
2. Select **Extended functions**.
3. Select **Mobile twin number** and enter the directory number of the DECT handset (this automatically sets the **Mobile twin number** setting of the DECT extension to the fixed terminals directory number).

DECT Integration

DECT Integration works with INDeX Level 8.0+. It allows 20DT handsets (S/W PCS4E) to receive CLI or alpha tagging information from the INDeX (overriding the name entries in the DECT database).

20DT handsets can also access the switch directory index for system speed dials and extensions in a similar fashion to display terminals.

DECT Integration requires entry of a **Mobile Numbers** switch licence with **Option 1**. It also requires the INDeX and DECT Contyrol Unit (DCU) to be linked via a DECT Integration cable.

Note: With DECT Integration operating the handsets uses directory names supplied by the INDeX. It is a sensible precaution to still have a User Name, Standby Text, and Presentation Text set in the DECT handset database.

All the programming shown below is performed on the INDeX switch.

A. Enable mobile numbers use with DECT integration:

1. From the **Main Menu** select **System** and then **Switch Licences**.
2. Select **Mobile numbers** and enter the licence key. Ensure that the option field displays **1**, indicating it is the licence for Mobile Numbers with DECT Integration.

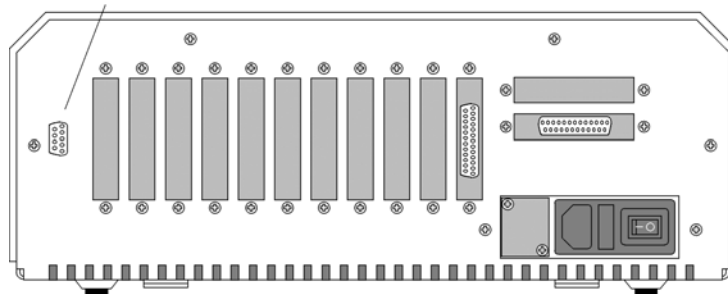
B. Set the two-wire port to DECT operation:

1. From the **Main Menu** select **Terminal** and enter the directory number for a two-wire port connected to the DECT.
2. Select **Port/Type** and set this to **DECT**.
3. Repeat this process for all the INDeX two-wire ports connected to the DCU.

C. Set the INDeX port speed to 19200:

1. From the **Main Menu** select **System** and then **Ports**.
2. Press **tab** to select the serial port which will be connected to the DCU.
3. Set the ports speed to **19200**.
4. Connect the integration cable between the DCU and the INDeX (see DCU to PC Programming Cable *on page 69*).

Serial Port for either DECT Integration or Programming Cables



D. Start the DECT Log output:

1. From the **Main Menu** select **Reports** and then **Start/stop Smdr, fault, event logging and DECT**.
2. Press **tab** to select the serial port connected to the DCU.
3. Select **Start DECT** to start DECT integration. The port shows **DECT (Running)** when operating correctly (you may have to leave and then re-enter the menu).

E. Ensure that the DECT directory numbers are named:

1. Give each DECT extension number a directory name on the INDeX.

IP Office Integration

DECT Integration

The DECT system can be used with most PBX's that provide analogue extension connections. However, when used with IP Office, the DECT system is able to access a range of additional features.

- When a DECT handset is called it will show caller's name (or CLI)*
- When a call is made from a DECT handset (by dialling a number) it will show called name (or CLI)*.
- A DECT handset will display the name only in cases where the calling or called extension/number is in internal/external directory.*
- Call waiting indication is given (both audible and visual) of a call made to a busy DECT handset.*
- The DECT will display a message when a Voicemail is waiting to be collected.*
- A menu is provided on the DECT handset that allows the user to look up entries in the internal and external directories. Entries can be identified by their first letter and entries can be browsed using the > and < DECT handset buttons. You can make a call from the internal or external directory by pressing DECT handset's off hook button. Selected person will be called.
- You can configure the program to make a DECT handset operate as a slave* of an IP Office desktop phone. If you do so, when the desktop telephone is called the associated DECT handset will also ring and show the caller's name. It is possible to answer the call on either phone.
- With a DECT handset as a slave* of a desktop phone you can program the link to share the same mailbox*. Hence, you can pick up the Voice Mail of the master desktop phone from the DECT handset (with or without passcode access).

***Notes:** 1. A licence key is required for the above functions to be available on IP Office.
2. DECT handsets **must** be sequentially numbered.

Installation Overview

To install DECT Integration software with IP Office the following steps must be performed in sequence:

1. Perform the Site Survey (see *page 8*) and install the DECT Control Unit (see *page 16*).
2. Register each DECT handset using the CCFP Administration program (see *page 25*). The *Local No.* must be the extension number allocated to the analogue port of the IP Office (see *page 52*).
3. Install DECT Configuration software on the PC running IP Office Administration (see *page 52*). Connect the DECT to the PC using the DCU to PC Programming Cable (see *page 69*).
4. DECT configuration must be licenced (see *page 52*) to utilize IP Office Integration.
5. Configure, within the IP Office Manager program, each **User** (the analogue port allocated to a DECT handset - see *page 52*).
6. Options:
 - Make a DECT handset a slave of an IP Office desktop phone (see *page 52*)
 - Set Voicemail pick-up, from a DECT handset operating as a slave of a desktop phone (see *page 55*).
7. On completion, the Voice Mail server **must** be switched on (Programs/IP Office/VoiceMail).

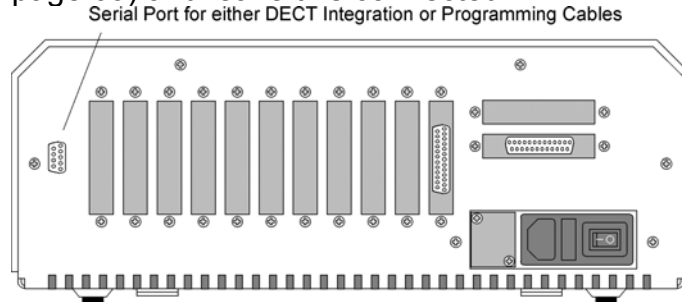
DECT Configuration Software

With the Site Survey performed (see page 8), the Base Station installed and all DECT handsets Registered (see page 35), the IP Office DECT Configuration software can be installed.

Software Installation

The DECT Configuration software is installed from the IP Office Administration CD and can be installed onto any Windows 95 or higher PC. Perform the following:

1. On the PC running on the same TCP/IP LAN as the IP Office, connect the DECT to the PC using the DCU to PC Programming Cable (see page 69) and leave this connected.



2. Insert the IP Office Administration CD and follow the installation *Wizard* instructions.
3. In the *Select Components* menu, select (tick box) *DECT Configuration*.
4. When installation is completed, click **Finish**.

Licence

To install the DECT licence, perform the following:

1. From Programs/IP Office, open the **Manager** application. The default password for Administrator is *Administrator*, however this **must** be changed as early as possible.
2. Open the Configuration Tree (File/Open). The default password for the configuration is *password*, however this **must** be changed as early as possible.
3. Click on the *Licence* icon and in the right hand field, right click and select new.
4. Enter a valid Licence string for the DECT (obtained from your supplier). The DECT Configuration Licences are for 8, 16 or 64 extensions.

User Configuration

Each user assigned to a DECT handset must be configured and the **Internal** directory set up. Perform the following:

1. From Programs/IP Office, open the **Manager** application. The default password for Administrator is *Administrator*, however this **must** be changed as early as possible.
2. Open the Configuration Tree (File/Open). The default password for the configuration is *password*, however this **must** be changed as early as possible.
3. In the Configuration Tree, open **User** to display all available Users.
4. For each analogue port assigned to a DECT handset, right click in the *User* icon and select **Edit**.
5. In the *User* tab enter both a *Name* and *Full Name*. These names should be unique to each DECT handset and will represent the **Internal** directory.
6. Select the Voicemail tab and ensure that:
 - When voicemail for the DECT is required that the Voicemail On box is ticked
 - Where voicemail for the DECT or the DECT is to be slave of a desktop phone (see page 52), that the Voicemail On box is empty.

DECT Handset as a Slave of a Desktop Phone

A DECT handset can be made a slave of an IP Office desktop handset. Perform the following:

1. From Start | Programs | IP Office select **DECT Configuration** (the CCFP application must not be running).
2. You will be given the option to switch off the DECT service. Select **Yes**.
3. The IP Office DECT Configuration menu is displayed.

The screenshot shows the 'IP400 - DECT Registry Configuration' dialog box. It contains several fields and buttons. Annotations with arrows point to specific elements:

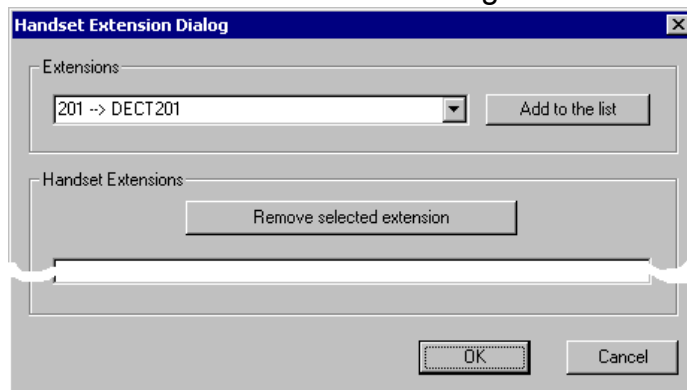
- An arrow points to the 'Host Name or IP Address' field, with the text: 'Enter either the name of the host IP Office or it's IP Address'.
- An arrow points to the 'IP Office password' field, with the text: 'Enter the password of the host IP Office'.
- An arrow points to the 'Handset Extensions ...' button, with the text: 'Click here to access the Extension Dialog menu (see below). When completed, the number of DECT handsets available to be twinned is displayed'.
- An arrow points to the 'Enable Desktop/Handset Twinning' checkbox, with the text: 'Tick this box to gain access to the **Connect and configure** menu and hence enable twinning (see below)'.
- An arrow points to the 'Connect and configure ...' button, with the text: 'The number of the DECT handset (identified above) and the number of the desktop phone will appear here (e.g. 201 – 203) after **Connect and configure** menu has been completed (see below)'.

The dialog box also includes fields for 'Serial port' (with a 'Test' button and a dropdown set to 'COM 1') and 'Language' (a dropdown set to 'English'). At the bottom are 'Apply' and 'Exit' buttons.

The password must be that of the IP Office connected to the DECT.

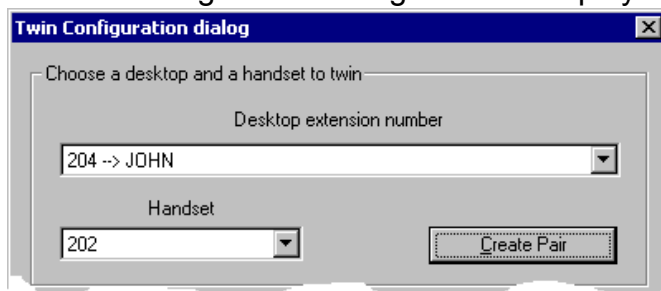
4. Check that either the *Host Name* or *IP Address* is displayed. If not, enter the IP address of the IP Office.

5. Click on **Test**. If communication with the DECT has not been established, check the connection between the PC and the DECT (see pages 30 and 32 respectively).
6. Click on **Handset Extensions** to gain access to:



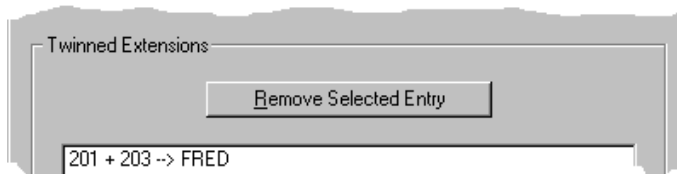
From the pull down list, select the extensions allocated to DECT (see page 52). Click on **Add to the list** for each entry selected. These will appear in the box below. If you wish to delete an extension from this list, then highlight entry and click **Remove selected extension**. Click **OK** on

7. Ensure that the *Enable Desktop/Handset Twinning* box is ticked and click on **Connect and configure**.
8. The Twin Configuration dialog menu is displayed.



From the *Desktop extension number* pull down options list select the extension number of the master desktop phone. The number of the DECT handset you entered previously in the **Handset Extensions** menu box is displayed first.

9. Click on **Create Pair** and the twinned extensions are displayed.



10. You have the option to **Remove Selected Entry**. Highlight the entry and click on **Remove Selected Entry**.
11. Repeat the procedure for all the master desktop phones that you wish to slave with DECT handsets (remember that the DECT handset numbers will appear in sequential order starting from the numbers entered previously in the **Handset Extension** menu). Click on **OK** when finished.

12. The **Configuration** menu will now look as follows (with DECT handsets 201 and 202 as slaves of desktop phones 203 and 204 respectively):



13. On completion, click **Apply** and then **Exit**.
 14. Select **Yes** to start the DECT service.
 15. A small icon  may appear in the task bar to indicate that the DECT configuration is active.

Call Waiting Indication

When Call Waiting Indication is required, then **both** the master or slave handsets must have the facility selected. Perform the following:

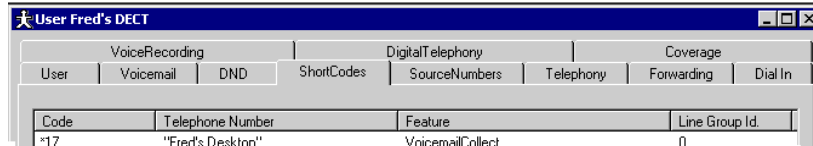
1. On both the master and slave handsets, dial *15.
Alternatively, you can set up the IP Office remotely by:
2. From Programs/IP Office, open the **Manager** application. The default password for Administrator is *Administrator*, however this **must** be changed as early as possible.
3. Open the Configuration Tree (File/Open). The default password for the IP Office configuration is *password*, however this password **must** be changed as early as possible.
4. In the Configuration Tree, open **User** to display all available users.
5. For the analogue port extension number assigned to the slave DECT handset, right click in the *User* icon and select **Edit**.
6. Select the *Telephony* tab and click the **Call Waiting** box. Click **OK**.
7. For the master handset, right click in the *User* icon and select **Edit**.
8. Select the *Telephony* tab and click the **Call Waiting** box. Click **OK**.

Voicemail Pick-up

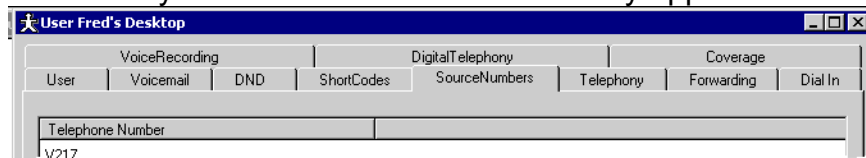
DECT handsets can be programmed such that the DECT handset can pick-up and listen to a desktop phone's Voicemail. These DECT handset are normally set to be a slave of a desktop phone (see page 52).

Perform the following:

1. Where appropriate, check that the DECT handset is set as a slave of a desktop phone.
2. From Programs/IP Office, open the **Manager** application. The default password for Administrator is *Administrator*, however this **must** be changed as early as possible.
3. Open the Configuration Tree (File/Open). The default password for the IP Office configuration is *password*, however this password **must** be changed as early as possible.
4. In the Configuration Tree, open **User** to display all available users.
5. For the analogue port extension number assigned to the slave DECT handset, right click in the *User* icon and select **Edit**.
6. Select the *ShortCodes* tab, right click in the box and select **Add**.
7. Enter *17 (VoiceMail pick-up code) in **Code**,
8. Enter "*name*" (where *name* is the **Name** given to the Desktop phone) in **Telephone Number**.
9. Set **Feature** to *VoicemailCollect* as shown below



- 10.
11. Select the *SourceNumbers* tab, right click in the box and select **Delete** (this tab **must not** contain any entries).
12. Click **OK** to finish.
13. For the *User* assigned to the Desktop phone, right click in the *User* icon and select **Edit** and select the *SourceNumber* tab.
14. Where the Desktop phone has been allocated **password protection** for it's voice mailbox, you can either:
15. Permit a 'trusted location' to access the Desktop phone's voice mailbox **without a password**.
- OR**
16. Ensure that slaved DECT handsets must **enter a passcode** to access the Desktop phone's voice mailbox.
17. To make the DECT handset a 'trusted location' (e.g. where **no is password required**) right click in the *SourceNumber* box and add Vxxx (where xxx is the extension number of the DECT handset). Do not edit any other 'trusted numbers' that may appear.



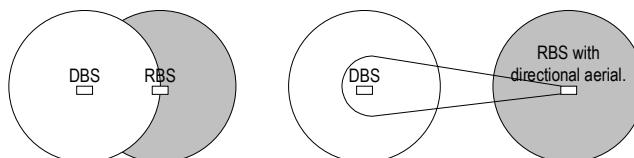
18. To ensure that the DECT handset **must enter** the Desktop's **password** to access the Desktop's voicemail box, check that the *SourceNumber* box **does not** contain Vxxx (where xxx is the extension number of the DECT handset). Do not edit any other 'trusted numbers' that may appear.
19. Save the configuration by clicking on the disc icon  in the menu bar.
20. Ensure that the Voice Mail Server is running; Programs/IP Office/VoiceMail.

Repeater Base Stations

Introduction

The DECT Repeater allows you to extend the range of coverage of a DECT system without requiring more wiring to the system. The only physical connection required for each Repeater is a mains supply.

A Repeater Base Station can be added for each existing DBS within an installation.



The range at which the Repeater can work will typically be between 50 and 150m within a building. The use of a directional aerial allows the Repeater to be placed up to 1000m from its parent base station (subject to intervening structures).

Each Repeater works in conjunction with an existing parent DECT Base Station. Each Repeater can handle up to 2 calls. Each call using the Repeater reduces by one the capacity of its parent DBS (normal maximum capacity 4 calls).

Locating Repeater Base Stations

Repeater base stations are subject to the same positioning requirements as normal base station units (*see Site Surveys on page 8*). Currently the only method for doing a site survey with Repeater Base Stations is in conjunction with an installed DCU and DBS or a DBS running on an DECT Demo System.

As with all DECT Base Stations, the correct performance and functioning of a Repeater Base Station requires an accurate site survey. Make sure you also include sufficient overlap for base station handover when positioning Repeater Base Stations.

Installing a Repeater

Use the procedures below to setup and install a Repeater base station. Note that unlike normal DBS's, it is not necessary to repeat cable measurement when installing a Repeater.

1. Configure the Base Stations

Each Repeater needs to be programmed with various settings before it can be used. Those settings include:

- The DCU system number.
- The base station number of DBS with which the Repeater will work.
- The base station number which the Repeater should use for itself.

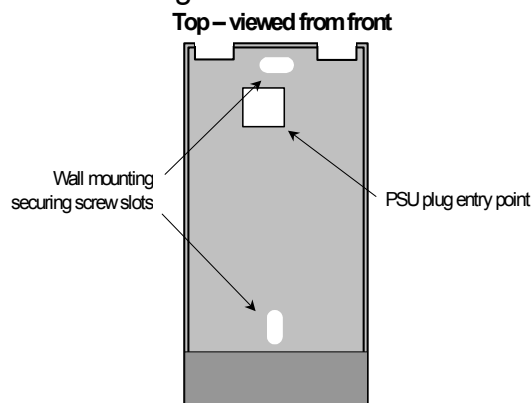
To do this you must use the Repeater Setup program (see *The Repeater Setup Program* on page 58).

2. Mounting the Repeater

Each Repeater is supplied with a plug top PSU fitted with 2mtrs of cable that terminates in a modular plug. Screws/plugs, for wall mounting the CDBS, are also supplied.

To mount a Repeater, perform the following:

1. Check the proposed position of the Repeater and ensure that:
 - A mains power supply is within 2 metres.
 - There is a minimum of 200mm's clearance on all sides of the Repeater.
2. Use the Repeater Wall Mounting Bracket (see figure below) as a template to mark the required holes. Ensure that the Repeater is level. Drill and insert the wall fixings for the No.6 round-head screws.
3. Run the PSU modular plug through the access hole before fixing the bracket to the wall with the two No. 6 round head screws.
4. Push the PSU modular plug in to it's socket on the Repeater.
5. Slide the Repeater onto the mounting bracket (a firm push is required to slide the Repeater lugs over the pins on the wall mounting bracket).
6. Connect the plug top PSU to the mains power supply. The lamp in centre of the front of the Repeater will light red for a few moments and then turn to green.



3. Attaching an Directional Aerial

The directional aerial is supplied with a wall mounting plate, screws and wall fixings. It also includes a 0.9m lead for connection to the directional aerial socket on the Repeater Base Station.

The face of the aerial should be mounted perpendicular to the parent DBS. The DECT system should be installed and the position of the Repeater plus directional aerial tested by making calls before finally fixing the wall mounting plate into place. The directional aerial then clicks into the wall mounting plate.

The Repeater Setup Program

Before a Repeater can be used, it must be setup with various settings; e.g. the base station number, system number, etc. The Repeater Setup program runs on a Windows based PC and require the serial lead and phone doubler from a DECT Repeater Programming kit.

Installing the Repeater Setup Program

The Repeater Setup program is supplied on floppy disks as a self-installing program. It is also available from the web site (<https://emea-businesspartner.avaya.com/index.asp>) as a self-extracting file.

Windows 3.x

1. Insert the first disk.
2. In program Manager, select **File** and then **Run**.
3. Type **a:\setup.exe** and then click on **OK**.
4. Follow the on-screen instructions for installing the CCFP Admin program.

Windows 95/NT

1. Insert the first floppy disk.
2. Click on **Start**. Select **Settings** and then **Control Panel**.
3. Select **Add/Remove Programs**.
4. In the **Add/Remove Programs Properties** menu click on the **Install/Uninstall** tab. Click on the **Install** button.
5. Windows will scan the floppy disk for a suitable installation file.
6. When it has located the file **setup.exe** on the floppy disk, click on **Finish**.
7. Follow the on-screen instructions for installing the CCFP Admin program.

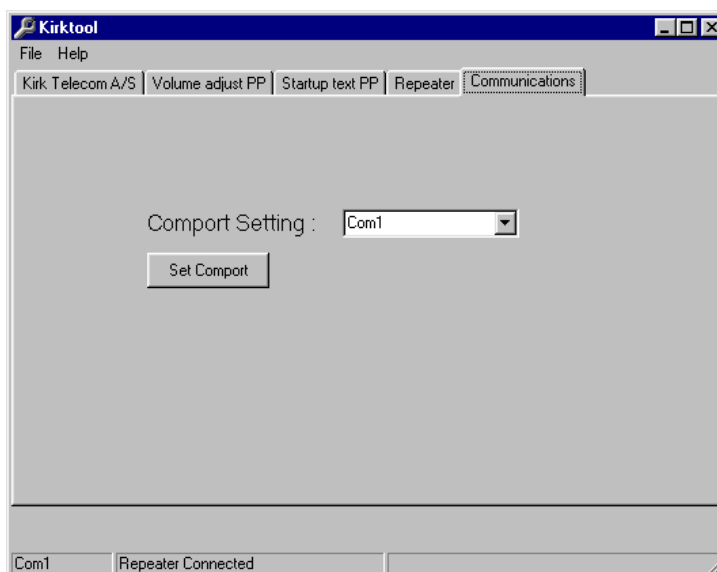
Connecting a Repeater for Programming

The Repeater Setup kit includes a phone socket doubler and a Serial lead. **The serial lead incorporates special components, do not use any other serial lead.**

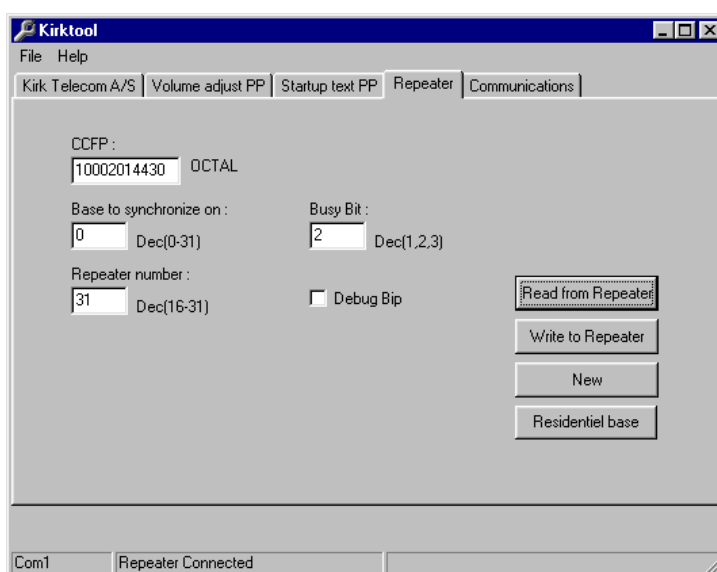
1. Use the doubler to connect the serial lead to the Repeater in parallel with the power supply connector. Ensure that the power supply is on.
2. Connect the serial lead to the PC on which the Repeater Setup program is installed.

Configuring a Repeater

1. Locate and click on the **Kirktool** icon.
Windows 3.x: Located in the desktop group **Kirktool**.
Windows 95/NT: Located in **Start | Programs | Kirktool**.
2. Click on **Communication** and set this to the **Comport Setting** (serial port) connected to the Repeater.



3. Click on **Repeater** and click on **Read from Repeater** to load the connected Repeater's current settings. These may be empty.

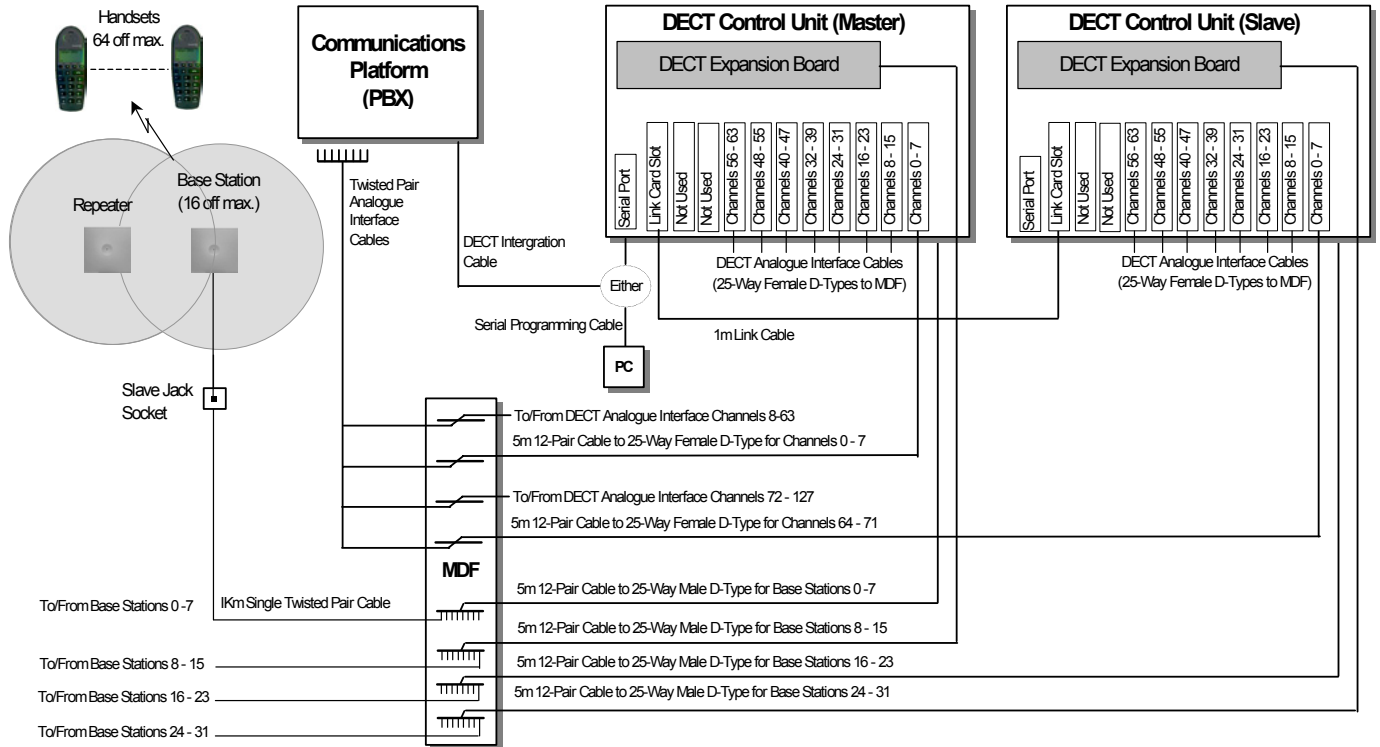


- **CCFP:** This is the number of the DCU. The number of the DCU can be found from the CCFP application (see *PC/CCFP Version on page 38*) Also ensure that the **Allow Subscription** is set to **yes** (see *Subscribing Handsets on page 26*).
 - **Base to synchronize on:** The base station number of the DBS with which the Repeater should synchronize.
 - **Repeater number:** The base station number for the Repeater.
4. Click on **New** and enter the required values
 5. Click on **Write to Repeater**.
 - Error messages appear if any values are not correctly set.
 6. Click on **Read from Repeater** and check that the values are as required.
 7. Click on **Exit**. You can now use the Repeater.

Linked DECT Systems

Introduction

The DECT Link Kit allows two DCU's to be connected. They then act as a single DECT system with one DCU taking the role of master and the other slave.



The Link Kit consists of:

- **Link Cards:**
These cards (one slave and one master) go into the left hand slots of each DCU motherboard. They provide an external connector for the DECT Link cable.
- **Link Cable:**
This cable connects between the two Link Cards. It is a 1m cable with male connector and one end and female connector at the other.
- **Replacement Eprom Chips:**
If either cabinet contains an 13298200 chip, it must be replaced with one of the 13298201 chips supplied in the Link Kit.
- **Software Disk:**
This disk includes version 5 SIO and associated files which are required for Linked DECT systems. It also includes new versions of F_APP_DB.DAT. It also includes a FLASH.KTB file for upgrading linked cabinets.

Upgrading Existing DECT Systems

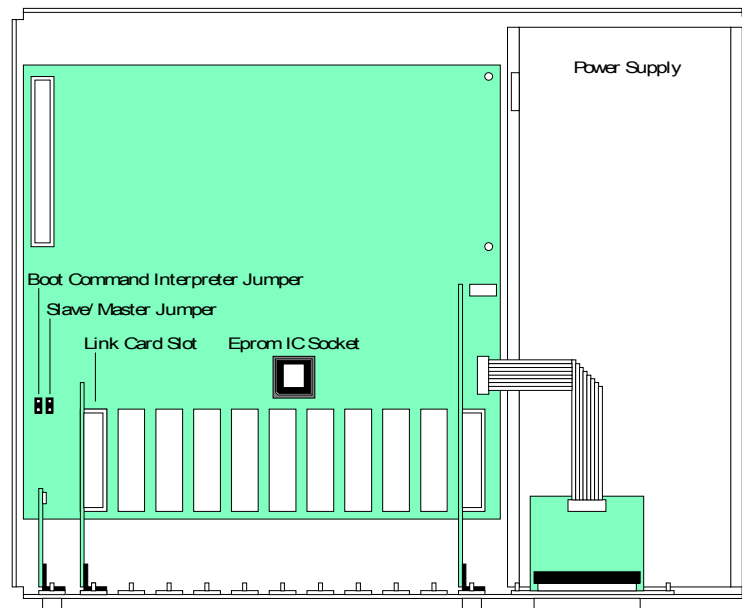
Link Cards can only be used in DCU's with HW PCS6+, SW PCS5+. If necessary the motherboard of any existing DCU must be upgraded to that level (by either replacing the motherboard or the whole DCU).

The Link Kit includes replacement Eprom chip to be used if necessary (see *Eprom Replacement on page 63*).

Installing a Linked DECT System

Install DCU's, DAB cards and base stations as normal. Note that the DCU's must be mounted horizontally level with each other and no more than 500mm apart to allow for Link Cable connection.

1. Ensure that the mains power supply to both Control Units is off. Remove the cabinet covers.



2. Check the Eprom chip in each cabinet. If either is an 13298200 chip, replace it with one of the 13298201 chips supplied in the Link Kit (see *Eprom Replacement on page 63*).
3. In each cabinet remove the blanking plate from the first available slot on the left (the slot next to the serial cable connector).
4. Insert the Link cards into those slots. Ensure that you insert the correct card into each DCU; the card for the master system has a female connector, the card for the slave system has a male connector. Connect the two cards using the supplied Link Cable.
5. You can program the system using either CCFP or SIO (see *either: Programming a Linked DECT System using CCFP on page 61 or Programming a Linked DECT System using SIO on page 62*)

Programming a Linked DECT System using CCFP

1. Ensure that the mains power supply to both Control Units is off. Remove the cabinet covers.
2. In each cabinet, at the bottom-left of the motherboard, are a pair of jumpers with one jumper connector.
3. In the Slave Cabinet, remove the jumper connector and in the Master Cabinet, place the jumper connector on the right-hand jumper (Slave/Master Jumper).
4. Apply power to both cabinets.
5. With your PC connected to the Master DCU (*for direct connection see page 31 or via a modem see page 33*) and CCFP running, select:
Options | Preferences | Link Setup
6. Select **Assign as Link System**. This will setup the system correctly and initiate reset of the CCFP Administration program. A configuration display appears:
Master/Slave System Configuration Detected
7. Program the system as per normal. E.g. the registration of handsets beyond 64 is automatically catered for by CCFP.

Programming a Linked DECT System using SIO

1. Ensure that the mains power supply to both Control Units is off. Remove the cabinet covers.
2. In each cabinet, put the jumper connector of the left-hand jumper (the Boot Command Interpreter jumper).
3. Apply power to both cabinets.
4. For Linked DECT systems, that are to be programmed using the SIO interface, the `f_app.dd.dat` file must be uploaded (see *Editing the DECT Database via SIO on page 68*).
5. Connect your PC to the Master Cabinet. Start the Link SIO program, it should attempt to connect to the Master Cabinet and then display the Boot Command Interpreter menu.
6. Enter **load f**. Enter **flash.ktb** to select the `flash.ktb` file in the same directory as the Link SIO program (alternatively add the required drive and directory). Press **Ctrl + Break** to exit the Boot Command Interpreter.
7. Repeat steps 5 and 6 for the Slave Cabinet.
8. Disconnect the mains power supply.
9. In the Slave Cabinet, remove the jumper connector. In the Master Cabinet, place the jumper connector on the right-hand jumper (Slave/Master Jumper).
10. Connect your PC to the Master Cabinet and start the Link SIO program. When the Boot Command Interpreter menu appears, enter **role** and select Master.
11. Restart the Slave and Master Cabinets.
12. Restart SIO and check that it connects to the Master Cabinet rather than switching to the Boot Command Interpreter menu mode. If this fails, check the jumper settings.

The following sections detail the known differences from programming a single cabinet DECT system using SIO.

Entering Handset Details

The `f_app.dd.dat` cannot currently be used to program users on DAB card channels in the Slave Cabinet. Enter the handset details for these users as if they were using the DAB card channels in the Master Cabinet. Then use the SIO command **USRMOVE** (Shift F7) to move each user to the appropriate DAB card channel in the Slave Cabinet. Then reload the `f_app.dd.dat` file with the required handset details for the Master Cabinet.

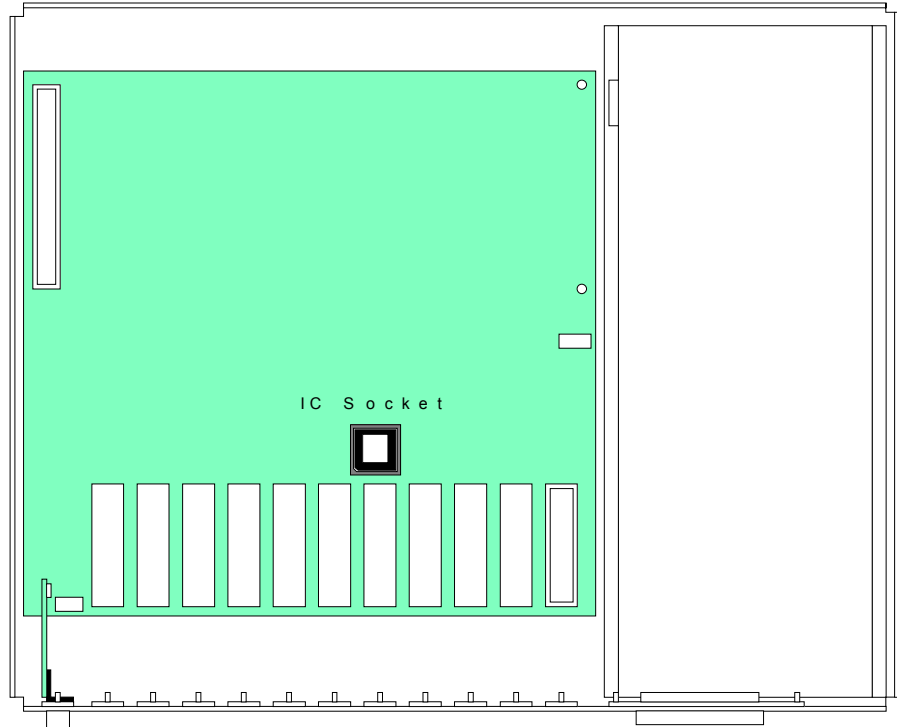
Subscribing Handsets to Slave Cabinet DAB Channels

Handsets registered to Slave Cabinet DAB channels can only currently be subscribed whilst the Master Cabinet's Base Stations are disconnected.

Eprom Replacement

For linked DECT cabinets, the Eprom 13298200 must be replaced with an Eprom 13298201 as supplied in the Link Kit. The upgrade requires a PLCC Extractor Tool (RS Component 404-727) and full anti-static precautions.

1. Ensure that the cabinet power supply is off but that the main lead is still connected. Ensure that you have taken suitable anti-static precautions.



2. The existing Eprom 13298200 chip is located in the IC socket as shown. Remove the chip using the PLCC tool.
3. Carefully insert the replacement Eprom 13298201 chip. Align the dot marked on the chip with the small triangle marked in the IC socket. The chip also has one corner chamfered to match the IC socket. Take great care to ensure that none of the chips pins are bent or damaged during the insertion. Check that the chip is properly seated into the IC socket.

Using SIO

Introduction

SIO is a DOS based program for configuration of DECT systems. It provides access to the similar features as CCFP but without a graphical interface.

This section covers the use of SIO PCS5a.

Installing SIO

To install SIO, all the files on the supplied SIO disk should be copied to a directory on your PC's hard disk. Amongst the files in the SIO directory should be:

- **SIO.EXE:**
The SIO program file.
- **F_APP_DB.DAT:**
A DECT handset database in plain text format.
- **F_APP_DB.KTB:**
A DECT handset database in binary file format.
- **APPDBKTB.EXE:**
The converter program for turning plain text handset database files into binary file format.

Running SIO

SIO is run from DOS.

1. Connect the DECT system or a modem to a PC serial port.
2. Start DOS and go to the directory containing the **SIO.EXE** files.
3. Enter **SIO /Cn** where **n** is the serial port number (if not specified SIO defaults to serial port 1).
4. **If Using a Modem:**
 - Press **C** when prompted on screen during SIO start up. This opens a basic comms screen for sending Hayes AT commands to your modem.
 - Enter any modem initialisation strings required by DECT (see DCU to Modem Programming Cable *on page 69*) or by your particular modem model. If you cannot see your typing in the comms window, enter ATE1 to turn local command echo on.
 - When completed press **F1** to return to SIO.
 - Press **F2** and enter the number to dial (once connected you can use **F3** to hangup).
5. Use SIO to program the DECT system.

SIO Commands

F1 - HELP

Pressing F1 starts the help function. Once started, pressing any other key combination will display help for that function. To end the help display press **Enter**. Press a down arrow cursor key to page down in the help display.

F2 - DIAL

Used to dial a number when using SIO with a modem connection.

F3 - HANGUP

Used to hangup an SIO modem connection.

F4 - MSFSETUP

Allows real time messages to be sent to 20DT handsets. The command prompts for the details to be entered, press **TAB** to move between options, press **Enter** to implement.

F5 - MFSINFO

The same as **F4- MSFSETUP** but without options for setting the call type.

F6 - MSFREL

End any MSF messages that has not been answered for a specific handset number.

F8 - PASSWORD

Not currently supported.

F9 - SYSTINFO

Show the PCS Version and details of the DECT Control Unit.

F10 - QUIT

Exit the SIO program.

Shift F1 - BACKUP

Downloads the DECT Database to the PC. The command will prompt for a file name (maximum 8 letters). When complete, the Status Field displays "system back-up complete".

Shift F2 - RESTORE

Loads a database file onto the DECT. The command will prompt for a filename in the same directory as the SIO program.

Shift F3 - USRREAD

Shows details of the settings of a DAB card channel. When entered, the command prompts for the IWU (DAB Card) and Channel number, use TAB to toggle between fields, press Enter to display details.

Shift F4 - USRREADAL

Displays the settings of all the channels on a DAB Card including name and standby text. The command prompts for an IWU (DAB Card) to be entered.

Shift F5 - USRCONFIG

Allows real time programming of any channel after prompting for the IWU (DAB card) and channel number. Use TAB to move between options and make changes, press **Enter** to implement.

Shift F6 - USSREM

Use this option with caution. Allows removal of any handset against the DAB card and channel selected.

Shift F7 - USRMOVE

Allows the handset programming set for one DAB card/channel to be moved to another DAB card/channel. Note: You can only move to a channel that is not already configured.

Shift F8 - IWUREAD

Shows the hex value of settings for a selected DAB Card.

Shift F9 - IWUCONFIG

Allows the setup of hex values for a selected DAB card. * indicates a default value.

- **Ringling Frequency Detection:**
01 = 13-60Hz, 02 = 20-60Hz*, 03 = 20-30Hz.
- **Recall Mode:**
Bit no = channel no with loop break = 1 and earth recall = 0 (see Note 1 below), e.g. FF = All loop break, 00 = All earth recall.
- **Recall Timing: Loop Break**
11 = 100ms*, 12 = 290ms, 13 = 630ms
- **Recall Timing: Earth Pulse**
01 = 400ms*, 02 = 2.5s.
- **Dial Mode:**
Bit no. = channel no with DTMF = 1 and pulse = 0 (see note 1 below), e.g. FF = All DTMF, 00 = All pulse.
- **DTMF Timing:**
01 = 80ms, 02 = 90ms*, 03 = 100ms, 04 = 150ms (PCS7+), 05 = 200ms (PCS7+), 06 = 250ms (PCS7+), 07 = 2500ms (PCS7+).
- **Pulse Timing:**
01 = 40ms/60ms, 02 = 34ms/66ms.
- **Dial Tone Detect Maximum Pause Time:**
01 = 3s*, 02 = 4s, 03 = 6s, 04 = 8s, 05 = 1s (PCS 7+).
- **Dial Tone Detect Filter:**
00 = 390-460Hz, 01 = 350-500Hz, 02 = 310-540Hz*, 03 = 270-630Hz.
- **Suppression:**
01 = On*, 03 = Off (+10dB).

Note 1: Some settings are per channel on the DAB. Each channels is set as a binary bit (0 or 1) in the sequence channel 1 to channel 8. The binary sequence xxxxxxxx (ie. Channel 1 to channel 8, 0 or 1 for each channel) is then converted to a hex value.

Shift F10 - SUBSCRIBE

Allows handset subscription to be allowed or barred . Enter 1 for allowed, 0 for barred.

Shift F11 - READ SOLO

Used to read all the users on a master or solo DCU. **Warning:** This command can cause the loss of any current calls.

Shift F12 - READ SLAVE

Used to read all the users on a slave DCU. **Warning:** This command can cause the loss of any current calls.

Ctrl F1 - EXCHREAD

Shows the exchange code set on the system.

Ctrl F2 - EXCHWRITE

Allows a new exchange code to be written to the DCU. No code should be entered for use with an INDeX PBX.

Ctrl F3 - RINGREAD

Shows whether the DECT is set to System (**S**) or Exchange (**E**) generated ringing.

Ctrl F4 - RINGWRITE

Allows the DCU ringing source to be entered as either System (**S**) or Exchange (**E**).

Ctrl F5 - TIMEREAD

Displays the Date and Time set on the DCU.

Ctrl F6 - TIMEWRITE

Sets the Date and Time on the DCU.

Ctrl F7 - CDMEASURE

Performs cable delay measurement to all base stations. Whilst performed the DECT system will be out of service.

Ctrl F8 - CDREAD M

Shows which base stations are active and the cable delay measurement for each base station on a master/solo DCU.

Ctrl F9 - CDREAD S

Shows which base stations are active and the cable delay measurement for each base station on a slave DCU.

Ctrl F10 – CCFP ROLE

Sets the DCU's function as Solo (single DCU system), Master or Slave (linked DCU system) or Solo No Traffic (used when changing a DCU's function). This command should be used with care as it requires appropriate jumper changes within the DCU's.

Alt F1 - SMLREAD

Shows the current status message level setting for the system.

Alt F2 - SMLWRITE

Sets the status message level setting for the system (from 0, 1, 2 and 3).

Alt F3 - READUSER

Read user data for a specified user number.

Alt F5 - CCSETUP

Currently not used.

Alt F6 - PPTEXTLD

Currently not used.

Alt F7 - PPMENULD

Currently not used.

Alt F8 - NEW PASSW

Currently not supported.

Alt F9 - RESTART

Restarts the DECT Control Unit without power being turned off.
Alternatively restart from the micro-switch on the DCU motherboard.

Alt F10 - LOADCODE

Loads new program code to the DECT Control Unit. The command will prompt for a file name in the same directory as the SIO program (e.g. FLASH.KTB). During loading the status field shows "program loading".

Editing the DECT Database via SIO

Edit the Text File

1. Using a text editor, open the file **f_app_db.dat**.
2. Read the notes contained within the file. Then alter and save the settings in the file to match the IWU card and handset details required for the DECT system.

Convert the Text File

1. From the SIO directory, run **appdbktb**. This converts **f_app_db.dat** (*a plain text file*) to **f_app_db.ktb** (*a binary data file for the DECT*).

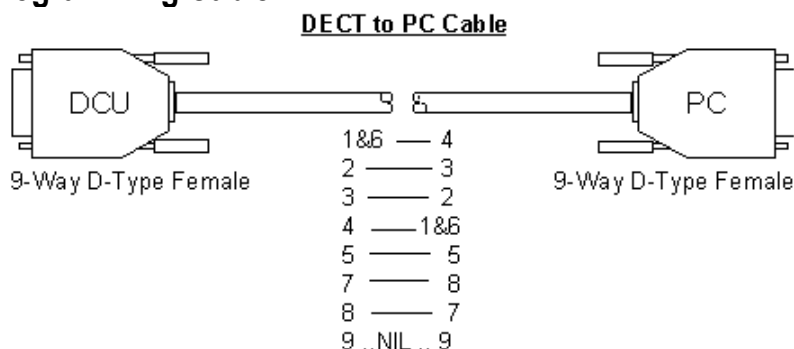
Upload the Binary File

1. Connect the programming cable from your PC to the DECT system.
2. Run **SIO**.
3. Press **Shift F2**.
4. Type in the name of the file to load (**f_app_db.ktb**) and press **Enter**.
5. After uploading, press **Shift F10** for handset subscription and enter **1** to allow subscription.
6. Subscribe any new handsets. Press **Shift F10** for handset subscription again and enter **0** to disallow any further subscription.

Appendices

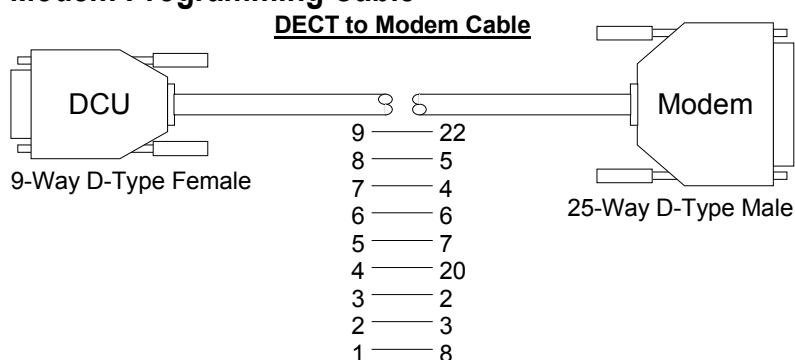
DECT Cables

DCU to PC Programming Cable



Note: This cable is also used for IP Office Integration.

DCU to Modem Programming Cable



When using a modem connection, both modem should use the settings below:

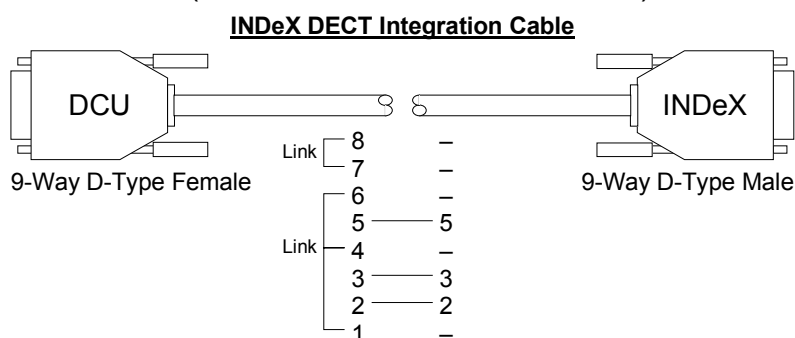
- **Baudrate:** 19.2K.
- **Data:** 8 bits.
- **Parity:** None.
- **Stop Bits:** 1.

The remote modem (connected to the DCU) must be set to Auto-Answer (AT S0=1), inhibit results codes to the DTE (AT Q1). The local modem (connected to the PC) must be set to DSR active (AT &S0).

DCU to INDeX Integration Cable

For IP Office Integration, use the DCU to PC Programming cable (see above).

Note: To maintain the INDeX system's CE and EMC approvals, only the Avaya supplied cable should be used (38YCND00001SAC – 2 metres).



Summary of Installing a New System

1. Install the Control Unit:

Cables 2m maximum from power supply, 5m maximum from MDF. Allow 200mm clearance on all sides. Fix mounting bracket to wall using four No.6 screws and suitable fixings. Hang cabinet on bracket.

2. Install the DECT Expansion Board: (optional)

Remove cabinet cover (four screws on base, two on either side). Insert support pillars onto motherboard and then plug in expansion board. Connect integral lead to position over existing socket.

3. Install the DECT Alog Boards:

Install into cabinet and connect to MDF using 25-way female D-type cable.

<u>Channel</u>	<u>Pin - Wire Pair</u>	<u>Channel</u>	<u>Pin - Wire Pair</u>
Channel 0	14 - White/Blue 01 - Blue/White	Channel 4	20 - White/Slate 07 - Slate/White
Channel 1	15 - White/Orange 03 - Orange/White	Channel 5	21 - Red/Blue 09 - Blue/Red
Channel 2	17 - White/Green 04 - Green/White	Channel 6	22 - Red/Orange 23 - Orange/Red
Channel 3	18 - White/Brown 06 - Brown/White	Channel 7	24 - Red/Green 12 - Green/Red

4. Connect PC for Programming:

- Install CCFP Admin and SIO if necessary.

5. Install Base Stations:

- **Connect from Control Unit to MDF:** Use cable with 25-way male D-type.

<u>Base Station</u>	<u>Pin - Wire</u>	<u>Base Station</u>	<u>Pin - Wire</u>
Station 0 (8)	01 - White/Blue 14 - Blue/White	Station 4 (12)	05 - White/Slate 18 - Slate/White
Station 1 (9)	02 - White/Orange 15 - Orange/White	Station 5 (13)	06 - Red/Blue 19 - Blue/Red
Station 2 (10)	03 - White/Green 16 - Green/White	Station 6 (14)	07 - Red/Orange 20 - Orange/Red
Station 3 (11)	04 - White/Brown 17 - Brown/White	Station 7 (15)	08 - Red/Green 21 - Green/Red

- **Connect from MDF to Slave Jack Sockets:** Connect to pins 3 and 4.
- **Mount Base Stations:** Use two No. 6 screws 130mm apart horizontally.

6. Configure Database:

- Run CCFP Administration.
- Alter the settings for all IWU cards.
- Perform a cable delay measurement.
- Setup the handset details and allow subscription.

7. Subscribe Handsets:

- **Subscribe each handset:** Press **MENU** and then **ENTER**.
- Use > to select **SUBSCRIBE** and then press **ENTER**.
- Use > to select **CREATE** and then press **ENTER**.
- When system ID is shown, press **ENTER** twice.

8. INDeX Level 8+ DECT Integration

- Set the port type of the two-wire ports to DECT.
- Connect the integration cable between the DCU and INDeX.
- Set the INDeX port speed to 19200.
- Start the DECT log running on the INDeX.

System Details Form

System Name & Location:

System Serial (ID) Number =

PCS Levels

H/W PCS

S/W PCS

DECT Control Unit (DCU)
DECT Analogue Interface (DAB)
Cards
DECT Base Stations (DBS)

Handset Details

DAB Card 0

DAB Card	Channel	Wire Pair	PBX Ext No.	PBX Circuit	Handset Serial No	User Name
0	0	Blue/White				
	1	Orange/White				
	2	Green/White				
	3	Brown/White				
	4	Slate/White				
	5	Blue/Red				
	6	Orange/Red				
	7	Green/Red				

DAB Card 1

DAB Card	Channel	Wire Pair	PBX Ext No.	PBX Circuit	Handset Serial No	User Name
1	0	Blue/White				
	1	Orange/White				
	2	Green/White				
	3	Brown/White				
	4	Slate/White				
	5	Blue/Red				
	6	Orange/Red				
	7	Green/Red				

DAB Card 2

DAB Card	Channel	Wire Pair	PBX Ext No.	PBX Circuit	Handset Serial No	User Name
2	0	Blue/White				
	1	Orange/White				
	2	Green/White				
	3	Brown/White				
	4	Slate/White				
	5	Blue/Red				
	6	Orange/Red				
	7	Green/Red				

DAB Card 3

<u>DAB Card</u>	<u>Channel</u>	<u>Wire Pair</u>	<u>PBX Ext No.</u>	<u>PBX Circuit</u>	<u>Handset Serial No</u>	<u>User Name</u>
3	0	Blue/White				
	1	Orange/White				
	2	Green/White				
	3	Brown/White				
	4	Slate/White				
	5	Blue/Red				
	6	Orange/Red				
	7	Green/Red				

DAB Card 4

<u>DAB Card</u>	<u>Channel</u>	<u>Wire Pair</u>	<u>PBX Ext No.</u>	<u>PBX Circuit</u>	<u>Handset Serial No</u>	<u>User Name</u>
4	0	Blue/White				
	1	Orange/White				
	2	Green/White				
	3	Brown/White				
	4	Slate/White				
	5	Blue/Red				
	6	Orange/Red				
	7	Green/Red				

DAB Card 5

<u>DAB Card</u>	<u>Channel</u>	<u>Wire Pair</u>	<u>PBX Ext No.</u>	<u>PBX Circuit</u>	<u>Handset Serial No</u>	<u>User Name</u>
5	0	Blue/White				
	1	Orange/White				
	2	Green/White				
	3	Brown/White				
	4	Slate/White				
	5	Blue/Red				
	6	Orange/Red				
	7	Green/Red				

DAB Card 6

<u>DAB Card</u>	<u>Channel</u>	<u>Wire Pair</u>	<u>PBX Ext No.</u>	<u>PBX Circuit</u>	<u>Handset Serial No</u>	<u>User Name</u>
6	0	Blue/White				
	1	Orange/White				
	2	Green/White				
	3	Brown/White				
	4	Slate/White				
	5	Blue/Red				
	6	Orange/Red				
	7	Green/Red				

DAB Card 7

<u>DAB Card</u>	<u>Channel</u>	<u>Wire Pair</u>	<u>PBX Ext No.</u>	<u>PBX Circuit</u>	<u>Handset Serial No</u>	<u>User Name</u>
7	0	Blue/White				
	1	Orange/White				
	2	Green/White				
	3	Brown/White				
	4	Slate/White				
	5	Blue/Red				
	6	Orange/Red				
	7	Green/Red				

Index

- A**
- Access Profile3,60
 - Account number25
 - Alert type45
 - Allow subscription ..25,26,27
 - Alog Board5,18,19,20
 - Alog settings19,20
 - Approvals3,60
- B**
- Base station
 - Cable measure23
 - Base Station6,21
 - Base Station Coverage .9,10
 - Battery charge43
- C**
- Cable delay22
 - Cable measurement....22,23
 - Cable requirements.....15
 - Cable ties14
 - Callback45
 - CCFP Setup24
 - Change communications
 - configuration.....31,33
 - Change system27
 - Chargers7
 - Com Port32
 - Comms ports31,33
 - Communications
 - configuration.....31,33
 - Compose45
 - Concrete10
 - Connection32
 - Control Unit5,16,22,57
 - Coverage
 - Practice10
 - Theory9
 - CW130815
- D**
- DAB5,18,19,20
 - DAB settings24
 - Date24
 - DBS6,21
 - DCU5,16,22,57
 - DEB5,17
 - DECT licence49,51
 - Delay22,23
 - Delete subscription28
 - Dial mode19,20
 - Dial Mode24
 - Dial tone filter19,20,24
 - Direct connection ...31,32,33
 - DTMF24
 - Dust15
- E**
- Earth pulse recall24
 - Edit45
 - Edit user25
 - EMC3,15,60
 - Environmental requirements
 -15
 - Exchange code24
 - Expansion Board5,17
- F**
- Fault returns16
 - FDMA4
 - Fire doors10
 - Flash transfer34
 - Flooding15
 - Frequency4
- G**
- GAP3,60
 - Global CCFP Setup24
 - Group message45
 - Groups46
- H**
- Handset registration25
 - Handset software version.43
 - Handset subscription...26,27
 - Hot Desk27
 - Humidity15
- I**
- Individual IWU Card Setup24
 - Installation
 - CCFP Admin30,58
 - Interference10
 - IWU settings24
- L**
- LD 24
 - Link Kit60
 - Load35
 - Load CCFP31,33
 - Local number25
 - Login27
 - Loop break recall.....24
- M**
- Mains supply15
 - Measure cable delay23
 - Measure cable delays.....22
 - Mesh10
 - Message
 - Send45
 - Messages44
 - Save35
 - MF 24
 - Modem32
 - Modem connection31,33
 - Move user25
 - MSF44
 - MSF Log Status34
 - Multi-Charger7
 - Multi-site Roaming.....27
- O**
- Open35
 - Operating Frequency4
- P**
- Packaging16
 - Page call45
 - Parts Required14
 - Pause Time24
 - Power supply15
 - Presentation text25
 - Pulse24
- R**
- Recall mode19,20
 - Recall Mode24
 - Receive Status34
 - Reflection10
 - Registration25
 - Remove45
 - Remove subscription28
 - Ring frequency19,20
 - Ringing Frequency24
 - Ringing mode24
 - Run CCFP31,33
- S**
- Save35
 - Save as35
 - Send message45
 - Serial interface setup32
 - Serial number25,28
 - Serial ports31,33
 - Settings19,20
 - DAB24
 - Settings IWU24
 - Short messages44
 - Signal measurement43
 - Signal Measuring11
 - Signal reflection10
 - Singles Charger7
 - Site survey11
 - Software upload34
 - Stair wells10
 - Standby text25
 - Start CCFP31,33
 - Status34
 - Subscription25,26,27
 - Non-SDX Handsets28
 - Supplementary MSF Status
 -34
 - Suppression24
 - Survey Base Station11
- T**
- TDMA4
 - Telephone cable15
 - Temperature15
 - Time24
 - Tools required14
 - Transfer flash34
 - Tripod11
 - Twinned DECT52
 - Two-wire signalling19,20
- U**
- Unsubscribe28
 - Upload software34
 - UPS Equipment15
 - Use callback number45
 - User name25
- V**
- Ventilation15
- W**
- Wire grills10
 - Write45

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