KIRK System 500
User's Guide

KIRK telecom A/S

1.0 KIRK System 500

The present User's Guide has been prepared and published by KIRK telecom A/S. This User's Guide describes the installation of the KIRK System 500.
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Before installing the KIRK System 500, please read carefully the present User's Guide.

1.1 The box contains.

- A KIRK System 500 control unit.
- A power supply (9V DC, 0,6 A).
- An installation CD-ROM containing documentation and software package for configuration.
- Quick guide.

1.2 The control unit features.

- Eight analogue (a/b) lines to be connected to the PABX.
- An RJ45 serial connection for messaging and a programming interface elsewhere referred to as RS-232.
- The capacity of up to 8 handsets and 6 simultaneous calls.

1.3 The handsets.

If you install the system without a PC connection, you will have to use a KIRK Z-3040 Handset as the Master Handset.

1.4 The KIRK Repeater (optional) features.

Up to 6 Wireless KIRK Repeaters can be added to the KIRK System 500 to expand its coverage area. The KIRK Repeaters can be programmed on-site either by using a KIRK Z-3040 Handset or via the "KIRK Tool" software.

2.0 Components of the KIRK System 500

PSTN lines

- **The base station /control unit shall be placed strategically correct for obtaining optimal coverage.**

- **6 Repeaters can be connected to increase the radio coverage.**

PABX

Base station

Repeater

8 a/b lines

RS232 Modem connection MSF, etc.
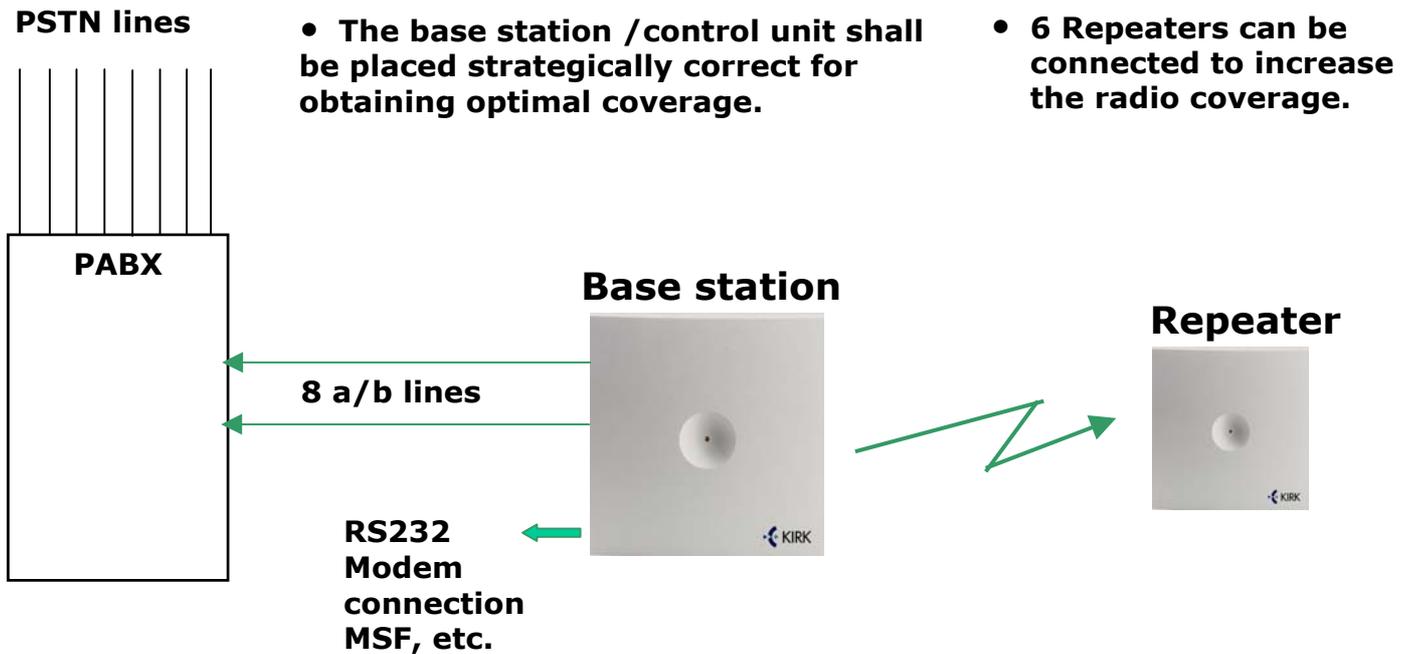
Possibility of connecting up to 8 handsets.

Up to six (6) repeaters may be added to the system providing additional coverage whenever needed.

3.0 Wiring of the KIRK System 500

3.1 Connections.
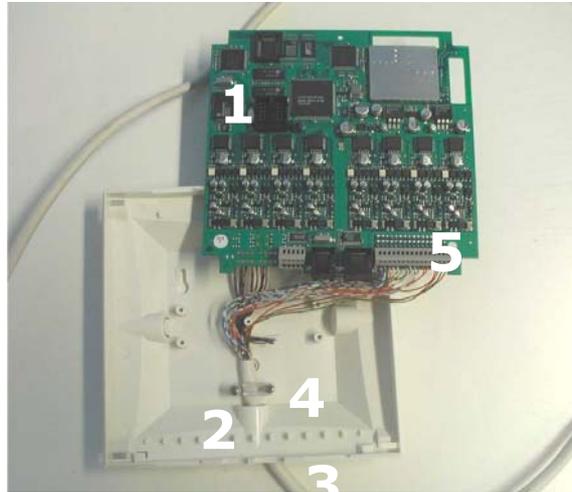
1. Remove the PCB from the housing.
2. Remove the "break out" at the bottom of the housing.
3. Introduce the cable into the housing.
4. Secure the cable by the attached Cable Bracket/screws.
5. Connect the wires into connector (see diagram below).

Power connection.
For **9V DC** is a 6/6 modular plug.

The connector for **RS232** is an 8/8 modular plug.

Hole 1
Hole 2
Hole 3

a/b connectors
Release of the internal spring can be achieved by pushing a 2*0,5 mm or similar small screwdriver into hole 1 or 2 while pushing the stripped wire into hole 3.
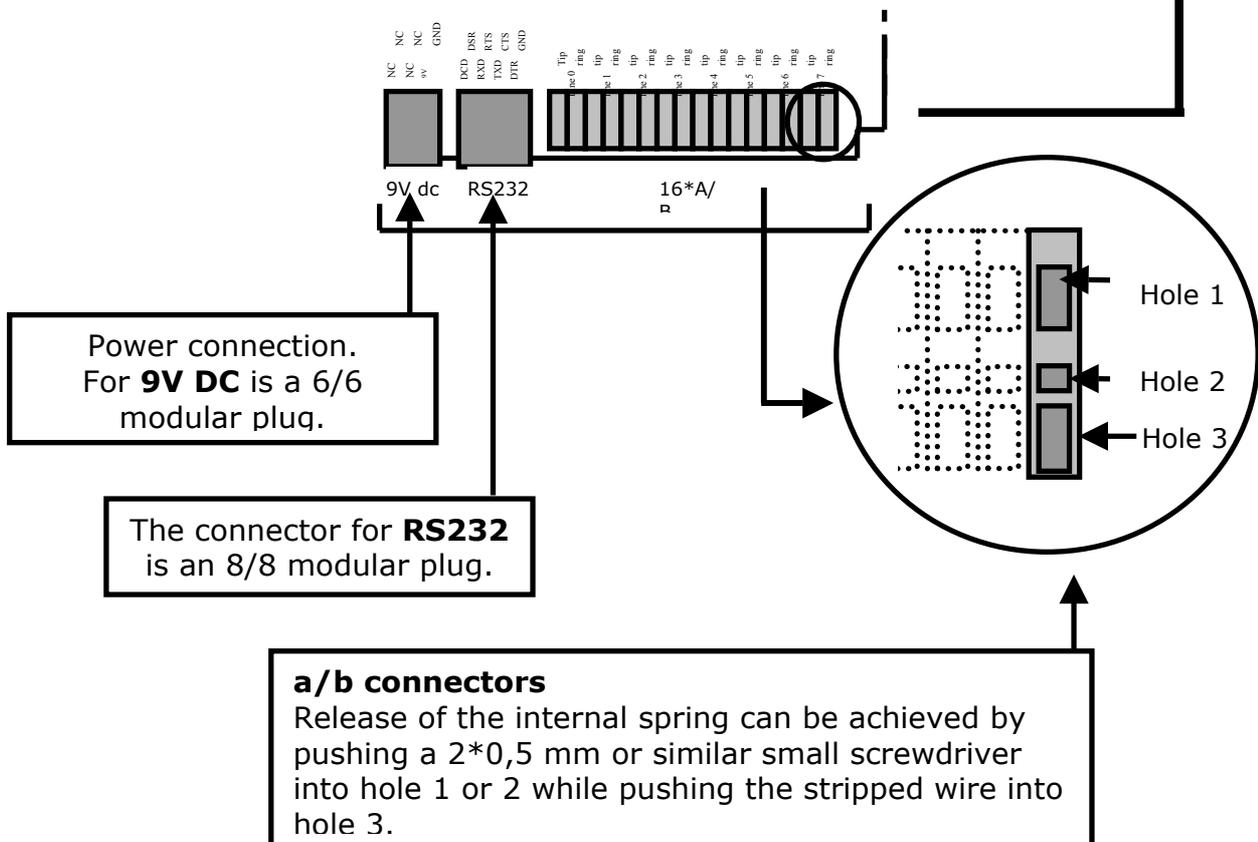
4.0 Programming handsets on KIRK System 500

4.1 Two ways of programming the KIRK System 500.

1. Either through a **MASTER** Handset.
   Please note that the Master Handset programming
   can only be exercised by using a KIRK Z-3040 Handset.

2. or through the **CCFP Administration Program** installed on the PC
   (Please refer to section **8.0** page **19**).

4.2 Registration of the Master Handset.

When powering up the KIRK System 500-control unit it will automatically enter into registration mode for a period of **15 minutes**. During this period you can subscribe the MASTER Handset. The registration mode is indicated by a fast flashing green LED on the control unit[1].

It is now possible to subscribe the first handset.
(Will automatically be configured to channel 00).

1. Power up the handset by pressing the **OFF HOOK** key.

2. Press the **MENU** *key.*

3. Press the **<** until " *LOGIN* " appears in the display*. Press ✓.*

4. Press **>** key once. "*SUBSCRIPTION CREATE* " will appear in the display.

5. Press ✓.

The handset starts searching for "your" KIRK System 500 - control unit. When the handset finds the system, a number appears in the display, which should match the serial number on the rear of the KIRK System 500 - control unit.

If the handset detects more than one system, an arrow will appear in the bottom of the display indicating that you can press the **>** key.

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[1] It is only possible to subscribe one MASTER Handset on each KIRK System 500 - control unit. The 1st handset subscribed will automatically become the **MASTER Handset**.

It is now possible to scroll between the numbers in the display by pressing either the **<** or the **>** key.

6. Press ✓ to confirm the ID number.

7. Press ✓ to confirm the AC Code and the system number (Each handset can be subscribed to 4 different systems). The display will show " *SUBSCRIPTION WAIT* " while the handset logs itself on to the system. A long tone indicates that the subscription has succeeded.

8. In the left corner of the display an antenna symbol (•) will appear indicating that the handset has been subscribed to the KIRK System 500 - control unit.

4.3 Entering the extension number.

To allocate an extension number to the handset:

1. Press the **MENU** key.

2. Press the **>** key until " *EXT. Service* " appears in the display*.

3. Press ✓ . The menu will now show *" CLIP-Stack "*.

4. Press **<** key until *"Read/Write user data"* appears in the display.

5. Press ✓. The Serial Number of the **MASTER** Handset will now appear in the display.

6. Press ✓. Enter the extension number of the user of the handset.

7. Press ✓.

8. Press the **MENU** key to return to standby mode.

Right after this, the handset has to be turned off (by pressing and holding down the ✓ key) and then on again. The extension number appears in the display.

The 1st subscribed Handset is the **MASTER** Handset, i.e. you are now able to configure further handsets to the system via this handset.

4.4 Registration of Additional Handsets via the Master Handset.

To register additional handsets **via** the **MASTER Handset**, the **MASTER Handset** has to "allow subscription" for each handset by registration of the serial number/s of the new handsets on the system.

The MASTER Handset:

1. Press the **MENU** key.

2. Press the **>** key until *" EXT. Service "* appears in the display*.*

3. Press ✓ **.** The menu shows *" CLIP-Stack ".*

4. Press the **<** key until *"Read/Write user data"* appears in the display.

5. Press ✓. The Serial Number of the **MASTER** Handset appears in the display.

To enter serial numbers of the additional handsets:

6. Press the **>** key, until an empty position has been reached (channel 1 – 7). If the position is empty, the display shows " _____".

7. **Enter** the Serial Number of the new handset (to be found on the label under the battery), e.g. 00077 0164824. Please note; the Serial Number *has* to be entered as contiguous characters.

8. Press ✓ .

9. The chosen channel number appears in the display.

10. **Enter** the extension number.

11. Press ✓ .

The MASTER Handset has now registered new handset/s with the corresponding serial number/s to the system. You can now subscribe the additional handset.

By pressing the **>** key, additional handsets can be registered according to the procedure as above mentioned.

- Press **MENU** to go back to standby mode.

4.5 Subscription of KIRK Handsets.

1. Power up the Handset by pressing the **OFF-HOOK** key.

2. Press the **MENU** key*.*

3. Press the **<** key until *″ LOGIN ″* appears in the display*.* Press ✓ .

4. Press **>** key until " *SUBSCRIPTION CREATE* " appears in the display*.*

5. Press ✓ . The handset starts searching for "your" KIRK System 500 - control unit.
   When the handset finds the system, a number appears in the display that should
   match the serial number on the back of the control unit.

   If the handset detects more than one system, an arrow appears in the bottom of the
   display, indicating that you can press the **>** key. It is now possible to scroll between
   the numbers of available systems in the display by pressing either the < or the >
   key.

   It is important that the number shown in the display is identical to the ID number,
   indicated on the rear of the KIRK System 500 - control unit.

6. Press ✓ to confirm the ID number.

7. Press ✓ to confirm the AC Code and the system number (Each handset can be
   subscribed to 4 different systems). The display will show " *SUBSCRIPTION WAIT* "
   while the handset logs itself on to the system. A long tone indicates that the
   subscription has succeeded.

8. In the left corner of the display an antenna symbol (•) appears indicating that the
   handset has been subscribed to the KIRK System 500 - control unit.

4.6 Cancellation/de-subscription of a Registered handset via the Master Handset.

Use the MASTER Handset and

1. Press **MENU**.

2. Press **>** until *" EXT.Service "* appears in the display.
   Press ✓ *.*

3. Press the **<** key until *" Delete Userdata "* appears in the display*.* Press ✓ **.**

4. Press the **>** *key* until the handset you would like to remove has been reached (channel 1 – 7). The number should correlate to the serial number of the handset that is to be removed.

5. Press ✓ *.*

6. Press **MENU** to go back to standby mode.

Please note:
The only way of removing the Master Handset is via the CCFP Administration Program.
(Please refer to section **8.4/8.5** page **22**)

5.0 Deployment

5.1 Introduction.

The **KIRK System 500** supports **6 simultaneous conversations** while each **KIRK Repeater** only supports **2 simultaneous conversations** at a time.
Repeaters in chain – in the whole chain - supports **2 simultaneous conversations**.

Before installing the KIRK System 500 on-site, the number of simultaneous users within different areas of the site and the need of coverage area should be thoroughly discussed and agreed upon with your customer.

In co-operation with your customer you map out the areas in which the users typically are concentrated. According to this it is calculated whether or not additional Repeaters are needed and where they would have to be placed.
Please do not forget to consider whether or not it would be necessary to obtain 100% coverage at the site in question.

The final result of the performance of the system can only be satisfactory identified after the installation has been completed.

Before fulfilling the deployment, you would need a clear understanding of the material composition of the site of the installation, while some materials might reduce the signalling of the system.

Please be aware of

- **Metal surfaces:**
  produce increased signal reflection and reduced signal pass-through.

- **Windows with reflective film or specialized glass:**
  produce increased signal reflection and reduced signal pass-through.

- **Wire Meshes and Grills with apertures of less than 4cm:**
  block signals as effectively as continuous metal sheet.

- **Fire Doors:**
  block the signals.

- **Shadows:**
  "shadows" may be created in parts of the building, i.e. there might emerge spots where no radio signals exist at all.

- **Weather conditions and seasons of the year:**
  Different weather conditions might influence the stability of the radio coverage.
  Parts of buildings getting wet might act as a shield to the radio coverage.
  Different seasons of the year might also influence on the radio coverage.
  At leafing foliation the trees in the surroundings of a building might change the radio coverage as a result of the shielding created by the leaves of the trees.

During measurement of the radio coverage you will also have to take the influence of the human body into consideration.
This can be done either by shielding the antenna with your hand or by rotating the handset and your body simultaneously in a way to achieve a "worst case" situation for reception of the radio signal from a given control unit or a Repeater.

When deploying[2] you will have to move around with a KIRK Z-3040 handset[3] in "testing mode" in the area to be covered by the KIRK System 500-control unit and the Repeater(s).
(Please refer to section **6.0** page **13**).

Please notice fulfilling a thorough and careful deployment is essential for optimizing the handover between the control unit and the Repeater(s) before final installation of the system.

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[2] = radio signal checking
[3] not necessarily the Master Handset, but definitely a KIRK DECT handset

6.0 Radio Signal Checking – (deployment) Test display

To start the deployment, power up the KIRK System 500 - control unit.

As mentioned in 5.0 you will have to move around in the area with a KIRK Handset in special "testing mode" to be covered when deploying as well as listening to the audio quality of the handset.

The KIRK Z-3040 Handset (subscribed to the KIRK System 500 - control unit) has to be used for checking the signal strength and quality being received securing proper handover.

Measuring the radio coverage can be done the following way.
The values to be checked are the Q-value and the RSSI-value whilst moving away from the KIRK System 500 - control unit and/or the Repeater(s).

To start deploying, dial ***99989*** and **press ✓** - and go **OFF-HOOK.**
Please note that the handset has to be subscribed to the system before starting deploying (Please refer to section **4.5** page **9**) and the handset has to be in OFF-HOOK mode.

```
RPN: 02  03  04
RSS: 96  72  65
01   64  :2 140
```

RPN: is the **alternative** repeater or the KIRK System 500 - control unit[4] number, e.g. repeater no. 02 or repeater no. 03.

RSS: refers to the **signal strength** (RSSI) from either the alternative Repeater or the KIRK System 500-control unit.

<u>01</u> **:** the number indicates the **actual** number of the KIRK System 500-control unit or Repeater that the handset has connected to. Please note that the KIRK System 500-control unit always has number 01.

<u>64</u> **:** refers to the **speech quality** (BIT ERROR RATE) of the signal received from the KIRK System 500-control unit or the Repeater.
Only the speech quality of the active connection is shown. Optimum level is 64 and should not be less than 52.

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[4] the KIRK System 500 - control unit's value is always 01.

Be aware that this value has to be **stable** (not fluctuating).

:2 : **RSSI -** refers to the **signal strength** from the actual Repeater or the KIRK System 500-control unit to which the Handset is connected. You will find the RSSI maximum level by standing close to the KIRK System 500 - control unit. Moving away from the control unit the value of the RSSI level might drop up to 20 dB and still having a satisfactory audio quality.
If the handset shows **:X** it's not a failure, but an indication of the RSSI level being = 100 or higher.
The indication :X has been made this way because it is only possible to show 2 digits in the display.

140 : Displays the **frequency** and the **timeslot** that the handset uses. Do not take these values into consideration during measurement of the radio coverage.

To **clear the display** press < and hold for 3 sec.

Please note:
The RSSI value given in the display is not a calibrated indication; i.e. the RRSI value may vary from handset to handset.

7.0 KIRK Repeater

7.1 The KIRK Repeater.

In some situations you might need to expand the coverage area of the KIRK System 500. A KIRK Repeater adds a larger area to the already existing coverage area.

Please note the following:

- *The KIRK Repeater does not add capacity, i.e. further channels, but only a larger coverage area*

- *The KIRK Repeater can only be registered on the system when placed within the coverage area of the control unit itself or an already installed KIRK Repeater*

The KIRK System 500 contains 6 available speech channels in the coverage area of the control unit.

A KIRK Repeater covers 2 simultaneous speech channels. These 2 channels are "borrowed" from the KIRK System 500-control unit and are **not** additionally channels to the system's 6 channels in total.

Each handset uses one channel when making a call – internal or external.
Thus, in total 6 handsets are able to handle traffic simultaneously.

When 6 handsets are " in the air " the system sends out a busy signal. On KIRK Handsets a flashing antenna icon in the bottom left side of the display indicates that the system is busy.

7.2 Two ways of programming the KIRK Repeater.

1. Either through a **KIRK Handset**.

2. or with the **KIRK Tool** (Please refer to section **9.0** page **25**).

7.3 Connection of a KIRK Repeater (WRFP) to the KIRK System 500 via a KIRK Z-3040 Handset.

1. Power up the KIRK System 500 - control unit and a subscribed Handset.

2. Turn on the KIRK Repeater (WRFP) for more than 1 second and less than 5 seconds[5]. Turn off the WRFP and turn it on again. The WRFP is now in subscription mode (for 5 minutes) indicated by a fast flashing LED.

3. Press the OFF-HOOK key.
   If the WRFP is synchronized with the requested control unit the LED lights constantly[6].

4. Select Radio Part Number (RPN).
   Press a number on the handset in the range between 2 and 7. When the number has been accepted by the WRFP the LED flashes the number of times corresponding to the typed digit.

5. Accept subscription identities by pressing the *-key. When the key is accepted by the WRFP the LED indicates that by turning off for 2 seconds.

6. The WRFP now restarts with the new subscription identities in normal mode. The LED light constantly for 5 seconds and the WRFP is then ready to use.

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[5] In normal operation mode the LED lights constantly 5 seconds after powering up. Afterwards the LED flashes as long as the WRFP is unsynchronized and lights constantly when synchronized to the control unit. Whenever a connection has been established via the WRFP, a short flash appears in the LED.
[6] If the LED does not light after pressing the Hook-key or INT-key a few times, the WRFP has probably synchronized with another control unit than the one you searched for. Should this be the situation, the subscription procedure has to be repeated from step 2.

7.4 Examples of different ways of installing Repeaters in a KIRK System 500.

7.4.1 Example 1

The KIRK System 500 - control unit has to be located in the area where most of the phone traffic will take place. KIRK Repeaters in chain can be established.

Please note:
The Repeater chain can only handle 2 simultaneous calls.
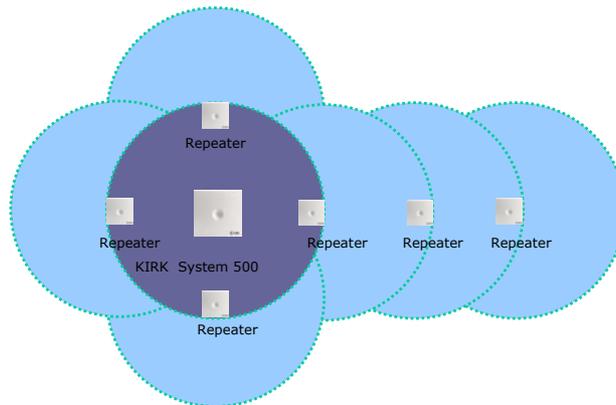
The remaining KIRK Repeaters increase the coverage area.

7.4.2 Example 2

The KIRK System 500 - control unit can be placed centrally with KIRK Repeaters enlarging the coverage area around the outer edge of the premises.

Please note:
KIRK Repeaters have to overlap the coverage of the KIRK System 500-control unit for the system to work properly.
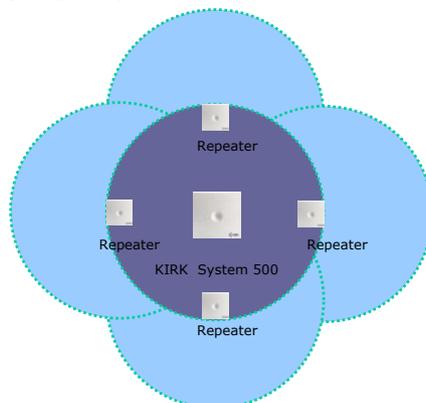
7.4.3 Example 3

Remote sites up to 1 Km (in line of sight) from the main site can be incorporated into the system by means of a wireless KIRK Repeater equipped with an optional external antenna amplifying the received signal from the KIRK System 500 - control unit or the KIRK Repeater it is logged on to.
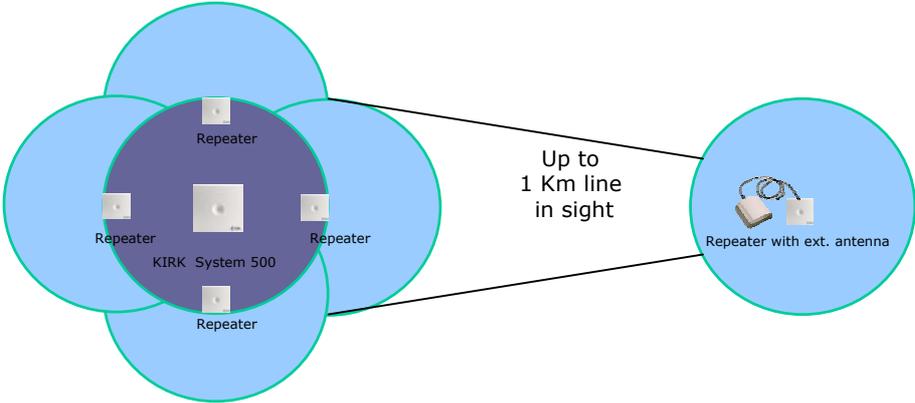
8.0 Programming handsets by use of the CCFP Administration Program on a PC

You will need the **CCFP Administration Program** to program the KIRK System 500 - control unit via this method. The program can be downloaded from www.kirktelecom.com.

8.1 Installation of the CCFP Administration Program on your PC.

1. Unzip the file to a new directory.

2. **Run** the setup.exe file from the new directory.

3. Follow the on-screen instructions for installing the CCFP Administration Program.

4. **Launch** the program to get all the files copied.

5. Start the CCFP Administration Program and follow the instructions to complete the installation.

8.2 Starting the CCFP Administration Program

1. Ensure that the KIRK System 500 is powered up and that the serial cable (null-modem cable) is connected. Please refer to the "RS232 cable layout" (**11.0** page **29**) section in this manual for configuration.

2. Click on the CCFP Administration icon.
Windows 95/98/2000/NT/XP: Located in **Start | Programs | CCFP Administration**.

1. A start-up window appears. The lower part of the window shows the current communication settings used for connecting to the DECT system.
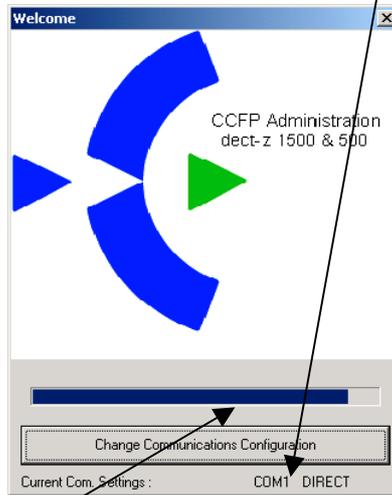
2. The moving bar across the window allows changing of the communication settings *(see 8.3 "Changing the Communications Configuration")* before it attempts to make the connection with the KIRK System 500 - control unit.

3. After a caution message (KIRK System 500 detected), the main CCFP Administration screen appears.
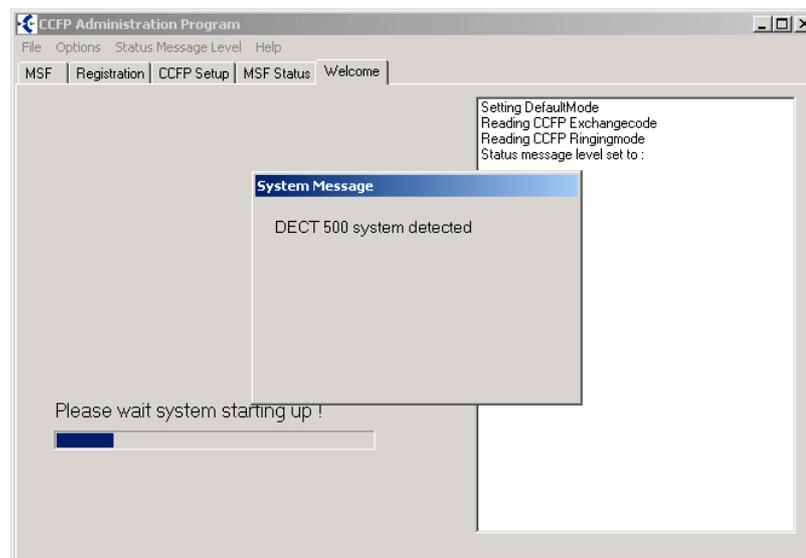
5. For direct communication (*Comport 1*) go to **8.4 Registering Handsets**.

8.3 Change of the Communications Configuration.

1. Whilst the start-up window is shown, clicking on **Change communications configuration or the space bar** pauses the start up and displays the **Communications Set Up** menu.
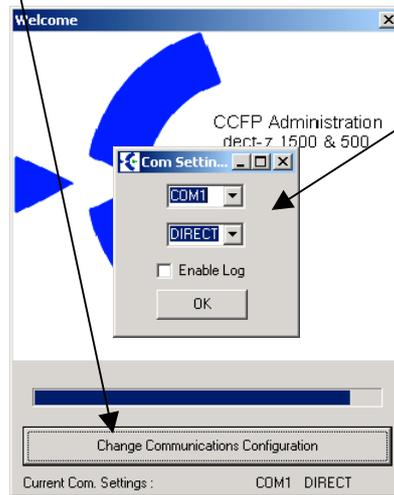
2. Set the **Com Port** to match the serial port of your PC connected to your KIRK System 500-control unit (Com 1-4 can be chosen).

3. Set the **Connection:** to the type of connection required.
   If a **modem connection** is set, then a dial up screen will appear.
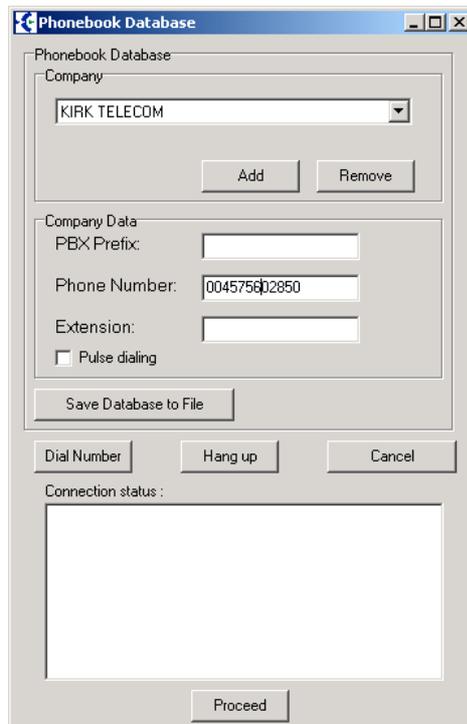
8.4 Registration of Handsets.

The **Registration** page of the CCFP Administration Program displays all the information for registering handsets. The top sections of the screen show all the available channels and handset information. The lower part of the screen shows the settings for an individual channel. It provides you with the options of **Deleting** or **Moving** users.

8.5 Registration/Editing User Settings.

In the **Create/Edit - Current User data** section, enter your information in the bottom line as required.

Please note:
The only way to **remove/delete** the Master Handset is via the CCFP Administration Program.

- **Serial No.:**
is the handset's serial number. For KIRK Handsets this is found on a label under the battery. It consists of a 5-digit handset type and then a 7-digit handset number separated by a space.

- **AC No.:**
is an option account code of up to 8 digits. If set, then the authorization code has to be entered as a part of the subscription process (AC:). This is usually kept blank.

• **User Name:**
may contain up to 10 characters. Shown in the display of the DECT handset called by the user.

• **Local No.:**
is the handset's extension number on the attached PABX.

• **Standby Text:**
may contain up to 24 characters. Shown when idle but in range of a KIRK System 500. If followed by a space and **\L** the Local number is displayed as well.

• **Presentation Text:**
may contain up to 32 characters. Shown in the display of the DECT handset calling the user.

Please note:

User Name/Local no.: – sent to the called part as clip (internal call).

Presentation Text: - sent from the called part - to the calling part (internal call).

Example:

John Smith calls Mary Jones:

In the display of John Smith the **Presentation text** from Mary Jones "**You called Mary Jones**" will appear.

In the display of Mary Jones the **Name** and **Local number** of John Smith will appear "**John Smith 11**".

8.6 Subscription of Handsets.

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

Please note:
Subscription is default set to <u>ALLOW</u> in the KIRK System 500.
(Please refer to section **4.5** page **9** Subscribing KIRK Handsets)

8.7 For further use of the CCFP Administration program please refer to the <u>Help file</u>

9.0 Repeater Programming via the KIRK Tool Program on a PC

9.1 Installation of the Repeater Programming Software on your PC.

This software, KIRK Tool, is available from www.kirktelecom.com as a zipped file.

1. Unzip the file to a new directory.

2. **Run** the **setup.exe** file from the new directory.

3. Follow the on-screen instructions for installing the KIRK Tool Program.

9.2 Connecting a KIRK Repeater for Programming.

The KIRK Repeater programming tool includes a phone socket double adapter and a serial cable.

The serial cable incorporates special components,
<u>DO NOT USE ANY OTHER SERIAL CABLE</u>.

1. Use the double to connect the serial cable to the KIRK Repeater in parallel with the power supply connector. Ensure that the power supply is on.

2. Connect the serial cable to the PC on which the KIRK Tool Program is installed.
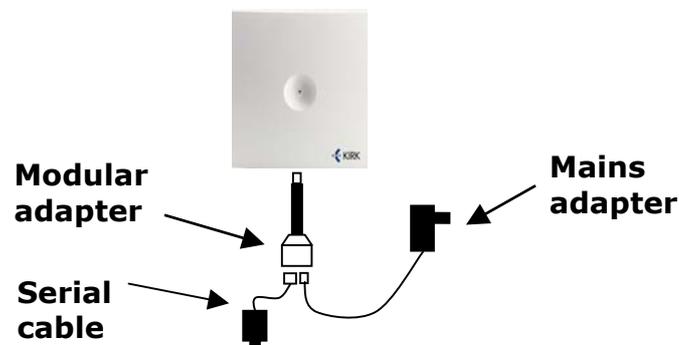
9.3 Configuration of a KIRK Repeater.

1. Start up the **KIRK Tool** application.

2. Click on **Communication** and set the **Comport** (serial port) connected to the KIRK Repeater. Click on **Set Comport** even if the default setting is correct**.** Ensure that the KIRK Repeater is connected as indicated below.
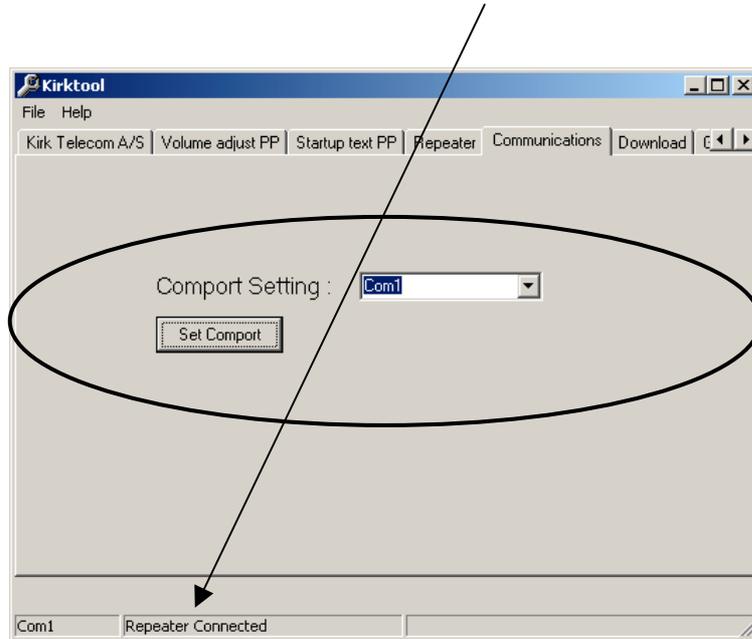
3. Select Repeater tab.

4. Click on the **Residential Base** button.
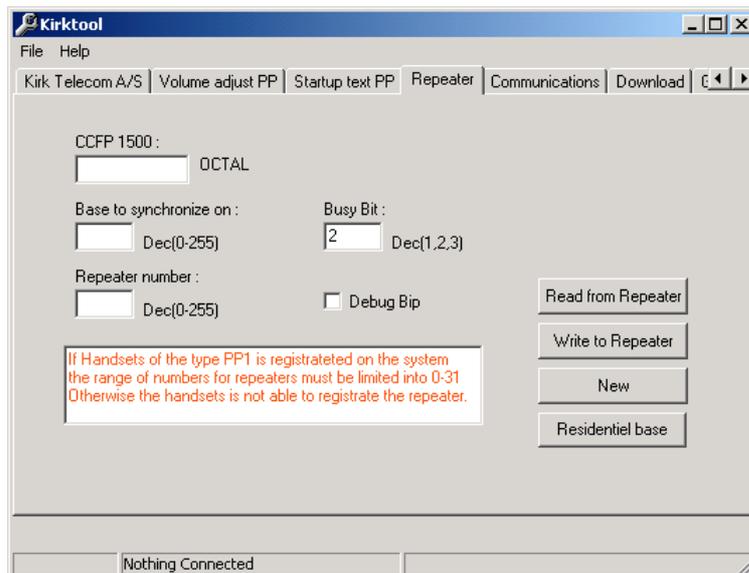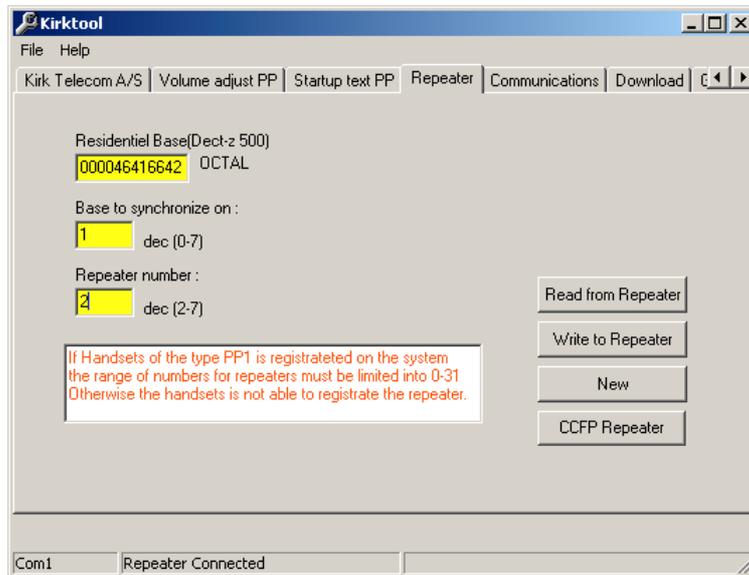
5. Under the **Repeater** tab, enter the values required :

*   **Residential Base (System 500):** This is the serial number of the KIRK System 500-control unit. It appears on the label on the rear of the KIRK System 500-control unit, e.g. 000046416642.

*   **Base to synchronize on:** The control unit number. The KIRK System 500-control unit is set to 1 by default.

*   **Repeater number:** The user assigned number for the Repeater. Each figure must be a unique number between 2 and 7.

6. Click on **Write to Repeate**r.

7. Click on **New**.

8. Click on **Read from Repeater** and check that the values are as required.

9. Click on **Exit**. You can now install and use the Repeater.

9.4 For further use of the KIRK Tool Program, please refer to the <u>Help file</u>.

10.0 KIRK System 500 RED/GREEN LED Indications

1. Fast flashing green means empty system with Subscription Allowed (Master handset). This mode is active for 15 minutes.

2. Constantly green means in operation and ready for use and no active connections.

3. Slow flashing green means in operation with active connection(s).

4. Fast flashing red means empty system with Subscription (Master Handset) not allowed. The system enters into this mode after 15 minutes.

5. Slow flashing red means in operation with the maximum of active connections (Busy).

6. Continuously flashing red/green light means faulty situation, or in flash programming mode (Power up of the system with the 'BOOTSTRAP" jumper mounted).

11.0 RS232 Cable layout

In the KIRK System 500-control unit, the connector to the external is an 8-pole modular plug. In the other end of the cable a 25-pin male DSUB is used for connecting to a typical modem, and a 9-pin female DSUB when connecting to a PC or similar equipment. Please notice that the interface is used for short distance connection to the PC or similar equipment only.

11.1 Modem cable connection layout.

For connection to/from Modem to the system

8-pin modular plug			25-pin male DSUB	
DCD	1	——	8	DCD
DSR	2	——	6	DSR
RXD	3	——	3	RXD
RTS	4	——	4	RTS
TXD	5	——	2	TXD
CTS	6	——	5	CTS
DTR	7	——	20	DTR
GND	8	——	7	GND
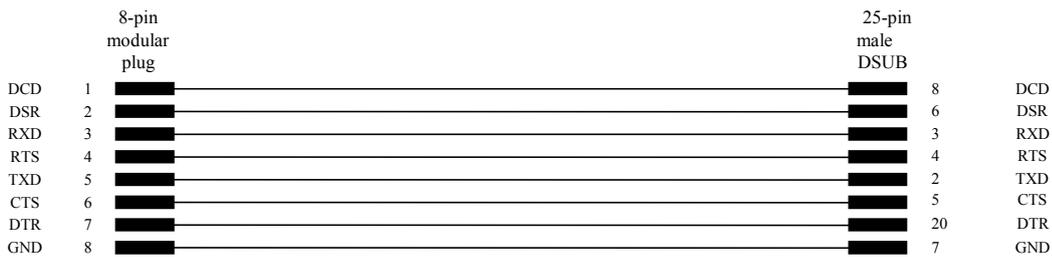
11.2 Null-Modem connection layout.

For PC Programming – connection from the PC to the system

8-pin modular plug			9-pin femal DSUB	
DCD	1	——	4	DTR
DSR	2			
RXD	3	——	3	TXD
RTS	4	——	8	CTS
TXD	5	——	2	RXD
CTS	6	——	7	RTS
DTR	7	——	1	DCD
			6	DSR
GND	8	——	5	GND