**For Further Assistance**

If, after reading this guide, you are still experiencing difficulties, please contact the Communicate Helpdesk on **01344 291294** where one of our expert staff will be pleased to assist you.

# Liberty™ GSM

A concise, helpful user guide
for Communicate's

**Liberty™ GSM PC Card**

for use with the

**Orbitel 907**

data compatible phone.

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**March 1996 • P/N: 42101246 • V1.0**

CE This product complies with the EMC directive 89/336/EEC.

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Communicate Ltd. warrants that the hardware furnished will be free from defects in materials or workmanship under normal use in the warranty period and will conform to the documentation. The hardware is tested in production to the standards stipulated by the British Approvals Board for Telecommunications but it cannot be tested in every possible combination and environment. Therefore, Communicate Ltd. does not warrant that the operation of the hardware will be uninterrupted or that the hardware will be error free.

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### Important Notice

All warranty enquiries should, in the first instance, be directed to the dealer from whom you purchased the equipment

# Welcome

Thank you for purchasing the Liberty™ GSM card from Communicate.

The Liberty™ GSM is designed to work with the data compatible Orbitel 907 phone and personal computers equipped with PC Card slots.

This compact PC Card device uses state-of-the-art miniaturisation techniques and international communication standards to ensure that you are data-connected, wherever you are.

## MessageLink™

The Liberty™ GSM card fully supports the Orbitel MessageLink™ system which allows you to create, edit, store, copy, reply to or forward SMS (Short Message Service) messages using your computer system. This instantly gives you the advantage of a full size keyboard and display when creating and reading SMS messages.

## Handling the Liberty™ GSM card

Whilst your Liberty™ GSM card has been built to withstand the normal wear and tear of everyday use, you should take care to minimise any risk of physical or electrical damage.

**To ensure long and reliable service, please:**

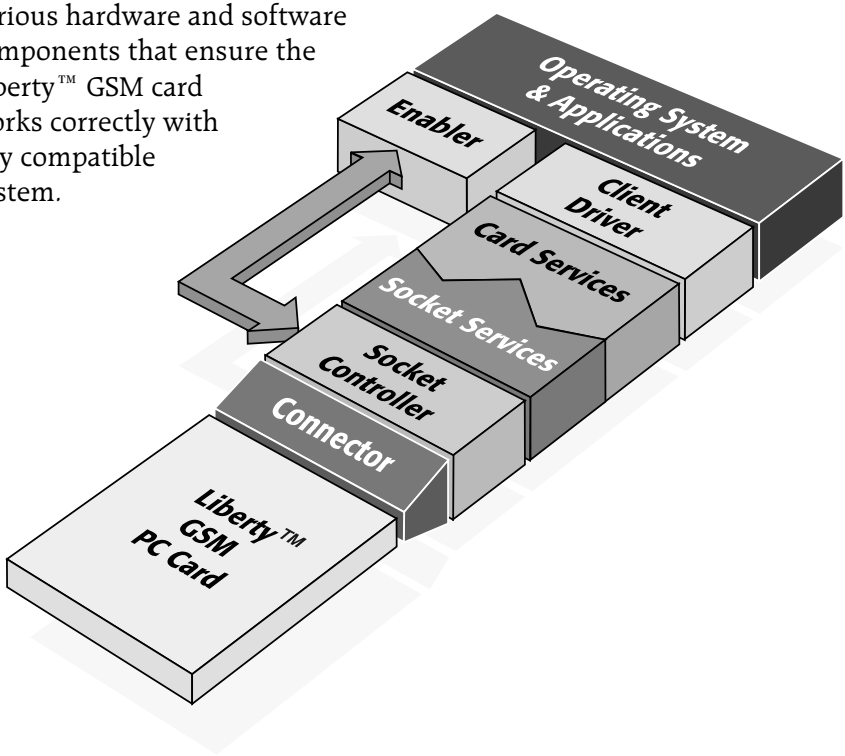
- Keep the card dry,
- Don't let it get dirty or dusty,
- Avoid situations in which static electricity might build up.

# Contents

# 1 • The PC Card Specification - Explained

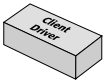
Conceived as a basic standard to rationalise the design of plug-in memory cards for mobile computers, the PC Card (previously PCMCIA) specification has matured rapidly in the past few years. This specification has proved to be the catalyst for a wealth of miniaturised, high performance and easily attachable peripherals such as the Liberty™ GSM card. During the development of the specification there have been numerous additions to the capabilities and complexities of the various hardware and software elements.

A central aim of the updated standard is to ensure that any PC Card peripheral can be used in any system that has the appropriate slots. While this may sound straightforward, in practice there are a number of problems posed by the sheer diversity of peripheral cards, computer systems and operating systems that are available. The solution has been to insulate the operating system from the underlying hardware components using intermediary software layers. The diagram below indicates the relationships of the various hardware and software components that ensure the Liberty™ GSM card works correctly with any compatible system.



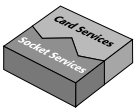

The **Operating System and Applications** on the system communicate first of all through one of two main types of driver - an Enabler or a Client Driver.

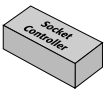
The more basic of the two, the **Enabler**, is derived from the early days of the PC Card specification when none of the lower software layers were implemented. The Enabler communicates directly with the Socket Controller hardware and, as such, provides basic support for a specific type of PC Card.


The **Client Driver**, a more recent addition to the PC Card specification, informs the Operating System how to talk to PC Cards and forms a link to the next two, closely integrated software layers: Card and Socket Services.

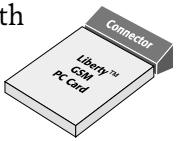
**Card Services** presents a standard interface to the Operating System at one end while meshing with Socket Services at the other. Additionally, it manages the allocation of system resources to the installed PC Card. **Socket Services** is specific to the type of Socket Controller hardware installed and passes information between it and Card Services. Working together, the Client Driver, Card Services and Socket Services layers provide an effective insulation layer and allow for features such as 'Hot-Swapping' of PC cards while the system is in use.




The **Socket Controller** consists of the electronic circuitry needed to form the physical link between the software layers, other system components and the installed PC Card.

Finally, when the PC Card is inserted into the slot, it mates with the **Connector** to ensure the reliable transfer of signals and information.



# 2 • Preparing a DOS & Windows 3.x System

In order for the Liberty™ GSM card to operate correctly, your system needs to have installed the three software layers mentioned in Chapter 1 '**The PC Card Specification - Explained**' , these are:

- A Suitable **Client Driver**,
- **Card Services** and **Socket Services** (these will be treated as one from now on).

If your system has all of the above layers installed, then you need no further preparation before inserting and connecting the Liberty™ GSM card.

It is possible that your system could have Card and Socket Services installed but not a suitable Client Driver, in such a case you need to install the Client Driver supplied with the Liberty™ GSM card: **ENABLEDD.SYS**. This is a DOS device driver and occupies roughly 11KBytes when loaded.

If your system does not have any of the above mentioned software layers, then you need to install the Enabler supplied with the Liberty™ GSM card: **ENABLE.EXE**. This driver is actually a little more sophisticated than a standard Enabler because it can sense the presence of Card and Socket Services, if available, and will use them in a Client Driver-like capacity. However, because it does not remain loaded after it is run, it cannot sense insertion or removal events and so does not support Hot Swapping. If your system has Card and Socket Services you are strongly recommended to use **ENABLEDD.SYS**.

If you are not sure of the software drivers installed within your system, please use the flow diagram shown opposite to guide you through a procedure that will determine which action you need to take.

## Checking Your System

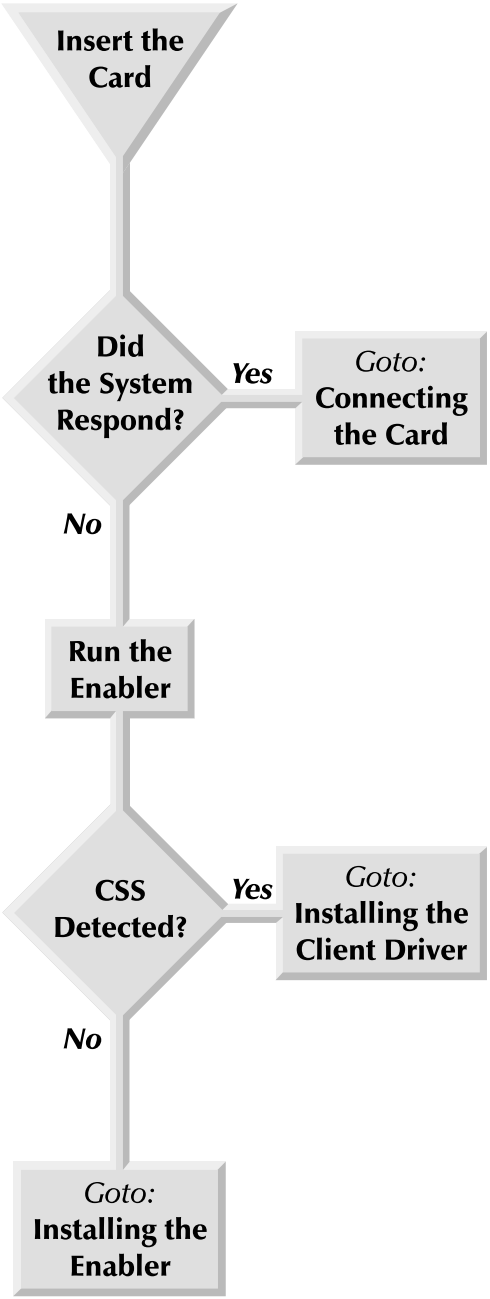
Begin by switching on your computer system and when the operating system has loaded, carefully insert the Liberty™ GSM card into a vacant PC Card slot. Refer to Chapter 4 '**Inserting The Card**' for more information.

Listen for a beep or other response from the system when the card is inserted.

If there was no response, insert the **Modem Enabler Software Diskette** and type: `A:\ENABLE.EXE` from the DOS prompt.

Check the install message that is displayed. What does it state?:

- '**Using Card Services**' (Yes), or
- '**Not using Card Services**' (No).



## Installing the Client Driver

If, after following the flow chart, it is apparent that your system has Card and Socket Services but not a suitable Client Driver, then you need to install the one supplied with the Liberty™ GSM card.

**To install the Liberty™ GSM Client Driver:**

1. Insert the **Modem Enabler Software Diskette** into the floppy drive of your system.
   - **In Windows**: Using File Manager, create a new directory (from the root directory) called LIBERTY and copy the five files from the root directory of the diskette to the newly created LIBERTY directory on your hard drive.
   - **In DOS**: Create a new directory called LIBERTY by entering: `MD C:\LIBERTY` and press Enter. Copy the five files from the root directory of the diskette to the newly created LIBERTY directory on your hard drive by entering: `COPY A:\*.* C:\LIBERTY` and press Enter
2. You now need to add a new command line into the CONFIG.SYS file on your system. To do this, use either the Notepad editor in Windows or EDIT in DOS:
   - Using Notepad, open the file C:\CONFIG.SYS
   - Using EDIT, type: `EDIT C:\CONFIG.SYS` and press Enter.
3. Add the following line at the end of all existing lines within the CONFIG.SYS file:

   ```
   DEVICE=C:\LIBERTY\ENABLEDD.SYS
   ```

4. After you have added the new line, exit from the editor program and reboot your system (exit from Windows first if it is running).

When the system has rebooted, it should respond with three beeps when the card is inserted and two beeps when it is removed.

### If the Client Driver Doesn't See the Card

If the Client Driver, ENABLEDD.SYS, fails to recognise the Liberty™ GSM card when it is installed, it could be that another device within your system is already using COM2 (the default port for the Liberty™ GSM). If so, you can reassign the card to use a different port (COM 3 or 4) by changing the line that you added in the CONFIG.SYS file to read:

`DEVICE=C:\LIBERTY\ENABLEDD.SYS /x` (where x is 3 or 4)

## Installing the Enabler

If, after following the flow chart, it is found that your system does not have Card and Socket Services available, then you need to install the Enabler supplied with the Liberty™ GSM card.

**To install the Liberty™ GSM Enabler:**

1. Insert the **Modem Enabler Software Diskette** into the floppy drive of your system.
   - **In Windows**: Using File Manager, create a new directory (from the root directory) called LIBERTY and copy the five files from the root directory of the diskette to the newly created LIBERTY directory on your hard drive.
   - **In DOS**: Create a new directory called LIBERTY by entering: `MD C:\LIBERTY` and press Enter. Copy the five files from the root directory of the diskette to the newly created LIBERTY directory on your hard drive by entering: `COPY A:\*.* C:\LIBERTY` and press Enter
2. You now need to add a new command line into the AUTOEXEC.BAT file on your system. To do this, use either the Notepad editor in Windows or EDIT in DOS:
   - Using Notepad, open the file C:\ AUTOEXEC.BAT
   - Using EDIT, type: `EDIT C:\ AUTOEXEC.BAT` and press Enter.
3. Add the following line at the end of all existing lines within the AUTOEXEC.BAT file, but before a line, if present, that has the command 'WIN' (runs Windows whenever you boot the system):

   `C:\LIBERTY\ENABLE.EXE`
4. It is a good idea at this point to declare the new directory within DOS. To do this, add the following text to the end of the line that starts: PATH C:\.....

   `;C:\LIBERTY` (don't miss out the semicolon)
5. After you have added the new line, exit from the editor program and reboot your system (exit from Windows first if it is running).

(continued)

## Installing the Enabler (continued)

The system now has support for the Liberty™ GSM card. However, the Enabler cannot sense insertion or removal of the card. Therefore, you must load the driver before using the card (adding the command into the AUTOEXEC.BAT as above enables the card whenever the system boots) and unload the driver if the card is removed.

**To manually load and unload the Enabler:**

- Type: `ENABLE` and press Enter to load the Enabler, and
- Type: `ENABLE OFF` and press Enter to unload the Enabler.

### If the Enabler Doesn't See the Card

If the Enabler, ENABLE.EXE, fails to support the Liberty™ GSM card, it could be that another device within your system is already using COM2 (the default port for the Liberty™ GSM). If so, you can reassign the card to use a different port (COM 3 or 4) by changing the line that you added in the AUTOEXEC.BAT file to read:

`C:\LIBERTY\ENABLE.EXE /x` (where `x` is 3 or 4)

When loading the Enabler manually, use the command:

`ENABLE /x` (where `x` is 3 or 4)

## Liberty™ GSM Utilities

Three extra utilities are supplied on the **Modem Enabler Software Diskette** in addition to the driver files, these are:

- **4PORTS.COM** allows the COM3 and COM4 assignments to be used by the Liberty™ GSM card in older systems.
- **AT.EXE** allows you to send AT modem commands to the Liberty™ GSM card.
- **README.TXT** provides further information about the drivers.

# 3 • Preparing a Windows 95 System

Thanks to the Plug and Play features that are an integral part of Windows 95, preparing such a system to use the Liberty™ GSM card is a quick and easy task.

**To add support for the Liberty™ GSM card:**

1. Switch on your system and let it complete its Windows 95 initiation.
2. Insert the Liberty™ GSM card into a vacant PC Card slot (refer to Chapter 4 '**Connecting the Card**' for more information).

   One of the following will occur:

   - There is no screen response. If the system does not respond, check that the card is fully and correctly inserted, and then refer to the section **Enabling Windows 95 PC Card Support**.
   - A small PC Card symbol appears next to the clock on the task bar. Windows 95 already has support for the Liberty™ GSM card and no further preparation is required. Now go straight to Chapter 5 '**Connecting the Card**'.
   - The following dialog box is displayed:


(continued)

## Preparing a Windows 95 System (continued)

3 Select the option: **Driver from disk provided by hardware manufacturer** and click OK. The following dialog box will be displayed:


4 Insert the **Modem Enabler Software Diskette** and click OK.

Windows 95 will locate and load the required driver from the diskette. Full support for the Liberty™ GSM card is now installed.

## Enabling Windows 95 PC Card Support

If Windows 95 failed to respond when the Liberty™ GSM card was inserted it may mean that the native 32-bit Windows 95 PC Card drivers are not enabled. To enable them:

1 Click the Start button, choose Settings and select the Control Panel. Then select this icon:


PC Card
(PCMCIA)

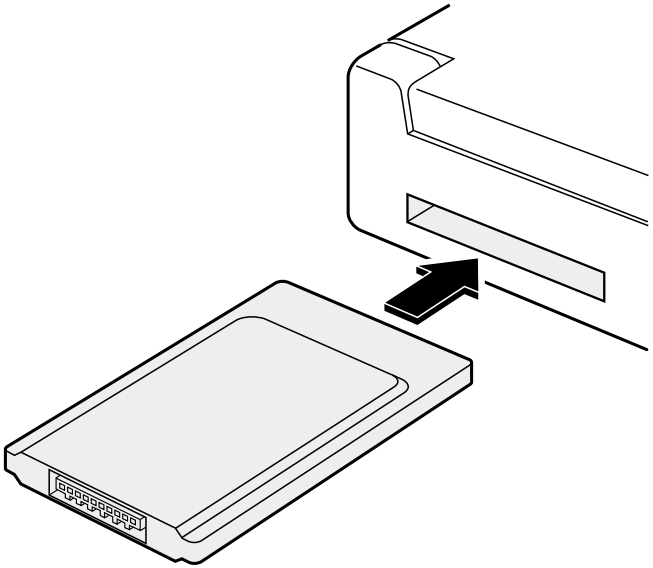
2 Follow the instructions given in the resulting Installation Wizard.

# 4 • Inserting the Card

The Liberty™ GSM card can be inserted while your system is switched off or on.

**To insert the Liberty™ GSM card:**

**1** Hold the card with the Liberty™ logo face up and the arrow symbols facing towards a vacant PC Card slot on your computer system.



**2** Gently slide the card into the vacant slot until it offers a little resistance. Then press the card firmly into place until it will go no further.

Depending on the operating system and drivers installed, your system may recognise the Liberty™ GSM card immediately as it is inserted. Alternatively, if you are using the supplied Enabler you may have to load the driver before the Liberty™ GSM card can be used.

Refer to either Chapter 2 or 3 (depending on your operation system) for more information about drivers.

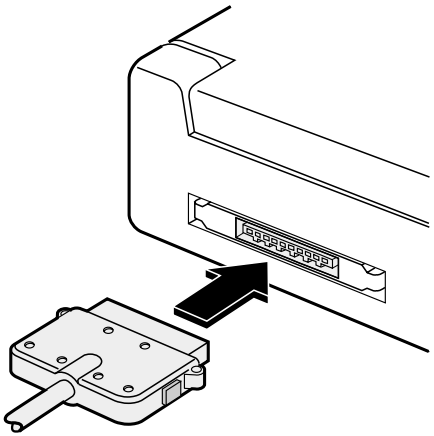
# 5 • Connecting the Card

The Liberty™ GSM card is supplied with a cable to connect it to the data compatible Orbitel 907 phone. The cable can be attached to the Liberty™ GSM card before or after it is inserted into your system, though for the purpose of these instructions it will be assumed that the card is already installed.

## Attaching the Cable to the Card

**To attach the cable to the Liberty™ GSM card:**

1. Determine which of the two plugs will attach to the card by matching it against the socket on the card (the two cable plugs are different and not interchangeable).



2. Orient the plug so that its keyed profile matches that of the card socket.
3. Gently insert the plug into the card socket until it locks into place with a click.

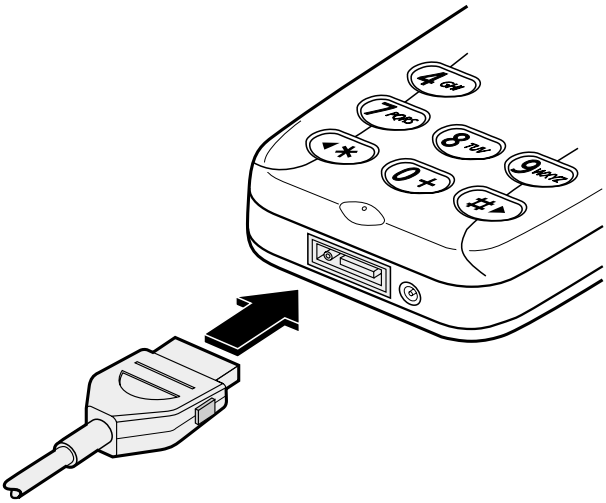
**To remove the cable from the Liberty™ GSM card:**

1. Press the buttons on either side of the plug and pull it out.

## Attaching the Cable to the Phone

**To attach the cable to your Orbitel phone:**

1 Locate the socket located at the base of your phone, just below the zero key.



2 Orient the appropriate plug so that its keyed profile matches that of the phone socket.

3 Gently insert the plug into the phone socket until it clicks into place.

**To remove the cable from your Orbitel phone:**

1 Press the buttons on either side of the plug and pull it out.

### Switching your Phone On and Off via the Card

The Liberty™ GSM card and your Orbitel phone allow you to switch the phone on and off via software control. You will need to be running a communications program or the supplied AT.EXE utility:

- **To switch the phone ON:** `AT *P1` and press Enter.
- **To switch the phone OFF:** `AT *P0` and press Enter.

### If the Data Link Fails

Under some rare circumstances the data link may fail. If this does occur, attempt to re-establish the link in the normal manner. In the event that the link cannot be re-established, exit your communications software, power cycle the modem by removing it from the slot and reinserting it. Then re-establish the link.

# 6 • Testing the Connection

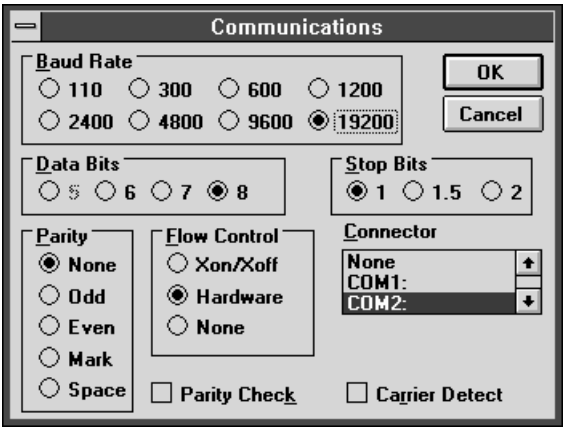
The quickest and easiest way to test the card, phone and system combination is to use them and make a connection. For this purpose Communicate Limited provide a Bulletin Board Service that you can connect with. This section details how to use standard Windows 3.x and Windows 95 applications to perform the test though any such communication packages may be used.

**The connected Orbitel phone must be subscribed to GSM Data and Fax services before it can transmit or receive data on the network.**

## Testing with Windows 3.x

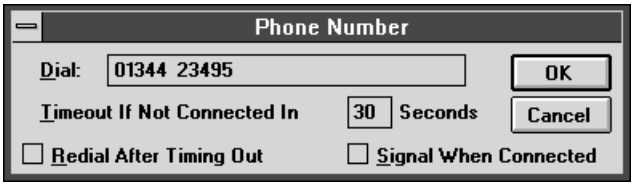
1. Power up your system and then switch on the connected phone.
2. Locate the Accessories group within Windows and run the Terminal application:


3. If Terminal requests you to enter a '**Default Serial Port**', choose **COM2** unless you moved the Liberty™ GSM card to another port.
4. In the Terminal program, select the **Settings** menu and click **Communications**. The following dialog box will be displayed:




Change the settings, if necessary, to match those shown in the screen shot here (the Connector entry should read COM2 unless you changed the port). Click OK to enter the settings.

5 Select the **Settings** menu and click **Phone Number...** The following dialog box will be displayed:




6 Enter the number of the Communicate Bulletin Board, which is **01344 23495**, and click OK.

7 Select the **Phone Menu** and click **Dial**.

The system will activate the Liberty™ GSM card and instigate a GSM data call through the Orbitel phone. Once connected, you should see the following introductory screen:


The automated Bulletin Board will ask you to respond to several basic questions, starting with your name, and will then display a Main Menu where you can browse through the system and download files if you wish.

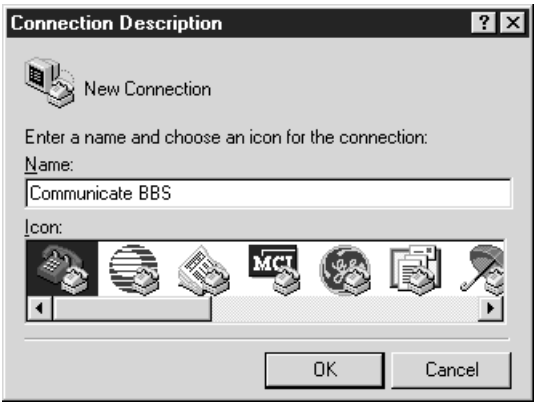
**To leave the Bulletin Board:**
Press **!** or click on the **Phone** menu and select **Hang Up**.

**If the message NO CARRIER shows briefly on the phone display, the phone may not be subscribed to data and fax services or the network may not have a data channel currently available. Contact your cellular service provider for subscription and service information.**

## Testing with Windows 95

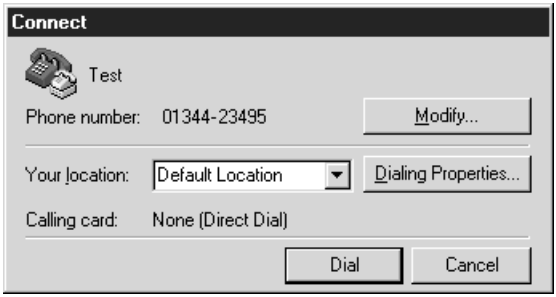
1. Power up your system and then switch on the connected phone.
2. Click the **Start** button, choose **Programs**, then **Accessories** and finally **HyperTerminal**.
3. Within the HyperTerminal window, start a new connection by selecting the Hypertrm icon:


The following dialog box will be displayed:




4. Enter a name for the new connection (and choose an icon, if desired) and click OK. The following dialog box will be displayed:

**5** Enter '**01344**' into the **Area code** field and '**23495**' into the **Phone number** field, then click OK. The following dialog box will be displayed:




**6** When you are ready, click **Dial**.

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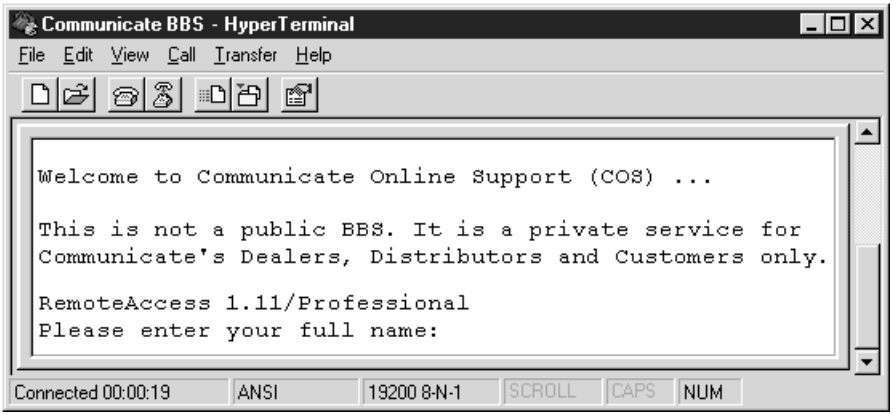


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# 7 • Using the Card with Applications

If the software package being used does not have the Liberty™ GSM modem in its supported list it is usually possible to get started by using a Hayes™ Default profile. If this is unsuccessful then the following suggested setup command strings may be useful:

**Default Setup with Software Flow Control:** `AT&F&D2&C1&K4`

**Default Setup with Hardware Flow Control:** `AT&F&D2&C1&K3`

Fax Operation is supported by Class 1 and Class 2 (de-facto) command sets. Most facsimile applications have drivers for Generic Class 1 or Generic Class 2 modems which should operate correctly. It is recommended that Class 2 is used.

If connections can be established, but large amounts of data cannot be transferred successfully, a flow control problem is likely to be the cause.

Use the command **&K4** for software flow control or **&K3** for hardware control in the initialisation. Check to see what your application needs.

The Liberty™ GSM card supports a maximum data transfer rate of 9600bps, however, by using V.42bis data compression, this rate is effectively raised to a theoretical maximum of 36,000bps (not for fax calls). In order to ensure that the compression system is supplied with sufficient data, select a transmission rate of 19,200bps within the communications package.

# 8 • AT Commands and S-Register Details

## Basic AT Commands

Commands in **bold** have no function in GSM Mode.
Underlined commands are default settings.

| Command | Function |
|---|---|
| A | Go off-hook and attempt to answer a call |
| Dn | Dial modifier |
| E0 | Turn off command echo |
| E1 | Turn on command echo |
| H0 | Initiate a hangup sequence |
| **H1** | **If on-hook, go off-hook and enter command mode** |
| I0 | Report product code |
| I1 | Report pre-computed checksum from ROM |
| I2 | Compute checksum and report status |
| I3 | Report firmware level |
| I4 | Report response programmed by an OEM |
| I5 | Report the country code number |
| I6 | Report modem data pump model |
| L0 | Set low speaker volume |
| L1 | Set low speaker volume |
| L2 | Set medium speaker volume |
| L3 | Set high speaker volume |
| M0 | Turn speaker off |
| M1 | Turn speaker on during handshaking and turn speaker off while receiving carrier |
| M2 | Turn speaker on during handshaking and while receiving carrier |
| M3 | Turn speaker off during dialling and receiving carrier and turn speaker on during answering |
| O0 | Go on-line |

| Command | Function |
|---|---|
| Q0 | Allow result codes to DTE |
| Q1 | Inhibit result codes to DTE |
| Sn | Select S register as default |
| Sn? | Return the value of S register n |
| =v | Set default S register to value v |
| ? | Return the value of default S register |
| V0 | Report short form (terse) result codes |
| V1 | Report long form (verbose) result codes |
| W0 | Report DTE speed in EC mode |
| W1 | Report line speed, EC protocol and DTE speed<br>e.g.<br>CARRIER 9600<br>PROTOCOL: ALT<br>COMPRESSION: V42bis<br>CONNECT: 19200 |
| W2 | Report DCE speed in EC mode |
| X0 | Report basic call progress result codes, i.e., OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER and ERROR |
| X1 | Report basic call progress result codes and connection speeds, i.e., OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT XXXX, and ERROR. |
| X2 | As per X1 |
| X3 | As per X1 |
| X4 | Report all call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, NO DIAL TONE and ERROR. |
| Y0 | Disable long space disconnect before on-hook |
| Y1 | Enable long space disconnect before on-hook |
| Z0 | Restore stored profile 0 after warm reset |

| Command | Function |
|---|---|
| Z1 | Restore stored profile 1 after warm reset |
| &C0 | Force RLSD active regardless of the carrier state |
| &C1 | Allow RLSD to follow the carrier state |
| &D0 | Interpret DTR ON-to-OFF transition per &Qn: |
| &D1 | Interpret DTR ON-to-OFF transition per &Qn: |
| &D2 | Interpret DTR ON-to-OFF transition per &Qn: |
| &D3 | Interpret DTR ON-to-OFF transition per &Qn: |
| &F0 | Recall (restore) factory profile 0 |
| &F1 | Recall (restore) factory profile 1 |
| &K0 | Disable DTE/DCE flow control |
| &K3 | Enable RTS/CTS DTE/DCE flow control |
| &K4 | Enable XON/XOFF DTE/DCE flow control |
| &K5 | Support transparent XON/XOFF DTE/DCE flow control |
| &Q0 | Buffered Mode |
| &Q1 | Buffered Mode |
| &Q5 | Error Correcting Mode |
| &R0 | CTS tracks RTS (async) or acts per V.25 (sync) |
| &R1 | CTS is always active |
| &S0 | DSR is always active |
| &S1 | DSR acts per V.25 |
| &V | Display current configurations |
| &W0 | Store the active profile in NVRAM profile 0 |
| &W1 | Store the active profile in NVRAM profile 1 |
| &Y0 | Recall stored profile 0 upon power up |
| &Y1 | Recall stored profile 1 upon power up |
| &Zn=x | Store dial string x (to 40) to location n (0 to 19) |
| \G0 | Disable modem to modem flow control |
| \G1 | Enable modem to modem flow control |

| Command | Function |
|---|---|
| \Kn | Controls break handling during three states: |
| \N0 | Select normal speed buffered mode |
| \N1 | Select direct mode |
| \N2 | Select reliable link mode |
| \N3 | Select auto reliable mode |
| **\N4** | **Force LAPM mode** |
| \N5 | Force MNP mode |

## ECC Commands

| | |
|---|---|
| %C0 | Disable data compression |
| %C1 | MNP5 compression |
| %C2 | V42bis compression |
| %C3 | MNP5/V42bis compression (negotiated) |
| \A0 | Set maximum block size in MNP to 64 |
| \A1 | Set maximum block size in MNP to 128 |
| \A2 | Set maximum block size in MNP to 192 |
| \A3 | Set maximum block size in MNP to 256 |
| +CBST=7,0,1 | Enable Radio Link Protocol (Non Transparent) |
| +CBST=7,0,0 | Disable Radio Link Protocol (Transparent) |

## Orbitel Phone Codes

The Orbitel 907 supports an additional command - 'Select Character Set. Three character sets are supported: the International Reference Alphabet (Formerly IA5); the GSM alphabet; and the multi-lingual alphabet 'PC Code Page 850'. Character sets are particularly applicable to Abbreviated Numbers, where users may wish to use extended characters such as 'é'.

The Orbitel 907 also supports the following sub-set of GSM 07.05, 07.07 and ITU V.25ter modem control commands:

| Command | Function |
|---|---|
| AT+CESP | V.25ter entry into GSM 07.05 SMS Block Mode. Returns 'OK' if successful |
| SMS B | V.25ter entry into GSM 07.05 SMS Block Mode. Returns 'VAL' if successful |
| ATV0 | Select numeric response format |
| ATV1 | Select verbose response format |
| AT+CPAS | Request phone activity status. Returns +CPAS:n where |

| n | Meaning |
|---|---|
| 0 | 907 OK |
| 1 | Unavailable (e.g. waiting for SIM PIN entry) |
| 3 | Incoming call |
| 4 | Call in progress |

| | |
|---|---|
| AT+CPAS=? | List supported activity status modes<br>Returns +CPAS: (0,1,3,4) |
| AT+CPBS="pbk" | Select phone book (i.e. SIM, Phone Memory, Combined, FDNs). Note that FDNs only available when enabled on 907, and that write can only be performed if user has first entered the Super PIN at least once<br>pbk can take the values reported by AT+CPBS=? |
| AT+CPBS=? | List supported phone books. Note that the list changes if Fixed Numbers are selected in the phone |
| AT+CPBS? | Report selected phone book |

| Command | Function |
|---|---|
| AT+CPBR=<index1>[,<index2>] | Read from phone book. Reads either a single entry (index1) or a range of entries (index1 to index2) |
| AT+CPBR=? | List phone book parameters: Returns +CPBR: (list of supported indexes), number length, text length |
| AT+CPBF="name" | Find matching phone book entry(ies). Matches entries beginning with 'name'. Case insensitive |
| AT+CPBF=? | List search parameters: Returns +CPBF: number length, text length |
| AT+CPBW=[<index>][,<number>][,<type>][,<name>] | Write to phone book. With <index> only, erases that entry. Name and number only finds first free entry in selected phone book. Type is decimal representation of TON/NPI field. Supported values listed by AT+CPBW=? |
| AT+CPBW=? | List write parameters: Returns +CPBW: (list of supported indexes), number length, supported types, text length |
| AT+CKPD="p" | Power off phone. Operates in any mode, including in-call |
| AT+CKPD=? | Return OK to indicate command supported |
| AT+CMEC=[<keyp>][,<disp>][,<ind>] | Remote control mode - Selects whether phone or terminal has control. Currently only allows remote+phone operation of the keypad |
| AT+CMEC=? | List remote control modes supported. Returns +CMEC: (2),(0),(0) indicating keypad control set to remote+phone control. Display and indicators under phone control |
| AT+CMEC? | Report remote control modes selected. Returns +CMEC: 2,0,0 indicating keypad control can only be set to remote+phone control. Display and indicators only under phone control |

| Command | Function |
|---|---|
| AT+CMEE=<n> | Select GSM Cellular Error reporting format. Where<br>n CME Error Setting<br>0 +CME Error disabled<br>1 +CME Numeric Mode selected<br>2 +CME Verbose Mode selected |
| AT+CMEE=? | Lists supported error modes. Returns +CMEE: (0-2) |
| AT+CMEE? | Reports selected +CME Error mode |
| AT+CGMI | Manufacturer's identification. Returns Orbitel Mobile Communications Limited |
| AT+CGMI=? | Returns OK to indicate command supported |
| AT+CGMM | Model name. Returns PPU 907 |
| AT+CGMM=? | Returns OK to indicate command supported |
| AT+CGMR | Revision - reflects SMS Terminal Interface module issue |
| AT+CGMR=? | Returns OK to indicate command supported |
| AT+CGSN | Serial number - Returns 15 digit IMEI |
| AT+CGSN=? | Returns OK to indicate command supported |
| AT+CSCS=<char_set> | Select character set for AT Command. Supported character sets indicated by AT+CSCS=? |
| AT+CSCS | Report selected character set |
| AT+CSCS=? | Listsupported character sets |

## Fax Class 2

| | |
|---|---|
| +FCLASS=n | Service class |
| +FAA=n | Adaptive answer |
| +FAXERR | Fax error value |
| +FBOR | Phase C data bit order |
| +FBUF? | Buffer size (read only) |
| +FCFR | Indicate confirmation to receive |
| +FCLASS= | Service class |
| +FCON | Facsimile connection response |

| Command | Function |
|---|---|
| +FCR | Capability to receive |
| +FCR= | Capability to receive |
| +FCSI: | Report the called station ID |
| +FDCC= | DCE capabilities parameters |
| | AT+FDCC=1,3 for 9600 |
| | AT+FDCC=1,0 for 2400 |
| +FDCS: | Report current session |
| +FDIS: | Report remote identification |
| +FDIS= | Current sessions parameters |
| +FDR | Begin or continue phase C receive data |
| +FDT= | Data transmission |
| +FET: | Post page message response |
| +FET=N | Transmit page punctuation |
| +FHNG | Call termination with status |
| +FK | Session termination |
| +FLID= | Local ID string |
| +FMDL? | Identify model |
| +FMFR? | Identify manufacturer |
| +FPHCTO | Phase C time out |
| +FPTS: | Page transfer status |
| +FPTS= | Page transfer status |
| +FREV? | Identity revision |
| +FTSI: | Report the transmit station ID |

## S-Registers

| Register | Range | | Function |
|---|---|---|---|
| S35 | 0-255 | 3 | Remote Modem Type<br>0=Autobauding (see Note 3)<br>1=300 bps V21<br>2=1200bps V22<br>3=1200/75bps V23<br>4=2400bps V22bis<br>5=2400bps V26ter<br>6=4800bps V32<br>7=9600bps V32<br>65=300bps V110<br>66=1200bps V110<br>68=2400bps V110<br>70=4800bps V110<br>71=9600bps V110<br>Note: Options 6, 7, 70 & 71 require later phone. |
| S42 | 0-255 | 0 | GSM Call clearing code as returned by the network. Please refer to GSM 04.08 Table 10.86 Cause Information Element Values (see Note 5) |
| S47 | 0-255 | 0 | Type of Number being called:<br>0=Unknown<br>1=International<br>2=National<br>3=Network Specific<br>4=Dedicated PAD |
| S49 | 0-255 | 1 | Numbering Plan of called number:<br>0=Unknown<br>1=ISDN/Telephony<br>2=Data<br>3=Telex<br>4=National<br>5=Private |

## Notes

1. The default for data compression is with MNP2 with V.42bis. If V.42bis is not available then MNP5 compression should be selected.
2. For Tel-Me usage set S35=71 and turn off MNP error correction with AT\N0. It is possible to use RLP (Non-Transparent) on Tel-Me by using AT+CBST=7,0,1 if desired.
3. S register 35 can be set to 0 for Autobauding modems but Non-Transparent operation must also be selected by AT+CBST=7,0,1 as well. This corresponds to the specification of the GSM system in the document 04.08 section 10.5.4.5.1
4. If there is any doubt about the current card configuration use AT&F to restore the factory defaults. With the 9600 adapter code the default will be set for a Transparent 9600 connection with MNP error correction and compression on top.
5. The S register 42 has been used to contain the Call Clearing Cause field of most call clearing circumstances. The value contained in this register can be interrogated after a call has been cleared by using the command ATS42? The value contained in this field directly corresponds to the cause value table 10.86 in GSM specification 04.08. This can be useful to identify problems whereby your SIM may not be setup correctly for example.