NetComm®
NETWORKING & COMMUNICATIONS CONVERGED

CORPORATE SERIES
56K V90 DATA MODEM

SmartModem 56

THE ADVANCED MODEM
FOR MISSION-CRITICAL
SECURE COMMUNICATIONS

- Advanced, corporate-grade security, including DES encryption
- Flash-upgradeable, high-performance technology
- Synchronous and asynchronous communications
- PSTN, 2 & 4 leased-line capability
- Extensive command set for maximum host compatibility

Quick Start Guide

Contents

Congratulations on making the smart choice. Please read through the following instructions to ensure that your installation proceeds easily and safely.

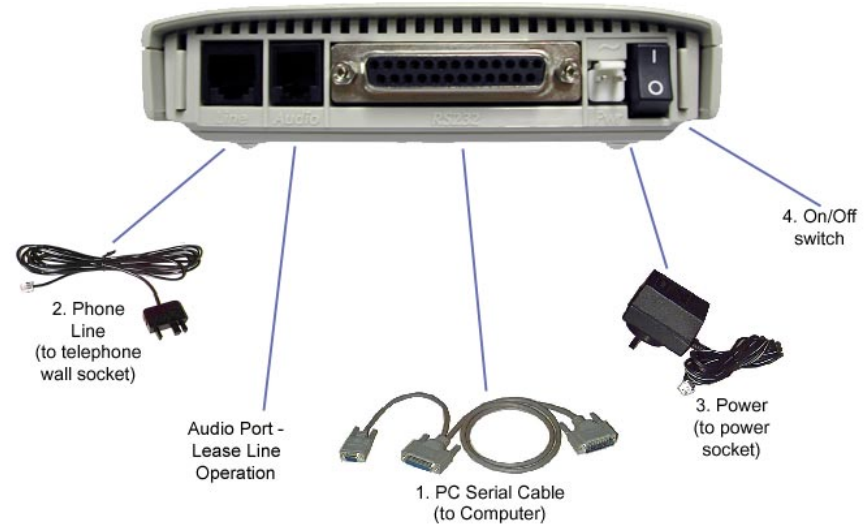
Step 1 - What you will find in the box

Everything you need to get started comes straight out of the box:

- SmartModem56 (SM5695).
- a telephone cable to connect your modem to the telephone line.
- a power supply for your modem.
- a CD ROM† containing modem software and documentation.
- a serial cable to connect your modem to your computer.

† If you don't have a CD ROM drive, contact NetComm on (02) 9424 2070 to obtain 3.5" floppy disks at an additional charge.

Step 2 - Connecting the Cables



Turn your computer off.

1. Plug the data cable's male end (pins showing) into the socket at the back of your Modem and then plug the female end (no pins showing) of the same cable into the COM port at the back of your computer.

   Your computer's COM port could be 9 pins or 25 pins. Use the appropriate connector on the cable suppled to conntect your modem to your Serial port.

2. Plug the telephone cable into the socket marked LINE at the back of your Modem and the other end of the cable into your telephone wall socket.

> *Your modem is supplied with an AUDIO Port to allow 4-wire leased line operation. Refer to the section on Leased Line Operations for details on this feature.*

3. Plug the power cable pin into the POWER socket at the back of your Modem and plug the power supply into a suitable power point.
4. Turn your Modem on and check that some of the Modem lights illuminate.

Restart your computer. Now you need to install your Modem's Driver. Which operating system is your computer running? Read the next section for driver installation instructions.

Step 3 - Installing your Drivers

Your modem comes with a Netcomm CD ROM which includes software and manuals for your SM5695 Modem.

Windows XP

1. Please insert the NetComm CD supplied and, when the "Found New Hardware Wizard" recognises the new Modem, select "Install from a list or specific location. [Advanced]", and then click "Next"
2. Select "Search for the best driver in these locations" and choose "Include this location in the search:". Type in "D:\" (where D:\ is the letter of your CD ROM drive) and click "Next".
3. The Wizard will search for the correct driver. The drivers that Windows XP uses are not digitally signed by Microsoft. Click "Continue Anyway".
4. Windows XP will now copy the required files.
5. Once all files have been copied, click "Finish", and the installation is complete.
6. To verify installation, you should find a new icon on your bottom task bar. And when you place your cursor there it will identify the new icon as "Modem Audio Device". Once identified, the modem is ready to use.

Windows ME

1. Please insert the NetComm CD supplied and, when the "Found New Hardware Wizard" recognises the new Modem, select "Specify the location of the driver [Advanced]" and click "Next" to search for the driver.
2. Select "Search for the best driver in these locations" and choose "Specify a location".

   Type in "D:\" (where D:\ is the letter of your CD ROM drive) and click "Next" to continue.
3. Click "Next" to start the installation.
4. Click "Finish" to end this installation procedure.
5. The "Add New Hardware Wizard" will now install the Wave Device for Voice Modem driver. Select "Specify the location of the driver [Advanced]" and click "Next" to install the wave device.
6. Select "Search for the best driver in these locations" and choose "Specify a location".

   Type in "D:\" (where D:\ is the letter of your CD ROM drive) and click "Next" to continue.
7. Click "Next" to start the installation.
8. Click "Finish" to end this procedure.

Windows NT4.0

1. Please insert the NetComm CD supplied and go to Start>My Computer>Control Panel, then double-click on "Modems" icon to install a new modem.
2. Select "Don't detect my modem; I will select it from a list" and then click "Next" to continue.
3. Click "Have Disk…" to install from the installation disk.
4. Type in "D:\" (where D:\ is the letter of your CD ROM drive) and click "Next" to continue.
5. Select "NetComm SM5695 SmartModem" from the list of Models and click "Next" to continue.

6. Select "Selected ports" choose the appropriate COM port. Click "Next" to start installing the selected modem.
7. Click "Finish" to complete the installation.

Windows 2000

1. Windows will detect the modem automatically. Please insert the NetComm CD supplied and click "Next".
2. Select "Search for a suitable driver for my device [recommended]", and then click "Next".
3. Select "Specify a location" and click "Next".
4. Enter the driver location "D:\" where D:\ is the letter of your CD ROM drive and click on "OK".
5. Windows will find the correct driver for your modem. Click "Next" to continue.
6. When the "Digital Signature Not Found" screen appears, click "Yes" to continue.
7. Click "Finish" to end this procedure.

Windows 98

1. Please insert the driver CD supplied and, when the "Found New Hardware Wizard" recognises the new Modem, click Next to search for the driver.
2. Select the "Search for the best driver your device. [Recommended]" and click "Next" to continue.
3. Select the "Specify a location" option and type "D:\" where D:\ is the letter of your CD ROM drive. Click "Next" to start the search for your driver.
4. Click "Next" to start the installation.
5. Click "Finish".
6. The "Add New Hardware Wizard" will now install the Wave Device for Voice Modem driver. Select "Specify the location of the driver [Advanced]" and click "Next" to install the wave device.
7. Select the "Specify a location" option and type "D:\" where D:\ is the letter of your CD ROM drive. Click "Next" to start the search for your driver.
8. Click "Next" to start the installation.
10. Click "Finish" to end this procedure.

Step 4 - Using your Modem

Your SM5695 Modem has a number of advanced features. For your convenience, the following section contains information on:

- Modem LED Display,
- Option Switches,
- Leased Line Operation,
- Abbreviated Command List, and
- Specifications.

For more information on your SM5695 Modem and a detailed command list, please refer to the User Guide included on the CD ROM in Adobe Acrobat format. If you do not already have Adobe Acrobat Reader software installed on your computer, a copy is provided on the CD ROM.

To install your Adobe Acrobat Reader software:

1. Go to the "Start" button in the right-bottom corner of the screen. Select "Run".
2. Click on "Browse..." and go to "D:\Software\Acrobat\Win32\Acrobat Reader 5.00 English.exe" where D:\ is the letter of your CD-ROM drive.

> ***Note:*** *You will need to select the Linux, Win16 or Win32 directory depending on the Operating System you are using. For example, if your operating system Windows 95/ 98/2000/NT/ME/XP you will use the "Win32" version. If you are using Windows for Workgroups or Windows 3.X you will need to use the "Win16" version.*

3. Click "OK" and the software installation screen will appear. Follow the screen instructions to install the software. A copy ofthe Adobe Acrobat User Guide is available in "D:\Manuals\Acrobat" where D:\ is the letter of your CD-ROM drive.

Modem LED Display

Transmit Data (TXD)

LED will flash when the modem is sending data.

Receive Data (RXD)

LED will flash when the modem is transferring data from the remote to the local computer.

Off-Hook

LED will glow when the modem is on-line; ie. dialling or answering

Carrier Detect

LED will glow when the modem detects a valid carrier signal from a remote modem.

Auto-Answer

LED will glow to indicate auto-answering operation. If the SmartModem is performing a test, the LED will flash until the test is completed or cancelled.

Terminal Ready

LED indicates the 'Data Terminal Ready' (DTR) signal is asserted.

Mode One, Two, Three and Four

For more information about Mode one to four LEDs, please turn to the next page.

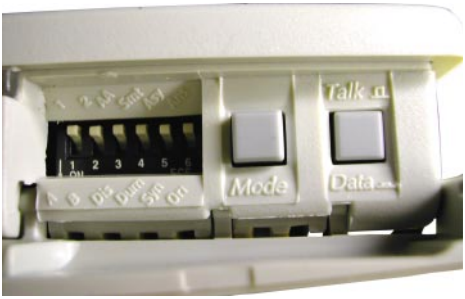
Front Panel Mode LEDs

Line Modulation	One	Two	Three	Four
V.90 29333	✺F	✺F	❍	●
V.90 30667	✺F	✺F	❍	●
V.90 32000	❍	●	●	❍
V.90 33333	✺F	✺F	❍	●
V.90 34667	❍	❍	●	❍
V.90 36000	❍	❍	●	❍
V.90 37333	●	●	❍	❍
V.90 38666	❍	●	❍	❍
V.90 40000	❍	●	❍	❍
V.90 41533	●	❍	❍	❍
V.90 42667	❍	❍	❍	❍
V.90 44000	❍	❍	❍	❍
V.90 45332	✺F	●	●	❍
V.90 46667	✺F	❍	●	❍
V.90 48000	✺F	❍	●	❍
V.90 49333	✺F	●	❍	❍
V.90 50667	✺F	❍	❍	❍
V.90 52000	✺F	❍	❍	❍
V.90 53333	✺F	✺F	●	❍
V.90 54667	✺F	✺F	❍	❍
V.90 56000	✺F	✺F	❍	❍
33600 bps	✺F	✺F	❍	●
31200 bps	✺F	✺F	●	●
28800 bps	✺F	❍	❍	●
26400 bps	✺F	❍	●	●
24000 bps	✺F	●	●	●
21600 bps	✺M	❍	❍	●
19200 bps	✺M	●	❍	●
16800 bps	✺M	❍	●	●
14400 bps	●	●	●	●
12000 bps	●	●	❍	●
9600 bps	❍	●	❍	●
7200 bps	❍	●	●	●
4800 bps	●	❍	❍	●
2400 bps	✺S	❍	❍	●
1200 bps	✺S	❍	●	●
1200/75 bps	✺S	●	❍	●
300 bps	✺S	●	●	●

LED: ● = Off ❍ = On
Flashing:✺S = Slow, ✺M = Med, ✺F = Fast

The Option Switches

The Option switches allow you to control the operation of your modem in Dumb mode, as well as providing additional features in Smart mode.



***Note**: Front panel Option switches 1 and 2 always take precedence over software setting of behaviour of DTR and DSR. When AT%F is set to 1 (when AT%F is set to 0, behaviour of DTR and DSR is controlled by AT commands if applicable).*

Switches 1 and 2 are used to select AT command mode or V.25bis command mode, or control the state of the DTR and DSR signals.

Description	AT%F	Switch 1	Switch 2
AT command mode	%F0	Up	Up
V.25bis asynchronous	%F0	Up	Down
V.25bis synchronous (HDLC framing)	%F0	Down	Up
V.25bis sync (BSC character framing)	%F0	Down	Down
DTR controlled by computer	%F1	Up	n/a
DTR assumed to be asserted (raised)	%F1	Down	n/a
DSR acts normally	%F1	n/a	Up
DSR mimics DTR	%F1	n/a	Down

Switches 3 - 6 allow you to set up Dumb mode operation, as well as manually selecting loopback tests in Smart mode.

Description	AT#F	Switch	Switch
Smart mode	n/a	4 - Up	n/a
Dumb mode	n/a	4 - Down	n/a
Loopback Test Pattern Off	#F1	3 - Up	4 - Up
Loopback Test Pattern On	#F1	3 - Down	4 - Up
Analog Loopback Off	#F1	5 - Up	4 - Up
Analog Loopback On	#F1	5 - Down	4 - Up
Remote Digital Loopback Off	#F1	6 - Up	4 - Up
Remote Digital Loopback On	#F1	6 - Down	4 - Up
Auto-answer enabled	n/a	3 - Up	4 - Down
Auto-answer disabled	n/a	3 - Down	4 - Down
Asynchronous operation	n/a	5 - Up	4 - Down
Synchronous operation	n/a	5 - Down	4 - Down
Answer mode	n/a	6 - Up	4 - Down
Originate mode	n/a	6 - Down	4 - Down

+ n/a = not applicable

Leased Line Operations

A leased line, or private line, is a telephone line that permanently connects two or more locations. The leased line does not have any switching equipment associated with it.

Leased-line operation with the modem is selected with the &L command.

The &L command informs your modem that communications will occur over leased lines, with no answer tones being generated by the modem. If the modem detects a loss of the remote carrier signal while leased-line operation is selected, it will attempt to re-establish the connection rather than hang up.

If you select leased line operation with the &L1 command, you must issue the ATA command to answer a call, and the ATD command to initiate a call. If you use &L2 or &L3 to select Auto leased line operation, you do not need to issue the ATA or ATD commands; &L2 selects Originate mode automatically and &L3 selects Answer mode automatically or use the Talk/Data switch from the front panel. To dial or answer, raise DTR; to return to local command state, lower DTR.

You will require a special phone cable (available from your dealer) to connect your modem to a leased-line socket. The phone cable supplied with your modem is suitable for use with normal, dial-up, voice (PSTN) lines.

Before commencing leased-line communications, it is recommended that a non-auto-ranging B setting be specified.

If error correction is required, select a Reliable mode, not an Auto- Reliable mode. (See the \N command.)

If auto-ranging and fallback are disabled in leased-line mode, your modem will only attempt to connect using the communications standard specified by the B command and the terminal speed.

Once a connection has been established, if your modem detects a loss of carrier it will continuously attempt to re-establish the connection.

Smart Leased- Line Mode

Leased-line operation is available in both asynchronous and synchronous modeÊ 1.

Calling and AnsweringUsing &L1

When operating in smart mode (&L1 set), the ATD and ATA commands are used to initiate and answer calls respectively.

> *Your modem will hang up and return to local command state if your computer transmits characters while the modem is attempting to establish or re-establish a connection (unless &N0 has been issued).*

Auto Leased Line Operation (&L2 or &L3)

You can select Auto leased line operation with the &L2 or &L3 command. In Auto leased line operation you do not need to issue the ATA command to answer a call, or the ATD command to initiate a call. Issue the &L2 command to automatically select Originate mode, or the &L3 command to automatically select Answer mode.

In Auto leased line operation AT commands can only be entered while DTR is low. Irrespective of the &D setting, your modem will remain in idle mode when DTR is low, and will go on-line when DTR is high and the modem's TALK/DATA switch is set to DATA. If DTR is lowered (or the TALK/

DATA switch is set to TALK) when your modem is on-line, it will hang up and return to idle mode. If power is lost, your modem will enter on-line state when DTR is restored.

If your modem has a TALK/DATA switch, it must be set to DATA.

Hanging Up

There are five ways of hanging up your modem when leased-line mode is selected.

- ❏ If your modem is attempting to establish or re-establish a connection, sending characters to it will cause it to hang up (unless &N0 has been issued).
- ❏ If synchronous mode is selected, lowering the DTR signal will cause your modem to immediately hang up.
- ❏ If asynchronous mode is selected, issuing the ATH command will cause the modem to hang up.
- ❏ If asynchronous mode is selected (&L2 or &L3), lowering DTR will cause the modem to hang up.
- ❏ Switch the TALK/DATA switch to TALK.

> *XON/XOFF flow control should not be selected for leased-line connections. Your modem will prematurely hang up if your computer sends an XON/XOFF character while the modem is attempting to reestablish a connection.*

Improving the Reliability of Leased-Line Connections If you are experiencing data errors over leased lines, issue the %L command to lower the transmit level of your modem. You may need to experiment with the levels, but start between %L15 and %L19.

The transmit level should be changed on both modems.

4 Wire Leased Line setup via audio port

To Setup 4 Wire LL via audio port:

1. Connect LL cable (Pins 1 and 4 for TX / 2 and 3 for RX) to the Audio ports on your SM5690's
2. Issue the following commands through HyperTerminal to activate Audio port:

   AT&F (Reset)

   AT-LINE=1 (Set audio port active)
3. Issue the following commands to activate LL mode:
   a. For Auto Leased Line:

      AT&L2 (Set auto LL mode) to be issued to Originate modem

      AT&L3 (Set auto LL mode) to be issued to Answering modem

   b. For Manual LL mode:

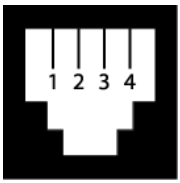
      AT&L1 (Set LL mode) to be issued to both modems

      ATA (Initiate manual answer) to be issued to answering modem

      ATD (Initiate manual dial) to be issued to originate modem.

RJ11 Pin Assignments for Leased Line

Pin	Signal	Type
1	TX	
2	RX	
3	RX	+
4	TX	_



RS-232 Signals

This section describes each of the signals supported on the modem's RS-232 socket.

> *Pin assignments are only applicable to products with a 25-pin DB-25 connector. Refer to your Product Guide for information regarding the pin assignments for your product.*

Transmit Data (TxD) - Pin 2

The computer transmits data to the modem via this pin.

Receive Data (RxD) - Pin 3

The computer receives data from the modem via this pin.

Request To Send (RTS) - Pin 4

This signal indicates to the modem whether the computer is ready to begin sending data to it. When RTS/CTS flow control is enabled, the RTS signal is used by the computer to pause the transmission of data from the modem to it. If RTS/ CTS flow control is not selected, the RTS signal is ignored when the modem is in asynchronous mode or local command state.

Clear To Send (CTS) - Pin 5

This signal indicates to the computer the modem is ready to begin receiving data from it. When RTS/CTS flow control is enabled, the CTS signal is used by the modem to pause the transmission of data from the computer to it. If RTS/CTS flow control is not selected CTS will always be asserted when asynchronous operation is selected. With synchronous mode selected CTS will be lowered when the modem is on line until such time as DSR and DCD are asserted. CTS will always be asserted in local command state.

Data Set Ready (DSR) - Pin 6

This signal indicates to the computer that the modem is ready to begin communications.

In asynchronous mode, this signal will be asserted whenever the modem is switched on and is not performing a test. In synchronous mode, the DSR will only be asserted when the modem is off hook.

The &S command lets you control the state of the DSR signal.

Signal Ground (SG) - Pin 7

Ground for all signals on the RS-232 socket.

Data Carrier Detect (DCD) - Pin 8

This signal indicates the presence of a compatible carrier signal. In asynchronous mode, the modem may be configured to assert DCD at all times, ignoring the presence of an incoming carrier signal. The &C command allows control over the state of the DCD signal.

Transmit Clock (TxC) - Pin 15

This signal only affects the operation of the modem when synchronous mode is selected. This signal may be used to clock transmit data from the host computer.

The clock pulse may be derived from the computer connected to the modem (via the XCLK pin), the remote modem (via the receive carrier signal) or the modem's internal clock. The source of the transmit clock is determined by the &X command.

Receive Clock (RxC) - Pin 17

This signal only affects the operation of the modem when synchronous mode is selected. This signal is used by your computer to synchronise incoming data. The receive data clock is always derived from the receive carrier signal.

Data Terminal Ready (DTR) - Pin 20

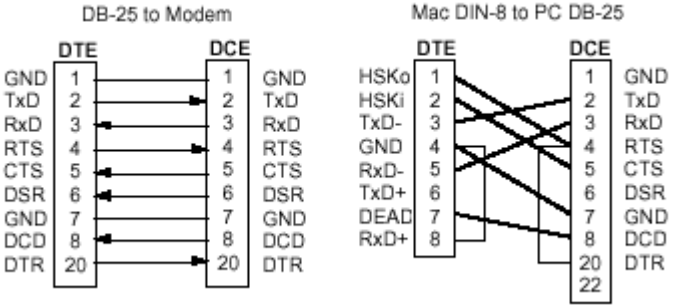
This signal indicates to the modem whether the computer is ready to begin communications. When asynchronous mode is selected the &D command allows you to determine what the modem will do if the DTR signal is lowered while the mode is in on-line state. When synchronous mode 2 is selected, dialling and answering can be initiated by the DTR signal and the modem will hang up and return to local command state if the DTR signal is lowered. The &D command lets you control the DTR signal.

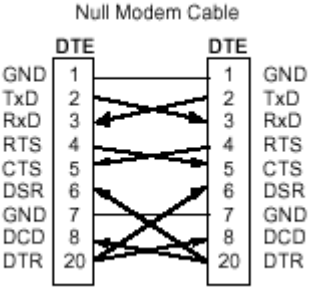
Ring Indicator (RI) - Pin 22

This signal will be asserted whenever an incoming call is detected.

External Clock (XCLK) - Pin 24

This signal is only used when a synchronous mode is asserted. The modem may be configured to use this signal for data transmission timing. The &X1 command allows external clocking to be used during synchronous connections.



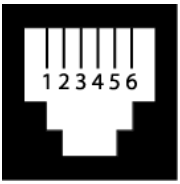


Description	*ITU*	*PC IEA*	*PC PC*	*DB-9*	*MAC DB-25*	*MAC Mac*	*DIN-8*	*DB-9*
Protective frame ground	101	AA	GND		1			
Transmit Data	103	BA	TxD	3	2		3	
Receive Data	104	BB	RxD	2	3		5	
Request to Send	105	CA	RTS	7	4		1	
Clear to Send	106	CB	CTS	8	5		2	
Data Set Ready	107	CC	DSR	6	6			
Reference signal ground	102	AB	GND	5	7		4	
Data Carrier Detect	109	CF	DCD	1	8		7	
Data Terminal Ready	108	CD	DTR	4	20	1		
Ring Indicator	125	CE	RI	9	22			

Standard RS-232 Examples

RJ11 Pin Assignments

Pin	Signal	Type
1	NC	
2	NC	
3	TIP	+
4	RING	_
5	NC	
6	NC	



Abbreviated Command List

General Commands

+++		Escape Sequence
+++		Return to local command state
****		Remote Access Sequence
?		Interactive Command Help
A/		Repeat last command
A		Answer an incoming call
Bn		Select Communications Standard
B0	■	Auto-Connect
B1		Auto-Connect
B2		Auto-Connect
B3		V.21 at 300bps
B4		Bell 103 at 300bps
B5		V.23 at 1200/75bps
B6		V.22 at 1200bps
B7		Bell 212A at 1200bps
B8		V.22bis at 2400bps
B9		Auto-Connect
B10		V.32 at 4800bps
B11		V.32 at 7200bps
B12		V.32 (Non-TCM) at 9600bps
B13		V.32 at 9600bps
B14		V.32bis at 12000bps
B15		V.32bis at 14400bps
B16		V.34 at 14,400bps
B17		V.34 at 16,800 bps
B18		V.34 at 19,200 bps
B19		V.34 at 21,600 bps
B20		V.34 at 24,000 bps
B21		V.34 at 26,400 bps
B22		V.34 at 28,800 bps
B23		31,200 bps
B24		33,600 bps
B25		(Reserved)
B26		(Reserved)
B27		V.34 at 2400bps
B28		V.34 at 4800bps
B29		V.34 at 7200bps
B30		V.34 at 9600bps
B40		V.90 at 28,000bps
B41		V.90 at 29,333bps
B42		V.90 at 30,667bps
B43		V.90 at 32,000bps
B44		V.90 at 33,333bps
B45		V.90 at 34,667bps
B46		V.90 at 36,000bps
B47		V.90 at 37,333bps
B48		V.90 at 38,667bps
B49		V.90 at 40,000bps
B50		V.90 at 41,333bps
B51		V.90 at 42,667bps
B52		V.90 at 44,000bps
B53		V.90 at 43,333bps
B54		V.90 at 46,667bps
B55		V.90 at 48,000bps
B56		V.90 at 49,333bps
B57		V.90 at 50,667bps
B58		V.90 at 52,000bps
B59		V.90 at 53,333bps
B60		V.90 at 54,667bps
B61		V.90 at 56,000bps
E0		Disable local command state echo
E1	■	Enable local command state echo
H0		Hang up
H1		Go off-hook
H2		Go off-hook after current connection terminates
I0		Display numeric identity code
I1		Return a checksum of modem's firmware
I3		Display model identifier
I4		Display code revision and creation date
I5		Display manufacturer identification
I9		Display complete product identification
I10		Display modem statistics
L0		Lowest speaker volume level
L1		Low speaker volume level
L2	■	Medium speaker level
L3		Highest speaker volume level
M0		Speaker is always off
M1	■	Speaker is on whenever the modem is dialling or answering a call. When a connection is established, the speaker is switched off

M2	Speaker is always on
M3	Speaker is off whenever the modem is dialling or once a connection is established
M4	Speaker is on whenever the modem is dialling or answering. The speaker will also be on during retrains or rate changes.
O0	Enter on-line state
O1	Enter on-line state & force equaliser retrain (2400bps & higher only)
O2	Retrain, not on-line (2400bps & higher speeds only)
O3	Change line speed to 4800 bps (V.32bis/V.34)
O4	Change line speed to 7200 bps (V.32bis/V.34)
O5	Change line speed to 9600 bps (V.32bis/V.34)
O6	Change line speed to 12,000 bps (V.32bis/V.34)
O7	Change line speed to 14,400 bps (V.32bis/V.34)
O8	Change line speed to 16,800 bps (V.34)
O9	Change line speed to 19,200 bps (V.34)
O10	Change line speed to 21,600 bps (V.34)
O11	Change line speed to 24,000 bps (V.34)
O12	Change line speed to 26,400 bps (V.34)
O13	Change line speed to 28,800 bps (V.34)
014	Change line speed to 32,000 bps (V.34)
O15	Change line speed to 33,600 bps (V.34)
O23	Change line speed to 4800 bps (V.32bis/V.34)
O24	Change line speed to 7200 bps (V.32bis/V.34)
O25	Change line speed to 9600 bps (V.32bis/V.34)
O66	Change line speed to 12,000 bps (V.32bis/V.34)
O27	Change line speed to 14,400 bps (V.32bis/V.34)
O28	Change line speed to 16,800 bps (V.32bis/V.34)
O29	Change line speed to 19,200 bps (V.32bis/V.34)
O30	Change line speed to 21,600 bps (V.32bis/V.34)
O31	Change line speed to 24,000 bps (V.32bis/V.34)
O32	Change line speed to 26,400 bps (V.32bis/V.34)
O33	Change line speed to 28,800 bps (V.32bis/V.34)
O34	Change line speed to 32,000 bps (V.32bis/V.34)
O35	Change line speed to 33,600 bps (V.32bis/V.34)
Q0 ■	Send response codes to the screen
Q1	Do not send response codes to the screen
Q2	Modem does not return RINGING, CONNECT or NO CARRIER messages when in answer mode.
R0 ■	Autobaud enabled
R1	1200 bps (locked terminal speed - no autobaud)
R2	2400 bps (locked terminal speed - no autobaud)
R4	4800 bps (locked terminal speed - no autobaud)
R7	7200 bps (locked terminal speed - no autobaud)
R9	9600 bps (locked terminal speed - no autobaud)
R12	12,000 bps (locked terminal speed - no autobaud)
R14	14,400 bps (locked terminal speed - no autobaud)
R16	16,800 bps (locked terminal speed - no autobaud)
R19	19,200 bps (locked terminal speed - no autobaud)
R21	21,600 bps (locked terminal speed - no autobaud)
R24	24,000 bps (locked terminal speed - no autobaud)
R26	26,400 bps (locked terminal speed - no autobaud)
R28	28,800 bps (locked terminal speed - no autobaud)

R38		38,400 bps (locked terminal speed - no autobaud)
R57		57,600 bps (locked terminal speed - no autobaud)
R76		76,800 bps (locked terminal speed - no autobaud)
R96		96,000 bps (locked terminal speed - no autobaud)
R115		115,200 bps (locked terminal speed - no autobaud)
R230		230,400 bps (locked terminal speed - no autobaud)
R460		460,800 bps (locked terminal speed - no autobaud)
Sn?		Display S Register Value where n is the S Register
Sn=		Set S Register Value
V0		Numeric response codes
V1	■	Verbal response codes
W0		The CONNECT message reports the terminal speed
W1		The CONNECT message reports the terminal speed
W2	■	The CONNECT message reports the line speed
X0		Display extended response codes (0-4) only
X1		Display extended response codes (0-5,10-12,30-40,60-62)
X2		Display extended response codes (0-6,10-12,30-40,60-62)
X3		Display extended response codes (0-5,7,10-12,30-40,60-62)
X4		Display extended response codes (0-7,10-12,30-40,60-62)
X5	■	Display extended response codes (0-7,10-13,30-40,60-62)
X6		Display extended response codes (0-5, 7-8, 10-13, 30-40,60-62)
Z0		Restore active configuration from stored profile 0
Z1		Restore active configuration from stored profile 1
Z2		Restore active configuration from stored profile 2
Z3		Restore active configuration from stored profile 3
&B0		8 bit characters
&B1		9 bit characters
&B2		10 bit characters
&B3		11 bit characters
&B4	■	Use 10 or 11-bit format as detected by autobaud
&C0		DCD signal is always asserted
&C1	■	DCD signal responds to remote modem
&C2		DCD signal always on, pulses low on disconnect
&C3		DCD asserted during voice session
&D0		The modem ignores the DTR signal and acts as if it is asserted (the modem assumes the computer is ready to communicate).
&D1		The modem will return to on line command state if DTR is lowered during a connection.
&D2	■	The modem will hang up, return to local command state and disable autoanswer whilst DTR is low (is not asserted). To enable auto-answer, the DTR signal must be asserted. The computer must assert DTR before dialling or answering may commence.
&D3		If DTR is lowered, the modem will hang up, return to local command state and initialise itself with the values stored in the &Y profile.
&D4		The modem will hang up, return to local command state and go off-hook. It will remain off-hook whilst DTR is low.
&F.		Total reinitialisation of modem
&F0		Restore Command and S Registers to Factory Defaults
&F1		Select non-error correction factory defaults
&F2		Select synchronous mode factory defaults
&G0	■	Do not generate guard tones
&G1		Generate guard tones of 550Hz
&G2		Generate guard tones of 1800Hz
&H0	■	Clock always present in synchronous mode
&H1		Clock only appears after connection
&K0		Flow control disabled
&K3	■	RTS/CTS (hardware) flow control
&K4		XON/XOFF (software) flow control
&K5		Transparent XON/XOFF flow control

&K9		Failsafe flow control
&L0	■	PSTN mode
&L1		Leased-line mode
&L2		Auto leased line Originate mode
&L3		Auto leased line Answer mode
&M0	■	Asynchronous mode
&M1		Synchronous mode with asynchronous dialling
&M2		Synchronous mode with dialling invoked by the DTR signal
&M4		Asynchronous mode with dialling invoked by the DTR signal
&N0		Disable abort connection
&N1	■	Enable abort connection
&R0	■	CTS follows RTS when the modem is on line.
&R1		CTS is always asserted.
&S0	■	DSR signal will always be asserted
&S1		DSR signal asserted at the start of handshake
&S2		DSR signal asserted at end of handshake (before CONNECT message)
&Vn		View Active Configuration Profile
&V0		View stored configuration profile 0
&V1		View stored configuration profile 1
&V2		View stored configuration profile 2
&V3		View stored configuration profile 3
&V8		View differences between active configuration and default settings of the S Registers
&Wn		Write Configuration Parameters
&W0		Save current configuration into profile 0
&W1		Save current configuration into profile 1
&W2		Save current configuration into profile 2
&W3		Save current configuration into profile 3
&X0	■	Synchronous clocks generated by Modem.
&X1		Clocks generated by computer - external clocking.
&X2		Clocks generated by remote system - slave clocking.
&Y0		Select stored profile 0 on power up
&Y1		Select stored profile 1 on power up
&Y2		Select stored profile 2 on power up
&Y3		Select stored profile 3 on power up
&Z		Stored Phone Number
#A0		Prevent remote access
#A1		Allow remote access
#A2	■	Allow remote access with security password
#B0	■	B0 = V.23 B2 = V.22
#B1		B0 = V.22 B2 = V.23
#C0		V.25 calling tones disabled
#C1	■	V.25 calling tones enabled
#CID0	■	Caller ID disabled
#CID1		Caller ID enabled
#CID2		Caller ID enabled with response to host in hex format
#CID3		Caller ID enabled with extended response
#D0	■	Disable direct calling procedures
#D1		Enable direct calling procedures
#E0	■	DES encryption disabled
#E1		DES encryption enabled
#E2		SuperSecure enabled (some models only)
#E3		DES MultiKey
#E4		DES AutoIV
#H		Display Help
#I0	■	V.22bis leased line normal
#I1		Use non-standard PSTN V.22bis over leased line
#J0		Assume V.42 capable
#J1	■	Check V.42 compatibility
#K0		Disable MNP 10
#K1	■	Enable MNP 10
#K2		Enable MNP 10 with cellular options
#M0	■	command operation
#M1		Asynchronous V.25bis
#M2		Synchronous V.25bis (HDLC framing)
#M3		Synchronous V.25bis (Char. framing-BSC mode)
#N0	■	NRZ Character Encoding
#N1		NRZI Character Encoding
#O0	■	Characters are ignored if the modem buffers overflow.
#O1		Modem disconnects if the terminal buffer overflows.

#O2		Modem disconnects if the line buffer overflows.
#O3		Modem disconnects if either buffer overflows.
#Q		V.25bis Terminal Speed
#Q0		Use last autobaud speed
#R		Enable remote control mode
#S		Display Security Menu
#U		V.25bis Character Set
#U0	■	ASCII character set
#U1		EBCDIC character set
#V0		Command and S Register verifier off
#V1	■	Command and S Register verifier on
%B0	■	S0=0 No AutoAnswer
%B2		S0=2 Modem answers after two rings
%C0		Compression disabled
%C1		MNP 5 compression enabled
%C2		V.42bis data comression enabled
%C3	■	V.42bis data compression enabled with fallback to MNP 5
%D0	■	No disconnect delay
%E0		Auto EQM Retrain OFF
%E1		Auto EQM Retrain ON
%E2	■	V34/V32 auto rate change
%F0		A & B switches control V.25bis function
%F1	■	Switch A forces DTR on, Switch B forces DSR high
%H0	■	Use the B setting for initial MNP 10 connection speed. The B setting is the maximum speed.
%H1		Initial connection speed is made at 1200 bps (V.22). The maximum speed is defined by the B setting.
%H2		Initial connection made at 4800 bps (V.32). The maximum speed is limited by the B setting.
%H3		Initial connection made at 9600 bps (V.32). The maximum speed is limited by the B setting.
%H9		Use the B setting for the initial connection speed, but do not upshift until the connection is established. (NetComm modems only).
%K0	■	CTS operates normally
%K1		CTS is lowered when an D command is issued and remains low until a connection is established
%L		Display Line Signal Level 11-19 (13 default) -11dB-19dB transmit level
%M0	■	Mode LEDs indicate the connection speed
%M1		Mode LEDs indicate the line quality, V.42/MNP errors and flow control
%N0	■	Standard Baud Rates
%N1		Standard to 14400 then 20800, 31200, 41600 and 62400
%N2		Standard to 38400 then 51200
%P0	■	CONNECT message appears before DCD is asserted
%P1		CONNECT message appears after to DCD is asserted
%Q		Display line signal quality
%R0	■	&R command determines the state of CTS
%R1		CTS always follows RTS (both in on-line state and local command state)
%R2		V.25bis mode: CTS on when ready to accept a command
%S0	■	DSR is not overridden
%S1		DSR mimics the state of the DTR signal (only reset by &F.)
%T0	■	DCD always follows the state of the carrier from the remote modem
%T1		DCD is always high (only reset by &F.)
%U0	■	Standard error correction response codes
%U1		V.42 response codes sent when a V.42 error corrected connection is established
%U2		Append /LAP-M or/REL (2,4,10) or /MNP-5 or /V.42bis or /DES messages to the CONNECT message when established
%W0	■	Welcome Message disabled
%W1		Welcome Message enabled
\A0		64 character MNP block size
\A1		128 character MNP block size
\A2		192 character MNP block size
\A3	■	256 character MNP block size
\Bn		Generate Break (default 3 - 0.3 seconds)
\J0	■	Fallback Constant Speed mode
\J1		Fallback to Variable Speed mode
\K		Break Control

\N		Asynchronous Operating Mode
\N0		Constant speed mode
\N1		Variable speed mode
\N2		MNP Reliable mode
\N3	■	V.42/MNP auto-reliable mode
\N4		V.42 reliable mode
\N5		V.42 auto-reliable mode
\N6		V.42/MNP reliable mode with fallback to MNP reliable mode, disconnect if MNP not supported by remote modem.
\N7		MNP auto-reliable mode
\Q0		Flow control disabled
\Q1		XON/XOFF flow control
\Q2		CTS flow control #1
\Q3		CTS/RTS flow control #1
\Q4		Modem XON/XOFF flow control
\Q5		CTS flow control #2
\Q6		CTS/RTS flow control #2
\S		Display Active Configuration
\Tn		Inactivity Timer (Data Mode)
\T0	■	Disable inactivity timer
\T35		Set inactivity timer to 35 minutes
\V0	■	Disable error correction response codes
\V1		Enable error correction response codes
\V8		Enable error correction response codes plus details of the error correction and data compression negotiated with the remote modem is displayed immediately before the CONNECT message.
\V9		Enable error correction response codes plus details of the error correction and data compression negotiated with the remote modem and diagnostic information displayed immediately before the CONNECT message.
\X0	■	Remove received XON/XOFF characters from received data
\X1		Pass through received XON/XOFF characters

*K		Select Primary DES KEY from Stored Keys
*R0	■	V.13 Remote RTS mode off
*R1		V.13 Remote RTS mode on
*S		Change Current User Password
*T0	■	Disable auto call redial
*T1		Enable auto call redial
*V0	■	Maximum 8,192 V.42bis dictionary entries
*V1		Maximum 2,048 V.42bis dictionary entries
*W		Welcome Message Text
*Y0	■	Escape Sequence Detection in Sync mode disabled
*Y1		Escape Sequence Detection in Sync mode enabled
+ICF		Character Framing and Parity Select
+MS		Select Modulation

<mod>	**Mod**	**Possible Rates (bps)**
0	V.21	300
1	V.22	1200
2	V.22bis	2400 or 1200
3	V.23	1200
9	V.32	9600 or 4800
10	V.32bis	14400, 12000, 9600, 7200, or 4800
11	V.34	33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, or 2400
12 ■	V.90	56000, 54667, 53333, 52000, 50667, 49333, 48000, 46667, 44000, 42667, 41333, 40000, 38667, 37333, 36000, 34667, 33333, 32000, 30667, 29333, 28000
64	Bell 103	300
69	Bell 212	1200

-Q0		Disable MNP10 fallback to V.22bis or V.22
-Q1	■	Enable MNP10 fallback to V.22bis or V.22 with MNP10
-DATE		Time & Date
-LOG		Call Log
:E0		Disable the V.32 compromise equaliser
:E1	■	Enable the V.32 compromise equaliser
CIC		Connect Incoming Call
CIC		Accept an incoming call after the DIC command has been issued
CRN		Dial
CRS		Dial Stored Number
DIC		Disregard Incoming Call
PRN		Stored Phone Number
RST		Reset the modem and restore the saved configuration profile

Distinctive Ring Commands

-SDR=n,x where n=0 to 7, default=0,

x=0 Disable Distinctive Ring response suffix;

x=1 Enable Distinctive Ring response suffix (default)

Dial Modifiers

D	Dial
,	Pause
;	Return to local command state
R	Reverse mode
@	Wait for quiet answer
J	Initiate MNP 10 at 1200 bps
M	Initiate MNP 10 at 4800 bps
K	MNP 10 cellular option
L	Last number redial
F or ^	Disable calling tones
!	Hook flash
S=n	Dial stored phone number n
W	Wait for dial tone

S Registers

Reg	Function	Default	Range
0	Rings Before Answer	0	0-255
1	Ring Count	0	0-255
2	Escape Sequence Character	43 (the + character)	1-255
3	Carriage Return Character	13	0-127
4	Line Feed Character	10	0-127
5	Backspace Character	8	0-127
6	Dial Tone Wait Time	4	4-7
7	Wait for Carrier	30	1-60
8	Pause Dial Modifier Delay	4	1-7
9	Carrier Detect Response Time	6	1-255
10	Lost Carrier/Hang Up Delay	18	1-255
11	DTMF Tone Timing	95	70-254
12	Escape Sequence Guard Time	50	3-255
16	Test in Progress (read only)	0	0-8
18	Test Timer	0	0-255
25	DTR Loss Detection	5	0-255
26	RTS/CTS Delay	0	0-255
27	Delay Before Dial	0	0-255
29	Hook Flash Duration	50	10-100
30	Inactivity Timer	0	0-255
33	EQM Threshold Value	3	0-255
38	Disconnect Delay	0	0-255
42	Modem Disconnect Reason		
43	Break Sequence Length	15	1-255
45	V.22bis EQM Threshold Value	98	0-255
57	DTR High Detection	0	0-255
62	V.42 Detection Timer	75 (0.75 second)	0-255
66	Remote Access Guard Time	10	1-255
67	Remote Access Character	42 (the * character)	1-125
69	Command Line Time-out	60	0-255
71	Ignore Incoming Call	0	0-30
74	Disconnect Reason for Prev. Call		
80	Flow Control High Water Mark	15 (75% of the buffer)	1-19
81	Flow Control Low Water Mark		1-19
82	Failsafe Flow Control Overrun	60	1-255
95	Extended Response Codes		0-255
96	Help Page Width	80	1-255
97	Help Page Length	24	1-255
105	Voice 'Dead Man' Timer	30	
S30	'Dead Man' Timer (voice mode)		0-255
122	AutoRateChange	55	30-100
123	AutoRateChange	16	0-20
124	Duration EQM	30	1-255

Specifications

Dimensions

Height: 31mm
Length: 218mm
Width: 122mm

Communications

V.90 56,000bps
ITU-T V.34 (2400-33600bps)
ITU-T V.32bis (4800-14400bps)
ITU-T V.32 (4800-9600bps)
ITU-T V.22bis (2400bps)
ITU-T V.22 (1200bps)
ITU-T V.23 (1200/75bps)
ITU-T V.21 (300bps)
Bell 212A (1200bps)
Bell 103 (300bps)

Terminal Speeds

300bps - 460,800bps

Power Requirements

15V Ac 6Va Plug Pack - Supplied
or 12~18VDC.

Caller ID

Austel TS 030
Bellcore MDMF message format

Command Sets

AT commands
V.25bis commands

Data Formats

Synchronous, Asynchronous: 7/8 data bits
Flow Control RTS/CTS, XON/XOFF and Transparent XON/XOFF (async mode only)

Error Correction

V.42, MNP 2-4, MNP10

Data Compression

V.42bis, MNP 5

Encryption

DES 64-bit Cypher Feedback (Aust only)
SuperSecure

Environmental

Operating: 0° to +45° C
Non-operating: -10° to +50°C

Humidity

Operating: 10% to 90% noncondensing
Non-operating: 5% to 90% non-condensing

Step 5 - Registering your NetComm Product

To ensure that the conditions of your warranty are complied with, please go to the NetComm web site for quick and easy registration of your product at

www.netcomm.com.au

Alternatively, you can fill in the Warranty Registration Form and mail it to NetComm Limited, PO Box 1200, Lane Cove NSW 2066.

Contact Information

If you have any technical difficulties with your product, please do not hesitate to contact NetComm's Customer Support Department.

Email: support@netcomm.com.au

Fax: (02) 9424-2010

Web: www.netcomm.com.au

Cut along the line

Warranty Registration Form

Date of Purchase ……

Name ……

Company ……

Address ……

…… Post Code ……

Tel No ( ) …… Fax No ( ) ……

E-mail ……

The following information is vital for your warranty

Please make sure it's correct and complete.

Serial No ……

Model ……

Product Type:

- ☐ PC Card
- ☐ External
- ☐ Internal
- ☐ Other

! Make sure you fill this section in!

I intend to use this modem at:

- ☐ Home
- ☐ School/College/University
- ☐ Business
- ☐ Government Office

Dealer's Name ……

Dealer's Address ……

…… Post Code ……

Tel No ( ) …… Fax No ( ) ……

How did you find out about our products?

……

……

Product Warranty

The warranty is granted on the following conditions:

1. This warranty extends to the original purchaser (you) and is not transferable;
2. This warranty shall not apply to software programs, batteries, power supplies, cables or other accessories supplied in or with the product;
3. The customer complies with all of the terms of any relevant agreement with NetComm and any other reasonable requirements of NetComm including producing such evidence of purchase as NetComm may require;
4. The cost of transporting product to and from NetComm's nominated premises is your responsibility; and,
5. NetComm does not have any liability or responsibility under this warranty where any cost, loss, injury or damage of any kind, whether direct, indirect, consequential, incidental or otherwise arises out of events beyond NetComm's reasonable control. This includes but is not limited to: acts of God, war, riot, embargoes, acts of civil or military authorities, fire, floods, electricity outages, lightning, power surges, or shortages of materials or labour.
6. The customer is responsible for the security of their computer and network at all times. Security features may be disabled within the factory default settings. NetComm recommends that you enable these features to enhance your security.

The warranty is automatically voided if:

1. You, or someone else, use the product, or attempts to use it, other than as specified by NetComm;
2. The fault or defect in your product is the result of a voltage surge subjected to the product either by the way of power supply or communication line, whether caused by thunderstorm activity or any other cause(s);
3. The fault is the result of accidental damage or damage in transit, including but not limited to liquid spillage;
4. Your product has been used for any purposes other than that for which it is sold, or in any way other than in strict accordance with the user manual supplied;
5. Your product has been repaired or modified or attempted to be repaired or modified, other than by a qualified person at a service centre authorised by NetComm; and,
6. The serial number has been defaced or altered in any way or if the serial number plate has been removed.

Limitations of Warranty

The Trade Practices Act 1974 and corresponding State and Territory Fair Trading Acts or legalisation of another Government ("the relevant acts") in certain circumstances imply mandatory conditions and warranties which cannot be excluded. This warranty is in addition to and not in replacement for such conditions and warranties.

To the extent permitted by the Relevant Acts, in relation to your product and any other materials provided with the product ("the Goods") the liability of NetComm under the Relevant Acts is limited to, at the option of NetComm to:

- Replacement of the Goods; or
- Repair of the Goods; or
- Payment of the cost of replacing the Goods; or
- Payment of the cost of having the Goods repaired.

All NetComm ACN 002 490 486 products have a standard 12 months warranty from date of purchase. However some products have an extended warranty option (refer to packaging). To be eligible for the extended warranty you must supply the requested warranty information to NetComm within 30 days of the original purchase by registering on-line via the NetComm web site at www.netcomm.com.au.

NetComm reserves the right to request proof of purchase upon any warranty claim.

Legal & Regulatory Information

Copyright Information

Australian Customer Information

ACA (Australian Communications Authority) requires you to be aware of the following information and warnings:

Users may experience minor audio distortion when using te VoiceModem series. This distortion may be generated by the low bit rate for voice sampling when using either the headset or hands free operation.

Some of the modem default settings have been selected to comply with Austel technical specifications.

If you intend to change any default settings you must comply with the following rules:

- The modem must not answer an incoming call less than two seconds after the first ring signal. As a “rule-of-thumb” your modem should be set so it answers incoming calls after the second ring (ATS0=2).
- If Busy signal detection is switched off, the modem must not attempt more than two automatic redials and must wait at least two seconds before redialling.
- If Busy signal detection is switched on, the modem must not attempt more than nine automatic redials and must wait at least two seconds before redialling.
- If, after redialling the maximum number of times, the modem is still unable to establish a connection you must wait 30 minutes before attempting to redial.
- The use of Bell standard 103 and 212A is not permitted in Australia. Use of these modes will cause your modem to lose its permit status.

Changing the default values of the modem, in such a way as to cause your modem to operate in a noncompliant manner when connected to a telecommunications network operated by a carrier, is contrary to the Telecommunications Act and may result in penalties of $12,000.

The Telephone Line Cord used with this unit must complie with the ACA Technical Standard TS008.

New Zealand Customer Information

New Zealand Telecom requires you to be aware of these important warnings:

This equipment may not necessarily provide for the effective hand-over of a call to or from a telephone connected to the same line.

The operation of this equipment on the same line as telephones or other equipment with audible warning devices or automatic ring detectors will give rise to bell tinkle or noise and may cause false tripping of the ring detector. Should such problems occur, the user is not to contact Telecom Faults Service.

The telephone associated with the authorised apparatus must be permitted for connection to the New Zealand public telephone network.

The transmit level from this device is set at a fixed level and because of this there may be circumstances where the device does not give its optimum performance. Before reporting such occurrences as faults, please check the line with a standard Telepermitted telephone, and do not report a fault unless the telephone performance is impaired.

If your modem ever suffers physical damage that causes its internal parts to become exposed, it should be disconnected from the phone line immediately. The modem must then be repaired before reconnection to the phone line is permissible.

Should it be necessary to physically move your modem, disconnect it from the phone line or earthing lead before disconnecting the power connection. When reconnecting your modem, reconnect the power or earthing lead before reconnecting it to the phone line.

Some parameters required for compliance with Telecom's PTC Specifications are dependent on the equipment connected to the RS 232 port. The connected equipment shall be set to operate within the following limits for compliance with Telecom Specifications:

1. Equipment connected to the RS 232 port shall be certified to meet the requirements of Reg. 18 of the New Zealand Wiring Regulations 1976.
2. When the user manually initiates a call, via equipment connected to the RS232 port, the equipment shall operate within the following restrictions:
   a. Not more than 5 call attempts shall be made to the same number within a one hour period.
   b. There shall be at least 60 seconds between call attempts.
   c. Not more than a total of 10 call attempts shall be made to the same number for any single manual call initiation.
   d. Automatic calls to different numbers shall be not less than 5 seconds apart.

FAILURE TO MEET THE ABOVE REQUIREMENTS MAY NEGATE THE USER RIGHTS UNDER THE TELECOM TERMS OF SERVICE.

When operating in V.22bis or V.22 mode over some older telephone exhanges, it may be necessary to issue the &G2 command.

Setting the S0 register (auto-answer) to S0 = 1 or to values greater than 5 will render this equipment non-compliant with the Telepermit requirements.

This equipment does not provide a guard tone with the V.22 and V.22bis answer modes. In some circumstances this could cause interference with the telephone network signalling systems, and could result in lost calls. Telecom will not accept responsibility should such problems occur. Such occurrences will be rare.

The preferred method is to use DTMF tones (ATDT...) as this is faster than pulse (decadic) dialling, and is available on most New Zealand telephone exchanges. Where DTMF is not available and decadic must be used, your communications software must be set up to record numbers according to the following translation table as the modem is not directly compatible with the New Zealand (10-N) Reverse dialling standard.

Number to be dialled	Number to program into computer 0 0
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1

Note that where DTMF dialling is used, the numbers should be entered normally.

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