

Socket Rocket 336™

Your Mobile Communications Tool

When you choose a NetComm modem, you get a lot more than you expect. Not only do you get the latest technology from the leading Australian modem manufacturer, but packed in with your modem you'll find all the software you need to get up and running.

- The modem for the corporate mobile environment
- High performance 16-bit technology 33,600 bps Fax Modem
- Very fast data throughput - up to 230.4Kbps
- Advanced security, including DES encryption
- Nationwide Customer Support
- Suitable for PC & Macintosh



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NetComm®

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Legal & Regulatory Information

Copyright Information

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NetComm limited reserves the right to change the specifications and operating details of this product without notice.

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All other trademarks are acknowledged the property of their respective owners.

Australian Customer Information

Austel (The Australian Telecommunications Authority) requires you to be aware of the following information and warnings:

Users may experience minor audio distortion when using this product. 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 non-compliant manner when connected to a telecommunications network operated by a carrier, is contrary to the Telecommunications Act 1991 and may result in penalties of \$12,000.

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 exchanges, 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.

Connecting Your Modem

1. Switch off your computer.
2. Insert your Socket Rocket 336™ into your computers PCMCIA slot - ensure the Socket Rocket 336™ label is facing up and the card is level upon insertion
3. Plug the line adaptor into the Socket Rocket 336™, ensuring the cable is inserted correctly.
4. Connect the phone cable to the line adaptor and to the telephone wall socket
5. Restart your computer

☞ Do not connect your modem to a digital telephone line or PABX. Check with your telephone service provider if you are unsure that the line you wish to use is suitable for use with your Socket Rocket 336.

Installing your modem drivers for Windows 95™

If you are using your modem with Windows 95™ you will need to install a driver. Upon restarting your computer the NetComm Socket Rocket 336 will be automatically detected and the following screen will appear:



1. Choose the “**Driver from disk provided by hardware manufacturer**” option and click on the OK button.
2. When prompted for a driver, insert the disk labelled “Modem Documentation and Drivers” and click on the OK button.

Installing your modem for Windows™ 3.1x or DOS

To use the Socket Rocket 336™ with DOS and Windows 3.1x, Card and Socket Services drivers are needed. Some computers will have these drivers already configured or a disk will be provided with the computer. Once Card and Socket Services are loaded the modem can be used. The drivers will automatically assign a COM port for your modem to use.

Installation for Macintosh

To use the Socket Rocket 336 with a Macintosh PCMCIA port, insert the card with the label facing upward into either slot.

- Gently push the card into the slot until it is socketed firmly.

When the card is firmly seated, an icon for the PC Card will appear on the desktop.

For more information about the PC Card in the slot, click on the Socket Rocket 336 icon once, so that it is highlighted. Then open the "File" menu and choose "Get Info". This will show an overview of the card status.

For additional help, see the 'Using PC Cards' topic in your 'Macintosh Guide'.

Ejecting the Socket Rocket

Some PC Card compatible computers feature an “Eject” button, which allows you to remove the modem from your computer. If your computer has an Eject button, refer to your computer's 'User Guide' for details.

If your computer does not have an Eject button, remove the modem by gently pulling the connector body of the line adaptor.

If you use a Macintosh™ computer with a PCMCIA Slot, eject the modem by dragging the Socket Rocket 336 icon onto the Trash. You may also eject the card by highlighting the Socket Rocket 336 icon, opening the Special menu and choosing Eject PC Card.



Your modem may become warm to touch after extended periods of use—please handle with care.

Distinctive Ring

The modem is able to discriminate between three different types of rings. This is useful if you purchase the Telstra Duet service. With Telstra Duet, two phone numbers are shared for one telephone line. One is for voice and the second is for your modem.

To enable the modem to answer only when your modem number is dialled, issue the command AT-SDR=4S0=2 (this can be saved with AT&W). For most users, AT-SDR=4S0=2 will be suitable. Do not set Auto Answer for less than two rings when Distinctive Ring is enabled.

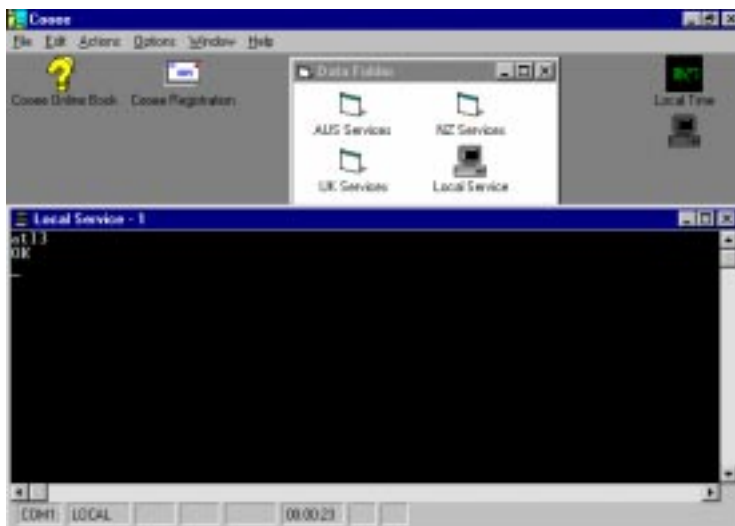
Distinctive Ring Commands

AT-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)
AT-SDR=0	Any ring detected and reported as "RING"
AT-SDR=1,1	Single ring detected and reported as "RING1"
AT-SDR=1,0	Single ring detected and reported as "RING"
AT-SDR=2,1	Double ring detected and reported as "RING2"
AT-SDR=2,0	Double ring detected and reported as "RING"
AT-SDR=3,1	Single and double ring detected and reported as "RING1" or "RING2"
AT-SDR=3,0	Single and double ring detected and reported as "RING"
AT-SDR=4,1	Triple ring detected and reported as "RING3"
AT-SDR=4,0	Triple ring detected and reported as "RING"
AT-SDR=5,1	Single and triple ring detected and reported as "RING1" or "RING3"
AT-SDR=5,0	Single and triple ring detected and reported as "RING"
AT-SDR=6,1	Double and triple ring detected and reported as "RING2" or "RING3"
AT-SDR=6,0	Double and triple ring detected and reported as "RING"
AT-SDR=7	Any ring detected and reported as "RING1" or "RING2" or "RING3"

☞ Use AT-SDR=4 for Telstra's Duet service. Do not set Auto Answer below 2 when Distinctive Ring is enabled.

Modem Commands

Your Socket Rocket 336™ has a number of specific commands that control and enhance its operation. To access and change these commands open a local terminal connection with your modem using your preferred communications software, such as Cooe, and type the letters AT followed by the specific command and press <Enter>. The AT commands are case insensitive and may be entered in either lower or capital letters.



Within Cooe, open the 'Data Folder' and double-click the 'Local Service' icon. This will open a terminal session and allow AT commands to be sent to the modem.

Example: AT&V<ENTER>

Will view the active and stored profiles of the modem.

■ indicates the default settings

Connection Commands

<i>Command</i>	<i>Description</i>
A	Answer call
D	Dial number
H	Hang up modem
O	Enter On-line state

Dial Modifiers

Dial Digits	0-9, A, B, C, D, #, *
,	Pause while dialling
F or ^	Disable calling tones
L	Redial last number
P	Pulse dial number
R	Switch to answer mode
S=n	Dial stored number 'n' (where n=0-9)
T	Tone dial number
W	Wait for dial tone
;	Return to Local command state
!	Hook flash
@	Wait for quiet answer

General Commands

<i>Command</i>	<i>Description</i>
+++	Escape Sequence
****	Universal Remote Access Sequence
?	Displays help. May be followed by the command(s) or a keyword for which help is needed
A/	Repeat Command
B0 ■	Auto-Connect
B1	Auto-Connect
B2	Auto-Connect
B3	V.21 - 300 bps
B4	Bell 103 - 300 bps
B5	V.23 - 1200/75 bps
B6	V.22 - 1200 bps
B7	Bell 212A - 1200 bps
B8	V.22bis - 2400 bps
B9	Auto-Connect
B10	V.32 - 4800 bps
B11	V.32bis - 7200 bps
B12	V.32 (Non-TCM) - 9600 bps
B13	V.32 - 9600 bps
B14	V.32bis - 12000 bps

B15	V.32bis - 14400 bps
B16	V.34 - 14400 bps
B17	V.34 - 16800 bps
B18	V.34 - 19200 bps
B19	V.34 - 21600 bps
B20	V.34 - 24000 bps
B21	V.34 - 26400 bps
B22	V.34 - 28800 bps
B23	V.34 - 31200 bps
B24	V.34 - 33600 bps
E0	Local command state echo off
E1	■ Local command state echo on
H1	Go off-hook
I0	Numeric firmware identity
I3	Modem Model
I4	Firmware Version and date
I5	Manufacturer ID
I9	Verbal firmware identity
I10	Modem Statistics
M0	Speaker is always off
M1	■ Speaker on when connecting, off when connected
M2	Speaker always on
M3	Speaker off when dialling or after connection established
M4	Speaker on during dial, answer, retrain or rate change
O1	Enter On-line state and force communication retrain
O2	Retrain, don't go on-line
P	Pulse dialling
Q0	■ Modem returns response codes
Q1	Modem does not return response codes
Q2	Modem does not return RINGING or response codes when answering
R0	■ Autobaud ☞ Although other R settings are accepted, the modem always reads the terminal speed directly from the internal 16550UART.
Sn?	Display value in S Register 'n'
Sn=x	Place 'x' in S Register 'n'
T	■ Tone dialling
V0	Numeric response codes
V1	■ Verbal response codes
W0	CONNECT message reports the terminal speed
W1	CONNECT message reports the terminal speed
W2	■ CONNECT message reports the line speed
X0	Basic response codes (codes 0-4,8)
X1	Extended response codes (codes 0-5,8,10-12,30-40,60-62)
X2	Extended response codes (codes 0-6,8,10-12,30-40,60-62)

X3		Extended response codes (codes 0-5,7,8,10-12,30-40,60-62)
X4		Extended response codes (codes 0-7,10-12,30-40,60-62)
X5	■	Extended response codes (codes 0-7,10-13,30-40,60-62)
X6		Extended response codes (codes 0-5,7-8,10-13,30-40,60-62)
Zn		Restore configuration profile n (n=0,1,2,3)
&C0		DCD signal always asserted
&C1	■	DCD signal responds to remote modem
&C2		DCD signal always on, pulses low on disconnect
&D0		Ignore DTR
&D1		Return to Local command state if DTR goes low
&D2	■	Hang up and return to Local command state if DTR goes low, disable auto-answer until DTR asserted
&D3		Initialise with values in &Y profile if DTR goes low
&F0		Restore factory defaults
&F1		Restore non-error correction factory defaults
&F.		Reset modem (clear security database/Telephone numbers)
&G0	■	No guard tone generated
&G1		550 Hz guard tone generated
&G2		1800 Hz guard tone generated
&K0		Flow control disabled
&K3		RTS/CTS flow control
&K4		XON/XOFF flow control
&K5		Transparent XON/XOFF flow control
&K9	■	Failsafe flow control
&M0	■	Asynchronous mode
&M4		Asynchronous mode with stored number dialling
&N0		Abort dial character disabled
&N1	■	Abort dial character enabled
&P0		39/61 make/break ratio (USA)
&P1	■▲	33/67 make/break ratio (Aus/UK)
&S0	■	DSR signal always asserted
&S1		DSR signal asserted at start of handshake
&S2		DSR signal asserted at end of handshake
&T0		Terminate test
&T1		Local Analog Loopback test
&T4		Grant Remote Digital Loopback test
&T5		Deny Remote Digital Loopback test
&T6		Remote Digital Loopback test
&T7		Remote Digital Loopback & Self test
&V		View active configuration profile
&Vn		View stored profile (n=0-3)
&V8		View differences between active and default
&Wn		Save current configuration into stored profile n (n=0,1,2,3)
&Yn		Select stored profile n for Power on and &D3

&Zn=x		Store x as phone number n (x=0-9)
#A0		Prevent remote access
#A1		Allow remote access
#A2	■	Allow remote access with security password
#B0	■	In 1200bps originate mode B0=V.23, B2=V.22
#B1		In 1200bps originate mode B0=V.22, B2=V.23
#C0		V.25 calling tones disabled
#C1	■	V.25 calling tones enabled
#E0	■	DES encryption disabled
#E1		DES encryption enabled
#E2		Super secure enabled
#J0		Assume V.42 compatibility
#J1	■	Check V.42 compatibility
#K0		Disable MNP10 Enhanced Error Correction
#K1	■	Enable MNP10 Enhanced Error Correction
#K2		Enable MNP10 Enhanced Error Correction with Cellular Notification
#O0	■	Characters ignored if modem buffers overflow
#O1		Disconnects if terminal buffer overflows
#O2		Disconnects if line buffer overflows
#O3		Disconnects if either buffer overflows
#S		Enter security menu mode
#V0		Command and S Register verifier off
#V1	■	Command and S Register verifier on
%B0	■	S0=0 setting after AT&F
%B1		S0=2 setting after AT&F
%C0		Compression disabled
%C1		MNP 5 compression enabled
%C2		V.42bis data compression enabled
%C3	■	V.42bis data compression enabled with fallback to MNP 5
%Dn		Set disconnect delay to n seconds (default %D0)
%E0		Disable auto-retrain
%E1		Enable auto-retrain
%E2	■	Automatic Speed Stepping
%H0	■	Use B setting for initial MNP 10 connection speed
%H1		Initial connection is made at 1200 bps (MNP 10)
%H2		Initial connection is made at 4800 bps (MNP 10)
%H9		Use B setting for connection but do not upshift (MNP 10)
%K0	■	CTS operates normally
%K1		CTS off during dial and handshake
%L0		Report current received signal level (-dBm)
%Ln		Set transmit level (n=11 to 19; -11dBm to -19dBm)
%P0	■	CONNECT message appears before DCD asserted
%P1		CONNECT message appears after DCD asserted
%Q		Report current line quality (EQM) (0=perfect)
%R0	■	&R command determines state of CTS
%R1		CTS always follows RTS (not reset by &F)

%R2		CTS follows DTR when offline (not reset by &F)
%S0	■	DSR is not overridden
%S1		DSR mimics the state of DTR (not reset by &F)
%T0	■	DCD always follows state of carrier
%U0	■	Standard error correction response codes
%U1		V.42 response codes when V.42 connection established
%U2		V.42 response codes for V.42 connections, MNP 2,4, compression & DES messages displayed
%W0	■	Disable welcome message
%W1		Send message specified by *W to remote modem after connect
\A0		MNP block size = 64
\A1		MNP block size = 128
\A2		MNP block size = 192
\A3	■	MNP block size = 256
\Bn		Send Break sequence to remote modem (default \B3)
\J0	■	Fallback to direct mode disabled
\J1		Fallback to direct mode enabled
\Kn		Received Break control (default \K5)
\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, fallback to MNP reliable mode
\N7		MNP auto-reliable mode
\Q0		Flow control disabled
\Q1		XON/XOFF flow control from modem and computer
\Q2		CTS flow control
\Q3		CTS-RTS flow control (same as &K3)
\Q4		Modem-only XON/XOFF flow control
\Q5		CTS flow control (CTS low until connection)
\Q6		CTS-RTS flow control - CTS low until connect
\S		Display active configuration with detailed description
\Tn		Set inactivity timer to n seconds (Default \T0)
\V0	■	Disable reliable response codes
\V1		Enable reliable response codes
\V8		Extended response codes
\V9		Extended response codes with diagnostic information
\X0	■	XON/XOFF pass through disabled
\X1		XON/XOFF pass through enabled
*A0		Conservative Automatic Rate Selection
*A1	■	Medium Automatic Rate Selection
*A2		Aggressive Automatic Rate Selection
*Kn		Select Active Primary DES Key (0-9)
*Wttt...tt		Specify welcome message text used by %W1 ttt...tt = text use for new line (max. 80 characters)

Modulation Setting

- +MS? Report selected options
- +MS=? Report list of supported options
- +MS= <mod>,<automode>,<min_rate>,<max_rate><E>
- <mod> see table
- <automode> =0 (automode disabled, fixed modulation)
- <automode> =1 (automode enabled, auto select speed/mod)
- <min_rate> =lowest rate for modem connection
- <max_rate> =highest rate for modem connection

<mod>	Modulation	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	33,600, 31,200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, or 2400
64	Bell 103	300
69	Bell 212	1200

S Registers

<i>Reg</i>	<i>Range</i>	<i>Def</i>	<i>Unit</i>	<i>Function</i>
0	0-255	0	rings	Rings Before Answer
1	0-255	00	rings	Ring Count (read only)
2	1-255	43(+)	ASCII	Escape Sequence Character
3	0-127	13	ASCII	Carriage Return Character
4	0-127	10	ASCII	Line Feed Character
5	0-127	08	ASCII	Backspace Character
6	4-7	04	secs	Wait for Dial Tone
7	1-60	30	secs	Wait for Carrier
8	1-7	04	secs	Delay for Pause Modifier
9	1-255	06	0.1secs	Carrier Detect Response Time (fsk only)
10	1-255	18	0.1secs	Lost Carrier/Hang Up Delay (fsk only)
11	70-254	95	msecs	Touch Tone Timing
12	3-255	50	0.02secs	Escape Sequence Guard Time
16	0-8	00		Test in Progress (read only)
18	0-255	00	secs	Test Timer
25	0-255	05	0.01secs	DTR Loss Detection Time
26	0-255	00	0.01secs	RTS-CTS Delay
27	0-255	00	secs	Delay Before Security Dial-back
29	10-100	50	0.01secs	Hook Flash Duration (also sets S100)
30	0-255	00	10secs	Inactivity Timer (data mode)
33	0-1	1		Retrain Disable = 0
38	0-255	00	secs	Disconnect Delay
42	0-255			Modem Disconnect Reason (read only)
43	0-255	15	msecs	Break Sequence Length
62	0-255	75	0.01secs	V.42 detection timer
66	1-255	10	0.1secs	Remote Access Guard Time
67	1-127	42(*)	ASCII	Remote Access Character
69	0-255	60	secs	Command line timeout
74	0-255			Disconnect Reason Previous Call
75	0-255	0	0.01secs	DTR active detection time
80	1-19	15	5%	Flow Control High Water Mark
81	1-19	03	5%	Flow Control Low Water Mark
82	1-255	60	bytes	Failsafe Flow Control Overrun
95	0-63	0	bitmap	Extended Result Codes
96	1-255	80		Help Page Width
97	1-255	24		Help Page length
100	1-10	5	100msecs	Hook Flash Duration (also sets S29)

Use AT? to see the Command Set supported by your modem's version of code. For a detailed description of the modem commands, refer to the SmartModem Reference Guide in the Manuals section of the NetComm CD ROM.

Response Codes

<i>Num</i>	<i>Verbal</i>	<i>Description</i>
0	OK	Command accepted
1	CONNECT	Connection established
2	RING	Incoming call detected
3	NO CARRIER	Carrier not detected
4	ERROR	Command error
6	NO DIALTONE	Dial tone not detected, check phone connection
7	BUSY	The number dialled is busy
8	NO ANSWER	Silence not detected
13	RINGING	The number dialled is ringing
5	CONNECT 1200	Connected at 1200 bps
10	CONNECT 2400	Connected at 2400 bps
11	CONNECT 4800	Connected at 4800 bps
32	CONNECT 7200	Connected at 7200 bps
12	CONNECT 9600	Connected at 9600 bps
30	CONNECT 12000	Connected at 12000 bps
31	CONNECT 14400	Connected at 14400 bps
33	CONNECT 16800	Connected at 16800 bps
34	CONNECT 19200	Connected at 19200 bps
35	CONNECT 21600	Connected at 21600 bps
36	CONNECT 24000	Connected at 24000 bps
37	CONNECT 26400	Connected at 26400 bps
38	CONNECT 28800	Connected at 28800 bps
95	CONNECT 31200	Connected at 31200 bps
97	CONNECT 33600	Connected at 33600 bps
39	CONNECT 38400	Connected at 38400 bps
40	CONNECT 57600	Connected at 57600 bps
60	CONNECT 76800	Connected at 76800 bps
61	CONNECT 96000	Connected at 96000 bps
62	CONNECT 115200	Connected at 115200 bps
63	CONNECT 230400	Connected at 230400 bps

Glossary

A

ACK (Acknowledge)

Control Character transmitted by a receiving device as an affirmation to a sending device.

Alphanumeric

Roman Letters (alphabetic) and Arabic numbers (numeric).

Amplitude

The height of a waveform measured in volts.

Amplitude Modulation (AM)

Transmission of information by varying the amplitude of a carrier signal.

Analog Data

Data in the form of continuously variable physical qualities. Compare with Digital data.

Analog signal

A signal such as voice or music that varies in a continuous manner (smooth transitions to different levels).

ANSI

American National Standards Institute, primary standards development body in the USA.

ASCII

American Standard Code for Information Interchange. Pronounced *as-kee*. A code by which alphanumeric, punctuation and control characters, commonly found on computer keyboards, are each assigned a unique value between 0-127 (decimal).

Asynchronous

A data transmission in which the time between characters may vary. Characters are delimited by start and stop bits.

Attenuation

The loss of power through transmission equipment, lines or other communication devices.

Auto answer

A modem capability that allows automatic pick-up — by the modem — when the phone answers.

Auto dial

The ability to make a connection with another modem automatically. (To dial a number automatically, usually using a stored number.)

Auto range

The ability of a modem to range over several modem standards to determine the standard of the calling modem.

B

Bandwidth

The range of signal frequencies that are accepted or passed by a circuit or network. (The normal bandwidth on a telephone line is 3100Hz.)

Baseband

The frequency band occupied by a signal in its original or unmodulated form.

Baud

This term represents the number of signal elements per second. Because a signal element can represent more than one bit, this term is not equivalent to BPS (bits per second), although it is often used in this way. Compare with bit rate.

Baud Rate

Number of discrete signalling events per second; not necessarily the same as bits per second. For example, a V22bis, 2400 bps modem uses a 600 baud by 4-bit encoding scheme.

Baudot Code

Code for transmitting data using five bits to represent a single character.

BBS

An acronym for Bulletin Board System. See Bulletin Board.

Binary

A number system with a base of two, using the digits 0 and 1. Commonly used in computers since the values 0 and 1 can easily be represented as OFF and ON in electrical circuits.

Binary Synchronous Communications (BSC or BiSync)

A communications protocol developed by IBM which has become an industry standard. It uses a defined set of control character sequences for synchronized transmission of data.

Bit

The smallest piece of information in a binary number system. The word stands for Binary digIT.

Bit rate

The speed at which bits are transmitted, usually expressed as bits per second (BPS).

Block

Group of characters treated as a unit for the purpose of data transmission.

BPS

An acronym for Bits Per Second. Transmission rate of binary numbers. Compare with Baud.

Break

A special, non-data signal used by computer equipment to interrupt some processes.

Buffer

Temporary storage area used to compensate for a difference in the rate of data flow into and out of a device.

Bulletin Board

A generic term covering a wide variety of on line information services. Many bulletin boards are open to the public, run at no cost to users and provide the ability to download public domain software and exchange electronic mail.

Byte

A grouping of bits to specify a single character usually consisting of eight consecutive bits. See also Bit.

C

Carrier signal

An analog signal of known specifications, such as level and frequency, which is modulated by another signal containing information to be transmitted. This is the high-pitched sound you can hear when you first connect to a remote system.

Carrier Detect

An RS-232 interface signal from the modem to a terminal or personal computer indicating that the modem is receiving a signal from a remote modem. See also DCD.

Channel

An electronic communications path. A voice grade channel generally ranges from 300 to 4000 Hz.

Character

A letter, number or other symbol contained in a message or used in a control function. See Byte.

Character Set

The characters that can be coded or used by a particular machine.

Clear to Send (CTS)

An RS-232 control signal sent by the DCE to indicate that the DTE may begin a transmission.

Code

A predefined set of rules specifying the way data is to be represented by the transmitting and receiving device.

Common Carrier

Telephone company that furnishes communications services to the general public.

Conditioning

The addition of equipment to a leased voice-grade line to improve the transmission characteristics of the line.

Conferencing

A form of bulletin board that allows real-time communication between multiple users. In the U.S.A., conferencing systems have been established to allow large numbers of individuals to simultaneously discuss a wide range of specialised topics and interests.

Connector

A physical devices, such as a plug, socket or jack, used to connect one hardware component of a system to another. A connector may also be called a port.

Connect Time

The amount of time spent on line with an information service.

Console

Part of a computer system, usually a video display terminal, used by the operator to communicate with the computer.

Contention

Condition arising when two or more devices try to transmit at the same time using the same channel.

Control Character

Any character assigned as ASCII numeric code less than the SPACE character. These characters are used to initiate a control function on the receiving device.

Also a symbol you can create by pressing one of your computer's keys while holding down the Control key. These symbols are not usually printed, and are generally used to control screen formatting and cursor positioning.

CPU

Central Processing Unit. The computer hardware which processes software instructions to control the computer system and its peripherals.

CRT

Cathode Ray Tube. This term is commonly used to stand for the video display terminal.

CTS

An acronym for Clear To Send. This signal is generated by a modem in response to RTS to indicate that a communications channel has been established and that data can be sent.

Cyclic Redundancy Check

An error-detection technique in which a data validation value is mathematically derived from a block of data and transmitted at the end of the block. The receiving end recomputes the value and if it matches the value sent, the data is assumed to be valid (error-free). If not, the receiver notifies the transmitter that an error has occurred and the block is retransmitted.

D

Data

Any type of information, such as numbers, letters and symbols, that can be processed by a computer.

Database

A source or collection of information. In the context of communications, a dial-up service from which users can exchange or retrieve information.

Data Bits

The actual characters being transmitted between two computers when asynchronous communications is being used. Usually 7 or 8 data bits are used.

Data Communications

A broad term covering any exchange of information between computers or similar systems over telephone lines.

Data Communications Equipment

Equipment that is used to access a communications network. The DCE provides all the functions required to establish, maintain and terminate a connection, and provides the signal conversion required for communications between the Data Terminal Equipment (DTE) and the telephone network.

With RS-232 connections, the modem is generally the DCE device while the computer or terminal connected to a modem is generally the DTE device. See also Data Terminal Equipment.

Data Compression

An encoding technique which provides for the transmission of fewer data bits without the loss of information. The receiving end expands the data received to its original form.

Data Set

See Data Communications Equipment and Modem.

Data Set Ready (DSR)

An RS-232 control signal used to indicate the readiness of the DCE (Usually a modem) to accept data from the DTE (usually a terminal or computer).

Data Terminal Equipment (DTE)

The equipment which provides the data source and/or receiving end of a data transmission link. The DTE may be a CRT or teletype terminal, a personal computer, a printer, a front-end processor to a large mainframe computer or any other device which can transmit or receive data. With RS-232 connections the designation of DTE or DCE determines which device is responsible for generating certain control signals. See also Data Communications Equipment.

Data Terminal Ready (DTR)

An RS-232 control signal used to indicate the readiness of the DTE for data transmission.

DCD

An acronym for Data Carrier Detect. See also Carrier Detect.

DCE

An acronym of Data Communications Equipment. See Data Communications Equipment.

Decibel (dB)

Unit of measure indicating the logarithmic ratio of output signal power to input signal power.

Dedicated Line

A communications line which is not dialled. Also known as a leased or private line.

Default

A value, action or setting that is automatically used by a computer system when no other explicit information has been given.

Demodulate

To recover the information being transmitted by a modulated signal. For example, a conventional radio receiver demodulates an incoming broadcast signal to convert it into sound emitted by a speaker. See also Modulate and Modem.

Device

A piece of equipment connected to a computer — maybe a Fax Card or Modem.

Dial-up

Establishing a temporary connection to a remote system or computer via the public switched telephone network.

Dial Tone

A call progress signal returned by a telephone switching machine to indicate that it is ready to accept a telephone number.

Dibit

A grouping of two bits.

Digital Signal

A signal composed of discrete signal levels as opposed to the continuous signal levels of an analog signal.

Direct Keying

In videotex terminology direct keying refers to accessing a page by specifying its page number rather than using index pages.

Distortion

Undesired change in a signal's original waveform resulting from the characteristics of the transmission circuits or other external influences.

Downloading

See Software Downloading.

DTE

An acronym of Data Terminal Equipment. See Data Terminal Equipment.

Double-Digit Keying

Pressing two number keys in rapid succession to access a page in a videotex system. The first number accesses an intermediate index (see Intermediate Page) which in turn accesses the page. See also Single-Digit Keying.

Dumb Terminal

Terminals that do not contain an intelligent microprocessor and usually send data one character at a time.

Duplex Transmission

Independent, simultaneous, two-way transmission.

E

EBCDIC

Extended Binary Coded Decimal Interchange Code. An eight bit code used primarily by IBM equipment.

Echo

The re-transmission of characters received by either the modem or remote system back to the DTE.

Echoplex

Method of verification of transmitted data by echoing the characters transmitted back to the source device for verification. Echoplex is sometimes called remote echo and, erroneously, half-duplex.

EEPROM

Electrically Erasable Programmable Read Only Memory.

EIA

Electronic Industries Association. Organisation in the USA that sets standards for the functional characteristics of electronic interfaces.

Electronic Mail

A means by which users of a particular bulletin board or videotex system can send messages to other users of that system. Some dial-up services deal exclusively with providing electronic mail facilities.

E-MAIL

See Electronic Mail.

ENQ

Control character used to enquire as to the identification or status of a remote device.

Even Parity

Even parity refers to the addition of a 0 value or 1 value bit to the data bits which form a character to cause an even number of 1 value data bits to be sent. See also Parity.

ETX

Control character which indicates the End of Text in a transmitted message.

F

Firmware

Computer program stored permanently in Read Only Memory.

Forward Error Correction (FEC)

Technique of transmitting additional information with the original data so that if small errors are detected the correct information can be recreated by the receiving end without requiring a re-transmission.

Frame

See Block.

Frequency Modulation (FM)

A method of transmitting information by varying the carrier frequency.

Frequency Shift Keying

A form of frequency modulation in which the frequency of the carrier is shifted between two frequencies to represent digital data.

Front-end Processor

Computer equipment designed primarily for communications control associated with a large mainframe.

Full Duplex

Data transmission which allows data to flow in two directions at the same time.

G

Gateway

An electronic connection of some type, generally transparent to the user, by which multiple computers can be connected together.

Graphics

Information in the form of pictures or images. Also, the display of pictures or images on a computer's display screen.

Guard Band

Narrow frequency band left unused between adjacent channels to minimize interference.

H

Half Duplex

Data transmission in which data may flow in either direction at one time, but not both directions simultaneously. Transmission direction is alternatively switched to allow two way flow of data.

Handshake

A predetermined interchange of signals between two devices to establish conditions for a transfer of data.

Hardware

The electronic or electro-mechanical devices in a computer system as opposed to the programs or software.

Hardware Handshaking

The use of special RS-232 signals to halt or commence the flow of data between two computers or terminals, between computers and modems or between facsimile machines. See also Software Handshaking, RTS and CTS

Harmonics

Frequencies which are integer multiples of some fundamental frequency.

Harmonic Distortion

A line impairment caused by equipment which distorts the original signal at multiples of the same fundamental frequency.

Hexadecimal Numbers

A number system with a base of 16. The first ten digits are represented by 0-9 while the last six digits are represented by A-F. Hexadecimal numbers can be easily translated from binary numbers and are easier for humans to understand and read than are binary numbers.

HDLC

High Level Data Link Control. Communications protocol developed by the International Standards Organization.

Header

In communications protocols, this is the control information that precedes the message or text portion of a block of data.

Hertz (Hz)

Unit of frequency, one cycle per second.

Horizontal Redundancy Checking (HRC)

Technique in which redundant information is included with a block of data for validating the transmitted data at the receiving end.

Host Computer

A computer that manages information for many terminals. A host computer may be mainframe, minicomputer or a microcomputer.

I

ID Name

See ID Number.

ID Number

A security code, used mainly with remote systems that either charge a

subscription fee, allow the purchasing of goods and services on line or both. The code is known only to the user and protects the user from unauthorised access to her/his account. See also Password.

Input

Information transferred into a computer from some external source, such as the keyboard, a disk drive, a modem or a scanner. Also, the act or process of transferring such information.

Input/Output Device

A device that transfers information into or out of a computer.

Interface

A physical point of interconnection between two devices where electrical signal levels, timing, handshaking and pin numbers are defined. The devices, rules or convention by which one component of a system communicates with another.

Interference

Undesirable disturbances or distortions in a data transmission signal.

Intermediate Page

An index page which, when used with another index page, allows users to perform double-digit keying.

I/O

Input/Output. The transfer of information into and out of a computer.

ISO

International Standards Organization.

J

Jack

A socket used for telephone line or other electrical connections.

K

Kermit

Kermit is a file transfer protocol developed for operating systems which could not support the XModem protocol. Kermit was developed at Columbia University in 1981.

Keying

Videotex systems only. Refers to pressing of numeric keys to access an item from an index.

L

LED

Acronym for light emitting diode. See Light Emitting Diode.

Light Emitting Diode

A diode which glows when a current flows through it. Often used as an indicator light.

Link

A circuit or transmission path, including all equipment, between a sender and a receiver.

Local Echo

A method of communication in which your modem or software displays data locally on your screen, without relying on the host computer to echo the characters back.

Log on

To connect to or access a bulletin board or videotex system.

Log Off

To disconnect from a bulletin board or videotex system.

Longitudinal Redundancy Check

Error detection technique that consists of a byte where each bit is calculated on the basis of the parity of all bits in the block in the same position.

Loopback

Directing signals back toward the source at some point in the communications path.

M

Mailbox

A term used to describe the holding, by a bulletin board, videotex or electronic mail system, of electronic messages (mail) for a user. Usually, the system will announce if the user has any unread mail when she/he logs on.

Mainframe

Large scale computer system composed of a large number of peripherals and comprehensive software.

Mark

One of the two possible states of a binary data element. The closed circuit and idle condition in a teleprinter circuit. Also see Space.

Modem

Modulator/Demodulator. A device to convert data from a computer or terminal into a form suitable for transmission across a telephone system.

Modem Eliminator

A usually passive device which takes the place of a modem between a local terminal which requires a modem and a computer.

Modulate

To modify or alter a signal so as to transmit information. For example, conventional broadcast radio transmits sound by modulating the amplitude (Amplitude Modulation, or AM) or the frequency (Frequency Modulation, or FM) or a carrier signal. See also Demodulate and Modem.

Monitor

A program or device used to observe an operation without interfering with the operation.

Multidrop Line

Single communications circuit interconnecting many stations (nodes) each containing terminal devices.

Multiplex

To interleave or simultaneously transmit two or more messages on a single channel.

N

NAK

Negative Acknowledgement. This control character indicates that the last block transmitted was in error and that the receiver is expecting a re-transmission.

Node

A point of interconnection on a circuit.

Noise

Random electrical signals introduced by components of the circuit or natural disturbances which can produce errors in transmission.

Null Modem

See Modem Eliminator.

O

Odd Parity

Odd parity refers to the appending of a 0 or 1 value bit to the data bits of a character to ensure that an odd number of 1 value bits are sent. See also Even Parity and Parity.

Off line

Describes equipment and activities connected to, but not currently accessible by, a computer.

On line

Describes activities and equipment currently connected to an accessible by a computer.

P

PABX

Private Automatic Branch Exchange. An automatic switchboard for handling large concentrations of telephones (extensions).

Packet

Group of bits including data and control elements that are transmitted as a whole.

Packet Switched Network

System where messages are transmitted in packets, each individually addressed and routed through the network.

Packetised Ensemble Protocol (PEP)

A patented data transmission technique used by the TrailBlazer modem to transmit data at up 18000 bps on the switched telephone network.

Parity

A simple method of error checking by which the number of data bits received are added together to ensure that the correct number have been received. Most bulletin boards do not use any parity checking.

Password

A second-level security device, generally being a set number of characters. The length and types of passwords used with bulletin boards varies from one system to another. On most videotex systems a four character password is used. See also ID Number.

PBX

See PABX.

PEP

See Packetised Ensemble Protocol.

Peripheral

(Or peripheral device). A device, such as a video monitor, disk drive, printer or modem, used in conjunction with a computer. Often (but not necessarily) physically separate from the computer and connected to it by wires, cables or some other form of interface.

Phase Modulation (PM)

A method of modulating the carrier wave based on the data by varying the phase relationship of the signal elements.

Point-to-point

A connection between two points as opposed to a multipoint or multidrop line.

Port

The point of connection, usually a physical connector, between a computer and a peripheral device, another computer or a network.

PROM

Programmable Read Only Memory.

Propagation Delay

The time required for a signal to travel from one end of a circuit to another.

Protocol

A set of conventions controlling the timing and format of data communications between two pieces of communications equipment.

Protocol Convertor

Device that converts from one protocol to another.

Public Domain Software

Software from which its author has relinquished copyrights. This software is free of charge and may be distributed for non-commercial purposes. Many bulletin boards and videotex systems carry public domain software for users to download. See also Shareware.

Public Switched Network

Telephone system providing circuit switching to many customers.

Pulse

An abrupt and relatively short change in voltage, either positive or negative, resulting in the conveyance of data in a circuit.

Q

Quadrature Amplitude Modulation (QAM)

A modulation technique which employs both amplitude and phase modulation to encode multiple bits in a single element.

R

RAM

Random Access Memory.

Received Line Signal Detector

See Carrier Detect.

Redundancy Check

Technique of error detection involving the transmission of additional data related to the message so that the receiving device can determine if the data transmitted is valid (error-free).

Remote System

Usually a bulletin board or videotex system that registered users or the public can dial up and communicate with via modem.

Request to Send

RS-232 control signal by the DTE to inform the DCE that it is ready to transmit data. When used for flow control between the DTE and the modem, this signal indicates to the modem that the DTE is ready to accept data.

Ring Indicator

RS-232 control signal used by the DCE to inform the DTE that it is receiving a ringing signal.

ROM

Read Only Memory.

RS-232C

Frequently shortened to RS-232. A standard which defines the physical and electrical interface between Data Communications Equipment and Data Terminal Equipment. The most commonly used interface between modems and computers. Also known as ITU-T V24.

RTS

An acronym for Request To Send. This signal is generated by the terminal or computer indicating that it requires to send data to the modem. Used mainly in half-duplex communications.

S

SDLC

The standard Synchronous Data Link Control protocol used by IBM for products which conform to its System Network Architecture.

Serial Data

Data transmission in which each bit of information is sent sequentially through a single data path.

Shareware

An extension of public domain software. Individuals can obtain copies of software for free from bulletin boards or other computer users. If the software is useful to them, they are encouraged to send a small fee to the program's author, usually for a printed manual, registration and any software updates that are available. See also Public Domain Software.

SIG

An acronym for Special Interest Group. Groups of user's who share an interest in a particular topic. Often SIGs set up bulletin boards, available only to SIG members.

Simplex

Data communications in one direction only.

Single-Digit Keying

Refers to videotex systems where you only need to press one numeric key from an index. See also Double-Digit Keying.

Software

Computer program or set of computer programs held in storage, and loaded into RAM for execution.

Software Downloading

Known as software downloading or teleloading on videotex systems and downloading on some bulletin boards. Refers to the transferring of software from a remote system to your computer.

Software Handshaking

A method of controlling the flow of data between two computers or terminals. Special control characters are sent from one terminal to the other in order to halt or re-commence the flow of data. See also Hardware Handshaking.

Space

One of the two possible states of a binary data element. The open circuit condition in a teleprinter circuit. Also see Mark.

Special Interest Group

See SIG.

Start Bit

When a character is transmitted asynchronously to another computer, a start bit always precedes the actual data. Seven or eight data bits, an optional parity bit and a stop bit will follow.

Stop Bit

The last bit or element transmitted in asynchronous transmission of a character to return the circuit to an idle state. One or two stop bits are sent at the end of each character of data.

Synchronous

A data transmission in which the time between characters is fixed by synchronising the transmitting and receiving communications equipment. The clock signal is typically derived from the data stream in order to maintain synchronisation.

Sysop

System Operator. This is the person or organisation who controls and maintains a videotex or bulletin board system. Most bulletin board systems display the name of their individual sysops when you first log on.

T

Telecommunications

The transmission of information across long distances, such as over telephone lines.

Tele-downloading

See Software Downloading.

Teleload

See Software Downloading.

Teletext

A non-interactive information system that was the predecessor to videotex systems. Teletext terminals consist of a specially modified television set and keypad to provide 24 lines of 40 column colour text and graphics. Connection is made to teletext systems by specially assigned television broadcast channels, hence the need to use a television set. Videotex terminals cannot access the information contained in a teletext system.

Terminal

An input/output device consisting of a typewriter-like keyboard and a display device, used for communicating with a large computer. Any device capable of sending and/or receiving data over a communications channel.

Terminal Emulation

Refers to the type of ASCII terminal your software will imitate (the control characters used to perform certain screen and cursor movement tasks vary from one terminal to another).

Text

The message portion of a data block in synchronous data transmissions.

Turnaround Time

The time required to reverse the direction of transmission when operating in half duplex mode.

U

Upload

Refers to sending files or text from the user's computer to another user, a bulletin board or videotex system. (Many bulletin boards that offer public domain software encourage users to upload their own programs so that other users can download them).

V

Vertical Redundancy Check (VRC)

A method of character parity checking.

Videotex

An interactive information system which is also known as Videotext or Viewdata. Videotex systems usually operate over switched telephone lines and allow 40 columns by 24 lines of colour text and graphics to be displayed on the screen. Information is arranged in pages, each page having a unique page number. Well known videotex systems include Prestel (Britain), Discovery 40 (Australia), and Minitel (France). See also Teletext.

Videotext

See Videotex.

Voice Grade Line

Channel with a frequency range of 300 to 3400 Hz suitable for the transmission of speech or data in analog form.

X

XModem

A communications protocol developed in the late '70s by Ward Christensen to perform error checking on data being sent between two computers.

XON/XOFF

Special control characters used to control the flow of data between your computer and a remote system. See Software Handshaking.

Y

Y Modem

An extension of the original XModem transfer protocol. Added features included transfer of file names, multi-file transfers, increased reliability of error checking and increased data throughput.

Z

ZModem

Designed to rectify some of the limitations associated with YModem as well as providing support for high speed, packet and network communications environments.

Specifications

Dimensions

Height: 5mm
Length: 85mm
Width: 54mm

PCMCIA

Type II PC Card (Version2.1)
and JEIDA 4.2

Power

Supplied by computer

Power Consumption

280mA (1400mW) max.
150mA (750mW) standby

Environmental

Operating: 0° to +45° C
Non-operating: -20° to +60° C

Humidity

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

Command Sets

AT commands
EIA Class 1 fax commands
EIA Class 2 fax commands

Data Formats

Asynchronous: 7/8 data bits

Terminal Speeds

300bps - 230,400bps

Flow Control

RTS/CTS, XON/XOFF and
Transparent
XON/XOFF

Communications

33,600bps
31,200bps
ITU-T V.34 (2400-28,800bps)
ITU-T V.32bis (14,400bps)
ITU-T V.32bis (12,000bps)
ITU-T V.32 (9600bps)
ITU-T V.32 (7200bps)
ITU-T V.32 (4800bps)
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)
ITU-T V.17 (fax 12,000-
14,400bps)
ITU-T V.29 (fax 7200-
9600bps)
ITU-T V.27ter (fax 2400-
4800bps)

Error Correction

V.42, MNP 2-4

Data Compression

V.42bis, MNP 5

Encryption

DES 64-bit Cypher Feedback
(Aust only)
Super Secure

Initialisation String

A suggested general purpose
Init String for most
communications programs:
AT&F#C0S7=60&K3

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