Industrial Modem

Designed for unattended sites

- Designed to survive harsh environmental conditions for unattended operation, such as remote monitoring.
- Dual Watchdog Timers which can restart the modem if the modem crashes, starts executing invalid code or has a power interruption.
- Fully customisable.
- A unique voice messaging system that can be used as a voice mail box or answering machine.
- Dial & Talk Alarm feature.
- Automatic Power Off when modem is not used.
- No internal batteries for non-volatile storage ensuring a long life.
- Small rugged packaging.

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Legal & Regulatory Information

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

Introduction

This manual provides a brief introduction to the Industrial SmartModem and gives an overview of the features and commands available.

The IG6000 Industrial SmartModem has a SmartModem 336 core with additional features that make it suitable for industrial and unattended operation. Particular attention has been paid to ensuring that the modem restarts reliably in the event of power interruption or internal malfunction. The modem uses the latest generation Rockwell DSP which will enable new features to be soft-uploadable when they become available.

Modem Controls and Indicators

Links (Internal controls)

LK1	1	Set factory defaults
	2	Normal
LK2	1	Reserved
LK3	1	Reserved
LK4	1	Reserved
LK5		Reserved
LK6		Reserved
LK7		Reserved
LK8	1	Power down disabled
	2	DTR wakeup enabled
	None	DTR wakeup disabled
LK9		Link connects RS232 shield to ground
PSTN	IN	PSTN
	OUT	Leased Line

LEDS

DCD - Data Carrier Detect (Inner LED)
LED will glow when the modem detects a valid carrier signal from a remote modem.
PWR - Power (Outer LED)
LED will glow to indicate when the modem is turned on. LED will be off when the modem is in power down mode.

Modem Features

Power Down Feature

S119 can be set with the number of seconds of no activity before the modem shuts down. The modem will not shut down if DTR is asserted, if the modem is connected, any key on the keyboard is pressed or an alarm switch is on.
The modem will wake up if:
- DTR is raised
- there is a Ringing signal or
- an alarm switch is asserted.

S119 defaults to 0 (power down disabled).
The modem draws almost no power when powered down.

Dial and Talk Feature

This feature enables a modem to alert, by spoken word, that an alarm situation at a remote site needs attention. The modems can be configured to dial up to 10 preset numbers and speak a stored message when one of two external switches are closed.
These switches will connect to pins 12 and 7 (alarm 1) and pins 13 and 7 (alarm2) of the RS232 connector. An alarm condition is recognised when a short circuit is applied across either pair of pins, eg by use of a relay.
By default to modem will ring stored number 0 if either alarm switch is closed.
To set stored number 0 type:
AT&Z0 = nnnnnnnnnn where nnnnnnnn is the phone number.
You may store up to 10 numbers using &Z0 to &Z9.
The numbers to ring for each alarm can be specified by the AT#ALM command:
AT#ALM1=1,4,8,3
If alarm switch 1 is pressed the modem should dial the stored numbers 1 then 4 then 8 then 3.
AT#ALM2= 9
Means that if alarm switch 2 is pressed dial stored number 9.

Voice Messaging System

This feature can be installed into an IG6000 by downloading a vocabulary file to the modem to enable it to respond to DTMF tones from a remote modem.
If this feature is enabled by using the #MEM command:
AT#MEM1   Modem will answer in voice mode after S110 rings if DTR is low
AT#MEM2   Modem will answer in voice mode after S110 rings regardless of DTR
AT#MEM0   All voice features off
Dial the modem and wait for it to answer. After the number of rings specified by S110 (default 4) the modem will answer the call and respond with "Leave a Message after the Beep". If you key in a DTMF digit during the time this message is played, the message will stop and you can complete entering the PIN number. The factory default PIN number is 1234. This can be changed by using the new #PIN command.
AT#PINnn…nnn
where nn…nnn is the pin number. Up to 9 digits of PIN number can be specified
If you key in the correct PIN number the modem will say "OK" and ask for a command. You may key in 0 for a menu of available functions.

Functions Available using DTMF keys:

1-20	Play back stored message 1 to 20
*1	Record a new welcome message to replace "Leave a Message after the Beep" (Press # to finish)
*2	Record a new message (Press # to finish)
*3	Playback the current welcome message
*4	Report number of stored messages and the state of the alarm switches (ON or OFF)
*5	Play all messages
*6	Enable / disable answering machine record function
*9	Erase stored messages but retain the welcome message
*0	Erase all stored messages including the welcome message (return to factory default message)
##	Hang up

Messages 1 and 2 are used by the alarm switches. Other messages can be stored and used as a voice mail box which can be shared by a group of people who know the PIN number.
If no pin number is entered the user can leave a message after the welcome message beep.
+   To avoid recording a lot of silence the messages can be terminated with the # DTMF key.
About 8 minutes of voice storage in a maximum of 20 individual messages is available.

How to Load the Voice Alarm Messages

If you have not downloaded a vocabulary file use the following procedure:
1. Connect the modem to a PC running a terminal program (like Hyperterminal).
2. Type ATS119=0 to stop modem going to sleep.
3. Type AT#MINI and wait for EPROMs to erase. The modem will beep when ready.
4. Type AT#MEM2 to put the modem into voice answering mode.
5. Connect modem to phone line and using a touch tone phone dial the modem. The modem will answer with a brief message "Leave a message after the beep!"
6. Record your message into the modem for Alarm Condition #1, leaving 2 seconds of silence after the beep before speaking.
7. Press the # button on the phone when your message is finished.
8. Hang up the phone wait a few seconds.
9. Ring the modem again and record a second message for Alarm #2 following steps 8 and 9. Your messages are now recorded.
10. Reconnect modem to a terminal program and type AT#MCD to display the stored messages. The duration of the 2 messages you have recorded should be visible.
11. If you wish the modem to answer calls in data mode type AT#MEM0&W in a terminal program to turn off the voice answering function or AT#MEM1 if you want the voice answering function only when DTR is low.
To redo the messages, erase the EPROMs using AT#MINI and record the messages again.

Remote Voice Setting of Alarm Messages

If you have installed the vocabulary file, use the procedure detailed in the VOICE MESSAGING SYSTEM to enter the modem PIN number then use DTMF command *2 the record the first message then enter *2 again to enter the second message. You may playback the messages immediately by keying DTMF 1 and DTMF 2 to verify that they sound OK.
Hang up by keying ##.

Operating Modes

Asynchronous Mode

Asynchronous Mode is the normal default mode of the modem. Control and monitoring is performed by executing the AT commands using a PC fitted with suitable communications software.

Synchronous Operation

Your modem supports two synchronous modes. Mode 1 allows operation with computers which support asynchronous and synchronous communication on a single RS-232 port. Mode 2 allows your modem to be operated with dedicated synchronous terminals.

Although your modem can only operate over a single two-wire connection, it will still perform full-duplex synchronous communication. Half-duplex operation could be simulated by controlling the state of the RTS and CTS signals.
Terminal Speeds
Your synchronous terminal or host should use the clock signals provided by the modem to synchronise transmit and receive data. The clock speed will represent the actual connection speed of the modem.
+ When synchronous mode is selected, your modem cannot operate in constant speed mode or use the error correction or data compression facilities of the modem. Only variable speed mode is available in synchronous connections (this refers to the modem's terminal speed).

Line Speeds

Your modem supports a number of synchronous line speeds.
When operating in synchronous mode, your modem should always be configured with a locked, non-auto-ranging B setting (this refers to modem line speed).
For V.34, the B setting only sets the maximum speed. The modem will automatically determine the highest usable speed for the line.

Synchronous Mode 1

Synchronous mode 1 is selected with the &M1 command.
- Type: AT&M1 <E>
        Your modem will enter synchronous mode whenever it successfully connects to a remote modem.
You should also:
- Type: AT&D2 <E>
                This allows hang up via your computerÕs DTR signal.
To return to asynchronous operation:
- Type: AT&M0 <E>
Synchronous Mode 2
Synchronous mode 2 is selected with the &M2 command.
- Type: AT&M2 <E>
Your modem will enter synchronous mode whenever it successfully connects to a remote modem.
You should also:
- Type: AT&D2 <E>
        This allows you to dial and hang up.
When the terminal asserts the DTR signal (DTR makes an OFF-ON transition), your modem will dial stored phone number zero. The phone number may contain dial modifiers.
To return to asynchronous mode:
- Type: AT&M0 <E>
        Your modem will remain in asynchronous mode.

Leased Line Operation

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.
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. To dial or answer, raise DTR; to hang up and 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.)

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.

If the modem is in auto leased-line operation and this configuration has ben stored in memory using the AT&W command, a timeout period of 10 seconds is available after power up to disable the leased-line mode via the AT&O command. Alternatively, this command can be sent with DTR low.

Modem AT Commands

Your Industrial Modem [a] 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 WinFax Pro, 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.

■   indicates the default settings

Commands

Command	Description
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
J	Initiate MNP 10 at 1200 bps (V.22)
K	MNP 10 cellular power level adjustment for this call
L	Redial last number
M	Initiate MNP 10 at 4800 bps (V.32)
P	Pulse dial number
R	Switch to answer mode
S=n	Dial stored number ÔnÕ (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

+++		Escape 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/V.Fast Class - 14400 bps
B17		V.34/V.Fast Class - 16800 bps
B18		V.34/V.Fast Class - 19200 bps
B19		V.34/V.Fast Class - 21600 bps
B20		V.34/V.Fast Class - 24000 bps
B21		V.34/V.Fast Class - 26400 bps
B22		V.34/V.Fast Class - 28800 bps
B23		V.34 31200 bps
B24		V.34 33600 bps
E0		Local command state echo off
E1	■	Local command state echo on
H0		Go on-hook
H1		Go off-hook
I0		Numeric firmware identity
I1		Checksum of firmware - return checksum
I2		Checksum of firmware - return OK/ERROR
I3		Modem Model
I4		Firmware Version and date
I5		Manufacturer ID
I9		Verbal firmware identity
I10		Display modem statistics
L0		Lowest volume level
L1		Low volume level
L2	■	Medium volume level
L3		Highest volume level
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

Command		Description
M4		Speaker on during dial, answer, retrain or rate change
O1		Enter On-line state and force communication retrain (V.22bis and V.32bis only)
O2		Retrain, donÕt go on-line (V.22bis & V.32bis)
O3		Change line speed to 4800 bps (V.32 & V.32bis)
O4		Change line speed to 7200 bps (V.32 & V.32bis)
O5		Change line speed to 9600 bps (V.32 & V.32bis)
O6		Change line speed to 12000 bps (V.32 & V.32bis)
O7		Change line speed to 14400 bps (V.32 & V.32bis)
P		Pulse dialling (Not supported in Australia).
Q0	■	Modem returns response codes
Q1		Modem does not return response codes
Q2		Modem does not return RINGING or response codes when answering
R9		9600 bps (locked terminal speed - no autobaud)
R14		14,400 bps (locked terminal speed - no autobaud)
R19		19,200 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)
R115		115,200 bps (locked terminal speed - no autobaud)
R230		230,400 bps (locked terminal speed - no autobaud)
Sn?		Display value in S Register ÔnÕ
Sn=x		Place ÔxÕ in S Register ÔnÕ
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)
&B0		8 bit character length
&B1		9 bit character length
&B2		10 bit character length
&B3		11 bit character length
&B4	■	10 or 11 bit character length determined by autobaud
&C0		DCD signal 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		Ignore DTR
&D1		Return to Local command state if DTR goes low
&D2	■	Hangup & return to Local Com 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
&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 (before CONNECT message)
&T0		Terminate current test
&T1		Local Analogue Loopback test
&T3		Local Digital Loopback test
&T4	■	Grant Remote Digital Loopback test
&T5		Deny Remote Digital Loopback test
&T6		Remote Digital Loopback test
&T7		Remote Digital Loopback with Self-test
&T8		Local Analog Loopback with 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
#ALMn=x		Dial number/s x (x=0-9 in &Z) for remote alert n
#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
#J0		Assume V.42 compatibility
#J1	■	Check V.42 compatibility
#K0		Disable MNP 10
#K1	■	Enable MNP 10
#K2		Enable MNP 10 for Cellular links
#MEM0		All voice features off
#MEM1	■	Voice mode after S110 rings if DTR is low
#MEM2		Voice mode after S110 rings regardless of DTR
#MINI		Erase Voice mode alarm message

#M0	■	AT command operation
#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
#PIN=n		Pin Number where n is the pin number
#R0		Remote Control 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)
%H3		Initial connection is made at 9600 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)
%M0	■	Mode LEDs indicate connection speed
%M1		Mode LEDs indicate line quality, V.42/MNP errors & flow ctrl
%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 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
%T1		DCD is always high (not reset by &F)
%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 2,4,10 compression
%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
*C0	■	Enable V.34
*C1		Disable V.34 use V.FC
*Wttt...tt		Specify welcome message text used by %W1(ttt...tt = text use | for new line)

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, 14400, 12000, 9600, 7200, 4800, or 2400	16800,
64	Bell 103	300	
69	Bell 212 1200		

Distinctive Ring

The Industrial 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 number can be used for Voice and the other number can be used for your Modem. To enable the modem to answer only when your modem number is dialled, issue the command: AT-SDR=4 S0=2&W.

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.

Response Codes

Num	*Verbal*	*Description*
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 has not been detected
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

A full list of response codes is provided in your SmartModem Reference Guide included on the NetComm CD ROM.

S Registers

Reg	*Range*	*Def*	*Unit*	*Function*
0	0-255	00	rings	Rings Before Answer
1	0-255	00	rings	Ring Count
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
10	1-255	18	0.1secs	Lost Carrier/Hang Up Delay
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	0-255	03		EQM Threshold for V.32/V.32bis
38	0-255	00	secs	Disconnect Delay
42	0-255			Modem Disconnect Reason
43	0-255	15	msecs	Break Sequence Length
45	0-255	98		EQM Threshold - V.22/V.22bis/212A
47	1-255	08	secs	Auto-Range Time
62	0-255	75	0.01secs	V.42 detection timer
69	0-255	60	secs	Command line timeout
74	0-255			Modem Disconnect Reason (Last Call)
80	1-19	15	5%	Flow Control High Water Mark
81	1-19	03	5%	Flow Control Low Water Mark
82	1-255	60		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)
105	0-255	30	secs	Voice-mode ÒDead-manÓ timer
110	0-255	4	rings	Voice-mode Rings before Answer
119	0-255	0	secs	Power Down Feature

Use **AT?** to see the Command Set supported by your modem's version of code.

Specifications

Dimensions

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

Communications

- ITU-T 33600bps
- ITU-T 31200bps
- ITU-T V.34 (2400-33600bps)
- ITU-T V.32bis (14400bps)
- ITU-T V.32bis (1200bps)
- 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)

Terminal Speeds

- 300bps - 230,400bps

Power

- Plug Pack: 15VAC 6VA supplied
- Will operate directly from 6.0 to 14.5 V DC

Caller ID

- Austel TS 030
- Bellcore MDMF message format

Command Sets

- AT commands
- EIA Class 1 &2 fax 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
- Failsafe Feature
- Hardware and firmware watchdog circuitry resets modem in the event of a lockup condition

Environmental

- Operating: -10¡ to +50¡ C

Humidity

- Up to 95% non-condensing

Build Options

- 9-38 V DC operation
- HOST interface TTL levels via 20 way dual row pinstrip connector.

Sirius Technical Support