Card Type Modem (synchronous/asynchronous)

Chip Set Unidentified
Maximum Modem Rate 56Kbps
ISDN Transfer rate 64Kbps
Maximum Fax Rate 14.4Kbps
Data Modulation Protocol Bell 103/212A

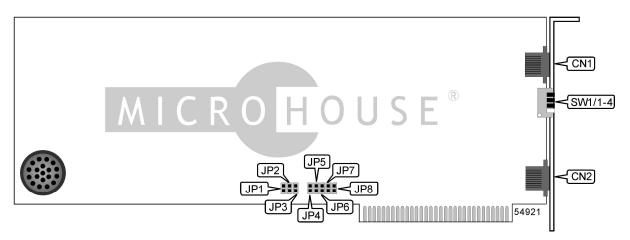
ITU-T x2, V.34, V.FC, V.32, V.32terbo, V.32bis

ISDN Protocol V.120, V.110 Fax Modulation Protocol Unidentified

Error Correction/Compression MNP5, V.42, V.42bis, HST

Fax Class | & ||
Data Bus | 8-bit | SA

Card Size Full-length, full-height card



	CONNE	ECTIONS	
Function	Label	Function	Label
RJ-45 connector	CN1	RJ-45 connector	CN2

USER CONFIGURABLE SETTINGS		
Function	Label	Position
í Load &F0 setting upon reset	SW1/1	Off
Load NVRAM settings upon reset	SW1/1	On
Modem acts on AT commands	SW1/2	On
Modem ignores AT commands		Off
í Factory configured - do not alter		Unidentified
í Factory configured - do not alter		Unidentified

	SERIAL POR	T ADDRESS	
Setting	JP1	JP2	JP3
COM1 (3F8h)	Open	Open	Open
COM2 (2F8h)	Closed	Open	Open
COM3 (3E8h)	Open	Closed	Open
COM4 (2E8h)	Closed	Closed	Open
Plug & Play	Open	Open	Closed

. . . continued from previous page

		INTER	RUPT		
IRQ	JP4	JP5	JP6	JP7	JP8
2	Open	Open	Open	Open	Closed
3	Open	Open	Open	Closed	Open
4	Open	Open	Closed	Open	Open
5	Open	Closed	Open	Open	Open
7	Closed	Open	Open	Open	Open

SUPPORTED COMMAND SET
Basic AT Commands
AT, '+++', A/
A, B, C, E, F, O, V
&C, &G, &Z
S Registers
S0, S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S18, S26
Note: See MHI Help File for full command documentation.

#### **Proprietary AT Command Set**

	ADDITIONAL RESULT CODES
Type:	Configuration
Format:	AT [cmds] &An [cmds]
Description:	Controls the display of the additional result codes
Command	Function
í &A0	Do not display ARQ result codes
&A1	Display ARQ result codes
&A2	Display ARQ result codes, HST, V.32, V.FC, V.34 or Digital modulation indicator
&A3	Display ARQ result codes and error control indicator LAPM, HST, MNP, SYNC, V.120, or NONE

	BREAK HANDLING
Type:	Configuration
Format:	AT [cmds] &Yn [cmds]
Description:	Controls the break handling
Command	Function
í &Y0	Destructive, don't send break
&Y1	Destructive, expedited break sent
&Y2	Nondestructive, expedited break sent
&Y3	Non destructive un-expedited break sent

	CONNECTION RATE
Type:	Configuration
Format:	AT [cmds] &Nn [cmds]
Description:	Controls the connection rate
Command	Function
í &N0	Variable rate
&N1	300bps
&N2	1200bps
&N3	2400bps
&N4	4800bps
&N5	7200bps
&N6	9600bps
&N7	12Kbps
&N8	14.4Kbps
&N9	16.8Kbps
&N10	19.2Kbps
&N11	21.6Kbps
&N12	24Kbps
&N13	26.4Kbps
&N14	28.8Kbps
&N15	31.2Kbps
&N16	33.6Kbps

	DATA COMPRESSION
Type:	Configuration
Format:	AT [cmds] &Kn [cmds]
Description:	Controls the data compression
Command	Function
&K0	Data compression disabled
í &K1	Use auto enable/disable data compression
&K2	Data compression always enabled
&K3	Selective data compression

	DATA SET READY (DSR)
Type:	Configuration
Format:	AT [cmds] &Sn [cmds]
Description:	Selects DSR options
Command	Function
&S0	DSR forced high
í &S1	DSR high only while modem is handshaking or connected
&S2	Pulsed DSR sent with CTS following CD when the carrier is lost
&S3	Pulsed DSR sent following CD when the carrier is lost
&S4	Send the computer a DSR signal at the same time as the CD
&S5	Send DSR normally, and follow CTS with CD

	DATA TERMINAL READY (DTR)
Type:	Configuration
Format:	AT [cmds] &Dn [cmds]
Description:	Selects modem response to DTR
Note: The action ea	ch variant of &D causes depends on the setting of &Q
Command	Function
í &D0	Modem does not respond to DTR
&D1	Modem goes to command mode after DTR goes is off
&D2	Modem goes to command mode and disconnects (hangs up) after DTR goes off; Auto-Answer is disabled.

	DIAL
Type:	Immediate
Format:	AT [cmds] D<#> [cmds]
Description:	Dials telephone number according to any modifiers included in the string
Note:	Any combination of modifiers can be used to produce the desired dial functions in sequence.
Command	Function
DL	Re-dial last number
DP	Pulse dialing enabled
DR	Answer mode enabled; originate mode disabled following handshake initiation.
DS=n	Dial stored telephone number <i>n</i>
DT	Tone dialing enabled/Pulse dialing disabled
DW	Dialing resumed following dial tone detection
D,	Dialing paused for amount of time specified in S8 register
D"WXY"	Optional method of denoting telephone numbers. Letters enclosed in quotes are interpreted as numbers according to the system found on a telephone keypad.
D@	Wait for Quite Answer function enabled. Modem waits until a "quiet answer," a ring-back signal followed by silence up to the time specified in S7, is received prior to executing the rest of the dial string.
D\$	Wait for prompt tone detection function enabled. Waits for prompt tone for amount of time specified by the S7 command.
D;	Modem returned to idle state after dialing. The semicolon can only be placed at the end of the dial command.
D/	Pause for 125 milliseconds

	ERROR CONTROL
Type:	Configuration
Format:	AT [cmds] &Mn [cmds]
Description:	Selects the error control protocol
Command	Mode
í &M0	Normal mode, no error control
&M1	On-line synchronous mode, no error control
&M4	Normal/ARQ mode,
&M5	ARQ asynchronous mode
&M6	V.25bis synchronous mode.
&M7	V.25bis synchronous mode using HDLC link protocol

	FACTORY DEFAULT PROFILE
Type:	Configuration
Format:	AT [cmds] &F [cmds]
Description:	Sets values in active profile to values found in the default profile
Command	Function
Command í &F0	Function  Load No Flow Control template settings

HARDWARE RESET	
Type:	Immediate
Format:	AT [cmds] Z! [cmds]
Description:	Performs a hardware reset

	HELP
Type:	Configuration
Format:	AT [cmds] \$ [cmds]
Description:	Display the help commands for the selected command sets
Command	Function
#\$	Display the help pannels for the octothorpe (#) command set
*\$	Displays the help pannels for the * command set

	HOOK CONTROL
Type:	Immediate
Format:	AT [cmds] Hn [cmds]
Description:	Selects whether the modem is on-hook or off-hook
Command	Function
í H0	Modem commanded to go on-hook (hang-up)

	LINE SELECTION
Type:	Configuration
Format:	AT [cmds] &Ln [cmds]
Description:	Selects the phone line type
Command	Function
&L0	Switched line (PSTN/Dial-up)

	MODEM CLOCK
Type:	Configuration
Format:	AT [cmds] Kn [cmds]
Description:	Controls the modem clock
Command	Function
í K0	If on-line, display current call duration; if off-line, display the last call's duration
K1	Display the actual time (set clock using ATI3=HH:MM:SS K1)

	RECEIVE DATA FLOW CONTROL
Type:	Configuration
Format:	AT [cmds] &In [cmds]
Description:	Controls the receive data flow control
Command	Jack Type
í &I0	Disables XON/XOFF flow control
&I1	Modem acts on typed XON/XOFF commands, Ctrl -S, or Ctrl -Q and passes them to remote device
&I2	Modem acts on typed XON/XOFF commands but removes them from data stream
&I3	Hewlett Packard host mode
&I4	Hewlett Packard terminal mode
&I5	Enable flow control on the phone link when the connection is not under error control

	REPORT INFORMATION
Type:	Immediate
Format:	AT [cmds] In [cmds]
Description:	Displays information requested
Command	Function
10	Reports 4 digit product code
l1	Reports results of ROM checksum
12	Reports results of RAM test
13	Reports the product name
14	Reports the current modem settings
15	Reports the settings stored in NVRAM
16	Reports statistics for the last call
17	Reports product configuration
l10	Reports dial security account status information
l11	Displays high speed connection report
l12	Display the ISDN settings

	RESULT CODES
Type:	Configuration
Format:	AT [cmds] Qn [cmds]
Description:	Enables modem to send result codes to the DTE
Command	Function
Command í Q0	Function  Result code sending enabled
<b>-</b>	

	RTS/CTS
Type:	Configuration
Format:	AT [cmds] &Rn [cmds]
Description:	Selects RTS/CTS options
Command	Function
í &R0	CTS follows RTS in data mode; RTS is ignored in command mode.
í &R0 &R1	CTS follows RTS in data mode; RTS is ignored in command mode.  CTS forced high, RTS is ignored.

	SELECT CALL PROGRESS RESULT CODES
Type:	Configuration
Format:	AT [cmds] Xn [cmds]
Description:	Enables selection of tone detection and associated result code format options
Command	Function
X0	Busy and dial tone detection disabled; result codes 0 - 4 enabled.
X1	Busy and dial tone detection disabled; result codes 0 - 5 & 10 enabled.
X2	Busy tone detection disabled, dial tone detection enabled; result codes 0 - 6 & 10 enabled.
Х3	Busy tone detection enabled, dial tone detection disabled; result codes 0 - 5, 7 & 10 enabled.
í X4	Busy and dial tone detection enabled; result codes 0 - 7 & 10 enabled.
X5	Busy tone detection enabled, dial tone detection disabled, all result codes enabled
X6	All result codes enabled
X7	Voice detection disabled, all result codes enabled

	SERIAL PORT RATE
Type:	Configuration
Format:	AT [cmds] &Bn [cmds]
Description:	Controls the serial port rate
Command	Function
Command í &B0	Function  Variable serial port rate

	TEST MODES
Type:	Immediate
Format:	AT [cmds] &Tn
Description:	Selects test options
Command	Function
&T0	End current test
&T3	Begin local digital loopback
&T4	Grant remote digital loopback request
&T5	Deny remote digital loopback request
&T6	Request remote digital loopback
&T7	Request remote digital loopback and self-test

. . . continued from previous page

	TRANSMIT DATA FLOW CONTROL
Type:	Configuration
Format:	AT [cmds] &Hn [cmds]
Description:	Controls the transmit data flow
Command	Function
í &H0	Flow control disabled
&H1	Hardware flow control enabled
&H2	Software flow control enabled
&H3	Both hardware and software flow control enabled

	WRITE CURRENT SETTINGS
Type:	Immediate
Format:	AT [cmds] &W [cmds]
Description:	Writes the current settings to NVRAM

#### **Extended AT Commands**

ASSIGN PASSWORD	
Type:	Immediate
Format:	AT [cmds] %V=PWn [cmds]
Description:	Assign the password in account <i>n</i> in security account

CALL TYPE		
Type:		Configuration
Format:		AT [cmds] *Vn [cmds]
Descripti	on:	Sets the call type
Bit	Unit	Function
*V1	0	3.1 kHz audio (modem/fax)
	1	Speech
*V2	0	Autodetect
	1	V.120 rate adaption only
	2	V.110 rate adaption only
	3	Modem or fax only
	4	Clear-channel synchronous
	5	Asychronous to synchronous PPP conversion

	CENTRAL OFFICE PROTOCOL
Type:	Configuration
Format:	AT [cmds] *Wn [cmds]
Description:	Sets the protocol used by the telephone company's central office
Command	Function
*W0	AT&T 5ESS custom
*W1	Northern Telecom DMS-100
*W2	National ISDN-1
*W3	National ISDN-2

	CLOCK SPEED
Type:	Configuration
Format:	AT [cmds] %Nn [cmds]
Description:	Sets clock speed for synchronous mode
Command	Function
%N2	1200bps
%N3	2400bps
%N4	4800bps
%N5	7200bps
%N6	9600bps
%N7	12000bps
%N8	14400bps
%N9	16800bps
%N10	19200bps

	DIALING MODE
Type:	Immediate
Format:	AT [cmds] *On [cmds]
Description:	Sets the dialing mode
Command	Function
*O0	En-bloc dialing
*01	Overlap dialing

	DIRECTORY NUMBER
Type:	Configuration
Format:	AT [cmds] *P [cmds]
Description:	Sets the Directory number assigned by the phone company
Command	Function
*P1	The DN for Voice B-channel
*P2	The DN for Data B-channel

	ERASE SECURITY SETTINGS
Type:	Configuration
Format:	AT [cmds] %En [cmds]
Description:	Erases selected security settings
Command	Function
%E1	Erase local access password
%E2	Erase autopass password
%E3	Erase passwords in accounts 0-9
%E4	Erase phone numbers in accounts 0-9
%E5	Disable account, dialback, and new number fields in accouns 0-9

	LOCAL ACCESS PASSWORD
Type:	Configuration
Format:	AT [cmds] %Ln [cmds]
Description:	Set local access password

PASSWORD SECURITY	
Type:	Immediate
Format:	AT [cmds] %P [cmds]
Description:	Disable password security

	REMOTE CONFIGURATION
Type:	Configuration
Format:	AT [cmds] %C <i>n</i> [cmds]
Description:	Controls the remote configuration
Command	Function
Command %C0	Function  Defer configuration changes until the call is ended
	-

	REMOTE CONFIGURATION
Type:	Configuration
Format:	AT [cmds] %Fn [cmds]
Description:	Configure another device's data remotely
Command	Function
%F0	No parity, 8 data bits
%F1	Mark parity, 7 data bits
%F2	Odd parity, 7 data bits
%F3	Even parity, 7 data bits

	RINGING SIGNAL VOLUME
Type:	Configuration
Default:	Unidentified
Range:	0-9
Format:	AT [cmds] *Rn [cmds]
Description:	Sets the ringing signal volume

	SECURITY ACCOUNTS
Type:	Configuration
Format:	AT [cmds] %An [cmds]
Description:	Create and configure security accounts

SECURITY ACCOUNTS	
Type:	Configuration
Format:	AT [cmds] %Sn [cmds]
Description:	Access security accounts

	SERIAL PORT RATE
Type:	Configuration
Format:	AT [cmds] %Bn [cmds]
Description:	Remotely configure a modem's serial port rate
Command	Function
%B0	110bps
%B1	300bps
%B2	600bps
%B3	1200bps
%B4	2400bps
%B5	4800bps
%B6	9600bps
%B7	19200bps
%B8	38400bps
%B9	57600bps
%B10	115200bps

SERVICE PROFILE ID	
Type:	Configuration
Format:	AT [cmds] Sn=? [cmds]
Description:	Sets the service profile ID
Command	Function
*S1	The SPID for the Voice B-channel
*S2	The SPID for the Data B-channel

	TELEPHONE COMPANY PROTOCOL
Type:	Configuration
Format:	AT [cmds] *Mn [cmds]
Description:	Set switch protocol
Command	Function
*M0	Point-to-point
*M1	Multipoint

TERMINAL ENDPOINT ID	
Type:	Configuration
Format:	AT [cmds] *T [cmds]
Description:	Sets the Terminal endpoint ID
Command	Function
*T1	0-63 for the Voice B-channel
*T2	0-63 for the Data B-channel

	TONE FREQUENCIES
Type:	Configuration
Format:	AT [cmds] %Tn [cmds]
Description:	Enables recognition of the tone frequencies

. . . continued from previous page

	VOLUME
Type:	Configuration
Format:	AT [cmds] *Cn [cmds]
Description:	Sets the volume of the sound that comes out of the analog device jack
Command	Function
*C0	Off
*C1	Volume level 1
*C2	Volume level 2
*C3	Volume level 3
*C4	Volume level 4
*C5	Volume level 5
*C6	Volume level 6
*C7	Volume level 7
*C8	Volume level 8
*C9	Volume level 9

#### S(status) -REGISTERS

		BIT MAPPED REGISTER
Type:		Register
Format:		AT [cmds] S15= <i>n</i> [cmds]
Unit:		Bit-mapped
Descript	ion:	Controls fallback
Bit	Value	Function
0	1	Disable the modem's extra high frequency equalization if it causes problems on
		shorter -link calls- for HST modulation only
1	2	Disable online fallback
2	4	Disable 450bps back channelHST only
3	8	Reset non-ARQ mode transmit buffer from 1.5Kbytes to 128
4	16	Disable MNP level 4
5	32	Set backspace key to delete
6	64	Set for some incompatable 2400bps MNP-I modems
7	128	Custom applications only

		BIT MAPPED REGISTER S16
Type:		Register
Format:		AT [cmds] S16=n [cmds]
Unit:		Bit-mapped
Descript	ion:	Controls loopback tests and test pattern
Bit	Value	Function
2	4	Test pattern
3	8	Remote digital loopback

		BIT MAPPED REGISTER S53
Type:		Register
Format:		AT [cmds] S53= <i>n</i> [cmds]
Default:		126
Description:		Bit mapped register
Bit	Value	Function
0	1	Dial security enabled
1	2	Prompting enabled
2	4	Local access password protection enabled

		BIT MAPPED REGISTER S54
Type:		Register
Format:		AT [cmds] S54= <i>n</i> [cmds]
Unit:		Bit mapped
Bit	Value	Function
0	1	Disable 2400 symbol rate
1	2	Disable 2743 symbol rate
2	4	Disable 2800 symbol rate
3	8	Disable 3000 symbol rate
4	16	Disable 3200 symbol rate
5	32	Disable 3429 symbol rate
6	64	Disable Call Indicate
7	128	Disable V.8

		BIT-MAPPED REGISTER S13
Format:		AT [cmds] S13=n [cmds]
Default:		170
Range:		0-174
Unit:		Bit-mapped
Description:		Controls echo, result codes and display, dial mode, and answer/originate mode.
Bit	Value	Function
0	1	Reset when DTR drops
1	2	Reverse normal auto answer mode
2	4	Disable 250 msec pause before result code display
3	8	On DTR signal, Autodial the number stored in NVRAM at position 0
4	16	At power on/reset, auto dial number stored in NVRAM at position 0
5	32	Disable HST
6	64	Disable MNP level 3
7	128	Hardware reset

		BIT-MAPPED REGISTER S14
Format:		AT [cmds] S14=n [cmds]
Default:		170
Range:		0-174
Unit:		Bit-mapped
Descript	ion:	Controls echo, result codes and display, dial mode, and answer/originate mode.
Bit	Value	Function
0	í 1	Disconnect on escape code
1	2	Send result codes only when originating a call

	BIT-MAPPED REGISTER S21
Format	AT [cmds] S21= <i>n</i> [cmds]
Default:	Unidentified
Range:	Unidentified
Unit:	.01 second
Description:	Sets the duration of breaks sent from the modem to the computer or terminal

	BIT-MAPPED REGISTER S28
Format	AT [cmds] S28= <i>n</i> [cmds]
Default:	Unidentified
Range:	8
Unit:	.1 second
Description:	Sets the duration of the extra 3000/600 Hz answer tones sent during handshaking.

		BITMAPPED REGISTER S27
Format		AT [cmds] S27=n [cmds]
Default:		Unidentified
Range:		0
Unit:		Bit-mapped
Descripti	ion:	Selects modulation
Bit	Value	Function
0	1	Enable ITU-T V.21
1	2	Enable un-encoded modulation in V.32 mode
2	4	Disable V.32 modulation
3	8	Disable 2100Hz answer tone
4	0	V.42 detection, LAPM error control, MNP
	16	Disable MNP
	0	Disable V.42 detection and LAPM
	16	Disable detection phase
5	0	V.42 detection, LAPM error control, MNP
	32	Disable MNP
	0	Disable V.42 detection and LAPM
	32	Disable detection phase
7	128	Unusual software incompatibility

		BIT-MAPPED REGISTER S34
Type:		Register
Format:		AT [cmds] S34n [cmds]
Default:		0
Range:		Unidentified
Unit:		Unidentified
Descripti	ion:	Controls V.32bis
Bit	Value	Function
0	1	Disable V.32bis
1	2	Disable modem's enhanced proprietary V.32bis modulation
2	4	Disable the faster retrains that occure during proprietary V.32terbo modulation
3	8	Enable V.23
4	16	Force the MR LED to show DSR
5	32	Enable MI/MIC
6	64	Disable remote access busy message
7	128	Disable V.32terbo

		BIT-MAPPED REGISTER S51
Format		AT [cmds] S51= <i>n</i> [cmds]
Default:		0
Range:		Unidentified
Unit:		Bit-mapped
Descript	ion:	MNP/V.42 control
Bit	Value	Function
<b>Bit</b> 0	Value 1	Function Disable MNP/V.42 for V.22
<del></del>	Value 1 2	
	1	Disable MNP/V.42 for V.22
0	1 2	Disable MNP/V.42 for V.22 Disable MNP/V.42 for V.22bis

		BIT-MAPPED REGISTER S55
Type:		Register
Format		AT [cmds] S55= <i>n</i> [cmds]
Unit:		Bit mapped
Bit	Value	Function
<b>Bit</b> 0	Value 1	Function Disable 8S-2D mapping
9 1	<b>Value</b> 1 2	
9 Bit 0 1 2	1	Disable 8S-2D mapping

BIT-MAPPED REGISTER S56			
Type:		Register	
Format		AT [cmds] S56? [cmds]	
Unit:		Bit mapped	
Bit	Value	Function	
0	1	Disable non-linear coding	
1	2	Disable TX level deviation	
2	4	Disable pre-emphasis	
3	8	Disable precoding	
4	16	Disable shaping	
6	64	Disable V.34	
7	128	Disable V.FC	

BIT-MAPPED REGISTER S67		
Type:		Register
Format		AT [cmds] S67 [cmds]
Unit:		Bit mapped
Bit	Value	Function
0	1	Disable non-linear coding
1	2	Disable TX level diviation
2	4	Disable preemphasis
3	8	Disable precoding
4	16	Disable shaping
6	64	Disable V.34
7	128	Disable V.FC

		BIT-MAPPED REGISTER S68
Type:		Register
Format		AT [cmds] S68 [cmds]
Unit:		Bit mapped
Bit	Value	Function
0	1	Enable V.110 fallback
1	2	Use fixed network rate
2	4	Fix the network rate at 64Kbps
3	8	Route incoming analog calls to the data port
4	16	Enable a 45-65 second link delay
5	32	Map B1 LED = B-channel 1 and B2 LED to B-channel 2
6	64	Disable all blinking patterns for B-channel LED's

BIT-MAPPED REGISTER S69		
Type:		Register
Format		AT [cmds] S69 [cmds]
Unit:		Bit mapped
Bit	Value	Function
0	1	Disable Plug and Play signaling

	DSR RECOGNITION
Type:	Register
Format	AT [cmds] S25=n [cmds]
Default:	5
Range:	Unidentified
Unit:	.1 second
Description:	Sets DTR recognition time

	DSR SIGNAL
Type:	Register
Format	AT [cmds] S24=n [cmds]
Default:	150
Range:	Unidentified
Unit:	.02 second
Description:	Sets the duration between pulsed DSR signals when the modem is set to &S2 or &S3.
	833.

	FLOW CONTROL CHARACTER - XOFF
Format	AT [cmds] S23=n [cmds]
Default:	19
Range:	Unidentified
Unit:	ASCII
Description:	Sets the character used to represent XOFF

	FLOW CONTROL CHARACTER - XON
Format	AT [cmds] S22=n [cmds]
Default:	17
Range:	Unidentified
Unit:	ASCII
Description:	Sets the character used to represent XON

	GUARD TIME DURATION
Type:	Register
Format	AT [cmds] S43=n [cmds]
Default:	200
Unit:	.02 second
Description:	Sets the duration of the guard time for the remote access sequence

	INACTIVITY TIMER
Type:	Register
Format	AT [cmds] S19= <i>n</i> [cmds]
Default:	Unidentified
Range:	Unidentified
Unit:	Minute
Description:	Sets the duration in minutes for the inactivity timer

	REMOTE ACCESS
Type:	Register
Format	AT [cmds] S41=n [cmds]
Default:	0
Description:	Sets the number of allowable remote access login attempts, thus enabling or disabling remote access.

	REMOTE ACCESS ESCAPE CHARACTER
Type:	Register
Format	AT [cmds] S42= <i>n</i> [cmds]
Default:	126
Range:	Unidentified
Unit:	Unitdentified
Description:	Stores the ASCII decimal code for the remote access escape character.

	TRANSMIT BUFFER
Type:	Register
Format	AT [cmds] S38 <i>n</i> [cmds]
Default:	0
Description:	Sets the time before a forced hang up and clearing of the transmit buffer when DTR drops during an ARQ call.