Card Type Fax, Modem (asynchronous), Voice

Chip Set U.S. Robotics I/O Options Digital SVD Maximum Data Rate 28.8Kbps Maximum Fax Rate 14.4Kbps Bata Bus 8-bit ISA Class I & II Data Modulation Protocol Bell 103/212A

ITU-T V.21, V.22, V.22bis, V.23, V.32, V.32bis, V.34

Rockwell V.FC

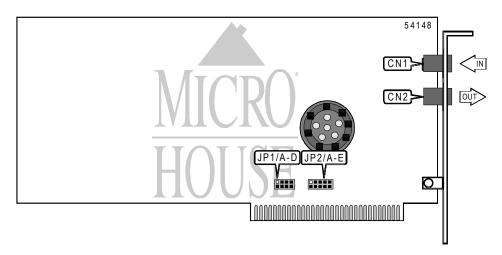
Fax Modulation Protocol

Unidentified

Error

MNP5, V.42, V.42bis

Correction/Compression



	CONNE	CTIONS	
Function	Label	Function	Label
Line in	CN1	Line out	CN2

	S	ERIAL PORT ADDRE	SS	
Setting	JP1/A	JP1/B	JP1/C	JP1/D
COM1 (3F8h)	Closed	Open	Open	Open
í COM2 (2F8h)	Open	Closed	Open	Open
COM3 (3E8h)	Open	Open	Closed	Open
COM4 (2E8h)	Open	Open	Open	Closed

INTERRUPT					
Setting	JP2/A	JP2/B	JP2/C	JP2/D	JP2/E
2	Closed	Open	Open	Open	Open
í 3	Open	Closed	Open	Open	Open
4	Open	Open	Closed	Open	Open
5	Open	Open	Open	Closed	Open
7	Open	Open	Open	Open	Closed

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Proprietary AT Command Set

	ABORT
Type:	Immediate
Format:	Any key
Description:	Aborts answering/originating a call; modem hangs up.

	ANSWER
Type:	Immediate
Format:	AT [cmds] A
Description:	Enables manual answer mode, the modem goes off-hook; pressing any key will abort.

	ANSWER SEQUENCE
Type:	Configuration
Format:	AT [cmds] Bn [cmds]
Description:	Selects the answer sequence the modem will use
Command	Function
í B0	ITU-T V.25 answer sequence enabled
B1	Bell answer sequence enabled

	ATTENTION
Type:	Immediate
Format:	AT [cmds]
Description:	Tells the modem that a command follows or use alone to test OK result code

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		BAUD RATE
Type:		Register
Format: AT [cmds] S54=n [cmds]		
Default:		0
Range:		0-255
Unit:		Bit-mapped
Descript	ion:	Controls baud rate
Bit	Value	Function
0	íΟ	2400 baud rate enabled
	1	2400 baud rate disabled
1	í O	2743 baud rate enabled
	1	2743 baud rate disabled
2	í O	2800 baud rate enabled
	1	2800 baud rate disabled
3	í O	3000 baud rate enabled
	1	3000 baud rate disabled
4	í O	3200 baud rate enabled
	1	3200 baud rate disabled
5	í O	3429 baud rate enabled
	1	3429 baud rate disabled
6	í 0	Call indicate during V.34 operation enabled
	1	Call indicate during V.34 operation disabled
7	í O	V.8 during V.34 operation enabled
	1	V.8 during V.34 operation disabled

		BIT-MAPPED REGISTER S13
Format		AT [cmds] S13=n [cmds]
Default:		0
Range:		0-89
Unit:		Bit-mapped
Descripti	ion:	Controls DTR reset, DTR dialing, reset dialing, and MNP3.
Bit	Value	Function
0	í O	DTR normal
	1	Reset on low DTR
1, 2	í 00	Not used
3	í O	
	1	DTR dialing enabled
4	í O	Reset dialing disabled
	1	Reset dialing enabled, dials number from position 0 in NVRAM
5	í O	Not used
6	í O	MNP 3 enabled
	1	MNP 3 disabled

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		BIT-MAPPED REGISTER S15
Format		AT [cmds] S15= <i>n</i> [cmds]
Default:		0
Range:		0-24
Unit:		Bit-mapped
Description: Controls non-error-correcting mode buffer, and MNP4.		Controls non-error-correcting mode buffer, and MNP4.
Bit	Value	Function
0 - 2	í O	Not used
3	í O	Non-error-correcting mode transmit buffer set to 1.5KB
	1	Non-error-correcting mode transmit buffer set to 128 bytes
4	í O	MNP 4 enabled
	1	MNP 4 disabled

		BIT-MAPPED REGISTER S27
Format		AT [cmds] S27=n [cmds]
Default:		0
Range: 0-191		0-191
Unit:		Bit-mapped
Descripti	ion:	Controls V.21, V.32 encoding and modulation, V.42 answer tone and handshake,
		and 9600 result codes.
Bit	Value	Function
0	í O	V.21 disabled
	1	V.21 enabled
1	í O	V.32 non-trellis coding disabled
	1	V.32 non-trellis coding enabled
2	í O	V.32 modulation enabled
	1	V.32 modulation disabled
3	í O	2100Hz answer tone enabled
ļ	1	2100Hz answer tone disabled
5, 4	í 00	V.42 detect, LAPM and MNP enabled
	01	MNP disabled
	10	V.42 detect and LAPM disabled
	11	LAPM enabled without detection phase
6	í 0	Not used
7	í O	Actual result codes displayed
	1	Force 9600 result codes

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		BIT-MAPPED REGISTER S56
Format:		AT [cmds] S56=n [cmds]
Default:		0
Range:		0-223
Unit:		Bit-mapped
Descript	ion:	Controls non-linear coding, TX level deviation, pre-emphasis, pre-coding, shaping, V.34, and V.FC
Bit	Value	Function
0	í 0	Non linear coding enabled
	1	Non linear coding disabled
1	í O	TX level deviation enabled
	1	TX level deviation disabled
2	í 0	Pre-emphasis enabled
	1	Pre-emphasis disabled
3	í 0	Pre-coding enabled
	1	Pre-coding disabled
4	í 0	Shaping enabled
	1	Shaping disabled
5	í O	Not used
6	í O	V.34 enabled
	1	V.34 disabled
7	í O	V.FC enabled
	1	V.FC disabled

	BREAK LENGTH
Type:	Register
Format:	AT [cmds] S21=n [cmds]
Default:	10
Range:	Unidentified
Unit:	.01 second
Description:	Sets the length of error control mode breaks sent from DCE to DTE.

	BREAK TYPE
Type:	Configuration
Format:	AT [cmds] &Yn [cmds]
Description:	Configures action of break signal
Command	Function
Command &Y0	Function Empty buffer only
	1 1111111111

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	CARRIER DETECT (CD)
Type:	Configuration
Format:	AT [cmds] &Cn [cmds]
Description:	Controls the CD signal
Command	Function
&C0	Modem does not respond to CD signal
í &C1	CD signal normal

	COMPRESSION
Type:	Configuration
Format:	AT [cmds] &Kn [cmds]
Description:	Selects data compression
Command	Function
&K0	Data compression disabled
í &K1	Auto enabled/disable data compression
&K2	Data compression enabled
&K3	MNP5 data compression disabled

COMPRESSION AND ERROR CORRECTION		
Format		AT [cmds] S51= <i>n</i> [cmds]
Default:		0
Range:		0-7
Unit:		Bit-mapped
Descripti	ion:	Selects compression and error correction for specific modulations
Bit	Value	Function
0	í O	MNP/V.42 disabled during V.22 operation
	1	MNP/V.42 disabled during V.22 operation
1	í O	MNP/V.42 disabled during V.22bis operation
	1	MNP/V.42 disabled during V.22bis operation
2	í O	MNP/V.42 disabled during V.32bis operation
	1	MNP/V.42 disabled during V.32bis operation

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	CONNECTION SPEED LOWER LIMIT
Type:	Configuration
Format:	AT [cmds] &Un [cmds]
Description:	Sets minimum required connection speed
Note: 16.8 - 28.8bp	s for 28.8 models
Command	Function
í &U0	Variable
&U1	300bps
&U2	1200bps
&U3	2400bps
&U4	4800bps
&U5	7200bps
&U6	9600bps
&U7	12Kbps
&U8	14.4Kbps
&U9	16.8Kbps
&U10	19.2Kbps
&U11	21.6Kbps
&U12	24Kbps
&U13	26.4Kbps
&U14	28.8Kbps

	CONNECTION SPEED UPPER LIMIT
Type:	Configuration
Format:	AT [cmds] &Nn [cmds]
Description:	Sets maximum required connection speed, modem will hang up if it cannot connect.
Note: 16.8 - 28.8bp	s for 28.8 models
Command	Function
í &N0	Variable
&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

DATA SET READY (DSR)		
Type:	Configuration	
Format:	AT [cmds] &Sn [cmds]	
Description:	Selects DSR options	
Command	Function	
í &S0	DSR forced high	
&S1	DSR controlled by modem	

	DATA TERMINAL READY (DTR)
Type:	Configuration
Format:	AT [cmds] &Dn [cmds]
Description:	Selects modem response to DTR
Command	Function
&D0	Modem does not respond to DTR
&D1	Modem goes to command mode after DTR toggles
í &D2	Modem uses DTR as normal
&D3	Modem is initialized after DTR goes off

	DIAL
Type:	Immediate
Format:	AT [cmds] D<#> [cmds]
Example:	ATDT 443-3388,,,1111;
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.
	During voice-only, if a voice/data session is needed use ATD to start.
	During voice/data or data-only, ADT is ignored, the connection exists.
Command	Function
íΡ	Pulse dialing enabled
T	Tone dialing enabled
,	Dialing paused for 2 seconds to a maximum amount of time specified in S8 register
;	Modem returned to command state after dialing. Can only be placed at the end of
	the dial command.
!	Flash function initiated
1	125 ms delay before proceeding with dial string
W	Dialing resumed following dial tone detection of second dial tone
@	Wait for quiet answer, then procedes to execute the rest of the dial string.
R	Answer mode enabled; originate mode disabled following handshake initiation.
# and *	Extended touch tone pad tones

	DIAL - LAST NUMBER
Type:	Immediate
Format:	AT [cmds] DL [cmds]
Description:	Re-dial last number dialed

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	DIAL - STORED NUMBER
Type:	Immediate
Format:	AT [cmds] DSn [cmds]
Description:	Dial stored number from memory location <i>n</i>

	DIGITAL SIMULTANEOUS VOICE/DATA
Туре:	Configuration
Format:	AT [cmds] -Sxxx [cmds]
Description:	Controls DSVD operation the modem will operate in
Command	Function
-SSE?	Displays current digital simultaneous voice/data mode
í -SSE=0	Digital simultaneous voice/data mode disabled
-SSE=1	Digital simultaneous voice/data mode enabled

	DISCONNECT BUFFER DELAY
Type:	Register
Format	AT [cmds] S38=n [cmds]
Default:	0
Range:	Unidentified
Unit:	1 second
Description:	Sets maximum duration allowed during buffered data calls for modem to perform clearing functions after losing carrier-signal or receiving a clear call signal from the remote modem and before initiating hang-up process. A value of 0 will allow the modem to hanging-up after DTR drops.

	DTR CHANGE THRESHOLD
Type:	Register
Format	AT [cmds] S25= <i>n</i> [cmds]
Default:	5
Range:	Unidentified
Unit:	.01 second
Description:	Sets maximum time a change in the DTR signal will be ignored

	ECHO
Type:	Configuration
Format:	AT [cmds] En [cmds]
Description:	Controls echo function; display keyboard commands when enabled.
Command	Function
E0	Echo function disabled
í E1	Echo function enabled

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	ECHO - ON-LINE
Type:	Configuration
Format:	AT [cmds] Fn [cmds]
Description:	Selects whether data sent while in data mode are echoed
Command	Function
F0	Local echo enabled
í F1	Local echo disabled

	ERROR CORRECTION MODE (ARQ)
Type:	Configuration
Format:	AT [cmds] &Mn [cmds]
Description:	Selects active error correction protocols at 1200bps or higher
Command	Function
Command &M0	Function Normal mode only

	ESCAPE CHARACTER RESPONSE
Type:	Register
Format:	AT [cmds] S14=n [cmds]
Description:	Controls reaction to escape character
Command	Function
í S14=0	Normal operation
S14=1	When +++ is received, modem goes on hook, enters command state and sends NO CARRIER result code.

	ESCAPE SEQUENCE
Type:	Immediate
Format:	+++AT [cmds] <cr></cr>
Description:	Initiates the escape sequence and returns the modem to the on-line command state if it receives three escape characters set in S2 within the time allotted by S12.
Note: Do not precede this command with AT.	

	EXTENDED RESULT CODES
Type:	Configuration
Format:	AT [cmds] &An [cmds]
Description:	Selects extended result codes
Command	Function
&A0	Extended result codes disabled
&A1	ARQ result codes enabled
&A2	ARQ result codes enabled and V.32 result code added
í &A3	Error control and compression result codes enabled

	FACTORY DEFAULT PROFILE
Type:	Configuration
Format:	AT [cmds] &Fn [cmds]
Description:	Loads values in active profile to values found in the default profile, which are READ-ONLY.
Command	Function
&F0	Generic template
&F1	Hardware flow control template
&F2	Software flow control template

	FLOW CONTROL CHARACTER - XOFF
Type:	Register
Format:	AT [cmds] S23= <i>n</i> [cmds]
Default:	19
Range:	0-127
Unit:	ASCII
Description:	Sets the character used to represent XOFF.

	FLOW CONTROL CHARACTER - XON
Type:	Register
Format:	AT [cmds] S22=n [cmds]
Default:	17
Range:	0-127
Unit:	ASCII
Description:	Sets the character used to represent XON.

	FLOW CONTROL PASS-THROUGH
Type:	Configuration
Format:	AT [cmds] &In [cmds]
Description:	Allows modem to act on, then transmit XON/XOFF characters.
Command	Function
Command í &l0	Function Software flow control disabled

	FLOW CONTROL TYPE
Type:	Configuration
Format:	AT [cmds] &Hn [cmds]
Description:	Sets type of flow control used by modem
Command	Function
&H0	Flow control disabled
í &H1	CTS/RTS flow control enabled
&H2	XON/XOFF flow control enabled
u u 12	AON/AOFF flow control enabled

	FLOW CONTROL TYPE
Type:	Configuration
Format:	AT [cmds] &Rn [cmds]
Description:	Controls receive data hardware flow control and RTS signals
Command	Function
&R1	Modem ignores RTS
í &R2	Received data to DTE when RTS is on

	GUARD TONE
Type:	Configuration
Format:	AT [cmds] &Gn [cmds]
Description:	Commands the modem to transmit a guard tone
Note: Used primar	ily for international data transmission
Command	Function
í &G0	Guard tone disabled
&G1	550Hz guard tone enabled
&G2	1800Hz guard tone enabled

	HELP SCREEN - CONTROLS
Type:	Immediate
Format:	<ctrl> C K or S</ctrl>
Description:	Cancel or starts/restarts help screens
Command	Function
Command <ctrl> C</ctrl>	Function Display of help screen canceled

	HANDSHAKE TIMER
Type:	Register
Format:	AT [cmds] S28=n [cmds]
Default:	8
Range:	0-255
Unit:	.1 second
Description:	Sets the length of handshake time, so modems with V.32bis, V.FC and V.34 are
	given a chance to connect at 9600bps or higher.

	HOOK CONTROL
Type:	Immediate
Format:	AT [cmds] Hn [cmds]
Description:	Selects whether the modem is on-hook or off-hook
	ice-only, has no effect; during data-only or voice/data, disconnect data transmission
and change vo	pice from digitized to full analog.
Command	Function
H0	Modem commanded to go on-hook (hang-up)
H1	Modem commanded to go off-hook (pick-up)

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	INACTIVITY TIMER
Type:	Register
Format:	AT [cmds] S19= <i>n</i> [cmds]
Default:	0
Range:	Unidentified
Unit:	1 minute
Description:	Sets the length of time that the modem does not receive information before it disconnects.
Note: S19=0 disa	ables the timer.

	LIST AMPERSAND COMMANDS
Type:	Immediate
Format:	AT [cmds] &\$ [cmds]
Description:	Displays ampersand (&) commands

	LIST DIAL COMMANDS
Type:	Immediate
Format:	AT [cmds] D\$ [cmds]
Description:	Displays dial commands

	LIST S-REGISTERS
Type:	Immediate
Format:	AT [cmds] S\$ [cmds]
Description:	Displays the S-registers

	LOCK SERIAL PORT
Type:	Configuration
Format:	AT [cmds] &Bn [cmds]
Description:	Sets operation of serial port speed
Command	Function
Command &B0	Function Serial speed follows connect speed
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	MAPPING		
	AT [cmds] S55= <i>n</i> [cmds]		
	0		
	0-15		
	Controls all Map options		
Value			Function
í O			
1	8S-2D map disabled		
		í O	16S-4D map enabled
		1	16S-4D map disabled
		í O	32S-2D map enabled
		1	32S-2D map disabled
		í O	64S-4D map enabled
		1	64S-4D map disabled

	ON-LINE
Type:	Immediate
Format:	AT [cmds] On [cmds]
Description:	Controls on-line command (data transmission) mode options.
Note: The O command must be placed at the end of the command string.	
Command	Function
00	On-line command mode with no retraining enabled
01	On-line command mode with retraining enabled

	ON-LINE HELP
Type:	Immediate
Format:	AT [cmds] \$ [cmds]
Description:	On-line help; displays basic command list

	PHONE STATUS
Type:	Immediate
Format:	AT [cmds] -SHP=? [cmds]
Description:	Displays the status of the phone connected to the 'Phone' jack
Value	Meaning
0	On-hook (hung-up)
1	Off-hook (picked-up)

	POWER-UP/HARD RESET CONFIGURATIONS
Type:	Configuration
Format:	AT [cmds] Yn [cmds]
Description:	On power-up modem uses default profiles
Command	Function
í Y0	Use default setting 0 saved in non-volatile RAM
Y1	Use default setting 1 saved in non-volatile RAM

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	PULSE DIALING	
Type:	Configuration	
Format:	AT [cmds] P [cmds]	
Description:	Enables pulse dialing	
Note: This command can be duplicated with the P modifier in the D (Dial) command.		

	PULSE DIALING RATIO
Type:	Configuration
Format:	AT [cmds] &Pn [cmds]
Description:	Selects pulse dial make/break ratio
Command	Function
í &P0	39/61ms at 10pps (North America)
&P1	33/67ms at 10pps (Europe)

	REPEAT PREVIOUS COMMAND
Type:	Immediate
Format:	A/
Description:	Repeats previous command, mainly used for re-dial
Note: Do not precede this command with AT, or follow it with <cr>.</cr>	

	REPORT INFORMATION
Type:	Immediate
Format:	AT [cmds] In [cmds]
Description:	Displays information requested
Command	Function
10	Reports 4-digit product code
l1	Reports ROM checksum
12	Reports RAM checksum
13	Reports product type
14	Reports current command settings
15	Reports NVRAM settings
16	Reports link diagnostics
17	Reports product configuration

	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

	RESULT CODE FORMAT
Type:	Configuration
Format:	AT [cmds] Vn [cmds]
Description:	Selects word or numeric format for information-text and result codes
Command	Function
V0	Numeric format enabled
í V1	Verbose (word) format enabled

	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, 10-107 enabled
X2	Busy tone detection disabled, dial tone detection enabled; result codes 0-6, 10-107
	enabled; also adaptive dialing, wait for second dial tone, and fast dialing enabled.
X3	Busy tone detection enabled, dial tone detection disabled; result codes 0-5, 7-107
	enabled; also adaptive dialing, and wait for answer enabled.
X4	Busy and dial tone detection enabled; result codes 0-107 enabled; also adaptive
	dialing, wait for second dial tone, wait for answer, and fast dialing enabled.
Note: Valid numer	ic result codes; 0-8, 10, 13, 18, 20, 21, 25, 43, 85, 91, 99, 103, and 107.

SOFT RESET	
Type:	Immediate
Format:	AT [cmds] Zn [cmds]
Description:	Restores modem profiles previously saved in non-volatile RAM
Command	Function
í Z0	Restore setting used by ATY command
Z1	Restore setting 0
Z2	Restore setting 1
Z3	Restore factory setting 0 (AT&F0)
Z4	Restore factory setting 1 (AT&F1)
Z 5	Restore factory setting 2 (AT&F2)

	SPEAKER MODE
Type:	Configuration
Format:	AT [cmds] Mn [cmds]
Description:	Selects various speaker options
Command	Function
M0	Speaker disabled
í M1	Speaker enabled until carrier signal detected
M2	Speaker enabled
M3	Speaker enabled following dialing, then disabled after carrier signal detected.

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	SPEAKER VOLUME
Type:	Configuration
Format:	AT [cmds] Ln [cmds]
Description:	Controls speaker volume
Command	Function
L0	Low volume setting
L1	Low volume setting
í L2	Medium volume setting
L3	Highest volume setting

	STATUS-REGISTER	
Type:	Configuration	
Format:	Read: AT [cmds] Sn? [cmds]	
	Write: AT [cmds] Sn=x [cmds]	
Description:	Writes to or reads from a specified register	
Note: See the section on S-registers for detailed listing of commonly used S-registers.		
Command	Function	
Sn.b=x	Write to register bit b using values 0 (off) and 1 (on) for x	

	STORE ACTIVE PROFILE
Type:	Configuration
Format:	AT [cmds] &Wn [cmds]
Description:	Writes the values for the active profile into the non-volatile RAM templates
Command	Function
&W0	Write the active profile to stored profile 0
&W1	Write the active profile to stored profile 1

	STORE TELEPHONE NUMBER	
Type:	Configuration	
Format:	AT [cmds] &Zn=(phone # & modifiers)	
Description:	Writes selected telephone numbers into the non-volatile memory at location <i>n</i>	
Note: The characters described in the D command are valid for use in the &Z command.		
Command	Function	
&Zn=L	Writes last executed dial string into the non-volatile memory at location <i>n</i>	
&Zn?	Displays phone number from non-volatile memory at location <i>n</i>	
&ZL?	Displays last executed dial string	

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	TEST MODES
Type:	Configuration
Format:	AT [cmds] &Tn [cmds]
Description:	Controls loopback tests, analog, digital, remote digital, and self tests.
Command	Function
&T0	Testing disabled
&T1	Local analog loopback enabled
&T3	Local digital loopback enabled
&T4	Remote digital loopback enabled
í &T5	Remote digital loopback prohibited
&T6	Remote digital loopback initiated
&T7	Remote digital loopback w/ self-test and error detector in progress
&T8	Local analog loopback w/ self-test and error detector in progress

	TEST TIMER
Type:	Register
Format	AT [cmds] S18=n [cmds]
Default:	0
Range:	0-255
Unit:	1 second
Description:	Sets the maximum duration for modem tests
Note: S18=0 disables the timer and allows an indefinite duration.	

	TONE DIALING
Type:	Configuration
Format:	AT [cmds] T [cmds]
Description:	Enables tone dialing mode
Note: This command can be duplicated with the T modifier in the D (Dial) command.	

TONE DIALING TEST		
Type:	Register	
Format:	AT [cmds] S16=n [cmds]	
Description:	Selects the tone dialing test	
Command	Function	
í S16=0	Tone dialing test disabled	
S16=2	Tone dialing test enabled	

V.32 AND V.32bis MODULATIONS		
Format		AT [cmds] S34= <i>n</i> [cmds]
Default:		0
Range:		0-13
Unit: Bit-mapped		
Description: Controls V.32 and V.32bis modulations.		
Bit	Value	Function
0	í O	V.32bis enabled
	1	V.32bis disabled
1	í O	Not used
2	í O	Quick V.32 retrain enabled
	1	Quick V.32 retrain disabled
3	í O	V.23 modulation disabled
	1	V.23 modulation enabled