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SECURCOMM

BY DC SECURITY PRODUCTS

OMNIFLEX

RS232 OR CURRENT LOOP

LEASED LINE / DIALUP / LINE DRIVER

Modem Model Numbers

CL3364 / CL1444

OPERATING INSTRUCTIONS AND PROGRAMMING MANUAL

Quality Communication Products by

DC SECURITY PRODUCTS, INC

INTRODUCTION

The Securcomm ***OMNIFLEX*** modems are designed for use on standard four/two-wire dialup circuits, four/two-wire leased line circuits, and four/two-wire dry pair circuit. The Securcomm ***OMNIFLEX CL3364*** supports the following standards: V.34+, V.32bis, V.32, V.22bis, V.22 A&B, Bell 212A and Bell 103J. The Securcomm ***OMNIFLEX CL1444*** supports the following standards: V.32bis, V.32, V.22bis, V.22 A&B, Bell 212A and Bell 103J. The DTE interface is compatible with V.24 (RS-232-C), AT Command selectable ***CURRENT LOOP***, and operates in an asynchronous and synchronous, auto baud mode or selectable formats. The ***CL1444*** supports all standard data rates, from 2400 kbps to 14.4 kbps. The ***CL3364*** supports all standard data rates, from 2400 kbps to 33.6 kbps. The auto dial modes and configuration controls are AT compatible making programming a snap. The ***OMNIFLEX*** modems are packaged with power supply, Telco cord, and power cable with flying leads for wiring to a 12VDC voltage connection.

REAR PROGRAMMING JUMPERS

All Securcomm ***OMNIFLEX*** modems are designed with two programming jumpers. Located in the rear, next to the RS-232-C Connection, is the Two-Pin ***Left*** Programming Jumper. This Jumper controls the smart mode and dumb modes. The smart mode means that the ***OMNIFLEX*** modems will respond to AT commands. Once the units have been configured, the Two-Pin ***Left*** Jumper should be placed over both Pins. This action places the modem in the dumb mode of operation. In the dumb mode, the modem will no longer respond to AT commands and cannot be changed inadvertently. If the unit is operating in dumb mode and it becomes necessary to return it to smart mode, please remove the Jumper and reprogram as necessary.

Also located in the rear, next to the RJ-11 jack, is the Two-Pin ***Right*** Jumper. The Jumper placed over both pins enables RS485 and no jumper continues to allow RS232 (Default). Once programmed the jumper is placed over the Two-Pin ***Right*** header to control data flow by enabling Current Loop. It is important to note once you enable Current Loop you will be prevented from communicating with your PC (PC's are usually RS232). Any re-programming can only be achieved by removing ***both*** jumpers. And always remember to save any programmed or re-programmed configurations with the ***AT&W*** command as described on pages 4, 5, and13.

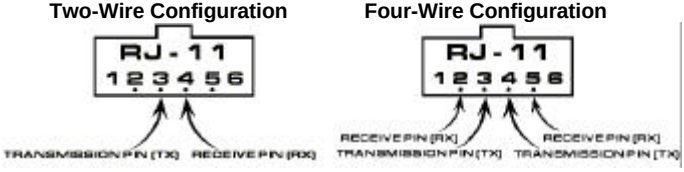
OMNIFLEX FRONT LIGHTS

MR	Modem Ready	**OH**	Off Hook
TR	Terminal Ready	**CD**	Carrier Detect
SD	Send Data	**AA**	Auto Answer
RD	Receive Data	**HS**	High Speed

OMNIFLEX REAR CONNECTORS

LINE This RJ-11 connector is used to connect the modem to a normal dial circuit, or a dedicated 4-wire or 2-wire leased line circuit, or 4-wire or 2-wire dry pair wire circuit. Please review the following diagram:

Two-Wire Configuration **Four-Wire Configuration**



VAC This connector is present on all stand-alone models and accepts a 12VAC/VDC power source of at least 300ma.

OMNIFLEX REAR CONNECTORS - CONT

RS232 / CURRENT LOOP This connector provides RS232 (V.24) or CURRENT LOOP interface. The table below highlights the following Pin signal assignments that are available:

DTE CONNECTOR INFORMATION TABLE

PIN#	SIGNAL DESCRIPTION	SOURCE	COMMENTS / NOTES
PIN 1	*Frame Ground*	*DTE / DCE*	
PIN 2	*Transmit Data*	*DTE*	*Activates SD Light on Front of Unit*
PIN 3	*Receive Data*	*DCE*	*Activates RD light on Front of Unit*
PIN 4	*Request To Send*	*DTE*	
PIN 5	*Clear To Send*	*DCE*	
PIN 6	*Data Set Ready*	*DCE*	*Activates MR Light on Front of Unit*
PIN 7	*Signal Ground*		*DTE / DCE*
PIN 8	*Carrier Detect*	*DCE*	*Activates CD Light on Front of Unit*
PIN 11	*Current Loop Receive Data (-)*	*DTE*	*Activates SD Light on Front of Unit in Current Loop mode*
PIN 12	*Speed Indicator*	*DCE*	
PIN 13	*Current Loop Transmit Data (+)*	*DCE*	*Activates RD Light on Front of Unit in Current Loop mode*
PIN 15	*DCE Transmit Clock*	*DCE*	
PIN 17	*DCE Receive Clock*	*DCE*	
PIN 20	*Data Terminal Ready*	*DTE*	*Activates TR Light on Front of Unit*
PIN 22	*Ring Indicator*	*DCE*	
PIN 23	*Current Loop Receive Data (+)*	*DTE*	*Activates SD Light on Front of Unit in Current Loop mode*
PIN 24	*DTE Transmit Clock*	*DTE*	*Please Refer to " &Xn" command*
PIN 25	*Current Loop Transmit Data (-)*	*DCE*	*Activates RD Light on Front of Unit in Current Loop mode*

LEASED LINE AND LINE DRIVER OPERATION

The ***OMNIFLEX*** modem will operate in either a 4-wire or 2-wire leased line or operate as a 4-wire or 2-wire dry pair mode with either asynchronous or synchronous DTE. In order to place the modem in leased line mode, it is necessary to use the following commands as part of your configuration string:

Originate End: ***&L1\H1\F1S7=200[user specific parameters)&W***
Answer End: ***&L1\H1\F0S7=30[user specific parameters)&W***

In the user specific section of each command string, parameters may be entered to match the ***OMNIFLEX*** modem to the specific requirements of the attached DTE. *Its important to emphasize that once configured for leased line / line driver operation, Securcomm Modems are* ***required*** *be placed in dumb mode and power to be cycled for proper data communication.*

OMNIFLEX OPERATION SETTINGS - TWO OR FOUR WIRE

Your ***OMNIFLEX CL1444*** **and** ***CL3364*** modem is equipped with a 4-wire interface, an interface you must change to enable 4-wire operation. Once this jumper has been changed, the modem will not operate on 2-wire dial or leased circuits. To change the jumper setting, remove the 2 screws in the modem case bottom and remove the upper half of the modem case. Hold the modem so that the front LEDs are facing toward you and the rear connectors are facing away from you. Locate J7 on the left side of the modem board. You will find that the 2 right pins of this 3-pin jumper are connected together with a removable shunt. Remove the shunt and place it over the 2 left pins of this 3-pin header. The modem is now in 4-wire mode and you may proceed to the standard setup paragraph that follows.

AT COMMAND SET

Command Guidelines

The basic ***AT*** (Computer/Laptop Keyboard) commands used to control modem operation are defined and explained in this section. Under ***AT*** operation, the ***OMNIFLEX*** modem performs an autobaud/autoparity/autolength function on each header entered. The autolength/autoparity facility detects 7-or-8-bit characters of even, odd, or no parity with one stop bit.

AT COMMAND SET - CONTINUED

Command Format

A command line is a string of characters sent from a DTE Device (i.e. Computer, Laptop, Terminal, etc) to the ***OMNIFLEX*** modem (DCE) while the modem is in a command state. A command line has a prefix, a body, and a terminator. Each command line (with the exception of the **A/** command) must begin with the character sequence AT and must be terminated by a carriage return. Characters within the command line are parsed as commands with associated parameter values. The basic commands consist of single ASCII characters, or single characters preceded by a prefix character (e.g., "&"), followed by a decimal parameter. Missing decimal parameters are evaluated as Zero.

Example: **{AT + L3 + &W }** (This command activates High Volume on the speaker – Pg 8)
Prefix Body Terminator

The AT sequence may be followed by any number of commands in sequence, except for commands such as Z, D, or A. Commands following commands Z, D, or A on the same command line will be ignored. The maximum number of characters on any command line is 65 (including "A" and "T"). If a syntax error is found anywhere in a command line (i.e. a command you typed incorrectly), the remainder of the line will be ignored and the ERROR result code will be returned. Ultimately, the goal is programming your ***OMNIFLEX*** modem with an error-free string of commands that could look a lot like these sample strings:

Originate Example: **{AT&F0&L1&K0&I1&D0\H1\F1\N1+MS=9,0,9600,9600S7=200&W<Enter >}**
Answer Example: **{AT&F0&L1&K0&I1&D0\H1\F0\N1+MS=9,0,9600,9600S7=30&W<Enter >}**

Escape Code Sequence

When the modem has established a connection and has entered the on-line data mode, it is possible to break into the data transmission to issue added commands in an on-line command mode. This is achieved by sending to the modem a sequence of three ASCII characters specified by register S2. The default character is '+'. The timing of the three characters must comply with specific time constraints. There is a guard time before the first character (the pre-sequence time), a guard time following the third character (the post-sequence time), and a guard time-out between the first and second characters and between the second and third characters (the inter-character time). These times are controlled by the value recorded in register S12.

Command Set Detail

The modem will respond to the commands detailed in the following pages of this manual. Parameters applicable to each command are listed with the command description. The defaults shown for each configuration command are those used in factory profile 0.

AT COMMANDS

A/	**Re-execute Command**

The modem behaves as though the last command line had been re-sent by the DTE. "A/" will repeat all the commands in the command buffer.

AT=*X*	**Write to Selected S-Register**

This command writes the value x to the currently selected S-Register. An S-Register can be selected by using the ATSn command.

AT?	**Read Selected S-Register**

This command reads and displays the selected S-Register.

AT COMMANDS - CONTINUNED

A	Answer

The modem will go off-hook and attempt to answer an incoming call if correct conditions are met.

B*n*	CCITT or Bell
B0	Selects CCITT operation at 300 or 1200 bps.
B1	Selects BELL operation at 300 or 1200 bps. (Default)

When the Securcomm ***OMNIFLEX*** modem is configured to allow either option, the modem will select Bell or CCITT modulation for a line speed connection of 300 or 1200 bps according to the parameter supplied. Any other line speed will use a CCITT modulation standard.

C*n*	Carrier Control

This command is included for compatibility only, and has no effect other than returning a result code. The only valid parameter is 1.

D*n*	Dial

This command directs the modem to go on-line, dial according to the string entered and attempt to establish a connection. If no dial string is supplied, the modem will go on-line and attempt the handshake in originate mode. **NOTE:** If the ATD command is issued before the S1 register has cleared, the modem will respond with the NO CARRIER result code.

Dial Modifiers. The valid dial string parameters are described below. Punctuation characters may be used for clarity, with parentheses, hyphen, and spaces being ignored.

Dial Modifier	Description
0-9	DTMF digits 0 to 9.
*****	The "Star" digit (tone dialing only).
#	The "Gate" digit (tone dialing only).
A-D	DTMF digits A,B,C, and D.
J	Perform MNP10 link negotiation at 1200 bps.
K	Enable power level adjustment during MNP10 link negotiation.
L	Re-dial last number.
P	Select pulse dialing.
T	Select tone dialing.
R	Ignored.
S=n	Dial the number stored in the directory.
W	Wait for dial tone: The modem will wait for dial tone before dialing the digits following "W". If dial tone is not detected within the time specified by S7, the modem will abort the rest of the sequence.
'	Dial pause: the modem will pause for a time specified by S8 before dialing the digits following ",'".
&	Wait for credit card dialing tone before continuing with the dial string. If bong is not detected within the time specified by S7, the modem will abort the rest of the sequence.
!	Flash: the modem will go on-hook for a time defined by the value of S29.
^	Toggles calling tone enable/disable: applicable to current dial attempt only.

AT COMMANDS - CONTINUED

Dial Modifier	Description
@	Wait for silence: the modem will wait for at least 5 seconds of silence in the call process frequency band before continuing with the next dial string parameter. If the modem does not detect these 5 seconds of silence before the expiration of the call abort timer (S7), the modem will terminate the call attempt with a NO ANSWER message. If busy detection is enabled, the modem may terminate the call with the BUSY result code. If answer tone arrives during execution of this parameter, the modem handshakes.
;	Return to command state. Added to the end of a dial string, this causes the modem to return to the command state after it processes the portion of the dial string preceding the ";".
()	Ignored: may be used to format the dial string.
_	Ignored: may be used to format the dial string.
<I>	Invalid character: will be ignored.

En	Command Echo
E0	Disables command echo.
E1	Enables command echo. (Default)

The Securcomm ***OMNIFLEX*** modem enables or disables the echo of characters to the DTE according to the parameter supplied. This allows the characters to be displayed on the PC Screen / Monitor.

Fn	Select Line Modulation ***(OMNIFLEX CL1444 ONLY)***
F0	Selects auto-detect mode. All connect speeds supported by the modem are possible according to the remote modem's preference.
F1	Selects V.21 or Bell 103 according to the B setting as the only acceptable line speed resulting in a subsequent connection.
F2	Not supported.
F3	Selects V.23 as the only acceptable line modulation for a subsequent connection. Originator is at 75 bps and answered is at 1200bps.
F4	Selects V.22 1200 or Bell 212A according to the B command setting as the only acceptable line speed for a subsequent connection.
F5	Selects V.22 bis as the only line modulation for a subsequent connection.
F6	Select V.32bis 4800 or V.32 4800 as the only acceptable line modulation for a subsequent connection.
F7	Selects V.32 bis 7200 as the only acceptable line modulation for a subsequent connection.
F8	Selects V.32bis 9600 or V.32 9600 as the only line modulations for a subsequent connection.
F9	Selects V.32bis 12000 as the only acceptable line modulation for a subsequent connect
F10	Selects V.32 bis 14400 as the only line modulation for a subsequent connection.

This command selects the line modulation according to the parameter supplied. The line modulation is fixed unless Automode is selected.

AT COMMANDS - CONTINUED

Hn		Disconnect (Hang-Up)
	HO	The modem will release the line if the modem is currently on-line, and will terminate any test that is in progress.
	H1	If on-hook, the modem will go off-hook and enter command mode.

This command initiates a hang up sequence.

In		Identification
	I0	Reports product code.
	I1	Reports a precomputed checksum.
	I2	Reports "OK".
	I3	Reports firmware revision (VX.XXX) model code.
	I4	Reports OEM defined identifier string in Hayes compatible binary format.
	I5	Reports Country Code parameter.
	I6	Reports modem data pump model and internal code revision.
	I7	Reports the DAA code resulting from MCU interrogation of the DAA for auto DAA recognition.

The Securcomm ***OMNIFLEX*** modem reports to the DTE the requested result according to the command parameter.

Ln		Speaker Volume
	L0	Low volume.
	L1	Low volume. (Default)
	L2	Medium volume.
	L3	High volume.

The Securcomm ***OMNIFLEX*** modem sets the speaker volume control according to the parameter supplied.

Mn		Speaker Control
	M0	Speaker is always off.
	M1	Speaker is on during call establishment, but off when receiving carrier. (Default)
	M2	Speaker is always on.
	M3	Speaker is off when receiving carrier and during dialing, but on during answering.

The Securcomm ***OMNIFLEX*** modem sets the speaker activation according to the parameter selected.

Nn		Automode Enable
	N0	Automode detection is disabled.
	N1	Automode detection is enabled. (Default).

This command enables or disables Automode detection.

AT COMMANDS - CONTINUED

On	**Return to On-Line Data Mode**
O0	Enters on-line data mode, without a retrain.
O1	Enters on-line data mode with a retrain.

This command determines how the modem will enter the on-line data mode.

P	**Set Pulse Dial Default**

This command forces pulse dialing until the next T dial modifier or T command is received.

Qn	**Quiet Results Codes Control**
Q0	Enables result codes to the DTE. (Default)
Q1	Disables result codes to the DTE.

The command enables or disables the sending of result codes to the DTE according to the parameter supplied.

Sn	**Read/Write S-Register**
Sn	Establishes S-Register n as the last register accessed.
Sn=v	Sets S-Register n to the value v.
Sn?	Reports the value of S-Register n.

Modem selects an S-Register, performs an S-Register read or writes function, or reports the value of an S-Register.

T	**Set Tone Dial Default**

This command forces DTMF dialing until the next P dial modifier or P command is received.

Vn	**Result Code Form**
V0	Enables short-form (terse) result codes.
V1	Enables long-form (verbose) result codes. (Default)

This command selects the sending of short-form or long-form result codes to the DTE.

Wn	**Connect Message Control**
W0	Modem reports DTE speed. (Default)
W1	Modem reports line speed error correction OMNIFLEX and DTE speed.
W2	Modem reports the DCE speed.

This command controls the format of CONNECT messages.

AT COMMANDS - CONTINUED

Xn		Extended Result Codes:
	X0	Disables monitoring of busy tones, sends only OK, CONNECT, RING, NO CARRIER, ERROR, and NO ANSWER result codes. Blind dialing is enabled.
	X1	Disables monitoring of busy tones, sends only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER, and CONNECT XXXX*. Blind dialing is enabled.
	X2	Disables monitoring of busy tones, sends only OK, CONNECT, RING, NO CARRIER, ERROR, NO DIAL TONE, NO ANSWER, and CONNECT XXXX*.
	X3	Enables monitoring of busy tones; send only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER, and CONNECT XXXX*. Blind dialing is enabled.
	X4	Enables monitoring of busy tones, sends all messages. (Default).

This command selects which subset of the result messages will be used by the modem to inform the DTE of the results of commands. (*Note: XXXX= represents the connected baud rate)

Yn		Long Space Disconnect
	Y0	Disables long space disconnect. (Default)
	Y1	Enables long space disconnect.

This command enables/disables the generation and response to long space disconnect.

Zn		Soft Reset and Restore Profile
	Z0	Soft reset and restores stored in profile 0.
	Z1	Soft reset and restores stored profile 1.

The Securcomm ***OMNIFLEX*** modem performs a soft reset and restores (recalls) the configuration profile according to the parameter supplied. If no parameter is specified, zero is assumed.

AT& COMMANDS

&Cn		RLSD (DCD) Option
	&C0	RLSD remains ON at all times.
	&C1	RLSD follows the state of the carrier. (Default)

This command controls the RLSD output in accordance with the parameter supplied.

&Dn		DTR Option
	&DO	DTR is ignored and assumed on.
	&D1	DTR drop forces modem to command state without disconnecting.
	&D2	DTR drop causes the modem to hang up, auto-dial is inhibited. (Default)
	&D3	DTR drop forces modem to soft reset.

The command interprets the ON to OFF transition of the DTR signal from the DTE in accord with Parameter supplied.

&Fn		Restore Factory Configuration (profile)
	&F0	Restore factory configuration 0.
	&F1	Restore factory configuration 1.

The command loads the factory default configuration (profile).

AT& COMMANDS - CONTINUED

&Gn	**Select Guard Tone**
&G0	Disables guard tone.
&G1	Disables guard tone.
&G2	Selects 1800 Hz guard tone.

&In	**Select RS232 or Current Loop Mode**
&I0	This command sets the modem to RS-232 mode. (Default)
&I1	This command sets the modem into the current loop mode

&Jn	**Telephone Jack Control**
&J0	&J0 command. (Default)
&J1	&J1 command.

This command is only included for compatibility and performs no function except to load the S-Register.

&Kn	**Flow Control**
&K0	Disables flow control.
&K3	Enables RTS/CTS flow control. (Default)
&K4	Enables XON/XOFF flow control.
&K5	Enables transparent XON/XOFF flow control.
&K6	Enables both RTS/CTS and XON/XOFF flow control.

This command defines the DTE/DCE (terminal/modem) flow control mechanism.

&Ln	**Selects Dialup or Leased Line / Line Driver Operation**
&L0	Selects dial up operation. (Default)
&L1	Selects leased line / line driver operation.

This command selects dial up or leased line operation.

&Mn	**Asynchronous/Synchronous Mode Selection**
&M0	Selects direct asynchronous operation.
&M1	Selects synchronous connect mode with asynch off-line command mode.
&M2	Selects synchronous connect mode with asynch off-line command mode. Same as &M1 except that &M2 enables DTR dialing of directory slot 0. The modem will disconnect if DTR is OFF for more than the period in S25.
&M3	Selects synchronous connect mode. This mode allows DTR to act as a talk/data switch.

The call is manually initiated while DTR is inactive. When DTR becomes active, the handshake proceeds in originate or answer mode according to S14 bit 7.

AT& COMMANDS - CONTINUED

&Pn		Select Pulse Dial Make/Break Ratio
	&P0	Selects 39%-61% make/break ratio at 10 pulses per second. (Default)
	&P1	Selects 33%-67% make/break ratio at 10 pulses per second.
	&P2	Selects 39%-61% make/break ratio at 20 pulses per second.
	&P3	Selects 33%-67% make/break ratio at 20 pulses per second.

This command determines the make/break ratio used during pulse dialing.

&Qn		Sync/Async Mode
	&Q0	Selects direct asynchronous operation.
	&Q1	Selects synchronous connect mode with async off-line command mode.
	&Q2	Selects synchronous connect mode with asynch off-line command mode and enables DTR dialing of directory 0.
	&Q3	Selects synchronous connect mode with async off-line command mode and enables DTR to act as Talk/Data switch.
	&Q4	Selects AutoSync operation. Auto-sync operation when used in conjunction with the Hayes Synchronous Interface (HSI) capability in the DTE, provides synchronous communication capability from an asynchronous terminal.
	&Q5	The modem will try to negotiate an error-corrected link. (Default)
	&Q6	Selects asynchronous operation in normal mode (speed buffering).

This command is an extension of the &M command is used to control the connection modes permitted. It is used in conjunction with S36 and S48.

&Rn		RTS/CTS Option
	&R0	In sync mode, CTS tracks the state of RTS; the RTS to CTS delay is defined by S26. In async mode, CTS acts according to V.25bis handshake.
	&R1	In sync mode, CTS is always ON (RTS transitions are ignored). In async mode, CTS will only drop if required by flow control. (Default)

This selects how the Securcomm ***OMNIFLEX*** modem controls CTS. CTS operation is modified if the hardware flow control is selected.

&Sn		DSR Override
	&S0	DSR will remain ON at all times. (Default)
	&S1	DSR will become active after answer tone has been detected and inactive after the carrier has been lost.

This command selects how the modem will control DSR.

&Tn		Test and Diagnostics
	&T0	Terminates test in progress.
	&T1	Initiates local analog loopback, V.54, Loop 3.
	&T2	Returns ERROR.
	&T3	Initiates local digital loopback, V.54 Loop 2.
	&T4	Enables digital loopback for remote request. (Default)
	&T5	Disables digital loopback for remote request.
	&T6	Requests a remote digital loopback, V.54 Loop 2 without self test.
	&T7	Requests remote digital loopback, V.54 Loop 2, with self-test.
	&T8	Initiates local analog loopback, V.54 Loop 3, with self-test.

The modem will perform test and diagnostic functions according to the parameter supplied. A test can be run only when in asynchronous operation in non-error-correction mode (normal or direct mode). To terminate a test, the escape sequence must be entered first, except for parameters 7 and 8. If **S18** is non-zero, a test will terminate automatically after the time specified by **S18** and display the OK message.

&V	Display Current Configuration and Stored Profiles

Reports the current (active) configuration, stored (user) profiles, and the first 4 stored telephone numbers.

&V1	Display Status of Last Call

Presents an analysis of modern performance and telephone circuit quality during the last call.

&Wn		Store Current Configuration
	&W0	Store as profile 0.
	&W1	Store as profile 1.

Saves the current configuration and S-Registers in one of the two user profiles, which are kept in non-volatile memory (NVRAM).

&Xn		Select Synchronous Clock Source
	&X0	Internal clock from DCE.
	&X1	External clock from DTE. (DTE must supply clock on pin 24)
	&X2	Internal clock from DCE synchronized with carrier from remote modem.

Selects the source of the transmit clock for synchronous operation.

&Yn		Designate a Default Profile
	&Y0	Profile 0.
	&Y1	Profile 1.

Selects the user profile that will be used after a reset.

&Zn		Store Telephone Number
	&Zn=x	Where n = 0 to 3 and x = dial string.

The modem can store up to four telephone numbers.

%C*n*	Enable/Disable Data Compression
%C0	Disables data compression.
%C1	Enables MNP5 data compression negotiation.
%C2	Enables V.42 bis data compression.
%C3	Enables both V.42 bis and MNP5 data compression. (Default)

Enables or disables data compression negotiation. The Securcomm ***OMNIFLEX*** modem can only perform data compression on an error corrected link.

%E*n*	Enable/Disable Line Quality Monitor and Auto-Retrain or Fallback/Fall Forward
%E0	Disable line quality monitor and auto-retrain.
%E1	Enable line quality monitor and auto-retrain.
%E2	Enable line quality monitor and fallback/fall forward. (Default)

Controls whether or not the modem will automatically monitor the line quality and request a retrain (%E1) or fall back when line quality is insufficient or fall forward when line quality is sufficient (%E2).

%L	Line Signal Level

Returns a value, which indicates the received signal level.

%Q	Line Signal Quality

Reports line signal quality.

\A*n*	Select Maximum MNP Block Size
\A0	64 characters.
\A1	128 characters. (Default)
\A2	192 characters.
\A3	256 characters.

The Securcomm ***OMNIFLEX*** modem will operate an MNP error corrected link using a maximum block size controlled by the parameter supplied.

\B*n*	Transmit Break to Remote

In the non-error-correction mode, the modem will transmit a break signal to the remote modem with a length in multiples of 100 ms according to parameter specified. If a number in excess of 9 is entered, 9 is used.

\F*n*	Set Answer or Originate Mode
\F0	Sets modem to answer mode.
\F1	Sets modem to originate mode.

In dial operation the answering modem on average assumes answer responsibility and the calling modem assumes originate responsibility. In leased line operation where there is no implied calling or answering modem, the relationship must be established with this command. Please note that setting the modem in answer mode is not the same as setting the modem to auto-answer mode for dial operation. S0 must still be set for auto-answer dial mode.

\G*n*	Modem to Modem Flow Control (XON/XOFF) *(OMNIFLEX CL1444 ONLY)*
\G0	Disables modem-to-modem flow control. (Default)
\G1	Enables modem-to-modem XON/XOFF flow control.

In non-error-correction mode, the Securcomm ***OMNIFLEX*** modem enables or disables the generation or recognition of modem-to-modem XON/XOFF flow control according to the parameter supplied. In error correction mode, the setting of modem-to-modem XON/XOFF flow control is ignored. However, the serial port flow control settings (AT&K) remain active during a reliable link.

\H*n*	Auto-Connect
\H0	Normal dial/answer operation under AT command control. (Default)
\H1	Modem constantly attempts to go off hook and connect as configured.

In many cases where the dumb mode of operation is required, it is necessary for the Securcomm ***OMNIFLEX*** modem to be configured so that it constantly attempts to go off hook and connect as configured. This is necessary for leased line operation or for operation with an external manual dialer. This command allows that to occur.

\K*n*	Break Control
The first state is where the modem receives a break from the DTE when the unit is operating in data transfer mode:	
\K0	Enter on line command mode, no break sent to the remote modem.
\K1	Clear data buffers and send break to remote modem.
\K2	Same as 0.
\K3	Send break to remote modem immediately.
\K4	Same as 0.
\K5	Send break to remote modem in sequence with data. (Default)
The second case is where the modem is in the on-line command state (waiting for AT commands) during a data connection and the \B is received in order to send a break to the remote modem.	
\K0	Clear data buffers and send break to remote modem.
\K1	Same as 0.
\K2	Send break to remote modem immediately.
\K3	(Same as 2).
\K4	Send break to remote modem in sequence with data.
\K5	Same as 4. (Default)

The above group of commands controls the response of the Securcomm ***OMNIFLEX*** modem to a break received from the DTE or the remote modem or the \B command according to the parameter supplied. The response is different in three separate states. The first two Break Control states are listed above, the third state is listed on the following page.

AT\ COMMANDS - CONTINUED

\K*n*	Break Control
The third case is where a break is received from a remote modem during a non-error corrected connection:	
\K0	Clears data buffers and send break to the DTE.
\K1	(Same as 0).
\K2	Send a break immediately to DTE.
\K3	(Same as 2).
\K4	Send a break in sequence with received data to DTE.
\K5	(Same as 4). (Default)

The above group of commands controls the response of the Securcomm ***OMNIFLEX*** modem to a break received from the DTE or the remote modem or the \B command according to the parameter supplied. The response is different in three separate states. The first two Break Control states are listed on the previous page.

\N*n*	Operating Mode
\N0	Normal speed buffered mode (disables error correction).
\N1	Direct mode.
\N2	MNP only.
\N3	MNP with fallback to normal mode (auto reliable mode).
\N4	V.42 only.
\N5	V.42 with fallback to MNP only.
\N6	V.42 with fallback to MNP with fallback to normal. (Default)

This command controls the preferred error-correcting mode to be negotiated in a subsequent data connection.

+MS COMMANDS

+MS	Select Modulation

This extended format command selects the modulation, optionally enables or disables automode, and optionally specifies the lowest and highest connection rates using one to four subparameters. The command format is:

+MS=<mod>[,[<automode>][,[<min_rate>][,[<max_rate>]]]]<CR>

Notes:

1. For 14400 bps and lower speeds, the Nn command and S37 register can alternatively be used in which case the +MS subparameters will be modified to reflect the Nn and S37=x settings. Use of the Nn and S37=x commands is not recommended but is provided for compatibility with existing communication software. (S37 is not updated by the +MS command).

2. Subparameters not entered (enter a comma only or <CR> to skip the last subparameter) remain at their current values.

+MS COMMANDS - CONTINUED

Reporting Selected Options

The Securcomm ***OMNIFLEX*** modem can send a string of information to the DTE consisting of selected options using the following command:

+MS?

The response is:

+MS:<mod>,<automode>,<min_rate>,<max_rate>

For example,

+MS: 11,1,300,28800 (shows default values)

Reporting Supported Options

The Securcomm ***OMNIFLEX*** modem can send a string of information to the DTE consisting of supported options using the following command:

+MS=?

The response is:

+MS: (list of supported <mod> values),(list of supported <automode> values)
(list of supported <min_rate> values),(list of supported <max_rate> values)

For example,

,MS: (0,1,2,3,8,9,10,13,64,69,74),(0,1),(300-28800),(300-28800)

Sub parameter Definitions

1. <mod>=A decimal number which specifies the preferred modulation (automode disabled) to use in originating or answering a connection. The options are:

<mod>	Modulation	Possible Rates(bps)	Notes
0	V.21	300	
1	V.22	1200	
2	V.22bis	2400 or 1200	
3	V.23	1200	See Note 2
9	V.32	9600 or 4800	
10	V.32bis	14400,12000,9600,7200,4800	Default (CL1444)
11	V.34	33600, 31200,28800, 26400,24000, 21600,19200,16800,14400,12000, 9600,7200,4800,2400	Default (CL3364)
64	Bell 103	300	
69	Bell 212	1200	
74	V.FC	33600, 31200,28800,26400,24000,21600,19200, 16800,14400	

2. **<automode>** is an optional numeric value which enables or disables automatic modulation negotiation using V.8 or V.32bis Annex A. The options are:

<automode>	Option Selected	Notes
0	Automode disabled	
1	Automode enabled using V.8 or V.32 Annex A	Default

3. <min_rate> is an optional number which specifies the lowest rate at which the modem may establish a connection. The value is decimal coded in units of bps e.g. 2400 specifies the lowest rate to be 2400 bps. The default is 300 for 300 bps.

4. <max_rate> is an optional number which specifies the highest rate at which the modem may establish a connection. The value is decimal coded, in units of bps, e.g., 14400 specifies the highest rate to be 14400 bps. The default is 33600 for 33600 bps.

MNP 10 COMMANDS

)M*n*		**Enable Cellular Power Level Adjustment**
	)M0	Disables transmit power level adjustment during MNP10 link negotiation. The)M0 command allows transmit power adjustment if cellular operation is requested by the remote modem. Uses wireline power level for initial cellular connection. (Default)
	)M1	Enables transmit power level adjustment during MNP10 link negotiation. Uses the @Mn value to establish initial cellular connection. After connection, the optimal power level is determined by the modem. **NOTE**:)M1 should not be used with *H2.
	)M2	Enables transmit power level adjustment during MNP10 link negotiation. Uses the @Mn value to establish initial cellular connection. After connection, the power level remains fixed.

Enables or disables automatic adjustment of the transmit power level to accommodate the signaling requirements of cellular telephone equipment.

*H*n*		**Link Negotiation Speed**
	***H0**	Link negotiation occurs at the highest supported speed. (Default)
	***H1**	Link negotiation occurs at 1200 bps; used primarily for establishing cellular connections.
	***H2**	Link negotiation occurs at 4800 bps; used primarily to negotiate an MNP10 connection on less than average quality telephone lines.

This command controls the connect speed for link negotiations before upshift occurs between two MNP10 modems.

-Q*n*		**Enable Fallback to V.22 bis/V.22**
	-Q0	Disables fallback to 2400 bps (V.22bis) and 1200 bps (V.22). Fallback is enabled only to 4800 bps.
	-Q1	Enables fallback to 2400 bps (V.22bis) and 1200 bps (V.22). (Default)

Enables or disables fallback from MNP10 to V.22bis/V.22.

-K*n*		**MNP Extended Services**
	-K0	Disables V.42 LAPM to MNP10 conversion.
	-K1	Enables V.42 LAPM to MNP10 conversion. (Default)
	-K2	Enables V.42 LAPM to MNP10 conversion; inhibits MNP Extended Services initiation during V.42 LAPM answer mode detection phase.

Enables or disables conversion of a V.42 LAPM connection to an MNP10 connection.

@M*n*	Initial Cellular Power Level Setting		
	@M0 -26 dBm. (Default)	**@M1** - 30 dBm.	**@M2** - 10 dBm.
	@M3 through **@M10** -10 dBm. **@M11** - 11 dBm.		
	@M12 - 12 dBm.	**@M30** - 30 dBm.	**@M31** - 31 dBm.

Sets the initial transmit power level for upshift at connect until line conditions can be determined. @M0 corresponds to -26 dBm, @M1 corresponds to -30 dBm, @M2 through @M10 correspond to -10 dBm, and @M11 through @31 correspond to -11dBm to -31 dBm, respectively.

:E*n*	Compromise Equalizer Enable Command
:E0	Disables the equalizer.
:E1	Enables the equalizer. (Default)

Enables or disables the V.32 compromise equalizer. The parameter value, if valid, is written to S201 bit 5. This command can be used when the modem is attached to either a flat line or a cellular connection.

AT COMMAND RESULT CODES

The modem responds to commands from the DTE and to activity on the line by signalling to the DTE in the form of result codes. The result codes that the modem can send are described below.

0- OK
1- CONNECT
2- RING
3- NO CARRIER
4- ERROR
5- CONNECT 1200
6- NO DIALTONE
7- BUSY
8- NO ANSWER
9- CONNECT 0600
10- CONNECT 2400
11- CONNECT 4800
12- CONNECT 9600
13- CONNECT 7200
14- CONNECT 12000
15- CONNECT 14400
16- CONNECT 19200
17- CONNECT 38400
18- CONNECT 57600
19- CONNECT 115200
22- CONNECT 75TX/1200RX
23- CONNECT 1200TX/75RX
24- DELAYED
32- BLACKLISTED
33- FAX
35- DATA
40- CARRIER 300
44- CARRIER 1200/75
45- CARRIER 75/1200
46- CARRIER 1200
47- CARRIER 2400
48- CARRIER 4800
49- CARRIER 7200
50- CARRIER 9600
51- CARRIER 12000
52- CARRIER 14400
53- CARRIER 16800
54- CARRIER 19200
55- CARRIER 21600
56- CARRIER 24000
57- CARRIER 26400
58- CARRIER 28800
59- CONNECT 16800
61- CONNECT 21600
62- CONNECT 24000
63- CONNECT 26400
64- CONNECT 28800
66- COMPRESSION: CLASS 5
67- COMPRESSION: V.42 bis
69- COMPRESSION: NONE
70- PROTOCOL: NONE
77- PROTOCOL: LAPM
80- PROTOCOL: ALT
81- PROTOCOL: ALT-CELLULAR

S-REGISTERS

The table in this section summarizes the S-Registers and their default values. Registers denoted with an (*) may be stored in one of the two user profiles by entering the ***&Wn*** command. One of these profiles may be loaded at any time by using the ***Zn*** command. Registers or register fields quoted as "reserved" are reserved for current or future use. All bit-mapped registers are read-only. The appropriate ***AT*** command, which controls the relevant bits in the S-Register, should be used to change the value.

S-REGISTERS - CONTINUED

FACTORY DEFAULTS

The factory default values are stored in ROM and are loaded into the active configuration at power up or by the **ATZ*n*** command. In addition, the designated default profile is subsequently loaded, and may change some of the factory default values. The designated default profile can be changed by entering the **&Y*n*** command where ***n*** is one of the two possible use profiles. The factory defaults may be loaded anytime by entering the **&F*n*** command.

S-REGISTER INFORMATION TABLE SUMMARY

Register	Function	Range	Units	Saved	Default
S00	Rings to Auto-Answer	0-255	rings	*	0
S01	Ring Counter	0-255	rings		0
S02	Escape Character	0-255	ASCII	*	43
S03	Carriage Return Character.	0-127	ASCII		13
S04	Line Feed Character	0-127	ASCII		10
S05	Backspace Character	0-255	ASCII		8
S06	Wait Time for Dial Tone	2-255	s	*	2
S07	Wait Time for Carrier	1-255	s	*	50
S08	Pause Time for Dial Delay	0-255	s	*	2
S09	Carrier Detect Response time	1-255	0.1s	*	6
S10	Carrier Loss Disconnect time	1-255	0.1s	*	14
S11	DTMF Tone Duration	50-255	0.001s	*	95
S12	Escape Prompt Delay	0-255	0.02s	*	50
S13	Reserved	-	-	-	-
S14	General Bit Mapped Options	-	-	*	138
S15	Reserved	-	-	-	-
S16	Test Mode Bit Mapped	-	-	-	0
S17	Reserved	-	-	-	-
S18	Test Timer	0-255	s	*	0
S19	AutoSync Options	-	-	-	0
S20	AutoSync HDLC or BSC Char.	0-255	-	*	0
S21	V.24/General Bit Mapped	-	-	*	4
S22	Speaker/Results Bit Mapped	-	-	*	117
S23	General Bit Mapped	-	-	*	54
S24	Sleep Inactivity Timer	0-255	s	*	0
S25	Delay to DTR Off	0-255	s or 0.01s	-	5
S26	RTS-to-CTS Delay	0-255	s or 0.01	-	1
S27	General Bit Mapped	-	-	*	9
S28	General Bit Mapped	-	-	*	0
S29	Flash Dial Modifier	0-255	10 ms	-	0
S30	Disconnect Timer	0-255	10 s	-	0
S31	General Bit-Mapped	-	-	*	2
S32	XON Character	0-255	ASCII	-	17
S33	XOFF Character	0-255	ASCII	-	19
S34-S35	Reserved	-	-	-	-
S36	LAPM Failure Control	-	-	*	7
S37	Line Connection Speed	-	-	*	0
S38	Delay Before Hang up	0-255	s	-	20
S39	Flow Control Bit Mapped	-	-	*	3
S40	General Bit-Mapped	-	-	*	104
S41	General Bit-Mapped	-	-	*	195
S42-S45	Reserved	-	-	-	-
S46	Data Compression Control	-	-	*	138
S48	V.42 Negotiation Control	-	-	*	7
S82	LAPM Break Control	-	-	-	128
S86	Call Failure Reason	0-255	-	-	-
S91	PSTN Transmit Attenuation	0-15	dBm	-	11
S92	FAX Transmit Attenuation	0-15	dBm	-	11
S95	Result Code Control	-	-	*	0
S201	Cellular Transmit Level		0-63		* 50

***Register value may be stored in either user profile with the *&W* command.**

S-REGISTER DEFINITIONS

S00 - Number of Rings to Auto Answer

Sets the number of the rings required before the modem automatically answers a call. Setting this register to zero disables auto-answer mode.

Range: 0-255 rings Default: 0

S01 - Ring Counter

S1 is incremented each time the ***OMNIFLEX*** modem detects a ring signal on the telephone line. S1 is cleared if no rings occur over an eight-second interval.

Range: 0-255 rings Default: 0

S02 - Escape Character

S02 holds the decimal value of the ASCII character used as the escape character. The default value corresponds to an ASCII "+". A value over 127 disables the escape process, i.e., no escape character will be recognized.

Range: 0-255, decimal Default: 43(+)

S03 - Carriage Return Character

Sets the command line and result code terminator character.

Range: 0-127, decimal Default: 13 (Carriage Return)

S04 - Line Feed Character

Sets the character recognized as a line feed.

Range: 0-127, decimal Default: 10 (line feed)

S05 - Backspace Character

Sets the character recognized as a backspace.

Range: 0-255, decimal Default: 8 (Backspace)

S06 - Wait Time for Dial Tone Before Blind Dialing.

Sets the length of time in seconds that the modem will wait before starting to dial after going off-hook when blind dialing. The modem always pauses for a minimum of 2 seconds, even if the value of S6 is less than 2 seconds.

Range: 2-255 seconds Default: 2

S07 - Wait Time for Carrier After Dial, For Silence, or For Dial Tone After "W" Dial Modifier

1. Sets the length of time, in seconds, that the ***OMNIFLEX*** modem will wait for carrier before hanging up. The timer is started when the modem finishes dialing (this is the originate mode), or 2 seconds after going off-hook (this is the answer mode). In originate mode, the timer is reset upon detection of answer tone.
2. Sets the length of time, in seconds, that the ***OMNIFLEX*** modem will wait for silence when encountering the @ dial modifier (see "D*n*-Dial" Command, page 6 and 7) before continuing with the next dial string parameter.
3. Sets the length of time, in seconds, that the ***OMNIFLEX*** modem will wait for dial tone when encountering a "W" dial modifier (see "D*n*-Dial" Command, page 6 and 7) before continuing with the next dial string parameter.

Range: 1-255 seconds Default: 50

S08 - Pause Time for Dial Delay

Sets the time, in seconds, that the unit must pause when the "," dial modifier is encountered in the dial string.

Range: 0-255 seconds Default: 2

S09 - Carrier Detect Response Time

Sets the time, in tenths of a second, that the carrier must be present before the modem considers it valid and turns on RLSD.

Range: 1-255 tenths of a second Default: 6 (0.6 second)

S10 - Lost Carrier to Hang Up Delay

Sets the length of time, in tenths of a second that the Securcomm ***OMNIFLEX*** modem waits before hanging up after a loss of carrier. When register S10 is set to 255, the modem functions as if a carrier is always present. The actual interval the modem waits before disconnecting is the value in register S10 minus the value in register S9. Therefore, the S10 value must be greater than the S9 value or else the modem disconnects before it recognizes the carrier.

Range: 1-255 tenths of a second Default: 14 (1.4 seconds)

S11 - DTMF Tone Duration

Sets the duration of tones in DTMF dialing. This value has no effect on pulse dialing.

Range: 50-255 milliseconds Default: 95 (95 milliseconds)

S12 - Escape Prompt Delay

Defines the maximum period in fiftieths of a second, allowed between receipt of the last character of the three-escape character sequence from the DTE and the sending of the OK result code to the DTE. If any characters are detected during this time, the OK will not be sent.

Range: 0-255 1/50 of a second Default: 50 (1 second)

S13 - Reserved

S14 - General Bit Mapped Options Status

Indicates the status of command options.

Default: 138

Bit0 - This bit is ignored

Bit1 - Command echo 

0 = Disabled (EO)
1 = Enabled (E1)(Default)

Bit2 - Quiet mode (Qn)
0 = Send result codes (Q0)(Default)
1 = Do not send result codes (Q1)

Bit3 - 0 = Numeric (V0)
1 = Verbose (V1)(Default)

Bit4 - Reserved

Bit5 - Tone (T)/Pulse (P)
0 = Tone (T)(Default)
1 = Pulse (P)

Bit6 - Reserved

Bit7 - Originate/Answer
0 = Answer
1 = Originate (Default)

S15 - Reserved

S16 - General Bit Mapped Test Options Status

Indicates the test in progress status.

Default: 0

Bit0 - Local analog loopback
- 0 = Not in progress (Default)
- 1 = In progress (&T1)

Bit1 - Not used

Bit2 - Local digital loopback
- 0 = Not in progress (Default)
- 1 = In progress (&T3)

Bit3 - Remote digital loopback (RDL)
- 0 = Modem not in RDL (Default)
- 1 = RDL in progress

Bit4 - RDL requested
- 0 = RDL not requested (Default)
- 1 = RDL requested (&T6)

Bit5 - RDL with self-test
- 0 = RDL not requested (Default)
- 1 = RDL requested (&T7)

Bit6 - Local analog loopback (LAL) with self-test
- 0 = Not in progress (Default)
- 1 = In progress (&T8)

Bit7 - Not used

S17 - Reserved

S18 - Test Timer

Sets the length of time, in seconds, that the modem conducts a test (commanded by &Tn) before returning to the command mode. If his register value is zero, the test will not automatically terminate; the test must be terminated from the command mode by issuing a &T0 or H command. When S18 is non-zero, the modem returns the OK message upon test termination.

Range: 0-255 seconds Default: 0

S19 - AutoSync Bit Mapped Options

Defines the options for AutoSync operation (see &Q4). S19 must be set to the desired value before &Q4 is issued.

Default: 0

Bit0 - Reserved

Bit1 - BSC/HDLC Format Select
- 0 = BSC selected (Default)
- 1 = HDLC selected

Bit2 - Address detection enable/disable
- 0 = Disabled (Default)
- 1 = Enabled

Bit3 - NRZI/NRZ coding select
- 0 = NRZI (Default)
- 1 = NRZ

Bit4 - Idle indicator select
- 0 = Mark idle (Default)
- 1 = Flag of sync idle

Bits5-7 - Reserved

S20 - AutoSync HDLC Address or BSC Sync Character

Defines the HDLC address (S19 bit 1 = 1) or BSC Sync Character (S19 bit 1 = 0) for Auto Sync operation (see &Q4 command).

Range: 0-255 Default: 0

S21 - V.24/General Bit Mapped Options Status

Indicates the status of command options

Default: 4

Bit0 - Set by &J*n* command but ignored Otherwise.
- 0 = &J0 (Default)
- 1 = &J1

Bit1 – Reserved

Bit2 - CTS behavior &R*n*
- 0 = CTS tracks RTS (&R0)
- 1 = CTS always on (&R1)(Default)

Bits3-4 - DTR behavior &D*n*
- 0 = &D0 selected (Default)
- 1 = &D1 selected2 = &D2 selected
- 3 = &D3 selected

BIT5 - RLSD (DCD) behavior &C*n*
- 0 = &C0 selected (Default)
- 1 = &C1 selected

Bit6 - DSR behavior &S*n*
- 0 = &S0 selected (Default)
- 1 = &S1 selected

Bit7 - Long space disconnect Y*n*
- 0 = Y0 (Default)
- 1 = Y1

S22 - Speaker/Results Bit Mapped Options Status

Indicates the status of command options.

Default: 117

Bits0-1 - Speaker volume L*n*
- 0 = Off (L0)
- 1 = Low (L1)(Default)
- 2 = Medium (L2)
- 3 = High (L3)

Bits2-3 - Speaker control M*n*
- 0 = Disabled (M0)
- 1 = Off on carrier (M1)(Default)
- 2 = Always on (M2)
- 3 = On during handshake (M3)

Bits4-6 - Limit result codes X*n*
- 0 = X0
- 4 = X1
- 5 = X2
- 6 = X3
- 7 = X4 (Default)

Bit7 - Reserved

S-REGISTER DEFINITIONS - CONTINUED

S23 - General Bit Mapped Options Status

Indicates the status of command options.

Default: 54

Bit0 - Grant RDL

0 = RDL not allowed (&T5)(Default) 1 = RDL allowed (&T4)

Bits1-3 - DTE Rate

0 = 0-300 bps	4 = 4800 bps
1 = 600 bps	5 = 9600 bps
2 = 1200 bps	6 = 19200 bps
3 = 2400 bps	7 = 38400 bps or higher

Bits4-5 - Assumed DTE parity

0 = even	1 = not used
2 = odd	3 = none (Default)

Bits6-7 - Guard Tone &Gn

0 = None (&G0)(Default) 1 = None (&G1)

2 = 1800 Hz (&G2)

S24 - Sleep Inactivity Timer

Sets the length of time, in seconds, that the modem will operate in normal mode with no detected telephone line or DTE line activity before entering low-power sleep mode. The timer is reset upon any DTE line or telephone line activity. If the S24 is zero, neither DTE line nor telephone inactivity will cause the modem to enter the sleep mode.

Range: 0-255 seconds Default: 0

S25 - Delay to DTR

Set the length of time that the Securcomm ***OMNIFLEX*** modem will ignore DTR for taking the action specified by &Dn. Its units are seconds for synchronous modes and one hundredths of a second for other modes.

Range: 0-255 Default: 5

S26 - RTS to CTS Delay

Sets the time delay, in hundredths of a second, before the modem turns CTS ON after detecting an OFF-to-ON transition on RTS when &R0 is commanded.

Range: 0-255 hundredths of a second Default: 1

S27 - Bit Mapped Options Status

Indicates the status of command options.

Default: 9

Bits0,1,3 - Synchronous /asynchronous / selection &Mn / &Qn

3	1	0
0	**0**	**0 = &M0 or &Q0**
0	**0**	**1 = &M1 or &Q1**
0	**1**	**0 = &M2 or &Q2**
0	**1**	**1 = &M3 or &Q3**
1	**0**	**0 = &Q4**
1	**0**	**1 = &Q5 (Default)**
1	**1**	**0 = &Q6**

Bit2 - Leased line control (&Ln)

0 = Dial up line (&L0)(Default) 1 = Leased line (&L1)

Bits4-5 - Internal Clock select (&Sn)

0 = Internal clock (&X0)(Default) 1 = External clock (&X1)

2 = Slave clock (&X2)

Bit6 - CCITT/Bell mode select (Bn)

0 = CCITT mode (B0)(Default) 1 = Bell mode (B1)

Bit7 - Reserved

S28 - Bit Mapped Options Status

Default: 0

Bits0 –1: Reserved
Bit2: Reserved (always 0)
Bits3-4: Pulse dialing make/break ratio &P*n*

0 = 39%-61% ratio at 10 pulses per second (&P0)(Default)
1 = 33%-67% ratio at 10 pulses per second (&P1)
2 = 39%-61% ratio at 20 pulses per second (&P2)
3 = 33%-67% ratio at 20 pulses per second (&P3)

Bit5: Reserved
Bits6-7 - MNP Link Negotiation Speed *H*n*

0 = Link negotiation at highest speed (*H0)(Default)
1 = Link negotiation at 1200 bps (*H1)
2 = Link negotiation at 4800 bps (*H2)

S29 - Flash Dial Modifier Time

Sets the length of time, in units of 10ms, that the ***OMNIFLEX*** modem will go on-hook when it encounters the flash (!) dial modifier in the dial string.

Range: 0-255 10 ms intervals Default: 0 (disabled)

S30 - Disconnect Inactivity Timer

Sets the length of time in tens of seconds that the modem will stay on line before disconnecting when no data is sent or received.

Range: 0-255 tens of seconds (0-2550 seconds) Default: 0 (disabled)

S31 - Bit Mapped Options Status

Default: 2

Bit0 - Reserved
Bit1 - Controls auto line speed detection N*n*

0 = Disabled (N0)
1 = Enabled (N1)(Default)

Bits2-3 - Controls error correction progress messages W*n*

0 = DTE speed only (W0)(Default)
1 = Full reporting (W1)
2 = DCE speed only (W2)

Bit3 - Reserved
Bits4-7 - Reserved

S32 - XON Character

Set the value of the XON character.

Range: 0-255, DECIMAL Default: 17 (XON)

S33 - XOFF Character

Sets the value of the XOFF character.

Range: 0-255, decimal Default: 19 (XOFF)

S34-S35 - Reserved

S36 - LAPM Failure Control

Default: 7

Bits 0-2 - This value indicates what should happen upon a LAPM failure. These fallback options are initiated immediately upon connection if S48=128. If an invalid number is entered, the number is accepted into the register, but S36 will act as if the default value has been entered.

- 0 = Modem disconnects.
- 1 = Modem stays on-line and a Direct mode connection is established.
- 2 = Reserved.
- 3 = Modem stays on-line and a Normal mode connection is established.
- 4 = An MNP connection is attempted and if it fails, the modem disconnects.
- 5 = An MNP connection is attempted and if it fails, a Direct mode connection is established.
- 6 = Reserved.
- 7 = MNP connection is attempted and if it fails, a Normal mode connection is established. (Default)

Bits3-7 - Reserved

S37 - Desired Line Connection Speed

This register specifies the desired line connection speed.

Default: 0

Bits0-4 Desired line connection speed.

0 = Automode	8 = V.32/32bis 4800bps
1-3 = 300bps	9 = V.32/32bis 9600bps
4 = Reserved	10 = V.32bis 12000bps
5 = V.22 1200bps	11 = V.32bis 14400bps
6 = V.22bis 2400bps	12 = V.32bis 7200bps
7 = V.23	

Bits5-7 Reserved

S38 - Delay Before Forced Hang Up

This register specifies the delay between the modem's receipt of the H command to disconnect (or ON-to-=OFF transition of DTR if the Securcomm ***OMNIFLEX*** modem is programmed to follow the signal), and the disconnect operation. Applicable to error-correction connection only. This register can be used to ensure that data in the modem buffer is sent before the modem disconnects.

1. If S38 is set to a value between 0 and 254, the modem will wait that number of seconds for the remote modem to acknowledge all data in the modem buffer before disconnecting. If time expires before all data is sent, the NO CARRIER result code will be issued to indicate that data has been lost. If all data is transmitted prior to time-out, the response to the H0 command will be OK.
2. If S38 is set to 255, the modem does not time-out and continues to attempt to deliver data in the buffer until the connection is lost or the data is delivered.

Range: 0-255 seconds Default: 20

S-REGISTER DEFINITIONS - CONTINUED

S39 - Flow Control Bit Mapped Options Status

Default: 3

Bits0-2 - Status of command Options &K*n*

0 = No flow control
3 = RTS/CTS (&K3)(Default)
4 = XON/XOFF (&K4)
5 = Transparent XON (&K5)
6 = Both methods (&K6)

Bits3-7 - Reserved

S40 - General Bit Mapped Options Status

Indicates the status of command options.

Default: 104

Bit0-1 - MNP Extended Services -K*n*

0 = Disable extended services (-K0) 1 = Enable extended services (-K1)
2 = Enable extended services (-K2)

Bit2 - Power Level Adjustment for Cellular Use)M*n*

0 = Auto-adjustment ()M0)(Default) 1 = Force adjustment ()M1)

Bits3-5 - Break Handling \K*n*

0 = \K0 1 = \K1 2 = \K2
3 = \K3 4 = \K4 5 = \K5 (default)

Bits6-7 - MNP Block size \A*n*

0 = 64 chars (\A0) 1 = 128 chars (\A1)(Default)
2 = 192 chars (\A2) 3 = 256 chars (\A3)

S41 - General Bit Mapped Options Status

Indicates the status of the command options.

Default: 195

Bits0-1 - Compression Selection %C*n*

0 = Disabled (%C0) 1 = MNP5 (%C1)
2 = V.42 bis (%C2) 3 = MNP5 and V.42 bis (%C3)(Default)

Bits2, 6 - Auto retrain and fallback/fall forward (%En0 (bit6)(bit2)
0 0 = Retrain, fallback/fall forward disabled (%E0)(Default)
0 1 = Retrain enabled (%E1)
1 0 = Fallback/fall forward enabled (%E2)

Bit3 - Reserved

Bit4 - Block mode control \L*n*

0 = Stream mode (\L0)(Default) 1 = Block mode (\L1)

Bit5 - Reserved

Bit7 - Enable fallback to V.22bis/V.22 -Q*n*

0 = Disabled (-Q0) 1 = Enabled (-Q1)(Default)

S46 - Data Compression Control

Controls selection of compression. The following actions are executed for the given values.

S46=136	Error correction protocol with no compression
S46=138	Error correction protocol with compression. (Default)

Range: 136 or 138 Default: 138

S48 - V.42 Negotiation Action

The V.42 negotiation process determines the capabilities of the remote ***OMNIFLEX*** modem. However, when the capabilities of the remote modem are known and negotiation is unnecessary, this process can be bypassed if so desired.

S48=0	Disable negotiation; bypass the detection and negotiation phases; and proceed with LAPM.
S48=7	Enable negotiation. (Default)
S48=128	Disable negotiation; bypass the detection and negotiation phases; and proceed at once with the fallback action specified in S36. Can be used to force MNP.

Range: 0,7, or 128 Default: 7

S82 - Break Handling Options

S82 is for compatibility purposes only; changing this register will not have any affect.

S86 - Call Failure Reason Code

When the ***OMNIFLEX*** modem issues a NO CARRIER result code, a value is written to this S-Register to help determine the reason for the failed connection. S86 records the first event that contributes to a NO CARRIER message. The cause codes are:

Range: 0,4,5,9,12,13, or 14
Default:

S86=0	Normal disconnect, no error occurred
S86=4	Loss of carrier
S86=5	V.42 negotiation failed to detect an error correction modem at the other end
S86=9	The modems could not find a common protocol
S86=12	Normal disconnect initiated by the remote modem
S86=13	Remote modem does not respond after 10 transmissions of the same message
S86=14	Protocol violation

S91 - PSTN Transmit Attenuation Level

Sets the transmit attenuation level from 0 to 15 dB resulting in a transmit level from 0 to -15dBm.

Range: 0 to 15 dBm Default: 11 (-10dBm)

S92 - Fax Transmit Attenuation Level

Sets the transmit attenuation level from 0 to 15 dB resulting in a transmit level from 0 to -15 dBm.

Range: 0 to 15 dBm Default: 11 (-10dBm)

S95 - Extended Result Codes

The bits in this register can be set to override some of the Wn command options. A bit set to a 1 in this register will enable to corresponding result code regardless of the Wn setting.

Default: 0
Bit1 - CONNECT result code indicates DCE speed instead of DTE speed
Bit2 - Append/ARQ to CONNECT XXXX result code in error correction mode.
Bit2 - Enable CARRIER XXXX result code.
Bit3 - Enable PROTOCOL XXXX result code.
Bit4 - Reserved
Bit5 - Enable COMPRESSION result code.
Bit6 - Reserved
Bit7 - Reserved

S-REGISTER DEFINITIONS – CONTINUED

S201 - Cellular Transmit Level	
The bits in this register are set by the @Mn and: En commands to support cellular connections.	
Default: 50	
Bits0-4 -	Initial Cellular Power Level Setting
Bit5 -	Compromise Equalizer Enable Command
Bit6 -	Reserved
Bit7 -	Reserved

CERTIFICATIONS

FCC Part 68

This equipment complies with U.S. Code of Federal Regulations, Title 47, FCC Rules and Regulations Part 68. Located on the equipment are the FCC Registration Number and Ringer Equivalence Number (REN). You must provide this information to the Telephone Company if requested. The Registration Number and REN will be on a label attached to the unit. The FCC requires these numbers be prominently displayed on an outside surface of the equipment. The REN is used to determine the number of devices you may legally connect to your telephone line. In most areas, the sum of the REN of all devices connected to one line must not exceed five (5.0). You should contact your telephone company to determine the maximum REN for your calling area. The telephone company may change technical operations or procedures affecting your equipment. You will be notified of changes in advance to give you ample time to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact DC Security Products at (415) 550-0443 for information on obtaining service or repairs. The Telephone Company may ask that you disconnect this equipment from the network until the problem has been resolved. If your equipment continues to disrupt the network, the Telephone Company may temporarily disconnect service. If this occurs you will be informed of your right to file a complaint with the FCC. This equipment may not be used on coin service provided by the Telephone Company. Connection to party lines is subject to state tariffs.

FCC Part 15

This equipment has been tested and complies with the limits for a Class A computing device according to U.S. Code of Federal Regulations, Title 47, FCC Rules and Regulations Part 15. Operation is subject to the following two conditions:

(1) This device may cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

LIMITED WARRANTY

LIMITED WARRANTY AND LIMITATION OF REMEDIES: DC Security Products warrants that this product is free from defects in material and manufacture at the time of purchase. **If any such defect appears within twelve (12) months from the date of purchase, DC Security Products entire liability is either (a) repair, or (b) replacement of the product with proof of purchase.** This warranty does **NOT** apply to product failure resulting from misuse, abuse, accident, neglect or mishandling, improper adjustment, programming, or maintenance, incorrect environments or wear from ordinary use. **DC SECURITY PRODUCTS SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL LOSS OR DAMAGE (INCLUDING WITHOUT LIMITATION DAMAGES FOR LOSS OF PROFITS, SAVINGS OR DATA) IN ANY WAY RELATED TO THE PRODUCT.**

USER NOTES:

"Products designed with SECURITY in mind"

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