AT Command Set for RocketModem™ Series, VS2000, and RocketPort™ USB Modem Hub

Overview

This document discusses the following topics. Blue underlined text denotes hypertext links.

Basic AT Commands

The following table lists the AT commands recognized by Comtrol V.34 and V.90 modems. For more detailed descriptions of these commands, see the **RC336D/RC336LD** (V.34) and **RC56D/RC56LD** (V.90) *Reference Manual* on the Conexant website.

Caution

Exercise caution when using **AT** commands. It is possible to disable or render your modem unworkable through use of an incorrect command. If this appears to have happened, enter **atZ0** or **at&F0** to restore the modem to its default state, before calling Comtrol technical support.

Basic AT Commands

Command	Definition
A/	Re-execute command
A	Go off-hook and attempt to answer a call
B0	Select V.22 connection at 1200 bps
B1	Select Bell 212A connection at 1200 bps
C1	Return OK message
Dn	Dial modifier
E0	Turn off command echo
E1	Turn on command echo
H0	Initiate a hang-up sequence
H1	If on-hook, go off-hook and enter command mode
I0	Report product code

Basic AT Commands (Continued)

Command	Definition
I1	Report pre-computed checksum
I2	Report OK
I3	Report firmware revision, model, and interface type
I4	Report response programmed by OEM
I5	Report the country code parameter: 5 France 6 Germany 8 Italy 14 Sweden 16 United Kingdom 22 United States
I6	Report modem data pump model & code revision
I7	Report the DAA code (world-class models only)
Ln	*RocketModem II only*: set speaker volume to *n*, where 0 is the lowest level and 3 is the highest level. This value is written to S22 bits 0 and 1.
Mn	*RocketModem II only*: set speaker mode to *n*, where 0 is off, 1 is on when making calls only, 2 is always on, and 3 is on when receiving calls only. This value is written to S22 bits 2 and 3.
+MS	Select modulation. *See* Select Modulation (+MS).
N0	Turn off automode detection
N1	Turn on automode detection
O0	Go on-line
O1	Go on-line and initiate a retrain sequence
P	Force pulse dialing
Q0	Allow result codes to DTE
Q1	Inhibit result codes to DTE
Sn	Select S-Register as default
Sn?	Return the value of S-Register *n*
=v	Set default S-Register to value *v*
?	Return the value of default S-Register
T	Force DTMF dialing
V0	Report short form (terse) result codes
V1	Report long form (verbose) result codes
W0	Report DTE speed in EC mode
W1	Report line speed, EC protocol and DTE speed
W2	Report DCE speed in EC mode
X0	Report basic call progress result codes, i.e., OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, and ERROR
X1	Report basic call progress result codes and connection speeds, i.e., OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT *xxxx* (bps rate) and ERROR
X2	Same as X1
X3	Same as X1

Basic AT Commands (Continued)

Command	Definition
X4	Report all call progress result codes and connection speeds, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT *xxxx* (bps rate), BUSY, NO DIAL TONE, and ERROR
Y0	Disable long space disconnect before on-hook
Y1	Enable long space disconnect before on-hook
Z0	Restore stored profile 0 after warm reset
Z1	Restore stored profile 1 after warm reset
&C0	Force CD active regardless of the carrier state
&C1	Allow CD to follow the carrier state
&D0	Interpret DTR ON-to-OFF transition per &Qn: &Q0, &Q5, &Q6: The modem ignores DTR. &Q1, &Q4: The modem hangs up. &Q2, &Q3 The modem hangs up.
&D1	Interpret DTR ON-to-OFF transition per &Qn: &Q0, &Q5, &Q6: Asynchronous escape. &Q1, &Q4 Asynchronous escape. &Q2, &Q3 The modem hangs up.
&D2	Interpret DTR ON-to-OFF transition per &Qn: &Q0—&Q6: The modem hangs up.
&D3	Interpret DTR ON-to-OFF transition per &Qn: &Q0, &Q5, &Q6: The modem does soft reset. &Q1, &Q4 The modem does soft reset. &Q2, &Q3 The modem hangs up.
&F0	Restore factory configuration 0
&F1	Restore factory configuration 1
&G0	Disable guard tone
&G1	Disable guard tone
&G2	Enable 1800 Hz guard tone
&K0	Disable DTE/DCE flow control
&K3	Enable RTS/CTS DTE/DCE flow control
&K4	Enable XON/XOFF DTE/DCE flow control
&K5	Enable transparent XON/XOFF flow control
&K6	Enable both RTS/CTS & XON/XOFF flow control
&L0	Select dial up line operation
&M0	Select direct asynchronous mode
&M1	Select sync connect with async offline command mode
&M2	Select sync connect with async offline command mode and enable DTR dialing of directory zero
&M3	Select sync connect with async offline command mode and enable DTR to act as Talk/Data switch
&P0	Set 10 pps pulse dial with 39%/61% make/break

Basic AT Commands (Continued)

Command	Definition
&P1	Set 10 pps pulse dial with 33%/67% make/break
&P2	Set 20 pps pulse dial with 39%/61% make/break
&P3	Set 20 pps pulse dial with 33%/67% make/break
&Q0	Select direct asynchronous mode
&Q1	Select sync connect with async offline command mode
&Q2	Select sync connect with async offline command mode and enable DTR dialing of directory zero
&Q3	Select sync connect with async offline command mode and enable DTR to act as Talk/Data switch
&Q5	Modem negotiates an error corrected link
&Q6	Select asynchronous operation in normal mode
&R0	CTS tracks RTS (async) or acts per V.25 (sync)
&R1	CTS is always active
&S0	DSR is forced active
&S1	DSR acts per V.25
&T0	Terminate any test in progress
&T1	Initiate local analog loopback
&T2	Returns ERROR result code
&T3	Initiate local digital loopback
&T4	Allow remote digital loopback
&T5	Disallow remote digital loopback request
&T6	Request an RDL without self-test
&T7	Request an RDL with self-test
&T8	Initiate local analog loop with self-test
&V	Display current configurations
&V1	Display connection statistics
&W0	Store the active profile in NVRAM profile 0
&W1	Store the active profile in NVRAM profile 1
&X0	Select internal timing for the transmit clock
&X1	Select external timing for the transmit clock
&X2	Select slave receive timing for transmit clock
&Y0	Recall stored profile 0 upon power up
&Y1	Recall stored profile 1 upon power up
&Zn=x	Store dial string *x* (length up to 34) in location *n* (0 to 3)
%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
%L	Return received line signal level
%Q	Report the line signal quality

Basic AT Commands (Continued)

Command	Definition
%U	Toggle μ-law or A-law codec type
%7	Plug and Play serial number
%8	Plug and Play vendor ID and product number
\Kn	**Controls break handling during three states:**
	When modem receives a break from the DTE:
\K0,2,4	Enter on-line command mode, no break sent to the remote modem
\K1	Clear buffers and send break to remote modem
\K3	Send break to remote modem immediately
\K5	Send break to remote modem in sequence with transmitted data
	When modem receives \B in on-line command state:
\K0,1	Clear buffers and send break to remote modem
\K2,3	Send break to remote modem immediately
\K4,5	Send break to remote modem in sequence with transmitted data
	When modem receives break from the remote modem:
\K0,1	Clear data buffers and send break to DTE
\K2,3	Send a break immediately to DTE
\K4,5	Send a break with received data to the DTE
\N0	Select normal speed buffered mode (for RocketPort USB Modem Hub, see **+ES**)
\N1	Select direct mode (for RocketPort USB Modem Hub, see **+ES**)
\N2	Select reliable link mode (for RocketPort USB Modem Hub, see **+ES**)
\N3	Select auto reliable mode (for RocketPort USB Modem Hub, see **+ES**)
\N4	Force LAPM mode (for RocketPort USB Modem Hub, see **+ES**)
\N5	Force MNP mode (for RocketPort USB Modem Hub, see **+ES**)
\V0	Connect messages are controlled by command settings X, W, and S95.
\V1	Enable extended result code connect messages: *CONNECT <DTE speed><modulation> <protocol><compression><line speed>*
+ES	Error control commands for RocketPort USB Modem Hub, see *Error Control and Synchronous Mode Selection (+ES)*
+MS	Select modulation, see *Select Modulation (+MS)*
+H0	Disable RPI/Video Ready mode
+H1	Enable RPI and set DTE speed to 19.2 Kbps
+H2	Enable RPI and set DTE speed to 38.4 Kbps
+H3	Enable RPI and set DTE speed to 57.6 Kbps
+H16	Enable Video Ready mode
+H17	Enable host-based DSVD
-SDR=0	Disable distinctive ring
-SDR=1	Enable distinctive ring type 1
-SDR=2	Enable distinctive ring type 2
-SDR=3	Enable distinctive ring type 1 & 2

Basic AT Commands (Continued)

Command	Definition
-SDR=4	Enable distinctive ring type 3
-SDR=5	Enable distinctive ring type 1 & 3
-SDR=6	Enable distinctive ring type 2 & 3
-SDR=7	Enable distinctive ring type 1, 2, & 3

ECC Commands

Command	Definition
%C0	Disable data compression
%C1	Enable MNP 5 data compression
%C2	Enable V.42 bis data compression
%C3	Enable both V.42 bis and MNP 5 compression
\A0	Set maximum block size in MNP to 64
\A1	Set maximum block size in MNP to 128
\A2	Set maximum block size in MNP to 192
\A3	Set maximum block size in MNP to 256
\Bn	Send break of n x 100 ms

MNP 10 Commands

Command	Definition
-K0	Disable MNP 10 extended services
-K1	Enable MNP 10 extended services
-K2	Enable MNP 10 extended services detection only
-SEC=0	Disable MNP 10EC
-SEC=1,[tx level]	Enable MNP 10EC and set transmit level [tx level] 0 to 30 (0 dBm to -30 dBm)

W-Class Commands

Command	Definition
***B**	Display list of permanently blacklisted numbers
***D**	Display list of delayed numbers
***NC*nn**	Change country to another in NVRAM: 05 France 06 Germany 08 Italy 14 Sweden 16 United Kingdom 22 United States

Fax Class 1 Commands

Command	Definition
+FCLASS=n	Service class
+FAE=n	Data/fax auto answer
+FRH=n	Receive data with HDLC framing
+FRM=n	Receive data
+FRS=n	Receive silence
+FTH=n	Transmit data with HDLC framing
+FTM=n	Transmit data
+FTS=n	Stop transmission and wait

Fax Class 2 Commands

Command	Definition
+FCLASS=n	Service class
+FAA=n	Adaptive answer
+FAXERR	Fax error value
+FBOR	Phase C data bit order
+FBUF?	Buffer size (read only)
+FCFR	Indicate confirmation to receive
+FCON	Facsimile connection response
+FCIG	Set the polled station identification
+FCIG:	Report the polled station identification
+FCR	Capability to receive
+FCSI:	Report the called station ID
+FDCC=	DCE capabilities parameters
+FDCS:	Report current session
+FDCS=	Current session results
+FDIS:	Report remote capabilities
+FDIS=	Current session parameteres
+FDR	Begin or continue phase C receive data
+FDT=	Data transmission
+FDTC:	Report the polled station capabilities

Fax Class 2 Commands (Continued)

Command	Definition
+FET:	Post page message response
+FET=N	Transmit page punctuation
+FHNG	Call termination with status
+FK	Session termination
+FLID=	Local ID string
+FLPL	Document for polling
+FMDL?	Identify model
+FMFR?	Identify manufacturer
+FPHCTO	Phase C time out
+FPOLL	Indicates polling request
+FPTS:	Page transfer status
+FPTS=	Page transfer status
+FREV?	Identify revision
+FSPL	Enable polling
+FTSI:	Report the transmit station ID

Error Control and Synchronous Mode Selection (+ES)

This extended-format command specifies the initial requested mode of operation when the modem is operating as the originator, optionally specifies the acceptable fallback mode of operation when the modem is operating as the originator, and optionally specifies the acceptable fallback mode of operation when the modem is operating as the answerer. It accepts three numeric subparameters:

Svntax

+ES=[<orig_rqst>[,<orig fbk>[,<ans_fbk>]]]

+ES Error Correction and Synchronous Mode Selection

Defined Values	Meaning
<orig_rqst>	Decimal number which specifies the initial requested mode of operation when the modem is operating as the originator. The options are: 0 Initiate call with Direct Mode. 1 Initiate call with Normal Mode (also referred to as Buffered Mode) only. 2 Initiate V.42 without Detection Phase. if V.8 is in use. disable V.42 Detection Phase. 3 Initiate V.42 with Detection Phase. (Default.) 4 Initiate MNP. 6 Initiate V.80 Synchronous Access Mode when connection is completed, and Data State is entered. 7 Initiate Frame Tunneling Mode when connection is complete, and Data Mode is entered.
<orig_fbk>	Decimal number which specifies the acceptable fallback mode of operation when the modem is operating as the originator. 0 LAPM, MNP, or Normal Mode error control optional. (Default.) 1 LAPM, MNP, or Direct Mode error control optional. 2 LAPM or MNP error control required; disconnect if error control is not established. 3 LAPM error control required; disconnect if error control is not established. 4 MNP error control required; disconnect if error control is not established.
<ans_fbk>	Decimal number which specifies the acceptable fallback mode of operation when the modem is operating as the answerer or specifies V.80 Synchronous Access Mode. 0 Direct Mode. 1 Error control disabled, use Normal Mode. 2 LAPM, MNP, or Normal Mode error control optional. (Default.) 3 LAPM, MNP, or Direct Mode error control optional. 4 LAPM or MNP error control required; disconnect if error control is not established. 5 LAPM error control required; disconnect if error control is not established. 6 MNP error control required; disconnect if error control is not established. 8 Initiate V.80 Synchronous Access Mode when connection is completed, and Data State is entered (see +ESA and +ITF commands). 9 Initiate Frame Tunneling Mode when connection is complete, and Data Mode is entered.

Select Modulation (+MS)

This extended-format AT command uses one to five subparameters to:

- Select the modulation.
- Optionally, enable or disable automode.
- Specify the lowest and highest connection rates.
- Select μ-Law or A-Law codec type.
- Enable or disable robbed bit signaling generation (server modem) or detection (client modem.

The command format is:

+MS=<mod>[,[<automode>][,[<min_rate>][,[<max_rate>]
[,[<x-law>][,[<rb_signalling>]]]]]]<CR>

Subparameters not entered (enter a comma only, or press **Enter** to skip the last subparameter) remain at their current values.

Reporting Supporting Options

The modem can also be queried for currently selected options using the following command:

+MS?

The response is:

+MS: <mod>,<automode>,<min_rate>,<max_rate>, <x-law>, <rb_signalling>

For example, the default response for a Comtrol v.34 modem is:

+MS: 11,1,300,33600,0,0

Likewise, the modem can be queried for its range of supported options, by using the following command:

+MS=?

The default response for a Comtrol V.34 modem is:

+MS: (0,1,2,3,9,10,11,64,69),(0,1),(300-33600),(300-33600),(0,1),(0,1)

The default response for a Comtrol V.90 modem is:

+MS: (0,1,2,3,9,10,11,12, 64,69),(0,1),(300-33600),(300-56000),(0,1),(0,1), (300-33600)

Subparameter Definitions

<mod> = A decimal number that specifies the preferred modulation (automode enabled) or the modulation (automode disabled) to use in originating or answering a connection.

+MS Subparameter Options

<mod>	Modulation	Possible Rates (bps)*	Notes
0	V.21	300	
1	V.22	1200	
2	V.22 bis	2400 or 1200	
3	V.23	1200	Orginating modes transmit at 75 bps and receive at 1200 bps; answering modes transmit at 1200 bps and receive at 75 bps. The rate is always specified as 1200 bps.
9	V.32	9600 or 4800	
10	V.32 bis	14400, 12000, 9600, 7200, or 4800	
11	V.34	33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, or 2400	Default for RC336
12	V.90	56000, 54667, 53333, 52000, 50667, 49333, 48000, 46667, 45333, 42667, 41333, 40000, 38667, 37333, 36000, 34667, 33333, 32000, 30667, 29333, or 28000	Default for RC56 with V.90 only or V.90/ K56flex loaded
56	K56flex	56000, 54000, 52000, 50000, 48000, 46000, 44000, 42000, 40000, 38000, 36000, 34000, or 32000	Default for RC56 with K56flex only loaded
64	Bell 103	300	
69	Bell 212	1200	

* *See optional* ***<automode>****,* ***<min_RX_rate>****,* ***<max_RX_rate>****, and* ***<max_TX_rate>*** *subparameters.*

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.

Two forms of each code are available: a long-form English-like “verbose” response, and a short-form data-like “numeric” response. The verbose response is listed first, then the numeric response. The following list is sorted in numeric code order.

In use, the verbose response is preceded and terminated by a <CR><LF> sequence. The numeric response is terminated by <CR>, with no preceding sequence. If result messages are suppressed, no message is returned to the DTE.

AT Command Result Codes

Code	Definition
OK (0)	The OK code is returned by the modem to acknowledge execution of a command line.
CONNECT (1)	The modem sends this result code on connect when: 1. The line speed is 300 bps and the modem has been instructred to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 300 bps and the modem has been instructed to report the DTE speed to the DTE upon connecting, or, 3. The range of result code responses is restricted by the X command such that no speed reporting is allowed.
RING (2)	The modem sends this result code when incoming ringing is detected on the line. What qualifies as a ring signal is determined by country-dependent parameters, modifiable through ConfigurACE. When cellular interface is selected, RING indicates that the cellular phone is receiving an incoming call.
NO CARRIER (3)	The modem sends this result code when attempting to establish a call, if: 1. Ringback is detected and later ceases but no carrier is detected within the period of time set by register S7, or, 2. No ringback is detected within the period of time set by register S7, or, 3. The modem auto-disconnects due to loss of carrier. Under X0, if busy tone detection is enforced, this result code is used as a response to the detection of busy or circuit busy. If dial tone detection is enforced or selected, this result code is used to indicate that dial tone has not been detected.
ERROR (4)	The modem returns this result code if the command line contains a syntax error or if it is unable to execute a command contained in the command line. It is issued if a command does not exists or if the parameter supplied is outside the permitted range. Under X0, X1, X2 and X3, this result is used instead of DELAYED or BLACKLISTED.
CONNECT 1200 (5)	For X1, X2, X3, and X4, the modem sends this result code when: 1. The line speed is 1200 bps and the modem has been instructed to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 1200 bps and the modem has been instructed to report the DTE speed to the DTE upon connecting. (See also the W command.)
NO DIALTONE (6)	For X2 and X4, the modem sends this result code if it has been instructed to wait for dial tone during dialing but none is received. When cellular phone interface is selected, NO DIAL-TONE indicates cellular service is not available.
BUSY (7)	For X3 and X4, if busy tone detection is enforced, this indicates a busy signal has been detected on the line while attempting to originate a call.

AT Command Result Codes (Continued)

Code	Definition
NO ANSWER (8)	This indicates a continuous ringback signal has been detected on the line while attempting to originate a call, until the expiration of timer S7.
CONNECT 0600 (9)	For X1, X2, X3, and X4, this indicates: 1. The line speed is 600 bps and the modem is instructed to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 600 bps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 2400 (10)	For X1, X2, X3, and X4, this indicates: 1. The line speed is 2400 bps and the modem is instructed to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 2400 bps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 4800 (11)	For X1, X2, X3, and X4, this indicates: 1. The line speed is 4800 bps and the modem is instructed to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 4800 bps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 9600 (12)	For X1, X2, X3, and X4, this indicates: 1. The line speed is 9600 bps and the modem is instructed to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 9600 bps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 7200 (13)	For X1, X2, X3, and X4, this indicates: 1. The line speed is 7200 bps and the modem is instructed to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 7200 bps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 12000 (14)	For X1, X2, X3, and X4, this indicates: 1. The line speed is 12 Kbps and the modem is instructed to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 12 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 14400 (15)	For X1, X2, X3, and X4, this indicates: 1. The line speed is 14.4 Kbps and the modem is instructed to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 14.4 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.

AT Command Result Codes (Continued)

Code	Definition
CONNECT 19200 (16)	For X1, X2, X3, and X4, this indicates: 1. The line speed is 19.2 Kbps and the modem is instructed to report the line speed to the DTE upon connecting, or, 2. The DTE speed is 19.2 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 38400 (17)	For X1, X2, X3, and X4, this indicates the DTE speed is 38.4 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 57600 (18)	For X1, X2, X3, and X4, this indicates the DTE speed is 57.6 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 115200 (19)	For X1, X2, X3, and X4, this indicates the DTE speed is 115.2 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 230400 (20)	For X1, X2, X3, and X4, this indicates the DTE speed is 230.4 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 75TX/1200RX (22)	For X1, X2, X3, and X4, this indicates the establish-ment of a V.23 originate connection when the modem is instructed to report the CDE speed upon connecting.
CONNECT 1200TX/75RX (23)	For X1, X2, X3, and X4, this indicates the establish-ment of a V.23 answer connection when the modem is instructed to report the CDE speed upon connecting.
DELAYED (24)	For X4, this indicates that a call has failed to connect and the number dialed is considered “delayed” due to country blacklisting requirements.
BLACKLISTED (25)	For X4, this indicates that a call has failed to connect and the number dialed is considered “blacklisted.”
FAX (33)	This indicates that a fax modem connection has been established in facsimile mode.
DATA (35)	This indicates that a data modem connection has been established in facsimile mode.
CARRIER 300 (40)	A 0-300 bps data rate has been detected on the line and carrier reporting has been enabled. (See S95 and Xn.)
CARRIER 1200/ 75 (44)	A V.23 backward channel carrier has been detected and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 75/ 1200 (45)	A V.23 forward channel carrier has been detected and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 1200 (46)	A 1200 bps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 2400 (47)	A 2400 bps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 4800 (48)	A 4800 bps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 7200 (49)	A 7200 bps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 9600 (50)	A 9600 bps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)

AT Command Result Codes (Continued)

Code	Definition
CARRIER 12000 (51)	A 12 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 14400 (52)	A 14.4 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 16800 (53)	A 16.8 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 19200 (54)	A 19.2 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 21600 (55)	A 21.6 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 24000 (56)	A 24 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 26400 (57)	A 26.4 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 28800 (58)	A 28.8 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CONNECT 16800 (59)	For X1, X2, X3, and X4, this indicates the DTE speed is 16.8 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 21600 (61)	For X1, X2, X3, and X4, this indicates the DTE speed is 21.6 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 24000 (62)	For X1, X2, X3, and X4, this indicates the DTE speed is 24 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 26400 (63)	For X1, X2, X3, and X4, this indicates the DTE speed is 26.4 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 28800 (64)	For X1, X2, X3, and X4, this indicates the DTE speed is 28.8 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
COMPRESSION : CLASS 5 (66)	The modem has connected in MNP Class 5 and COMPRESSION message reporting is enabled.
COMPRESSION : V.42 bis (67)	The modem has connected in V.42 bis and COMPRESSION message reporting is enabled.
COMPRESSION : NONE (69)	The modem has connected without data compression and COMPRESSION message reporting is enabled.
PROTOCOL: NONE (70)	The modem has connected without error correction and PROTOCOL message reporting is enabled.
PROTOCOL: LAPM (77)	The modem has connected in V.42 LAPM correction mode and PROTOCOL reporting is enabled.
CARRIER 31200 (78)	A 31.2 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 33600 (79)	A 33.6 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)

AT Command Result Codes (Continued)

Code	Definition
PROTOCOL: ALT (80)	The modem has connected in MNP correction mode and PROTOCOL reporting is enabled.
PROTOCOL: ALT-CELLULAR (81)	The modem has connected in MNP 10 correction mode and PROTOCOL reporting is enabled.
CONNECT 33600 (84)	For X1, X2, X3, and X4, this indicates the DTE speed is 33.6 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 31200 (91)	For X1, X2, X3, and X4, this indicates the DTE speed is 31.2 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CARRIER 32000 (150)	A 32 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 34000 (151)	A 34 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 36000 (152)	A 36 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 38000 (153)	A 38 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 40000 (154)	A 40 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 42000 (155)	A 42 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 44000 (156)	A 44 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 46000 (157)	A 46 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 48000 (158)	A 48 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 50000 (159)	A 50 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 52000 (160)	A 52 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 54000 (161)	A 54 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CARRIER 56000 (162)	A 56 Kbps data rate has been detected on the line and carrier reporting is enabled. (See S95 and Xn.)
CONNECT 32000 (165)	For X1, X2, X3, and X4, this indicates the DTE speed is 32 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 34000 (166)	For X1, X2, X3, and X4, this indicates the DTE speed is 34 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 36000 (167)	For X1, X2, X3, and X4, this indicates the DTE speed is 36 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.

AT Command Result Codes (Continued)

Code	Definition
CONNECT 38000 (168)	For X1, X2, X3, and X4, this indicates the DTE speed is 38 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 32000 (165)	For X1, X2, X3, and X4, this indicates the DTE speed is 32 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 34000 (166)	For X1, X2, X3, and X4, this indicates the DTE speed is 34 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 36000 (167)	For X1, X2, X3, and X4, this indicates the DTE speed is 36 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 38000 (168)	For X1, X2, X3, and X4, this indicates the DTE speed is 38 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 40000 (169)	For X1, X2, X3, and X4, this indicates the DTE speed is 40 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 42000 (170)	For X1, X2, X3, and X4, this indicates the DTE speed is 42 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 44000 (171)	For X1, X2, X3, and X4, this indicates the DTE speed is 44 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 46000 (172)	For X1, X2, X3, and X4, this indicates the DTE speed is 46 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 48000 (173)	For X1, X2, X3, and X4, this indicates the DTE speed is 48 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 50000 (174)	For X1, X2, X3, and X4, this indicates the DTE speed is 50 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 52000 (175)	For X1, X2, X3, and X4, this indicates the DTE speed is 52 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 54000 (176)	For X1, X2, X3, and X4, this indicates the DTE speed is 54 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
CONNECT 56000 (177)	For X1, X2, X3, and X4, this indicates the DTE speed is 56 Kbps and the modem is instructed to report the DTE speed to the DTE upon connecting.
+FCERROR (+F4)	A high-speed fax data (V.27, V.29, V.33, or V.17) signal is expected and a V.21 signal is received.

S-Register Summary

The S-Registers are summarized in the following table along with their default values. Registers marked with an asterisk (*****) may be stored in one of 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 marked "reserved" are reserved for current or future use by the firmware, or are permanently over-ridden by PTT limitations. For the latter, control of the equivalent functionality is available with ConfigurACE Call Progress and Blacklisting options.

All bit-mapped registers are read-only. The appropriate AT command that controls the relevant bits in the S-Register should be used to change the value.

S-Register Summary

Reg.	Function	Range	Units	Default
S0*	Rings to Auto-Answer	0-255	rings	0
S1	Ring Counter	0-255	rings	0
S2*	Escape Character	0-255	ASCII	43
S3	Carriage Return Character	0-127	ASCII	13
S4	Line Feed Character	0-127	ASCII	10
S5	Backspace Character	0-255	ASCII	8
S6*	Wait Time for Dial Tone	2-255	seconds	2
S7*	Wait Time for Carrier	1-255	seconds	50
S8*	Pause Time for Dial Delay	0-255	seconds	2
S9*	Carrier Detect Response Time	1-255	.1 secs	6
S10*	Carrier Loss Disconnect Time	1-255	.1 secs	14
S11*	DTMF Tone Duration	50-255	.001 sec	95
S12	Escape Prompt Delay	0-255	.02 sec	50
S13	RESERVED			
S14*	General Bit-Mapped Options Status	-	-	138 (8Ah)
S15	RESERVED			
S16	Test Mode Bit-Mapped Options Status (&T)	-	-	0
S17	RESERVED			
S18*	Test Timer	0-255	seconds	0
S19	AutoSync Options	-	-	0
S20*	AutoSync HDLC Address or BSC Sync Character	0-255	-	0
S21*	V.24/General Bit-Mapped Options Status	-	-	52 (34h)
S22*	Speaker/Results Bit-Mapped Options Status	-	-	117 (75h)
S23*	General Bit-Mapped Options Status		-	62 (3Dh)

S-Register Summary (Continued)

Reg.	Function	Range	Units	Default
S24*	Sleep Inactivity Timer	0-255	seconds	0
S25	Delay to DTR Off	0-255	seconds	5
S26	RTS-to-CTS Delay	0-255	.01 secs	1
S27*	General Bit-Mapped Options Status	-	-	73 (49h)
S28*	General Bit-Mapped Options Status	-	-	0
S29	Flash Dial Modifier Time	0-255	10 ms	70
S30	Disconnect Inactivity Timer	0-255	10 sec	0
S31*	General Bit-Mapped Options Status	-	-	194 (C2h)
S32	XON Character	0-255	ASCII	17 (11h)
S33	XOFF Character	0-255	ASCII	19 (13h)
S34	RESERVED			
S35	RESERVED			
S36*	LAPM Failure Control	-	-	7
S37*	Line Connection Speed	-	-	0
S38	Delay Before Forced Hangup	0-255	seconds	20
S39*	Flow Control Bit-Mapped Options Status	-	-	3
S40*	General Bit-Mapped Options Status	-	-	104 (68h)
S41*	General Bit-Mapped Options Status	-	-	195 (C3h)
S42 **S43** **S44** **S45**	RESERVED			
S46*	Data Compression Control	-	-	138
S48*	V.42 Negotiation Control	-	-	7
S82	LAPM Break Control	-	-	128 (40h)
S86	Call Failure Reason Code	0-255	-	-
S91	PSTN Transmit Attenuation Level	0-15	dBm	10**
S92	Fax Transmit Attentuation Level	0-15	dBm	10**
S95*	Result Code Messages Control	-	-	0

* *Register value may be stored in one of two user profiles by using the &Wn command.*

** *Default value is country-dependent.*

Factory Defaults

The factory default values are stored in ROM and are loaded into the active configuration at power-up or by the ATZn 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 user profiles.

The defaults shown are those used by Rockwell in factory profiles zero and one. These may be overwritten by the OEM with ConfigurACE prior to placing the firmware in PROM. Minimum and maximum values may also be imposed by ConfigurACE in response to country PTT requirements.

The default values shown in the foregoing table may vary by modem firmware configuration. Consult the MCU firmware release notes for exact configuration.

The factory default values may be reloaded at any time by entering the &Fn command.

S-Register Definitions

S0 Number of Rings to Auto-Answer

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

S1 Ring Counter

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

S2 Escape Character

S2 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; no escape character will be recognized.

S3 Carriage Return Character

S3 sets the command line and result code terminator character. This pertains to asynchronous operations only, and defaults to ASCII 13.

S4 Line Feed Character

S4 sets the character recognized as a line feed. The Line Feed control character is output after the Carriage Return control character if verbose result codes are used. This pertains to async operation only and defaults to ASCII 10.

S5 Backspace Character

S5 sets the backspace character. The modem will not recognize a backspace character value greater than 32. This character can be used to edit a command line. When the echo command is enabled, the modem echoes back to the local DTE the backspace character, an ASCII space character, and a second backspace character. This means a total of three characters are transmitted each time the modem processes the backspace character. This pertains to async operation only and defaults to ASCII 8.

S6 Wait Time for Dial Tone Before Blind Dialing, or After “W” Dial Modifier (W-Class Models)

This 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 set less than 2 seconds. This operation may be affected by some ATX options according to country restrictions. The “Wait for Dial Tone” call progress feature (W dial modifier in the dial string) will override the value in register S6.

For W-class modems, S6 sets the length of time, in seconds, that the modem will wait for dial tone when encountering a “W” dial modifier before returning a NO DIAL TONE result code.

S7 Wait Time for Carrier After Dial, For Silence, or For Dial Tone After "W" Dial Modifier (U.S. Models)

This sets the length of time, in seconds, that the modem will wait for a carrier before hanging up. The default is 50 seconds. The timer is started when the modem finishes dialing (originate), or 2 seconds after going off-hook (answer). In originate mode, the timer is reset upon detection of an answer tone if allowed by country restrictions.

This also sets the length of time, in seconds, that the modem will wait for silence after encountering the @ dial modifier, before continuing with the next dial string parameter.

For U.S. models, this sets the length of time, in seconds, that the modem will wait for a dial tone when encountering a "W" dial modifier, before continuing with the next dial string parameter.

S8 Pause Time for Dial Delay

This sets the time, in seconds, that the modem must pause when the "," dial modifier is encountered in the dial string.

S9 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. As this time interval is increased, the chance of detecting a false carrier due to line noise is decreased.

S10 Lost Carrier to Hang Up Delay

This sets the length of time, in tenths of a second, that the modem waits before hanging up after loss of carrier. This allows for a temporary carrier loss without disconnection. When S10 is set to 255, the modem functions as if the 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 S10 must be greater than S9, or the modem will disconnect before recognizing the carrier.

S11 DTMF Tone Duration

Sets the duration of tones in DTMF dialing (U.S. models only). This value has no effect on pulse dialing. For W-class models, this parameter is a country parameter set via ConfigurACE.

S12 Escape Prompt Delay (EPD)

Defines the maximum period, in $1/50^{ths}$ 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. Note that sending the OK result code does not affect entry in command mode.

S13 RESERVED

S14 General Bit-Mapped Options Status

Indicates the status of command options:

Default: 138 (8A hex, 10001010 binary)

Bit 0: Ignored

Bit 1: Command Echo (En)
- 0 = Disabled (E0)
- 1 = Enabled (E1) (Default)

Bit 2: Quiet Mode (Qn)
- 0 = Send result codes (Q0) (Default)
- 1 = Do not send result codes (Q1)

Bit 3: Result Codes (Vn)
- 0 = Numeric (V0)
- 1 = Verbose (V1) (Default)

Bit 4: Reserved

Bit 5: Tone/Pulse (T/P)
0 = Tone (T) (Default)
1 = Pulse (P)

Bit 6: Reserved

Bit 7: Originate/Answer
0 = Answer
1 = Originate (Default)

S15 RESERVED

S16 General Bit-Mapped Test Options Status

Indicates the test-in-progress status:
Default: 0

Bit 0: Local analog loopback
0 = Disabled (Default)
1 = Enabled (&T1)

Bit 1: Not used

Bit 2: Local digital loopback
0 = Disabled (Default)
1 = Enabled (&T3)

Bit 3: Remote digital loopback (RDL) status
0 = Modem not in RDL (Default)
1 = RDL in progress

Bit 4: RDL requested (AT&T6)
0 = RDL not requested (Default)
1 = RDL requested (&T6)

Bit 5: RDL with self test
0 = Disabled (Default)
1 = Enabled (&T7)

Bit 6: Local analog loopback (LAL) with self test
0 = Disabled (Default)
1 = Enabled (&T8)

Bit 6: 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 command mode. If this register value is zero, the test will not automatically terminate; it must be terminated from the command line by an **&T0** or **H** command. When S18 is not zero, the modem returns the OK message upon successful test termination.

S19 AutoSync Bit-Mapped Options

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

Default: 0

Bit 0: Reserved

Bit 1: BSC/HDLC format select
0 = BSC selected (Default)
1 = HDLC selected

Bit 2: Address detection enable/disable
0 = Disabled (Default)
1 = Enabled

Bit 3: NRZI/NZI coding select
0 = NRZI (Default)
1 = NZI

Bit 4: Idle indicator select
0 = Mark idle (Default)
1 = Flag or sync idle

Bit 5: Reserved

Bit 6: Reserved

Bit 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 AutoSync operation (see &Q4 command). S20 must be set to the desired value before &Q4 is issued.

S21 V.24/General Bit-Mapped Options Status

Indicates the status of command options.

Default: 52 (34 hex, 00110100 binary)

Bit 0: Set by &Jn command but ignored otherwise.
0 = &J0 (Default)
1 = &J1

Bit 1: Reserved

Bit 2: CTS behavior (&Rn)
0 = CTS tracks RTS (&R0)
1 = CTS always on (&R1) (Default)

Bit 3-4: DTR behavior (&Dn)
0 = &D0 selected
1 = &D1 selected
2 = &D2 selected (Default)
3 = &D3 selected

Bit 5: RLSD (DCD) behavior (&Cn)
0 = &C0 selected
1 = &C1 selected (Default)

Bit 6: DSR behavior (&Sn)
0 = &S0 selected (Default)
1 = &S1 selected

Bit 7: Long space disconnect (Yn)
0 = Y0 (Default)
1 = Y1

S22 Speaker/Results Bit-Mapped Options Status

Indicates the status of command options:

Default: 117 (75 hex, 01110101 binary)

Bit 0-1: Speaker volume (Ln)
0 = Off (L0)
1 = Low (L1) (Default)
2 = Medium (L2)
3 = High (L3)

Bit 2-3: Speaker Control (Mn)
- 0 = Disabled (M0)
- 1 = Off on carrier (M1) (Default)
- 2 = Always on (M2)
- 3 = On during handshake (M3)

Bit 4-6: Limit result codes (Xn)
- 0 = X0
- 4 = X1
- 5 = X2
- 6 = X3
- 7 = X4 (Default)

Bit 7: Reserved

S23 General Bit-Mapped Options Status

Indicates the status of command options.

Default: 62 (3D hex, 00111110 binary)

Bit 0: Grant RDL
- 0 = RDL not allowed (&T5) (Default.)
- 1 = RDL allowed (&T4)

Bit 1-3: DTE Rate
- 0 = 0 - 300 bps
- 1 = 600 bps
- 2 = 1200 bps
- 3 = 2400 bps
- 4 = 4800 bps
- 5 = 9600 bps
- 6 = 19200 bps
- 7 = 38400 bps or higher (Default.)

Bit 4-5: Assumed DTE parity
- 0 = even
- 1 = not used
- 2 = odd
- 3 = none (Default.)

Bit 6-7: 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 value is zero, neither DTE line nor telephone inactivity will cause the modem to enter the sleep mode.

S25 Delay To DTR

Sets the length of time that the 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.

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. Pertains to synchronous operation only.

S27 Bit Mapped Options Status

Indicates the status of command options.

Default: 73 (49 hex, 01001001 binary)

Bits 0,1,3
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

Bit 2: Leased line control (&Ln)
0 = Dial up line (&L0) (Default)

Bit 4-5: Internal clock select (&Xn)
0 = Internal clock (&XO) (Default)
1 = External clock (&X1)
2 = Slave clock (&X2)

Bit 6: CCITT/Bell mode select (Bn)
0 = CCITT mode (BO)
1 = RRII mode (R11 (Default)

Bit 7: Reserved

S28 Bit-Mapped Options Status

Bit 0-2: Reserved (Bit 2 always 0)

Bit 3-4: Pulse dialing (&Pn)
at 10 pulses per second
0 = 39/61% make/break ratio (&P0) (Default)
1 = 33/67% make/break ratio (&P1)
at 20 pulses per second
2 = 39/61% make/break ratio (&P2)
3 = 33/67% make/break ratio (&P3)

Bit 5-7: Reserved

S29 Flash Dial Modified Time

Sets the length of time, in units of 10 ms., that the modem will go on-hook when it encounters the flash (!) dial modifier in the dial string. The time can be limited as it is country-dependent.

S30 Disconnect Inactivity Timer

Sets the length of time, in tens of seconds, that the modem will stay online before disconnecting when no data is sent or received. In error-correction mode, any data transmitted or received will reset the time. In other modes, any data transmitted will reset the time. The timer is inoperative in synchronous mode.

S31 Bit-Mapped Options Status

Default: 194 (C2 hex, 11000010 binary)

Bit 0: Single line connent message enable/disable (Vn)
0 = Messages controlled by S95, Wn and Vn (\V0) (Default)
1 = Single line connect message (\V1)

Bit 1: Auto line speed detection (Nn)
0 = Disabled (N0)
1 = Enabled (N1) (Default)

Bit 2-3: Error correction progress messages (Wn)
0 = DTE speed only (W0) (Default)
1 = Full reporting (W1)
2 = DCE speed only (W2)

Bit 4-5: Caller ID (#CID)

0 = Caller ID disabled (#CID=0) (Default)
1 = Short (formatted Caller ID enabled (#CID=1)
2 = Long (unformmated) Caller ID enabled (#CID=2)

Bit 6-7: Reserved (Default = 11 binary)

S32 XON Character

Sets the value of the XON character.

S33 XOFF Character

Sets the value of the XOFF character.

S34 RESERVED

S35 RESERVED

S36 LAPM Failure Control

Default: 7 (00000111 binary)

Bits 0-2:
This value indicates what should happen upon a LAPM failure. The 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 = An MNP connection is attempted and if it fails, a Normal mode connection is established. (Default)

Bits 3-7: Reserved

S37 Desired Line Connection Speed

This register specifies the desired line connection speed

Notes:

1. When the Nn command is issued or the S37 register value is modified, the +MS command subparameters are updated to reflect the speed and modulation specified by the S37 value (see Select Modulation (+MS)). For example:

   If NO command is active, S37=10 updates the +MS command subparameters to reflect +MS=10,1,300,12000.

   If N1 command is active, S37=10 updates the +MS command subparameters to reflect +MS=10,0,12000,12000.

2. S37 is not updated by the +MS command.
3. Use of the +MS command is recommended instead of the Nn and S37=x commands. Nn and S37=x commands are supported for compatibility with existing communication software.

Bits 0-4:
Desired line connection speed. This is interlinked with the Fn command (RC144). If an invalid number is entered, the number is accepted into the register, but S37 will act as if the default value has been entered.

0 = Attempt automode connection. If NO is active, connection is attempted at the most recently sensed DTE speed (+MS command settings are updated to the appropriate values). If N1 is active, connection is attempted at the highest possible speed (+MS settings are updated to 11,1,300,2880 to reflect V.34, automode, 300 bus minimum speed, and 28800 bps maximum speed). (Default.)

1-3 = Attempt to connect at 300 bps.

4 = Reserved.

5 = Attempt to connect at V.22 1200 bps.

6 = Attempt to connect at V.22 bis 2400 bps.

7 = Attempt to connect at V.23.

8 = Attempt to connect at V.32 bis/V.32 4800 bps.

9 = Attempt to connect at V.32 bis/V.32 9600 bps.

10 = Attempt to connect at V.32 bis 12000 bps.

11 = Attempt to connect at V.32 bis 14400 bps.

12 = Attempt to connect at V.32 bis 7200 bps.

Bits 5-7 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 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.

Default: 20

S39 Flow Control Bit Mapped Options Status

Default: 3 (00000011 binary)

Bits 0-2: Status of command options

0 = No flow control

3 = RTS/CTS (&K3) (Default.

4 = XON/XOFF (&K4)

5 = Transparent XON (&K5)

6 = Both methods (&K6)

Bits 3-7: Reserved

S40 General Bit-Mapped Options Status

Indicates the status of command options.

Default: 104 (68 hex, 01101000 binary)

Bit 0-1: MNP Extended Services (-Kn)

0 = Disable extended services (-K0) (Default)

1 = Enable extended services (-K1)

2 = Enable extended services (-K2)

Bit 2: Reserved

Bit 3-5: Break Handling (\Kn)

0 = \K0

1 = \K1

2 = \K2

3 = \K3

4 = \K4

5 = \K5 (Default.)

Bit 6-7: MNP block size (\An)

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 command options.

Default: 195 (C3 hex, 11000011 binary)

Bit 0-1: Compression selection (%Cn)

0 = Disabled (%C0)

1 = MNP 5 (%C1)

2 = V.42 bis (%C2)

3 = MNP 5 and V.42 bis (%C3) (Default.)

Bits 2, 6: Auto retrain and fallback/fall forward (%En)

Bit 6 2

0 0 = Retrain and failback/fall forward disabled (%E0)

0 1 = Retrain enabled (%E1)

1 0 = Fallback/fall forward enabled (%E2) (Default.)

Bits 3 - 7: Reserved

S46 Data Compression Control

Controls selection of compression. Valid values are:

136 Execute error correction protocol with no compression.

138 Execute error correction with compression. (Default)

S48 V.42 Negotiation Action

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

Range: 0, 7, or 128 If an invalid number is entered, it is accepted into the S-Register, but S48 will act as if 128 has been entered.

Default: 7

0 Disable negotiation; bypass the detection and negotiation phases; and proceed with LAPM.

7 Enable negotiation. (Default.)

128 Disable negotiation; bypass detection and negotiation phases and proceed at once with the fallback action specified in S36. Can be used to force MNP.

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 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 valid cause codes are:

0 Normal disconnect. no error occurred.

4 Loss of carrier.

5 V.42 negotiation failed to detect an error-correction modem at the other end.

9 The modems could not find a common protocol.

12 Normal disconnect initiated by the remote modem.

13 Remote modem does not respond after 10 re-transmissions of the same message.

14 Protocol violation.

S91 PSTN Transmit Attenuation Level

Sets the transmit attenuation level from 0 to 15 dBm for the PSTN mode, resulting in a transmit level from 0 to -15 dBm. In some countries, the transmit level may not be changed and there are checks to prevent transmit attenuation level change

S92 Fax Transmit Attenuation Level

Sets the transmit attenuation level from 0 to 15 dBm for the fax mode, resulting in a transmit level from 0 to -15 dBm. In some countries, the transmit level may not be changed and there are checks to prevent transmit attenuation level change using ConfigurACE.

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 the corresponding result code regardless of the Wn setting.

Default: 0

Bit 0: CONNECT result code indicates DCE speed instead of DTE speed.

Bit 1: Append/ARQ to CONNECT XXXX result code in error- correction mode (XXXX = rate).

Bit 2: Enable CARRIER XXXX result code (XXXX = rate).

Bit 3: Enable PROTOCOL XXXX result code (XXXX = protocol identifier).

Bit 4: Reserved

Bit 5: Enable COMPRESSION result code (XXXX = compression type).

Bit 6: Reserved

Bit 7: Reserved

Technical Support

If you need technical support, contact Comtrol using one of the following methods.

Corporate Headquarters:

- email: support@comtrol.com
- FTP Site: ftp://ftp.comtrol.com
- Web Site: http://www.comtrol.com
- FAX: (763) 494-4199
- Phone: (763) 494-4100

Comtrol Europe:

- email: support@comtrol.co.uk
- Web Site: http://www.comtrol.co.uk
- FAX: +44 (0) 1 869-323-211
- Phone: +44 (0) 1 869-323-220

Comtrol has a staff of technical support representatives to help you.

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