

Your modem has status registers. These registers are memory locations inside your modem which control your modem's operation. You usually do not have to worry about setting any register because the default values work for most applications.

#### Register Summary

The following chart summarizes your modem's registers.

Register	Range	Unit	Default	Description
S0*	0-255	rings	0	Ring to answer on.
S1	0-255	rings	0	Number of rings passed.
S2*	0-127	ASCII	43	Escape code character.
S3	0-127	ASCII	13	Command terminator.
S4	0-127	ASCII	10	Line feed character.
S5	0-127	ASCII	8	Back space character
S6*	0-255	seconds	2	Wait time for dial tone.
S7*	0-255	seconds	30	Wait time for carrier.
S8*	0-255	seconds	2	Pause time for comma.
S9*	0-255	1/10 sec.	6	Carrier detect response time.
S10*	0-255	1/10 sec.	14	Carrier loss hang up delay.
S11*	0-255	1/100 sec.	95	Touch-tone timing.
S12*	0-255	1/50 sec	. 50	Escape code timing.
S13		Not used		
S14*	Bit Mapped			Option Register.
S15		Not used		
S16	Bit Mapped			Option Register.

S17		Not used		
S18*	0-255	seconds	5	Test mode timer.
S19		Not used.		
S20		Not used.		
S21*	Bit Mapped			Option register.
S22*	Bit Mapped			Option register.
S23*	Bit Mapped			Option register.
S24		Not used		
S25*	0-255	seconds	5	DTR delay.
S26*	0-255	seconds	1	RTS to CTS delay.
S27*	Bit Mapped			Option register.
S30*	0-255	1/10 sec.	0	Inactivity timer.
S36*	0-7		7	Negotiation failure action.
S37*	0-7		0	Desired carrier speed.
S38*	0-255	seconds	20	Forced disconnect delay.
S41	Bit Mapped			Option register.
S46*	136,138	138	138	Protocol selection.
S48*	0,7,128		7	V.42 negotiation action.
S86	0,4,5,9 12,13,14	0	0	Connection failure cause code.
S91	0-15	dBm	0	Leased line transmit level.
S95*	Bit Mapped			Extended result options.

\* - Registers marked with an asterisk ("\*")  
are saved with the At &W command.

## Viewing Registers

To view the contents of a register, in the command mode type:

```
AT Sr? [ENTER]  Where r is the register number.
```

Your modem returns:

```
nn  Where nn is the current setting of the register.
```

```
OK
```

You can view the contents of several registers with one command:

```
AT Sr? Sr? Sr? [ENTER]
```

Your modem returns:

```
nn  First register.
```

```
nn  Second register.
```

```
nn  Third register.
```

```
OK
```

## Setting Registers

To change the contents of a register, in the command mode type:

```
AT Sr=n [ENTER]  Where r is the register number and n  
is the new value.
```

Your modem returns:

```
OK
```

You can set the contents of several registers with one command:

```
AT Sr=n Sr=n Sr=n [ENTER]
```

Your modem returns:

```
OK
```

## Register Explanations:

Register S0 - Auto Answer Control
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This register determines how many times your phone rings before your modem answers. If you set this register to 0, your modem does not answer the telephone. The default value

for this register is 0.

Register S1 - Ring Counter

This register contains the count of the current number of rings. If your telephone does not ring within 8 seconds, this register resets to 0.

Register S2 - Escape Code ASCII Value

This register contains the ASCII value of the escape code. You must set this value to a legitimate ASCII character within the range 0-127. Setting this code to greater than 127 disables the escape code. See "Switching From the Communications to the Command Mode" in "Dialing and Answering with the AT Command Set," earlier in this manual. The default value for this register is 43 (ASCII value of "+").

Register S3 - Command Terminator

This register contains the ASCII value of the character you use to end and execute a command. You should never need to change this value. The default for this register is 13 (the ASCII value for [ENTER]).

Register S4 - Line Feed ASCII Value

This register sets the character your modem sends after any result code. You should never need to change this value. If you do not want your modem to send a line feed after the result code, set this register to 0. The default value for this register is 10 (the ASCII value for line feed).

Register S5 - Back space ASCII Value

This register sets the character your modem uses as a backspace character for editing. You do not normally need to change this register. The default value is 8 (the ASCII value for backspace).

Register S6 - Wait For Dial Tone Time

This register sets how many seconds your modem waits to begin dialing after it goes off hook. If your modem begins to dial before the dial tone starts, your call might not go through. You can set this register to a higher value to provide a longer delay. The default value is 2 (setting it to 0 or 1 also gives a 2-second delay).

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Register S7 - Wait For Carrier Time

This register sets how long the modem waits after dialing to detect a carrier. If this time expires without a carrier detect, your modem returns the NO CARRIER result code. The default value is 30.

Register S8 - Dialing Pause (,) Time

This register sets how many seconds your modem pauses when it encounters a comma (,) in the dialing sequence. If you dial from a system that requires a second dial tone (like a PABX system), you might need to increase the duration of this pause if your modem is not waiting long enough for an outside line. The default value is 2.

Register S9 - Carrier Detect Response Time

This register sets the length of time (in 1/10 second increments) a carrier signal must be present before the modem recognizes it as a carrier. As the length of time increases, the chance that the modem will incorrectly detect a carrier decreases. The default value is 6.

Register S10 - Carrier Loss Disconnect Time

This register sets how many tenths of a second (1 /10 seconds) your modem waits to disconnect from the phone line after the other modem's carrier stops. In some areas with poor quality phone service, the carrier can occasionally drop out and cause your modem to disconnect during a call. If you set this register to 255, your modem considers the carrier always present. The default value is 14 (1-4/10 seconds).

Register S11 - Touch Tone Dialing Speed

This register controls the dialing rate during tone dialing (no effect on pulse dialing). The default value of 95 sets a rate of about seven digits per second.

Register S12 - Escape Code Guard Time

This register sets how long (in 1/50 second increments) you must pause before and after the escape code for your modem to recognize the escape code. See "Switching From the Communications to the Command Mode" in "Dialing and Answering with the AT Command Set," earlier in this manual. The default value is 50 (1 second).

Register S13 - Not Used.

Register S14 - Bit Mapped Options

This register is a bit-mapped register that shows the status of some of the operation options. Normally, you do not write to this register. You use specific commands to set these options.

Bit	Value	Description
0	Not used	
1	0 1	Local echo disabled. Local echo enabled.
2	0 1	Result codes enabled. Result Codes disabled.
3	0 1	Result codes as numbers. Result codes as words.
4	Not used	
5	0 1	Tone dial. Pulse dial.
6	Not used	
7	0 1	Answer mode. Originate mode.

Register S15 - Not Used

Register S16 - Test Mode Option Register

This status register duplicates the &T command options.

Bit	Value	Description
0	0 1	Local analog loopback disabled. Local analog loopback enabled.
1	Not used	
2	0 1	Local digital loopback disabled. Local digital loopback enabled.
3	0 1	Remote digital loopback not in progress. Remote digital loopback in

		progress.
4	0 1	Remote digital loopback disabled. Remote digital loopback enabled.
5	0 1	Remote digital loopback w/self-test disabled. Remote digital loopback w/self-test enabled.
6	0 1	Local analog loopback w/self-test disabled. Local analog loopback w/self-test enabled.
7	Not used	

Register S17 - Not Used

Register S18 - Test Mode Timer

This register determines the time, in seconds, for the test modes. A value of 0 indicates a continuous test. The default for this register is 0.

Register S19 - Not Used

Register S20 - Not Used

Register S21 - Bit Mapped Options

This is a bit-mapped register that shows the status of the &D, &C, and Y commands. You do not normally write to this register. Use the individual commands to affect these options.

Bit	Value	Description
0	Not Used	
1	0 1	&Y0 (Select user profile 0). &Y1 (Select user profile 1).
2	Not used	
3,4	00 10 01	&D0 (Forced DTR). &D1 (Async command state). &D2 On hook, async command state,

	11	disables auto answer). &D3 (Assumes initialization state).
5	0 1	&C0 (Carrier detect forced). &C1 (Carrier detect true).
6	0 1	&S0 (DSR always active). & S1 (DSR active at connection).
7	0 1	Y0 (Disable long space disconnect). Y1 (Enable long space disconnect).

Register S22 - Bit Mapped Options

This is a bit-mapped register that shows the status of the M, X, and &P commands. You do not normally write to this register. Use the individual commands to affect these options.

Bit	Value	Description
0,1	00 10 01 11	L0 (Low speaker volume). L1 (Low speaker volume). L2 (Medium speaker volume). L3 (High speaker volume).
2,3	00 10 01 11	M0 (Speaker disabled). M1 (speaker disabled during data transfer). M2 (Speaker always on). M3 (Speaker disabled during dialing & data transfer).
4,5,6	000 001 101 011	X0 X1 (Result code status). X2 (Result code status). X3 (Result code status).
7	0 1	&P0 (U.S. make/break dial pulse ratio). &P1 (U.K./Hong Kong make/break dial pulse ratio).

Register S23 - Bit Mapped Options

This is a bit-mapped register that shows your modem's current communications settings. You do not normally write to this register. The modem sets the communications settings automatically.

Bit	Value	Description
0	0	Response to remote digital loopback disabled..



	1	Response to remote digital loopback enabled..
1,2,3	000 100 010 110 101	300 bps DTE. 600 bps DTE. 1200 bps DTE. 2400 bps DTE. 9600 bps DTE.
4,5	00 10 01 11	Even parity. Not used. Odd parity. No parity.
6,7	Not used	

Register S24 - Not Used

Register S25 - Delay to DTR

This register sets, in 1/100-second increments, the length of time after a connection is established before the modem recognizes changes in the DTR.

Register S26 - RTS to CTS Delay

This register sets how long, in 1/100-second increments, the modem waits after the modem detects RTS before it turns on CTS.

Register S27 - Bit Mapped Options

This is a bit-mapped register that shows the status of the B, &Q, and &L commands. You do not normally write to this register. Use the &Q, &L, and B commands to affect the status of this register.

Bit	Value	Description
0,1,3	000 101 011	&Q0 &Q5 &Q6
2	0 1	&L0 (Leased line) &L1 (Dial-up line)
4,5	Reserved	
6	0 1	B0 CCITT V.22bis/V.22 B1 Bell 212A

7	Not used	
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Register S30 - Inactivity Timer

This register determines the length of time, in seconds, the modem waits before disconnecting when no data is sent or received. This only operates in &Q5 and &Q6 modes. A value of 0 in this register disables the timer.

Register S36 - Negotiation Failure Treatment

This register sets how the modem responds when error-correction negotiation fails. The default of 7 makes the modem fall back to a non-error corrected mode if negotiation fails.

If you want to ensure an error-corrected link, set this register to 0. If negotiation fails, the modem disconnects.

Register S37 - Desired DCE Speed

This register controls the speed at which the modem communicates with the remote modem, if you have set N0. If you enter an invalid number in this register, it is set to the default of 0.

Value	Connect speed
0	Attempt to connect at the speed of the last-detected AT command. If that speed is greater than 2400 bps, attempt to connect at 2400 bps.
1-3	Attempt to connect at 300 bps.
4	Reserved.
5	Attempt to connect at 1200 bps.
6	Attempt to connect at 2400 bps.
7	Attempt to connect in V.23, 75/1200 bps mode.

Register S38 - Forced-Disconnect Delay

This register controls how long the modem waits after receiving the ATH command or loss of DTR before it disconnects from the telephone line. When connected in an error-corrected mode, you can use this register to ensure that all data is transmitted from the modem's buffer before the modem disconnects.

If you set S38 between 0 and 254, the modem waits that number of seconds for the remote modem to acknowledge all data before it disconnects. If you set S38 to 255, the modem waits indefinitely for the remote modem to acknowledge all data.

The default for this register is 20 seconds.

Register S41 - Bit-Mapped Options

This register contains bit-mapped options. You usually change this register's contents using the %C command.

Bit	Value	Description
0	0	%C0 (Compression disabled)
	1	%C1 (Compression enabled)
1-7	Not Used	

Register S46 - Protocol Selection

This register controls whether the modem tries to use data compression when the modem establishes an error corrected link. The default is for the modem to use data compression (138).

Value	Description
136	Do not attempt error correction.
138	Attempt error correction.

Register S48 - Negotiation Action

This register controls whether the modem is forced into V.42 LAP-M or the MNP-5 protocol, or if the modem will negotiate for an error-correction method. You can force a protocol to shorten the delay between connect and on-line, when you know that the other modem supports one of the protocols. If the other modem does not support the forced protocol, the modem's action is controlled by Register S36. The default is for the modem to negotiate for the protocol (7)

Value	Description
0	Disable negotiation, force LAPM.
7	Enable negotiation.
128	Disable negotiation, force MNP.

Register S86 - No Carrier Error Code

This register contains a value that indicates the fault detected that caused the modem to disconnect and return a NO CARRIER result code. The cause codes are as follows:

Value	Description
0	Normal disconnect, no error occurred.
4	Carrier lost (other modem disconnected).
5	V.42 negotiation failed to detect an error-correcting modem.
9	Modems could not find a common protocol.
12	Normal disconnect initiated by the remote modem.
13	Remote modem did not respond after 10 consecutive retransmissions of the same message.
14	Protocol violation.

Register S91 - Programmable Transmit Levels

When you set the modem for leased-line operation (&L1), you can adjust the transmit level in 1 dB increments as follows:

Value	Description
0	0dBm
1	-1 dBm
2	-2dBm
.	
.	
.	
13	-13 dBm
14	-14 dBm
15	-15 dBm

Register S95 - Extended Result Codes
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This register can override some of the W command options. Set the appropriate bit to 1 to enable the corresponding result code, regardless of the W command setting. Set the bit to 0 to disable the result code.

Bit	Description
0	CONNECT indicates DCE speed.
1	Append/ARD to the CONNECT result code if the protocol is other than NONE.
2	CARRIER result code.
3	PROTOCOL: result code.
4	Reserved.
5	COMPRESSION: result code.
6	Reserved.
7	Reserved.

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