ZM56 High-Speed Industrial Modem

Command Summary

AT Command Summary

Command	Description
AT	Attention Prefix Precedes all commands except the escape sequence (+++). All commands are terminated by a carriage return (CR).
ATA	Force modem off-hook.
ATDT	Initiate Originate mode and dialing sequence. ZM56 will go off-hook and dial the sequence that follows. Valid digits: 0 – 9, '*', '#', 'A', 'B', 'C', or 'D' Modifiers: ',' – inserts a 2 second delay '/' – inserts a 125ms delay Ignored characters: ' ', '-', '(', ')', '.'
ATE0	Disable character echo in command state. Also set by turning DIP Switch 11 off.
ATE1	Enable character echo in command state. Also set by turning DIP Switch 11 on.
ATH	Hang-up This command causes the modem to go on-hook, and forces a hardware reset.
ATH1	Force modem off-hook without sending data. (Test mode command)
ATI	Identification Returns firmware version number.
ATO	Return to the on-line (connected) state from command state.
ATS	Sets "S" Register (See table of valid S registers.)

ATV0	Sets modem for numeric result codes. Also set by turning DIP Switch 10 off.
ATV1	Sets modem for verbose result codes. Also set by turning DIP Switch 10 on.
ATZ	Performs a hardware reset of the modem.
AT&F	Restore factory default settings.
AT&V	Display current settings.
+++	Escape Sequence When connected, the escape sequence returns the modem to the command state. The escape sequence must be preceeded and followed by a 1 second quiet time (no characters received from the RS-232 port).

Auto-Dialout Related Commands

ATAT	Set AutoDial Termination features. ATAT=0,1 0 – Send message string when connected, then hangup. 1 – Send message string when connected, remain connected. ATAT? – Displays current setting.
ATCT	Set Connection Timeout. The time allotted to establish a connection before attempting to redial. ATCT=nn – Enters connection timeout value (1 – 255 seconds). ATCT? – Displays current value.
ATDAn	Set number of Dialing Attempts for each Dialing String. n = 1, 2 or 3 ATDA1=r sets number of dialing attempts for dialing string 1. ATDA2=r sets number of dialing attempts for dialing string 2. ATDA3=r sets number of dialing attempts for dialing string 3. r = 0 - 9 ATDA1=3 tries to connect to the number in dialing string 1 three times before checking the next dialing string number. ATDAn? – Displays current setting.
ATDSn	Set Dialing String number. Three dial-out numbers are available (1, 2 and 3). Numbers may be up to 32 characters long. ATDS1=555-1234 sets dialing string number 1. ATDSn? – Displays string.
ATMS	Set Message String (511 characters max). ATMS? - display message string. ATMS=text, sets text for message string (one line only). ATMScr – Allows long messages to be entered. Use cntl-J to continue on next line. Use 'cr' to finish entering text.
ATRD	Sets Retry Delay. ATRD=nn Enters delay between dialing retries (0 – 255 seconds). ATRD? – Displays value.

S Register Summary

ATS0=n	Auto Answer Control Sets number of rings before modem answers an incoming call. 0 = auto answer disabled n = 0 – 9 This register is initialized on power up based on the DIP Switch 12 setting (see DIP Switch Settings).
ATS7=n	Connection Timeout Sets maximum time for a connection to be established. n = 2 – 255 seconds Default timeout is 55 seconds.

DIP Switch Settings

Switch	Description
SW1 SW2 SW3	RS-232 Port Baud Rate Select
OFF OFF OFF	1200 Baud
ON OFF OFF	2400 Baud
OFF ON OFF	4800 Baud
ON ON OFF	9600 Baud
OFF OFF ON	19.2k Baud
ON OFF ON	38.4k Baud
OFF ON ON	57.6k Baud
ON ON ON	115.2k Baud
Switch 4	OFF – 8 Data bits, No Parity, 1 Stop bit ON – 7 Data bits, Even Parity, 1 Stop bit
Switch 5	OFF – Data compression enabled ON – Data compression disabled
Switch 6	Reserved
Switch 7	Reserved
Switch 8	Reserved
Switch 9	Reserved (Test Function)
Switch 10	Modem Response Format OFF – Modem sends numeric response codes ON – Modem sends verbose response codes
Switch 11	Echo Control OFF – Character echo in command state disabled ON – Character echo in command state enabled
Switch 12	Auto Answer OFF – Auto Answer disabled (S0=0) ON – Auto Answer enabled (S0=1)

All switches are only read when the modem is powered up. Modem power must cycled if any switch settings are changed.

LED Indicators

Indicator	Description
CONNECT	Modem connection has been established.
AUTO ANS	Auto Answer is enabled.
$\rightarrow$	Command Mode: Data is being sent from the RS-232 port to the modem. Connect Mode: Data is being sent from the RS-232 port to the phone line.
$\leftarrow$	Command Mode: Data is being sent from the modem to the RS-232 port. Connect Mode: Data is being sent from the phone line to the RS-232 port.
3 Status LEDs (Upper Right)	Alternating pattern when no RS-232 device is connected. Sequential pattern when RS-232 device is connected. All 3 LEDs will flash 'ON' when an incoming ring signal is detected. Dialing Attempt registers are displayed for 1 second after initial LED startup sequence pattern. If Dialing Attempt register is non-zero, corresponding LED will turn *on* to indicate dialing string is enabled. When dial-out is in progress, LED corresponding to dialing string blinks at 1-second rate.

Connectors

Power Connector (3-pin connector)

Pin	Signal	Description
1	+V	5 to 30 Vdc
2	GND	Common for Pin 1
3	Chassis Ground	Connection to case and DB25 shell.

Dialout Trigger & Acknowledge (4-pin connector)

Pin	Signal	Description
1	Digital Input	Short pins 1 & 2 together
2	Digital Input	to trigger (dry contact – optically isolated)
3	Digital Output	AC or DC connection (optically isolated)
4	Digital Output	48V, 100mA max, 25 Ω typical

Dialout is started when pins 1 & 2 are shorted together. If pins 1 & 2 remain shorted after completion of dialout connection, a new dialout attempt will not be started until until the short is briefly opened (100ms).

RS-232 Connector (DCE)

Pin	Signal	Name	Direction	Description
3	TXD	Transmit Data	Input	Used to receive data being sent to telephone network and receiving AT commands.
2	RXD	Receive Data	Output	Used to transmit data being received from the telephone network and send AT command results.
7	RTS	Request To Send	Input	Used by modem to determine if DTE device is ready to send data.
8	CTS	Clear To Send	Output	Asserted by modem to indicate ready to receive data from DTE device.
6	DSR	Data Set Ready	Output	Asserted by modem to indicate operational status.
5	GND	Ground		Electrical ground.
1	DCD	Data Carrier Detect	Output	Asserted when link has been established with another modem. This signal may be monitored instead of waiting for the ASCII "CONNECT" string.
4	DTR	Data Terminal Ready	Input	Used by modem to indicate that an external device is connected to the RS-232 port. Toggling this signal will force modem to hang up.
9	RI	Ring Indicator	Output	Asserted after a ring signal is detected from the telephone line. The RI output is pulsed high for 500ms after the ring signal stops.

ZM56 Specifications

Data Rate	56k bps (asynchronous) V.90
Configuration	Hayes AT® style command structure
Interface	RS-232 DB25 female connector
Phone Line	RJ11 connector

Power (5 to 30 Vdc)

	Idle	Connected (typical values)
5 Vdc	70mA	98mA
8 Vdc	45mA	62mA
12 Vdc	33mA	44mA
24 Vdc	20mA	26mA
30 Vdc	17mA	22mA
	Removable 3-pin connector	

Operating Temperature Range	-40°C to +85°C 10% to 90% RH (non-condensing)

Transient Protection

Power Input	Peak Pulse Power – 600 watts (10/100us waveform) Peak Surge Current – 100 amps (8.3ms single half sine-wave)
Telephone Line	FCC Part 68 Surge Specifications
RS-232 Port	ESD Protected ±15kV Human Body Model ±8kV Contact Discharge ±15kV Air-gap Discharge
Size	5.0 in. x 5.0 in. x 1.45 in.
Mounting	Optional Mounting Bracket