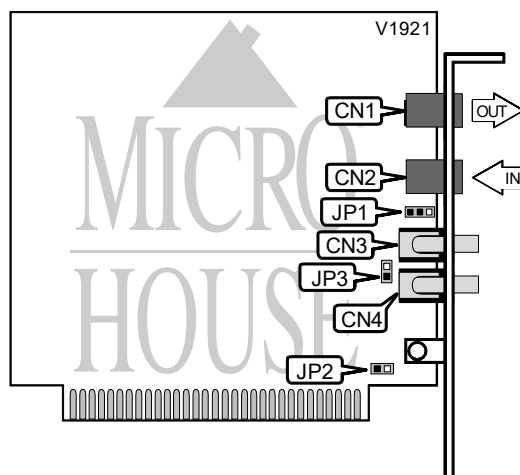


# ZOOM TELEPHONICS, INC.

## COMSTAR 28800

<b>Card Type</b>	Fax, Modem (asynchronous), Voice
<b>Chip Set</b>	Unidentified
<b>I/O Options</b>	Speakerphone, Voice mail
<b>Maximum Data Rate</b>	28.8Kbps
<b>Maximum Fax Rate</b>	14.4Kbps
<b>Data Bus</b>	8-bit ISA
<b>Fax Class</b>	Class I & II
<b>Data Modulation Protocol</b>	Bell 103/212A
	ITU-T V.21, V.22, V.22bis, V.23, V.32, V.32bis, V.34
<b>Fax Modulation Protocol</b>	ITU-T V.17, V.21CH2, V.27ter, V.29, V.33
<b>Error Correction/Compression</b>	MNP10, V.42bis



CONNECTIONS			
Function	Label	Function	Label
Line out	CN1	Microphone	CN3
Line in	CN2	Speaker	CN4

USER CONFIGURABLE SETTINGS		
Function	Label	Position
Electret microphone	JP1	Pins 1 & 2 closed
Plantronics headset	JP1	Pins 2 & 3 closed
Dynamic microphone	JP1	Open
Unpowered speaker, volume medium level	JP2	Closed
Powered speaker, volume low level	JP2	Open
Volume high level	JP2	Closed
Unpowered speaker, volume medium level	JP3	Closed
Powered speaker, volume low level	JP3	Open
Volume high level	JP3	Open

Continued on next page . . .

. . . continued from previous page

## Proprietary AT Command Set

AUTO-RETRAIN - AUTO-FALLBACK/FALL-FORWARD	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] %En [cmds]
<b>Description:</b>	Controls auto-retrain mode and auto-fallback/fall-forward
Command	Function
%E0	Auto-retrain disabled
%E1	Auto-retrain enabled
i %E2	Auto-fallback/fall-forward enabled
%E3	Auto-retrain enabled with fast hang-up

BIT MAPPED REGISTERS	
Register	Default
S14	Unidentified
S16	Unidentified
S21	Unidentified
S22	Unidentified
S23	Unidentified
S27	Unidentified
S28	Unidentified
S31	Unidentified
S40	Unidentified
S41	Unidentified

BREAK SEND	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] \Bn [cmds]
<b>Default:</b>	3
<b>Range:</b>	1-9
<b>Unit:</b>	.1 second
<b>Description:</b>	Sends break to modem

BREAK TYPE	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] \Kn [cmds]
<b>Description:</b>	Configures action of break signal

CALLER ID	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] #CID=n [cmds]
<b>Description:</b>	Controls the Caller ID function
Command	Function
#CID=0	Caller ID disabled
#CID=1	Caller ID enabled

Continued on next page . . .

ZOOM TELEPHONICS, INC.  
COMSTAR 28800

. . . continued from previous page

COMPRESSION	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] %Cn [cmds]
<b>Description:</b>	Selects data compression
Command	Function
%C0	Data compression disabled
%C1	MNP5 enabled
%C2	V.42bis enabled
í %C3	MNP5 and V.42bis enabled

CONNECT MODE	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] \Nn [cmds]
<b>Description:</b>	Controls the type of connection the modem will operate in
Command	Function
\N0	Normal mode enabled
\N1	Direct mode enabled
\N2	Reliable mode enabled
í \N3	Auto-reliable mode enabled
\N4	LAP-M error correcting only enabled
\N5	MNP error correcting only enabled

DIAL	
<b>Type:</b>	Immediate
<b>Format:</b>	AT [cmds] D<#> [cmds]
<b>Description:</b>	Dials telephone number according to any modifiers included in the string
Modifier	Function
L	Redials last number
P	Pulse dialing enabled
T	Tone dialing enabled
W	Dialing resumed following dial tone detection
,	Dialing paused for amount of time specified in S8 register
@	Modem waits for a ring-back signal followed by silence up to 5 second prior to executing the rest of the dial string.
R	Command recognized and not initiated
;	Modem returned to command mode after dialing.
!	Flash function initiated. Goes on-hook for amount of time specified in S29 register
S=(0-3)	Number in memory location &Zn dialed
^	Calling tone enabled, data mode only.

FLASH DIAL MODIFIER TIME	
<b>Type:</b>	Register
<b>Format</b>	AT [cmds] S29=n [cmds]
<b>Default:</b>	70
<b>Range:</b>	0-255
<b>Unit:</b>	.01 second
<b>Description:</b>	Time the modem will go on-hook upon receiving the ! dial modifier in dial string.

Continued on next page . . .

# ZOOM TELEPHONICS, INC.

## COMSTAR 28800

. . . continued from previous page

FLOW CONTROL	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] \Gn [cmds]
<b>Description:</b>	Selects modem port flow control
Command	Function
f \G0	Flow control disabled
\G1	Flow control enabled

FLOW CONTROL	
<b>Type:</b>	Register
<b>Format:</b>	AT [cmds] S39=n [cmds]
<b>Description:</b>	Select the type of flow control used
Command	Function
S39=0	Flow control disabled
f S39=3	Hardware flow control enabled
S39=4	Software flow control enabled
S39=5	Transparent software flow control enabled
S39=6	Both hardware and software flow control enabled

FLOW CONTROL CHARACTER - XOFF	
<b>Type:</b>	Register
<b>Format:</b>	AT [cmds] S33=n [cmds]
<b>Default:</b>	19
<b>Range:</b>	0-255
<b>Unit:</b>	ASCII
<b>Description:</b>	Sets the character used to represent XOFF

FLOW CONTROL CHARACTER - XON	
<b>Type:</b>	Register
<b>Format:</b>	AT [cmds] S32=n [cmds]
<b>Default:</b>	17
<b>Range:</b>	0-255
<b>Unit:</b>	ASCII
<b>Description:</b>	Sets the character used to represent XON

LINE SIGNAL LEVEL	
<b>Type:</b>	Immediate
<b>Format:</b>	AT [cmds] %L [cmds]
<b>Description:</b>	Returns a value which indicates the received line signal level (-dBm)

LINE SIGNAL QUALITY	
<b>Type:</b>	Immediate
<b>Format:</b>	AT [cmds] %Q [cmds]
<b>Description:</b>	Returns a value which indicates line signal quality

Continued on next page . . .

ZOOM TELEPHONICS, INC.  
COMSTAR 28800

. . . continued from previous page

MAXIMUM BLOCK SIZE FOR TRANSMISSION	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] \An [cmds]
<b>Description:</b>	Sets the maximum transmittable block size
Command	Function
\A0	MNP block size is 64 characters
í \A1	MNP block size is 128 characters
\A2	MNP block size is 192 characters
\A3	MNP block size is 256 characters

MNP - STREAM/BLOCK MODE	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] \Ln [cmds]
<b>Description:</b>	Selects the transfer mode for MNP link
Command	Function
í \L0	Stream mode for MNP enabled
\L1	Block mode for MNP enabled

MNP10 - EXTENDED SERVICES	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] -Kn [cmds]
<b>Description:</b>	Selects MNP10 extended services
Command	Function
í -K0	MNP10 disabled
-K1	MNP10 enabled
-K2	MNP10 enabled on originate mode only

MNP10 - FALLBACK	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] -Qn [cmds]
<b>Description:</b>	Allows MNP10 to fall back to 2400bps
Command	Function
-Q0	MNP10 at 2400 disabled
í -Q1	MNP10 at 2400 enabled

MNP10 - LINK NEGOTIATION	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] *Hn [cmds]
<b>Description:</b>	Sets the speed at which MNP10 link negotiation will occur
Command	Function
í *H0	Link will be negotiated at highest possible speed
*H1	Link will be negotiated at 1200bps
*H2	Link will be negotiated at 4800bps

Continued on next page . . .

# ZOOM TELEPHONICS, INC.

## COMSTAR 28800

. . . continued from previous page

MNP10 - POWER LEVEL ADJUST	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] )Mn [cmds]
<b>Description:</b>	Controls automatic transmit power level adjustment during MNP 10 link negotiation
Command	Function
í )M0	Power level adjustment disabled
)M1	Power level adjustment enabled

MODULATION SELECTION DISPLAY	
<b>Type:</b>	Immediate
<b>Format:</b>	AT [cmds] +MS? [cmds]
<b>Description:</b>	Displays modulation, automode, minimum rate and maximum rate settings

MODULATION SELECTION	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] +MS=x,y,z,a [cmds]
<b>Description:</b>	Sets options for active protocol; the transfer rates specified by z and a must be valid for the protocol selected.
Command	Function
x=0	V.21
x=1	V.22
x=2	V.22bis
x=3	V.23
x=9	V.32
x=10	V.32bis
í x=11	V.34
x=64	Bell 103
x=69	Bell 212A
x=74	V.FC
y=0	Automode disabled
í y=1	Auto-detect highest speed enabled
z, a=300	Set minimum or maximum transfer rate at 300bps, respectively.
z, a=1200	Set minimum or maximum transfer rate at 1200bps, respectively.
z, a=2400	Set minimum or maximum transfer rate at 2400bps, respectively.
z, a=4800	Set minimum or maximum transfer rate at 4800bps, respectively.
z, a=7200	Set minimum or maximum transfer rate at 7200bps, respectively.
z, a=9600	Set minimum or maximum transfer rate at 9600bps, respectively.
z, a=12000	Set minimum or maximum transfer rate at 12000bps, respectively.
z, a=14400	Set minimum or maximum transfer rate at 14400bps, respectively.
z, a=16800	Set minimum or maximum transfer rate at 16800bps, respectively.
z, a=19200	Set minimum or maximum transfer rate at 19200bps, respectively.
z, a=21600	Set minimum or maximum transfer rate at 21600bps, respectively.
z, a=24000	Set minimum or maximum transfer rate at 24000bps, respectively.
z, a=26400	Set minimum or maximum transfer rate at 26400bps, respectively.
z, a=28800	Set minimum or maximum transfer rate at 28800bps, respectively.

Continued on next page . . .

# ZOOM TELEPHONICS, INC.

## COMSTAR 28800

. . . continued from previous page

SLEEP TIMER	
<b>Type:</b>	Register
<b>Format:</b>	AT [cmds] S24= <i>n</i> [cmds]
<b>Default:</b>	0
<b>Range:</b>	0-255
<b>Unit:</b>	1 second
<b>Description:</b>	Maximum duration of DTE and DCE inactivity allowed prior to initiating low-power sleep mode.

SPEAKERPHONE OPTIONS	
<b>Type:</b>	Immediate/Configuration
<b>Format:</b>	AT [cmds] (see below) [cmds]
<b>Description:</b>	Configures the modem to voice mode
Command	Function
#CLS=8	Enable voice mode
#VLS=6	Enable speakerphone
A	Answer in-coming call
#VRN=0	To originate a call, then AT<#><enter>
HZ	Ends the call

SPEAKERPHONE SETTINGS	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] #SPK= <i>x</i> , <i>y</i> , <i>z</i> [cmds]
<b>Description:</b>	Controls the speakerphone settings
Command	Function
<i>x</i> =0	Microphone muted, speaker enabled
<i>i</i> <i>x</i> =1	Microphone and speaker enabled
<i>x</i> =2	Microphone on maximum and speaker disabled
<i>y</i> =(0-16)	Speaker volume; increase the value lowers the volume.
<i>i</i> <i>Y</i> =5	Default setting
<i>Z</i> =(0-3)	Microphone sensitivity; increase the value the microphone becomes more sensitive.
<i>i</i> <i>Z</i> =1	Default setting

TRANSMISSION LEVEL - CELLULAR	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] @M <i>n</i> [cmds]
<b>Default:</b>	0
<b>Range:</b>	11-30
<b>Unit:</b>	-1 dBm
<b>Description:</b>	Sets the signal level for transmission while in cellular mode
Command	Function
@M0	-26 dBm
@M1	-30 dBm
@M2-@M10	-10 dBm

Continued on next page . . .

ZOOM TELEPHONICS, INC.  
COMSTAR 28800

. . . continued from previous page

V.32 - COMPROMISE EQUALIZER	
<b>Type:</b>	Configuration
<b>Format:</b>	AT [cmds] :En [cmds]
<b>Description:</b>	Controls V.32 compromise equalizer
Command	Function
:E0	Equalizer disabled
í :E1	Equalizer enabled