

iDOME iVIEW/iVIEW2 LCU COMMUNICATIONS PROTOCOL



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1.1 GENERAL

This documents defines the Asynchronous communication protocol between the MPC Master Control Panel/Host Computer and an iDome/iView/LCU. Figure 1. Illustrates the handshake protocol. The communication is full duplex. Typical or default communication parameters will be 9600 baud, 8 data bits, 1 stop bit and no parity.

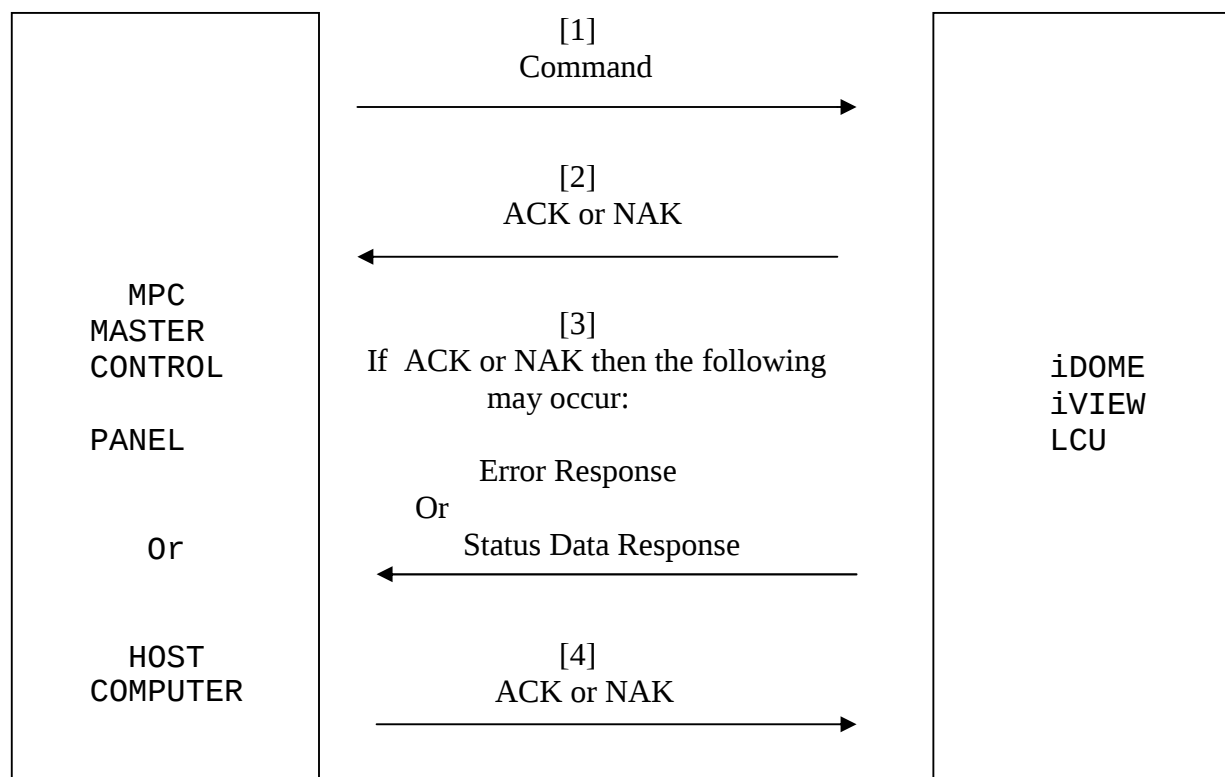


FIGURE 1. TYPICAL COMMUNICATION HANDSHAKE PROTOCOL

1.2 MESSAGE FORMAT

Anytime a command message is sent to the Camera the camera will respond with an ACK or NAK. The commands are sent using the command message format show in Table 1 to 4. The response message from the camera is shown in Table 5 and 6.

If the command message contains only a momentary function, no further response beyond the ACK or NAK will occur. If the command requires a status message response, then a message will be returned following the ACK.

-The control characters to be used are:-

F8	Start Character (in HEX)
ACK	Acknowledge proper receipt of transmission
NAK	Bad transmission - re transmit
CS	Checksum (End of Message)
ID	Camera address in HEX
##	One byte in Hex
'#'	Number in ASCII
'*'	ASCII Asterisk
'c'	ASCII c
'd'	ASCII d

All transmissions will be in formats:

	<F8> <CamID> <DATA> <CS>	Table 1.
or:	<F8> <CamID> <c> <DATA> <CS>	Table 2.
or:	<F8> <CamID> <*> <DATA> <CS>	Table 3.
or:	<F8> <CamID> <d> <DATA> <CS>	Table 4.

TABLE 1. STANDARD COMMAND MESSAGE FORMAT

BYTE	DATA	DESCRIPTION
0	F8h	Start of message
1	Camera Address	in HEX (01h to DFh) <u>Note:</u> FFh address is used to read camera address or to assign camera address
2 to n+2	Command Data	
n+3	CHECKSUM	End of message 80H-8FH Least significant nibble is XOR of all previous bytes (LS NIBBLES only) except F8h

NOTE: n is the number of command data bytes in the message

TABLE 2. DSP CAMERA COMMAND MESSAGE FORMAT

BYTE	DATA	DESCRIPTION
0	F8h	Start of message
1	Camera Address	in HEX (01h to DFh) <u>Note:</u> FFh address is used to read camera address or to assign camera address
2	'c'	Message type (for camera control)
3 to n+3	DSP Command Data	
n+4	CHECKSUM	End of message 80H-8FH Least significant nibble is XOR of all previous bytes (LS NIBBLES only) except F8h

TABLE 3. SECTOR/TOURING COMMAND MESSAGE FORMAT

BYTE	DATA	DESCRIPTION
0	F8h	Start of message
1	Camera Address	in HEX (01h to DFh) <u>Note:</u> FFh address is used to read camera address or to assign camera address
2	'*'	Message type (for sector/touring)
3 to n+3	Touring/Position Command Data	
n+4	CHECKSUM	End of message 80H-8FH Least significant nibble is XOR of all previous bytes (LS NIBBLES only) except F8h

TABLE 4. ID COMMAND MESSAGE FORMAT

BYTE	DATA	DESCRIPTION
0	F8h	Start of message
1	Camera Address	in HEX (01h to DFh) <u>Note:</u> FFh address is used to read camera address or to assign camera address
2	'd'	Message type (for ID)
3	Command 1	See Page 7 for command types
4	Command 2	and reponse
5 to 29	ID Data	24 ID ASCII characters, or Enable/Disable, or Blinking, etc.
n+30	CHECKSUM	End of message 80H-8FH Least significant nibble is XOR of all previous bytes (LS NIBBLES only) except F8h

1.3 STANDARD COMMANDS

<u>COMMAND</u>	<u>DESCRIPTION</u>
PR	Pan Right
PL	Pan Left
PS	Pan Stop
TU	Tilt Up
TD	Tilt Down
TS	Tilt Stop
ZI	Zoom In
ZO	Zoom Out
ZS	Zoom Stop
FN	Focus Near
FF	Focus Far
FS	Focus Stop
IO	Iris Open
IC	Iris Close
IS	Iris Stop
P ##	Program Preset Position ## = 10hex to 3Ehex (first 47 positions) = 60hex to 70hex (last 16 positions)
H ##	Goto a Preset Position ## = 10hex to 3Ehex (first 47 positions) = 60hex to 70hex (last 16 positions)
B1	Integration Up .Continue up to 1/8 th shutter speed
B2	Integration Down .Continue back to 1/60 th shutter speed

LATCH COMMANDS

LP	Camera Power ON/OFF
LM	Manual Iris toggle
LL	Lens Speed toggle
L1	Manual Focus toggle
L2	Wash ON/OFF (3965 model only)
L3	Wipe ON/OFF (3965 model only)

Notes: All latch commands will return the status as the L? command described below.

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
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STATUS REQUEST

L?	Latch Status Request	.See Table 5 for response status
H?	Home Position Request.	.See Table 5 for response status

VARIABLE SPEED P/T/Z COMMANDS

r ##	Pan Right – Var. Speed ##: 16 variable speed controls (from 30 hex to 3F hex)	
l ##	Pan Left – Var. Speed ##: 16 variable speed controls (from 30 hex to 3F hex)	
PS	Pan Stop	
u ##	Tilt Up – Var. Speed ##: 16 variable speed controls (from 30 hex to 3F hex)	
d ##	Tilt Down- Var. Speed ##: 16 variable speed controls (from 30 hex to 3F hex)	
TS	Tilt Stop	
s#	Set P/T Speed (iView2) # = '0': Fixed P/T Speed – Use Zoom Pos as proportional speed '1': Var. Speed P/T – No Zoom Pos used as speed '2': Var. Speed and use Zoom Pos as proportional and variable speed	
sS	Request for Status of P/T Speed mode	s# # = '0', '1', '2'
rn	Pan Right – Nudge	
ln	Pan Left – Nudge	
un	Tilt Up – Nudge	
dn	Tilt Down - Nudge	

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
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ID COMMANDS

dIE	Enable ID display (All)	
dIe'x'	Enable ID Line #	
	x = '1' Line 1	
	= '2' Line 2	
dID	Disable ID display (All)	
dId'x'	Disable ID Line #	
	x = '1' Line 1	
	= '2' Line 2	
dIT	Display ID on top of screen	
dIB	Display ID on bottom of screen	
dAE	Enable Alarm display (All)	
dAe'x'	Enable Alarm Line #	
	x = '1' Line 1	
	= '2' Line 2	
	= '3' Line 3	
dAD	Disable Alarm # display (All)	
dAd'x'	Disable Alarm Line #	
	x = '1' Line 1	
	= '2' Line 2	
	= '3' Line 3	
dAB	Enable Alarm Blinking	
dAb	Disable Alarm Blinking	
dME	Maintenance Display Enable	
dMD	Maintenance Display Disable	
dIC	Clear All ID data, include Presets, Sectors, PrivacyZones	
dL#DATA	Set content of ID messages	
	# = '1' : line 1 (ID line 1)	
	# = '2' : line 2 (ID line 2)	
	# = '3' : line 3 (Alarm ID line 1)	
	# = '4' : line 4 (Alarm ID line 2)	
	# = '5' : line 5 (Alarm ID line 3)	
	DATA = 24 ASCII characters	

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
ID COMMANDS (Cont.)		
dP##DATA	Store Preset ID display in the receiver Preset ID will be displayed when a preset is executed, and disappears when a P/T/Z/F command is executed. ## = 10hex to 3Ehex (first 48 positions) = 60hex to 70hex (last 16 positions) DATA = 24 ASCII characters	
dST#s	Set Sector ID Text # = Sector Number (31H to 40H) s = 24 ASCII characters	
dSS#s	Set Sector ID State # = Sector Number (31H to 40H) s = State ('1'=On; '0'=Off)	
cdSc	Get ID Control Data, i.e Enable, Top, Alarm Blink ...	dC# # = Control Byte(xxx11111)
cdSl#	Get ID messages # = '1', '2', '3', '4', '5'	dL#DATA
cdS##	Get Preset## ID stored in camera ## = 10hex to 3Ehex (first 48 positions) = 60hex to 70hex (last 16 positions)	dP##DATA
cdSS##	Get Sector ## ID stored in camera ## = 31hex to 40hex (16 sectors)	dST##DATA
cdSs##	Get Sector ID State ## = Sector Number (31hex to 40hex)	dSS#s s = State ('1'=On; '0'=Off)
dM#	Maintenance Mode Display # = 'E' Enable 'D' Disable	
dp#	Pan Tilt Position Display # = 'E' Enable 'D' Disable 'T' Use TimeOut to clear the display 't' Displayed always	

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
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ID COMMANDS (Cont.)

dN#	North Position Display	
	# = 'E' Enable	
	'D' Disable	
	'T' Use TimeOut to clear the display	
	't' Displayed always	
	'0' Displayed 8 Zones equally	
	'1' Displayed 16 Zones equally	
	'I' Displayed A/Z/N with IDs group	
	'i' Displayed A/Z/N not with IDs group	

MISC. COMMANDS

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
A?	Read Camera Address 'A####'	Return the current CamAddr in ASCII #### = '001' – '223'
AS###	Assign Camera Address ### = '001' – '223'	
<u>NOTE:</u> The above command is also valid if Camera Address FFh is used.		
E#####	Elevation level where the camera is mounted This is used to calibrate the Low Pressure indicator in the camera. ##### = 0 to 10000 in ASCII (in feet)	
RS	iDome/iView Firmware Revision Query	Return Firmware Revision (Maximum 24 Characters) 'Model# Firmware Ver. 1.0' <u>For example:</u> RModel# Firmware V1.0
Rs	LCU Firmware Revision Query	Return Firmware Revision (Maximum 24 Characters) <u>For example:</u> rLCU Firmware V1.0
Lp#	Line Lock Phase Adjust # = '0' (Camera is in Crystal mode) = '1' (Line Lock - Phase 0 mode – 0 degree) = '2' (Line Lock - Phase 1 mode – 30 degree) = '3' (Line Lock - Phase 2 mode – 60 degree) = '4' (Line Lock - Phase 3 mode – 90 degree) = '5' (Line Lock - Phase 4 mode –120 degree) = '6' (Line Lock - Phase 5 mode –150 degree)	
Bs#####	Set Camera Baud Rate ##### = 0300, 0600, 1200, 2400, 4800, 9600	
bs#####	Set LCU Host Baud Rate ##### = 0300, 0600, 1200, 2400, 4800, 9600	
b?#####	Query LCU Host Baud Rate	b##### = 0300, 0600, 1200, 2400, 4800, 9600
fE	Tilt Flip Enabled	
fD	Tilt Flip Disabled	

MISC. COMMANDS

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
fS	iDome Flip Enable Query	Return Tilt Flip Enable Status 'fE' (Tilt Flip Enabled) 'fD' (Tilt Flip Disabled)
h1	RS232 Flow Control (RTS/CTS) Enabled	
h0	RS232 Flow Control (RTS/CTS) Disabled	
hS	RS232 Flow Control Query	Return RS232 Handshake Status 'h1' (Enabled) 'h0' (Disabled)
Jc0	Set Javelin Continous Motor Mode for Camera OFF	
Jc1	Set Javelin Continous Motor Mode for Camera ON	
JcS	Query Camera for Javelin Continous Motor Mode status in Camera	'Jc0' (OFF) 'Jc1' (ON)
Jb0	Set Javelin 2 Bytes Addr for camera OFF	
Jb1	Set Javelin 2 Bytes Addr for camera ON	
JbS	Query Camera for Javelin 2 Bytes Addr status in camera	'Jb0' (OFF) 'Jb1' (ON)
jc0	Set Javelin Continous Motor Mode for LCU OFF	
jc1	Set Javelin Continous Motor Mode for LCU ON	
jcS	Query LCU for Javelin Continous Motor Mode status in LCU	'jc0' (OFF) 'jc1' (ON)
jb0	Set Javelin 2 Bytes Addr for LCU OFF	
jb1	Set Javelin 2 Bytes Addr for LCU ON	
jbS	Query LCU for Javelin 2 Bytes Addr status in LCU	'jb0' (OFF) 'jb1' (ON)

MISC. COMMANDS (cont.)

COMMAND	DESCRIPTION	RESPONSE
MAINTENANCE		
mPS	Query the internal pressure data	'mPxx.x' xx: 2 digits-ASCII data and 1digit decimal For example: 10.5
mTS	Query the internal temperature data	'mTxx' xx: 2 digits-ASCII data in degree C For example: 30 degree C
mtS	Query the trigger temperature setting for the heater	'mtxx' xx: 2 digits-ASCII data in degree C from 20 to 45 in degree C
mt'xx'	Set the trigger temperature for the heater xx: 2 digits-ASCII data in degree from 20 to 45 in degree C	
mNs	Set True North Offset	
mNc	Clear True North Offset	
mFH	Set Pan Tilt to find Home Position	
mS'xxxxxxx'	Set Camera Serial Number 'x' = '0' to '9'	
mSs	Query Camera Serial Number data	mS'xxxxxxx' 'x' = '0' to '9'
mf'x'	Video Mode Preset (Freeze/Live) when go to a preset '#' = '0' (OFF - Live) = '1' (ON - Frozen)	
mfS	Query Video Mode Preset	mf'x'

MISC. COMMANDS (cont.)

COMMAND	DESCRIPTION	RESPONSE
MAINTENANCE (cont.)		
mwr'####'d'##'	Set Wiper Run Time and Delay Time (<i>Note: for iView2 Only</i>) #### = '0000' to '9999' Run Time in Sec ## = '00' to '99' Delay Time in Sec	
mw?	Inquiry Wiper Run Time and Delay Time (<i>Note: for iView2 Only</i>)	mwr'####'d'##' #### = '0000' to '9999' Run Time in Sec ## = '00' to '99' Delay Time in Sec
mWW'##'w'\$\$'m'%'f'***'	Set Wash function - Wash Time, Wipe Time, Operation Mode, and Auto Mode Freq (<i>Note: for iView2 Only</i>) ## = '00' to '99' Wash Time in Sec \$\$ = '00' to '99' Wipe Time in Sec % = '0' Wash Mode - Auto '1' Wash Mode - Manual *** = '001' to '010' Auto Wash Cycles in Minute	
mW?	Inquiry Wash function status (<i>Note: for iView2 Only</i>)	mWW'##'w'\$\$'m'%'f'***' See above description
mWh	Set Wash Home Position	

MISC. COMMANDS (cont.)

COMMAND	DESCRIPTION	RESPONSE
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MAINTENANCE (cont.)

PAN TILT

s0	Set Fixed Medium P/T speed (MPCD-11)	
s1	Set Variable P/T Speed	
s2	Set Variable Proportional P/T Speed based on Zoom Position	

S#	Set P/T direction # = '0' : Normal = '1' : Inverted Tilt = '2' : Inverted Pan and Tilt	
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SS	Pan Tilt Direction Set Status Query	S# # = '0' : Normal = '1' : Inverted Tilt = '2' : Inverted Pan and Tilt
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TABLE 5. STANDARD LATCH/HOME RESPONSE MESSAGE FORMAT

BYTE	DATA	DESCRIPTION
FORMAT LATCH STATUS RESPONSE		
0	F8h	Start of message
1	Camera Address	in HEX (01h to DFh)
2	'L'	Latch status
3	30hex – 37hex	LS nibble is four bits of status Bit Value 0/1 B0 = Manual Iris/Auto Iris (1/0) B1 = Camera Power On/Off (1/0) B2 = Lens Speed Fast/Slow (1/0) B3 = Not Used
4	'A'	Aux status
5	30hex – 37hex	LS nibble is four bits of status Bit Value 0/1 B0 = Auto/Manual Focus (1/0) B1 = Auto Integration/Manual Integration (1/0) B2 = Wipe ON/OFF (1/0) (for 3965 model only) B3 = Wash ON/OFF (1/0) (for 3965 model only)
6	'X'	Misc. statuses
7	30hex – 37hex	LS nibble is four bits of status Bit Value 0/1 B0 = Not Used B1 = Low Pressure (1) B2 = Video Loss (1) B3 = Not Used
8	CHECKSUM	End of message 80H-8FH Least significant nibble is XOR of all previous bytes (LS NIBBLES only) except F8h
FORMAT HOME STATUS RESPONSE		
0	F8h	Start of message
1	Camera Address	in HEX (01h to DFh)
2	'H'	Home status
3	10 hex – 3E hex 60 hex – 70 hex 'I'	Home Position Home is inactive (camera is not at a preset position)
4	CHECKSUM	End of message 80H-8FH Least significant nibble is XOR of all previous bytes (LS NIBBLES only) except F8h

1.4 DSP COMMANDS

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
cD#	Digital Zoom Range # = '0' (OFF) = '1' (2X) = '2' (5X) = '3' (10X) = '4' (12X)	
cS#	Shutter # = 30h (Auto) = 31h (1/2) = 32h (1/4) = 33h (1/8) = 34h (1/15) = 35h (1/30) = 36h (1/60) = 37h (1/120) = 38h (1/180) = 39h (1/250) = 3Ah (1/500) = 3Bh (1/1000) = 3Ch (1/2000) = 3Dh (1/4000) = 3Eh (1/10000) = 3Fh (1/30000)	
cW#	White Balance # = '0' (Auto) = '1' (Manual)	
cWR	Increase RED (in Manual mode only)	
cWr	Decrease RED	
cWB	Increase BLUE	
cWb	Decrease BLUE	
cWQ	Stop Increase/Decrease color	
cWL#	Set Sensitive Light Level (ER8011B5) # = '0' (Low) = '1' (Manual)	
<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
cWLS	Query Light Level Status (ER8011B5)	cWL# # = '0' (Low)

= '1' (Manual)

cWSD# Set Shutter for Day (ER8011B5)

= 30h (Auto)
= 31h (1/2)
= 32h (1/4)
= 33h (1/8)
= 34h (1/15)
= 35h (1/30)
= 36h (1/60)
= 37h (1/120)
= 38h (1/180)
= 39h (1/250)
= 3Ah (1/500)
= 3Bh (1/1000)
= 3Ch (1/2000)
= 3Dh (1/4000)
= 3Eh (1/10000)
= 3Fh (1/30000)

cWSDS Query Shutter for Day (ER8011B5)

cWSD#

cWSN# Set Shutter for Night (ER8011B5)

= 30h (Auto)
= 31h (1/2)
= 32h (1/4)
= 33h (1/8)
= 34h (1/15)
= 35h (1/30)
= 36h (1/60)
= 37h (1/120)
= 38h (1/180)
= 39h (1/250)
= 3Ah (1/500)
= 3Bh (1/1000)
= 3Ch (1/2000)
= 3Dh (1/4000)
= 3Eh (1/10000)
= 3Fh (1/30000)

cWSNS Query Shutter for Night (ER8011B5)

cWSN#

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
cY1	Wide Dynamic Range ON	
cY0	Wide Dynamic Range OFF	
cM0	Camera in Day/Night Auto Mode	
cM1	Camera in Day Mode (Color)	
cM2	Camera in Night Mode (Monochrome)	
cIA	Iris Auto	
cIM	Iris Manual	
cIO	Iris Open	
cIC	Iris Close	
IS	Iris Stop	
cz#	Zoom Wide – Var. Speed # = '0' (Low Speed) = '1' (Medium Speed) = '2' (Fast Speed)	
cZ#	Zoom Tele – Var. Speed # = '0' (Low Speed) = '1' (Medium Speed) = '2' (Fast Speed)	
ZS	Zoom Stop	
cFA	Focus Auto	
cFM	Focus Manual	
cF#	Focus Far – Var. Speed # = '0' (Low Speed) = '1' (Medium Speed) = '2' (Fast Speed)	
cN#	Focus Near – Var. Speed # = '0' (Low Speed) = '1' (Medium Speed) = '2' (Fast Speed)	
FS	Focus Stop	

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
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cP#	Camera Communication Protocol Selection	
	# = 0x30 (Cohu)	
	= 0x31 (American Dynamics)	
	= 0x32 (Pelco D)	
	= 0x33 (Javelin)	
	= 0x34 (Philips)	
	= 0x35 (Vicon)	
	= 0x36 (Kalatel)	
	= 0x37 (Ultrak)	

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
cPs	Query LCU Communication Protocol	P# LCU Protocol # = 0x30 (Cohu) = 0x31 (American Dynamics) = 0x32 (Pelco D) = 0x33 (Javelin) = 0x34 (Philips) = 0x35 (Vicon)
csO	Set Progressive Scan On	
cso	Set Progressive Scan Off	
cs'0'	Set Progressive Scan - Even Field	
cs'1'	Set Progressive Scan - Odd Field	
cFF	Video Freeze ON/OFF toggle	
cF#	Set Video Freeze ON/OFF	
	# = 0x4F 'O' (ON)	
	= 0x6F 'o' (OFF)	
cb	Enable Boot Loader to update new firmware in the iDome/iView	
cB	Enable Boot Loader to update new firmware in the LCU	
cLN	Set Normal Light mode (ER8439E - special Camera module)	
cLn	Set Sodium Vapor Light mode (ER8439E - special Camera module)	
cLS	Status request of Light mode setting (ER8439E - special Camera module)	cLN : Normal mode cLn : Sodium Vapor mode
cC#	Set Camera Head Comm. Baud Rate (ER-8682 only)	
	# = '0' for 4800	
	= '1' for 9600	
	= '2' for 19.2K	
	= '3' for 38.4K	
cn#	Set Poll Camera (ER-8682 only)	
	# = '0' for OFF	
	= '1' for ON	
cG##	Set Max AGC Gain	
	## = 0x11h to 0x38	

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
cGS		cG## Current Max AGC Gain Status ## = 0x11h to 0x38
cA#	Set Aperture Mode # = '0' : Auto = '1' : Manual	
cAH##	Set Horizontal Aperture ## = 0x11 – 0x2F	
cAV##	Set Vertical Aperture ## = 0x11 – 0x2F	
cAS	Inquiry Aperture Mode	cA#H##V## ## = 0x11 – 0x2F (H/V level) # = '0' : Auto = '1' : Manual
cE#	Set Electronic Image Stabilizer Mode # = '0' : OFF = '1' : ON	
cES	Inquiry Electronic Image Stabilizer	cE# # = '0' : OFF = '1' : ON
cEF#	Set Electronic Image Stabilizer Frequency Level # = '0' : 16 Hz (default) = '1' : 5 Hz	
cEFS	Inquiry Electronic Image Stabilizer Frequency Level	cEF# # = '0' : 16 Hz (default) = '1' : 5 Hz
cEP#	Enable/Disable EIS while Pan/Tilt is moving Frequency Level '#' = '0' : Disabled = '1' : Enabled	
cEPS	Inquiry the Enable/Disable EIS While Pan/Tilt Is Moving Status	cEP# # = '0' : Disabled = '1' : Enabled

SET SCREEN PRIVACY ZONE COMMANDS

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
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Notes: *NOT IMPLEMENTED YET IN THE STANDARD FIRMWARE (RESERVED FOR FUTURE DEVELOPMENT)*

- Maximum of 24 zones per camera.
- Select a Zone to program
- Move the Privacy Zone Object to the center of the screen before programming a zone either using Goto Zone Pos button (if the zone already programmed), or manually using Pan/Tilt Control

csN#	Select Zone for Setting Modification # = 'A' through 'X' (24 Zones)	
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csC@##	Set Zone Color for either Programming/Live Mode @ = 'P' : Programming Mode 'L' : Live Mode ## = 30H to 3EH (14 Colors: Black, Gray1, Gray2, Gray3, Gray4, Gray5, Gray6, White, Red, Green, Blue, Cyan, Yellow, Magenta)	
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csC'?'	Color Setup Inquiry	csCP##@L##@ ## = 30H to 3EH (14 Colors: as describe Above)
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@ = '0' : transparency disabled
 = '1' : transparency enabled
P = Programmed Mode Status
L = Live Mode Status

csT@#	See through privacy zone mode (transparency mode) @ = 'P' : Programming Mode 'L' : Live Mode	
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= '0' : disabled
= '1' : enabled

SET SCREEN PRIVACY ZONE COMMANDS

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
csZS@	Privacy Zone Setting Status Request @ = 'A' through 'X' (24 Zones)	csZ@# @ = 'A' to 'X' (24 Zones) # = '0' : Off = '1' : Programmed = '2' : Live
csM@#	Set Privacy Zone mode @ = 'A' to 'X' (24 Zones) # = '0' : Off = '1' : Programmed = '2' : Live	
csH@'###'	Set Privacy Zone Horizontal size. @ = 'A' to 'X' (24 Zones) '###' = '000 to '128'	
csH@'?'	Inquiry Horz Size of a Zone @ = 'A' to 'X' (24 Zones)	csH@'###' '###' = '000 to '128'
csV@'###'	Privacy Zone Vertical size. @ = 'A' to 'X' (24 Zones) '###' = '000 to '128'	
csV@'?'	Inquiry Horz Size of a Zone @ = 'A' to 'X' (24 Zones)	csV@'###' '###' = '000 to '128'
csH@	Goto a privacy programmed zone positions (P/T/Z) @ = 'A' to 'X' (24 Zones)	
csP@	Put Privacy Zone Setup Area to the center of the screen @ = 'A' to 'X' (24 Zones)	

<u>COMMAND</u>	<u>DESCRIPTION</u>
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DSP STATUS REQUEST

cDS	DSP Status Request	See Table 6 for responses format
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TABLE 6. DSP RESPONSE MESSAGE FORMAT

BYTE	DATA	DESCRIPTION
FORMAT DSP STATUS RESPONSE		
0	F8h	Start of message
1	Camera Address	in HEX (01h to DFh)
2	c	DSP status
3	W	White Balance Status
4	30 hex – 31 hex	30 = Auto 31 = Manual
5	S	Shutter Status
6	30 hex – 3F hex	30 = Auto 31 = 1/2 32 = 1/4 33 = 1/8 34 = 1/15 35 = 1/30 36 = 1/60 37 = 1/120 38 = 1/180 39 = 1/250 3A = 1/500 3B = 1/1000 3C = 1/2000 3D = 1/4000 3E = 1/10000 3F = 1/30000
7	Y	Wide Dynamic Range Status
8	30 hex – 31 hex	30 = Off 31 = On
9	M	Day Night Mode
10	30 hex – 32 hex	30 = Day/Night in Auto mode 31 = in Day mode 32 = in Night mode
11	D	Digital Zoom Mode
12	30 hex – 34 hex	30 = Off 31 = 2X 32 = 5X 33 = 10X 34 = 12X
13	‘L’	Latch status
14	30hex – 37hex	LS nibble is four bits of status
Bit Value 0/1		
B0 = Manual Iris/Auto Iris (1/0)		
B1 = Camera Power On/Off (1/0)		
B2 = Lens Speed Fast/Slow (1/0)		
B3 = Not Used		

TABLE 6. DSP RESPONSE MESSAGE FORMAT (Cont.)

BYTE	DATA	DESCRIPTION
FORMAT LATCH STATUS RESPONSE		
15	'A'	Aux status
16	30hex – 37hex	LS nibble is four bits of status Bit Value 0/1 B0 = Auto/Manual Focus (1/0) B1 = Auto Integration/Manual Integration (1/0) B2 = Not used B3 = Not Used
17	'X'	Misc. statuses
18	30hex – 37hex	LS nibble is four bits of status Bit Value 0/1 B0 = Not Used B1 = Low Pressure (1) B2 = Video Loss (1) B3 = Not Used
19	'H'	Home status
20	10 hex – 3E hex 60 hex – 70 hex	Home Position
	'I'	Preset is inactive (camera is not at a preset position)
21	'P'	Camera Communication Protocol
22	30hex – 37hex	30 (Cohu) 31 (American Dynamics) 32 (Pelco D) 33 (Javelin) 34 (Philips) 35 (Vicon)
23	'V'	Video Type
24	30hex – 31hex	30 (NTSC) 31 (PAL)
25	'p'	Line Lock Phase Status
26	30hex – 36hex	'0' (Camera is in Crystal mode) '1' (Line Lock - Phase 0 mode – 0 degree) '2' (Line Lock - Phase 1 mode – 30 degree) '3' (Line Lock - Phase 2 mode – 60 degree) '4' (Line Lock - Phase 3 mode – 90 degree) '5' (Line Lock - Phase 4 mode –120 degree) '6' (Line Lock - Phase 5 mode –150 degree)

TABLE 6. DSP RESPONSE MESSAGE FORMAT (Cont.)

BYTE	DATA	DESCRIPTION
FORMAT LATCH STATUS RESPONSE		
27	'F'	Video Status
28	'o' / 'O'	'o' (Video Live mode) 'O' (Video Freeze mode)
29	'C'	Camera Head Comm. Baud Rate (ER-8682)
30	'0' / '1'	'0' 4800 '1' 9600 '2' 19.2K '3' 38.4K
31	'n'	Poll Camera ON/OFF Status (ER-8682)
32	'0' / '1'	'0' No Poll '1' Poll
33	's'	Progressive Scan
34	'o' / 'O'	'o' Off 'O' On
35	'0' or '1'	'0' Set On Even Field '1' Set On Odd Field
36	CHECKSUM	End of message 80H-8FH Least significant nibble is XOR of all previous bytes (LS NIBBLES only) except F8h

1.5. SECTOR/ZONE/TOURING MESSAGE FORMAT

COMMAND	DESCRIPTION	RESPONSE
SECTOR COMMANDS		
*SC#	Clear Sector Limits # = Sector Number (30H to 40H) If 30H clear all, otherwise clear sector only	
*SX	Set Calibration Position (optional)	
*Sx	Get Calibration Position (optional)	*SXpppp pppp = ASCII 0000 to 3599
*SL#s	Set Sector Limit # = Sector Number (31H to 40H) s = 'L' -Left Limit or 'R' -Right Limit	
*Sl#	Get Sector Limits # = Sector Number (31H to 40H)	*SS#llllrrrr llll and rrrr = ASCII 0000 to 3599

PRIVACY ZONE COMMANDS

*PC#	Clear Privacy Zone Limits # = Zone Number (30H to 38H) If 30H clear all, otherwise clear zone only	
*PL#s	Set Privacy Zone Limit # = Zone Number (31H to 38H) s = 'L' -Left Limit or 'R' -Right Limit	
*Pl#	Get Privacy Zone Limits # = Sector Number (31H to 38H)	*Pp#llllrrrr llll and rrrr = ASCII 0000 to 3599

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
PRIVACY ZONE COMMANDS (cont)		
*PS#s	Set Privacy Zone State # = Zone Number (31H to 38H) s = State ('1'=On; '0'=Off)	
*Ps#	Get Privacy Zone State # = Sector Number (31H to 38H)	*PS#s s = State ('1'=On; '0'=Off)
TOUR COMMANDS		
*TC#	Clear all preset/dwell data for Tour # # = Tour Number (31H to 38H)	
*TP#<data>	Set tour Presets # = Tour Number (31H to 38H) <data> = 32 preset values in the range 10H to 50H (i.e. 0 to 64) Note: 10h indicates No Preset	
*Tp#	Get tour Presets # = Tour Number (31H to 38H)	*TP#<data> <data> = 32 preset values in the range of 10H to 50H (0 to 64)
*TD#<data>	Set tour Dwell times # = Tour Number (31H to 38H) <data> = 32 dwell times in the range 10H to 4DH (0 to 60 sec)	
*Td#	Get tour Dwell times # = Tour Number (31H to 38H)	*TD#<data> <data> = 32 dwell times in the range of 10H to 4DH (0 to 60 sec)
*TS#s	Set Tour State # = Tour Number (31H to 38H) s = State ('0'=Stop; '1'=Start)	
*Ts#	Get Tour State # = Sector Number (31H to 38H)	*TS#s s = State ('0'=Stop; '1'=Start)

POSITION

This section describes how to GET the position/presets data and GOTO a position of the camera.

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
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STANDARD POSITION RESPONSE DATA

P?	Pan/Tilt Position request	Ppppttt ppp = 12 bit data of Pan (000 to FFF) Format: 303030-3F3F3F ttt = 12 bit data of Tilt (000-FFF) Format: 303030-3F3F3F
V?	Zoom/Focus Position request	Pzzzfff zzz = 12 bit data of Zoom (000 to FFF) Format: 303030 to 3F3F3F fff = 12 bit data of Focus (always 000) Format: 303030

STANDARD GOTO A POSITION

paaabbb	Goto a Pan/Tilt Position aaa = 12 bit data of Pan (000 to FFF) Format: 303030-3F3F3F bbb = 12 bit data of Tilt (000-FFF) Format: 303030-3F3F3F
vccdddd	Goto Zoom/Focus Position ccc = 12 bit data of Zoom (000 to FFF) Format: 303030 to 3F3F3F ddd = 12 bit data of Focus (always 000) Format: 303030

COMMAND

DESCRIPTION

RESPONSE

**ACTUAL
POSITION RESPONSE DATA**

cPS	Pan/Tilt Position request	cPpppptttt pppp = Pan data (0000 to 3599 in ASCII) tttt = Tilt data (0000 to 1220 in ASCII)
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**ACTUAL
GOTO A POSITION**

cpaaaabbbb	Goto a Pan/Tilt Position aaaa = Pan data (0000 to 3599 in ASCII) bbbb = Tilt data (0000 to 1220 in ASCII)
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**GET ACTUAL
PRESETS POSITION DATA**

*pp##	Get Preset data stored in camera ## = 10hex to 3Ehex (first 48 positions) = 60hex to 70hex (last 16 positions)	pP##ppppttttzzzzffff pppp = Pan Preset Position data tttt = Tilt Preset Position data zzzz = Zoom Preset Position data ffff = Focus Preset Position data
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1.6 UPLOAD CAMERA CONFIGURATION TO CAMERA

This section describes how to upload camera configuration data to the camera. For example, camera IDs, Presets position, Tour/Sector position, etc.

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
dC#	Upload ID Control Data, i.e Enable, Top, Alarm Blink ... to camera # = Control Byte(xxx11111)	
dL#<DATA>	Upload ID messages # = '1', '2', '3', '4', '5' DATA = 24 ASCII characters	
dP##<DATA>	Upload Preset## ID to camera ## = 10hex to 3Ehex (first 48 positions) = 60hex to 70hex (last 16 positions)	
dST##<DATA>	Upload Sector ## ID to camera ## = 31hex to 40hex (16 sectors)	
dSS##s	Upload Sector ID State to camera ## = Sector Number (31hex to 40hex) s = State ('1'=On; '0'=Off)	
*SS#llllrrrr	Upload Sector Limits to camera # = Sector Number (31H to 40H) llll and rrrr = ASCII 0000 to 3599	
*Pp#llllrrrr	Upload Privacy Zone Limits to camera # = Sector Number (31H to 38H) llll and rrrr = ASCII 0000 to 3599	
*PS#s	Upload Privacy Zone State to camera # = Sector Number (31H to 38H) s = State ('1'=On; '0'=Off)	
*TP#<data>	Upload Tour Presets to camera # = Tour Number (31H to 38H) <data> = 32 preset values in the	

<u>COMMAND</u>	<u>DESCRIPTION</u>	<u>RESPONSE</u>
*TD#<data>	Upload Tour Dwell times to camera # = Tour Number (31H to 38H) <data> = 32 dwell times in the range of 10H to 4DH (0 to 60 sec)	
*TS#s	Upload Tour State to camera # = Sector Number (31H to 38H) s = State ('0'=Stop; '1'=Start)	
*pP##pppptttzzzzfff	Upload Presets data to camera ## = 10hex to 3Ehex (first 48 positions) = 60hex to 70hex (last 16 positions) pppp = Pan Preset Position data tttt = Tilt Preset Position data zzzz = Zoom Preset Position data ffff = Focus Preset Position data	