COHU 3830 CAMERA
COMMUNICATION INTERFACE PROTOCOL
Rev 2.5
June 20, 2000

1.1 GENERAL

This documents defines the Asynchronous communication protocol between the MPC Master Control Panel/Host Computer and a 3830 Camera. Figure 1. illustrates the handshake protocol. The communication is a full duplex. Typical or default communication parameters will be 9600 baud, 8 data bits, 1 stop bit and no parity.

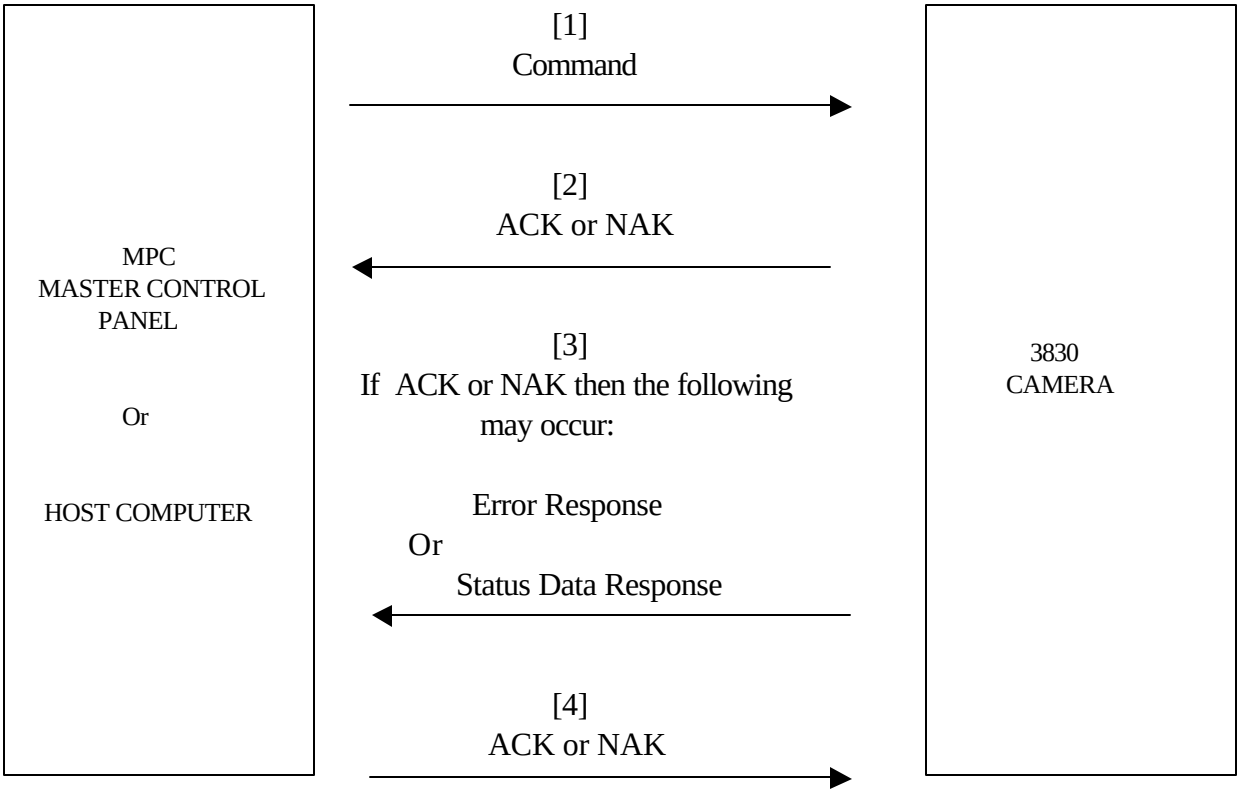

FIGURE 1. TYPICAL COMMUNICATION HANDSHAKE PROTOCOL

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. The response message from the camera is shown in Table 3.

If the command message contains only a momentary function, no further response beyond the ACK OR NAK will occur .

-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

All transmissions will be in formats:-

F8/ID/'c'/DATA BYTES/CHECKSUM

Note: 'Wa' means ASCII characters for W and a

TABLE 1. 3830 COMMAND MESSAGE FORMAT

BYTE	DATA	DESCRIPTION
0	F8h	Start of message
1	Camera Address	in HEX (01h to DFh) Note: FFh address is used to read camera address or to assign camera address
2	'c'	Message type (camera)
3 to n+3	Command Data	See Table 2
n+4	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. 3830 COMMAND/RESPONSE DATA

COMMAND	DESCRIPTION	RESPONSE	DESCRIPTION
CAMERA COMMANDS			
'AS'	Read Camera Address 'A###'		Return the current CamAddr in ASCII ### = '001' – '255'
'As###'	Assign Camera Address ### = '001' – '255'		
NOTE: The above command is also valid if Camera Address FFh is used.			
'B1'	Back Light ON		
'B0'	Back Light OFF # = '1' (ON) = '0' (OFF)		
'BS'	Request for current Status of Back Light	'B#'	Return the current Status of Back Light # = '1' (ON) = '0' (OFF)
'D#'	Digital Zoom Range # = '0' (OFF) = '1' (2X) = '2' (4X) = '3' (8X)		

TABLE 2. 3830 COMMAND/RESPONSE DATA (Cont.)

COMMAND	DESCRIPTION	RESPONSE	DESCRIPTION
CAMERA COMMANDS			
'DS'	Request for current Status of Digital Zoom Range	'Z#'	Return the current Status of Digital Zoom Mode # = '0' (OFF) = '1' (2X) = '2' (4X) = '3' (8X)
'S#'	Shutter # = 30h (1/4) = 31h (1/8) = 32h (1/15) = 33h (1/30) = 34h (Auto) = 35h (1/60) = 36h (1/100) = 37h (1/250) = 38h (1/500) = 39h (1/1000) = 3Ah (1/2000) = 3Bh (1/4000) = 3Ch (1/10000)		
'SS'	Request for current Status of Shutter	'S#'	Return the current Status of Shutter # = 30h (1/4) = 31h (1/8) = 32h (1/15) = 33h (1/30) = 34h (Auto) = 35h (1/60) = 36h (1/100) = 37h (1/250) = 38h (1/500) = 39h (1/1000) = 3Ah (1/2000) = 3Bh (1/4000) = 3Ch (1/10000)

TABLE 2. 3830 COMMAND/RESPONSE DATA (Cont.)

COMMAND	DESCRIPTION	RESPONSE	DESCRIPTION
CAMERA COMMANDS			
'IA'	Iris Auto		
'IM'	Iris Manual		
'IS'	Request for current Status of Iris Mode	'I#' # = '0' (Auto) = '1' (Manual)	Return the current Status of Iris Mode
'IO'	Iirs Open		
'IC'	Iris Close		
'Is'	Iris Stop		
'W#'	White Balance # = '0' (Auto) = '1' (Set) = '2' (Lock) = '3' (Indoor) = '4' (Outdoor) = '5' (Flourescent)		
'WS'	Request for current Status of White Balance	'W#' # = '0' (Auto) = '1' (Set) = '2' (Lock) = '3' (Indoor) = '4' (Outdoor) = '5' (Florescent)	Return the current Status of White Balance
'z#'	Zoom Wide # = '0' (Low Speed) = '1' (Medium Speed) = '2' (Fast Speed)		

TABLE 2. 3830 COMMAND/RESPONSE DATA (Cont.)

COMMAND	DESCRIPTION	RESPONSE	DESCRIPTION
CAMERA COMMANDS			
'Z#'	Zoom Tele # = '0' (Low Speed) = '1' (Medium Speed) = '2' (Fast Speed)		
'Zs'	Zoom Stop		
'FA'	Focus Auto		
'FM'	Focus Manual		
'FS'	Request for current Status of Focus Mode	'F#'	Return the current Status of Focus Mode # = '0' (Auto) = '1' (Manual)
'F#'	Focus Far # = '0' (Low Speed) = '1' (Medium Speed) = '2' (Fast Speed)		
'N#'	Focus Near # = '0' (Low Speed) = '1' (Medium Speed) = '2' (Fast Speed)		
'Fs'	Focus Stop		
'P' ##	Program Preset Position ## = 40h to 7Fh (total of 64 positions)		
'H' ##	Goto a Preset Position ## = 40h to 7Fh (total of 64 positions)		

TABLE 2. 3830 COMMAND/RESPONSE DATA (Cont.)

COMMAND	DESCRIPTION	RESPONSE	DESCRIPTION
CAMERA COMMANDS			
'RS'	Firmware Revision Query		Return Firware Revision (Maximum 24 Characters) 'Model# Firmware Ver. 1.0' For example: '3830 Firmware Ver. 2.2.'
ID COMMANDS			
'dIE'	Enable ID display		
'dID'	Disable ID display		
'dIT'	Display ID on top of screen		
'dIB'	Display ID on bottom of screen		
'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		

TABLE 2. 3830 COMMAND/RESPONSE DATA (Cont.)

COMMAND	DESCRIPTION	RESPONSE	DESCRIPTION
ID COMMANDS			
'dAE'	Enable Alarm display		
'dAD'	Disable Alarm # display		
'dAB'	Enable Alarm Blinking		
'dAb'	Disable Alarm Blinking		

TABLE 3. 3830 RESPONSE MESSAGE FORMAT

BYTE	DATA	DESCRIPTION
0	F8h	Start of message
1	Camera Address	in HEX (01h to DFh) Note: FFh address is used to read camera address or to assign camera address
2	'c'	Message type (camera)
3 to n+3	Response Data	Refer to Response Data of those commands above
n+4	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