

CL510 command set

Revisions

No	Issue Date	Version	Description	Apply Firmware
1	2012/03/20	1.0	First version.	TBD

***Notice:**

1. The RS-232 command list is for CL510
2. The Yellow highlight  means the latest update
3. The Blue highlight  means the deleted item.

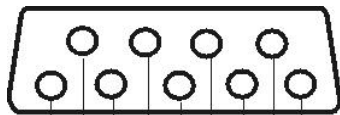
1. Communication Protocol

Transmit Method: Asynchronous Interface Half Duplex Serial Communication.

- Transmit Speed: 9600bps
- Start bit: 1Bit
- Parity Check: NA
- Data Bit: 8Bit
- Stop Bit: 1Bit

2. The wire diagram

The RS232 wire diagram between presenter and remote controller as below



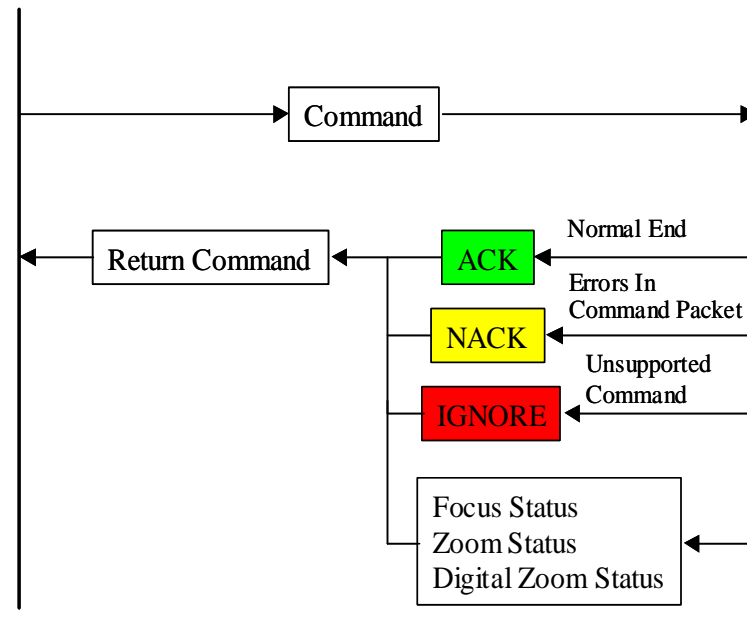
Female

CONNECTIONS		
DB 9F	COLOUR	DB 9F
2	-	3
3	-	2
5	-	5
SHELL	DRAIN	SHELL

3. Communication Program

Host Controller

Camera Module



4. Command Format

4.1 Command Packet Format

1Byte	STX	Start Of Command	: A0h
2Byte	Command	Command	: 00~FFh
3Byte	Parameter1	Data	: 00~FFh
4Byte	Parameter2	Data	: 00~FFh
5Byte	Parameter3	Data	: 00~FFh
6Byte	ETX	End Of Command	: AFh

4.2 Return Packet Format

1Byte	STX	Start Of Command	: A0h	
2Byte	Command	Command	: 00~ FFh	
3Byte	Parameter1	Data	: 00~FFh	
4Byte	Parameter2	Data	: 00~FFh	
5Byte	Status	<Bit>	<Contents>	
		7	(0)	
		6	Iris Moving Status (1)/(0)Stop Status	
		5	Zoom Moving Status (1)/(0)Stop Status	
		4	Focus Moving Status (1)/(0)Stop Status	
		3	(0)	
		2	(0)	
		1	Communication Response 0=ACK/1=NAK/2=IGNORE/3=Not Used	
0	Communication Response			
6Byte	ETX	End Of Command	: AFh	
Communication Response		Bit1	Bit0	Status

ACK	0	0	Capable Of Normal End Or Normal Operation
NAK	0	1	Detecting Errors In Command Packet(STX, ETX Byte)
			Parity Error ,Framing Error, Overrun Error
			Data in out of specified range
IGNORE	1	0	Cannot execute the transmitted command for other operations
			Unsupported command
Not Used	1	1	

5. Command Packet

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
1	Preset/Factory Reset	A0h	03h	P1	P2	00h	AFh	P1=0, P2=00/01:Preset Load/Save P1=1:Factory Reset
2	Slide show On/Off	A0h	04h	P1	00h	00h	AFh	P1=00/01:Off/On
3	Slide show Effect	A0h	06h	P1	00h	00h	AFh	P1=0~5:0.5/sec/1sec/3sec/5sec/10sec/Manual
4	Slide show Delay	A0h	07h	P1	00h	00h	AFh	P1=00/01/02:High/Medium/Low
5	Image/Record Quality	A0h	08h	00h	00h	00h	AFh	
6	Copy To SD Card	A0h	10h	00h	00h	00h	AFh	
7	Zoom Stop	A0h	11h	P1	P2	00h	AFh	P1=00/01:Tele/Wide, P2=00~06:Speed
8	Zoom Start (No AF)	A0h	13h	P1	00h	P3	AFh	P1=0~53(Dec):Zoom Position, P3=00~06:Speed
9	Zoom Direct (Straight, No AF)	A0h	14h	P1	00h	00h	AFh	P1=00/01:Auto Erase off/on
10	Digital Zoom Direct	A0h	15h	P1	00h	00h	AFh	P1=0x01~0x0A:1x~10x
11	Focus Stop	A0h	18h	P1	00h	00h	AFh	P1=0~60
12	Focus Start	A0h	19h	00h	00h	00h	AFh	
13	Focus Direct	A0h	1Ah	P1	P2	00h	AFh	P1=00/01:Near/Far, P2=00~06:Speed
14	Zoom Start (with AF)	A0h	1Bh	P1	P2	P3	AFh	P1(LowByte)P2(HighByte)=0~570(Dec), P3=00~06:Speed
15	Zoom Direct (Straight) (with AF)	A0h	1Dh	P1	00h	00h	AFh	P1=00/01:Tele/Wide
16	White Balance (AWB, Auto Tune)	A0h	1Fh	P1	00h	P3	AFh	P1=0~53(Dec):Zoom Position, P3=00~06:Speed
17	Pan PBP	A0h	22h	P1	00h	00h	AFh	P1=00/01:Auto Tune/AWB
18	Set Pan Mode	A0h	26h	P1	00h	00h	AFh	P1= 00 off 、 P1 = 01 on
19	Freeze	A0h	27h	P1	00h	00h	AFh	p1=0:Disable 1:Mask 2:Hightlight

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
20	Iris	A0h	2Ch	P1	00h	00h	AFh	P1=00/01:Off/On
21	Switch USB Transfer	A0h	30h	P1	P2	00h	AFh	P1=01:Manual (Normal 60Hz)P2=0~100(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness (Normal 50Hz)P2=0~100(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness
22	Negative (film)	A0h	36h	P1	00h	00h	AFh	P1=00/01:Off/On
23	Color (gray)	A0h	37h	P1	00h	00h	AFh	P1=00/01:Photo/Gray
24	Language Select	A0h	38h	P1	00h	00h	AFh	P1=0~12(Dec): English/ Traditional Chinese/ German/ French/ Spanish/ Russian/ Dutch/ Finnish / Polish/ Italian/ Portuguese/ Swedish/ Czech
25	Brightness Control	A0h	39h	P1	00h	00h	AFh	P1=00/01:-1/+1
26	Source live/PC	A0h	40h	P1	00h	00h	AFh	P1=00/01:Disable/Enable
27	Disable Digital Zoom After Optical Zoom	A0h	45h	00h	00h	00h	AFh	DHMxxx = DHM P1 P2 P3(ASCII)
28	Call Master Version	A0h	46h	00h	00h	00h	AFh	P1=00/01:Off/On
29	Call AE Status	A0h	47h	P1	00h	00h	AFh	p1=00/01:power on setting /power off setting P2=00/01:Default logo/Customer logo
30	LOGO Select	A0h	4Ah	P1	00h	00h	AFh	P1=00/01:Page Up/Page Down
31	Playback Image Index Change Page	A0h	4Bh	P1	00h	00h	AFh	P1=00/01:Off/On
32	All OSD On/Off	A0h	4Dh	00h	00h	00h	AFh	DHOxxx = DHO P1 P2 P3(ASCII)
33	Call Slave Version	A0h	50h	00h	00h	00h	AFh	P1=00/01:Off/On
34	Frame Average	A0h	51h	00h	00h	00h	AFh	P1=00/01/02:Photo/Text/Gray

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
34	Call lamp Status	A0h	52h	P1	P2	00h	AFh	P1=00/01:Read/Write P2=0x00~0xff
36	Call Text/Photo Status	A0h	53h	P1	P2	00h	AFh	
37	reg1	A0h	54h	P1	P2	00h	AFh	Call AC 50/60 Hz power State. P1=0~53(Dec):Zoom Position
38	reg2	A0h	58h	00h	00h	00h	AFh	
39	reg3	A0h	60h	00h	00h	00h	AFh	
40	Call AC 50/60 Hzpower state	A0h	62h	00h	00h	00h	AFh	P1=:0~60(Dec):Digital Zoom Position
41	Call Zoom Position	A0h	64h	00h	00h	00h	AFh	P1(LowByte)P2(HighByte)=0~570(Dec),P3=00~05:Speed
42	Call Digital Zoom Position	A0h	78h	00h	00h	00h	AFh	P1=00/01:Off/On
43	Call Focus Position	A0h	7Ah	00h	00h	00h	AFh	P1=00/01/02:Auto/Manual · Stop (Normal 60Hz)P2=0~100(Dec) (Microscope 60Hz)P2=00~134(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness (Normal 50Hz)P2=0~100(Dec) (Microscope 50Hz)P2=00~128(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness
44	Call Freeze Status	A0h	87h	00h	00h	00h	AFh	P1=00/01:Off/On
45	Call Iris Status	A0h	88h	00h	00h	00h	AFh	P1=00/01:Photo/Gray
46	Call Negative	A0h	89h	00h	00h	00h	AFh	(Normal 60Hz)P2=0~100(Dec) (Microscope 60Hz)P2=00~134(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness (Normal 50Hz)P2=0~100(Dec) (Microscope 50Hz)P2=00~128(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness
47	Call Color	A0h	8Ah	00h	00h	00h	AFh	P1(LowByte)P2(HighByte)=0~675(Dec):Mix Zoom

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
								Position
48	Call Brightness Position	A0h	8Bh	00h	00h	00h	AFh	P1=00/01:Off/On
49	Call Mix Zoom Position	A0h	96h	P1	00h	00h	AFh	P1=00/01/02:Single/Continuous/Disable
50	Call Menu Status	A0h	97h	P1	00h	00h	AFh	P1=00/01/02/03/04/05/06:1hr/ 2hr/ 4hr/ 8hr/ 24hr/48hr/72hr
51	Capture type	A0h	98h	P1	00h	00h	AFh	P1=00/01/02/03/04/05:5sec /10sec /30sec /1min/ 2min /5min
52	Capture time	A0h	A0h	P1	00h	00h	AFh	P1=01/02/03/04/05/06=Enter/Up/Down/Left/Right/Men u
53	Capture interval	A0h	A3h	01h	00h	00h	AFh	
54	Key Function	A0h	A7h	P1	00h	00h	AFh	P1=00/01/02:Photo/Text/Gray
55	AF One Push Trigger	A0h	A9h	P1	00h	00h	AFh	P1=00/01/02/:Normal/Slide/Film
56	Set Sharpness (Gamma)	A0h	ABh	P1	00h	00h	AFh	P1=00/01:Off/On
57	Set Image Mode	A0h	B0h	P1	00h	00h	AFh	P1=00/01:Off/On
58	Night Vision	A0h	B1h	P1	00h	00h	AFh	P1=00/01:Off/On
59	System ON/OFF	A0h	B2h	P1	00h	00h	AFh	P1=00/01:Capture/Record
60	Power	A0h	B3h	P1	00h	00h	AFh	P1=00/01:Thumbnail/PBP Thumbnail
61	Capture	A0h	B4h	P1	00h	00h	AFh	P1=00/01/02/03:Rotate 0/90/180/270
62	Playback thumbnail	A0h	B6h	P1	00h	00h	AFh	P1=00/01/02: Delete one/Delete all/Format
63	Preview rotation	A0h	B7h	00h	00h	00h	AFh	P1(system status)=00/01: not ready/ Read to receive the command P2(Power Status)=00/01:Off/On

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
64	Delete	A0h	C1h	P1	00h	00h	AFh	P1=00/01:Off/On

6. Return Packet

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
1	Preset/Factory Reset	A0h	03h	P1	P2	St.	AFh	P1=0, P2=00/01:Preset Load/Save P1=1:Factory Reset
2	Slide show On/Off	A0h	04h	P1	00h	St.	AFh	P1=00/01:Off/On
3	Slide show Effect	A0h	06h	P1	00h	St.	AFh	P1=0~5:0.5/sec/1sec/3sec/5sec/10sec/Manual
4	Slide show Delay	A0h	07h	P1	00h	St.	AFh	P1=00/01/02:High/Medium/Low
5	Image/Record Quality	A0h	08h	00h	00h	St.	AFh	
6	Copy To SD Card	A0h	10h	00h	00h	St.	AFh	
7	Zoom Stop	A0h	11h	P1	P2	St.	AFh	P1=00/01:Tele/Wide, P2=00~06:Speed
8	Zoom Start (No AF)	A0h	13h	P1	00h	St.	AFh	P1=0~53(Dec):Zoom Position, P3=00~06:Speed
9	Zoom Direct (Straight, No AF)	A0h	13h	P1	00h	St.	AFh	P1=00/01:Auto Erase off/on
10	Digital Zoom Direct	A0h	15h	P1	00h	St.	AFh	P1=0x01~0x0A:1x~10x
11	Focus Stop	A0h	18h	P1	00h	St.	AFh	P1=0~60
12	Focus Start	A0h	19h	00h	00h	St.	AFh	
13	Focus Direct	A0h	1Ah	P1	P2	St.	AFh	P1=00/01:Near/Far, P2=00~06:Speed
14	Zoom Start (with AF)	A0h	1Bh	P1	P2	St.	AFh	P1(LowByte)P2(HighByte)=0~570(Dec), P3=00~06:Speed
15	Zoom Direct (Straight) (with AF)	A0h	1Dh	P1	00h	St.	AFh	P1=00/01:Tele/Wide
16	White Balance (AWB, Auto Tune)	A0h	1Fh	P1	00h	St.	AFh	P1=0~53(Dec):Zoom Position, P3=00~06:Speed
17	Pan PBP	A0h	22h	P1	00h	St.	AFh	P1=00/01:Auto Tune/AWB
18	Set Pan Mode	A0h	26h	P1	00h	St.	AFh	P1= 00 off 、 P1 = 01 on
19	Freeze	A0h	27h	P1	00h	St.	AFh	p1=0:Disable 1:Mask 2:Hightlight

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
20	Iris	A0h	2Ch	P1	00h	St.	AFh	P1=00/01:Off/On
21	Switch USB Transfer	A0h	30h	P1	P2	St.	AFh	P1=01:Manual (Normal 60Hz)P2=0~100(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness (Normal 50Hz)P2=0~100(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness
22	Negative (film)	A0h	36h	P1	00h	St.	AFh	P1=00/01:Off/On
23	Color (gray)	A0h	37h	P1	00h	St.	AFh	P1=00/01:Photo/Gray
24	Language Select	A0h	38h	P1	00h	St.	AFh	P1=0~12(Dec): English/ Traditional Chinese/ German/ French/ Spanish/ Russian/ Dutch/ Finnish / Polish/ Italian/ Portuguese/ Swedish/ Czech
25	Brightness Control	A0h	39h	P1	00h	St.	AFh	P1=00/01:-1/+1
26	Source live/PC	A0h	40h	P1	00h	St.	AFh	P1=00/01:Disable/Enable
27	Disable Digital Zoom After Optical Zoom	A0h	45h	P1	P2	P3	AFh	DHMxxx = DHM P1 P2 P3(ASCII)
28	Call Master Version	A0h	46h	P1	00h	St.	AFh	P1=00/01:Off/On
29	Call AE Status	A0h	47h	P1	00h	St.	AFh	p1=00/01:power on setting /power off setting P2=00/01:Default logo/Customer logo
30	LOGO Select	A0h	4Ah	P1	00h	St.	AFh	P1=00/01:Page Up/Page Down
31	Playback Image Index Change Page	A0h	4Bh	P1	00h	St.	AFh	P1=00/01:Off/On
32	All OSD On/Off	A0h	4Dh	P1	P2	P3	AFh	DHOxxx = DHO P1 P2 P3(ASCII)
33	Call Slave Version	A0h	50h	P1	00h	St.	AFh	P1=00/01:Off/On
34	Frame Average	A0h	51h	P1	00h	St.	AFh	P1=00/01/02:Photo/Text/Gray

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
34	Call lamp Status	A0h	52h	P1	P2	St.	AFh	P1=00/01:Read/Write P2=0x00~0xff
36	Call Text/Photo Status	A0h	53h	P1	P2	St.	AFh	
37	reg1	A0h	54h	P1	P2	St.	AFh	Call AC 50/60 Hz power State. P1=0~53(Dec):Zoom Position
38	reg2	A0h	58h	00h	00h	St.	AFh	
39	reg3	A0h	60h	P1	P2	St.	AFh	
40	Call AC 50/60 Hzpower state	A0h	62h	P1	00h	St.	AFh	P1=:0~60(Dec):Digital Zoom Position
41	Call Zoom Position	A0h	64h	P1	P2	St.	AFh	P1(LowByte)P2(HighByte)=0~570(Dec),P3=00~05:Speed
42	Call Digital Zoom Position	A0h	78h	P1	00h	St.	AFh	P1=00/01:Off/On
43	Call Focus Position	A0h	7Ah	P1	P2	St.	AFh	P1=00/01/02:Auto/Manual · Stop (Normal 60Hz)P2=0~100(Dec) (Microscope 60Hz)P2=00~134(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness (Normal 50Hz)P2=0~100(Dec) (Microscope 50Hz)P2=00~128(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness
44	Call Freeze Status	A0h	87h	P1	00h	St.	AFh	P1=00/01:Off/On
45	Call Iris Status	A0h	88h	P1	00h	St.	AFh	P1=00/01:Photo/Gray
46	Call Negative	A0h	89h	P1	00h	St.	AFh	(Normal 60Hz)P2=0~100(Dec) (Microscope 60Hz)P2=00~134(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness (Normal 50Hz)P2=0~100(Dec) (Microscope 50Hz)P2=00~128(Dec)(NightVision 60Hz)P2=0~80(Dec):Brightness
47	Call Color	A0h	8Ah	P1	P2	St.	AFh	P1(LowByte)P2(HighByte)=0~675(Dec):Mix Zoom

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
								Position
48	Call Brightness Position	A0h	8Bh	P1	00h	St.	AFh	P1=00/01:Off/On
49	Call Mix Zoom Position	A0h	96h	P1	00h	St.	AFh	P1=00/01/02:Single/Continuous/Disable
50	Call Menu Status	A0h	97h	P1	00h	St.	AFh	P1=00/01/02/03/04/05/06:1hr/ 2hr/ 4hr/ 8hr/ 24hr/48hr/72hr
51	Capture type	A0h	98h	P1	00h	St.	AFh	P1=00/01/02/03/04/05:5sec /10sec /30sec /1min/ 2min /5min
52	Capture time	A0h	A0h	P1	00h	St.	AFh	P1=01/02/03/04/05/06=Enter/Up/Down/Left/Right/Men u
53	Capture interval	A0h	A3h	01h	00h	St.	AFh	
54	Key Function	A0h	A7h	P1	00h	St.	AFh	P1=00/01/02:Photo/Text/Gray
55	AF One Push Trigger	A0h	A9h	P1	00h	St.	AFh	P1=00/01/02/:Normal/Slide/Film
56	Set Sharpness (Gamma)	A0h	ABh	P1	00h	St.	AFh	P1=00/01:Off/On
57	Set Image Mode	A0h	B0h	P1	00h	St.	AFh	P1=00/01:Off/On
58	Night Vision	A0h	B1h	P1	00h	St.	AFh	P1=00/01:Off/On
59	System ON/OFF	A0h	B2h	P1	00h	St.	AFh	P1=00/01:Capture/Record
60	Power	A0h	B3h	P1	00h	St.	AFh	P1=00/01:Thumbnail/PBP Thumbnail
61	Capture	A0h	B4h	P1	00h	St.	AFh	P1=00/01/02/03:Rotate 0/90/180/270
62	Playback thumbnail	A0h	B6h	P1	00h	St.	AFh	P1=00/01/02: Delete one/Delete all/Format
63	Preview rotation	A0h	B7h	P1	P2	St.	AFh	P1(system status)=00/01: not ready/ Read to receive the command P2(Power Status)=00/01:Off/On

Item	Function	PC AP to CL510 Master command format						Comment
		1B	2B	3B	4B	5B	6B	
64	Delete	A0h	C1h	P1	00h	St.	AFh	P1=00/01:Off/On

** St : 0 =Action Succeed, 1= NAK (No Action), 2 = Ignore (Command is not in the command list.)



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