

DC166 Protocol

History

No	Issue Date	Version	Description	Apply Firmware
1	2009/05/15	1.0	First version	DHE101

***Notice: First Version**
***Notice: Only for DC166 use**

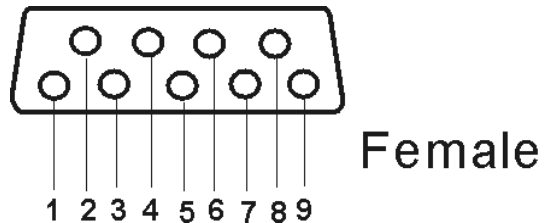
1. Communication Protocol

Transmit Method : Asynchronous Interface Half Duplex Serial Communication.

- Transmit Speed: 9600bps
- Flow control: NA
- Data Bit: 8Bit
- Parity Bit: NA
- Stop Bit: 1Bit

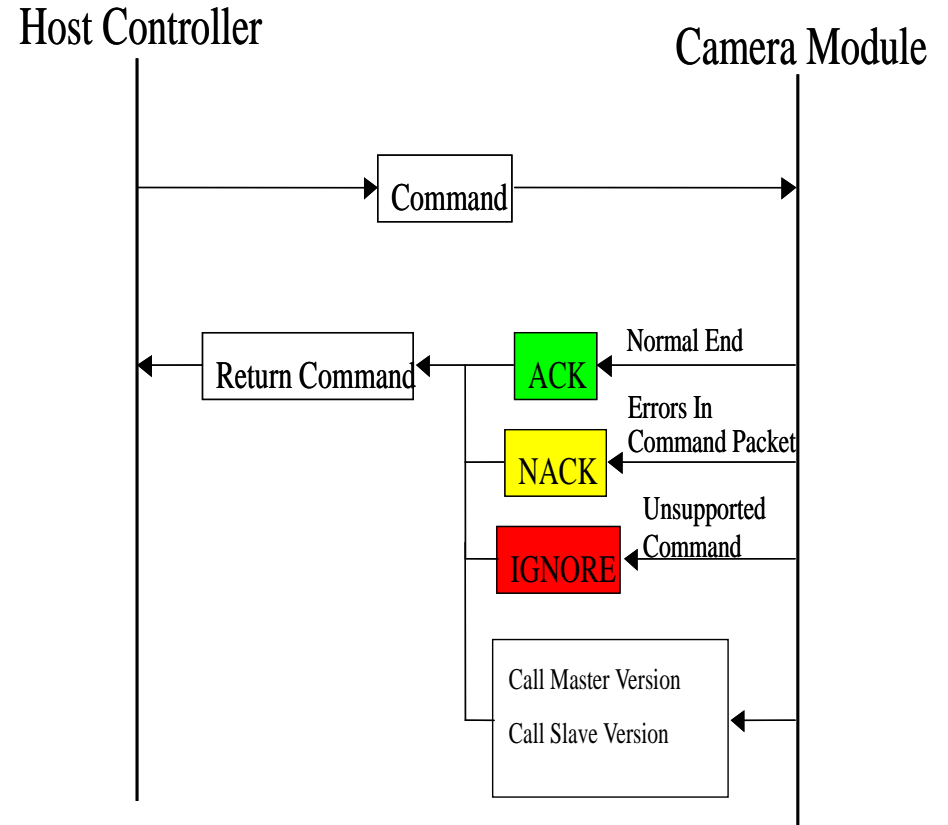
2. The wire diagram

The RS232 wire diagram between presenter and remote controller as below



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

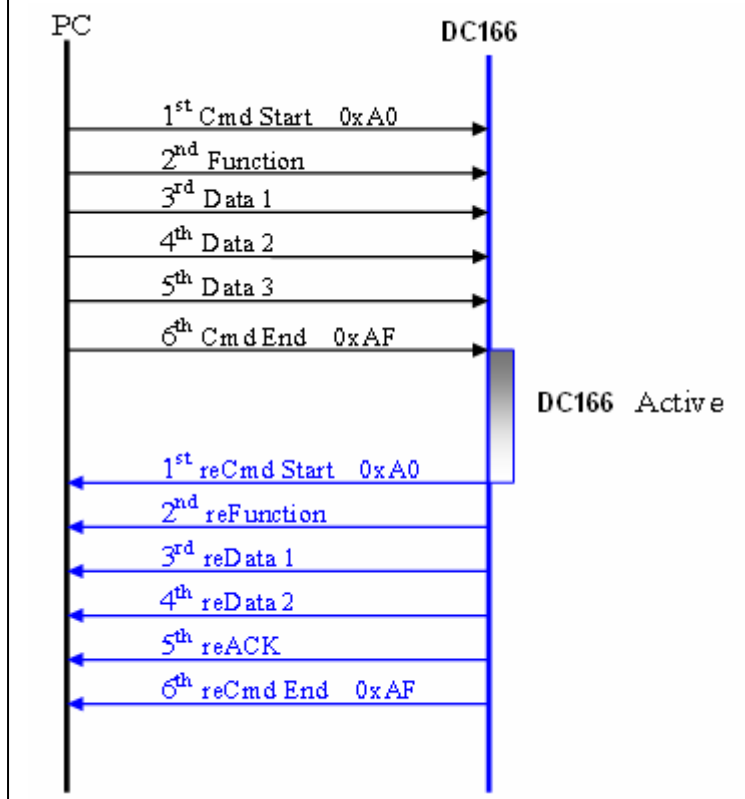
3. Command Process



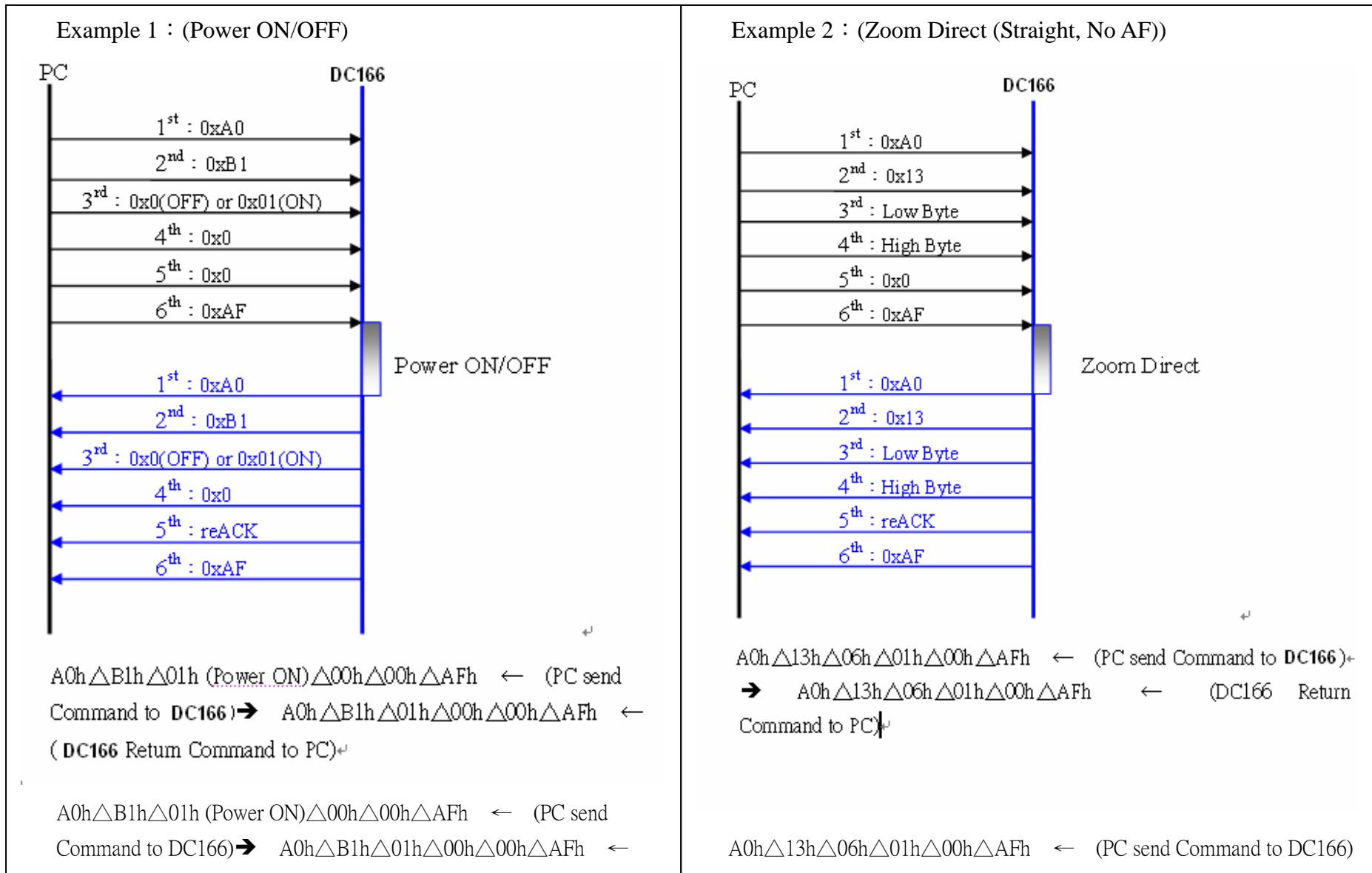
4. The Command Transfer

Control method

Control scheme as below



5. Example



6. Packet Format

<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

<Return Packet Format>

1Byte	STX	Start Of Command	:A0h
2Byte	Command	Command	:00~ FFh
3Byte	Parameter1	Data	:00~FFh
4Byte	Parameter2	Data	:00~FFh

Communication Response	5 th Byte	Status
ACK	0x00	Capable Of Normal End Or Normal Operation
		Detecting Errors In Command Packet(STX, ETX Byte) Parity Error ,Framing Error, Overrun Error
NAK	0x01	Data in out of specified range
		Cannot execute the transmitted command for other operations
IGNORE	0x10	Unsupported command

7. Control Command

Item	Function	PC AP to DC166 Master command format						Comment
		1st	2nd	3rd	4th	5th	6th	
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	05h	P1	00h	00h	AFh	P1=0~5:Off/Shutter/Right/Down/Side/Open
4	Slide show Delay	A0h	06h	P1	00h	00h	AFh	P1=0~4:1sec/3sec/5sec/10sec/Manual
5	Copy To SD Card	A0h	08h	00h	00h	00h	AFh	
6	Zoom Stop	A0h	10h	00h	00h	00h	AFh	
7	Zoom Start (No AF)	A0h	11h	P1	00h	00h	AFh	P1=00/01:Tele/Wide
8	Zoom Direct (Straight, No AF)	A0h	13h	P1	P2	00h	AFh	P1(LowByte)P2(HighByte)=0~615(Dec):Zoom Position
9	Auto Erase	A0h	14h	P1	00h	00h	AFh	P1=00/01:Auto Erase off/on
10	Digital Zoom Direct	A0h	18h	P1	00h	00h	AFh	P1= SXGA、720P、XGA : 0~46(Dec) :Digital Zoom Position
11	Focus Stop	A0h	19h	00h	00h	00h	AFh	
12	Focus Start	A0h	1Ah	P1	P2	00h	AFh	P1=00/01:Near/Far P2=01~05:Speed
13	Focus Direct (No Limit)	A0h	1Bh	P1	P2	P3	AFh	P1(LowByte)P2(HighByte)=0~324(Dec):Focus Position P3=01~05:Speed
14	Zoom Start (with AF)	A0h	1Dh	P1	00h	00h	AFh	P1=00/01:Tele/Wide
15	Zoom Direct (Straight) (with AF)	A0h	1Fh	P1	P2	P3	AFh	P1(LowByte)P2(HighByte)=0~615(Dec):Zoom Position
16	White Balance (AWB, Auto Tune)	A0h	22h	P1	00h	00h	AFh	P1=00/01:Auto Tune/AWB
17	White Balance Manual	A0h	23h	P1	P2	00h	AFh	P1=01/02 : +1/-1(Red Gain) P2=01/02 : +1/-1(Blue Gain)

18	Pan PBP	A0h	25h	P1	00h	00h	AFh	P1=0~20(Dec):Step
19	Set Pan Mode	A0h	26h	P1	00h	00h	AFh	P1=00/01/:Normal/Pan mode
20	Set Pan Move	A0h	27h	P1	00h	00h	AFh	P1=01/02/03/04:Up/Down/Left/Right
21	Call DIP Switch Value	A0h	29h	00h	00h	00h	AFh	P1:DIP Switch Value
22	Freeze	A0h	2Ch	P1	00h	00h	AFh	P1=00/01:Off/On
23	Iris	A0h	30h	P1	P2	00h	AFh	P1=00/01/02:Auto/Manual/Stop (AC 50Hz)P2=00~170(Dec):Brightness (AC 60Hz)P2=00~190(Dec):Brightness
24	Switch USB Transfer	A0h	32h	P1	00h	00h	AFh	P1=00/01:Mass Storage/USB Camera
25	Negative (film)	A0h	36h	P1	00h	00h	AFh	P1=00/01:Off/On
26	Color (gray)	A0h	37h	P1	00h	00h	AFh	P1=00/01:Photo/Gray
27	Language Select	A0h	38h	P1	00h	00h	AFh	P1=0~8: English/Traditional Chinese/German/French/Spanish/Russian/Dutch/Finnish/Polish
28	Brightness Control	A0h	39h	P1	00h	00h	AFh	P1=00/01:-1/+1
29	Source live/PC	A0h	3Ah	P1	00h	00h	AFh	P1=00/01:PC/Live Image
30	Disable Digital Zoom After Optical Zoom	A0h	40h	P1	00h	00h	AFh	P1=00/01:Disable/Enable
31	Call Master Version	A0h	45h	00h	00h	00h	AFh	DHAxxx = DHA P1 P2 P3(ASCII)
32	Call AE Status	A0h	46h	00h	00h	00h	AFh	P1=00/01:Off/On
33	Enable/Disable LOGO Image	A0h	47h	P1	00h	00h	AFh	P1=00/01:Off/On
34	Playback Image Index Change Page	A0h	4Ah	P1	00h	00h	AFh	P1=00/01:Page Up/Page Down
35	Call Slave Version	A0h	4Dh	00h	00h	00h	AFh	DHBxxx = DHB P1 P2 P3(ASCII)
36	Call lamp Status	A0h	50h	00h	00h	00h	AFh	P1=00/01:Off/On
37	Call Text/Photo Status	A0h	51h	00h	00h	00h	AFh	P1=00/01/02:Photo/Text/Gray

38	reg1	A0h	52h	P1	P2	00h	AFh	P1=00/01:Read/Write P2=0x00~0xff
39	reg2	A0h	53h	P1	P2	00h	AFh	
40	reg3	A0h	54h	P1	P2	00h	AFh	
41	Bad pixel fix	A0h	57h	P1	P2	P3	AFh	p1:00/01/02:bad pixel fix/bad pixel numbers/badpixel correction
42	Call Zoom Position	A0h	60h	00h	00h	00h	AFh	number
43	Call Digital Zoom Position	A0h	62h	00h	00h	00h	AFh	p1=2,p2=00/01:Read/Set bad pixel correction number.p3:Set number.p2:Read number. P1(LowByte)P2(HighByte)=0~615(Dec):Zoom Position P1= SXGA · 720P · XGA : 0~46(Dec) :Digital Zoom Position
44	Call Focus Position	A0h	64h	00h	00h	00h	AFh	P1(LowByte)P2(HighByte)=0~324(Dec):Focus Position
45	Call Freeze Status	A0h	78h	00h	00h	00h	AFh	P1=00/01:Off/On
46	Call Iris Status	A0h	7Ah	00h	00h	00h	AFh	P1=00/01:Auto/Manual · Stop (AC 50Hz)P2=00~170(Dec):Brightness (AC 60Hz)P2=00~190(Dec):Brightness
47	Call Negative	A0h	87h	00h	00h	00h	AFh	P1=00/01:Off/On
48	Call Color	A0h	88h	00h	00h	00h	AFh	P1=00/01:Photo/Gray
49	Call Brightness Position	A0h	89h	00h	00h	00h	AFh	(AC 50Hz)P1=00~170(Dec):Brightness (AC 60Hz)P1=00~190(Dec):Brightness
50	Call Mix Zoom Position	A0h	8Ah	00h	00h	00h	AFh	P1(LowByte)P2(HighByte)=0~661(Dec):Mix Zoom Position
51	Call Menu Status	A0h	8Bh	00h	00h	00h	AFh	P1=00/01:Off/On
52	Capture type	A0h	96h	P1	00h	00h	AFh	P1=00/01/02:Single/Continuous/Disable
53	Capture time	A0h	97h	P1	00h	00h	AFh	P1=00/01/02/03/04:1hr/ 2hr/ 4hr/ 8hr/ 24hr
54	Capture interval	A0h	98h	P1	00h	00h	AFh	P1=00/01/02/03/04/05:5sec /10sec /30sec /1min/ 2min /5min
55	Key Function	A0h	A0h	P1	00h	00h	AFh	P1=01/02/03/04/05/06=Enter/Up/Down/Left/Right/Menu

56	Set R/B Gain	A0h	A1h	P1	P2	P3	AFh	P1=01/02:Red Gain/Blue Gain P2(LowByte)P3(HighByte)=0~1023(Dec):Gain
57	Call R/B Gain	A0h	A2h	P1	00h	00h	AFh	Send : P1=01/02:Red Gain/Blue Gain Return : P1(LowByte)P2(HighByte)=0~1023(Dec):Gain
58	AF One Push Trigger	A0h	A3h	01h	00h	00h	AFh	
59	Set Sharpness (Gamma)	A0h	A7h	P1	00h	00h	AFh	P1=00/01/02:Photo/Text/Gray
60	Set Image Mode	A0h	A9h	P1	00h	00h	AFh	P1=00/01/02/03:Normal/Slide/Film/Microscope
61	Night Vision	A0h	ABh	P1	00h	00h	AFh	P1=00/01:Off/On
62	System ON/OFF	A0h	B0h	P1	00h	00h	AFh	P1=00/01:Off/On(lamp always on)
63	Power	A0h	B1h	P1	00h	00h	AFh	P1=00/01:Off/On(last setting)
64	Capture	A0h	B2h	P1	00h	00h	AFh	P1=00:Capture,P2=00/01:JPEG/RAW ; P1=01:Record Start/Stop
65	Playback thumbnail	A0h	B3h	P1	00h	00h	AFh	P1=00/01:Thumbnail/PBP Thumbnail
66	Preview rotation	A0h	B4h	P1	00h	00h	AFh	P1=00/01/02/03:Rotate 0/90/180/270
67	Delete	A0h	B6h	P1	P2	00h	AFh	P1=00/01/02: Delete one/Delete all/Format Format: P2=00/01 Format Nan B\External
68	call system status	A0h	B7h	00h	00h	00h	AFh	P1(system status = 00/01:stand by/reday to receive command P2(Power Status)=00/01:Off/On
69	AC Frequency Select	A0h	B8h	P1	00h	00h	AFh	P1=00/01:50 Hz/60 Hz
70	Lamp On/Off	A0h	C1h	P1	00h	00h	AFh	P1=00/01:Off/On
71	Firmware Upgrade	A0h	CBh	P1	00h	00h	AFh	P1=00/01:External/Internal; P1=1 and p2:00/01 Manual Run/Auto Run

*St : 0 =Action Succeed, 1= NAK (No Action)

5. Return value

Item	Function	DC166 feedback to PC value format						Comment
		1st	2nd	3 rd	4 th	5th	6th	
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	05h	P1	00h	St.	AFh	P1=0~5:Off/Shutter/Right/Down/Side/Open
4	Slide show Delay	A0h	06h	P1	00h	St.	AFh	P1=0~4:1sec/3sec/5sec/10sec/Manual
5	Copy To SD Card	A0h	08h	00h	00h	St.	AFh	
6	Zoom Stop	A0h	10h	00h	00h	St.	AFh	
7	Zoom Start (No AF)	A0h	11h	P1	00h	St.	AFh	P1=00/01:Tele/Wide
8	Zoom Direct (Straight, No AF)	A0h	13h	P1	P2	St.	AFh	P1(LowByte)P2(HighByte)=0~615(Dec):Zoom Position
9	Auto Erase	A0h	13h	P1	00h	St.	AFh	P1=00/01:Auto Erase off/on
10	Digital Zoom Direct	A0h	18h	P1	00h	St.	AFh	P1= SXGA、720P、XGA : 0~46(Dec) :Digital Zoom Position
11	Focus Stop	A0h	19h	00h	00h	St.	AFh	
12	Focus Start	A0h	1Ah	P1	P2	St.	AFh	P1=00/01:Near/Far P2=01~05:Speed
13	Focus Direct (No Limit)	A0h	1Bh	P1	P2	St.	AFh	P1(LowByte)P2(HighByte)=0~324(Dec):Focus Position P3=01~05:Speed
14	Zoom Start (with AF)	A0h	1Dh	P1	00h	St.	AFh	P1=00/01:Tele/Wide
15	Zoom Direct (Straight) (with AF)	A0h	1Fh	P1	P2	St.	AFh	P1(LowByte)P2(HighByte)=0~615(Dec):Zoom Position
16	White Balance (AWB, Auto Tune)	A0h	22h	P1	00h	St.	AFh	P1=00/01:Auto Tune/AWB
17	White Balance Manual	A0h	23h	P1	P2	St.	AFh	P1=01/02 : +1/-1(Red Gain) P2=01/02 : +1/-1(Blue Gain)

18	Pan PBP	A0h	25h	P1	00h	St.	AFh	P1=0~20(Dec):Step
19	Set Pan Mode	A0h	26h	P1	00h	St.	AFh	P1=00/01/:Normal/Pan mode
20	Set Pan Move	A0h	27h	P1	00h	St.	AFh	P1=01/02/03/04:Up/Down/Left/Right
21	Call DIP Switch Value	A0h	29h	P1	00h	St.	AFh	P1:DIP Switch Value
22	Freeze	A0h	2Ch	P1	00h	St.	AFh	P1=00/01:Off/On
23	Iris	A0h	30h	P1	P2	St.	AFh	P1=00/01/02:Auto/Manual/Stop (AC 50Hz)P2=00~170(Dec):Brightness (AC 60Hz)P2=00~190(Dec):Brightness
24	Switch USB Transfer	A0h	32h	P1	00h	St.	AFh	P1=00/01:Mass Storage/USB Camera
25	Negative (film)	A0h	36h	P1	00h	St.	AFh	P1=00/01:Off/On
26	Color (gray)	A0h	37h	P1	00h	St.	AFh	P1=00/01:Photo/Gray
27	Language Select	A0h	38h	P1	00h	St.	AFh	P1=0~8: Chinese/German/French/Spanish/Russian/Dutch/Finnish/Polish
28	Brightness Control	A0h	39h	P1	00h	St.	AFh	P1=00/01:-1/+1
29	Source live/PC	A0h	3Ah	P1	00h	St.	AFh	P1=00/01:PC/Live Image
30	Disable Digital Zoom After Optical Zoom	A0h	40h	P1	00h	St.	AFh	P1=00/01:Disable/Enable
31	Call Master Version	A0h	45h	P1	P2	P3	AFh	DHAxxx = DHA P1 P2 P3(ASCII)
32	Call AE Status	A0h	46h	P1	00h	St.	AFh	P1=00/01:Off/On
33	Enable/Disable LOGO Image	A0h	47h	P1	00h	St.	AFh	P1=00/01:Off/On
34	Playback Image Index Change Page	A0h	4Ah	P1	00h	St.	AFh	P1=00/01:Page Up/Page Down
35	Call Slave Version	A0h	4Dh	P1	P2	P3	AFh	DHBxxx = DHB P1 P2 P3(ASCII)
36	Call lamp Status	A0h	50h	P1	00h	St.	AFh	P1=00/01:Off/On
37	Call Text/Photo Status	A0h	51h	P1	00h	St.	AFh	P1=00/01/02:Photo/Text/Gray

38	reg1	A0h	52h	P1	P2	St.	AFh	P1=00/01:Read/Write P2=0x00~0xff
39	reg2	A0h	53h	P1	P2	St.	AFh	
40	reg3	A0h	54h	P1	P2	St.	AFh	
41	Bad pixel fix	A0h	57h	P1	P2	St.	AFh	p1:00/01/02:bad pixel fix/bad pixel numbers/badpixel correction number p1=2,p2=00/01:Read/Set bad pixel correction number.p3:Set number.p2:Read number. P1(LowByte)P2(HighByte)=0~615(Dec):Zoom Position P1= SXGA 、 720P 、 XGA : 0~46(Dec) :Digital Zoom Position
42	Call Zoom Position	A0h	60h	P1	P2	St.	AFh	
43	Call Digital Zoom Position	A0h	62h	P1	00h	St.	AFh	
44	Call Focus Position	A0h	64h	P1	P2	St.	AFh	P1(LowByte)P2(HighByte)=0~324(Dec):Focus Position
45	Call Freeze Status	A0h	78h	P1	00h	St.	AFh	P1=00/01:Off/On
46	Call Iris Status	A0h	7Ah	P1	P2	St.	AFh	P1=00/01:Auto/Manual 、 Stop (AC 50Hz)P2=00~170(Dec):Brightness (AC 60Hz)P2=00~190(Dec):Brightness
47	Call Negative	A0h	87h	P1	00h	St.	AFh	P1=00/01:Off/On
48	Call Color	A0h	88h	P1	00h	St.	AFh	P1=00/01:Photo/Gray
49	Call Brightness Position	A0h	89h	P1	00h	St.	AFh	(AC 50Hz)P1=00~170(Dec):Brightness (AC 60Hz)P1=00~190(Dec):Brightness
50	Call Mix Zoom Position	A0h	8Ah	P1	P2	St.	AFh	P1(LowByte)P2(HighByte)=0~661(Dec):Mix Zoom Position
51	Call Menu Status	A0h	8Bh	P1	00h	St.	AFh	P1=00/01:Off/On
52	Capture type	A0h	96h	P1	00h	St.	AFh	P1=00/01/02:Single/Continuous/Disable
53	Capture time	A0h	97h	P1	00h	St.	AFh	P1=00/01/02/03/04:1hr/ 2hr/ 4hr/ 8hr/ 24hr

54	Capture interval	A0h	98h	P1	00h	St.	AFh	P1=00/01/02/03/04/05:5sec /10sec /30sec /1min/ 2min /5min
55	Key Function	A0h	A0h	P1	00h	St.	AFh	P1=01/02/03/04/05/06=Enter/Up/Down/Left/Right/Menu
56	Set R/B Gain	A0h	A1h	P1	P2	St.	AFh	P1=01/02:Red Gain/Blue Gain P2(LowByte)P3(HighByte)=0~1023(Dec):Gain
57	Call R/B Gain	A0h	A2h	P1	P2	St.	AFh	Send : P1=01/02:Red Gain/Blue Gain Return : P1(LowByte)P2(HighByte)=0~1023(Dec):Gain
58	AF One Push Trigger	A0h	A3h	01h	00h	St.	AFh	
59	Set Sharpness (Gamma)	A0h	A7h	P1	00h	St.	AFh	P1=00/01/02:Photo/Text/Gray
60	Set Image Mode	A0h	A9h	P1	00h	St.	AFh	P1=00/01/02/03:Normal/Slide/Film/Microscope
61	Night Vision	A0h	ABh	P1	00h	St.	AFh	P1=00/01:Off/On
62	System ON/OFF	A0h	B0h	P1	00h	St.	AFh	P1=00/01:Off/On(lamp always on)
63	Power	A0h	B1h	P1	00h	St.	AFh	P1=00/01:Off/On(last setting)
64	Capture	A0h	B2h	P1	00h	St.	AFh	P1=00:Capture,P2=00/01:JPEG/RAW ; P1=01:Record Start/Stop
65	Playback thumbnail	A0h	B3h	P1	00h	St.	AFh	P1=00/01:Thumbnail/PBP Thumbnail
66	Preview rotation	A0h	B4h	P1	00h	St.	AFh	P1=00/01/02/03:Rotate 0/90/180/270
67	Delete	A0h	B6h	P1	P2	St.	AFh	P1=00/01/02: Delete one/Delete all/Format Format: P2=00/01 Format Nan B\External
68	call system status	A0h	B7h	P1	P2	St.	AFh	P1(system status = 00/01:stand by/reday to receive command P2(Power Status)=00/01:Off/On
69	AC Frequency Select	A0h	B8h	P1	00h	St.	AFh	P1=00/01:50 Hz/60 Hz
70	Lamp On/Off	A0h	C1h	P1	00h	St.	AFh	P1=00/01:Off/On
71	Firmware Upgrade	A0h	CBh	P1	00h	St.	AFh	P1=00/01:External/Internal; P1=1 and p2:00/01 Manual Run/Auto Run

*St : 0 =Action Succeed, 1= NAK (No Action)