

VC-B20D_B202D

RS-232 command set

No	Issue Date	Description	Apply Firmware
1	2014/10/21	First version.	TBD
2	2014/11/25	- Revise <u>13.Camera Command List</u> - Revise <u>14. Inquiry Command List</u>	VEA104R/ VEB102R/ VEC102R
3	2015/02/04	- Add command: CAM_AE Iris Priority CAM_Iris CAM_AEModeInq Iris Priority CAM_IrisPosInq Inquiry Iris Position - Resolution Setting: add following Resolution 0x0B 1080p-59.94 0x0C 1080i-59.94 0x0D 1080p-29.97 0x0E 720p-59.94 0x0F 720p-29.97	VEA113R/ VEB107R/ VEC102R
4	2015/06/01	- Add command: 1.1 CAM_RGain, CAM_BGain, CAM_RGainInq, CAM_BGainInq 1.2 CAM_RGainInq, CAM_BGainInq 1.3 AE_Iris Table - Modify command: 2.1 CAM_RGain, CAM_BGain, CAM_RGainInq, CAM_BGainInq 2.2 CAM_RGainInq, CAM_BGainInq 2.3 CAM_Iris, CAM_IrisPosInq 2.4 Resolution Setting	VEA117R/ VEB111R/ VEC102R

***Notice:**

1. The RS-232 command list is for VC-B20D_B202D.
2. The yellow highlight  means the latest update.
3. The blue highlight  means the deleted item.

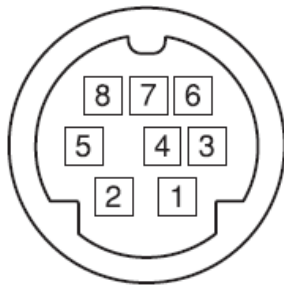
1. Communication Protocol

Transmit Method: Asynchronous Interface Half
Duplex Serial Communication

- Transmit Speed: 9600bps or 38400bps
- 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



No	Pins
1	DTR IN
2	DSR IN
3	TXD IN
4	GND
5	RXD IN
6	GND

3. ACK & Completion message

	Reply Packet	Note
Ack	X0 4Y FF	Y = socket number
Completion (commands)	X0 5Y FF	Y = socket number
Completion (Inquiries)	X0 5Y ... FF	Y = socket number
X = 9 to F==>camera address + 8 , Y=1 to 2		

4. Error message

Error Packet	Description
X0 60 02 FF	Syntax Error
X0 60 03 FF	Command buffer full
X0 6Y 04 FF	Command cancelled
X0 6Y 05 FF	No socket (to be cancelled)
X0 6Y 41 FF	Command not executable
X = 9 to F==>camera address + 8	
Y = socket number, Y=0 to 2, 0: Inquiry not execution	

5. Command execution cancel

	Cancel Packet	Note
Cancel	8X 2Y FF	Y = socket number
X = 1 to 7==>camera address, Y = socket number, Y=1 to 2		

6. Network Change

	Packet	Note
Address	88 30 01 FF	Always broadcasted
Network Change	X0 38 FF	
X = 9 to F==>camera address + 8		

7. IF_Clear

	Command	Reply Packet Note
IF_Clear	8X 01 00 01 FF	X0 50 FF
IF_Clear (broadcast)	88 01 00 01 FF	88 01 00 01 FF
X = 1 to 7==>camera address (For inquiry packet)		
X = 9 to F==>camera address +8 (For reply packet)		

8. Zoom Focus Position Table

Zoom Position	Wide end	Optical	Digital	
	0000	to 4000	to 4033(720p)/406E(1080p)	
Focus Position	Far end		Near end	
	000 to 2D3			

9. Digital Zoom Position Table

Digital Zoom Ratio	pq(720p)	pq(1080p)
x1	00	0
x2	1B	3C
x3	24	50
x4	28	5A
x5	2B	60
x6	2C	64
x7	2E	67
x8	2F	69
x9	30	6B
x10	31	6C
x11	32	6D
x12	33	6E

10. AE_Shutter Table

Shutter Speed	Index(pq)	60/30 mode	50/25 mode
	15	1/10000	1/10000
	14	1/5000	1/5000
	13	1/3000	1/3000
	12	1/2500	1/2500
	11	1/2000	1/1750
	10	1/1500	1/1250
	0F	1/1000	1/1000
	0E	1/725	1/600
	0D	1/500	1/425
	0C	1/350	1/300
	0B	1/250	1/215
	0A	1/180	1/150
	09	1/120	1/120
	08	1/100	1/100
	07	1/90	1/75
	06	1/60	1/50
	05	1/30	1/25
	04	1/15	1/12
	03	1/8	1/6
	02	1/4	1/3
	01	1/2	1/2
	00	1/1	1/1

11. AE_Gain Table

Gain	Index(pq)	Value
	0F	+30 dB
	0E	+28 dB
	0D	+26 dB
	0C	+24 dB
	0B	+22 dB
	0A	+20 dB
	09	+18 dB
	08	+16 dB
	07	+14 dB
	06	+12 dB
	05	+10 dB
	04	+8 dB
	03	+6 dB
	02	+4 dB
	01	+2 dB
	00	0 dB

12. AE_Gain Limit Table

Gain	Index(p)	Value
	0F	+30 dB
	0E	+28 dB
	0D	+26 dB
	0C	+24 dB
	0B	+22 dB
	0A	+20 dB
	09	+18 dB
	08	+16 dB
	07	+14 dB
	06	+12 dB
	05	+10 dB
	04	+8 dB

13. AE_Exposure Comp. Table

Exposure Comp.	Index(p)	Value(Level)	(Gain)Value
	0A	4	+6 dB
	09	3	+4.5 dB
	08	2	+3 dB
	07	1	+1.5 dB
	06	0	0 dB
	05	-1	-1.5 dB
	04	-2	-3 dB
	03	-3	-4.5 dB
	02	-4	-6 dB
	01	-5	-7.5 dB
	00	-6	-9 dB

14. AE_Iris Table

Iris	Index(pq)	Value
	05	F2.8
	04	F4.0
	03	F5.6
	02	F8
	01	F11
	00	F16

15. Camera Command List

Catagory	Command Set	Command	Command Packet	Comments
System	AddressSet	Broadcast	88 30 01 FF	Address setting
System	IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
System	CommandCancel	–	8x 2p FF	p: Socket No. (=1 or 2)
System	CAM_Power	On	8x 01 04 00 02 FF	Power ON/OFF
System	CAM_Power	Off (Standby)	8x 01 04 00 03 FF	
System	CAM_AutoPowerOff	Direct	8x 01 04 40 0p 0q 0r 0s FF	Auto Power Off, pqrs: 0000 To FFFF pqrs: Power Off Timer 0000 (Timer Off) to FFFF (65535min) Initial value: 0000 The power automatically turns off if the camera does not receive any commands or any signals from the Remote Commander for the duration you set in the timer.
Zoom	CAM_Zoom	Stop	8x 01 04 07 00 FF	Zoom Position: 0~0x4000~0x4033(720p)/0x406E(1080p)
Zoom	CAM_Zoom	Tele (Standard)	8x 01 04 07 02 FF	
Zoom	CAM_Zoom	Wide (Standard)	8x 01 04 07 03 FF	
Zoom	CAM_Zoom	Tele Step	8x 01 04 07 04 FF	
Zoom	CAM_Zoom	Wide Step	8x 01 04 07 05 FF	
Zoom	CAM_Zoom	Tele (Variable)	8x 01 04 07 2p FF	p=0 (Low) to 7 (High)
Zoom	CAM_Zoom	Wide (Variable)	8x 01 04 07 3p FF	
Zoom	CAM_Zoom	Direct	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position(0x0000~0x4033(720p)/0x406E(1080p)) , Optical Zoom Tele max position: 0x4000

Catagory	Command Set	Command	Command Packet	Comments
Zoom	CAM_Zoom	Direct(Speed Variable)	8x 01 04 47 0p 0q 0r 0s 0t FF	pqrs: Zoom Position(0x0000~0x4033(720p)/0x406E(1080p)) , Optical Zoom Tele max position: 0x4000, t:0~7(0 :Low, 7:High)
Zoom	CAM_DZoom	On	8x 01 04 06 02 FF	Digital zoom ON/OFF(No use in Separate Mode)
Zoom	CAM_DZoom	Off	8x 01 04 06 03 FF	
Focus	CAM_Focus	Stop	8x 01 04 08 00 FF	p=0 (Low) to 7 (High) * Enabled during Manual Mode
Focus	CAM_Focus	Far (Standard)	8x 01 04 08 02 FF	
Focus	CAM_Focus	Near (Standard)	8x 01 04 08 03 FF	
Focus	CAM_Focus	Far (Variable)	8x 01 04 08 2p FF	
Focus	CAM_Focus	Near (Variable)	8x 01 04 08 3p FF	
Focus	CAM_Focus	Direct	8x 01 04 48 0p 0q 0r 0s FF	pqrs: Focus Position , pqrs parameters are in the General Zoom Foucs Table 0x000~0x2D3
Focus	CAM_Focus	Auto Focus	8x 01 04 38 02 FF	AF ON/OFF
Focus	CAM_Focus	Manual Focus	8x 01 04 38 03 FF	
Focus	CAM_Focus	Auto/Manual	8x 01 04 38 10 FF	
Focus	CAM_Focus	One Push Trigger	8x 01 04 18 01 FF	One Push AF Trigger(* Enabled during Manual Mode)
System	Resolution Settting	—	8x 01 06 35 00 0p FF	p: 0x00:1080p-60 0x01:1080p-50 0x02:1080p-30 0x03:1080p-25 0x04:1080i-60 0x05:1080i-50 0x06:720p-60

Catagory	Command Set	Command	Command Packet	Comments
				0x07:720p-50 0x08:720p-30 0x09:720p-25 0x0A 1080p-59.94 0x0B 1080i-59.94 0x0C 1080p-29.97 0x0D 720p-59.94 0x0E 720p-29.97
White Balance	CAM_WB	Auto	8x 01 04 35 00 FF	Normal Auto
White Balance	CAM_WB	Indoor	8x 01 04 35 01 FF	Indoor mode
White Balance	CAM_WB	Outdoor	8x 01 04 35 02 FF	Outdoor mode
White Balance	CAM_WB	One Push WB	8x 01 04 35 03 FF	One Push WB mode
White Balance	CAM_WB	ATW	8x 01 04 35 04 FF	Auto Tracing White Balance
White Balance	CAM_WB	Manual	8x 01 04 35 05 FF	Manual Control mode
White Balance	CAM_WB	3000K	8x 01 04 35 06 FF	Color temperture fixed at 3000K mode
White Balance	CAM_WB	4300K	8x 01 04 35 07 FF	Color temperture fixed at 4300K mode
White Balance	CAM_WB	5000K	8x 01 04 35 08 FF	Color temperture fixed at 5000K mode

Catagory	Command Set	Command	Command Packet	Comments
White Balance	CAM_WB	6500K	8x 01 04 35 09 FF	Color temperture fixed at 6500K mode
White Balance	CAM_WB	8300K	8x 01 04 35 0A FF	Color temperture fixed at 8000K mode
White Balance	CAM_WB	Wide Auto	8x 01 04 35 0B FF	Wide Auto
White Balance	CAM_WB	Sodium Lamp	8x 01 04 35 0C FF	Sodium lamp source fixed mode
White Balance	CAM_WB	One Push Trigger	8x 01 04 10 05 FF	One Push WB Trigger(* Enabled during One Push WB Mode)
Exposure	CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
Exposure	CAM_AE	Manual	8x 01 04 39 03 FF	Manual Control mode
Exposure	CAM_AE	Shutter Priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
Exposure	CAM_AE	Iris Priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
Exposure	CAM_AE	White Board	8x 01 04 39 5F FF	White Board Mode
Exposure	CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter Setting (* Enabled during Shutter Priority/Manual Mode)
Exposure	CAM_Shutter	Up	8x 01 04 0A 02 FF	
Exposure	CAM_Shutter	Down	8x 01 04 0A 03 FF	
Exposure	CAM_Shutter	Direct	8x 01 04 4A 00 00 0p 0q FF	pq: Shutter Position , pq: 00 To 15
Exposure	CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris Setting (* Enabled during Iris Priority/Manual Mode)
Exposure	CAM_Iris	Up	8x 01 04 0B 02 FF	
Exposure	CAM_Iris	Down	8x 01 04 0B 03 FF	
Exposure	CAM_Iris	Direct	8x 01 04 4B 00 00 0p 0q FF	pq: Iris Position CAM_IrisPosInq
Exposure	CAM_Gain	Reset	8x 01 04 0C 00 FF	Gain Setting

RS073 - VC-B20D B202D RS-232 command set

Catagory	Command Set	Command	Command Packet	Comments
				(* Enabled during Manual Mode)
Exposure	CAM_Gain	Up	8x 01 04 0C 02 FF	
Exposure	CAM_Gain	Down	8x 01 04 0C 03 FF	
Exposure	CAM_Gain	Direct	8x 01 04 4C 00 00 0p 0q FF	pq: Gain Position, pq:00 To 0F
Exposure	CAM_Gain	Gain Limit	8x 01 04 2C 0p FF	p: Gain Position , p: 4 To F
Exposure	CAM_ExpComp	On	8x 01 04 3E 02 FF	Exposure Compensation ON/OFF
Exposure	CAM_ExpComp	Off	8x 01 04 3E 03 FF	
Exposure	CAM_ExpComp	Reset	8x 01 04 0E 00 FF	Exposure Compensation Amount Setting
Exposure	CAM_ExpComp	Up	8x 01 04 0E 02 FF	
Exposure	CAM_ExpComp	Down	8x 01 04 0E 03 FF	
Exposure	CAM_ExpComp	Direct	8x 01 04 4E 00 00 0p 0q FF	pq: ExpComp Position , pq: 00 To 0A
Exposure	CAM_BackLight	On	8x 01 04 33 02 FF	Back Light Compensation ON/OFF (* Enabled during AE Full Auto Mode)
Exposure	CAM_BackLight	Off	8x 01 04 33 03 FF	
Exposure	CAM_SpotAE	On	8x 01 04 59 02 FF	Spot Automatic Exposure Setting,Enable during AE Auto mode
Exposure	CAM_SpotAE	Off	8x 01 04 59 03 FF	
Exposure	CAM_SpotAE	Position	8x 01 04 29 0p 0q 0r 0s FF	pq: X (00 To 08), rs: Y (00 To 06)
Exposure	CAM_WD	Set Parameter	8x 01 04 2D 0p FF	p: 0 ~ 5, 0: Off, 1~5: mode 1~5
Picture	CAM_Aperture(Sharpness)	Reset	8x 01 04 02 00 FF	Aperture Control
Picture	CAM_Aperture(Sharpness)	Up	8x 01 04 02 02 FF	
Picture	CAM_Aperture(Sharpness)	Down	8x 01 04 02 03 FF	
Picture	CAM_Aperture(Sharpness)	Direct	8x 01 04 42 00 00 0p 0q FF	pq: Aperture Gain, pq: 00 To 0F
Picture	CAM_HR	On	8x 01 04 52 02 FF	High-Resolution Mode ON/OFF
Picture	CAM_HR	Off	8x 01 04 52 03 FF	

Catagory	Command Set	Command	Command Packet	Comments
Picture	CAM_2DNR	—	8x 01 04 53 0p FF	p: NR Setting , p: 0 To 6 (0: OFF, 1~5: 1~5, 6:Auto)
Picture	CAM_3DNR	—	8x 01 04 54 0p FF	p: NR Setting , p: 0:Off 1:Low 2:Typ 3:Max 4:Auto
Picture	CAM_Gamma	—	8x 01 04 5B 0p FF	p: Gamma setting ,p: 0 To 3
D-effect	CAM_LR_Reverse	On	8x 01 04 61 02 FF	Mirror Image ON/OFF
D-effect	CAM_LR_Reverse	Off	8x 01 04 61 03 FF	
D-effect	CAM_Freeze	On	8x 01 04 62 02 FF	Still Image ON/OFF
D-effect	CAM_Freeze	Off	8x 01 04 62 03 FF	
Picture	CAM_PictureEffect	Off	8x 01 04 63 00 FF	Picture Effect Setting
Picture	CAM_PictureEffect	Neg.Art	8x 01 04 63 02 FF	
Picture	CAM_PictureEffect	B&W	8x 01 04 63 04 FF	
D-effect	CAM_PictureFlip	On	8x 01 04 66 02 FF	Picture flip ON/OFF
D-effect	CAM_PictureFlip	Off	8x 01 04 66 03 FF	
System	CAM_Memory(Preset)	Reset	8x 01 04 3F 00 pp FF	pp: Memory Number (pp: 0x00 To 0x7F)
System	CAM_Memory(Preset)	Set	8x 01 04 3F 01 pp FF	pp: Memory Number (pp: 0x00 To 0x7F)
System	CAM_Memory(Preset)	Recall	8x 01 04 3F 02 pp FF	pp: Memory Number (pp: 0x00 To 0x7F)
D-effect	CAM_Mute	On	8x 01 04 75 02 FF	Muting ON/OFF
D-effect	CAM_Mute	Off	8x 01 04 75 03 FF	
D-effect	CAM_Mute	On/Off	8x 01 04 75 10 FF	
Picture	CAM_ChromaSuppress		8x 01 04 5F pp FF	pp: Chroma Suppress setting level, pp:00 To 03 00: OFF 1 to 3: ON (3 levels) Effect increases as the level number increases.
Picture	CAM_ColorGain(Saturation)	Direct	8x 01 04 49 00 00 00 pq FF	pq:0x00~0x19
Picture	CAM_ColorHue	Direct	8x 01 04 4F 00 00 00 0p FF	p: 0x00~0x0E
System	IR_Receive	On	8x 01 06 08 02 FF	IR(remote commander) receive ON/OFF

Catagory	Command Set	Command	Command Packet	Comments
System	IR_Receive	Off	8x 01 06 08 03 FF	
System	IR_Receive	On/Off	8x 01 06 08 10 FF	
Pan Tilt	Pan-tiltDrive	Up 3)	8x 01 06 01 VV WW 03 01 FF	VV: Pan speed 0x01 (low speed) to 0x18 (high speed) WW: Tilt Speed 0x01 (low speed) to 0x18 (high speed)
Pan Tilt	Pan-tiltDrive	Down 3)	8x 01 06 01 VV WW 03 02 FF	
Pan Tilt	Pan-tiltDrive	Left 3)	8x 01 06 01 VV WW 01 03 FF	
Pan Tilt	Pan-tiltDrive	Right 3)	8x 01 06 01 VV WW 02 03 FF	
Pan Tilt	Pan-tiltDrive	UpLeft 3)	8x 01 06 01 VV WW 01 01 FF	
Pan Tilt	Pan-tiltDrive	UpRight 3)	8x 01 06 01 VV WW 02 01 FF	
Pan Tilt	Pan-tiltDrive	DownLeft 3)	8x 01 06 01 VV WW 01 02 FF	
Pan Tilt	Pan-tiltDrive	DownRight 3)	8x 01 06 01 VV WW 02 02 FF	
Pan Tilt	Pan-tiltDrive	Stop 3)	8x 01 06 01 VV WW 03 03 FF	
Pan Tilt	Pan-tiltDrive	AbsolutePosition	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	YYYY: Pan Position 0x0000 to 0x2260 & 0xFFFF to 0xDDA0 (center 0x0000) ZZZZ: Tilt Position 0x0000 to 0x0A00 & 0x0000 to 0xF600 (center 0x0000)
Pan Tilt	Pan-tiltDrive			
Pan Tilt	Pan-tiltDrive	RelativePosition	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
Pan Tilt	Pan-tiltDrive			
Pan Tilt	Pan-tiltDrive	Home	8x 01 06 04 FF	
Pan Tilt	Pan-tiltDrive	Reset	8x 01 06 05 FF	
Pan Tilt	Pan-tiltLimitSet	LimitSet	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W: 1 UpRight YYYY: Pan Limit Position 0x0000~0x2260 ZZZZ: Tilt Limit Position 0x0000~0x0A00 W: 0 DownLeft YYYY: Pan Limit Position 0xFFFF~0xDDA0 ZZZZ: Tilt Limit Position 0xFFFF~0xF600

Catagory	Command Set	Command	Command Packet	Comments
Pan Tilt	Pan-tiltLimitSet			
Pan Tilt	Pan-tiltLimitSet	LimitClear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	
Pan Tilt	Pan-tiltLimitSet			
System	Firmware	Firmware version	8x 01 02 03 FF	
System	Error Code	Read Error Code	8x 01 01 01 FF	
System	Error Code	Clear Error Code Record	8x 02 02 02 FF	
System	Factory Reset	System Factroy Reset	8x 01 04 3F 03 00 FF	
Picture	CAM_Image_Mode	Select CAM Image Mode	8x 01 04 3F 04 0p FF	p: 0~6, 0:Custom mode
System	IR Pass Through	-	8x 01 06 09 0p FF	p: 0 to 3 0: IR right AND IR left 1: IR right 2: IR left 3: NA
Zoom	CAM_Dzoom	D-Zoom Limit	8x 01 04 26 0p FF	p = 0(x1), 1(x2), 2(x3), 3(x4), 4(x5), 5(x6), 6(x7), 7(x8), 8(x9), 9(x10), A(x11), B(x12)
Picture	CAM_Skin_Tone	select red level	8x 01 04 75 06 0p FF	p: 0~4
Picture	CAM_ImageModeBrightness	Set Brightness	8x 01 04 75 67 0p FF	p: 0x0~0xE
Picture	CAM_ImageModeContrast	Set Contrast	8x 01 04 75 68 0p FF	p: 0x0~0xE
Picture	Black Level	Black Level	8x 01 04 75 69 0p FF	p: 0 to 3, 0:Off, 1:Type 1, 2:Type 2, 3:Type 3
Focus	CAM_AF_SPEED	Normal	8x 01 04 56 02 FF	Set anytime AF speed : Normal / Fast
Focus	CAM_AF_SPEED	Fast	8x 01 04 56 03 FF	
Focus	CAM_AF_SPEED	Normal / Fast	8x 01 04 56 10 FF	
Focus	CAM_AF_SENSITIVE	-	8x 01 04 58 0p FF	p: 1 to 3, 1:High , 2:Middle, 3:Low

RS073 - VC-B20D B202D RS-232 command set

Catagory	Command Set	Command	Command Packet	Comments
Focus	CAM_AF_FRAME	Full Frame	8x 01 04 5C 02 FF	Set AF frame : Full Frame / Center
Focus	CAM_AF_FRAME	Center	8x 01 04 5C 03 FF	
Focus	CAM_AF_FRAME	Full Frame / Center	8x 01 04 5C 10 FF	
System	Save last memory	-	8x 01 04 3F 03 02 FF	
Lumens	CAM_SERIAL_NINE	Serial Number With 9 ascii codes	8x 02 18 aa bb cc dd ee ff gg hh ii FF	aabbccddeeffgghhii 9 Serial code(Ascii)
White Balance	CAM_RGain	Reset	8x 01 04 03 00 FF	
White Balance	CAM_RGain	Up	8x 01 04 03 02 FF	
White Balance	CAM_RGain	Down	8x 01 04 03 03 FF	
White Balance	CAM_RGain	Direct	8x 01 04 43 00 00 0p 0q FF	pq: R Gain, 0x00~0x3C
White Balance	CAM_BGain	Reset	8x 01 04 04 00 FF	
White Balance	CAM_BGain	Up	8x 01 04 04 02 FF	
White Balance	CAM_BGain	Down	8x 01 04 04 03 FF	
White Balance	CAM_BGain	Direct	8x 01 04 44 00 00 0p 0q FF	pq: B Gain, 0x00~0x3C

16. Inquiry

Category	Inquiry Command	Command Packet	Inquiry Packet	Comments
System	CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
System	CAM_PowerInq		y0 50 03 FF	Off (Standby)

Zoom	CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position(0x0000~0x4033(720p)/0x406E(1080p)) , Optical Zoom Tele max position: 0x4000
Zoom	CAM_DZoomModeInq	8x 09 04 06 FF	y0 50 02 FF	D-Zoom On
Zoom	CAM_DZoomModeInq		y0 50 03 FF	D-Zoom Off
Zoom	Digital Zoom Position	8x 09 04 46 FF	y0 50 00 00 0p 0q FF	pq: D-Zoom Position(*Enabled during Separate Mode), pq: 00 To 33(720p)/6E(1080p)
Focus	CAM_FocusModeInq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
Focus	CAM_FocusModeInq		y0 50 03 FF	Manual Focus
Focus	CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position, pqrs: 0x000~0x2D3
White Balance	CAM_WBModeInq	8x 09 04 35 FF	y0 50 00 FF	Auto
White Balance	CAM_WBModeInq		y0 50 01 FF	In Door
White Balance	CAM_WBModeInq		y0 50 02 FF	Out Door
White Balance	CAM_WBModeInq		y0 50 03 FF	One Push WB
White Balance	CAM_WBModeInq		y0 50 04 FF	ATW
White Balance	CAM_WBModeInq		y0 50 05 FF	Manual Control mode
White Balance	CAM_WBModeInq		y0 50 06 FF	3000K
White Balance	CAM_WBModeInq		y0 50 07 FF	4300K
White Balance	CAM_WBModeInq		y0 50 08 FF	5000K
White Balance	CAM_WBModeInq		y0 50 09 FF	6500K
White Balance	CAM_WBModeInq		y0 50 0A FF	8300K
White Balance	CAM_WBModeInq		y0 50 0B FF	Wide Auto
White Balance	CAM_WBModeInq		y0 50 0C FF	Sodium Lamp
Exposure	CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
Exposure	CAM_AEModeInq		y0 50 03 FF	Manual
Exposure	CAM_AEModeInq		y0 50 0A FF	Shutter Priority

Exposure	CAM_AEModeInq		y0 50 0B FF	Iris Priority
Exposure	CAM_AEModeInq		y0 50 5F FF	White Board
Exposure	CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position, pq: 00 To 15
Exposure	CAM_IrisPosInq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
Exposure	CAM_GainPosInq	8x 09 04 4C FF	y0 50 00 00 0p 0q FF	pq: Gain Position, pq: 00 To 0F
Exposure	CAM_GainLimitInq	8x 09 04 2C FF	y0 50 0q FF	p: Gain Limit,p: 4 To F
Exposure	CAM_ExpCompModeInq	8x 09 04 3E FF	y0 50 02 FF	On
Exposure	CAM_ExpCompModeInq		y0 50 03 FF	Off
Exposure	CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position, pq: 00 To 0A
Exposure	CAM_BackLightModeInq	8x 09 04 33 FF	y0 50 02 FF	On
Exposure	CAM_BackLightModeInq		y0 50 03 FF	Off
Exposure	CAM_SpotAEModeInq	8x 09 04 59 FF	y0 50 02 FF	On
Exposure	CAM_SpotAEModeInq		y0 50 03 FF	Off
Exposure	CAM_SpotAEPosInq	8x 09 04 29 FF	y0 50 0p 0q 0r 0s FF	pq: X position, rs: Y position, pq: 00 To 08, rs: 00 To 06
Exposure	CAM_WDParameterInq	8x 09 04 2D FF	y0 50 0p FF	p: 0 ~ 5, 0: Off, 1~5: mode 1~5
Picture	CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain, pq: 00 To 0F
Picture	CAM_HRModeInq	8x 09 04 52 FF	y0 50 02 FF	On (Hi-Resolution)
Picture	CAM_HRModeInq		y0 50 03 FF	Off
Picture	CAM_2DNRMModeInq	8x 09 04 53 FF	y0 50 0p FF	p: NR Setting , p: 0 To 6 (0: OFF, 1~5: 1~5, 6:Auto)
Picture	CAM_3DNRMModeInq	8x 09 04 54 FF	y0 50 0p FF	p: NR Setting , p: 0:Off 1:Low 2:Typ 3:Max 4:Auto
Picture	CAM_GammaInq	8x 09 04 5B FF	y0 50 0p FF	Gamma p: 0 To 3
D-effect	CAM_LR_ReverseModeInq	8x 09 04 61 FF	y0 50 02 FF	On
D-effect	CAM_LR_ReverseModeInq		y0 50 03 FF	Off
D-effect	CAM_FreezeModeInq	8x 09 04 62 FF	y0 50 02 FF	On
D-effect	CAM_FreezeModeInq		y0 50 03 FF	Off
Picture	CAM_PictureEffectModeInq	8x 09 04 63 FF	y0 50 00 FF	Off

Picture	CAM_PictureEffectModeInq		y0 50 02 FF	Neg.Art
Picture	CAM_PictureEffectModeInq		y0 50 04 FF	B&W
D-effect	CAM_PictureFlipModeInq	8x 09 04 66 FF	y0 50 02 FF	On
D-effect	CAM_PictureFlipModeInq		y0 50 03 FF	Off
System	CAM_MemoryInq	8x 09 04 3F FF	y0 50 pp FF	pp: Memory number recalled last, default value(no get any recall command) pp:0x00 , pp: 0x00 To 0x7F
D-effect	CAM_MuteModeInq	8x 09 04 75 FF	y0 50 02 FF	On
D-effect	CAM_MuteModeInq		y0 50 03 FF	Off
Picture	CAM_ChromaSuppressInq	8x 09 04 5F FF	y0 50 pp FF	pp: Chroma Suppress setting level, pp: 00 To 03
Picture	CAM_ColorGainInq	8x 09 04 49 FF	y0 50 00 00 00 pq FF	pq: Color Gain setting , pq: 0x00 To 0x19
Picture	CAM_ColorHueInq	8x 09 04 4F FF	y0 50 00 00 00 0p FF	p: Color Hue setting p: 0 To E
System	IR_Receive	8x 09 06 08 FF	y0 50 02 FF	On
System	IR_Receive		y0 50 03 FF	Off
Pan Tilt	Pan-tiltMaxSpeedInq	8x 09 06 11 FF	y0 50 ww zz FF	ww = Pan Max Speed, ww: 0x18 zz = Tilt Max Speed, zz: 0x18
Pan Tilt	Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	www: Pan Position, 0x0000 To 0x2260 or 0xFFFF To 0xDDA0, zzzz: Tilt Position, 0x0000 To 0x0A00 or 0xFFFF To 0xF600
Picture	CAM Image ModeInq	8x 09 04 3F 04 FF	y0 50 0p FF	p: 0~6, 0:Custom mode
System	CAM Version Inq	8x 09 00 02 FF	y0 50 pp qq rr ss jj jj kk FF	ppqq: Vender ID(1518) rrss: Model ID(0010) jjjj: Rom revision(0104) kk: Maxinum socket(02)
Focus	CAM_AF_SENSITIVE_INQ	8x 09 04 58 FF	y0 50 0p FF	p: 1 to 3, 1:High , 2:Middle, 3:Low
Focus	CAM_AF Speed Inq	8x 09 04 56 FF	y0 50 02 FF	Normal
Focus	CAM_AF Speed Inq		y0 50 03 FF	Fast

System	IR Pass Through Inq	8x 09 06 09 FF	y0 50 0p FF	p: 0 to 3 0: IR right AND IR left 1: IR right 2: IR left 3: NA
System	Resolution SetttingInq	8x 09 06 23 FF	y0 50 0p FF	p: 0x00:1080p-60 0x01:1080p-50 0x02:1080p-30 0x03:1080p-25 0x04:1080i-60 0x05:1080i-50 0x06:720p-60 0x07:720p-50 0x08:720p-30 0x09:720p-25 0x0A 720p-25 0x0B 1080p-59.94 0x0C 1080i-59.94 0x0D 1080p-29.97 0x0E 720p-59.94 0x0F 720p-29.97
Zoom	CAM_DZoomLimitInq	8x 09 04 26 FF	y0 50 0p FF	p = 0(x1), 1(x2), 2(x3), 3(x4), 4(x5), 5(x6), 6(x7), 7(x8), 8(x9), 9(x10), A(x11), B(x12)
Picture	BlackLevelInq	8x 09 04 75 69 FF	y0 50 0p FF	p: 0 to 3, 0:Off, 1:Type 1, 2:Type 2, 3:Type 3
Lumens	CAM SERIAL INQ	8x 09 02 18 FF	y0 50 aa bb cc dd ee ff gg hh ii FF	aabbccddeeffgghhii Serial code (ascii)

Lumens	PanTilt MaxSpeed INQ	8x 09 07 21 FF	y0 50 WW ZZ FF	WW: Pan Speed (angle/sec), ZZ: Tilt Speed (angle/sec)
Picture	CAM_Skin_ToneInq	8x 09 04 75 06 FF	y0 50 0p FF	p: 0~4
Picture	CAM_ImageModeBrightnessInq	8x 09 04 75 67 FF	y0 50 0p FF	p: 0x0~0xE
Picture	CAM_ImageModeContrastInq	8x 09 04 75 68 FF	y0 50 0p FF	p: 0x0~0xE
White Balance	CAM_RGainInq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain, 0x00~0x3C,
White Balance	CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain, 0x00~0x3C,

17. Camera Block Inquiry Command List

17.1 Lens Control System Inquiry Commands.....Command Set 8x 09 7E 7E 00 FF

Byte	Bit	Comments
Byte0	0	Source Address
	1	
	2	
	3	
	4	Destination Address
	5	
	6	
	7	
Byte1	0	0
	1	0
	2	0
	3	0
	4	1
	5	0
	6	1
	7	0 Completion Message (50h)
Byte2	0	Optical Zoom Position (HH)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte3	0	Optical Zoom Position (HL)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte4	0	Optical Zoom Position (LH)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte5	0	Optical Zoom Position (LL)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte6	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte7	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte8	0	Focus Position (HH)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte9	0	Focus Position (HL)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte10	0	Focus Position (LH)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte11	0	Focus Position (LL)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
	7	0
Byte12	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte13	0	Focus Mode 0: Manual 1: Auto
	1	0
	2	Reserved
	3	Reserved
	4	Reserved
	5	Reserved

Byte	Bit	Comments
	6	0
	7	0
Byte14	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte15	0	1
	1	1
	2	1
	3	1
	4	1
	5	1
	6	1
	7	1 Terminator (FFh)

17.2 Camera Control System Inquiry Commands.....Command Set 8x 09 7E 7E 01 FF

Byte	Bit	Comments
Byte0	0	Source Address
	1	
	2	
	3	
	4	Destination Address
	5	
	6	
	7	
Byte1	0	0
	1	0
	2	0
	3	0
	4	1
	5	0
	6	1
	7	0 Completion Message (50h)
Byte2	0	WB R_Gain(H)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte3	0	WB R_Gain(L)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte4	0	WB B_Gain(H)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte5	0	WB B_Gain(L)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte6	0	WB Mode
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte7	0	Aperture
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte8	0	AE Mode
	1	
	2	
	3	
	4	
	5	
	6	
	7	

Byte	Bit	Comments
Byte9	0	Reserved
	1	Exposure Comp. 1: On 0: Off
	2	Back Light 1: On 0: Off
	3	Spot AE 1: On 0: Off
	4	Wide-D (1: Other than Off,0: Off)
	5	High-Resolution 1: On 0: Off
	6	0
	7	0
Byte10	0	Shutter Position
	1	
	2	
	3	
	4	
	5	
	6	
	7	

Byte	Bit	Comments
Byte11	0	Iris Position
	1	
	2	
	3	
	4	Gain Position
	5	
	6	
	7	
Byte12	0	0
	1	
	2	
	3	
	4	0
	5	
	6	
	7	
Byte13	0	Reserved
	1	
	2	
	3	
	4	0
	5	
	6	
	7	

Byte	Bit	Comments
Byte14	0	ExpComp Position
	1	
	2	
	3	
	4	0
	5	
	6	
	7	
Byte15	0	1
	1	
	2	
	3	
	4	1 Terminator (FFh)
	5	
	6	
	7	

17.3 Other Inquiry Commands.....Command Set 8x 09 7E 7E 02 FF

Byte	Bit	Comments
Byte0	0	Source Address
	1	
	2	
	3	
	4	Destination Address
	5	
	6	
	7	
Byte1	0	0
	1	0
	2	0
	3	0
	4	1
	5	0
	6	1
	7	0 Completion Message (50h)
Byte2	0	Power 1: On 0: Off
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte3	0	0
	1	0
	2	LR Reverse 1: On 0: Off
	3	Reserved
	4	Reserved
	5	0
	6	0
	7	0
Byte4	0	0
	1	0
	2	0
	3	0
	4	Reserved
	5	0
	6	0
	7	0
Byte5	0	Picture Effect
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte6	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte7	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte8	0	Reserved
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte9	0	Reserved
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte10	0	Reserved
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte11	0	Reserved
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte12	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte13	0	0

Byte	Bit	Comments
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte14	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
Byte15	7	0
	0	1
	1	1
	2	1
	3	1
	4	1
	5	1
	6	1
	7	1 Terminator (FFh)

17.4 Enlargement Function1 Query Command.....Command Set 8x 09 7E 7E 03 FF

Byte	Bit	Comments
Byte0	0	Source Address
	1	
	2	
	3	
	4	Destination Address
	5	
	6	
	7	
Byte1	0	0
	1	0
	2	0
	3	0
	4	1
	5	0
	6	1
	7	0 Completion Message (50h)
Byte2	0	Reserved
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte3	0	Reserved
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte4	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte5	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte6	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte7	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte8	0	SpotAE Position (X)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte9	0	SpotAE Position (Y)
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0
Byte10	0	Picture flip (1: On, 0: Off)
	1	Reserved
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte11	0	Color Gain
	1	
	2	
	3	
	4	
	5	
	6	
	7	
Byte12	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte13	0	2DNR Level
	1	
	2	
	3	0
	4	Gamma
	5	
	6	
	7	0
Byte14	0	Gain Limit
	1	
	2	
	3	
	4	Chroma Suppress
	5	
	6	
	7	0
Byte15	0	1
	1	1
	2	1
	3	1
	4	1
	5	1
	6	1
	7	1 Terminator (FFh)

17.5 Enlargement Function2 Query Command.....Command Set 8x 09 7E 7E 04 FF

Byte	Bit	Comments
Byte0	0	Source Address
	1	
	2	
	3	
	4	Destination Address
	5	
	6	
	7	
Byte1	0	0
	1	0
	2	0
	3	0
	4	1
	5	0
	6	1
	7	0 Completion Message (50h)
Byte2	0	Reserved
	1	
	2	
	3	0
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte3	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte4	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte5	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte6	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte7	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte8	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte9	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte10	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte11	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte12	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte13	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte14	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
Byte15	0	1
	1	1
	2	1
	3	1
	4	1
	5	1
	6	1
	7	1 Terminator (FFh)

17.6 Enlargement Function3 Query Command.....Command Set 8x 09 7E 7E 05 FF

Byte	Bit	Comments
Byte0	0	Source Address
	1	
	2	
	3	
	4	Destination Address
	5	
	6	
	7	
Byte1	0	0
	1	0
	2	0
	3	0
	4	1
	5	0
	6	1
	7	0 Completion Message (50h)
Byte2	0	Color Hue
	1	
	2	
	3	
	4	0
	5	0
	6	0
	7	0

Byte	Bit	Comments
Byte3	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0
Byte4	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0
Byte5	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0

Byte	Bit	Comments
Byte6	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0
Byte7	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0
Byte8	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0

Byte	Bit	Comments
Byte9	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0
Byte10	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0

Byte	Bit	Comments
Byte11	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0
Byte12	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0

Byte	Bit	Comments
Byte13	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0
Byte14	0	Reserved
	1	
	2	
	3	
	4	
	5	
	6	
	7	0
Byte15	0	1
	1	1
	2	1
	3	1
	4	1
	5	1
	6	1
	7	1 Terminator (FFh)