VISCA Protocol

Format: 9600, 19200, 38400bps
8bit data 1stop bit none parity

		Command Packet (3~ 16bytes)	Comments
Inquiry		8X QQ RR ... FF	8X: 0x80+Sender addr(H nibble)+Recv addr(L nibble) addr(1~7) QQ: 01-Command/ 00-Inquiry RR: Category 00(Interface) 04(cam1) 06(Pan/Tilt) 07(cam2) FF: Terminator (0xff)

		Reply Packet	
Completion messag	ACK	X0 4Y FF	X = 9 to F: FCB camera address + 8
	Completion (commands	X0 5Y FF	Y: socket number
	Completion (Inquiries)	X0 5Y ... FF	

		Reply Packet	
Error message	Error	X0 6Y 01 FF	Message length error (>14 bytes)
		X0 6Y 02 FF	Syntax Error
		X0 6Y 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: FCB camera address + 8, Y = socket number

Command execution cancel	cancel	8X 2Y FF	X = 1 to 7: FCB camera address, Y = socket number

Network Change Address	Address	88 30 01 FF .	Always broadcasted
	Network Change	X0 38 FF	X = 9 to F: FCB camera address + 8

	Command Packet	Reply Packet
IF_Clear	8X 01 00 01FF	X0 50 FF
IF_Clear (broadcast)	88 01 00 01 FF	88 01 00 01 FF

	Inquiry Packet	Reply Packet	
CAM_VersionInq	8X 09 00 02 FF	Y0 50 GG GG HH HH JJ JJ KK FF	GGGG = Vender ID(0020: Sony) HHHH = Model ID(045C: FCB-EH4300) JJJJ = ROM revision KK = Maximum socket #(02)

	Supported Command
	Supported Specific Model Only
	not Supported Command

Command Set

Command Set	Command	Packet			Comments
AddressSet	Broadcast	88 30 01 FF			Address setting
IF_Clear	Broadcast	88 01 00 01 FF			I/F Clear
ClockSet	Broadcast	88 01 00 03 HH MM SS dd mm 0t 0u 0v 0w FF			HH: hours MM: minutes SS: seconds dd: day mm: month tuvw: year
CommandCancel		8x 2p FF			p: Socket No. (=1 or 2)
CAM_Power	On	8x 01 04 00 02 FF	0x00	02	Power ON/OFF
	Off(Standby)	8x 01 04 00 03 FF		03	
CAM_Zoom	Stop	8x 01 04 07 00 FF	0x07	00	
	Tele (Standard)	8x 01 04 07 02 FF		02	
	Wide (Standard)	8x 01 04 07 03 FF		03	
	Tele (Variable)	8x 01 04 07 2p FF		2p	p=0 (Low) to 7 (High)
	Wide (Variable)	8x 01 04 07 3p FF		3p	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	0x47	0p 0q 0r 0s	pqrs: Zoom Position
CAM_DZoom	On	8x 01 04 06 02 FF	0x06	02	Digital zoom ON/OFF
	Off	8x 01 04 06 03 FF		03	
	Combine Mode	8x 01 04 36 00 FF	0x36	00	Optical/Digital Zoom Combined
	Separate Mode	8x 01 04 36 01 FF		01	Optical/Digital Zoom Separate
	Stop	8x 01 04 06 00 FF	0x06	00	
	Tele (Variable)	8x 01 04 06 2p FF		2p	p=0 (Low) to 7 (High)
	Wide (Variable)	8x 01 04 06 3p FF		3p	* Enabled during Separate Mode
	x1/Max	8x 01 04 06 10 FF		0x10	x1/MAX Magnification Switchover * Enabled during Separate Mode
	Direct	8x 01 04 46 0p 0q 0r 0s FF	0x46	0p 0q 0r 0s	pq: D-Zoom Position * Enabled during Separate Mode
CAM_Focus	Stop	8x 01 04 08 00 FF	0x08	00	
	Far (Standard)	8x 01 04 08 02 FF		02	
	Near (Standard)	8x 01 04 08 03 FF		03	
	Far (Variable)	8x 01 04 08 2p FF		2p	p=0 (Low) to 7 (High)
	Near (Variable)	8x 01 04 08 3p FF		3p	
	Direct	8x 01 04 48 0p 0q 0r 0s FF	0x48	0p 0q 0r 0s	pqrs: Focus Position (0x1000 - 0xC000)
	Auto Focus	8x 01 04 38 02 FF	0x38	02	AF ON/OFF
	Manual Focus	8x 01 04 38 03 FF		03	
	Auto/Manual	8x 01 04 38 10 FF		0x10	
	One Push Trigger	8x 01 04 18 01 FF	0x18	01	One Push AF Trigger
	Infinity	8x 01 04 18 02 FF		02	Forced infinity
	Near Limit	8x 01 04 28 0p 0q 0r 0s FF	0x28	0p 0q 0r 0s	pqrs: Focus Near Limit Position
AF Sensitivity	Normal	8x 01 04 58 02 FF	0x58	02	AF Sensitivity High/Low
	Low	8x 01 04 58 03 FF		03	
CAM_AFMode	Normal AF	8x 01 04 57 00 FF	0x57	00	AF Movement Mode
	Interval AF	8x 01 04 57 01 FF		01	
	Zoom Trigger AF	8x 01 04 57 02 FF		02	
	Active/Interval Time	8x 01 04 27 0p 0q 0r 0s FF	0x27	0p 0q 0r 0s	pq: Movement Time, rs: Interval
CAM_IRCorrection	Standard	8x 01 04 11 00 FF	0x11	00	FOCUS IR compensation data switching
	IR Light	8x 01 04 11 01 FF		01	
CAM_ZoomFocus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	0x47	0p 0q 0r 0s 0t 0u 0v 0w	pqrs: Zoom Position tuvw: Focus Position
CAM_Initialize	Lens	8x 01 04 19 01 FF	0x19	01	Lens Initialization Start
	Camera	8x 01 04 19 03 FF		03	Camera reset

Command Set

Command Set	Command	Packet			Comments
CAM_WB	Auto	8x 01 04 35 00 FF	0x35	00	Normal Auto
	Indoor	8x 01 04 35 01 FF		01	Indoor mode
	Outdoor	8x 01 04 35 02 FF		02	Outdoor mode
	One Push WB	8x 01 04 35 03 FF		03	One Push WB mode
	ATW	8x 01 04 35 04 FF		04	Auto Tracing White Balance
	Manual	8x 01 04 35 05 FF		05	Manual Control mode
	One Push Trigger	8x 01 04 10 05 FF	0x10	05	One Push WB Trigger
	Outdoor Auto	8x 01 04 35 06 FF	0x35	06	Outdoor auto
	Sodium Lamp Auto	8x 01 04 35 07 FF		07	Auto including sodium lamp source
	Sodium Lamp	8x 01 04 35 08 FF		08	Sodium lamp source fixed mode
CAM_RGain	Reset	8x 01 04 03 00 FF	0x03	00	Manual Control of R Gain
	Up	8x 01 04 03 02 FF		02	
	Down	8x 01 04 03 03 FF		03	
	Direct	8x 01 04 43 00 00 0p 0q FF	0x43	00 00 0p 0q	pq: R Gain (0 to 0xFF)
CAM_BGain	Reset	8x 01 04 04 00 FF	0x04	00	Manual Control of B Gain
	Up	8x 01 04 04 02 FF		02	
	Down	8x 01 04 04 03 FF		03	
	Direct	8x 01 04 44 00 00 0p 0q FF	0x44	00 00 0p 0q	pq: B Gain (0 to 0xFF)
CAM_AE	Full Auto	8x 01 04 39 00 FF	0x39	00	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF		03	Manual Control mode
	Shutter Priority	8x 01 04 39 0A FF		0A	Shutter Priority Automatic Exposure mode
	Iris Priority	8x 01 04 39 0B FF		0B	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF		0D	Bright Mode (Manual control)
CAM_SlowShutter	Auto	8x 01 04 5A 02 FF	0x5A	02	Auto Slow Shutter ON/OFF
	Manual	8x 01 04 5A 03 FF		03	
CAM_Shutter	Reset	8x 01 04 0A 00 FF	0x0A	00	Shutter Setting
	Up	8x 01 04 0A 02 FF		02	
	Down	8x 01 04 0A 03 FF		03	
	Direct	8x 01 04 4A 00 00 0p 0q FF	0x4A	00 00 0p 0q	pq: Shutter Position
CAM_Iris	Reset	8x 01 04 0B 00 FF	0x0B	00	Iris Setting
	Up	8x 01 04 0B 02 FF		02	
	Down	8x 01 04 0B 03 FF		03	
	Direct	8x 01 04 4B 00 00 0p 0q FF	0x4B	00 00 0p 0q	pq: Iris Position (0 to 0x11)
CAM_Gain	Reset	8x 01 04 0C 00 FF	0x0C	00	Gain Setting
	Up	8x 01 04 0C 02 FF		02	
	Down	8x 01 04 0C 03 FF		03	
	Direct	8x 01 04 4C 00 00 0p 0q FF	0x4C	00 00 0p 0q	pq: Gain Position (0 to 0x0F)
	Gain Limit	8x 01 04 2C 0p FF	0x2C	0p	p: Gain Position
CAM_Bright	Reset	8x 01 04 0D 00 FF	0x0D	00	Bright Setting
	Up	8x 01 04 0D 02 FF		02	
	Down	8x 01 04 0D 03 FF		03	
	Direct	8x 01 04 4D 00 00 0p 0q FF	0x4D	00 00 0p 0q	pq: Bright Position (0 to 0x15)
CAM_ExpComp	On	8x 01 04 3E 02 FF	0x3E	02	Exposure Compensation ON/OFF
	Off	8x 01 04 3E 03 FF		03	
	Reset	8x 01 04 0E 00 FF	0x0E	00	Exposure Compensation Amount Setting
	Up	8x 01 04 0E 02 FF		02	
	Down	8x 01 04 0E 03 FF		03	
	Direct	8x 01 04 4E 00 00 0p 0q FF	0x4E	00 00 0p 0q	pq: ExpComp Position (0 to 0x0E)
CAM_BackLight	On	8x 01 04 33 02 FF	0x33	02	Back Light Compensation ON/OFF
	Off	8x 01 04 33 03 FF		03	
CAM_SpotAE	On	8x 01 04 59 02 FF	0x59	02	Spot Automatic Exposure Setting
	Off	8x 01 04 59 03 FF		03	
	Position	8x 01 04 29 0p 0q 0r 0s FF	0x29	0p 0q 0r 0s	pq: X (0 to F), rs: Y (0 to F)
CAM_AE_Response	Direct	8x 01 04 5D pp FF	0x5D	pp	pp: Automatic Exposure Response Setting (01 to 30), default value: 01
CAM_WD	On	8x 01 04 3D 02 FF	0x3D	02	Wide-D ON/OFF
	Off	8x 01 04 3D 03 FF		03	
	AutoOnOff	8x 01 04 3D 00 FF		00	Wide dynamic ON/OF auto switching
	On (RatioFix)	8x 01 04 3D 01 FF		01	Wide dynamic ON (Fixed exposure ratio mode)
	On (Dver Compati)	8x 01 04 3D 04 FF		04	Wide dynamic ON (Dver operation)
	Set Parameter	8x 01 04 2D 0p 0q 0r 0s 0t 0u 00 00 FF	0x2D	0p 0q 0r 0s 0t 0u 00 00	p: Screen display 0-Combined image, 2-Long time, 3-Short time q: Detection sensitivity (0: L 1: M 2: H) r: Blocked-up shadow correction level (0: L 1: M 2: H 3: S) s: Blown-out highlight correction level (0: L 1: M 2: H) tu: Exposure ratio of short exposure (x1 to x64)
CAM_WDAlarmRep	On	8x 01 04 3B 02 FF	0x3B	02	Wide dynamic auto switching alarm ON/OFF
	Off	8x 01 04 3B 03 FF		03	
	(Reply)	y0 07 04 3B 02 FF			Wide dynamic OFF ON
		y0 07 04 3B 03 FF			Wide dynamic ON OFF
CAM_Aperture	Reset	8x 01 04 02 00 FF	0x02	00	Aperture Control
	Up	8x 01 04 02 02 FF		02	
	Down	8x 01 04 02 03 FF		03	
	Direct	8x 01 04 42 00 00 0p 0q FF	0x42	00 00 0p 0q	pq: Aperture Gain (0 to 0x14)
CAM_HR	On	8x 01 04 52 02 FF	0x52	02	High-Resolusion Mode ON/OFF
	Off	8x 01 04 52 03 FF		03	
CAM_NR		8x 01 04 53 0p FF	0x53	0p	p: NR Setting (0: OFF, level 1 to 3)
CAM_Gamma		8x 01 04 5B 0p FF	0x5B	0p	p: Gamma setting (0: Standard, 1 to 4)
CAM_HighSensitivit	On	8x 01 04 5E 02 FF	0x5E	02	High Sensitivity mode ON/OFF
	Off	8x 01 04 5E 03 FF		03	
CAM_LR_Reverse	On	8x 01 04 61 02 FF	0x61	02	Mirror Image ON/OFF
	Off	8x 01 04 61 03 FF		03	
CAM_Freeze	On	8x 01 04 62 02 FF	0x62	02	Still Image ON/OFF
	Off	8x 01 04 62 03 FF		03	
CAM_PictureEffect	Off	8x 01 04 63 00 FF	0x63	00	Picture Effect Setting
	Neg.Art	8x 01 04 63 02 FF		02	
	B&W	8x 01 04 63 04 FF		04	
CAM_PictureFlip	On	8x 01 04 66 02 FF	0x66	02	Picture flip ON/OFF
	Off	8x 01 04 66 03 FF		03	
CAM_ICR	On	8x 01 04 01 02 FF	0x01	02	Infrared Mode ON/OFF
	Off	8x 01 04 01 03 FF	0x01	03	
CAM_AutoICR	On	8x 01 04 51 02 FF	0x51	02	Auto dark-field mode On/Off
	Off	8x 01 04 51 03 FF		03	
	Threshold	8x 01 04 21 00 00 0p 0q FF	0x21	00 00 0p 0q	pq: ICR ON OFF Threshold Level

Command Set

Command Set	Command	Packet			Comments
CAM_AutoICRAlarmReply	On	8x 01 04 31 02 FF	0x31	02	Auto ICR switching Alarm ON/OFF
	Off	8x 01 04 31 03 FF		03	
	(Reply)	y0 07 04 31 02 FF			ICR OFF -> ON
		y0 07 04 31 03 FF			ICR ON -> OFF
CAM_Memory (Preset pos)	Reset	8x 01 04 3F 00 0p FF	0x3F	00 0p	p: Memory Number (=0 to 6)
	Set	8x 01 04 3F 01 0p FF		01 0p	
	Recall	8x 01 04 3F 02 0p FF		02 0p	
CAM_CUSTOM	Reset	8x 01 04 3F 00 7F FF	0x3F	00 7F	Starts up in this mode when the power is turned on.
	Set	8x 01 04 3F 01 7F FF		01 7F	
	Recall	8x 01 04 3F 02 7F FF		02 7F	
CAM_MemSave	Write	8x 01 04 23 0X 0p 0p 0q 0q FF	0x23	0X 0p 0p 0q 0q	X: 00 to 07 (Address), total 16 byte ppqq: 0x0000 to 0xFFFF (Data)
CAM_Display	On	8x 01 04 15 02 FF (8x 01 06 06 02 FF)	0x15	02	Display ON/OFF
	Off	8x 01 04 15 03 FF (8x 01 06 06 03 FF)		03	
	On/Off	8x 01 04 15 10 FF (8x 01 06 06 10 FF)		0x10	
CAM_MultiLineTitle	Title Set1	8x 01 04 73 1L 00 nn pp qq 00 00 00 00 00 00 FF	0x73		L: Line Number 0~0xA nn: H-position 0~0x1F pp: Color 0:WHT 1:YEL 2:MAG 3:RED qq: Blink 0:Not blink 1:Blinks
	Title Set2	8x 01 04 73 2L mm nn pp qq rr ss tt uu vv ww FF			L: Line Number, mnpqrstuvw: Setting of characters (1 to 10)
	Title Set3	8x 01 04 73 3L mm nn pp qq rr ss tt uu vv ww FF			L: Line Number, mnpqrstuvw: Setting of characters (1 to 10)
	Title Clear	8x 01 04 74 1p FF	0x74	1p	Title Setting clear (p: 0 to a, f= all lines)
	On	8x 01 04 74 2p FF		2p	Title display On/Off (0 to a, f= all lines)
	Off	8x 01 04 74 3p FF		3p	
CAM_Mute	On	8x 01 04 75 02 FF	0x75	02	Muting ON/OFF
	Off	8x 01 04 75 03 FF		03	
	On/Off	8x 01 04 75 10 FF		0x10	
CAM_PrivacyZone	SetMask	8x 01 04 76 mm nn 0r 0r 0s 0s FF	0x76	mm nn 0r 0r 0s 0s	mm: Mask Settings nn: 00-Modify, 01-New rr: W ss: H
	Display	8x 01 04 77 pp pp pp pp FF	0x77	pp pp pp pp	Mask Display ON/OFF pp pp pp pp: Mask Settings (0: OFF, 1: ON)
	SetMaskColor	8x 01 04 78 pp pp pp pp qq rr FF	0x78	pp pp pp pp qq rr	pp pp pp pp: Mask Color Settings qq: Color Setting when 0 is selected rr: Color Setting when 1 is selected
	SetPanTiltAngle	8x 01 04 79 0p 0p 0p 0q 0q 0q FF	0x79	0p 0p 0p 0q 0q 0q	Pan/Tilt Angle Settings ppp: Pan 0~4095(0xFFF) 360/4096 Resolution qqq: Tilt 0~4095(0xFFF) 360/4096 Resolution
	SetPTZMask	8x 01 04 7B mm 0p 0p 0p 0q 0q 0q 0r 0r 0r 0r FF	0x7B		Pan/Tilt/Zoom Settings for Mask ppp: Pan 0~0xFFF qqq: Tilt 0~0xFFF rrrr: Zoom pos 0~0x4000
	Non_InterlockMask	8x 01 04 6F mm 0p 0p 0q 0q 0r 0r 0s 0s FF	0x6F		mm: Non_Interlock Mask Settings pp: X, q: Y, rr: W, ss: H
	GridOn	8x 01 04 7C 02 FF	0x7C	02	Grid Display ON/OFF
	GridOff	8x 01 04 7C 03 FF		03	Grid/Center Line Display Off
	CenterLineOn	8x 01 04 7C 04 FF		04	Center Line Display On
CAM_IDWrite		8x 01 04 22 0p 0q 0r 0s FF	0x22	0p 0q 0r 0s	pqrs: Camera ID (=0000 to FFFF)
CAM_Alarm	On	8x 01 04 6B 02 FF	0x6B	02	Alarm ON/OFF
	Off	8x 01 04 6B 03 FF		03	
	SetMode	8x 01 04 6C pp FF	0x6C	pp	pp: Mode setting 00 Focus change detection (reference value is not updated) 01 Focus change detection (reference value is updated) 02 AE change detection (reference value is not updated) 03 AE change detection (reference value is updated)
	SetDayNighLevel	8x 01 04 6D 0p 0p 0p 0q 0q 0q FF	0x6D	0p 0p 0p 0q 0q 0q	ppp: Day judgement level setting qqq: Night judgement level setting
	Alarm(Reply)	y0 07 04 6B 01 FF			Detection level "Low" -> "High"
		y0 07 04 6B 00 FF			Detection level "High" -> "Low"

A	B	C	D	E	F	G	H	0x00, 0x01, …, 0x07
I	J	K	L	M	N	O	P	0x08, 0x09, …, 0x0f
Q	R	S	T	U	V	W	X	0x10, 0x11, …, 0x17
Y	Z	&		?	!	1	2	0x18, 0x19, …, 0x1f
3	4	5	6	7	8	9	0	0x20, 0x21, …, 0x27
								0x28, 0x29, …, 0x2f
								0x30, 0x31, …, 0x37
								0x38, 0x39, …, 0x3f
	$	↵	➡	⬆	⬇	➡	⬅	0x40, 0x41, …, 0x47
	"	:	'	.	,	/	-	0x48, 0x49, …, 0x4f
*								0x50, 0x51, …, 0x57

Command Set

Command Set	Command	Packet			Comments
CAM_MD	On	8x 01 04 1B 02 FF	0x1B	02	Motion Detection On/Off
	Off	8x 01 04 1B 03 FF		03	
	Function Set	8x 01 04 1C 0m 0n 0p 0q 0r 0s FF	0x1C	0m 0n 0p 0q 0r 0s	m: Display mode n: Detection Frame Set (0 to F) pq: Threshold Level (00 to FF) rs: Interval Time set (00 to FF)
	Window Set	8x 01 04 1D 0m 0p 0q rr 0s FF	0x1D	0m 0p 0q rr 0s	m: Select Detection Frame (0, 1, 2, 3) p: Start Horizontal Position (00 to 0F) q: Start Vertical Position (00 to 07) r: Stop Horizontal Position (01 to 10) s: Stop Vertical Position (01 to 08)
	Alarm (Reply)	y0 07 04 1B 0p FF	0x1B	0p	p: Detection Frame Number
CAM_Continuous ZoomPosReply	On	8x 01 04 69 02 FF	0x69	02	ZoomPosition data Continuous Output On/Off
	Off	8x 01 04 69 03 FF		03	
	(Reply)	y0 07 04 69 0p 0p 0q 0q 0q 0q FF			pp: D-Zoom Position * 00: When Zoom Mode is Combine qqqq: Zoom Position
CAM_ReplyInterval TimeSet		8x 01 04 6A 00 00 0p 0p FF	0x6A		pp: Interval Time [Vertical timing]
CAM_RegisterValue		8x 01 04 24 mm 0p 0p FF	0x24		mm: Register No. (=00-7F) pp: Register Value (=00-7F)
CAM_ColorEnhance	Parameter Set	8x 01 04 20 mm nn pp qq rr FF	0x20		mm: First byte from the top threshold value nn: Second byte from the top threshold value pp: Third byte from the top threshold value qq: Color specification for high-intensity rr: Color specification for low-intensity Range for mm, nn, and pp is 0 to F. Range for qq and rr is 0 to 8. Colors 0: Yellow, 1: Cyan, 2: Green, 3: White, 4: Magenta, 5: Red, 6: Blue, 7: Black, 8: Gray
	On	8x 01 04 50 02 FF	0x50	02	Color Enhancement ON/OFF
	Off	8x 01 04 50 03 FF		03	
CAM_ ChromaSuppress		8x 01 04 5F pp FF	0x5F	pp	pp: Chroma Suppress setting level 00: OFF 1 to 3: ON (3 levels). Effect increases as the level number increases.
CAM_ColorGain	Direct	8x 01 04 49 00 00 00 0p FF	0x49		p: Color Gain setting 0h (60%) to Eh (200%)
CAM_ColorHue	Direct	8x 01 04 4F 00 00 00 0p FF	0x4F		p: Color Hue setting 0h (－14 dgrees) ~ Eh (+14 degrees)
CAM_Menu		8x 01 06 06 pp FF	0x06		pp: 2-ON 3-OFF 0-BACK 11-UP 12-DOWN 14-LEFT 18-RIGHT

8x 01 04 24 mm 0p 0p FF

Register Set

Command Set	Command	Packet	Reg No	Value	Comments
BaudRate		8x 01 04 24 00 00 0p FF	0x00	0p	p: 0-9600 1-19200 2-38400
Monitoring Mode		8x 01 04 24 72 0p 0p FF	0x72	pp	pp: 1-1080i@60 (specific model) 2-1080i@59.94 (not supported) 3-1080p@60 (specific model) 4-1080i@50 (specific model) 5-1080p@50 (specific model) 6-1080p@30 7-1080p@29.97 (not supported) 8-1080p@25 9-720p@60 A-720p@59.94 (not supported) B-NTSC analog out C-720p50 D-PAL analog out E-720p@30 F-720p@29.97 (not supported) 10-NTSC analog out 11-720p@25 12-PAL analog out
Output enable		8x 01 04 24 73 00 0p FF	0x73	0p	p: 1-CVBS On 2-SDI On 3-Both On
Wide limit		8x 01 04 24 50 0p 0p FF	0x50	pp	pp: 0-EB
Tele limit		8x 01 04 24 51 0p 0p FF	0x51	pp	pp: 0-FF
E-Zoom Max		8x 01 04 24 52 0p 0p FF	0x52	pp	pp: Max D-zoom ratio = 256/ (256-pp)
Stable Zoom		8x 01 04 24 53 00 0p FF	0x53	0p	p: 0-OFF 1-ON
Focus Trace		8x 01 04 24 54 00 0p FF	0x54	0p	p: 0-OFF 1-ON
Focus Offset		8x 01 04 24 55 0p 0p FF	0x55	pp	pp: 0-FF
HighLightMaskOn		8x 01 04 24 2D 00 0p FF	0x2D	0p	p: HLC On/Off 0-OFF 1-ON
HighLightMaskLevel		8x 01 04 24 2E 0p 0p FF	0x2E	pp	pp: HighLight Level 0~20
HighLightMaskColor		8x 01 04 24 2F 00 0p FF	0x2F	0p	p: MaskColor 0:WHT 1:YEL 2:CYN 3:GRN 4:MAG 5:RED 6:BLU 7:BLK
PrvMaskTrans		8x 01 04 24 3A 00 0p FF	0x3A	0p	p: Mask Transparency 0-4
ClockDisplayOn		8x 01 04 24 43 00 0p FF	0x43	0p	p: 0-OFF 1-ON
TemperatureDisplayOn		8x 01 04 24 44 00 0p FF	0x44	0p	p: 0-OFF 1-ON
AE_InOutdoor		8x 01 04 24 4B 00 0p FF	0x4B	0p	p: 0-AE Indoor Mode 1-AE Outdoor Mode
Focus Near Limit		8x 01 04 24 5F 00 0p FF	0x5F	0p	p: Near Limit 0-30Cm, 1-1M, 2-1.5M, 3-2M, 4-3M, 5-5M, 6-10M
Focus Far Limit		8x 01 04 24 60 00 0p FF	0x60	0p	p: Far Limit 0-2M, 1-3M, 2-5M, 3-10M, 4-Infinity

Inquiry Command

Inquiry Command	Command Packet	Inquiry Packet	Comments
CAM_ClockInq	8x 09 00 03 FF	y0 50 HH MM SS dd mm 0t 0u 0v 0w FF	HH: hours MM: minutes SS: seconds dd: day mm: month tuvw: year
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF y0 50 03 FF	On Off(Standby)
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_DZoomModeI	8x 09 04 06 FF	y0 50 02 FF y0 50 03 FF	D-Zoom On D-Zoom Off
CAM_DZoomC/SMo	8x 09 04 36 FF	y0 50 00 FF y0 50 01 FF	Combine Mode Separate Mode
CAM_DZoomPosInq	8x 09 04 46 FF	y0 50 00 00 0p 0q FF	pq: D-Zoom Position
CAM_FocusModeInq	8x 09 04 38 FF	y0 50 02 FF y0 50 03 FF	Auto Focus Manual Focus
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position (0x1000 - 0xC000)
CAM_FocusNearLim	8x 09 04 28 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Near Limit Position
CAM_AFSensitivityI	8x 09 04 58 FF	y0 50 02 FF y0 50 03 FF	AF Sensitivity Normal AF Sensitivity Low
CAM_AFModeInq	8x 09 04 57 FF	y0 50 00 FF y0 50 01 FF y0 50 02 FF	Normal AF Interval AF Zoom Trigger AF
CAM_AFTimeSettin	8x 09 04 27 FF	y0 50 0p 0q 0r 0s FF	pq: Movement Time rs: Interval Time
CAM_IRCorrectionIr	8x 09 04 11 FF	y0 50 02 FF y0 50 03 FF	Standard IR Light
CAM_WBModeInq	8x 09 04 35 FF	y0 50 00 FF y0 50 01 FF y0 50 02 FF y0 50 03 FF y0 50 04 FF y0 50 05 FF y0 50 06 FF y0 50 07 FF y0 50 08 FF	Auto InDoor OutDoor One Push WB ATW Manual Outdoor Auto Sodium Lamp Auto Sodium Lamp
CAM_RGainInq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF y0 50 03 FF y0 50 0A FF y0 50 0B FF y0 50 0D FF	Full Auto Manual Shutter Priority Iris Priority Bright
CAM_SlowShutterM	8x 09 04 5A FF	y0 50 02 FF y0 50 03 FF	Auto Manual
CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position
CAM_IrisPosInq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
CAM_GainPosInq	8x 09 04 4C FF	y0 50 00 00 0p 0q FF	pq: Gain Position
CAM_GainLimitInq	8x 09 04 2C FF	y0 50 0p FF	p: Gain Limit
CAM_BrightPosInq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
CAM_ExpCompMod	8x 09 04 3E FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ExpCompPos	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position
CAM_BackLightMod	8x 09 04 33 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_SpotAEModeI	8x 09 04 59 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_SpotAEPosInq	8x 09 04 29 FF	y0 50 0p 0q 0r 0s FF	pq: X position rs: Y position
CAM_AE_Response	8x 09 04 5D FF	y0 50 pp FF	pp: 01 to 0x20
CAM_WDModeInq	8x 09 04 3D FF	y0 50 02 FF y0 50 03 FF y0 50 00 FF y0 50 01 FF y0 50 04 FF	On Wide-D Off AutoOnOff On (RatioFix) On (Dver operation)
CAM_WDParameter	8x 09 04 2D FF	y0 50 0p 0p 0q 0r 0s 0t 0u 00 00 FF	p: Screen display q: Detection sensitivity r: Blocked-up shadow correction level s: Blown-out highlight correction level tu: Exposure ratio of short exposure
CAM_WDAlarmRepl	8x 09 04 3B FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain
CAM_HRModeInq	8x 09 04 52 FF	y0 50 02 FF y0 50 03 FF	On (Hi-Resolution) Off
CAM_NRModeInq	8x 09 04 53 FF	y0 50 0p FF	Noise Reduction p: 0 to 5
CAM_GammaInq	8x 09 04 5B FF	y0 50 0p FF	Gamma p: 0 to 4
CAM_HighSensitivity	8x 09 04 5E FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_LR_ReverseMo	8x 09 04 61 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_FreezeModeIn	8x 09 04 62 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_PictureEffectM	8x 09 04 63 FF	y0 50 00 FF y0 50 02 FF y0 50 04 FF	Off Neg.Art B&W
CAM_PictureFlipMo	8x 09 04 66 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ICRModeInq	8x 09 04 01 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_AutoICRMode	8x 09 04 51 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_AutoICRThresh	8x 09 04 21 FF	y0 50 00 00 0p 0q FF	pq: ICR ON ? OFF Threshold Level
CAM_AutoICRAlarm	8x 09 04 31 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_MemoryInq	8x 09 04 3F FF	y0 50 pp FF	pp: Memory number recalled last
CAM_MemSaveInq	8x 09 04 23 0X FF	y0 50 0p 0p 0q 0q FF	X: 00 to 07 (Address) ppqq: 0x0000 to 0xFFFF (Data)
CAM_DisplayModeI	8x 09 04 15 FF (8x 09 06 06 FF)	y0 50 02 FF y0 50 03 FF	On Off
CAM_TitleDisplayMo	8x 09 04 74 FF (8x 09 06 06 FF)	y0 50 02 FF y0 50 03 FF	On Off
CAM_MuteModeInq	8x 09 04 75 FF	y0 50 02 FF y0 50 03 FF	On Off

Inquiry Command

Inquiry Command	Command Packet	Inquiry Packet	Comments
CAM_PrivacyDisplay	8x 09 04 77 FF	y0 50 pp pp pp pp FF	pp pp pp pp: Mask Display (0: OFF 1: ON)
CAM_PrivacyPanTiltI	8x 09 04 79 FF	y0 50 0p 0p 0p 0q 0q 0q FF	ppp: Pan qqq: Tilt
CAM_PrivacyPTZInq	8x 09 04 7B mm FF	y0 50 0p 0p 0p 0q 0q 0q 0r 0r 0r 0r FF	mm: Mask Settings ppp: Pan qqq: Tilt rrr: Zoom
CAM_PrivacyMonito	8x 09 04 6F FF	y0 50 pp pp pp pp FF	pp pp pp pp: Mask is displayed now.
CAM_KeyLockInq	8x 09 04 17 FF	y0 50 00 FF y0 50 02 FF	Off On
CAM_IDInq	8x 09 04 22 FF	y0 50 0p 0q 0r 0s FF	pqrs: Camera ID
CAM_VersionInq	8x 09 00 02 FF	y0 50 00 20 mn pq rs tu vw FF	mnpq: Model Code (04xx) rstu: ROM version vw: Socket Number (=02)
CAM_AlarmInq	8x 09 04 6B FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_AlarmModeInc	8x 09 04 6C FF	y0 50 pp FF	pp: Alarm Mode
CAM_AlarmDayNigh LevelInq	8x 09 04 6D FF	y0 50 0p 0p 0p 0q 0q 0q 0r 0r 0r FF	ppp: Day judgement level setting qqq: Night judgement level setting rrr: Current Automatic Exposure level setting
CAM_AlarmDetect LevelInq	8x 09 04 6E FF	y0 50 01 FF y0 50 00 FF	Detection level "High" Detection level "Low"
CAM_MDModeInq	8x 09 04 1B FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_MDFunctionIn	8x 09 04 1C FF	y0 50 0m 0n 0p 0q FF	m: Display mode n: Detection Frame Set (0 to F) pq: Threshold Level (0 to FF) rs: Interval Time set (0 to FF)
CAM_MDWindowIn	8x 09 04 1D 0m FF	y0 50 0p 0q 0r 0s FF	m: Select Detection Frame (0 1 2 3) p: Start Horizontal Position (00 to 0B) q: Start Vertical Position (00 to 07) r: Stop Horizontal Position (01 to 0C) s: Stop Vertical Position (01 to 08)
CAM_ContinuousZo ReplyModeInq	8x 09 04 69 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ReplyIntervalT	8x 09 04 6A FF	y0 50 00 00 0p 0p FF	pp: Interval Time
CAM_RegisterValueI	8x 09 04 24 mm FF	y0 50 0p 0p FF	mm: Register No. (00 to 7F) pp: Register Value (00 to FF)
BaudRate	8x 09 04 24 00 FF	y0 50 00 0p FF	p: 0-9600 1-19200 2-38400
Monitoring Mode	8x 09 04 24 72 FF	y0 50 0p 0p FF	pp: 6-1080p@30 8-1080p@25 9-720p@60 C-720p50
Output enable	8x 09 04 24 73 FF	y0 50 00 0p FF	p: 1-CVBS On 2-SDI On 3-Both On
Wide limit	8x 09 04 24 50 FF	y0 50 00 pp FF	pp: 0-EB
Tele limit	8x 09 04 24 51 FF	y0 50 00 pp FF	pp: 0-FF
E-Zoom Max	8x 09 04 24 52 FF	y0 50 00 pp FF	pp: Max D-zoom ratio = 256/ (256-pp)
Stable Zoom	8x 09 04 24 53 FF	y0 50 00 0p FF	p: 0-OFF 1-ON
Focus Trace	8x 09 04 24 54 FF	y0 50 00 0p FF	p: 0-OFF 1-ON
Focus Offset	8x 09 04 24 55 FF	y0 50 00 pp FF	pp: 0-FF
ClockDisplayOn	8x 09 04 24 43 FF	y0 50 00 0p FF	p: 0-OFF 1-ON
TempDisplayOn	8x 09 04 24 44 FF	y0 50 00 0p FF	p: 0-OFF 1-ON
AE_InOutdoor	8x 09 04 24 4B FF	y0 50 00 0p FF	p: 0-AE Indoor Mode 1-AE Outdoor Mode
Focus Near Limit	8x 09 04 24 5F FF	y0 50 00 0p FF	p: Near Limit 0-30Cm, 1-1M, 2-1.5M, 3-2M, 4-3M, 5-5M, 6-10M
Focus Far Limit	8x 09 04 24 60 FF	y0 50 00 0p FF	p: Far Limit 0-2M, 1-3M, 2-5M, 3-10M, 4-Infinity
CAM_ColorEnhanceI	8x 09 04 20 FF	y0 50 mm nn pp qq rr FF	mm: First byte from the top threshold value nn: Second byte from the top threshold value pp: Third byte from the top threshold value qq: Color specification for high-intensity rr: Color specification for low-intensity Colors 0: Yellow 1:Cyan 2:Green 3:White 4: Magenta 5:Red 6:Blue 7:Black 8:Gray
	8x 09 04 50 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ChromaSuppr	8x 09 04 5F FF	y0 50 pp FF	pp: Chroma Suppress setting level
CAM_ColorGainInq	8x 09 04 49 FF	y0 50 00 00 00 0p FF	p: Color Gain setting 0h (60%) to Eh (200%)
CAM_ColorHueInq	8x 09 04 4F FF	y0 50 00 00 00 0p FF	p: Color Hue setting 0h (? 14 degrees) ~ Eh (+ 14 degrees)
CAM_TempInq	8x 09 04 68 FF	y0 50 00 00 0p 0q FF	pq : Current Temperature 0(0°C) ~ 0x7F(127 °C)
CAM_Menu	8x 09 06 06 FF	y0 50 0p FF	p: 2-ON 3-OFF
CAM_FocusStatusIr	8x 09 04 08 FF	y0 50 02 FF y0 50 03 FF	Focus executing Focus stopped

Inquiry Command

Inquiry Command	Command Packet	Inquiry Packet	Comments
Lens Control System Inquiry	8x 09 7E 7E 00 FF	y0 50 0p 0p 0p 0p 0q 0q 0r 0r 0r 0r 00 hh 0m FF	pppp: Zoom position qq: Near limit rrrr: Focus position hh: [5]DzoomMode 0-combine 1-seperate [4:3] 0-Nor 1-Interval 2-ztrg [2]AF sensitivity 0-slow 1-Nor [1]Dzoom 0-off 1-on [0]FocusMode 0-Manual 1-Auto m: [3]Low contrast detection 0-no 1-yes [2]Camera memory recall 0-stopped 1-executing [1]Focus command 0-stopped 1-executing [0]Zoom command 0-stopped 1-executing
	8x 09 7E 7E 01 FF	y0 50 0p 0p 0q 0q 0r 0s 0t hh mm nn 0u vv 0w FF	pp: Rgain qq: Bgain r: WB mode s: Aperture gain t: Exposue Mode hh: [5]High resolution 0-off 1-on [4]Wide-D 0-off 1-other than off [3]Spot AE 0-off 1-on [2]Back Light 0-off 1-on [1]Exposure comp. 0-off 1-on [0]slow shutter 0-Manual 2-Auto mm: Shutter position nn: Iris position u: Gain position vv: Bright position w: Exposure Comp. position
	8x 09 7E 7E 02 FF	y0 50 0p qq rr 0s 00 00 0t 0t 0t 0t hh 00 00 FF	p: [3]Auto ICR alarm 0-off 1-on [2]Auto ICR 0-off 1-on [1]0 [0]power 0-off 1-on qq: [4]ICR 0-off 1-on rr: [5]Privacy zone 0-off 1-on [4]Mute 0-off 1-on [3]Title display 0-off 1-on [2]Display 0-off 1-on s: Picture Effect Mode tttt: Cam ID hh: [4]Memory 0-not provided 1-provided [3]0 [2]ICR 0-not provided 1-provided [1]0 [0]0-1/60,1/30 1-1/50,1/25
	8x 09 7E 7E 03 FF	y0 50 0p 0p 0q 0q 0r 0r 0s 0t 0u vv hh mm nn FF	pp: Dzoom position qq: AF activation time rr: AF Interval time s: SpotAE position X t: SpotAE position Y u: [2]MD 0-off 1-on [1]Alarm 0-off 1-on [0]flip 0-off 1-on vv: [6:3]color gain [2]Advanced privacy 0-not provided [1]Alarm 0-not provided [0]flip 0-not provided hh: AE response mm: [6:4]Gamma [3]High Sensitivity mode 0-off 1-on [2:0]NR level nn: [6:4]Chroma suppression [3:0]Gain limit
	8x 09 7E 7E 04 FF	y0 50 0p 0q 0r 0s 0s 00 00 00 00 00 00 00 00 FF	p: WideD mode 0-off 1-on 2-auto on/off 3-on(ratioFix) 4-on(Dver) q: [3:2]WideD screen display 0-combined image 2-longtime 3-shorttime [1:0]WideD detection sensitivity 0-L 1-M 2-H r: [3:2]WideD blocked-up shadow correction level 0-L 1-M 2-H 3-S [1:0]WideD blown-out highlight correction level 0-L 1-M 2-H ss: WideD short exposure Exposure ratio
	8x 09 7E 7E 05 FF	y0 50 0p 00 00 00 00 00 00 00 00 00 00 00 00 FF	p: Color Hue

TABLE

Shutter Speed	Value	NTSC	PAL
	15	1/10000	1/10000
	14	1/6000	1/6000
	13	1/4000	1/3500
	12	1/3000	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	1/125	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

IRIS	Value	F no.
	11	F1.6
	10	F2
	0F	F2.4
	0E	F2.8
	0D	F3.4
	0C	F4
	0B	F4.8
	0A	F5.6
	09	F6.8
	08	F8
	07	F9.6
	06	F11
	05	F14
	00	CLOSE

Gain	Value	dB
	0F	+28 dB
	0E	+26 dB
	0D	+24 dB
	0C	+22 dB
	0B	+20 dB
	0A	+18 dB
	09	+16 dB
	08	+14 dB
	07	+12 dB
	06	+10 dB
	05	+8 dB
	04	+6 dB
	03	+4 dB
	02	+2 dB
	01	0 dB
	00	−3 dB

Gain Limit	Value	dB
	0F	+28 dB
	0E	+26 dB
	0D	+24 dB
	0C	+22 dB
	0B	+20 dB
	0A	+18 dB
	09	+16 dB
	08	+14 dB
	07	+12 dB
	06	+10 dB
	05	+8 dB
	04	+6 dB

Brightness	Value	IRIS	GAIN
	1F	F1.6	+28 dB
	1E	F1.6	+26 dB
	1D	F1.6	+24 dB
	1C	F1.6	+22 dB
	1B	F1.6	+20 dB
	1A	F1.6	+18 dB
	19	F1.6	+16 dB
	18	F1.6	+14 dB
	17	F1.6	+12 dB
	16	F1.6	+10 dB
	15	F1.6	+8 dB
	14	F1.6	+6 dB
	13	F1.6	+4 dB
	12	F1.6	+2 dB
	11	F1.6	0 dB
	10	F2	0 dB
	0F	F2.4	0 dB
	0E	F2.8	0 dB
	0D	F3.4	0 dB
	0C	F4	0 dB
	0B	F4.8	0 dB
	0A	F5.6	0 dB
	09	F6.8	0 dB
	08	F8	0 dB
	07	F9.6	0 dB
	06	F11	0 dB
	05	F14	0 dB
	00	CLOSE	0 dB

TABLE

x20 Model

Zoom Ratio	Zoom Ratio	Positon Data
Optical Zoom	×1	0000
	×2	1851
	×3	22BE
	×4	28F6
	×5	2D45
	×6	3086
	×7	3320
	×8	3549
	×9	371E
	×10	38B3
	×11	3A12
	×12	3B42
	×13	3C47
	×14	3D25
	×15	3DDF
	×16	3E7B
	×17	3EFB
	×18	3F64
	×19	3FBA
	×20	4000
Digital Zoom	×1	4000
	×2	6000
	×3	6A80
	×4	7000
	×5	7300
	×6	7540
	×7	76C0
	×8	7800
	×9	78C0
	×10	7980
	×11	7A00
	×12	7AC0

x12 Model

Zoom Ratio	Zoom Ratio	Positon Data
Optical Zoom	×1	0000
	×2	1982
	×3	24E2
	×4	2BC9
	×5	3099
	×6	343D
	×7	3724
	×8	3988
	×9	3B8B
	×10	3D43
	×11	3EBB
	×12	4000
Digital Zoom	×1	4000
	×2	6000
	×3	6A80
	×4	7000
	×5	7300
	×6	7540
	×7	76C0
	×8	7800
	×9	78C0
	×10	7980
	×11	7A00
	×12	7AC0

x10 Model

Zoom Ratio	Zoom Ratio	Positon Data
Optical Zoom	×1	0000
	×2	1AE1
	×3	271B
	×4	2DD3
	×5	32F2
	×6	374C
	×7	3A7F
	×8	3CDD
	×9	3E66
	×10	4000
Digital Zoom	×1	4000
	×2	6000
	×3	6A80
	×4	7000
	×5	7300
	×6	7540
	×7	76C0
	×8	7800
	×9	78C0
	×10	7980
	×11	7A00
	×12	7AC0