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Visca over IPP29

No	Issue Date	Description
1	2024/12/25	First version.
2	2025/06/27	Add CV625-TBN/TWN

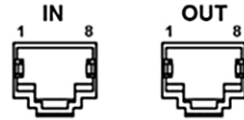
1. Communication Protocol

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

The wire diagram

The RS-232 in wire diagram between presenter and remote controller as below.



RJ45	IN	OUT	RS232
1	NA	NA	
2	NA	NA	
3	GND	GND	GND
4	TX	RX	RS232
5	RX	TX	RS232
6	DTR	DSR	RS232
7	NA	NA	
8	NA	NA	

RS-232 out to in (daisy chain) only need normal Cat5e Ethernet cable.

1. 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

2. 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

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3. COMMAND EXECUTION

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

4. NETWORK CHANGE

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

5. 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)		

6. ZOOM FOCUS POSITION TABLE

	Wide end		Optical Tele end		Digital Tele end	
Zoom Position	0000	to	3558	to	3609(720P) / 3668(1080P)	
Focus Position			Far end			focus range is limited by each zoom position
			0000	to	131A	

7. AE SHUTTER TABLE

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

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8. AE GAIN TABLE

	Index(pq)	Value
Gain	0F	+ 45 dB
	0E	+ 42 dB
	0D	+ 39 dB
	0C	+ 36 dB
	0B	+ 33 dB
	0A	+ 30 dB
	09	+ 27 dB
	08	+ 24 dB
	07	+ 21 dB
	06	+ 18 dB
	05	+ 15 dB
	04	+ 12 dB
	03	+ 9 dB
	02	+ 6 dB
	01	+ 3 dB
	00	0 dB

9. AE GAIN LIMIT TABLE

	Index(pq)	Value
Gain limit	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

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10. AE EXPOSURE COMP. TABLE

Exposure Comp. (AE Level)	Index(pq)	VISCA Step	OSD Value
	0A 1	0	4
	09 9		3
	08 8		2
	07 7		1
	06 6		0
	05 5		-1
	04 4		-2
	03 3		-3
	02 2		-4
	01 1		-5
	00	0	-6

11. AE IRIS TABLE

IRIS F1.6~14	Index(pq)	F Number
	0F	-
	0E	-
	0D	-
	0C	Close
	0B	F1.8
	0A	F2
	09	F2.4
	08	F2.8
	07	F3.4
	06	F4
	05	F4.8
	04	F5.6
	03	F6.8
	02	F8
	01	F9.6
	00	F11

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12. RS-232 COMMAND LIST

Command set	Command	Command packet	Comments
Audio	Audio Enable	8x 01 04 68 0p FF	p: 2=On, 3=Off
Audio	Dante Audio Enable	8x 01 04 6C 00 00 0p FF	p: 2=Enable, 3=Disable
Audio	Delay Time	8x 01 04 6A 0p 0q 0r FF	Set AudioDelay Time for Internet Streaming pqr : delay time, range: 001 ~ 1F4 (1 ~ 500)
Audio	Audio In	8x 01 04 6B 0p FF	p: 2=Line In
Audio	Audio Volume	8x 01 04 6E 0p FF	p: 0 ~ A (0 ~ 10)
Audio	Delay Enable	8x 01 04 6F 0p FF	Set AudioDelay On/Off for Internet Streaming p: 2=On, 3=Off
Auto Focus	Zoom Tracking	8x 01 04 38 03 0p FF	p: 0=Off (Curve Tracking), 1=On (Zoom Tracking)
Auto Focus	AF Sensitivity	8x 01 04 58 0p FF	p: 1=High, 2=Middle, 3=Low
Dig-Effect	Mirror	8x 01 04 61 0p FF	p: 2=On, 3=Off
Dig-Effect	Flip	8x 01 04 66 0p FF	p: 2=On, 3=Off
Ethernet	DHCP	8x 01 7C 01 0p FF	p: 2=On, 3=Off
Ethernet	IP Address	8x 01 7C 02 0p 0q 0r 0s 0t 0u 0v 0x FF	address : pq.rs.tu.vx (HEX), pq = 0~255, rs = 0~255, tu = 0~255, vx = 0~255, e.g. 192.168.100.150 => 81 01 7C 02 0C 00 0A 08 06 04 09 06 FF
Ethernet	Subnet Mask	8x 01 7C 03 0p 0q 0r 0s 0t 0u 0v 0x FF	address : pq.rs.tu.vx (HEX), pq = 0~255, rs = 0~255, tu = 0~255, vx = 0~255, e.g. 255.255.255.0 => 81 01 7C 03 0F 0F 0F 0F 0F 0F 00 00 FF
			e.g. 255.255.255.0 => 81 01 7C 03 0F 0F 0F 0F 0F 0F 00 00 FF
Ethernet	Gateway	8x 01 7C 04 0p 0q 0r 0s 0t 0u 0v 0x FF	address : pq.rs.tu.vx (HEX), pq = 0~255, rs = 0~255, tu = 0~255, vx = 0~255, e.g. 192.168.100.254 => 81 01 7C 04 0C 00 0A 08 06 04 0F 0E FF
Ethernet	DNS	8x 01 7C 05 0p 0q 0r 0s 0t 0u 0v 0x FF	address : pq.rs.tu.vx (HEX), pq = 0~255, rs = 0~255, tu = 0~255, vx = 0~255, e.g. 8.8.8.8 => 81 01 7C 05 00 08 00 08 00 08 00 08 FF
Exposure	Shutter Reset	8x 01 04 0A 00 FF	Reset Shutter Setting to the default value depending on the frame rate of Output Mode (* Available during Shutter Priority/Manual Mode)
Exposure	Shutter Up	8x 01 04 0A 02 FF	Shutter Setting (* Available during Shutter Priority/Manual Mode)
Exposure	Shutter Down	8x 01 04 0A 03 FF	Shutter Setting (* Available during Shutter Priority/Manual Mode)
Exposure	Iris Reset	8x 01 04 0B 00 FF	Reset Iris Setting to 0E (F1.6) value (* Available during Iris Priority/Manual Mode)
Exposure	Iris Up	8x 01 04 0B 02 FF	Iris Up (* Available during Iris Priority/Manual Mode)
Exposure	Iris Down	8x 01 04 0B 03 FF	Iris Down (* Available during Iris Priority/Manual Mode)
Exposure	Manual Gain Reset	8x 01 04 0C 00 FF	Reset Gain Setting to 0 (0 dB) value (* Available during AE Manual Mode)
Exposure	Manual Gain Up	8x 01 04 0C 02 FF	Gain Setting (* Available during AE Manual Mode)

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CV625-TB/TW/TBN/TWN RS-232 COMMAND SET

Exposure	Manual Gain Down	8x 01 04 0C 03 FF	Gain Setting (* Available during AE Manual Mode)
Exposure	Exposure Comp Reset	8x 01 04 0E 00 FF	Reset Exposure Compensation to 6 value (* Available during ExpComp On)
Exposure	Exposure Comp Up	8x 01 04 0E 02 FF	Exposure Compensation Up (* Available during ExpComp On)
Exposure	Exposure Comp Down	8x 01 04 0E 03 FF	Exposure Compensation Down (* Available during ExpComp On)
Exposure	Spot Light Position	8x 01 04 29 0p 0q 0r 0s FF	pq: X-axis, 00 ~ 06 rs: Y-axis, 00 ~ 04
Exposure	Gain Limit	8x 01 04 2C 0p FF	p: 4 ~ F
Exposure	WDR	8x 01 04 2D 0p FF	p: WDR mode, 0 ~ 3
Exposure	Mode	8x 01 04 39 pp FF	pp: 00=Full Auto, 03=Manual, 0A=Shutter Priority, 0B=Iris Priority, 5F=White Board
Exposure	Flickerless	8x 01 04 3C 0p FF	p: 0=Off, 1=50Hz, 2=60Hz For VC-R30,V1 only
Exposure	Exposure Comp On/Off	8x 01 04 3E 0p FF	p: 2=On, 3=Off (* Disabled during Manual Mode)
Exposure	Shutter Direct	8x 01 04 4A 00 00 0p 0q FF	pq: Shutter Position, 00 ~ 10 (* Available during Shutter Priority/Manual Mode)
Exposure	Iris Direct	8x 01 04 4B 00 00 0p 0q FF	pq: Iris Position, 00 ~ 0F
Exposure	Manual Gain Direct	8x 01 04 4C 00 00 0p 0q FF	pq: Gain Position, 00 ~ 0F
Exposure	Exposure Comp Direct	8x 01 04 4E 00 00 0p 0q FF	pq: 00 ~ 0A
Exposure	Spot Light	8x 01 04 59 0p FF	p: 2=On, 3=Off
Focus	Stop	8x 01 04 08 00 FF	Available during Manual Focus Mode
Focus	Far (Standard Speed)	8x 01 04 08 02 FF	Available during Manual Focus Mode
Focus	Near (Standard Speed)	8x 01 04 08 03 FF	Available during Manual Focus Mode
Focus	Far Step	8x 01 04 08 04 FF	Available during Manual Focus Mode
Focus	Near Step	8x 01 04 08 05 FF	Available during Manual Focus Mode
Focus	Far (Variable Speed)	8x 01 04 08 2p FF	p: Speed 0 (Low) ~ 7 (High) (* Available during Manual Focus Mode)
Focus	Near (Variable Speed)	8x 01 04 08 3p FF	p: Speed 0 (Low) ~ 7 (High) (* Available during Manual Focus Mode)
Focus	One Push Trigger	8x 01 04 18 01 FF	One Push AF Trigger (* Available during Manual Focus Mode)
Focus	Mode	8x 01 04 38 0p FF	p: 2=Auto Focus, 3=Manual Focus
Focus	Direct	8x 01 04 48 0p 0q 0r 0s FF	pqrs: Focus Position , pqrs parameters are in the General Zoom Focus Table (* Available during Manual Focus Mode)
Menu	Left	8x 01 06 01 01 01 01 03 FF	OSD Menu left
Menu	Right	8x 01 06 01 01 01 02 03 FF	OSD Menu right
Menu	Up	8x 01 06 01 01 01 03 01 FF	OSD Menu up
Menu	Down	8x 01 06 01 01 01 03 02 FF	OSD Menu down
Menu	On/Off	8x 01 06 06 pp FF	Turn on/off OSD menu screen pp: 2=On, 3=Off, 10=Toggle
Menu	Enter	8x 01 7E 01 02 00 01 FF	OSD Menu Enter
Pan Tilt	Pan Flip	8x 01 04 67 3F 0p FF	p: 2=On, 3=Off

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CV625-TB/TW/TBN/TWN RS-232 COMMAND SET

Pan Tilt	Tilt Flip	8x 01 04 68 3F 0p FF	p: 2=On, 3=Off
Pan Tilt	Pan Flip	8x 01 7E 01 06 00 0p FF	p: 0=Off, 1=On
Pan Tilt	Tilt Flip	8x 01 7E 01 09 00 0p FF	p: 0=Off, 1=On
Pan Tilt	Stop	8x 01 06 01 00 00 03 03 FF	
Pan Tilt	UpLeft	8x 01 06 01 VV WW 01 01 FF	VV: Pan Speed 0x01 (Low) ~ 0x18 (High) WW: Tilt Speed 0x01 (Low) ~ 0x14 (High)
Pan Tilt	DownLeft	8x 01 06 01 VV WW 01 02 FF	VV: Pan Speed 0x01 (Low) ~ 0x18 (High) WW: Tilt Speed 0x01 (Low) ~ 0x14 (High)
Pan Tilt	Left	8x 01 06 01 VV WW 01 03 FF	VV: Pan Speed 0x01 (Low) ~ 0x18 (High) WW: Tilt Speed 0x01 (Low) ~ 0x14 (High)
Pan Tilt	UpRight	8x 01 06 01 VV WW 02 01 FF	VV: Pan Speed 0x01 (Low) ~ 0x18 (High) WW: Tilt Speed 0x01 (Low) ~ 0x14 (High)
Pan Tilt	DownRight	8x 01 06 01 VV WW 02 02 FF	VV: Pan Speed 0x01 (Low) ~ 0x18 (High) WW: Tilt Speed 0x01 (Low) ~ 0x14 (High)
Pan Tilt	Right	8x 01 06 01 VV WW 02 03 FF	VV: Pan Speed 0x01 (Low) ~ 0x18 (High) WW: Tilt Speed 0x01 (Low) ~ 0x14 (High)
Pan Tilt	Up	8x 01 06 01 VV WW 03 01 FF	VV: Pan Speed 0x01 (Low) ~ 0x18 (High) WW: Tilt Speed 0x01 (Low) ~ 0x14 (High)
Pan Tilt	Down	8x 01 06 01 VV WW 03 02 FF	VV: Pan Speed 0x01 (Low) ~ 0x18 (High) WW: Tilt Speed 0x01 (Low) ~ 0x14 (High)
Pan Tilt	Absolute Position	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	YYYY: Pan Position 0x0000 ~ 0x6A40 & 0x95C0 ~ 0xFFFF (Center 0000) ZZZZ: Tilt Position 0x0000 ~ 0x3840 & 0xED40 ~ 0xFFFF (Center 0000)
Pan Tilt	Relative Position	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	YYYY: Pan Position 0x0000 ~ 0x6A40 & 0x95C0 ~ 0xFFFF (Center 0000) ZZZZ: Tilt Position 0x0000 ~ 0x3840 & 0xED40 ~ 0xFFFF (Center 0000)
			ZZZZ: Tilt Position 0x0000 ~ 0x3840 & 0xED40 ~ 0xFFFF (Center 0000)
Pan Tilt	Home	8x 01 06 04 FF	Go Home Position
Pan Tilt	Reset	8x 01 06 05 FF	Initialize Pan Tilt and go to last position
Pan Tilt	Pan Tilt Limit	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W: 1=Up & Right YYYY: Pan Limit Position 0x0000~0x6A40 ZZZZ: Tilt Limit Position 0x0000~0x3840 W: 0=Down & Left YYYY: Pan Limit Position 0xFFFF~0x95C0 ZZZZ: Tilt Limit Position 0xFFFF~0xED40
Pan Tilt	Limit Clear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	W: 1=Clear Up & Right, 0=Clear Down & Left
Pan Tilt	PanTilt Preset Speed	8x 01 7E 03 02 0p FF	p: 0: [5 deg/sec] 、 1: [25 deg/sec] 、 2: [50 deg/sec] 、 3: [80 deg/sec] 、 4: [120 deg/sec]
Pan Tilt Zoom	PTZ Speed Comp	8x 01 06 1F 01 0p FF	p: 0=Off, 1=On
Pan Tilt Zoom	Preset Speed	8x 01 06 20 0p FF	p: 0: [5 deg/sec] 、 1: [25 deg/sec] 、 2: [50 deg/sec] 、 3: [80 deg/sec] 、 4: [120 deg/sec]
Picture	Sharpness Reset	8x 01 04 02 00 FF	Reset Sharpness Setting to 7 value
Picture	Sharpness Up	8x 01 04 02 02 FF	Sharpness Up
Picture	Sharpness Down	8x 01 04 02 03 FF	Sharpness Down
Picture	Image Mode	8x 01 04 3F 04 0p FF	p: 0=Standard, 3=Brilliant
Picture	Advanced	8x 01 04 3F 07 0p FF	p: 2=On, 3=Off
Picture	Sharpness Direct	8x 01 04 42 00 00 0p 0q FF	pq: 00 ~ 0B
Picture	Saturation	8x 01 04 49 00 00 0p 0q FF	pq: 00 ~ 19
(* Available during Image Mode = Custom mode)			

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Picture	3D NR	8x 01 04 54 0p FF	p: 0=Off, 1=Low, 2=Type, 3=Max
Picture	Gamma	8x 01 04 5B 0p FF	p: 0 ~ 3 (* Available during Image Mode = Custom mode)
Picture	Brightness Reset	8x 01 04 0D 00 FF	
Picture	Brightness Up	8x 01 04 0D 02 FF	Brightness Up
Picture	Brightness Down	8x 01 04 0D 03 FF	Brightness Down
Picture	Brightness Direct	8x 01 04 4D 00 00 0p 0q FF	pq: 00 ~ 19 (* Available during Image Mode = Custom mode)
Power	On/Standby	8x 01 04 00 0p FF	p: 2=On, 3=Standby
Power	Standby Mode	8x 01 7E 01 0A 03 0p FF	p: 2=Normal Standby (Lens Tilt Down), 3=Ceiling Standby (Lens Tilt Up)
Preset	Reset	8x 01 04 3F 00 pp FF	pp: Memory Number 0x00 ~ 0x7F (* Preset address range : 0 ~ 127)
Preset	Set	8x 01 04 3F 01 pp FF	pp: Memory Number 0x00 ~ 0x7F (* Preset address range : 0 ~ 127)
Preset	Recall	8x 01 04 3F 02 pp FF	pp: Memory Number 0x00 ~ 0x7F (* Preset address range : 0 ~ 127)
Preset	Reset	8x 01 04 3F 10 pp FF	pp: Memory Number 0x00 ~ 0x7F (* Preset address range: 128 ~ 255)
Preset	Set	8x 01 04 3F 11 pp FF	pp: Memory Number 0x00 ~ 0x7F (* Preset address range: 128 ~ 255)
Preset	Recall	8x 01 04 3F 12 pp FF	pp: Memory Number 0x00 ~ 0x7F (* Preset address range: 128 ~ 255)
System	PrivacyMode	8x 01 04 00 02 0p FF	p: 2=On, 3=Off
System	Prompt	8x 01 04 07 00 0p FF	p: 2=On, 3=Off
System	Baud Rate	8x 01 04 24 00 00 0p FF	p: 0=9600 bps, 1=38400 bps
System	Factory Reset (Soft)	8x 01 04 3F 03 00 FF	Reset camera setting
System	Factory Reset (Hard)	8x 01 04 3F 03 01 FF	Reset camera and network setting
System	Initial Position	8x 01 04 75 6A 0p FF	p: 0=Last MEM, 1=1st Preset
System	IR Receive	8x 01 06 08 pp FF	pp: 2=On, 3=Off, 10=Toggle
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 02=QFHD 4K(3840 x 2160) - 59.94p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 03=QFHD 4K(3840 x 2160) - 50p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 05=QFHD 4K(3840 x 2160) - 29.97p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 06=QFHD 4K(3840 x 2160) - 25p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 08=FHD 1080P(1920 x 1080) - 59.94p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 09=FHD 1080P(1920 x 1080) - 50p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 0B=FHD 1080P(1920 x 1080) - 29.97p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 0C=FHD 1080P(1920 x 1080) - 25p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 0E=HD 720P(1280 x 720) - 59.94p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 0F=HD 720P(1280 x 720) - 50p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 11=HD 720P(1280 x 720) - 29.97p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 12=HD 720P(1280 x 720) - 25p
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 15=FHD 1080i(1920 x 1080) - 59.94i
System	Output Mode	8x 01 06 35 0p 0q FF	pq: 16=FHD 1080i(1920 x 1080) - 50i
System	Motionless Preset	8x 01 07 01 0p FF	p: 2=On, 3=Off
System	HDMI Format	8x 01 7E 01 03 00 0p FF	p: 1=RGB, 2=YUV422

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System	Tally Lamp	8x 01 7E 01 0A 00 0p FF	When Tally Lamp On, the default Tally Mode is 5 p: 2=On, 3=Off
System	Tally Mode	8x 01 7E 01 0A 01 0p FF	When receive Tally Mode command, the Tally Lamp setting will turn ON. p: 0: (Red:OFF / Green:OFF) 5: (Red:Highlight / Green:OFF) - Tally Lamp must be Enabled 6: (Red:OFF / Green:Highlight) - Tally Lamp must be Enabled 7: (Red:Highlight / Green:Highlight) - Tally Lamp must be Enabled
System	Write Camera ID	8x 01 CE aa bb cc dd ee ff gg hh ii jj kk ll FF	aa bb cc dd ee ff gg hh ii jj kk ll : Camera ID (ASCII)
System	Reboot	8x 01 DE 01 FF	Set to reboot
Tracking	Tracking - Framing Control(PresetRecall)	8x 01 04 3F 02 5p FF	p: 0=Tracking/Framing On (Recall preset 80), 1=Tracking/Framing Off (Recall preset 81)
Tracking	ID Switch	8x 01 0B 00 00 00 FF	
Tracking	ID Switch (Variable ID)	8x 01 0B 00 0A 0p 0q FF	pq: 0x01 ~ 0x10 (DEC 1~16)
Tracking	Auto Tracking On/Off	8x 01 0B 00 00 0p FF	p: 2=On, 3=Off
Tracking	Mode	8x 01 0B 00 01 0p FF	p: 0=Everywhere, 1=Stage, 2=Partition, 3=Auto Framing, 4=Partition Framing, 5=Center Stage
Tracking	Sensitivity	8x 01 0B 00 02 0p FF	p: 0= Low, 1=Middle, 2=High
Tracking	Tracking target lost time	8x 01 0B 00 03 0p FF	3s / 5s / 10s p: 0 : 3s 1 : 5s 2 : 10s
Tracking	Target Lost Reaction	8x 01 0B 00 04 0p FF	p: 0=PTZ Back to the center and wide, 1=Stay in the last position, 2=Back to start position.
Tracking	Head Position	8x 01 0B 00 05 0p FF	p: 0=Low, 1=Medium, 2=High
Tracking	Tracking LED Status	8x 01 0B 00 06 0p FF	p: 2=On, 3=Off
Tracking	Body Size/Type	8x 01 0B 02 01 0p FF	p: 0=Full Body, 1=Upper Body
Tracking	Auto Framing On/Off	8x 01 0B 04 02 0p FF	p: 2=On, 3=Off
Tracking	Framing Type	8x 0B 01 04 0p FF	p: A=Tracking, B=Framing
White Balance	Manual Red Reset	8x 01 04 03 00 FF	Reset R Gain Setting to 40 (64) value (* Available during WB Manual mode)
White Balance	Manual Red Up	8x 01 04 03 02 FF	R Gain Up (* Available during WB Manual mode)
White Balance	Manual Red Down	8x 01 04 03 03 FF	R Gain Down (* Available during WB Manual mode)
White Balance	Manual Blue Reset	8x 01 04 04 00 FF	Reset B Gain Setting to 40 (64) value (* Available during WB Manual mode)
White Balance	Manual Blue Up	8x 01 04 04 02 FF	B Gain Up (* Available during WB Manual mode)
White Balance	Manual Blue Down	8x 01 04 04 03 FF	B Gain Down (* Available during WB Manual mode)

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White Balance	One Push Trigger	8x 01 04 10 05 FF	One Push WB Trigger (* Available during One Push WB Mode)
White Balance	Mode	8x 01 04 35 0p FF	0=Auto, 1=Indoor, 2=Outdoor, 3=One Push WB, 4=ATW, 5=Manual, C=Sodium Lamp
White Balance	Manual Red Direct	8x 01 04 43 00 00 0p 0q FF	pq: 00 ~ 80 (0 ~ 128)
White Balance	Manual Blue Direct	8x 01 04 44 00 00 0p 0q FF	pq: 00 ~ 80 (0 ~ 128)
Zoom	Stop	8x 01 04 07 00 FF	
Zoom	Tele (Standard Speed)	8x 01 04 07 02 FF	
Zoom	Wide (Standard Speed)	8x 01 04 07 03 FF	
Zoom	Tele Step	8x 01 04 07 04 FF	
Zoom	Wide Step	8x 01 04 07 05 FF	
Zoom	Tele (Variable Speed)	8x 01 04 07 2p FF	p=0 (Low) ~ 7 (High)
Zoom	Wide (Variable Speed)	8x 01 04 07 3p FF	p=0 (Low) ~ 7 (High)
Zoom	Digital Zoom Limit	8x 01 04 26 0p FF	p: 1 (2x) ~ 7 (8x) 1 : 2x, 2 : 3x 3 : 4x 4 : 5x 5 : 6x 6 : 7x 7 : 8x
Zoom	Direct (Variable Speed)	8x 01 04 47 0p 0q 0r 0s 0t FF	pqrs: Zoom Position, Min. 0000h Max. 4000h (In Digital Zoom Limit = x1) Max. 7AC0h (In Digital Zoom Limit = x2 ~ x8) t: Zoom Speed, 0 (Low) ~ 7 (High)
Zoom	Direct (Standard Speed)	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position, Min. 0000h Max. 4000h (In Digital Zoom Limit = x1) Max. 7AC0h (In Digital Zoom Limit = x2 ~ x8)
Zoom Focus	Direct (Standard Speed)	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position, 0x0000 ~ 0x4000 tuvw: Focus Position, 0x0000 ~ FocusMaxValue (* Available during Manual Focus Mode)

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14. RS-232 OVER IP

14.1 OVERVIEW OF RS-232 OVER IP

RS-232 over IP allows you to control this unit from the controller with the IP communication function via the LAN by using RS-232.

You can connect up to 5 controllers simultaneously on one LAN segment.

The communication specifications of RS-232 over IP are as follows:

14.2 INTERFACE

RJ-45 10Base-T/100Base-TX (automatically discrimination)

14.3 INTERNET PROTOCOL

IPV4

14.4 TRANSPORT PROTOCOL

UDP

14.5 IP ADDRESS

Set by the IP card setting command

14.6 PORT ADDRESS

52381

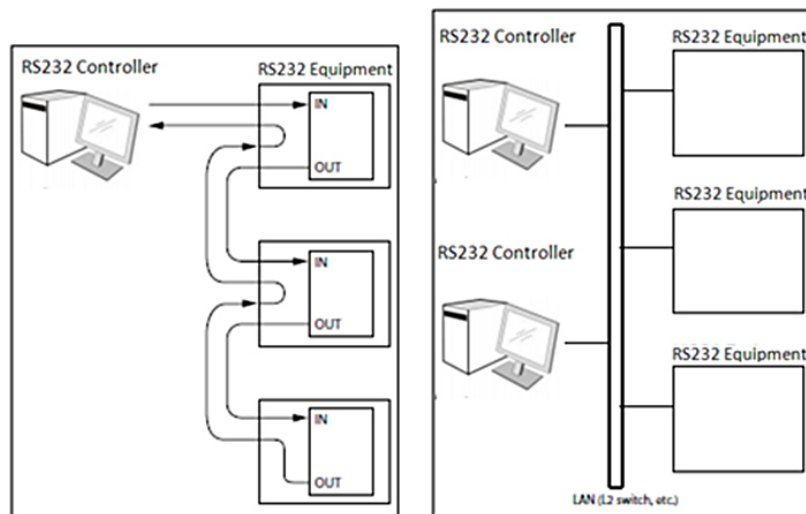
14.7 DELIVERY CONFIRMATION/RETRANSMISSION CONTROL

Depends on the application

14.8 COVERAGE

Limited dedicated network in the same segment without going through a bridge connection.

In this section, the device outputting commands, for example, a computer, is called the controller, and this unit and the devices connected to the same LAN are called the peripheral device. In the connection using RS-232, the controllers and peripheral devices are connected to a one-direction ring. On the IP communication connection, the controllers and peripheral devices are connected by star type through a LAN.



RS-232 CONNECTION

IP COMMUNICATION CONNECTION

While the IP communication connection, the address of each device cannot be set in the RS-232 message as it is because the controllers and peripheral devices that are connected simultaneously are increased. In this case, addresses of the controllers and peripheral devices that are set in the RS-232 message are locked to 0 (for the controller) or 1 (for the peripheral device).

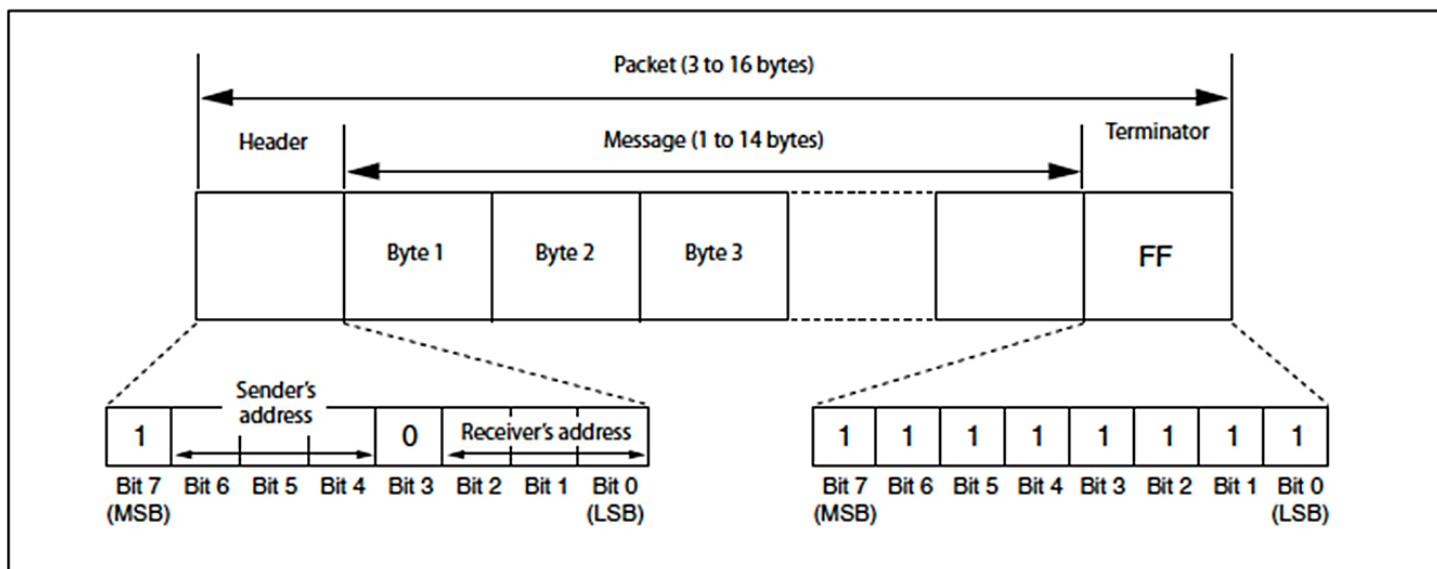
14.9 PACKET STRUCTURE

The basic unit of VISCA communication is called a packet [Pic.1]. The first byte of the packet is called the header and comprises the sender's and receiver's addresses. For example, the header of the packet sent to the SRG assigned address 1 from the controller (address 0) is 81h in hexadecimal. The packet sent to the SRG assigned address 2 is 82h. In the command list, as the header is 8X, input the address of the SRG to X. The header of the reply packet from the SRG assigned address 1 is 90h. The packet from the SRG assigned address 2 is A0h.

Some of the setting commands for SRG can be sent to all devices at one time (broadcast). In the case of broadcast, the header should be 88h in hexadecimal.

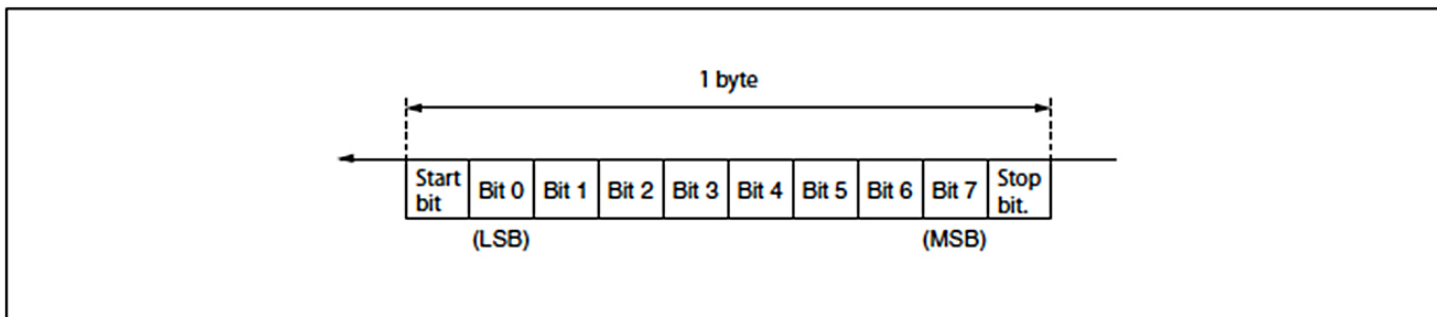
When the terminator is FFh, it signifies the end of the packet.

*The broadcast function is not available for VISCA over IP.



Pic 1. Packet Structure

NOTE: Pic. 1 shows the packet structure, while Pic. 2 shows the actual waveform. Data flow will take place with the LSB first



Pic. 2 Actual waveform for 1 byte

15 COMMUNICATION METHOD OF VISCA OVER IP

15.1 Communication method

VISCA over IP can process the VISCA communication between the controllers and peripheral devices using the messages that can be identified on the LAN, and sends/receives them. Because of this, VISCA over IP is not concerned about the contents of the communication between the controllers and peripheral devices. However, the VISCA communication sequence is different, depending on the types, as follows.

15.2 VISCA command

This is a command from the controller to the peripheral device. When the peripheral device receives this command, Acknowledge is returned. After completing command processing, a completion notice is returned. This command uses the socket of VISCA. The order of completion notices may be changed if the multiple commands are sent to the same peripheral device.

15.3 VISCA inquiry

This is an inquiry from the controller to the peripheral device. When the peripheral device receives this type of command, the reply for the inquiry is returned. This command does not use the socket of VISCA. The order of the replies is not changed if a multiple commands are sent.

15.4 VISCA reply

This is an Acknowledge, completion notice, reply, or error reply from the peripheral device to the controller. The classification for sending messages from the peripheral device to the controller is common.

15.5 VISCA device setting command

This is the device setting command from the controller to the peripheral device. When the peripheral device receives this classifications command, the peripheral device performs the function depend on the command.

15.6 Address

Sets the address of the peripheral device, and does not return a reply to the controller. While using VISCA over IP, the address command is not sent from the controller because a Network Change command from the peripheral device that triggers sending command is not issued.

15.7 IF_Clear

Sends the reply message to the controller after clearing, without using VISCA socket.

15.8 CAM_VerslonInq

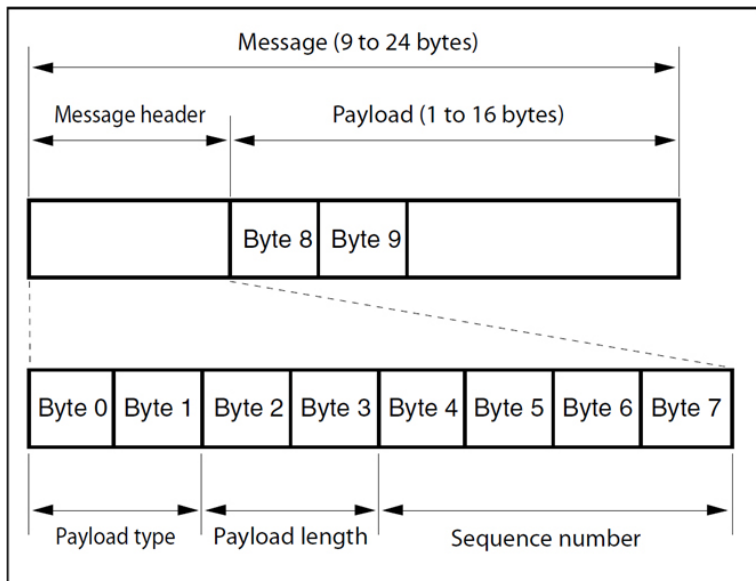
Sends the reply message to the controller, without using VISCA socket.

Continued on next page

CV625-TB/TW/TBN/TWN RS-232 COMMAND SET

15.9 Format

These are the specifications of the message header (8 bytes) and payload (1 to 16 bytes).



Pic.3 Message structure of the VISCA over IP

Note: The actual LAN out method is big-endian, LSB first.

Example:

Command	Payload type		Payload length		Sequence number				Payload (1~16Byte)										
	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	...	Byte 16
CAM_Power On	01	00	00	06	00	00	00	01	81	01	04	00	02	FF					
Pan-tiltDrive Up	01	00	00	09	00	00	00	02	81	01	06	01	0C	0C	03	01	FF		
Pan-tiltDrive Down	01	00	00	09	00	00	00	03	81	01	06	01	0C	0C	03	02	FF		
CAM_FocusModeInq	01	10	00	5	00	00	00	04	81	9	4	38	FF						

15.10 Payload type

Stores the value (Byte 0 and Byte 1) of the following table on the payload division.

Name	Value (Byte 0)	Value (Byte 1)	Description
VISCA command	01h	00h	Stores the VISCA command.
VISCA inquiry	01h	10h	Stores the VISCA inquiry.
VISCA reply	01h	11h	Stores the reply for the VISCA command and VISCA inquiry, or VISCA device setting command.
VISCA device setting command	01h	20h	Stores the VISCA device setting command.
Control command	02h	00h	Stores the control command.
Control reply	02h	01h	Stores the reply for the control command.

Pic.4 Payload Type Table

15.11 Payload Length

Stores the number of bytes (1 to 16) of data is stored on the payload.

Example: when the payload length is 16 bytes.

Byte 2:00h

Byte 3:10h

15.12 Sequence number

The controller stores the sequence number that is added every time a message is sent. If the sequence number reaches the limit, next values will be 0. The peripheral device saves the sequence number in the message from the controller, and stores the sequence number of the received message corresponding to the message sent to the controller.

15.13 Payload

Depending on the payload type, the following are stored.

1. VISCA command - Stores the packet of the VISCA command.
2. VISCA inquiry - Stores the packet of VISCA message.
3. VISCA reply - Stores the reply for the command or inquiry (Acknowledge message, completion message, or error message).
4. VISCA device setting command - Stores the packet of the VISCA device setting command.
5. Control command - The following are stored on the payload division of the control command.

Name	Value	Description
RESET	01h	Resets the sequence number to 0. The value that was set as the sequence number is ignored.
ERROR	0Fyyh	yy=01: Abnormality in the sequence number.
		yy=02: Abnormality in the message (message type)

6. Controlled reply -

The following are stored on the payload division of the reply for the control command

Message	Value	Description
Acknowledge	01h	Reply for RESET.

15.14 Delivery confirmation

VISCA over IP uses UDP as a communications protocol of the transport layer. Delivery of messages is not guaranteed for the UDP communication. Delivery confirmation and retransmission should be performed on the application.

When the controller sends a message to the peripheral device, wait until a reply for the message is received before sending the next message. You can confirm delivery of messages by managing the time-out waiting for a reply message sent.

If time out occurs on the controller, loss of one of the following message is considered:

- Command
- Completion message for command
- Inquiry
- Error message
- Inquiry of the VISCA device setting command
- Reply message of the VISCA device setting command