VC-TR1 RS-232 command set

No	Issue Date	Description	Apply Firmware
1	2020/09/08	First version.	
2	2021/08/05	Add Command: 1. Auto-Tracking command	V1.1.19
3	2021/12/22	Add new command	V1.1.27
4	2022/01/20	Correct invalid command	V1.1.30
5	**2022/03/03**	**Add Communication method of VISCA over IP**	

***Notice:**

1. **The RS-232 command list is for VC-TR1**
2. **The yellow highlight**  **means the latest update.**
3. **The blue highlight**  **means the deleted item.**

1 VISCA Communication Specifications

The basic unit of VISCA communication is called a packet. 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 VISCA camera assigned address 1 from the controller (address 0) is hexadecimal 81h. The packet sent to the camera assigned address 2 is 82h. In the command list, as the header is 8X, input the address of the camera at X.

The header of the reply packet from the camera assigned address 1 is 90h. The packet from the camera assigned address 2 is A0h. When the terminator is FFh, it signifies the end of the packet. The parameters of RS-232C are as follows.

Flow control using XON/XOFF and RTS/CTS, etc., is not supported.

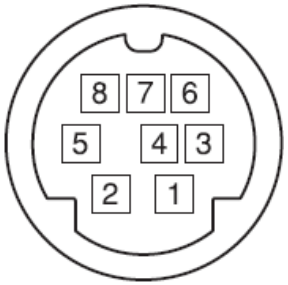
1. Communication Protocol

Transmit Method: Asynchronous Interface Half Duplex Serial Communication

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

2. The wire diagram

The RS232 wire diagram between presenter and remote controller as below



Pin Define	
1	DTR
2	DSR
3	TXD
4	GND
5	RXD
6	GND
7	IR OUT
8	N.C.

2 Acknowledge/Completion Messages

Acknowledge message Returned by the VISCA camera when it receives a command. No Acknowledge message is returned for inquiries. Completion message Returned by the VISCA camera when execution of commands or inquiries is completed. In the case of inquiry commands, it will contain reply data for the inquiry after the 3rd byte of the packet. If the Acknowledge message is omitted, the socket number will contain 0.

	Command Messages	Comments
Acknowledge	z0 4y FF (y:Socket No.)	Returned when the command is accepted.
Completion	z0 5y FF (y:Socket No.)	Returned when the command has been executed.
Z = Device address + 8		

3 Error Messages

When a command could not be executed or failed, an error message is returned instead of the Acknowledge message. After an Acknowledge message, an error message maybe returned if the process of some command (zoom, etc.) has not been completed. When an inquiry command could not be executed or failed, an error message is returned instead of the completion message.

	Command Messages	Comments
SyntaxError	z0 60 02 FF	Returned when the command format is different or when a command with illegal command parameters is accepted.
CommandBuffer Full	z0 60 03 FF	Indicates that two sockets are already being used (executing two commands) and the command could not be accepted when received.
CommandCanceled	z0 6y 04 FF (y:Socket No.)	Returned when a command which is being executed in a socket specified by the cancel command is canceled. The completion message for the command is not returned.
No Socket	z0 6y 05 FF (y:Socket No.)	Returned when no command is executed in a socket specified by the cancel command, or when an invalid socket number is specified.
CommandNot Executable	z0 6y 41 FF (y:Socket No.)	Returned when a command cannot be executed due to current conditions.
Z = Device address + 8		

4 VISCA Camera Command List

Command Set	Command	Command Packet	Comments
Address set	Broadcast	88 30 01 FF	Address setting
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
IF_Clear	IF_Clear(For x)	8x 01 00 01 FF	I/F Clear
Preset	Set preset	8x 01 04 3F 01 p FF	P<=254
	Get preset	8x 01 04 3F 02 p FF	
	Clear preset	8x 01 04 3F 00 p FF	
Menu	Menu On	8x 01 10 01 FF	Only when entering menu mode Invalid p\q value
	Menu Off	8x 01 10 03 FF	
	Enter	8x 01 10 02 FF	
	Back	8x 01 10 07 FF	
	Up	8x 01 06 01 p q 03 01 FF	
	Down	8x 01 06 01 p q 03 02 FF	
	Left	8x 01 06 01 p q 01 03 FF	
	Right	8x 01 06 01 p q 02 03 FF	
	Stop	8x 01 06 01 p q 03 03 FF	
Pan-tiltDrive	Up	8x 01 06 01 p q 03 01 FF	p: Pan speed 0 x00 (low speed) to 0 x18 (high speed) q: Tilt Speed 0 x00 (low speed) to 0 x14 (high speed) yyyy: PanPosition zzzz: Tilt Position When the action command is sent, the stop command should be sent to stop.
	Down	8x 01 06 01 p q 03 02 FF	
	Left	8x 01 06 01 p q 01 03 FF	
	Right	8x 01 06 01 p q 02 03 FF	
	Stop	8x 01 06 01 p q 03 03 FF	
	Home	8x 01 06 04 FF	
	AbsolutePosition	8x 01 06 02 p q 0y 0y 0y 0y 0z 0z 0z 0z FF	
CAM_Zoom	Stop	8x 01 04 07 00 FF	p=0 (Low) to 7 (High)

Command Set	Command	Command Packet	Comments
	Tele(Standard)	8x 01 04 07 02 FF	
	Wide(Standard)	8x 01 04 07 03 FF	
	Tele(Variable)	8x 01 04 07 2p FF	
	Wide(Variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position (0~0x4000)
CAM_Focus	Stop	8x 01 04 08 00 FF	p=0 (Low) to 7 (High)
	Far(Standard)	8x 01 04 08 02 FF	
	Near(Standard)	8x 01 04 08 03 FF	
	Far(Variable)	8x 01 04 08 2p FF	
	Near(Variable)	8x 01 04 08 3p FF	
	Auto Focus	8x 01 04 38 02 FF	AF ON
	Manual Focus	8x 01 04 38 03 FF	AF OFF
	One Push Trigger	8x 01 04 18 01 FF	One Push AF Trigger
	Direct	8x 01 04 48 0p 0q 0r 0s FF	pqrs: Focus Position(0x36a0~0x4758)
CAM_ZoomFocus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position tuvw: Focus Position
Video_Sharpness	Direct	8x 01 0E 24 40 0p 0q FF	pq: Sharpness value(0~15) (0p 0q:00 01 ~ 00 0F)
Video_Brightness	Direct	8x 01 0E 24 41 0p 0q FF	pq:Bright value(0~14) (0p 0q:00 01 ~ 00 0E)
Video_Contrast	Direct	8x 01 0E 24 42 0p 0q FF	pq: Contrast value(0~14) (0p 0q:00 01 ~ 00 0E)
Video_Saturation	Direct	8x 01 0E 24 43 0p 0q FF	pq: Saturation value(0~14) (0p 0q:00 01 ~ 00 0E)
Video_Hue	Direct	8x 01 0E 24 44 0p 0q FF	pq: Hue value(0~14) (0p 0q:00 01 ~ 00 0E)
Set Ip Addr	Set Ip Addr	8x 01 08 07 IP:MASK:Gateway FF	Example:see table 2
Set Dhcp	Set Dhcp	8x 01 08 08 0p FF	p:2 (ON) / 3 (OFF)
CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter Setting
	Up	8x 01 04 0A 02 FF	Pq: Shutter speed(0~21) (0p 0q:00 00 ~ 01 0F)

Command Set	Command	Command Packet	Comments
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	
CAM_Iris	Reset	8x 01 04 0B 00 FF	Cam_iris Setting pq: Iris Position(0~13) (0p 0q:00 00 ~ 00 0D)
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	
CAM_Bright	Reset	8x 01 04 0D 00 FF	BrightSetting pq:Bright value(1-7) (0p 0q:00 01 ~ 00 07)
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 4D 00 00 0p 0q FF	
CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
	Shutter Priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
	Iris Priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF	Bright Mode (Manual control)
CAM_ExpComp	Reset	8x 01 04 0e 00 FF	Exposure Compensation Amount Setting
	Up	8x 01 04 0e 02 FF	
	Down	8x 01 04 0e 03 FF	
	Direct	8x 01 04 4e 00 00 00 0p FF	p: ExpComp level(0~14)
CAM_RGain	Reset	8x 01 04 03 00 FF	Manual Control of R Gain pq: R Gain(0~128)
	Up	8x 01 04 03 02 FF	
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	
CAM_BGain	Reset	8x 01 04 04 00 FF	Manual Control of B Gain pq: B Gain(0~128)
	Up	8x 01 04 04 02 FF	

Command Set	Command	Command Packet	Comments
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	
CAM_WB Mode	Auto	8x 01 04 35 00 FF	Auto
	In Door	8x 01 04 35 01 FF	In Door
	Out Door	8x 01 04 35 02 FF	Out Door
	One Push WB	8x 01 04 35 03 FF	One Push WB Trigger
	ATW	8x 01 04 35 04 FF	ATW
	Manual	8x 01 04 35 05 FF	Manual
	SODIUM_LAMP	8x 01 04 35 08 FF	SODIUM_LAMP
	FLUO_LAMP	8x 01 04 35 09 FF	FLUO_LAMP
	Color Temp	8x 01 04 35 0B FF	Color Temp
ONE Push WB Trigger	One push trigger	8x 01 04 10 05 FF	when WB Mode is “One Push WB”
Automatic_tracking	ON	8x 01 04 3F 02 50 FF	Enable\stop automatic tracking
	OFF	8x 01 04 3F 02 51 FF	
VideoSystemSet Valid when switch the DIP Switch SW (1,2,3,4) bits to ON.	~~Set~~	~~8x 01 06 23 00 FF~~	~~1920*1080I60~~
		8x 01 06 23 01 FF	1920*1080P30
		8x 01 06 23 02 FF	1280*720P60
		8x 01 06 23 07 FF	1920*1080P60
		~~8x 01 06 23 08 FF~~	~~1920*1080I50~~
		8x 01 06 23 09 FF	1920*1080P25
		8x 01 06 23 0A FF	1280*720P50
		8x 01 06 23 0F FF	1920*1080P50
Set BLC on/off	ON	8x 01 04 33 02 FF	BLC ON
	OFF	8x 01 04 33 03 FF	BLC OFF
Start serial port upgrade	Set	8x 01 0E 7F 00 FF	Start serial port upgrade

Command Set	Command	Command Packet	Comments
Set Tracking Screen Retention Time	Set	8x 01 08 02 0p FF	p:3~a
Power Status	ON	8x 01 04 00 02 FF	Power ON
	OFF	8x 01 04 00 03 FF	Power OFF
~~Set camera mode~~	~~Auto-Tracking~~	~~8x 0B 01 04 0A FF~~	~~—~~
	~~Auto-Framing~~	~~8x 0B 01 04 0B FF~~	~~—~~
Set Presenter Frame	Set Preset	8x 0B 01 04 3F 01 00 01 FF	Equal to set Preset 1
View Presenter Frame	Get Preset	8x 0B 01 04 3F 02 00 01 FF	Equal to Get Preset 1
Set Stage Frame	Set Preset	8x 0B 01 04 3F 01 00 00 FF	Equal to set Preset 0
View Stage Frame	Get Preset	8x 0B 01 04 3F 02 00 00 FF	Equal to Get Preset 0
Everywhere Tracking	ON	8x 0B 01 04 0A 00 02 FF	
	OFF	8x 0B 01 04 0A 00 03 FF	
Multi-people detection	OFF	8x 0B 01 04 0B 00 00 FF	
	Multi-People Frame	8x 0B 01 04 0B 00 01 FF	
	Stage Frame	8x 0B 01 04 0B 00 02 FF	
	Panoramic Stream	8x 0B 01 04 0B 00 03 FF	
Set Multi-People Frame	Set Preset	8x 0B 01 04 3F 01 00 02 FF	Equal to set Preset 2
View Multi-People Frame	Get Preset	8x 0B 01 04 3F 02 00 02 FF	Equal to Get Preset 2
Auto-Framing Sensitivity	Set	8x 0B 01 04 0B 01 0p FF	
Auto-Framing Zoom Sens	Set	8x 0B 01 04 0B 02 0p FF	
Auto-Tracking Sensitivity	Set	8x 0B 01 04 0A 01 0p FF	
Auto-Tracking Pan Speed	Set	8x 0B 01 04 0A 02 0p FF	
Auto-Tracking Tilt Speed	Set	8x 0B 01 04 0A 03 0p FF	
Auto-Tracking Lost time	Set	8x 0B 01 04 0A 04 0p FF	
Expert Mode	ON	8x 0B 01 04 0C 02 FF	

Command Set	Command	Command Packet	Comments
	OFF	8x 0B 01 04 0C 03 FF	
Partition A	ON	8x 0B 01 04 0A 05 02 FF	
	OFF	8x 0B 01 04 0A 05 03 FF	
Set Partition A Preset	Set Preset	8x 0B 01 04 3F 01 06 05 FF	Equal to set Preset 101
View Partition A Preset	Get Preset	8x 0B 01 04 3F 02 06 05 FF	Equal to Get Preset 101
Partition B	ON	8x 0B 01 04 0A 06 02 FF	
	OFF	8x 0B 01 04 0A 06 03 FF	
Set Partition B Preset	Set Preset	8x 0B 01 04 3F 01 06 06 FF	Equal to set Preset 102
View Partition B Preset	Get Preset	8x 0B 01 04 3F 02 06 06 FF	Equal to Get Preset 102
Partition C	ON	8x 0B 01 04 0A 07 02 FF	
	OFF	8x 0B 01 04 0A 07 03 FF	
Set Partition C Preset	Set Preset	8x 0B 01 04 3F 01 06 07 FF	Equal to set Preset 103
View Partition C Preset	Get Preset	8x 0B 01 04 3F 02 06 07 FF	Equal to Get Preset 103
Partition D	ON	8x 0B 01 04 0A 08 02 FF	
	OFF	8x 0B 01 04 0A 08 03 FF	
Set Partition D Preset	Set Preset	8x 0B 01 04 3F 01 06 08 FF	Equal to set Preset 104
View Partition D Preset	Get Preset	8x 0B 01 04 3F 02 06 08 FF	Equal to Get Preset 104

5 Inquiry Command List

Inquiry Command	Command Packet	Inquiry Packet	Comments
~~Camera mode~~	~~8x 0B 09 04 FF~~	~~y0 50 0A FF~~	~~Auto Tracking~~
		~~y0 50 0B FF~~	~~Auto Framing~~
~~Everywhere Tracking~~	~~8x 0B 09 04 0A 00 FF~~	~~y0 50 02 FF~~	~~ON~~
		~~y0 50 03 FF~~	~~OFF~~
~~Auto Tracking Pan Speed~~	~~8x 0B 09 04 0A 02 FF~~	~~y0 50 0p FF~~	~~p:0~7~~
~~Auto Tracking Tilt Speed~~	~~8x 0B 09 04 0A 03 FF~~	~~y0 50 0p FF~~	~~p:0~7~~
~~Auto Tracking Lost time~~	~~8x 0B 09 04 0A 04 FF~~	~~y0 50 0p FF~~	~~p:0~7~~
Track Version Inq	8x 09 08 03 FF	y0 50 ww yy zz FF	Example:V1.0.1008B.ww = 10,yy =10 zz =08
Panom Version Inq	8x 09 08 04 FF	y0 50 ww yy zz FF	Example:V1.0.2008B.ww = 10,yy =20 zz =08
~~Audio Version Inq~~	~~8x 09 08 05 FF~~	~~y0 50 ww yy zz FF~~	~~Example:V1.0.3012B.ww = 10,yy =30 zz =12~~
Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	wwww = Pan Position zzzz = Tilt Position (see table 1)
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position (0 ~ 0x4000)
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position(0x36a0~0x4758)
CAM_FocusModeInq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
CAM_IrisPosInq	8x 09 04 4B FF	y0 50 0p 0q FF	pq: Iris Position
CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 0p 0q FF	pq: Shutter Position
CAM_BrightPosInq	8x 09 04 4D FF	y0 50 0p 0q FF	pq: Bright Position
CAM_RGainInq	8x 09 04 43 FF	y0 50 0p 0q FF	pq: R Gain
CAM_BGainInq	8x 09 04 44 FF	y0 50 0p 0q FF	pq: B Gain
~~CAM_WBModeInq~~	~~8x 09 04 35 FF~~	~~y0 50 00 FF~~	~~Auto~~
		~~y0 50 01 FF~~	~~In Door~~
		~~y0 50 02 FF~~	~~Out Door~~
		~~y0 50 03 FF~~	~~One Push WB~~

Inquiry Command	Command Packet	Inquiry Packet	Comments
		~~y0 50 04 FF~~	~~ATW~~
		~~y0 50 05 FF~~	~~Manual~~
		~~y0 50 08 FF~~	~~SODIUM_LAMP~~
		~~y0 50 09 FF~~	~~FLUO_LAMP~~
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter Priority
		y0 50 0B FF	Iris Priority
		y0 50 0D FF	Bright
CAM_version	8x 09 00 02 FF	y0 50 xx xx yy yy zz zz 01 FF	Xxxx:Manufacturer ID Yyyy:Device ID Zzzz: version (G200T: Manufacturer ID:02 01 Device ID:06 01)
VideoSystemInq	8x 09 06 23 FF	~~y0 50 00 FF~~	~~1920*1080I60~~
		y0 50 01 FF	1920*1080P30
		y0 50 02 FF	1280*720P60
		y0 50 07 FF	1920*1080P60
		~~y0 50 08 FF~~	~~1920*1080I50~~
		y0 50 09 FF	1920*1080P25
		y0 50 0A FF	1280*720P50
		y0 50 0F FF	1920*1080P50
Get BLC status	8x 09 04 33 FF	y0 50 02 FF	BLC ON
		y0 50 03 FF	BLC OFF
Query tracking status	8x 09 08 01 FF	y0 50 02 FF	Track
		y0 50 03 FF	Stop Track

Inquiry Command	Command Packet	Inquiry Packet	Comments
Get Tracking screen retention time	8x 09 08 02 FF	y0 50 0p FF	P:retention time
Get power status	8x 09 04 00 FF	y0 50 02 FF	Power ON
		y0 50 03 FF	Power OFF
~~CAM_ShutterPosInq~~	~~8x 09 04 4A FF~~	~~y0 50 0p 0q FF~~	~~pq: Shutter Position~~
Video_SharpnessInq	8x 09 0E 24 40 FF	y0 50 0p 0q FF	pq: Sharpness Value
Video_BrightnessInq	8x 09 0E 24 41 FF	y0 50 0p 0q FF	pq: Brightness Value
Video_ContrastInq	8x 09 0E 24 42 FF	y0 50 0p 0q FF	pq: Contrast Value
Video_SaturationInq	8x 09 0E 24 43 FF	y0 50 0p 0q FF	pq: Saturation Value
Video_HueInq	8x 09 0E 24 44 FF	y0 50 0p 0q FF	pq: Hue Value
Firmware Inq	8x 09 08 06 ff	y0 50 ASCII FF	Example:see table 4
Net Info Inq	8x 09 08 07 ff	y0 50 ASCII FF	Example:see table 3
Dhcp Info Inq	8x 09 08 08 ff	y0 50 0p FF	p:2 (ON) / 3 (OFF)

6 Table 1

	Parameter(Position)
PAN	FAE8(-90 degree) to 0518(+90 degree)
TILT	FE4D(-30degree) to 0518(+90 degree)

7 Table 2

Head	Content (ip:mask:gateway) (ASCII)	End
81 01 08 07	10.0.3.112:255.255.255.0:10.0.3.1	FF
	31 30 2e 30 2e 33 2e 31 31 32 3a 32 35 35 2e 32 35 35 2e 32 35 35 2e 30 3a 31 30 2e 30 2e 33 2e 31	

8 Table 3

Head	Content (Track:Panom:Audio) (ASCII)	End
90 50	V1.0.1017B:V1.0.2011B:V1.1.3014B	FF
	56 31 2E 30 2E 31 30 31 37 42 3A 56 31 2E 30 2E 32 30 31 31 42 3A 56 31 2E 31 2E 33 30 31 34 42	

Note:

1. All set commands failed when tracking state (except for stop tracking, address set)
2. All commands do not take effect when entering menu mode (except for menu operation commands)

9 RS232 over IP

9.1 Overview of RS232 over IP

RS232 over IP allows you to control this unit from the controller with the IP communication function via the LAN by using RS232.

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

The communication specifications of RS232 over IP are as follows:

9.2 Interface

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

9.3 Internet protocol

IPv4

9.4 Transport protocol

UDP

9.5 IP address

Set by the IP card setting command

9.6 Port address

52381

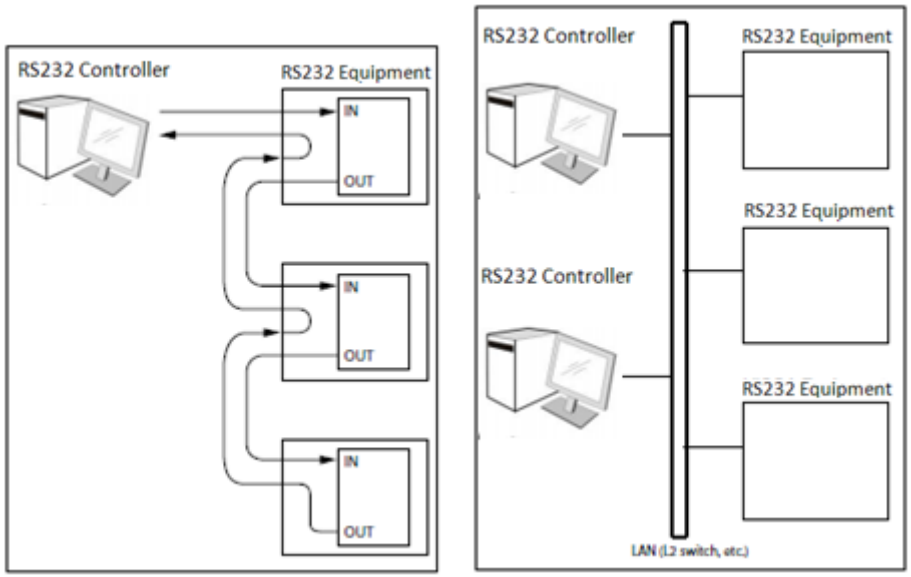
9.7 Delivery confirmation/Retransmission control

Depends on the application

9.8 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/RS-422, 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.



RS232/RS422 connection **IP communication connection**

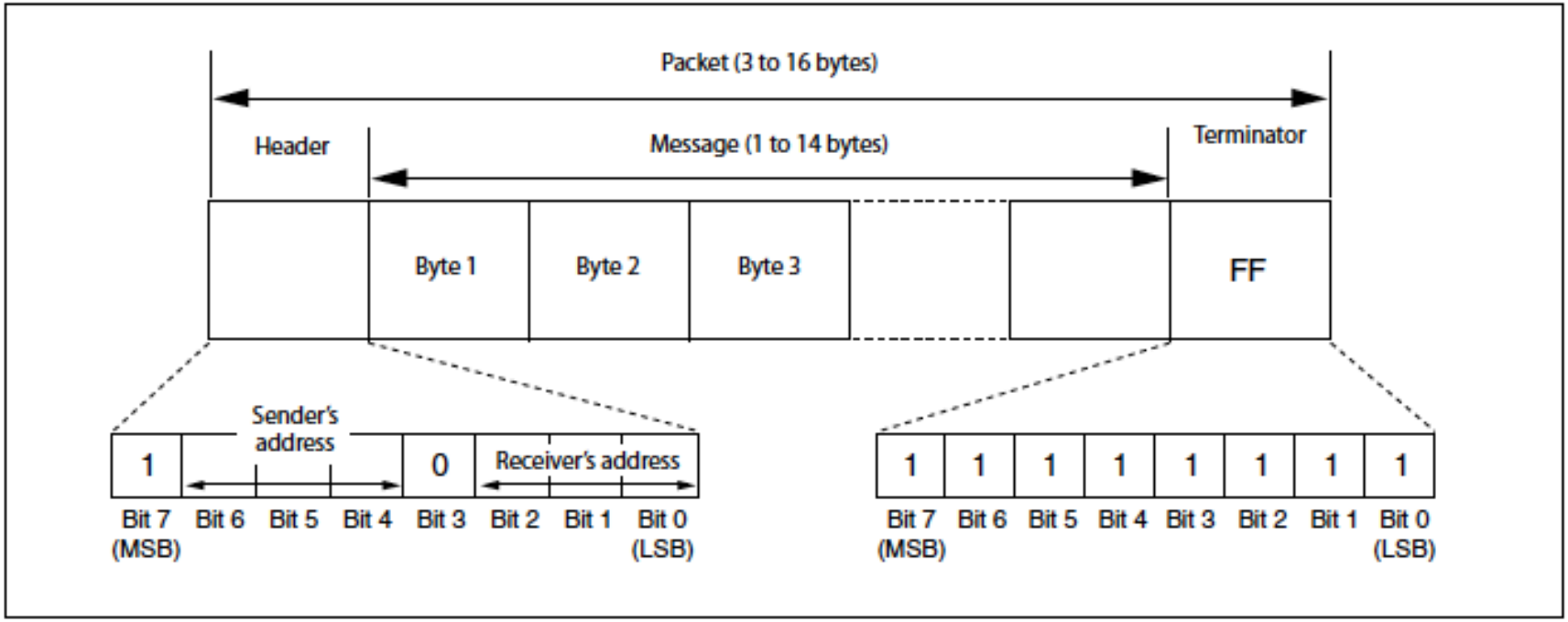
While the IP communication connection, the address of each device cannot be set in the RS232 message as it is because the controllers and peripheral devices that are connected simultaneously are increased. In this case, addresses of the controllers and peripheral devices that are set in the RS232 message are locked to 0 (for the controller) or 1 (for the peripheral device).

9.9 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.

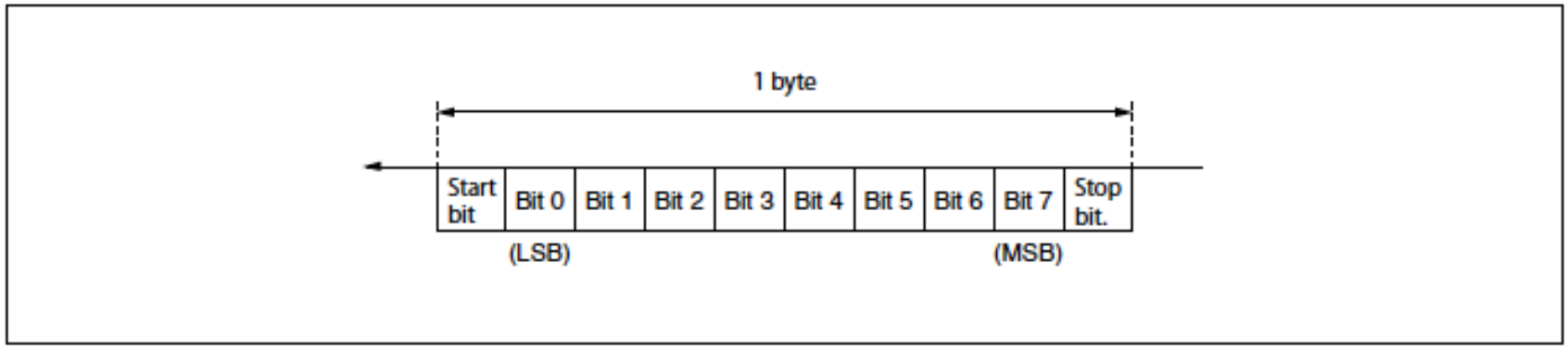
Some of the setting commands for SRG can be sent to all devices at one time (broadcast)*. In the case of broadcast, the header should be 88h in hexadecimal.

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

10 Communication method of VISCA over IP

9.1 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.

9.2 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.

9.3 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.

9.4 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.

9.5 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.

9.6 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.

9.7 IF_Clear

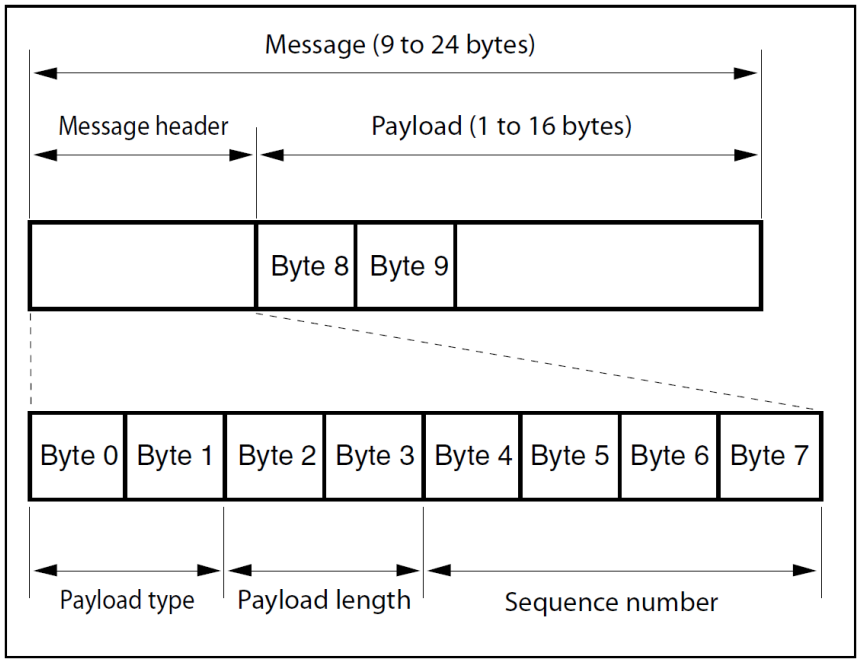
Sends the reply message to the controller after clearing, without using VISCA socket.

9.8 CAM_VersionInq

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

9.9 Format

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



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

Pic.3 Message structure of the VISCA over IP

Example:

	Payload type		Payload length		Sequence number				Payload (1~16Byte)										
Command	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						

9.10 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

9.11 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

9.12 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.

9.13 Payload

Depending on the payload type, the following are stored.

- VISCA command
  - Stores the packet of the VISCA command.
- VISCA inquiry
  - Stores the packet of VISCA message.
- VISCA reply
  - Stores the reply for the command or inquiry (Acknowledge message, completion message, or error message).

- VISCA device setting command
  - Stores the packet of the VISCA device setting command.
- 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)

- 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.

9.14 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
- Acknowledge message
- Completion message for command
- Inquiry
- Reply message for the inquiry

- Error message
- Inquiry of the VISCA device setting command
- Reply message of the VISCA device setting command.