

Color Video Camera

Command List

BRC-X1000/H800/H780

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VISCA¹⁾ Commands

Use of control software based upon this command list may cause malfunction or damage to hardware and software. We are not liable for any such damage.

Overview of VISCA

In VISCA, the side outputting commands, for example, a computer, is called the controller, while the side receiving the commands, such as a BRC-X1000/H800/H780²⁾, is called the peripheral device. In VISCA, up to seven peripheral devices including this unit can be connected to a single controller using communication conforming to the RS-422 standard. The parameters of RS-422 are as follows.

- Communication speed: 9600 bps/38400 bps
- Data bits : 8
- Start bit : 1
- Stop bit : 1
- Non parity

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

Peripheral devices are connected in a daisy chain. As shown in Fig. 1, the actual internal connection is a one-direction ring, so that messages return to the controller via the peripheral devices. The devices on the network are assigned addresses.

The address of the controller is fixed at 0.

The addresses of peripheral devices are as follows.

When the camera address selector is set to 0 (automatic setting mode)

The peripheral devices are assigned to the addresses, 1, 2, 3... in the connected order, starting from the one connected nearest to the controller. These addresses are set when the controller sends address commands during initialization of the network.

When the camera address selector is set to 1 through 7 (manual setting mode)

The addresses of the peripheral devices will be set to the pre-selected numbers. Within a single system, the same number can be used only once. If an address switch is used in a setting other than 0, set the address switch on this connected unit to different numbers.

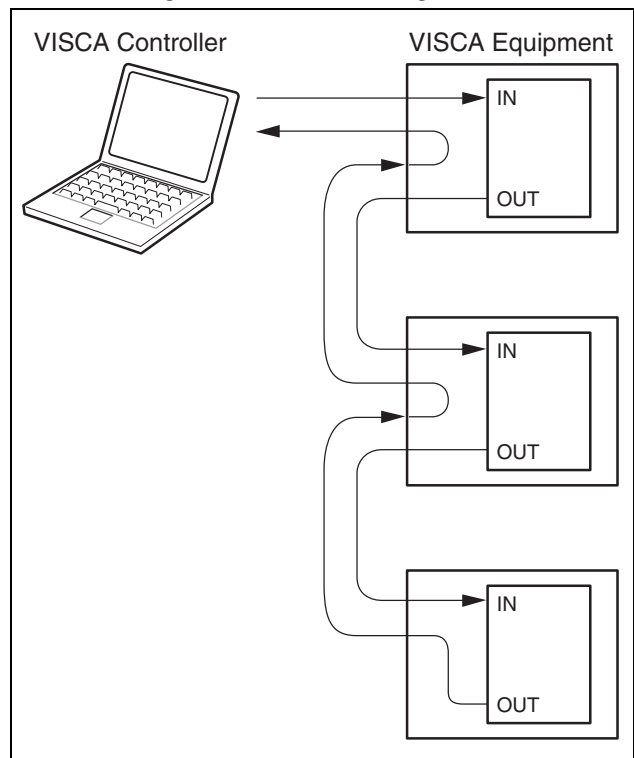
Note

In the same network, all the camera address selectors should be set to "0" (automatic setting) or all the selectors should be manually set to "1" to "7". Do not mix the automatic and manual settings.

Each VISCA equipment has VISCA IN and VISCA OUT connectors.

Set the DTR input (the S output of the controller) of VISCA IN to H when controlling VISCA equipment from the controller.

Fig. 1 VISCA network configuration



1) VISCA is a protocol developed by Sony for controlling a consumer's camcorder. "VISCA" is a trademark of Sony Corporation.

2) The product name of this unit, "Color video camera BRC-X1000/H800/H780" is referred to as "the unit" or "color video camera" in this document. BRC-H780 is the model on sale in China.

VISCA Communication Specifications

VISCA packet structure

The basic unit of VISCA communication is called a packet (Fig. 2). 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 unit (address 1) from the controller (address 0) is 81H in hexadecimal. Packet sent to the unit (address 2) is 82H. In the command list, as the header is 8X, input the address of the unit to X. The header of the reply packet from the unit assigned address 1 is 90H. The packet from the unit assigned address 2 is A0H.

Some of the setting commands 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.

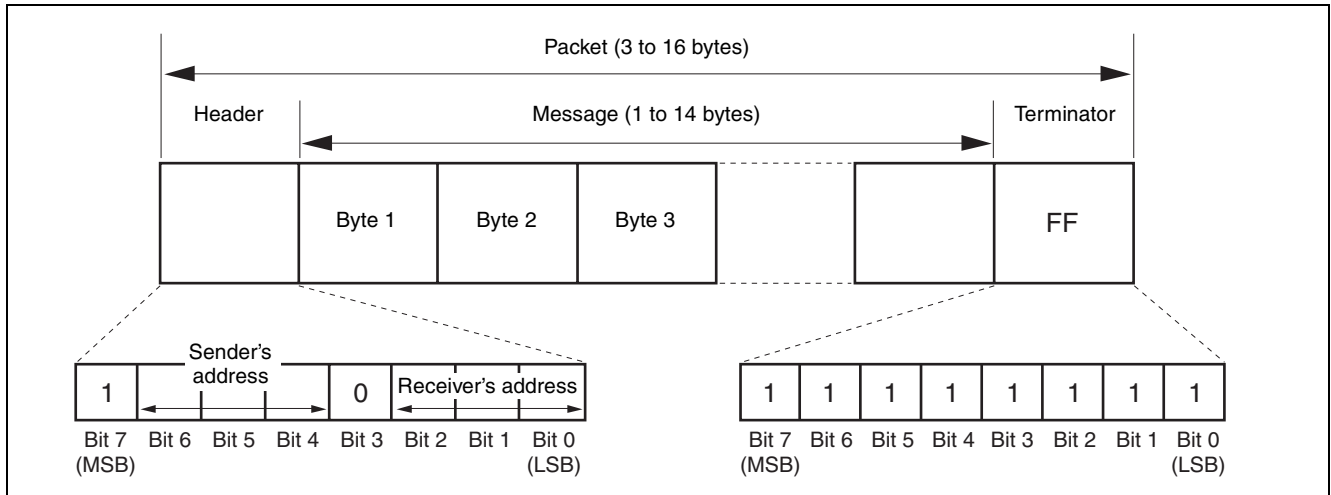


Fig. 2 Packet structure

Note

Fig. 2 shows the packet structure, while Fig. 3 shows the actual waveform. Data flow will take place with the LSB first.

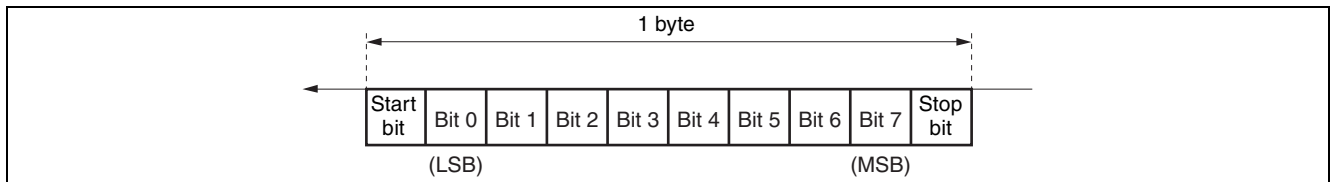


Fig. 3 Actual waveform for 1 byte.

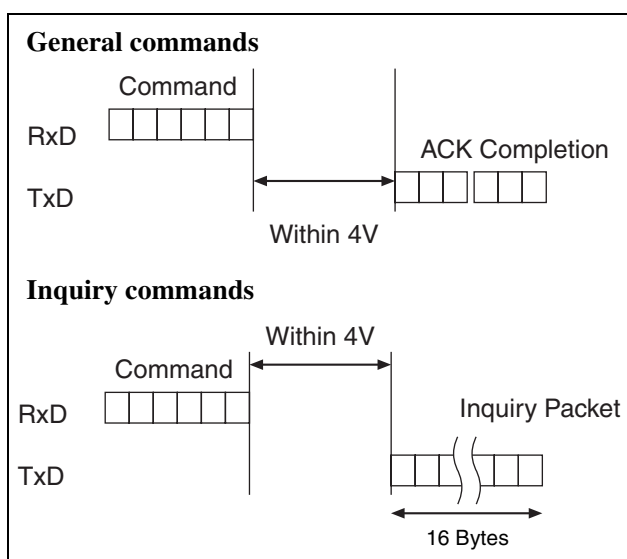
Timing Chart

As VISCA command processing can only be carried out a maximum of one time in a Vertical (V) cycle, it takes maximum 4V-cycle time for an ACK/Completion to be returned.

If the Command and ACK/Completion communication time is shorter than 1V-cycle time, a command can be received at every 1V cycle. From this point, if two or more commands are to be sent successively, wait for a reply command (an ACK or error message for a general command, and an inquiry packet for an inquiry command) of the previous command to be received before sending the next command.

1V = 16.7 msec (1080/59.94p, 1080/59.94i, 720/59.94p),
 20 msec (1080/50p, 1080/50i, 720/50p),
 33.4 msec (2160/29.97p (BRC-X1000 only)),
 40 msec (2160/25p (BRC-X1000 only)),
 41.7 msec (1080/23.98p^{*1}, 2160/23.98p (BRC-X1000 only))

^{*1} This function is not available for BRC-H780.



Command and inquiry

● Command

Sends operational commands to the unit.

● Inquiry

Used for inquiring about the current state of the unit.

	Command Packet	Note
Inquiry	8X QQ RR ... FF	QQ ¹⁾ = Command/Inquiry, RR ²⁾ = category code

¹⁾ QQ = 01 (Command), 09 (Inquiry)

²⁾ RR = 00 (Interface), 04 (camera 1), 06 (Pan/Tilter)

X = 1 to 7: Address of the unit*

* Locked to "X = 1" for VISCA over IP.

For actual values to be sent, see Command Lists or Inquiry Command Lists.

Responses for commands and inquiries

● ACK message

Returned by the unit when it receives a command. No ACK message is returned for an inquiry.

● Completion message

Returned by the unit when execution of commands or inquiries is completed. In the case of inquiry commands, reply data for the inquiry is contained after the 3rd byte of the packet. If the ACK message is omitted, the socket number will contain 0.

	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: Address of the unit + 8*

* Locked to "X = 9" for VISCA over IP.

● Error message

When a command or inquiry command could not be executed or failed, an error message is returned instead of a completion message.

Error Packet	Description
X0 6Y 01 FF	Message length error
X0 6Y 02 FF	Syntax Error
X0 6Y 03 FF	Command buffer full
X0 6Y 04 FF	Command canceled
X0 6Y 05 FF	No socket (to be canceled)
X0 6Y 41 FF	Command not executable

X = 9 to F: Address of the unit + 8, Y = socket number*

* Locked to "X = 9" for VISCA over IP.

Socket number

When command messages are sent to the unit, it is normal to send the next command message after receiving the completion message or error message. However, to deal with advanced uses, the unit has two sets of buffers (memories) for commands, so that up to two commands including the commands currently being executed can be received. (There is a wait longer than a 1V cycle between commands.) However, depending on the command, it may be necessary to wait until the first command is completed due to system reasons. When the unit receives commands, it notifies which command buffer was used using the socket number of ACK message.

As the completion message or error message also has a socket number, it indicates which command has ended. Even when two command buffers are being used, the unit management command and some inquiry messages can be executed.

The ACK message is not returned for these commands and inquiries, and only the completion message of socket number 0 is returned.

Command execution cancel

To cancel a command which has already been sent, send a Cancel command as the next command. To cancel one of two commands which have been sent, use the cancel message.

	Cancel Packet	Note
Cancel	8X 2Y FF	Y = socket number
X = 1 to 7:	Address of the unit, Y = socket number*	

* Locked to "X = 1" for VISCA over IP.

Error message "Command cancelled" will be returned for this command, but this is not a fault. It indicates that the command has been cancelled.

Note

To cancel a command when VISCA PAN-TILT Drive (page 17) is being executed, wait at least 200 msec after executing. Then send a cancel command to ensure that PAN-TILT Drive stops effectively.

To execute a PAN-TILT Drive command again, wait at least 200 msec after the message "Command cancelled" has appeared.

VISCA Device Setting Command

Before starting control of the unit, make sure to send the Address command and IF_Clear command using the broadcast.

For VISCA network administration

● Address*

Sets an address of a peripheral device. Use when initializing the network, and receiving the following network change message.

* Not available for VISCA over IP.

● Network Change*

Sent from the peripheral device to the controller when a device is removed from or added to the network. The address must be re-set when this message is received.

* Not available for VISCA over IP.

	Packet	Note
Address	88 30 01 FF	Always broadcasted.
Network Change	X0 38 FF	
X = 9 to F:	Address of the unit + 8	

VISCA interface command

● IF_Clear

Clears the command buffer in the unit. When cleared, the operation currently being executed is not guaranteed.

	Command Packet	Reply Packet	Note
IF_Clear	8X 01 00 01 FF	X0 50 FF	
IF_Clear (broadcast)*1	88 01 00 01 FF	88 01 00 01 FF	
X = 1 to 7:	Address of the unit (For inquiry packet)*2		
X = 9 to F:	Address of the unit +8 (For reply packet)*3		

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

*2 Locked to "X = 1" for VISCA over IP.

*3 Locked to "X = 9" for VISCA over IP.

VISCA interface and inquiry

● CAM_VersionInq

Returns information on the VISCA interface.

Inquiry	Inquiry Packet	Reply Packet	Description
CAM_VersionInq	8X 09 00 02 FF	Y0 50 GG GG HH HH JJ JJ KK FF	GGGG = Vender ID 0001: Sony HHHH = Model ID 0519: BRC-X1000 051A: BRC-H800 051B: BRC-H780 JJJJ = ROM revision KK = Maximum socket # (02)

X = 1 to 7: Address of the unit (For inquiry packet)*1

X = 9 to F: Address of the unit +8 (For reply packet)*2

*1 Locked to "X = 1" for VISCA over IP.

*2 Locked to "X = 9" for VISCA over IP.

VISCA Command/ACK Protocol

Command	Command Message	Reply Message	Comments
General Command	81 01 04 38 02 FF (Example)	90 4y FF (ACK) , 90 5y FF (Completion) (y: Socket No.)	Returns ACK when a command has been accepted, or Completion when a command has been executed.
	81 01 04 38 FF (Example)	90 60 02 FF (Syntax Error)	Accepted a command which is not supported or a command lacking parameters.
	81 01 04 38 02 FF (Example)	90 60 03 FF (Command Buffer Full)	Could not accept the command as there are two commands currently being executed.
	81 01 04 08 02 FF (Example)	90 6y 41 FF (Command Not Executable) (y: Socket No.)	Could not execute the command in the current mode.
Inquiry Command	81 09 04 38 FF (Example)	90 50 02 FF (Completion)	Does not return ACK.
	81 09 05 38 FF (Example)	90 60 02 FF (Syntax Error)	Accepted an incompatible command.
Address Set* ¹	88 30 01 FF	88 30 02 FF	The device address number plus 1 is returned.* ²
IF_Clear (Broadcast)* ¹	88 01 00 01 FF	88 01 00 01 FF	The same command is returned.
IF_Clear (For x)	8x 01 00 01 FF	y0 50 FF (Completion)	ACK is not returned for this command.
Command Cancel	8x 2p FF	y0 6p 04 FF (Command Cancelled)	Returned when the command of the socket specified is cancelled. Completion for the command cancelled is not returned.
		y0 6p 04 FF (No Socket)	Returned when the command of the specified socket has already been completed or when the socket number specified is wrong.

*1 Not available for VISCA over IP.

*2 When the camera address selector is set to an address other than 0, the value x in 88 30 0x FF will be variable.

Do not transmit the command (except Address Set, IF_Clear, Command Cancel and CAMERA POWER SUPPLY (page 18)) when any menu is displayed on the screen. If displayed, clear the menu first using MENU Display OFF (page 18) Command, and then proceed.

VISCA Camera-Issued Messages

ACK/Completion Messages

Command	Command Message	Comments
ACK	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 (Locked to "z = 9" for VISCA over IP.)

Error Messages

Command	Command Message	Comments
Syntax Error	z0 60 02 FF	Returned when the command format is different or when a command with illegal command parameters is accepted.
Command Buffer Full	z0 60 03 FF	Could not accept a command that is received while two commands are currently being executed (two sockets have been used).
Command Cancelled	z0 6y 04 FF (y: Socket No.)	Returned when a command which is being executed in a socket specified by the cancel command is cancelled. 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.
Command Not Executable	z0 6y 41 FF (y: Socket No.)	Returned when a command cannot be executed due to current conditions. For example, when a command for controlling the manual focus is received during the auto focus mode.

z = Device address + 8 (Locked to "z = 9" for VISCA over IP.)

Network Change Message*

Command	Command Message	Comments
Network Change	z0 38 FF	Issued when power is supplied to the camera.

* Not available for VISCA over IP.

VISCA over IP

Overview of VISCA over IP

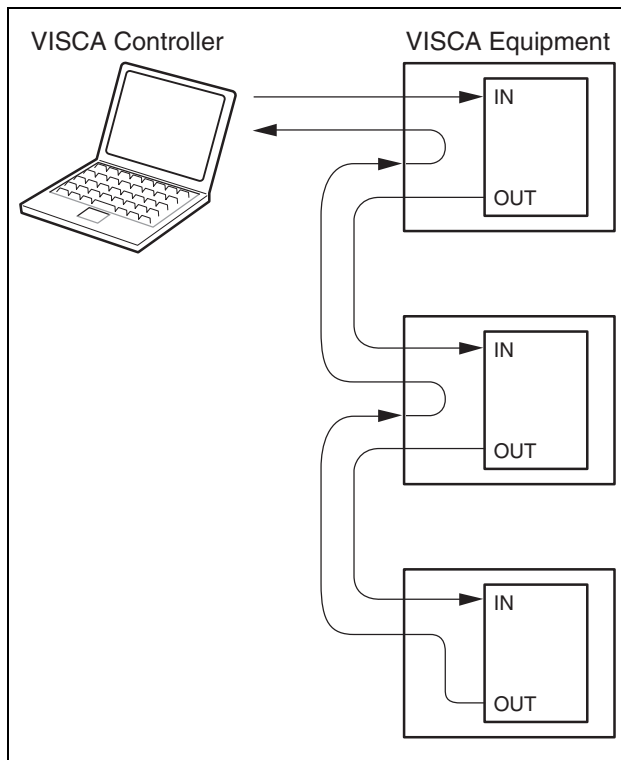
With VISCA over IP function, you can control the camera using VISCA on a controller equipped with IP communication capabilities via LAN. You can connect up to 5 controllers simultaneously on the network.

The communication specifications of VISCA over IP are as follows:

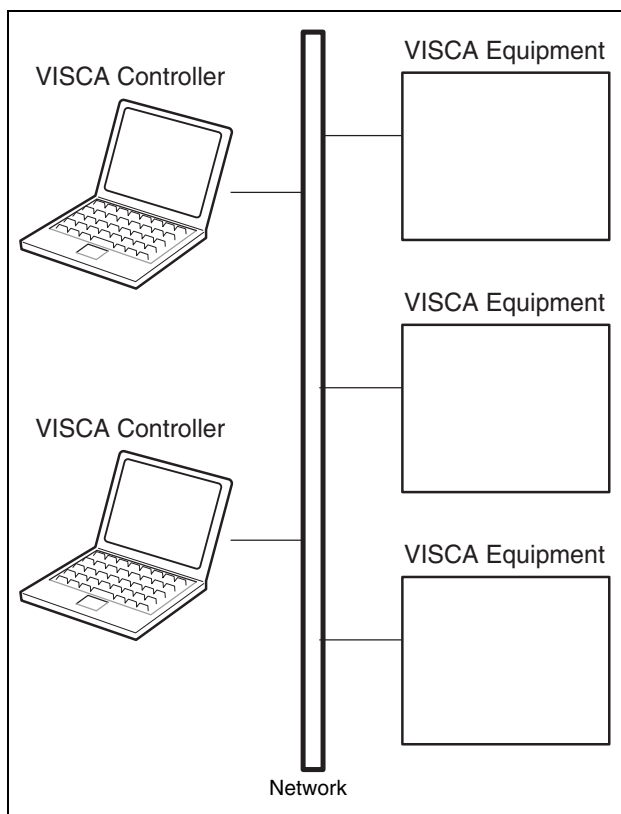
- **Interface**
RJ-45 10Base-T/100Base-TX (automatically identifying)
- **Internet protocol**
IPv4
- **Transport protocol**
UDP
- **IP address**
Set by the IP card setting command (page 37)
- **Port address**
52381
- **Delivery confirmation/Retransmission control**
Depends on the application

In these instructions, the device outputting commands, for example, a computer, is called the controller, and the device receiving the command, such as a BRC series camera, is called a peripheral device.

The controllers and peripheral devices are connected to a one-direction ring conforming to RS-422 standards. On the IP communication connection, the controllers and peripheral devices are connected by bus through a LAN.



RS422 connection



IP communication connection

While the IP communication connection, the address of each device cannot be set in the VISCA 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 VISCA message are locked to 0 (for the controller) or 1 (for the peripheral device).

Due to the nature of the IP communication, the use of some VISCA functions are limited. For details, see “Camera IP Setting Command” on page 37.

For how to set an IP address of the camera, refer to “Camera IP Setting Command” on page 37.

Communication method of VISCA over IP

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.

VISCA command

This is a command from the controller to the peripheral device.

When the peripheral device receives this command, ACK 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.

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.

VISCA reply

This is an ACK, 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.

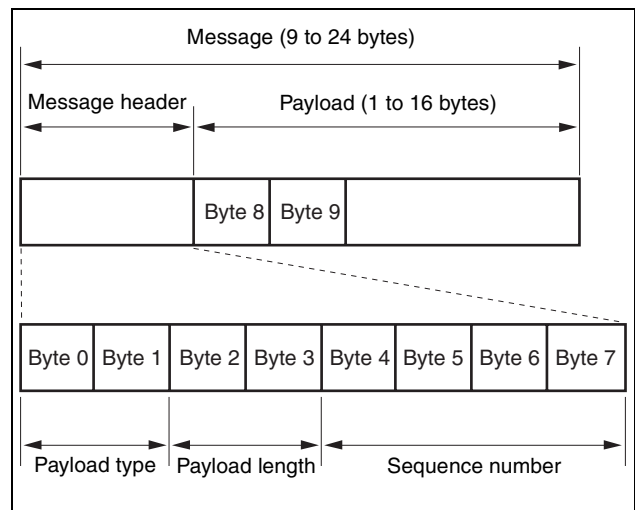
VISCA device setting command

This is the device setting command from the controller to the peripheral device as follows.

- **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.
- **IF_Clear**
Sends the reply message to the controller after clearing, without using VISCA socket.
- **CAM_VersionInq**
Sends the reply message to the controller, without using VISCA socket.

Format

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



Message structure

Note

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

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	0x01	0x00	Stores the VISCA command.
VISCA inquiry	0x01	0x10	Stores the VISCA inquiry.
VISCA reply	0x01	0x11	Stores the reply for the VISCA command and VISCA inquiry, or VISCA device setting command.
VISCA device setting command	0x01	0x20	Stores the VISCA device setting command.
Control command	0x02	0x00	Stores the control command.
Control reply	0x02	0x01	Stores the reply for the control command.

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: 0x00

Byte 3: 0x10

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 value 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.

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 (ACK 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	0x01	Resets the sequence number to 0. The value that was set as the sequence number is ignored.
ERROR	0x0Fyy	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
ACK	0x01	Reply for RESET.

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.

Normally, when the controller sends a message to the peripheral device, the controller sends the new message after receiving the reply for the last 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 messages is considered:

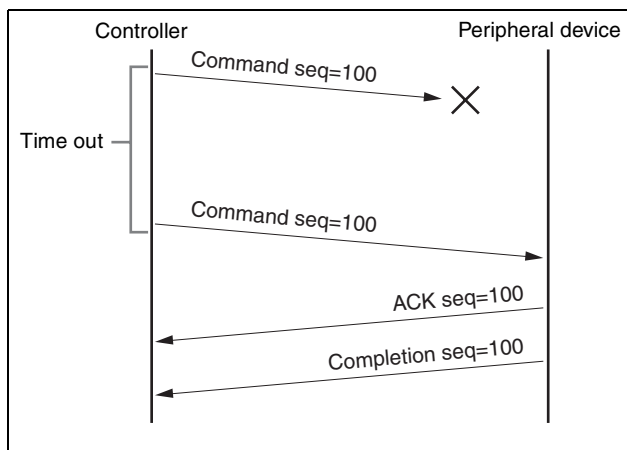
- Command
- ACK message
- Completion message for the command
- Inquiry
- Reply message for the inquiry
- Error message
- Inquiry of the VISCA device setting command
- Reply message of the VISCA device setting command

If time out occurs on the controller, you can infer the lost message and state of the peripheral device by retransmitting the message using the same sequence number. The following table shows the received message and status by retransmission of the lost message, and the reference of correspondence after retransmission for each case. (Except for the case that a time out occurs for reasons other than loss of message.)

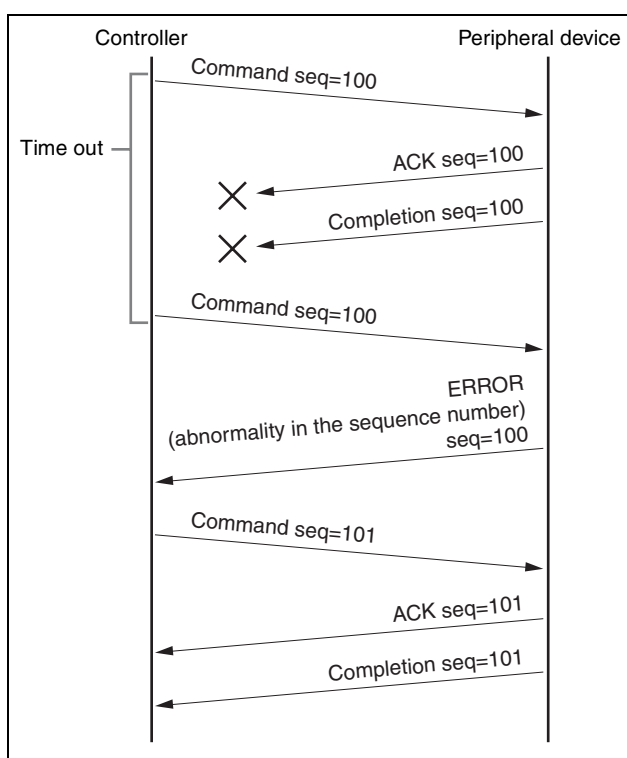
Lost message	Received message for retransmission	Status after retransmission	Correspondence after retransmission
Command	ACK message	Command is performed by retransmission.	Continue processing.
ACK message	ERROR (Abnormality in the sequence number.)	Command has been performed. If only the ACK message is lost, the completion message returns.	If the result by the completion message is needed, retransmit by updating the sequence number.
Completion message for the command	ERROR (Abnormality in the sequence number.)	Command has been performed.	If the result by the completion message is needed, retransmit by updating the sequence number.
Inquiry	Reply message	Inquiry is performed by retransmission.	Continue processing.
Reply message for the inquiry	ERROR (Abnormality in the sequence number.)	Inquiry has been performed.	If the result by the reply message is needed, retransmit by updating the sequence number.
Error message	Error message	Command is not performed. If the error cause eliminates, normal reply is returns (ACK, reply message).	Eliminate the error cause. If normal reply returns, continue processing.
Inquiry of the VISCA device setting command	Reply message of the VISCA device setting command	Inquiry has been performed by retransmission.	Continue processing.
Reply message of the VISCA device setting command	ERROR (Abnormality in the sequence number.)	Inquiry has been performed.	If the result by the reply message is needed, retransmit by updating the sequence number.

The BRC series camera has 2 buffers (memories) for the command to deal with advanced uses. When using VISCA over IP, up to 2 commands (including the current command) can be received. Depending on the message from the controller to the peripheral device, there are some messages that do not need to guarantee delivery. However, the peripheral device receives commands from multiple controllers while connected to VISCA over IP. If the multiple commands are send without waiting for the reply, the possibility of non-execution of the command and errors due to buffer overflow become high, because of limitations of order to receive commands or execution interval of command. It may cause efficiency to be reduced substantially.

Timing chart



Timing chart (loss of command)



Timing chart (loss of ACK or completion message)

Limitation

The following are limitations for VISCA over IP as compared with the VISCA specifications.

Locking the peripheral device's address of the VISCA message to 1

VISCA over IP cannot reflect each address to the address of the VISCA message because up to 112 peripheral devices and 5 controllers are connected. Because of this, the peripheral device's address of VISCA command is locked to 1 when using VISCA over IP. If the peripheral device's address is set to other than 1 for the VISCA command, the peripheral device works without hindrance since the peripheral device recognizes that its address is set to 1.

Locking the controller's address of the VISCA message to 0.

For the same reason as the peripheral device's address, the controller's address of VISCA command is locked to 0. If the controller's address is set to other than 0, the peripheral device works without hindrance, and the reply address from the peripheral device is always set to 0.

Prohibition of specifying the broadcast address for the VISCA message

Do not use the broadcast address because it requires the serial communication. Operations under the broadcast address is set to the command are not guaranteed.

Prohibition of the address for VISCA device setting command

Do not use this command because it requires the serial communication. Operations under the address command is sent are not guaranteed.

VISCA Network Change command is not supported

This cannot be issued because it requires the serial communication.

Expiration time for an on status of the tally lamp

The tally lamp is turned off if not receiving an on command from any controller for 15 seconds after receiving an on command of Cmd_Tally.

BRC-X1000/H800/H780 Commands

Command List (1/5)

Command Set	Command	Command Packet	Comments	
EXPOSURE	MODE	FULL AUTO	8x 01 04 39 00 FF	Full Auto
		MANUAL	8x 01 04 39 03 FF	Manual
		SHUTTER Pri	8x 01 04 39 0A FF	Shutter Priority
		IRIS Pri	8x 01 04 39 0B FF	Iris Priority
		Gain Pri	8x 01 04 39 0E FF	Gain Priority
	IRIS	Reset	8x 01 04 0B 00 FF	To return to 15 (F2.8) value
		Up (Open)	8x 01 04 0B 02 FF	
		Down (Close)	8x 01 04 0B 03 FF	
		Direct	8x 01 04 4B 00 00 0p 0p FF	pp: Iris Position 05 - 15
	GAIN	Reset	8x 01 04 0C 00 FF	To return to 01 (0 dB) value
		Up	8x 01 04 0C 02 FF	
		Down	8x 01 04 0C 03 FF	
		Direct	8x 01 04 4C 00 00 0p 0p FF	pp: 00 (-3 dB) - 0C (33 dB)
	GAIN LIMIT	Direct	8x 01 04 2C 0p FF	p: 4 (9 dB) - 9 (24 dB), F (Off)
	GAIN POINT	On/Off	8x 01 05 0C 0p FF	p: 2=On, 3=Off
	GAIN POINT POSITION	Direct	8x 01 05 4C 0p 0p FF	pp: 01 (0 dB) - 09 (24 dB)
	SHUTTER	Reset	8x 01 04 0A 00 FF	Return to the default value depending on the frame rate of video output
		Up (Fast)	8x 01 04 0A 02 FF	
		Down (Slow)	8x 01 04 0A 03 FF	
		Direct	8x 01 04 4A 00 00 0p 0p FF	pp: Shutter See the VISCA Command Setting Values (SHUTTER/MIN SHUTTER) section
	MAX SHUTTER	Direct	8x 01 05 2A 00 0p 0p FF	pp: High speed shutter limit See the VISCA Command Setting Values (MAX SHUTTER) section
	MIN SHUTTER	Direct	8x 01 05 2A 01 0p 0p FF	pp: Low speed shutter limit See the VISCA Command Setting Values (SHUTTER/MIN SHUTTER) section
	AE SPEED	Direct	8x 01 04 5D pp FF	pp: 01 - 30
	EXP COMP	On/Off	8x 01 04 3E 0p FF	p: 2=On, 3=Off
		Reset	8x 01 04 0E 00 FF	To return to 07 (Correction Level 0) value
		Up	8x 01 04 0E 02 FF	
		Down	8x 01 04 0E 03 FF	
		Direct	8x 01 04 4E 00 00 0p 0p FF	pp: 00 - 0E
	BACK LIGHT	On/Off	8x 01 04 33 0p FF	p: 2=On, 3=Off
	SPOT LIGHT	On/Off	8x 01 04 3A 0p FF	p: 2=On, 3=Off
	VISIBILITY ENHANCER	On/Off	8x 01 04 3D 03 FF	Off
			8x 01 04 3D 06 FF	On
-		8x 01 04 2D 00 0p 0q 0r 00 00 00 00 FF	p: Effect level 0 (Dark) - 6 (Bright)	
			q: Brightness compensation selection 0 (Very dark), 1 (Dark), 2 (Standard), 3 (Bright)	
		r: Compensation level 0 (Low), 1 (Mid), 2 (High)		
IR CUT FILTER*1	On/Off	8x 01 04 01 0p FF	p: 2=On (Night), 3=Off (Day)	
LOW LIGHT BASIS BRIGHTNESS	On/Off	8x 01 05 39 0p FF	p: 2=On, 3=Off	
	Level	8x 01 05 49 0p FF	p: 4 - A	
ND FILTER	-	8x 01 7E 01 53 0p FF	p: 0=Off, 1=1/4, 2=1/16, 3=1/64	

* Number in () is MENU display values.

*1 This function is not available for BRC-H780.

Command List (2/5)

Command Set	Command	Command Packet	Comments	
COLOR	WHITE BALANCE	Auto1	8x 01 04 35 00 FF	
		Indoor	8x 01 04 35 01 FF	
		Outdoor	8x 01 04 35 02 FF	
		One Push WB	8x 01 04 35 03 FF	
		Auto2	8x 01 04 35 04 FF	
		Manual	8x 01 04 35 05 FF	
	ONE PUSH TRIGGER	One Push Trigger	8x 01 04 10 05 FF	One Push WB Trigger
	R.GAIN	Reset	8x 01 04 03 00 FF	To return to 80 (0) value
		Up	8x 01 04 03 02 FF	
		Down	8x 01 04 03 03 FF	
		Direct	8x 01 04 43 00 00 0p 0p FF	pp: 00 (-128) - 80 (0) - FF (128)
	B.GAIN	Reset	8x 01 04 04 00 FF	To return to 80 (0) value
		Up	8x 01 04 04 02 FF	
		Down	8x 01 04 04 03 FF	
		Direct	8x 01 04 44 00 00 0p 0p FF	pp: 00 (-128) - 80 (0) - FF (128)
	SPEED		8x 01 04 56 0p FF	p: 1 (Slow) - 5 (Fast)
	OFFSET	Reset	8x 01 7E 01 2E 00 00 FF	To return to 7 (0) value
		Up	8x 01 7E 01 2E 00 02 FF	
		Down	8x 01 7E 01 2E 00 03 FF	
		Direct	8x 01 7E 01 2E 01 0p FF	p: 0 (-7) - 7 (0) - E (+7)
	CHROMA SUPPRESS	-	8x 01 04 5F 0p FF	p: 0 (Off), 1 (Weak) - 3 (Strong)
	MATRIX	Select	8x 01 7E 01 3D 0p FF	p: Matrix Setting (2=STD, 3=OFF, 4=HIGH SAT, 5=FL LIGHT, 6=MOVIE, 7=STILL, 8=CINEMA, 9=PRO, A=ITU709, B=B/W)
	LEVEL	Reset	8x 01 04 09 00 FF	To return to 4 value
		Up	8x 01 04 09 02 FF	
		Down	8x 01 04 09 03 FF	
		Direct	8x 01 04 49 00 00 0p 0p FF	p: 0 (0) - E (14)
	PHASE	Reset	8x 01 04 0F 00 FF	To return to 7 (0) value
		Up	8x 01 04 0F 02 FF	
		Down	8x 01 04 0F 03 FF	
		Direct	8x 01 04 4F 00 00 0p 0p FF	p: 0 (-7 degrees) - E (+7 degrees)
	R-G	Direct	8x 01 7E 01 7A 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)
	R-B	Direct	8x 01 7E 01 7B 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)
G-R	Direct	8x 01 7E 01 7C 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)	
G-B	Direct	8x 01 7E 01 7D 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)	
B-R	Direct	8x 01 7E 01 7E 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)	
B-G	Direct	8x 01 7E 01 7F 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)	
DETAIL	LEVEL	Reset	8x 01 04 02 00 FF	To return to 7 (0) value
		Up	8x 01 04 02 02 FF	
		Down	8x 01 04 02 03 FF	
		Direct	8x 01 04 42 00 00 0p 0p FF	pp: 00 - 0F
	MODE	Direct	8x 01 05 42 01 0p FF	p: Auto=0, Manual=1
	BANDWIDTH	Direct	8x 01 05 42 02 0p FF	p: 0 - 4
	CRISPENING	Direct	8x 01 05 42 03 0p FF	p: 0 - 7
	H/V BALANCE	Direct	8x 01 05 42 04 0p FF	p: 5 - 9
	B/W BALANCE	Direct	8x 01 05 42 05 0p FF	p: 0 - 4
	LIMIT	Direct	8x 01 05 42 06 0p FF	p: 0 - 7
	HIGHLIGHTDE TAIL	Direct	8x 01 05 42 07 0p FF	p: 0 - 4
	SUPERLOW	Direct	8x 01 05 42 08 0p FF	p: 0 - 7

* Number in () is MENU display values.

Command List (3/5)

Command Set	Command		Command Packet	Comments	
KNEE	KNEE SETTING	On/Off	8x 01 7E 01 6D 0p FF	p: 2=On, 3=Off	
	KNEE MODE	-	8x 01 7E 01 54 0p FF	p: 0=Auto, 4=Manual	
	KNEE SLOPE	Direct	8x 01 7E 01 6F 0p 0p FF	pp: 00 - 0E	
	KNEE POINT	Direct	8x 01 7E 01 6E 0p 0p FF	pp: 00 - 0C	
GAMMA	MODE	-	8x 01 04 5B 0p FF	p: GAMMA Setting (0=STD, 1=STRAIGHT, 2=PATTERN, 8=MOVIE, 9=STILL, A=CINE1, B=CINE2, C=CINE3, D=CINE4, E=ITU709)	
	PATTERN	Direct	8x 01 05 5B 0p 0p 0p FF	ppp: 001 - 200	
	OFFSET	Direct	8x 01 04 1E 00 00 00 0p 0q 0q FF	p: Offset polarity 0 (+), 1 (-) qq: Offset width 00 - 40	
	LEVEL	Direct	8x 01 7E 01 71 0p 0p FF	pp: 00 - 0E	
	BLACK GAMMA LEVEL	Direct	8x 01 7E 01 72 0p 0p FF	pp: 00 - 0E	
	BLACK GAMMA RANGE	Direct	8x 01 05 5C 0p FF	p: Correction range 0 (Low), 1 (Mid), 2 (High)	
	BLACK LEVEL	Reset		8x 01 7E 04 15 00 FF	To return to 30 (0) value
		Up		8x 01 7E 04 15 02 FF	
		Down		8x 01 7E 04 15 03 FF	
		Direct		8x 01 7E 04 45 0p 0p FF	pp: 00 (-48) - 60 (48)
PICTURE PROFILE	MODE	-	8x 01 7E 04 5F 0p FF	p: Picture profile setting (0=PP1, 1=PP2, 2=PP3, 3=PP4, 4=PP5, 5=PP6)	
FLICKER REDUCTION	MODE	On/Off	8x 01 04 32 0p FF	p: 2=On, 3=Off	
NOISE REDUCTION	MODE LEVEL	-	8x 01 04 53 pp FF	pp: NR Setting 00 (Off), 01 (Weak) - 05 (Strong), 7F (Advanced)	
	2D NR/3D NR MANUAL SETTING	Direct	8x 01 05 53 0p 0q FF	p: 2D NR Level 0 (Off), 1 (Weak) - 5 (Strong) q: 3D NR Level 0 (Off), 1 (Weak) - 5 (Strong)	
ZOOM	STOP	-	8x 01 04 07 00 FF		
	TELE (STANDARD)	-	8x 01 04 07 02 FF		
	WIDE (STANDARD)	-	8x 01 04 07 03 FF		
	TELE (VARIABLE)	-	8x 01 04 07 2p FF	p: 0 (Low) - 7 (High)	
	WIDE (VARIABLE)	-	8x 01 04 07 3p FF	p: 0 (Low) - 7 (High)	
	DIRECT	-	8x 01 04 47 0z 0z 0z 0z FF	zzzz: Refer to the section of the Zoom Position and Zoom Ratio (for reference) of VISCA Command Setting Values	
	CLEAR IMAGE ZOOM	On/Off		8x 01 04 06 03 FF	OFF
				8x 01 04 06 04 FF	ON
	ZOOM SPEED TYPE	-	8x 01 7E 04 57 pp FF	pp: 04=Extd. Range, 08=Normal	
	TELE CONVERT MODE	-	8x 01 7E 04 36 0p FF	p: 2=Double, 3=Off* ¹	

* Number in () is MENU display values.

*¹ Cannot be used when the signal format is other than 1080/29.97p, 1080/25p, or 1080/23.98p.

Command List (4/5)

Command Set	Command		Command Packet	Comments
FOCUS	MODE	AUTO/ MANUAL	8x 01 04 38 0p FF	p: 2=Auto Focus, 3=Manual Focus
	AUTO/MANUAL TOGGLE	-	8x 01 04 38 10 FF	
	STOP	-	8x 01 04 08 00 FF	
	FAR (STANDARD SPEED)	-	8x 01 04 08 02 FF	
	NEAR (STANDARD SPEED)	-	8x 01 04 08 03 FF	
	FAR (VARIABLE SPEED)	-	8x 01 04 08 2p FF	p: 0 (Low) - 7 (High)
	NEAR (VARIABLE SPEED)	-	8x 01 04 08 3p FF	p: 0 (Low) - 7 (High)
	DIRECT	Direct	8x 01 04 48 0p 0p 0p 0p FF	pppp: F000 (Near) - 0000 (Far) Refer to the section of the Focus Ratio and Focus Distance (for reference) of VISCA Command Setting Values
	ONE PUSH TRIGGER	-	8x 01 04 18 01 FF	One Push AF Trigger
	FOCUS ∞	-	8x 01 04 18 02 FF	
	NEAR LIMIT	Direct	8x 01 04 28 0p 0p 0p 0p FF	pppp: Refer to the section of the Focus Ratio and Focus Distance (for reference) of VISCA Command Setting Values
	AF SENSITIVITY	-	8x 01 04 58 0p FF	p: 2 (Normal), 3 (Low)
	IR CORRECTION	-	8x 01 04 11 0p FF	p: 0 (Standard), 1 (IR Light)
PAN TILT DRIVE	UP	-	8x 01 06 01 vv ww 03 01 FF	vv: Pan speed 01 (Slow) - 18 (Fast) ww: Tilt speed 01 (Slow) - 18 (Fast)
	DOWN	-	8x 01 06 01 vv ww 03 02 FF	vv: Pan speed 01 (Slow) - 18 (Fast) ww: Tilt speed 01 (Slow) - 18 (Fast)
	LEFT	-	8x 01 06 01 vv ww 01 03 FF	vv: Pan speed 01 (Slow) - 18 (Fast) ww: Tilt speed 01 (Slow) - 18 (Fast)
	RIGHT	-	8x 01 06 01 vv ww 02 03 FF	vv: Pan speed 01 (Slow) - 18 (Fast) ww: Tilt speed 01 (Slow) - 18 (Fast)
	UPLEFT	-	8x 01 06 01 vv ww 01 01 FF	vv: Pan speed 01 (Slow) - 18 (Fast) ww: Tilt speed 01 (Slow) - 18 (Fast)
	UPRIGHT	-	8x 01 06 01 vv ww 02 01 FF	vv: Pan speed 01 (Slow) - 18 (Fast) ww: Tilt speed 01 (Slow) - 18 (Fast)
	DOWNLEFT	-	8x 01 06 01 vv ww 01 02 FF	vv: Pan speed 01 (Slow) - 18 (Fast) ww: Tilt speed 01 (Slow) - 18 (Fast)
	DOWNRIGHT	-	8x 01 06 01 vv ww 02 02 FF	vv: Pan speed 01 (Slow) - 18 (Fast) ww: Tilt speed 01 (Slow) - 18 (Fast)
	STOP	-	8x 01 06 01 vv ww 03 03 FF	vv: Pan speed 01 (Slow) - 18 (Fast) ww: Tilt speed 01 (Slow) - 18 (Fast)
	ABS (ABSOLUTE POSITION)	-	8x 01 06 02 vv ww 0p 0p 0p 0p 0p 0t 0t 0t 0t FF	vv: Pan speed 01 (Slow) - 32 (Fast) ^{*1} ww: Tilt speed 00, 01 (Slow) - 32 (Fast) ^{*1 *2} pppp: Pan-coordinate ^{*3} tttt: Tilt-coordinate ^{*3}
	REL (RELATIVE POSITION)	-	8x 01 06 03 vv ww 0p 0p 0p 0p 0p 0t 0t 0t 0t FF	vv: Pan speed 01 (Slow) - 32 (Fast) ^{*1} ww: Tilt speed 00, 01 (Slow) - 32 (Fast) ^{*1 *2} ppppp: Pan-shift amount ^{*3} tttt: Tilt-shift amount ^{*3}

* Number in () is MENU display values.

*1 When PAN-TILT SPEED TYPE is Extd. Step, Pan/Tilt speeds of 19 and over are available. When PAN-TILT SPEED TYPE is Extd. Range or Normal, Pan and Tilt operate at a speed of 18 even though a speed from 19 to 32 is specified.

*2 When 00 is specified for the Tilt speed, Pan and Tilt operation will be completed simultaneously. When a speed higher than 01 is specified, Pan and Tilt move at the specified speed respectively.

*3 Refer to the section of the Pan/Tilt Position (for reference) of VISCA Command Setting Values.

Command List (5/5)

Command Set	Command		Command Packet	Comments
PAN TILT DRIVE	HOME	-	8x 01 06 04 FF	
	RESET	-	8x 01 06 05 FF	
PAN TILT	RAMP CURVE	-	8x 01 06 31 0p FF	p: 1 (Sharpness), 2 (Standard), 3 (Gentle)
	PAN-TILT SPEED TYPE	-	8x 01 06 45 pp FF	pp: 04=Extd. Range, 08=Normal, 18=Extd. Step
	PAN-TILT SLOW MODE	On/Off	8x 01 06 44 0p FF	p: 2=On, 3=Off
	PAN TILT LIMIT	Limit Set		8x 01 06 07 00 0w 0p 0p 0p 0p 0p 0t 0t 0t 0t FF
Limit Clear			8x 01 06 07 01 0w 07 0F 0F 0F 0F 07 0F 0F 0F FF	w: Position (1=UpRight, 0=DownLeft)
PRESET	RESET	Reset	8x 01 04 3F 00 pp FF	pp: PRESET No. to reset - 1 (00 to 63)
	SET	Set	8x 01 04 3F 01 pp FF	pp: PRESET No. to set - 1 (00 to 63)
	RECALL	Recall	8x 01 04 3F 02 pp FF	pp: PRESET No. to recall - 1 (00 to 63)
	PRESET DRIVE SPEED	-	8x 01 7E 01 0B pp qq FF	pp: Preset number of speed setting -1 (00 - 63) qq: pp position direction speed 01 - 18
	PRESET MODE	-	8x 01 7E 04 3D pp FF	pp: 00=MODE1, 01=MODE2, 10=TRACE*1 Refer to the section on PRESET MODE settings and PRESET command behaviors.
PTZ TRACE*1	REC	START	8x 01 7E 04 20 00 0p 02 FF	p: 0 - F (PTZ Trace number to record 1 - 16)
		STOP	8x 01 7E 04 20 00 00 03 FF	
	PLAY	PREPARE	8x 01 7E 04 20 01 0p 01 FF	p: 0 - F (PTZ Trace number to reproduce 1 - 16)
		START	8x 01 7E 04 20 01 00 02 FF	
	DELETE	DELETE	8x 01 7E 04 20 02 0p 00 FF	p: 0 - F (PTZ Trace number to delete 1 - 16)
SYSTEM	IR RECEIVE	-	8x 01 06 08 pp FF	pp: 02=On, 03=Off, 10=toggle
	HPHASE	Up	8x 01 7E 01 3E 00 02 FF	
		Down	8x 01 7E 01 3E 00 03 FF	
		Direct	8x 01 7E 01 5B 00 0p 0p 0p FF	ppp: 000 - 3BF
	IMG FLIP	On/Off	8x 01 04 66 0p FF	p: 2=On, 3=Off
	PAN REVERSE	On/Off	8x 01 7E 01 06 00 0p FF	p: 1=ON, 0=OFF
	TILT REVERSE	On/Off	8x 01 7E 01 09 00 0p FF	p: 1=ON, 0=OFF
COLOR BAR	On/Off	8x 01 04 7D 0p FF	p: 2=On, 3=Off	
MENU	ON/OFF	-	8x 01 06 06 pp FF	p: 2=On, 3=Off, 10=Toggle
	ENTER	-	8x 01 7E 01 02 00 01 FF	
Tally lamp	ON/OFF	On/Off	8x 01 7E 01 0A 00 0p FF	p: 2=On, 3=Off
	TALLY MODE	-	8x 01 7E 01 0A 01 0p FF	p: 0=OFF, 4=ON (LOW), 5=ON (HIGH)
HDMI	HDMI VIDEO FORMAT CHANGE	-	8x 01 7E 01 1E 0p 0p FF	pp: Refer to the section of the HDMI VIDEO FORMAT CHANGE value and HDMI output format of VISCA Command Setting Values
	HDMI COLOR SPACE	-	8x 01 7E 01 03 00 0p FF	p: 0=YCbCr, 1=RGB
CAMERA POWER SUPPLY	ON/STANDBY	-	8x 01 04 00 0p FF	p: 2=On, 3=STANDBY

* Number in () is MENU display values.

*1 This function is not available for BRC-H780.

Inquiry Command List (1/5)

Inquiry Command		Inquiry Packet	Reply Packet	Comments	
EXPOSURE	MODE	Mode Inquiry	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 0E FF	Gain Priority
	IRIS	-	8x 09 04 4B FF	y0 50 00 00 0p 0p FF	pp: See the VISCA Command Setting Values (IRIS) section
	GAIN	-	8x 09 04 4C FF	y0 50 00 00 0p 0p FF	pp: See the VISCA Command Setting Values (GAIN) section
	GAIN LIMIT	-	8x 09 04 2C FF	y0 50 0p FF	p: Gain Limit
	GAIN POINT	On/Off Inquiry	8x 09 05 0C FF	y0 50 0p FF	p: 2=On, 3=Off
	GAIN POINT POSITION	-	8x 09 05 4C FF	y0 50 0p 0p FF	pp: See the VISCA Command Setting Values (GAIN) section
	SHUTTER	-	8x 09 04 4A FF	y0 50 00 00 0p 0p FF	pp: Shutter See the VISCA Command Setting Values (SHUTTER/MIN SHUTTER) section
	MAX SHUTTER	-	8x 09 05 2A 00 FF	y0 50 0p 0p FF	pp: High speed shutter limit See the VISCA Command Setting Values (MAX SHUTTER) section
	MIN SHUTTER	-	8x 09 05 2A 01 FF	y0 50 0p 0p FF	pp: Low speed shutter limit See the VISCA Command Setting Values (SHUTTER/MIN SHUTTER) section
	AE SPEED	-	8x 09 04 5D FF	y0 50 pp FF	pp: 01 - 30
	EX COMP	On/Off Inquiry	8x 09 04 3E FF	y0 50 0p FF	p: 2=On, 3=Off
		LEVEL	8x 09 04 4E FF	y0 50 00 00 0p 0p FF	pp: 00 - 0E
	BACK LIGHT	On/Off Inquiry	8x 09 04 33 FF	y0 50 0p FF	p: 2=On, 3=Off
	SPOT LIGHT	On/Off Inquiry	8x 09 04 3A FF	y0 50 0p FF	p: 2=On, 3=Off
	VISIBILITY ENHANCER	On/Off Inquiry	8x 09 04 3D FF	y0 50 03 FF	Off
				y0 50 06 FF	On
-		8x 09 04 2D FF	y0 50 00 0p 0q 0r 00 00 00 00 FF	p: Effect level 0 (Dark) - 6 (Bright)	
				q: Brightness compensation selection 0 (Very dark), 1 (Dark), 2 (Standard), 3 (Bright)	
			r: Compensation level 0 (Low), 1 (Mid), 2 (High)		
LOW LIGHT BASIS BRIGHTNESS	On/Off Inquiry	8x 09 05 39 FF	y0 50 0p FF	p: 2=On, 3=Off	
	-	8x 09 05 49 FF	y0 50 0p FF	p: 4 - A	
ND FILTER	-	8x 09 7E 01 53 FF	y0 50 0p FF	p: 0=Off, 1=1/4, 2=1/16, 3=1/64	

* Number in () is MENU display values.

Inquiry Command List (2/5)

Inquiry Command		Inquiry Packet	Reply Packet	Comments	
COLOR	AUTO1	WHITE BALANCE MODE Inquiry	8x 09 04 35 FF	y0 50 00 FF	Auto1
	INDOOR		y0 50 01 FF	In Door	
	OUTDOOR		y0 50 02 FF	Out Door	
	ONE PUSH WB		y0 50 03 FF	One Push WB	
	AUTO2		y0 50 04 FF	Auto2	
	MANUAL		y0 50 05 FF	Manual	
	R.GAIN	-	8x 09 04 43 FF	y0 50 00 00 0p 0p FF	pp: 00 (-128) - 80 (0) - FF (128)
	B.GAIN	-	8x 09 04 44 FF	y0 50 00 00 0p 0p FF	pp: 00 (-128) - 80 (0) - FF (128)
	SPEED	-	8x 09 04 56 FF	y0 50 0p FF	p: 1 (Slow) - 5 (Fast)
	OFFSET	-	8x 09 7E 01 2E FF	y0 50 00 00 00 0p FF	p: 0 (-7) - 7 (0) - E (+7)
	CHROMA SUPPRESS	-	8x 09 04 5F FF	y0 50 0p FF	p: 0 (Off), 1 (Weak) - 3 (Strong)
	MATRIX	-	8x 09 7E 01 3D FF	y0 50 0p FF	p: Matrix Setting (2=STD, 3=OFF, 4=HIGH SAT, 5=FL LIGHT, 6=MOVIE, 7=STILL, 8=CINEMA, 9=PRO, A=ITU709, B=B/W)
	LEVEL	-	8x 09 04 49 FF	y0 50 00 00 00 0p FF	p: 0 (0) - E (15)
	PHASE	-	8x 09 04 4F FF	y0 50 00 00 00 0p FF	p: 0 (-7) - E (+7)
	R-G	-	8x 09 7E 01 7A FF	y0 50 00 00 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)
	R-B	-	8x 09 7E 01 7B FF	y0 50 00 00 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)
	G-R	-	8x 09 7E 01 7C FF	y0 50 00 00 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)
	G-B	-	8x 09 7E 01 7D FF	y0 50 00 00 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)
	B-R	-	8x 09 7E 01 7E FF	y0 50 00 00 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)
B-G	-	8x 09 7E 01 7F FF	y0 50 00 00 0p 0p FF	pp: 00 (-99) - 63 (00) - C6 (+99)	
DETAIL	LEVEL	-	8x 09 04 42 FF	y0 50 00 00 0p 0p FF	pp: 00 - 0F
	MODE	-	8x 09 05 42 01 FF	y0 50 0p FF	p: Auto=0, Manual=1
	BANDWIDTH	-	8x 09 05 42 02 FF	y0 50 0p FF	p: 0 - 4
	CRISPENING	-	8x 09 05 42 03 FF	y0 50 0p FF	p: 0 - 7
	H/V BALANCE	-	8x 09 05 42 04 FF	y0 50 0p FF	p: 5 - 9
	B/W BALANCE	-	8x 09 05 42 05 FF	y0 50 0p FF	p: 0 - 4
	LIMIT	-	8x 09 05 42 06 FF	y0 50 0p FF	p: 0 - 7
	HIGHLIGHT- DETAIL	-	8x 09 05 42 07 FF	y0 50 0p FF	p: 0 - 4
	SUPERLOW	-	8x 09 05 42 08 FF	y0 50 0p FF	p: 0 - 7
KNEE	KNEE SETTING	On/Off Inquiry	8x 09 7E 01 6D FF	y0 50 0p FF	p: 2=On, 3=Off
	KNEE MODE	-	8x 09 7E 01 54 FF	y0 50 0p FF	p: 0=Auto, 4=Manual
	KNEE SLOPE	-	8x 09 7E 01 6F FF	y0 50 00 00 0p 0p FF	pp: 00 - 0E
	KNEE POINT	-	8x 09 7E 01 6E FF	y0 50 00 00 0p 0p FF	pp: 00 - 0C

* Number in () is MENU display values.

Inquiry Command List (3/5)

Inquiry Command			Inquiry Packet	Reply Packet	Comments
GAMMA	MODE	-	8x 09 04 5B FF	y0 50 0p FF	p: GAMMA Setting (0=STD, 1=STRAIGHT, 2=PATTERN, 8=MOVIE, 9=STILL, A=CINE1, B=CINE2, C=CINE3, D=CINE4, E=ITU709)
	PATTERN	-	8x 09 05 5B FF	y0 50 0p 0p 0p FF	ppp: 001 - 200
	OFFSET	-	8x 09 04 1E FF	y0 50 00 00 00 0p 0q 0q FF	p: Offset polarity 0 (+), 1 (-) qq: Offset width 00 - 40
	LEVEL	-	8x 09 7E 01 71 FF	y0 50 00 00 0p 0p FF	pp: 00 - 0E
	BLACK GAMMA LEVEL	-	8x 09 7E 01 72 FF	y0 50 00 00 0p 0p FF	pp: 00 - 0E
	BLACK GAMMA RANGE	-	8x 09 05 5C FF	y0 50 0p FF	p: Correction range 0 (Low), 1 (Mid), 2 (High)
	BLACK LEVEL	-	8x 09 7E 04 45 FF	y0 50 0p 0p FF	pp: 00 (-48) - 60 (48)
FLICKER REDUCTION	-	On/Off Inquiry	8x 09 04 32 FF	y0 50 0p FF	p: 2=On, 3=Off
NOISE REDUCTION	MODE LEVEL	-	8x 09 04 53 FF	y0 50 pp FF	pp: NR Setting 00 (Off), 01 (Weak) - 05 (Strong), 7F (Advanced)
	2D NR/3D NR MANUAL SETTING	-	8x 09 05 53 FF	y0 50 0p 0q FF	p: 2D NR Level 0 (Off), 1 (Weak) - 5 (Strong)
					q: 3D NR Level 0 (Off), 1 (Weak) - 5 (Strong)
ZOOM	CLEAR IMAGE ZOOM	On/Off Inquiry	8x 09 04 06 FF	y0 50 0p FF	p: 4=On, 3=Off
	TELE CONVERT MODE	On/Off Inquiry	8x 09 7E 04 36 FF	y0 50 0p FF	p: 2=On, 3=Off
	ZOOM POSITION	-	8x 09 04 47 FF	y0 50 0z 0z 0z 0z FF	zzzz: Refer to the section of the Zoom Position and Zoom Ratio (for reference) of VISCA Command Setting Values
	ZOOM SPEED TYPE	-	8x 09 7E 04 57 FF	y0 50 pp FF	pp: 04=Extd. Range, 08=Normal
FOCUS	FOCUS MODE	-	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
				y0 50 03 FF	Manual Focus
	FOCUS POSITION	-	8x 09 04 48 FF	y0 50 0p 0p 0p 0p FF	pppp: F000 (Near) - 0000 (Far) Refer to the section of the Focus Ratio and Focus Distance (for reference) of VISCA Command Setting Values
	FOCUS SENSITIVITY	-	8x 09 04 58 FF	y0 50 02 FF	AF Sensitivity Normal
				y0 50 03 FF	AF Sensitivity Low
	FOCUS NEAR LIMIT	-	8x 09 04 28 FF	y0 50 0p 0p 0p 0p FF	pppp: Refer to the section of the Focus Ratio and Focus Distance (for reference) of VISCA Command Setting Values
FOCUS IR CORRECTION	-	8x 09 04 11 FF	y0 50 00 FF	Standard	
			y0 50 01 FF	IR Light	

* Number in () is MENU display values.

Inquiry Command List (4/5)

Inquiry Command			Inquiry Packet	Reply Packet	Comments
PAN TILT	POSITION	-	8x 09 06 12 FF	y0 50 0p 0p 0p 0p 0p 0t 0t 0t 0t FF	Refer to the section of the Pan/Tilt Position (for reference) of VISCA Command Setting Values for ppppp and tttt
	STATUS	-	8x 09 06 10 FF	y0 50 pp pp FF	Refer to the section of the Pan/Tilt status code list for pppp
	RAMP CURVE	-	8x 09 06 31 FF	y0 50 0p FF	p: 1 (Sharpness), 2 (Standard), 3 (Gentle)
	PAN-TILT SPEED TYPE	-	8x 09 06 45 FF	y0 50 pp FF	pp: 04=Extd. Range, 08=Normal, 18=Extd. Step
	PAN-TILT SLOW MODE	On/Off Inquiry	8x 09 06 44 FF	y0 50 0p FF	p: 2=On, 3=Off
	PAN TILT LIMIT	-	8x 09 06 07 0q FF	y0 50 0p 0p 0p 0p 0p 0t 0t 0t 0t FF	q: Position (1=UpRight, 0=DownLeft) Refer to the section of the Pan/Tilt Position (for reference) of VISCA Command Setting Values for ppppp and tttt
PRESET	PRESET driven speed	-	8x 09 7E 01 0B pp FF	y0 50 qq FF	pp: PRESET No. to confirm the speed - 1 (00 to 63) qq: p position direction speed 01-18
	PRESET	-	8x 09 04 3F FF	y0 50 pp FF	pp: PRESET No. last recalled - 1 (01 - 63, 7F)
	PRESET MODE	Mode inquiry	8x 09 7E 04 3D FF	y0 50 pp FF	pp: 00=MODE1, 01=MODE2, 10=TRACE*1 Refer to the sections about PRESET MODE settings and PRESET command behaviors
PTZ TRACE*1	Status inquiry	-	8x 09 7E 04 20 03 FF	y0 50 0p FF	p: Returns PTZ TRACE status, 0=normal, 1=recording, 2=preparing for playback, 3=playback preparation completed, 4= playing, 5= deleting
	Record status bulk inquiry	-	8x 09 7E 04 20 10 00 00 FF	y0 50 0p 0q 0r 0s FF	pqrs: recorded PTZ TRACE number PTZ TRACE function Refer to the section on Record status bulk inquiry
	Record status individual inquiry	-	8x 09 7E 04 20 10 01 0p FF	y0 50 0p FF	p: PTZ TRACE number q: 0=not recorded, 1=recorded
	Playback preparation status inquiry	-	8x 09 7E 04 20 01 00 00 FF	y0 50 pp FF	pp: number of PTZ TRACE 00 to 0F whose playback preparation is completed. 7F if number is not prepared
IR CUT FILTER*1	IR CUT FILTER	On/Off Inquiry	8x 09 04 01 FF	y0 50 0p FF	p: 2=On (Night), 3=Off (Day)
Tally lamp	-	On/Off Inquiry	8x 09 7E 01 0A FF	y0 50 0p FF	p: 2=On, 3=Off
SYSTEM	HPHASE	-	8x 09 7E 01 3E FF	y0 50 00 0p 0p 0p 0p FF	ppp: 000 - 3BF
	IR RECEIVE	On/Off Inquiry	8x 09 06 08 FF	y0 50 0p FF	p: 2=On, 3=Off
	IMG FLIP	On/Off Inquiry	8x 09 04 66 FF	y0 50 0p FF	p: 2=On, 3=Off
	PAN REVERSE	On/Off Inquiry	8x 09 7E 01 06 FF	y0 50 0p FF	p: 1=On, 0=Off
	TILT REVERSE	On/Off Inquiry	8x 09 7E 01 09 FF	y0 50 0p FF	p: 1=On, 0=Off
	COLOR BAR	On/Off	8x 09 04 7D FF	y0 50 0p FF	p: 2=On, 3=Off
HDMI	HDMI VIDEO FORMAT	-	8x 09 06 23 FF	y0 50 pp FF	pp: Refer to the section of the HDMI VIDEO FORMAT CHANGE value and HDMI output format of VISCA Command Setting Values
	HDMI COLOR SPACE	-	8x 09 7E 01 03 FF	y0 50 0p FF	p: 0=YCbCr, 1=RGB

* Number in () is MENU display values.

*1 This function is not available for BRC-H780.

Inquiry Command List (5/5)

Inquiry Command			Inquiry Packet	Reply Packet	Comments
MENU Display Status	ON/OFF INQUIRY	-	8x 09 06 06 FF	y0 50 0p FF	p: 2=On, 3=Off
POWER Status	ON/STANDBY INQUIRY	-	8x 09 04 00 FF	y0 50 0p FF	p: 2=On, 3=Standby
SOFTWARE VERSION	-	-	8x 09 00 02 FF	y0 50 pp pp qq qq rr rr 0s FF	pppp: Vendor ID qqqq: Model Code rrrr: ROM version s: Socket Number

* Number in () is MENU display values.

Block Inquiry Command List

Lens control system inquiry commands.....Inquiry Packet 8x 09 7E 7E 01 FF

Byte	Bit	Comments
0	7	Destination Address
	6	
	5	
	4	
	3	Source Address
	2	
	1	
	0	
1	7	0
	6	1
	5	0
	4	1
	3	0
	2	0
	1	0
	0	0
2	7	0
	6	0
	5	0
	4	0
	3	Zoom Position (HH)
	2	
	1	
	0	
3	7	0
	6	0
	5	0
	4	0
	3	Zoom Position (HL)
	2	
	1	
	0	
4	7	0
	6	0
	5	0
	4	0
	3	Zoom Position (LH)
	2	
	1	
	0	
5	7	0
	6	0
	5	0
	4	0
	3	Zoom Position (LL)
	2	
	1	
	0	

Byte	Bit	Comments
6	7	0
	6	0
	5	0
	4	0
	3	Focus Near Limit (H)
	2	
	1	
	0	
7	7	0
	6	0
	5	0
	4	0
	3	Focus Near Limit (L)
	2	
	1	
	0	
8	7	0
	6	0
	5	0
	4	0
	3	Focus Position (HH)
	2	
	1	
	0	
9	7	0
	6	0
	5	0
	4	0
	3	Focus Position (HL)
	2	
	1	
	0	
10	7	0
	6	0
	5	0
	4	0
	3	Focus Position (LH)
	2	
	1	
	0	
11	7	0
	6	0
	5	0
	4	0
	3	Focus Position (LL)
	2	
	1	
	0	

Byte	Bit	Comments
12	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	Base Block Fan
13	7	0
	6	Digital Zoom
	5	0
	4	0
	3	0
	2	AF Sensitivity
	1	0
	0	Focus Mode
14	7	0
	6	0
	5	0
	4	0
	3	0
	2	Camera Memory Recall
	1	Focus Command Executing
	0	Zoom Command Executing
15	7	1
	6	1
	5	1
	4	1 Terminator
	3	1
	2	1
	1	1
	0	1

Camera control system inquiry commands.....Inquiry Packet 8x 09 7E 7E 01 FF

Byte	Bit	Comments
0	7	Destination Address
	6	
	5	
	4	
	3	Source Address
	2	
	1	
	0	
1	7	0
	6	1
	5	0
	4	1
	3	0
	2	0
	1	0
	0	0
2	7	0
	6	0
	5	0
	4	0
	3	R Gain (H)
	2	
	1	
	0	
3	7	0
	6	0
	5	0
	4	0
	3	R Gain (L)
	2	
	1	
	0	
4	7	0
	6	0
	5	0
	4	0
	3	B Gain (H)
	2	
	1	
	0	
5	7	0
	6	0
	5	0
	4	0
	3	B Gain (L)
	2	
	1	
	0	

Byte	Bit	Comments
6	7	0
	6	0
	5	0
	4	0
	3	White Balance Mode
	2	
	1	
	0	
7	7	0
	6	White Balance Speed
	5	
	4	
	3	
	2	
	1	
	0	
8	7	0
	6	Color Matrix (L)
	5	
	4	0
	3	Exposure Mode
	2	
	1	
	0	
9	7	0
	6	0
	5	0
	4	Wide Dynamic
	3	0
	2	Backlight Compensation
	1	Exposure Compensation
	0	0
10	7	0
	6	0
	5	0
	4	Shutter Position
	3	
	2	
	1	
	0	0
11	7	0
	6	0
	5	0
	4	Iris Position
	3	
	2	
	1	
	0	0

Byte	Bit	Comments
12	7	0
	6	0
	5	0
	4	Gain Position
	3	
	2	
	1	
	0	0
13	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
14	7	0
	6	Color Matrix (H)
	5	
	4	
	3	Exposure Correction Level
	2	
	1	
	0	
15	7	1
	6	1
	5	1
	4	1 Terminator
	3	1
	2	1
	1	1
	0	1

Other block inquiry commands.....Inquiry Packet 8x 09 7E 7E 02 FF

Byte	Bit	Comments
0	7	Destination Address
	6	
	5	
	4	
	3	Source Address
	2	
	1	
	0	
1	7	0
	6	1
	5	0
	4	1
	3	0
	2	0
	1	0
	0	0
2	7	0
	6	0
	5	Spotlight Correction
	4	Flicker Cancel
	3	0
	2	0
	1	0
	0	Power
3	7	0
	6	0
	5	0
	4	ICR*1
	3	0
	2	0
	1	0
	0	0
4	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
5	7	0
	6	0
	5	0
	4	0
	3	Picture Effect
	2	
	1	
	0	

Byte	Bit	Comments
6	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
7	7	0
	6	0
	5	0
	4	0
	3	White Balance Offset
	2	
	1	
	0	
8	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
9	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
10	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
11	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0

Byte	Bit	Comments
12	7	0
	6	0
	5	0
	4	Memory
	3	0
	2	ICR*1
	1	Stabilizer
	0	System
13	7	0
	6	0
	5	0
	4	Knee Mode
	3	Knee Slope
	2	
	1	
	0	
14	7	0
	6	0
	5	0
	4	Knee Setting
	3	Knee Point
	2	
	1	
	0	
15	7	1
	6	1
	5	1
	4	1 Terminator
	3	1
	2	1
	1	1
	0	1

*1 0 for BRC-H780

Other enlargement inquiry commands (1/3) Inquiry Packet 8x 09 7E 7E 03 FF

Byte	Bit	Comments
0	7	Destination Address
	6	
	5	
	4	
	3	Source Address
	2	
	1	
	0	
1	7	0
	6	1
	5	0
	4	1
	3	0
	2	0
	1	0
	0	0
2	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
3	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
4	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
5	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0

Byte	Bit	Comments
6	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
7	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
8	7	0
	6	2D NR Level
	5	
	4	
	3	0
	2	0
	1	0
	0	0
9	7	0
	6	3D NR Level
	5	
	4	
	3	0
	2	0
	1	0
	0	0
10	7	0
	6	Gamma (H)
	5	
	4	
	3	
	2	0
	1	0
	0	Picture Flip Status
11	7	0
	6	Color Gain
	5	
	4	
	3	
	2	0
	1	0
	0	Picture Flip

Byte	Bit	Comments
12	7	0
	6	0
	5	AE Response
	4	
	3	
	2	
	1	
	0	
13	7	0
	6	Gamma (L)
	5	
	4	
	3	0
	2	NR Level
	1	
	0	
14	7	0
	6	Chroma Suppress
	5	
	4	
	3	Gain Limit
	2	
	1	
	0	
15	7	1
	6	1
	5	1
	4	1 Terminator
	3	1
	2	1
	1	1
	0	1

Other enlargement inquiry commands (2/3) Inquiry Packet 8x 09 7E 7E 04 FF

Byte	Bit	Comments
0	7	Destination Address
	6	
	5	
	4	
	3	Source Address
	2	
	1	
	0	
1	7	0
	6	1
	5	0
	4	1
	3	0
	2	0
	1	0
	0	0
2	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	WD
	0	
3	7	0
	6	0
	5	0
	4	0
	3	Black Level (H)
	2	
	1	
	0	
4	7	0
	6	Black Level (L)
	5	
	4	
	3	
	2	WD display brightness
	1	
	0	
5	7	0
	6	0
	5	Black Gamma Level
	4	
	3	
	2	
	1	WD correction brightness selection
	0	

Byte	Bit	Comments
6	7	0
	6	0
	5	Gamma Level
	4	
	3	
	2	
	1	WD correction strength
	0	
7	7	0
	6	Black Gamma Range
	5	
	4	
	3	Gamma Offset (H)
	2	
	1	
	0	
8	7	0
	6	0
	5	Gamma Offset (L)
	4	
	3	
	2	
	1	0
	0	0
9	7	0
	6	0
	5	0
	4	Slow Shutter Limit
	3	
	2	
	1	
	0	0
10	7	0
	6	0
	5	0
	4	Fast Shutter Limit
	3	
	2	
	1	
	0	0
11	7	0
	6	0
	5	Detail H/V Balance
	4	
	3	
	2	
	1	Detail Crispening
	0	

Byte	Bit	Comments
12	7	0
	6	0
	5	Detail Limit
	4	
	3	
	2	Detail B/W Balance
	1	
	0	
13	7	0
	6	0
	5	Detail High Light Detail
	4	
	3	
	2	Detail Super Low
	1	
	0	
14	7	0
	6	0
	5	0
	4	0
	3	Detail Mode
	2	Detail Band Width
	1	
	0	
15	7	1
	6	1
	5	1
	4	1 Terminator
	3	1
	2	1
	1	1
	0	1

Other enlargement inquiry commands (3/3) Inquiry Packet 8x 09 7E 7E 05 FF

Byte	Bit	Comments
0	7	Destination Address
	6	
	5	
	4	
	3	Source Address
	2	
	1	
	0	
1	7	0
	6	1
	5	0
	4	1
	3	0
	2	0
	1	0
	0	0
2	7	0
	6	0
	5	0
	4	0
	3	Color Hue
	2	
	1	
	0	
3	7	0
	6	0
	5	0
	4	0
	3	R-G (H)
	2	
	1	
	0	
4	7	0
	6	0
	5	0
	4	0
	3	R-G (L)
	2	
	1	
	0	
5	7	0
	6	0
	5	0
	4	0
	3	R-B (H)
	2	
	1	
	0	

Byte	Bit	Comments
6	7	0
	6	0
	5	0
	4	0
	3	R-B (L)
	2	
	1	
	0	
7	7	0
	6	0
	5	0
	4	0
	3	G-R (H)
	2	
	1	
	0	
8	7	0
	6	0
	5	0
	4	0
	3	G-R (L)
	2	
	1	
	0	
9	7	0
	6	0
	5	0
	4	0
	3	G-B (H)
	2	
	1	
	0	
10	7	0
	6	0
	5	0
	4	0
	3	G-B (L)
	2	
	1	
	0	
11	7	0
	6	0
	5	0
	4	0
	3	B-R (H)
	2	
	1	
	0	

Byte	Bit	Comments
12	7	0
	6	0
	5	0
	4	0
	3	B-R (L)
	2	
	1	
	0	
13	7	0
	6	0
	5	0
	4	0
	3	B-G (H)
	2	
	1	
	0	
14	7	0
	6	0
	5	0
	4	0
	3	B-G (L)
	2	
	1	
	0	
15	7	1
	6	1
	5	1
	4	1 Terminator
	3	1
	2	1
	1	1
	0	1

VISCA Command Setting Values

The VISCA parameter (value) is hexadecimal.

IRIS	
Parameter	F No.
15	F2.8 (Open)
14	F3.1
13	F3.4
12	F3.7
11	F4.0
10	F4.4
0F	F4.8
0E	F5.2
0D	F5.6
0C	F6.2
0B	F6.8
0A	F7.3
09	F8.0
08	F8.7
07	F9.6
06	F10
05	F11

GAIN	
Parameter	Gain (dB)
0C	33
0B	30
0A	27
09	24
08	21
07	18
06	15
05	12
04	9
03	6
02	3
01	0
00	-3

SHUTTER/MIN SHUTTER				
Parameter	Signal format	2160/25p (only BRC-X1000), 1080/59.94p, 1080/59.94i, 720/59.94p	2160/25p (only BRC-X1000), 1080/50p, 1080/50i, 720/50p	2160/23.98p (only BRC-X1000), 1080/23.98p ^{*1}
	Shutter Speed (sec)			
15		1/10000	1/10000	1/10000
14		1/6000	1/6000	1/4800
13		1/4000	1/3500	1/2400
12		1/3000	1/2500	1/1200
11		1/2000	1/1750	1/576
10		1/1500	1/1250	1/400
0F		1/1000	1/1000	1/288
0E		1/725	1/600	1/200
0D		1/500	1/425	1/192
0C		1/350	1/300	1/144
0B		1/250	1/215	1/120
0A		1/180	1/150	1/100
09		1/125	1/120	1/96
08		1/100	1/100	1/60
07		1/90	1/60	1/50
06		1/60	1/50	1/48
05		1/50	1/30	1/40
04		1/30	1/25	1/25
03		1/15	1/12	1/24
02		1/8	1/6	1/12
01		-	-	1/6

*1 This function is not available for BRC-H780.

MAX SHUTTER			
Signal format	2160/29.97p (only BRC-X1000), 1080/59.94p, 1080/59.94i, 720/59.94p	2160/25p (only BRC-X1000), 1080/50p, 1080/50i, 720/50p	2160/23.98p (only BRC-X1000), 1080/23.98p ^{*1}
Parameter	Shutter Speed (sec)		
15	1/10000	1/10000	1/10000
14	1/6000	1/6000	1/4800
13	1/4000	1/3500	1/2400
12	1/3000	1/2500	1/1200
11	1/2000	1/1750	1/576
10	1/1500	1/1250	1/400
0F	1/1000	1/1000	1/288
0E	1/725	1/600	1/200
0D	1/500	1/425	1/192
0C	1/350	1/300	1/144
0B	1/250	1/215	1/120
0A	1/180	1/150	1/100
09	1/125	1/120	1/96
08	1/100	1/100	1/60
07	1/90	1/60	1/50
06	1/60	1/50	1/48
05	1/50	1/30	1/40
04	1/30	1/25	1/25
03	-	-	1/24
02	-	-	-
01	-	-	-

*1 This function is not available for BRC-H780.

EXP COMP		
Parameter	Step	Exposure Compensation
0E	+7	+10.5 dB
0D	+6	+9.0 dB
0C	+5	+7.5 dB
0B	+4	+6.0 dB
0A	+3	+4.5 dB
09	+2	+3.0 dB
08	+1	+1.5 dB
07	0	0.0 dB
06	-1	-1.5 dB
05	-2	-3.0 dB
04	-3	-4.5 dB
03	-4	-6.0 dB
02	-5	-7.5 dB
01	-6	-9.0 dB
00	-7	-10.5 dB

Pan/Tilt Position (for reference)

Pan

Angle (degrees)	Left	Right
	ppppp values	ppppp values
0	00000	00000
10	00937	FF6C9
20	0126E	FED92
30	01BA5	FE45B
40	024DC	FDB24
50	02E13	FD1ED
60	0374A	FC8B6
70	04081	FBF7F
80	049B8	FB648
90	052EF	FAD11
100	05C26	FA3DA
110	0655D	F9AA3
120	06E94	F916C
130	077CB	F8835
140	08102	F7EFE
150	08A39	F75C7
160	09370	F6C90
169	09BBB	F6445
170	09CA7	F6359

Tilt

Angle (degrees)	Up	Down
	tttt values	tttt values
0	0000	0000
10	0937	F6C9
20	126E	ED92
30	1BA5	E45B
40	24DC	-
50	2E13	-
60	374A	-
70	4081	-
80	49B8	-
90	52EF	-

Focus Ratio and Focus Distance (for reference)

Focus Ratio	Focus Distance
pppp value	
1000	∞
2000	5 m
3000	3 m
4000	2 m
5000	1.5 m
6000	1.2 m
7000	1.0 m
8000	0.8 m
9000	0.55 m
A000	0.35 m
B000	0.25 m
C000	0.18 m
D000	0.14 m
E000	0.1 m
F000	0.08 m

Zoom Position and Zoom Ratio (for reference)

Zoom Position	Zoom Ratio
zzzz value	
0000	×1
1800	×2
2340	×3
2A40	×4
2F00	×5
3300	×6
3600	×7
3880	×8
3AC0	×9
3CC0	×10
3E80	×11
4000	×12
5580	×18 (While using Clear Image Zoom)
6000	×24 (While using Clear Image Zoom)* ¹

*¹ For BRC-X1000, this cannot be used when the signal format is a format other than 2160/29.97p, 2160/25p, or 2160/23.98p.

HDMI VIDEO FORMAT CHANGE value and HDMI output format

HDMI VIDEO FORMAT CHANGE value Parameter	HDMI output format	Remarks
00	1920 × 1080/59.94p	
02	1920 × 1080/29.97p	
03	1920 × 1080/59.94i	
04	1280 × 720/59.94p	
08	1920 × 1080/50p	
0A	1920 × 1080/25p	
0B	1920 × 1080/50i	
0C	1280 × 720/50p	
18	640 × 480/59.94p	
22	3840 × 2160/29.97p	Only BRC-X1000
26	3840 × 2160/25p	Only BRC-X1000
28	1920 × 1080/23.98p	Without BRC-H780
2A	3840 × 2160/23.98p	Only BRC-X1000

Pan/Tilt Status Code List

p	p	p	p	Status
- - - -	- - - -	0 - - -	- - - 1	Panning reaches the end of the left.
- - - -	- - - -	0 - - -	- - 1 -	Panning reaches the end of the right.
- - - -	- - - -	0 - - -	- 1 - -	Tilting reaches the upper limit.
- - - -	- - - -	0 - - -	1 - - -	Tilting reaches the lower limit.
- - - -	- - - -	- - 0 0	- - - -	Pan functions normally.
- - - -	- - - -	- - 0 1	- - - -	Pan/tilt position cannot be detected.
- - - -	- - - -	- - 1 0	- - - -	Pan mechanism is defective.
- - - -	- - 0 0	0 - - -	- - - -	Tilt functions normally.
- - - -	- - 0 1	0 - - -	- - - -	Tilt position cannot be detected.
- - - -	- - 1 0	0 - - -	- - - -	Tilt mechanism is defective.
- - - -	0 0 - -	0 - - -	- - - -	No movement instruction
- - - -	0 1 - -	0 - - -	- - - -	Pan/Tilt operating
- - - -	1 0 - -	0 - - -	- - - -	Pan/Tilt operations complete.
- - - -	1 1 - -	0 - - -	- - - -	Pan/Tilt operating failed.
- - 0 0	- - - -	0 - - -	- - - -	Not initialized
- - 0 1	- - - -	0 - - -	- - - -	Initializing
- - 1 0	- - - -	0 - - -	- - - -	Initialization completes.
- - 1 1	- - - -	0 - - -	- - - -	Initialization failed.

(- : optional)

Memory Function (Inquiry Commands)

Preset No. last operated	pp: Memory number last operated	Preset No. last operated	pp: Memory number last operated	Preset No. last operated	pp: Memory number last operated	Preset No. last operated	pp: Memory number last operated
1	7F*	17	10	33	20	49	30
2	01	18	11	34	21	50	31
3	02	19	12	35	22	51	32
4	03	20	13	36	23	52	33
5	04	21	14	37	24	53	34
6	05	22	15	38	25	54	35
7	06	23	16	39	26	55	36
8	07	24	17	40	27	56	37
9	08	25	18	41	28	57	38
10	09	26	19	42	29	58	39
11	0A	27	1A	43	2A	59	3A
12	0B	28	1B	44	2B	60	3B
13	0C	29	1C	45	2C	61	3C
14	0D	30	1D	46	2D	62	3D
15	0E	31	1E	47	2E	63	3E
16	0F	32	1F	48	2F	64	3F

Preset No. last operated	pp: Memory number last operated	Preset No. last operated	pp: Memory number last operated	Preset No. last operated	pp: Memory number last operated
65	40	81	50	97	60
66	41	82	51	98	61
67	42	83	52	99	62
68	43	84	53	100	63
69	44	85	54		
70	45	86	55		
71	46	87	56		
72	47	88	57		
73	48	89	58		
74	49	90	59		
75	4A	91	5A		
76	4B	92	5B		
77	4C	93	5C		
78	4D	94	5D		
79	4E	95	5E		
80	4F	96	5F		

* The value of pp becomes 7F if PRESET Recall has never been executed.

PTZ TRACE^{*1} function Record status bulk inquiry

Bit	p				q				r				s			
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PTZ Trace number	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

*1 This function is not available for BRC-H780.

PRESET MODE settings and PRESET command behaviors

PRESET MODE	PRESET Command		
	SET	Reset	Recall
MODE1	Saves PAN, TILT, ZOOM, and FOCUS positions and the camera settings in PRESET.	Returns the settings saved in PRESET to the initial value.	Calls PAN, TILT, ZOOM, and FOCUS positions and the camera settings in PRESET.
MODE2	Saves PAN, TILT, ZOOM, and FOCUS positions and the camera settings in PRESET.	Returns the settings saved in PRESET to the initial value.	Calls PAN, TILT, ZOOM, and FOCUS positions in PRESET.
TRACE* ¹	Starts recording of PTZ TRACE. During PTZ TRACE recording, stops the recording.	Deletes the settings saved in PTZ TRACE.	Prepares for the playback of PTZ TRACE recording. While preparing for playback, starts playback.

*¹ This function is not available for BRC-H780.

Camera IP Setting Command

The following commands are provided for setting an IP address and a camera name for BRC series cameras.

No.	Name	Description
1	Setting Protocol: Inquiry	The controller inquires the network setting for the camera.
2	Setting Protocol: Inquiry reply	The camera replies according to the inquiry from the controller.
3	Setting Protocol: Network setting	The controller sets the network setting of the camera.
4	Setting Protocol: Network setting reply	The camera replies according to the network setting of the controller.

The network setting of the camera is performed as communication sequence in the following. Connect the computer that configures the settings to the same segment as the camera.

1 Inquiry

The controller sends the inquiry packet to the broadcast address (255.255.255.255), specified port number (52380) of UDP. The camera replies as the inquiry reply packet.

2 Network setting

The controller sends the network setting packet to the broadcast address (255.255.255.255), specified port number (52380) of UDP. The receiving side sees the MAC address unit in the packet, and returns ACK as the network setting reply if it is the request for the receiving side.

If the receiving side fails to set, it returns NACK as the network setting reply.

Command	Data
Inquiry UDP Broadcast address (255.255.255.255) Specified port number (52380)	02 ENQ:network *1 FF 03
Inquiry reply UDP Broadcast address (255.255.255.255) Specified port number (52380)	02 MAC:**_**_**_**_**_** *1 FF MODEL:IPCARD *1 FF SOFTVERSION:**_**_** *1 FF IPADR:**_**_**_**_** *1 FF MASK:**_**_**_**_** *1 FF GATEWAY:**_**_**_**_** *1 FF NAME:xxxxxxx *1 FF WRITE:on *1 FF 03
Network setting UDP Broadcast address (255.255.255.255) Specified port number (52380)	02 MAC:**_**_**_**_**_** *1 FF IPADR:**_**_**_**_** *1 FF MASK:**_**_**_**_** *1 FF GATEWAY:**_**_**_**_** *1 FF NAME:xxxxxxx *1 FF 03
Network setting reply UDP Broadcast address (255.255.255.255) Specified port number (52380)	02 ACK:**_**_**_**_**_** *2 “xxxx” *3 FF 03

*1 Uses the ASCII code.

*2 Uses the ASCII code. Returns as “NAK:**_**_**_**_**_**” for NAK.

*3 Uses the ASCII code. Returns by adding the detail message, if necessary.

Note

The camera name is up to 8 characters of alphanumeric characters and blank.

Setting/Inquiring by CGI Commands

Setting by Commands

Set the camera by describing the CGI commands following the syntax below. It is possible to transmit several parameters at one time if the parameter the same CGI name (part of <cgi> of Syntax). In this case, it is necessary to insert "&" between each <parameter>=<value>.

Method

GET/POST

Syntax

```
http://<camera_address>/command/<cgi>?<parameter>=  
<value>[&<parameter>=<value>...]  
or  
http://<camera_address>/command/<cgi>?<parameter>=  
<value1,value2,...,valueN>
```

Parameters

Refer to "CGI Commands" for details.
Note that angle brackets in the table "CGI Commands," "<" and ">," mean that a string between one pair of angle brackets is just a symbol for numbers, but parameter name itself. For example, if a parameter name is described as SampleParam<n>, for actual usage, SampleParam1, SampleParam2, ... are valid expressions.

Inquiring by Commands

The following Inquiry command is used current status of the camera. The item which has an inquiry parameter in "CGI Commands" can be inquired as its current settings. As a response format, "standard format" and "JS (Java Script) parameter format" select arbitrarily are supported.

Method

GET/POST

Syntax1 (standard format)

```
http://<camera_address>/command/inquiry.cgi?inq=  
<Inquiry>[&inq=<Inquiry>...]
```

The response is as follows in the case of standard format.

```
HTTP/1.0 200 OK\r\n Content-Type: text/plain\r\n Content-Length: <len>\r\n\r\n<parameter>=<value>[&<parameter>=<value>&  
<parameter>=<value>...]
```

Syntax2 (JS parameter format)

```
http://<camera_address>/command/inquiry.cgi?inqjs=  
<Inquiry>[&inqjs=<Inquiry>...]
```

The response is as follows in the case of JS parameter format.

```
HTTP/1.0 200 OK\r\n Content-Type: text/plain\r\n Content-Length: <len>\r\n\r\nvar <parameter>=<value>\r\nvar <parameter>=<value>\r\nvar <parameter>=<value>\r\n:\r\n:
```

CGI Commands

s700p.cgi

Setting (Set): command/s700p.cgi?<Parameter>=<Value>

Inquiry (Inq): command/inquiry.cgi?inq=s700p

Parameter	Set Inq	Value	Description
SystemMode	Set Inq	bridge , mcs, reserved	Selects the connection mode.
MasterIP	Set Inq	IPv4 Address	Sets the master IP Address when connecting the MCS.
CameraNo	Set Inq	1 to 96	Sets the Camera No. when connecting the MCS.
CNSFunc	Inq	-	Shows whether the CNS function is available or not. 1=Available, 0=Unavailable

freedconfig.cgi

Setting (Set): command/freedconfig.cgi?<Parameter>=<Value>

Inquiry (Inq): command/inquiry.cgi?inq=freedconfig

Parameter	Set Inq	Value	Description
FreeD	Set Inq	on, off	Turns on/off the tracking data output.
FreeDCameraID	Set Inq	0 to 255	Sets CameraID.
FreeDTransferMode	Set Inq	always , ondemand	Sets the output control for the tracking data. always: Always outputs the tracking data. ondemand: Outputs/Stops the tracking data according to the Type D0 (poll/command) message from the client.
FreeDUdpPort	Set Inq	1025 to 40000 to 65534	When Transfer Mode is always, specifies the client UDP port to receive the metadata stream. Additionally, when Transfer Mode is ondemand, specifies the UDP port number for the camera to listen on.
FreeDDestinationIP	Set Inq	IPv4 address	When Transfer Mode is always, specifies the client IP address to receive the metadata stream.

modelinfo.cgi

Inquiry (Inq): command/inquiry.cgi?inq=modelinfo

Parameter	Set Inq	Value	Description
ModelName	Inq	-	Returns the model name of the camera.
CameraName	Inq	CAM1	Returns the camera name.
SoftVersion	Inq	-	Returns the software version.

user.cgi

Setting (Set): command/user.cgi?<Parameter>=<Value>

Inquiry (Inq): command/inquiry.cgi?inq=user

Parameter	Set Inq	Value	Description
Password	Set	-	Sets a password for the camera from a Web browser. Do not use directly.
UserName	Inq	-	Returns user name.
PasswordChanged	Inq	0 , 1	If the initial password has not been changed, returns 0. If it has been changed, returns 1.

Revision History

Revision	Item	Description
1.00		New edition
2.00		Added information about changed or added functions in BRC-X1000/H800/H780 Ver.2.00
2.01		Revised description of preset command
2.02		Corrected errors
2.10		Added information about added functions and CGI commands in Ver.2.10