SONY®

Color Video Camera

Command List

BRC-X1000/H800

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VISCA[1] 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, is called the peripheral device. In VISCA, up to seven peripheral devices like the BRC-X1000/H800 can be connected to one 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 selector number other than 0 is used, set the camera address selectors on the connected BRC-X1000/H800 cameras 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

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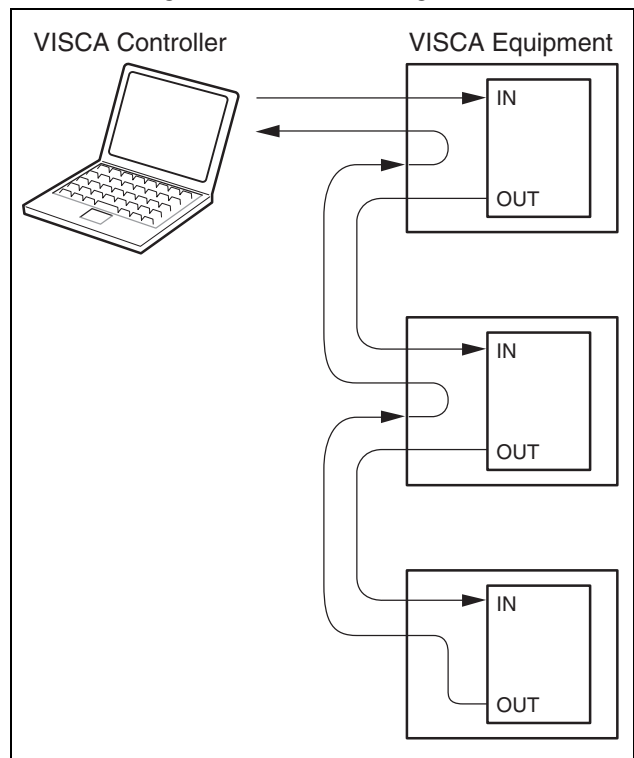
1) VISCA is a protocol developed by Sony for controlling a consumer's camcorder. "VISCA" is a trademark of Sony Corporation.

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 BRC-X1000/H800 assigned address 1 from the controller (address 0) is 81H in hexadecimal. The packet sent to the BRC-X1000/H800 assigned address 2 is 82H.

In the command list, as the header is 8X, input the address of the BRC-X1000/H800 to X. The header of the reply packet from the BRC-X1000/H800 assigned address 1 is 90H. The packet from the BRC-X1000/H800 assigned address 2 is A0H.

Some of the setting commands for BRC-X1000/H800 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.
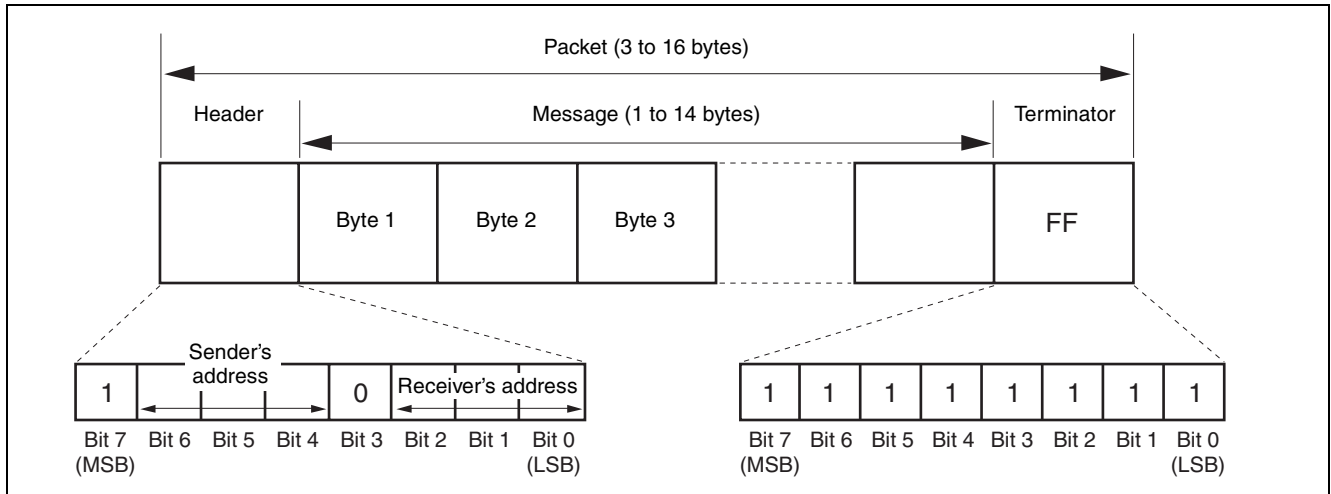
Fig. 2 Packet structure

Note

Fig. 2 shows the packet structure, while Fig. 3 shows the actual waveform. Data flow will take place with the LSB first.
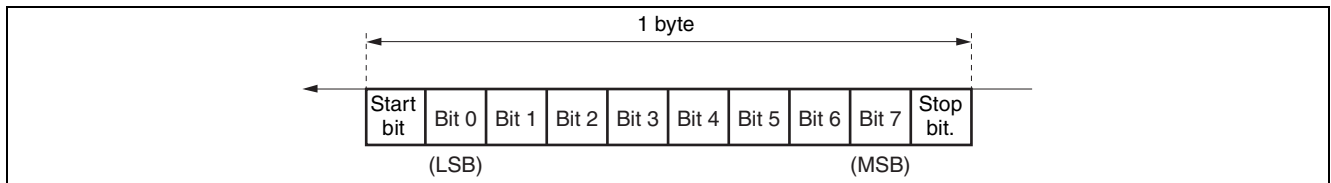
Fig. 3 Actual waveform for 1 byte.

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 (only BRC-X1000)), 40 msec (2160/25p (only BRC-X1000))
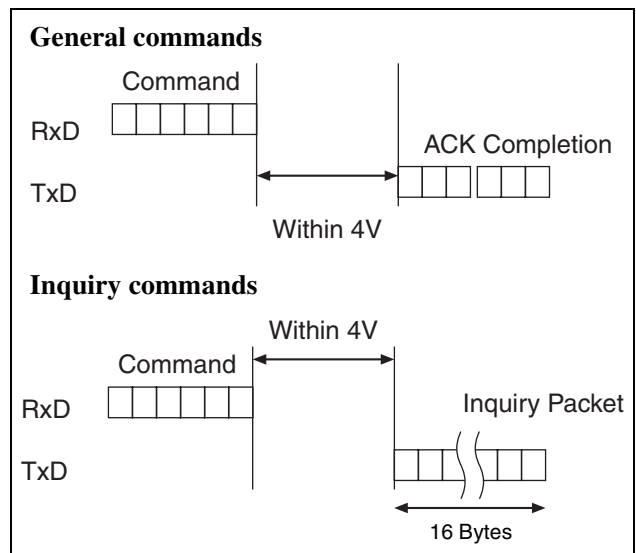
Command and inquiry

- **Command**

  Sends operational commands to the BRC-X1000/H800.

- **Inquiry**

  Used for inquiring about the current state of the BRC-X1000/H800.

	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: BRC-X1000/H800 address*

* 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 BRC-X1000/H800 when it receives a command. No ACK message is returned for an inquiry.

- **Completion message**

  Returned by the BRC-X1000/H800 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: BRC-X1000/H800 address + 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: BRC-X1000/H800 address + 8, Y = socket number*

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

Socket number

When command messages are sent to the BRC-X1000/H800, it is normal to send the next command message after receiving the completion message or error message. However, to deal with advanced uses, the BRC-X1000/H800 has two 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. When the BRC-X1000/H800 receives commands, it notifies the sender which command buffer was used, using the socket number of the 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, a BRC-X1000/H800 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: BRC-X1000/H800 address, 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 BRC-X1000/H800, be sure to send the Address command and the IF_Clear command using the broadcast function.

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: BRC-X1000/H800 address + 8

VISCA interface command

- **IF_Clear**
  Clears the command buffers in the BRC-X1000/H800. 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: BRC-X1000/H800 address (For inquiry packet)[2]
X = 9 to F: BRC-X1000/H800 address +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
			JJJJ = ROM revision
			KK = Maximum socket # (02)

X = 1 to 7: BRC-X1000/H800 address (For inquiry packet)[1]
X = 9 to F: BRC-X1000/H800 address +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 41 FF (ACK)+90 51 FF (Completion) 90 42 FF 90 52 FF	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 61 41 FF (Command Not Executable) 90 62 41 FF	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	z0 50 FF (Completion)	ACK is not returned for this command.
Command Cancel	8x 2y FF	z0 6y 04 FF (Command Cancelled)	Returned when the command of the socket specified is cancelled. Completion for the command cancelled is not returned.
		z0 6y 05 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) 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 33)
- **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.
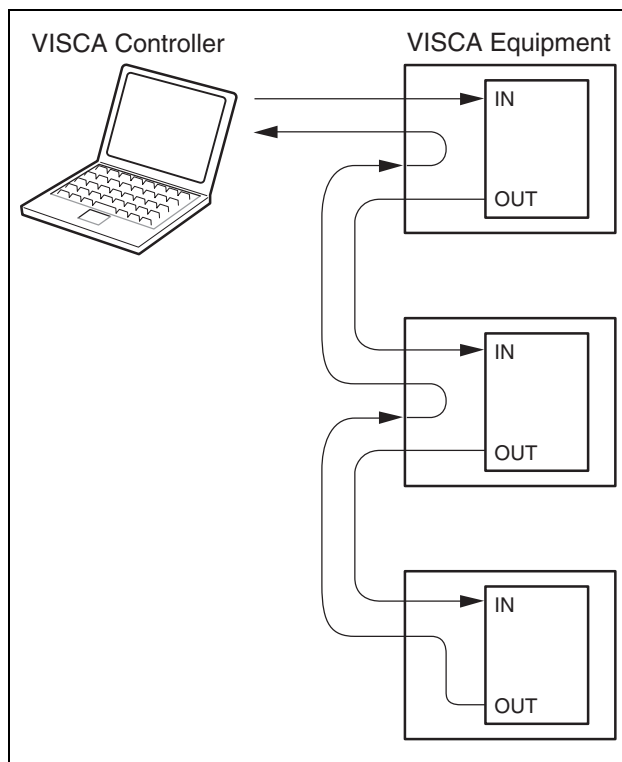
RS422 connection
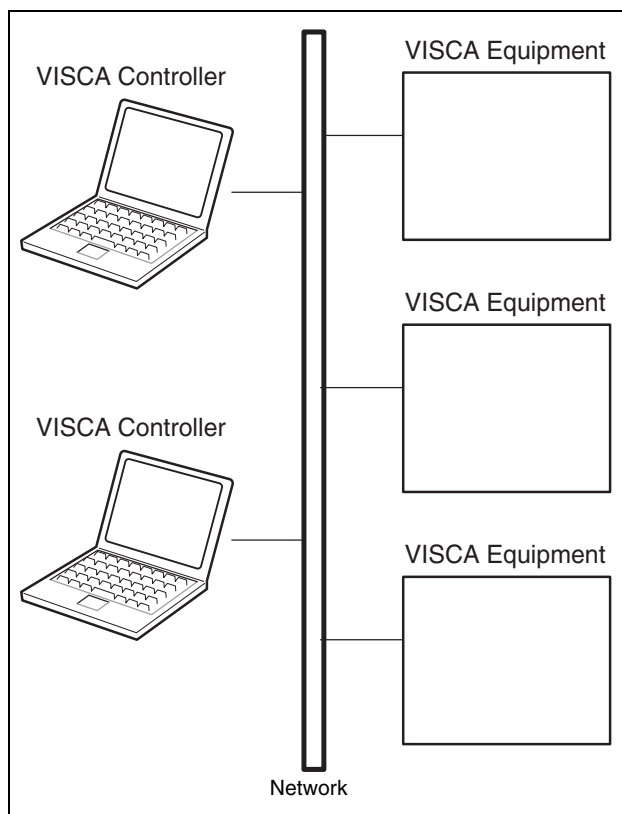
IP communication connection

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).

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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 33.

For how to set an IP address of the camera, refer to "Camera IP Setting Command" on page 33.

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).
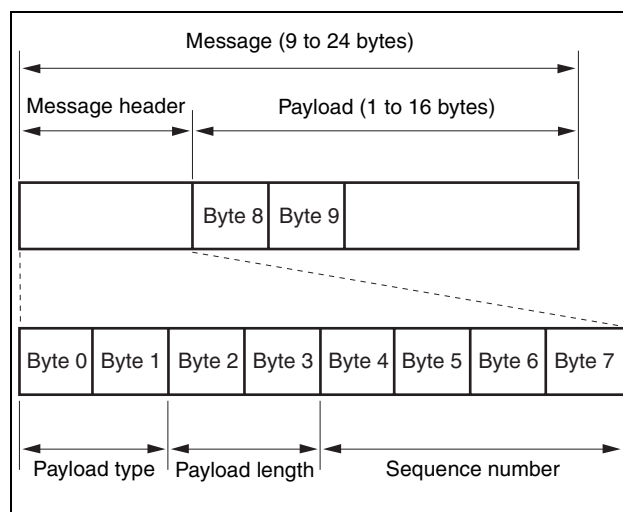
Message structure

> **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

Controller — Peripheral device

Command seq=100
Time out
Command seq=100
ACK seq=100
Completion seq=100
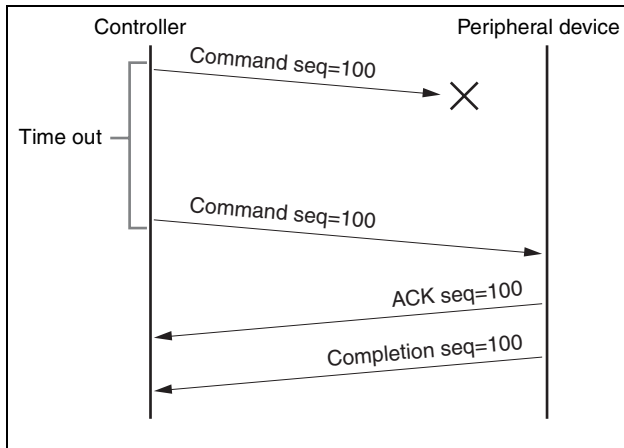
Timing chart (loss of command)

Controller — Peripheral device

Command seq=100
Time out
ACK seq=100
Completion seq=100
Command seq=100
ERROR
(abnormality in the sequence number) seq=100
Command seq=101
ACK seq=101
Completion seq=101
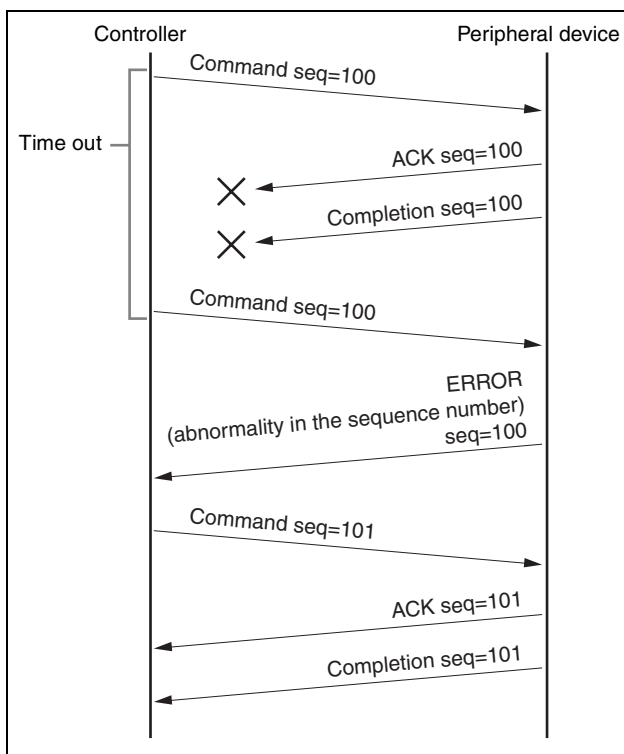
Timing chart (loss of ACK or completion message)

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 Commands

BRC-X1000/H800 Command List (1/5)

Command Set	Command		Command Packet	Comments
EXPOSURE	MODE	FULL AUTO	8x 01 04 39 00 FF	Automatic Exposure mode
		MANUAL	8x 01 04 39 03 FF	Manual Control mode
		SHUTTER Pri	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
		IRIS Pri	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
		Gain Pri	8x 01 04 39 0E FF	
	IRIS	Reset	8x 01 04 0B 00 FF	To return to 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 0 dB
		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 (–3dB) - 0C (33 dB)
	GAIN LIMIT	Direct	8x 01 04 2C 0p FF	p:4 (3dB) - 9 (24dB), 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 (0dB) - 09 (24dB)
	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 Position (03 - 15)
	MAX SHUTTER	Direct	8x 01 05 2A 00 0p 0p FF	pp:05 - 15
	MIN SHUTTER	Direct	8x 01 05 2A 01 0p 0p FF	pp:03 - 15
	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 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
		Direct	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	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
		Direct	8x 01 05 49 0p FF	p:4 - A

* Number in ( ) is MENU display values.

BRC-X1000/H800 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: speed 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: 2=ON (STD), 3=OFF, 4=ON (HIGH SAT), 5=ON (FL LIGHT)
	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 00 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 00 0p FF	p: 0 (–14 degrees) - E (+14 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:Aperture Gain 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:Band width 0 - 4
	CRISPENING	Direct	8x 01 05 42 03 0p FF	p:Crispening 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
	HIGHLIGHTDETAIL	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.

BRC-X1000/H800 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:Knee Slope 00 - 0E
	KNEE POINT	Direct	8x 01 7E 01 6E 0p 0p FF	pp:Knee Point 00 - 0C
GAMMA	MODE	-	8x 01 04 5B 0p FF	p:Gamma setting (0=Standard, 1=Straight, 2=Pattern)
	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)
FLICKER REDUCTION	MODE	On	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: 0000 (wide) to 4000 (optical tele) to 5580 (Clear Image Zoom tele 4K) 0000 (wide) to 4000 (optical tele) to 6000 (Clear Image Zoom tele FHD)
	CLEAR IMAGE ZOOM	-	8x 01 04 06 03 FF	OFF
			8x 01 04 06 04 FF	ON

BRC-X1000/H800 Command List (4/5)

Command Set	Command		Command Packet	Comments
FOCUS	MODE	-	8x 01 04 38 02 FF	Auto Focus
	MANUAL FOCUS	-	8x 01 04 38 03 FF	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)
	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:1000 - F000
	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 00 0p 0p 0p 0p 0p 0t 0t 0t 0t FF	vv:Speed 01 (Slow) - 18 (Fast)
				For ppppp and tttt, refer to the section of the Pan-Tilt position of VISCA command set value (reference value)
	REL (RELATIVE POSITION)	-	8x 01 06 03 vv 00 0p 0p 0p 0p 0p 0t 0t 0t 0t FF	vv:Speed 01 (Slow) - 18 (Fast)
				For ppppp and tttt, refer to the section of the Pan-Tilt position of VISCA command set value (reference value)
	HOME	-	8x 01 06 04 FF	
	RESET	-	8x 01 06 05 FF	

BRC-X1000/H800 Command List (5/5)

Command Set	Command		Command Packet	Comments
PAN TILT	RAMP CURVE	-	8x 01 06 31 0p FF	p: 1 (Sharpness), 2 (Standard), 3 (Gentle)
	PAN-TILT SLOW MODE	On/Off	8x 01 06 44 0p FF	p:2=On, 3=Off
PRESET	RESET	Reset	8x 01 04 3F 00 0p FF	p:Memory Number
	SET	Set	8x 01 04 3F 01 0p FF	p:Memory Number
	RECALL	Recall	8x 01 04 3F 02 0p FF	p:Memory Number
	PRESET DRIVE SPEED	-	8x 01 7E 01 0B 0p qq FF	p:Preset number of speed setting –1 (0 - F) qq:p position direction speed 01 - 18
SYSTEM	IR RECEIVE		8x 01 06 08 pp FF	p: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 Designation	8x 01 7E 01 5B 00 0p 0p 0p FF	ppp:000 - 77F
	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
MENU Display OFF	-	-	8x 01 06 06 03 FF	
TARRY	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: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 26=3840×2160/25P
	HDMI COLOR SPACE	-	8x 01 7E 01 03 00 0p FF	p:0=YCbCr, 1=RGB

BRC-X1000/H800 Inquiry Command List (1/4)

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: See the VISCA Command Setting Values (SHUTTER) section
	MAX SHUTTER	-	8x 09 05 2A 00 FF	y0 50 0p 0p FF	pp: See the VISCA Command Setting Values (SHUTTER) section
	MIN SHUTTER	-	8x 09 05 2A 01 FF	y0 50 0p 0p FF	pp: See the VISCA Command Setting Values (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	-	8x 09 04 33 FF	y0 50 0p FF	p:2=On, 3=Off
	SPOT LIGHT	-	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

* Number in ( ) is MENU display values.

BRC-X1000/H800 Inquiry Command List (2/4)

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:speed 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:2=ON (STD), 3=OFF, 4=ON (HIGH SAT), 5=ON (FL LIGHT)
	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:Aperture Gain 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:Band width 0 - 4
	CRISPENING	-	8x 09 05 42 03 FF	y0 50 0p FF	p:Crispening 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	-	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:Knee Slope 00 - 0E
	KNEE POINT	-	8x 09 7E 01 6E FF	y0 50 00 00 0p 0p FF	pp:Knee Point 00 - 0C

* Number in ( ) is MENU display values.

BRC-X1000/H800 Inquiry Command List (3/4)

Inquiry Command			Inquiry Packet	Reply Packet	Comments
GAMMA	MODE	-	8x 09 04 5B FF	y0 50 0p FF	p: (0=Standard, 1=Straight, 2=Pattern)
	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	-		y0 50 03 FF	Off
				y0 50 04 FF	On
	ZOOM POSITION	-	8x 09 04 47 FF	y0 50 0z 0z 0z 0z FF	zzzz: See the VISCA Command Setting Values (ZOOM) section
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:See the VISCA Command Setting Values (FOCUS) section
	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:See the VISCA Command Setting Values (FOCUS) section
	FOCUS IR CORRECTION	-	8x 09 04 11 FF	y0 50 00 FF	Standard
				y0 50 01 FF	IR Light
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 of VISCA command set value (reference value) 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 SLOW MODE	-	8x 09 06 44 FF	y0 50 0p FF	p:2=On, 3=Off

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BRC-X1000/H800 Inquiry Command List (4/4)

	Inquiry Command		Command Packet	Inquiry Packet	Comments
PRESET Drive Speed	-	-	8x 09 7E 01 0B 0p FF	y0 50 qq FF	p: 0 - F qq: p position direction speed 01-18
PRESET	-	-	8x 09 04 3F FF	y0 50 pp FF	Return the last preset number which has been operated pp:01 - 0F, 7F
IR CUT FILTER	IR CUT FILTER	On/Off Inquiry	8x 09 04 01 FF	y0 50 0p FF	p:2=On (Night), 3=Off (Day)
TALLY		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 FF	ppp:000 - 77F
	IR RECEIVE	-	8x 09 06 08 FF	y0 50 0p FF	p:2=On, 3=Off
	IMG FLIP	-	8x 09 04 66 FF	y0 50 0p FF	p:2=On, 3=Off
	PAN REVERSE	-	8x 09 7E 01 06 FF	y0 50 0p FF	p:1=On, 0=Off
	TILT REVERSE	-	8x 09 7E 01 09 FF	y0 50 0p FF	p:1=On, 0=Off
HDMI	HDMI VIDEO FORMAT	-	8x 09 06 23 FF	y0 50 pp FF	pp:Video Format (Refer to HDMI VIDEO FORMAT CHANGE on Command sheet)
	HDMI COLOR SPACE	-	8x 09 7E 01 03 FF	y0 50 0p FF	p:0=YCbCr, 1=RGB
MENU Display Status		-	8x 09 06 06 FF	y0 50 0p FF	p:2=On, 3=Off
POWER Status	ON/OFF INQUIRY		8x 09 04 00 FF	y0 50 0p FF	p:2=On, 3=Off (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.

BRC-X1000/H800 Block Inquiry Command List

Lens control system inquiry commands....................Command 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…..Command 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	Aperture Gain
	2	
	1	
	0	
8	7	0
	6	Color Matrix
	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	
11	7	0
	6	0
	5	0
	4	Iris Position
	3	
	2	
	1	
	0	

Byte	Bit	Comments
12	7	0
	6	0
	5	0
	4	Gain Position
	3	
	2	
	1	
	0	
13	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	0
	0	0
14	7	0
	6	0
	5	0
	4	0
	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.....Command 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
	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	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

Other enlargement inquiry commands (1/3) .... Command 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	0
	5	0
	4	0
	3	0
	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
	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) .... Command 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	
	1	WD display brightness
	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	Gamma Offset (H)
	3	
	2	
	1	
	0	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	
10	7	0
	6	0
	5	0
	4	Fast Shutter Limit
	3	
	2	
	1	
	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) .... Command Packet 8x 09 7E 7E 05 FF

Byte	Bit	Comments	Byte	Bit	Comments	Byte	Bit	Comments
0	7	Destination Address	6	7	0	12	7	0
	6			6	0		6	0
	5			5	0		5	0
	4			4	0		4	0
	3	Source Address		3	R-B (L)		3	B-R (L)
	2			2			2	
	1			1			1	
	0			0			0	
1	7	0	7	7	0	13	7	0
	6	1		6	0		6	0
	5	0		5	0		5	0
	4	1		4	0		4	0
	3	0		3	G-R (H)		3	B-G (H)
	2	0		2			2	
	1	0		1			1	
	0	0		0			0	
2	7	0	8	7	0	14	7	0
	6	0		6	0		6	0
	5	0		5	0		5	0
	4	0		4	0		4	0
	3	Color Hue		3	G-R (L)		3	B-G (L)
	2			2			2	
	1			1			1	
	0			0			0	
3	7	0	9	7	0	15	7	1
	6	0		6	0		6	1
	5	0		5	0		5	1
	4	0		4	0		4	1 Terminator
	3	R-G (H)		3	G-B (H)		3	1
	2			2			2	1
	1			1			1	1
	0			0			0	1
4	7	0	10	7	0			
	6	0		6	0			
	5	0		5	0			
	4	0		4	0			
	3	R-G (L)		3	G-B (L)			
	2			2				
	1			1				
	0			0				
5	7	0	11	7	0			
	6	0		6	0			
	5	0		5	0			
	4	0		4	0			
	3	R-B (H)		3	B-R (H)			
	2			2				
	1			1				
	0			0				

VISCA Command Setting Values

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		
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
Parameter	Shutter Speed (sec)	
15	1/10000	1/10000
14	1/6000	1/6000
13	1/4000	1/3500
12	1/3000	1/2500
11	1/2000	1/1750
10	1/1500	1/1250
0F	1/1000	1/1000
0E	1/725	1/600
0D	1/500	1/425
0C	1/350	1/300
0B	1/250	1/215
0A	1/180	1/150
09	1/125	1/120
08	1/100	1/100
07	1/90	1/75
06	1/60	1/50
05	1/30	1/25
04	1/15	1/12
03	1/8	1/6

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 When the signal format is either 2160/29.97p or 2160/25p, BRC-X1000 cannot be used.

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
1	7F*
2	01
3	02
4	03
5	04
6	05
7	06
8	07
9	08
10	09
11	0A
12	0B
13	0C
14	0D
15	0E
16	0F

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

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:xxxxxxxx　　　*[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:xxxxxxxx　　　*[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.

Revision History

Version	Item	Description
1.00		New edition