E-776-100-**12** (1)

SONY

Color Video Camera

CGI Command List
Software Version 2.10

BRC-X400/X401
SRG-X400/X402/201M2
SRG-X120/HD1M2

Table of Contents

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

About This Document

This document describes about CGI command specifications and RTSP streaming specifications of Sony color video camera BRC-X400 Series (BRC-X400, BRC-X401, SRG-X400, SRG-X402, SRG-201M2, SRG-X120, SRG-HD1M2).
In this document, the product is referred as “the cameras” or “this device.”

Advance Preparation

This document provides information about how to control this device remotely via network and stream video/audio by using CGI commands supported by this device and RTSP function.
To use CGI commands and RTSP streaming function, some pre-configurations are required. These pre-configurations are described below.

HTTP/RTSP Communication Usage Setting

To use CGI commands and RTSP streaming function on this device, you need to set appropriate HTTP/RTSP communication usage to enable communication via network in advance. To do this, there are 2 methods:
① Set CAMERA SETUP switch, ② Set HTTP/RTSP on the OSD menu.

① **Set CAMERA SETUP switch**
Set CAMERA SETUP 3 (HTTP/RTSP communication use setting) switch on the back of the camera to ON. Turn off the power, then turn on again to start.

② **Set HTTP/RTSP on the OSD menu**
Connect HDMI OUT terminal or SDI OUT terminal to video monitor. Display SYSTEM menu using infrared remote. Change HTTP/RTSP setting to ON. Turn off the power of the camera, then turn on again to start.
When the CAMERA SETUP 3 (HTTP/RTSP communication use setting) switch is set to ON in ①, HTTP/RTSP communication is available regardless the setting of OSD menu.

IP Address Settings by RM-IP Setup Tool

To enable the device to communicate with the camera appropriately, IP address settings is required. Set IP address based on your network environment using RM-IP Setup Tool. This is in order to set IP address. For details, refer to “RM-IP Setup Tool Guide.”

Note

- IP address is set to 192.168.0.100 as default.
- When IPSetupSetEnable (page 41) is set to off, the camera does not accept RM-IP Setup Tool setting.

- You cannot enable DHCP setting from RM-IP Setup Tool.
- To set IP address via Admin menu on Web browser, refer to "Network tab" under "Network menu" in Operating Instructions.

Changing Initial Password

After the process described above is performed, you can HTTP access to the cameras. Access to the cameras using Web browser. To access, enter the IP address of the cameras to the address bar in the Web browser, then press Enter.

You will be required to enter username and password, then enter Admin's username and password. Admin's username and password of default are below:

Admin username: admin
Password: Admin_1234

At the initial access (with default admin password not changed), you need to change the admin password. Set the admin password on user setting window displayed. To change the password, you need to enter the default password in Current password field.

When you press “OK,” the user setting will be changed. Once the setting is changed, you will be requested to enter admin username and password again. Enter the admin username and password you changed in the previous step.

Changing the Setting of Referer Check

As default, HTTP CGI command delivery checks the requests by checking Referer field in HTTP header to make sure that they are available only via Web page built in the cameras. You can change the setting to prevent CGI requests from being denied by this Referer check function.

For more information on how to change the setting of Referer check function via Admin setting menu on Web browser, refer to "Referer check tab" under "Security menu" in Operating Instructions.

If you use CGI commands with Referer check enabled, you can do so by adding Referer header like below when you create CGI request.

```
Referer: http://<camera_address>/\r\n
```

Where <camera_address> is the IP address of the cameras (when HTTP port number is 80).

About Authentication

This device supports HTTP/RTSP Digest authentication defined by IETF RFC 2617.
To use CGI commands on this unit, authentication at the necessary level is required. When you build software to achieve CGI command communication with the camera, build HTTP header to authenticate appropriately for HTTP 401 Unauthorized response as the response of command request.

To use RTSP streaming function supported by the device, authentication at the necessary level should be performed based on the RTSP authentication setting. When you build software to achieve RTSP streaming function between the cameras build RTSP header to authenticate appropriately for RTSP 401 Unauthorized response as the response of command request. For more information to change RTSP authentication function settings via Admin settings menu using Web browser, refer to "User tab" under "Security Menu" in Operating Instructions.

Note

If authentication errors are repeated from the same computer, the subsequent request may be regarded as Brute-force attack. Build the software to add credential information with appropriate user/password in case of HTTP 401 response reception. For more information on how to change the setting of Brute-force attack protection function via Admin setting menu on Web browser, refer to "Brute-force attack protection tab" under "Security menu" in Operating Instructions.

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>&<para
meter>=<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\n
var <parameter>=“<value>”\r\n
var <parameter>=“<value>”\r\n
var <parameter>=“<value>”\r\n
:
:
```

Command List

camera.cgi

Setting (Set): command/camera.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=camera

Parameter	Set Inq	Value	Description
AFInterval	Set Inq	[Value1] 0 to **5** to 255 [Value2] 0 to **5** to 255	Sets the operation/stop time when AFMode is set to interval or zoomtrigger. (unit: second) AFInterval=Value1,Value2 [Value1] Operation time * When set to 0, the Focus fixes. [Value2] Stop time * When set to 0, the Focus fixes.
AFMode	Set Inq	**normal**, interval, zoomtrigger	Sets Auto Focus Mode. normal : Always adjust the focus automatically. interval : Adjust the focus by the specified operation/stop time automatically. zoomtrigger : Adjust the focus for the specified operation time when zoom position is changed.
AFSensitivity	Set Inq	**normal**, low	Sets Auto Focus sensitivity. normal : Follow-up speed of focus becomes faster. low : Focus becomes stable.
AudInCodec	Set Inq	**aac48_128**, aac48_256	Sets the audio codec mode and bitrate for the audio input. aac48_128 : AAC 48 kHz (128 kbps) aac48_256 : AAC 48 kHz (256 kbps)
AudioEqualizer	Set Inq	**off**, 1, 2	Sets the processing method for the frequency characteristic of input audio. off : Does not change the frequency characteristic 1 : Decay low frequency and cut noises from air-conditioning facility etc. 2 : Decay high and low frequency and enhance human voices.
AudioIn	Set Inq	on, **off**	Sets whether to enable or disable the audio input. on : Enable off : Disable
AudioInVolume	Set Inq	-10 to **0** to 10	Sets the volume of the audio input while MicLineSelect is set to mic.
AutoLevelControl	Set Inq	**on**, off	Sets enable the function of the audio input level to a moderate volume level automatically or not.
BitRate1	Set Inq	512 to **16000** to 50000	Sets the bit rate of Image 1. (unit: kbps) This parameter is only valid when CBR1 is set to on.
BitRate2	Set Inq	512 to **8000** to 50000	Sets the bit rate of Image 2. (unit: kbps) This parameter is only valid when CBR2 is set to on.

Parameter	Set Inq	Value	Description
BitRate3	Set Inq	512 to **5000** to 50000	Sets the bit rate of Image 3. (unit: kbps) This parameter is only valid when CBR3 is set to on.
CBR1	Set Inq	on, **off**	Sets the bit rate control mode of Image 1. on : Bit rate control with CBR off : Bit rate control with VBR
CBR2	Set Inq	on, **off**	Sets the bit rate control mode of Image 2. on : Bit rate control with CBR off : Bit rate control with VBR
CBR3	Set Inq	on, **off**	Sets the bit rate control mode of Image 3. on : Bit rate control with CBR off : Bit rate control with VBR
ColorBar (BRC-X400/X401)	Set Inq	on, **off**	Sets whether to display the color bar to output image. on : Displays the color bar off : Normal image
ColorBarOverlayName (BRC-X400/X401)	Set Inq	on, **off**	Setting whether to show the camera name on images output from HDMI OUT or SDI OUT when you output color bar. on: Displays the camera name off: Not displays the camera name * Streaming images don't show the name of camera.
Eflip	Set Inq	on, **off**	Sets whether to enable or disable the flip image function. on : On (for hanging the camera from a ceiling) off : Off (for installing the camera on a rack, etc)
FocusMode	Set Inq	**auto**, manual	Sets the focus control mode. auto : Automatically controlled by the camera manual: Manually controlled by the user
FocusNearLimit	Set Inq	1000 to **b000** to f000	Sets the focus near limit. * Refer to the item “FOCUS” of CGI Command Setting Values.
FrameRate1	Set Inq	The available values depend on the video output format. 5, 15, 30, **60** (59.94p, 59.94i) 5, 15, **30** (29.97p) 5, 12.5, 25, **50** (50p, 50i) 5, 12.5, **25** (25p) 6, 12, **24** (23.98p)	Sets the frame rate (frame per second) of video steam corresponding to the Image 1.
FrameRate2	Set Inq	The available values depend on the video output format. 5, 15, 30, **60** (59.94p, 59.94i) 5, 15, **30** (29.97p) 5, 12.5, 25, **50** (50p, 50i) 5, 12.5, **25** (25p) 6, 12, **24** (23.98p)	Sets the frame rate (frame per second) of video steam corresponding to the Image 2.

Parameter	Set Inq	Value	Description
FrameRate3	Set Inq	The available values depend on the video output format. 5, 15, 30, **60** (59.94p, 59.94i) 5, 15, **30** (29.97p) 5, 12.5, 25, **50** (50p, 50i) 5, 12.5, **25** (25p) 6, 12, **24** (23.98p)	Sets the frame rate (frame per second) of video steam corresponding to the Image 3.
H264Profile1	Set Inq	**high**, main, baseline	Sets the profile of H.264 for Image 1. high : High profile main : Main profile baseline : Baseline profile
H264Profile2	Set Inq	**high**, main, baseline	Sets the profile of H.264 for Image 2. high : High profile main : Main profile baseline : Baseline profile
H264Profile3	Set Inq	**high**, main, baseline	Sets the profile of H.264 for Image 3. high : High profile main : Main profile baseline : Baseline profile
H264Quality1	Set Inq	1 to **6** to 10	Sets the H.264 VBR image quality of Image 1. This parameter is only valid when CBR1 is set to off. * Increasing the value makes the image quality better, but the date size also increases.
H264Quality2	Set Inq	1 to **6** to 10	Sets the H.264 VBR image quality of Image 2. This parameter is only valid when CBR2 is set to off. * Increasing the value makes the image quality better, but the date size also increases.
H264Quality3	Set Inq	1 to **6** to 10	Sets the H.264 VBR image quality of Image 3. This parameter is only valid when CBR3 is set to off. * Increasing the value makes the image quality better, but the date size also increases.
H265Quality1	Set Inq	1 to **6** to 10	Sets the H.265 VBR image quality of Image 1. This parameter is only valid when CBR1 is set to off. * Increasing the value makes the image quality better, but the date size also increases.
H265Quality2	Set Inq	1 to **6** to 10	Sets the H.265 VBR image quality of Image 2. This parameter is only valid when CBR2 is set to off. * Increasing the value makes the image quality better, but the date size also increases.

Parameter	Set Inq	Value	Description
H265Quality3	Set Inq	1 to **6** to 10	Sets the H.265 VBR image quality of Image 3. This parameter is only valid when CBR3 is set to off. * Increasing the value makes the image quality better, but the date size also increases.
HdmiColor	Set Inq	**ycbcr**, rgb	Sets the Color Space for output image via HDMI OUT. ycbcr : YCbCr rgb : RGB
HdmiOsd	Set Inq	**on**, off	Sets whether to display the OSD to output image via HDMI OUT. on: Displays the OSD off: Not displays the OSD
HPhase (BRC-X400/X401)	Set Inq	0 to **30** to 959	Sets the value for regulating the phase differences between the Reference signal and the video signal of the camera when using with the Reference signal connected to the external sync signal input terminal (EXT SYNC IN) in synchronization. * Step is 13.46n seconds. The smaller the value, the video signal is delayed, and the bigger the value, the video signal is advanced.
IFrameInterval1	Set Inq	0 to **1** to 5	Sets IPicture interval of Image 1. (unit: second) * When the value is 0, IFrameRatio1 setting is enabled.
IFrameInterval2	Set Inq	0 to **1** to 5	Sets IPicture interval of Image 2. (unit: second) * When the value is 0, IFrameRatio2 setting is enabled.
IFrameInterval3	Set Inq	0 to **1** to 5	Sets IPicture interval of Image 3. (unit: second) * When the value is 0, IFrameRatio3 setting is enabled.
IFrameRatio1	Set Inq	1 to **30** to 300	Sets the interval to insert IPicture of Image 1. (unit: frame) * Work with IFrameRatio1 setting when IFrameInterval1 is 0.
IFrameRatio2	Set Inq	1 to **30** to 300	Sets the interval to insert IPicture of Image 2. (unit: frame) * Work with IFrameRatio2 setting when IFrameInterval2 is 0.
IFrameRatio3	Set Inq	1 to **30** to 300	Sets the interval to insert IPicture of Image 3. (unit: frame) * Work with IFrameRatio3 setting when IFrameInterval3 is 0.
ImageCodec1	Set Inq	**h264**, h265	Sets the video code of Image 1. h264 : H.264 h265 : H.265

Parameter	Set Inq	Value	Description
ImageCodec2	Set Inq	h264, h265, **off**	Sets the video code of Image 2. h264 : H.264 h265 : H.265 off : Off
ImageCodec3	Set Inq	h264, h265, **off**	Sets the video code of Image 3. h264 : H.264 h265 : H.265 off : Off
ImageCodecMaxNum	Inq	3	Returns the maximum number of available video output.
ImageCodecNum	Inq	3	Returns the number of video output to be enabled.
ImageSize1	Set Inq	3840,2160 1920,1080 1280,720 720,576 720,480 640,360	Sets the image size of video stream corresponding to the Image 1. * The configurable value is restricted by the video output format. * Refer to the item "IMAGE SIZE" of CGI Command Setting Values.
ImageSize2	Set Inq	1920,1080 1280,720 720,576 720,480 640,360	Sets the image size of video stream corresponding to the Image 2. * The configurable value is restricted by the video output format. * Refer to the item "IMAGE SIZE" of CGI Command Setting Values.
ImageSize3	Set Inq	1280,720 720,576 720,480 640,360	Sets the image size of video stream corresponding to the Image 3. * Refer to the item "IMAGE SIZE" of CGI Command Setting Values.
InsertIFrame1	Set	on	Insert the IPicture to the video stream of Image 1.
InsertIFrame2	Set	on	Insert the IPicture to the video stream of Image 2.
InsertIFrame3	Set	on	Insert the IPicture to the video stream of Image 3.
McTtl	Set Inq	1 to **3** to 255	Sets the TTL value of multicast packets.
MicLineSelect	Set Inq	mic, **line**	Sets the audio input signal level. mic : MIC input line : LINE input
Multicast	Set Inq	on, **off**	Sets whether to allow the multicast streaming. on : Allowed off : Not allowed

Parameter	Set Inq	Value	Description
PanLimit	Set Inq	[Value1] **de00** to 21ff [Value2] de01 to **2200**	Sets the limitation of pan range. PanLimit=Value1,Value2 Value1 must be smaller than Value2. This parameter is only valid when PanLimitMode is set to 'limited'. * Refer to the item "PAN/TILT POSITION" of CGI Command Setting Values. [Value1] Setting for the left end coordinate de00 : (Left end) [Value2] Setting for the right end coordinate 2200 : (Right end)
PanLimitMode	Set Inq	**unlimited**, limited	Sets the limit mode of pan range. unlimited : Unlimited limited : Limited to the range given by the PanLimit.
PictureEffect	Set Inq	**off**, bw	Sets whether to output the image by changing the color to black and white. off : Normal bw : Changes the color to black and white
PtzfMode	Set Inq	**normal**, step	Sets the parameter used for panning and tilting from the camera operation panel of the live viewer. normal : Use Move step : Use Relative
RampCurve	Set Inq	**1**	Selects an acceleration/deceleration curve.
RelPanTilt	Set Inq	**1** to 10	Sets the transition level for panning/tilting when step is set for PtzfMode.
RelZoom	Set Inq	**1** to 10	Sets the transition level for zooming when step is set for PtzfMode.
RTPExpire	Inq	60000	Not used for this unit.
RTSPMcAddress	Set Inq	IPv4 address (**239.192.0.200**)	Sets the address used on RTSP/RTP (UDP) multicast.
RTSPMcAudioPort	Set Inq	1024 to **59000** to 65534	Sets the port used on RTSP/RTP (UDP) multicast for Audio. *1 *2
RTSPMcVideoPort1	Set Inq	1024 to **61000** to 65534	Sets the port used on RTSP/RTP (UDP) multicast for Image 1. *1 *2
RTSPMcVideoPort2	Set Inq	1024 to **63000** to 65534	Sets the port used on RTSP/RTP (UDP) multicast for Image 2. *1 *2
RTSPMcVideoPort3	Set Inq	1024 to **65000** to 65534	Sets the port used on RTSP/RTP (UDP) multicast for Image 3. *1 *2
RTSPPort	Set Inq	**554**, 1024 to 65534	Sets the port number used on RTSP streaming. *2
RTSPServer	Set Inq	**on**, off	Sets whether to enable or disable the RTSP function.
RTSPTimeout	Set Inq	0 to **60** to 600	Sets the timeout by Keep Alive command of RTSP steaming. (unit: second) When it is set to 0, RTSP session will not be regarded as disconnected at any longer even if the camera does not receive the Keep Alive commands (RTSP GET_PARAMETER/SET_PARAMETER etc.).

Parameter	Set Inq	Value	Description
RTSPUcAudioPort	Set Inq	1024 to **57000** to 65534	Sets the port used on RTSP/RTP (UDP) unicast for Audio. *1 *2
RTSPUcVideoPort1	Set Inq	1024 to **51000** to 65534	Sets the port used on RTSP/RTP (UDP) unicast for Image 1. *1 *2
RTSPUcVideoPort2	Set Inq	1024 to **53000** to 65534	Sets the port used on RTSP/RTP (UDP) unicast for Image 2. *1 *2
RTSPUcVideoPort3	Set Inq	1024 to **55000** to 65534	Sets the port used on RTSP/RTP (UDP) unicast for Image 3. *1 *2
SdiOsd	Set Inq	**on**, off	Sets whether to display the OSD to output image via SDI OUT. on : Displays the OSD off : Not displays the OSD
SelectVideoFormat	Set Inq	* Refer to the item "VIDEO OUTPUT FORMAT" of CGI Command Setting Values.	Sets the video output format.
SlowPanTiltMode	Set Inq	on, **off**	Sets the slow mode of pan and tilt to on or off. on : Slow mode off : Normal mode
TeleConvertMode (BRC-X400/X401, SRG-X402)	Set Inq	on, **off**	Sets the Tele Convert function to on or off.
TiltLimit	Set Inq	[Value1] The available values depend on the Eflip settings. **fc00** to 11ff (Off) **ee00** to 03ff (On) [Value2] The available values depend on the Eflip settings. fc01 to **1200** (Off) ee01 to **0400** (On)	Sets the limitation of tilt range. TiltLimit=Value1,Value2 Value1 must be smaller than Value2. This parameter is only valid when PanLimitMode is set to 'limited'. Refer to the item "PAN/TILT POSITION" of CGI Command Setting Values. [Value1] Sets the lower limit coordinate [Value2] Sets the upper limit coordinate
TiltLimitMode	Set Inq	**unlimited**, limited	Sets the limit mode of tilt range. unlimited : Unlimited limited : Limited to the range given by the TiltLimit.
VideoFormat	Inq	* Refer to the item "VIDEO OUTPUT FORMAT" of CGI Command Setting Values.	Returns the video output format selected by the SYSTEM SELECT switch and SDI level setting switch.
VideoFormatSelectable	Inq	1, 0	Returns whether to enable the video output format to change by SelectVideoFormat or not. 1 : Can be changed. 0: Cannot be changed.
ZoomMode	Set Inq	**optical**, clearimage, full	Sets the operation range of zoom function. optical : Optical zoom clearimage: Optical and Clear image zoom * full : Optical and Clearimage zoom and digital zoom * * This setting is not available for SRG-X120 and SRG-HD1M2 as Clear Image Zoom function and digital zoom function are not supported.

*1: Only even numbers can be assigned. Odd numbers 1 added to the specified number will be used for RTCP port.

*2: Reserved port cannot be used. Duplication to other setting port cannot be used either. For reserved port, refer to CGI Command Setting Values (RESERVED PORT).

imaging.cgi

Setting (Set): command/imaging.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=imaging

Parameter	Set Inq	Value	Description
AESpeed	Set Inq	**1** to 48	Sets the response speed of exposure. Camera operates according to this setting when ExposureMode is set to auto, shutter, or iris. 1 : About 1 sec. 48 : About 10 min. * The time for response speed varies depending on the shutter speed.
AutoSlowShutterMode	Set Inq	on, **off**	Sets the Auto Slow shutter function to on or off.
BacklightCompensationMode	Set Inq	on, **off**	Sets the Backlight Compensation function to on or off. The Backlight Compensation function operates when ExposureMode is set to auto, shutter, or iris.
BlackGammaLevel (BRC-X400/X401)	Set Inq	0 to **7** to 14	Sets the black gamma level.
BlackGammaRange (BRC-X400/X401)	Set Inq	**low**, mid, high	Sets the brightness range for which the black gamma becomes effective. low : Low mid : Middle high : High
BlackLevelOffset (BRC-X400/X401)	Set Inq	0 to **48** to 98	Sets the black level of the output video.
ChromaSuppressLevel	Set Inq	0 to **1** to 3	Sets suppression level of the color density when low lighting. Larger the number, greater the effect.
ColorHue (BRC-X400/X401)	Set Inq	0 to **7** to 14	Setting to adjust the color phase (color difference, color shade) of output images. Changes 2° by every 1step. ColorHue setting is applied when ColorMatrix is set to other than off. 0 : Color phase –14° 7 : Color phase 0° 14 : Color phase +14°

Parameter	Set Inq	Value	Description
ColorMatrix (BRC-X400/X401)	Set Inq	**std**, off, highsat, fllight, movie, still, cinema, pro, itu709, bw	Sets an internal preset matrix for matrix calculation for adjusting the color of the output image. std : Standard Basic setting off : Off highsat : Setting for denser color than std fllight : Setting for lighting environment with a fluorescent light movie : COLOR MATRIX setting for PP1 still : COLOR MATRIX setting for PP2 cinema : COLOR MATRIX setting for PP5 and PP6 pro : PCOLOR MATRIX setting for PP3 itu709 : COLOR MATRIX setting for PP4 bw : Setting with saturation as 0, black and white
ColorSaturation (BRC-X400/X401)	Set Inq	0 to **4** to 14	Sets the value of the output image. ColorSaturation setting is applied when ColorMatrix is set to other than off. 0 : Color level 60% (minimum) 4 : Color level 100% 14 : Color level 200% (maximum)
Defog	Set Inq	[Value1] on, **off** [Value2] **0** to 3	Sets the Defog function to on or off. Defog=Value1,Value2 [Value1] [Value2] 0 : Middle effect 1 : Weak effect 2 : Middle effect 3 : Maximum effect
DetailBandWidth	Set Inq	**standard**, low, mid, high, wide	Sets the bandwidth for signals undergoing contour emphasis. Setting is applied when DetailMode is set to Manual. standard : Standard low : Low mid : Middle high : High wide : Wide
DetailBWBalance	Set Inq	0 to **2** to 4	Sets the balance between contours in black on the low brightness side of the spectrum and contours in white on the high brightness side. Smaller the number, larger the black contour ratio. Larger the number, larger the white contour ratio. * Setting is applied when DetailMode is set to manual.
DetailCrispening	Set Inq	0 to **3** to 7	Sets the Crispening function of contour emphasis. Setting is applied when DetailMode is set to manual.
DetailHighlightDetail	Set Inq	**0** to 4	Sets the level of contour added to brightly-lit objects. Larger the number, larger the emphasis volume of the contour. Setting is applied when DetailMode is set to manual.

Parameter	Set Inq	Value	Description
DetailHVBalance	Set Inq	5 to **7** to 9	Sets the ratio for horizontal and vertical contour correction signal elements. Setting is applied when DetailMode is set to manual. Smaller the number, larger the vertical contour correction. Larger the number, larger the horizontal contour correction.
DetailLevel	Set Inq	0 to **7** to 15	Sets the levels for contour emphasis. 0 : Small contour emphasis 15: Large contour emphasis
DetailLimit	Set Inq	0 to **3** to 7	Sets the maximum value for the amount of contour emphasis in black on the low brightness side of the spectrum and in white on the high brightness side. Setting is applied when DetailMode is set to manual. 0 : The maximum value of emphasis is limited lower 7 : The maximum value of emphasis is unlimited
DetailMode	Set Inq	**auto**, manual	Sets the contour emphasis. auto : Sets the contour emphasis automatically manual: Sets the contour emphasis by setting DetailBandWidth, DetailBWBalance, DetailCrispening, DetailHighlightDetail, or DetailHVBalanc
DetailSuperLow	Set Inq	0 to **3** to 7	Sets contour emphasis level of the super low range of the image. Setting is applied when DetailMode is set to manual. 0 : The amount of contour emphasis becomes lower 7 : The amount of contour emphasis becomes higher
ExposureCompensation	Set Inq	0 to **7** to 14	Sets the target brightness level of the exposure when ExposureMode is set to auto, shutter, or iris. * Refer to the item "EXPOSURE COMPENSATION" of CGI Command Setting Values.
ExposureExposureTime	Set Inq	The available values depend on the video output format. 6 to **18** to 33 (59.94p, 59.94i, 50p, 50i, 23.98p) 6 to **16** to 33 (29.97p, 29.97i, 25p, 25i)	Sets the shutter speed when ExposureMode is set to shutter or manual. * Refer to the item "SHUTTER" of CGI Command Setting Values.
ExposureGain	Set Inq	The available values depend on the setting of the high sensitivity mode. **1** to 13 (The high sensitivity mode is off.) **1** to 17 (The high sensitivity mode is on.)	Sets the gain value when ExposureMode is set to manual. * Refer to the item "GAIN" of CGI Command Setting Values.

Parameter	Set Inq	Value	Description
ExposureGainPoint	Set Inq	The available values depend on the setting of the high sensitivity mode. **1** to 13 (The high sensitivity mode is off.) **1** to 17 (The high sensitivity mode is on.)	Sets the GainPoint position. * The value can be set to ExposureMaxGain and under. * Refer to the item "GAIN" of CGI Command Setting Values.
ExposureGainPointEnable	Set Inq	on, **off**	Sets GainPoint function to on or off.
ExposureIris	Set Inq	0 to **25**	Sets iris while ExposureMode is set to iris or manual. * Refer to the item "IRIS" of CGI Command Setting Values.
ExposureMaxExposureTime	Set Inq	The available values depend on the video output format. 16 to **29** to 33 (59.94p, 59.94i, 29.97p, 50p, 50i, 25p) 15 to **30** to 33 (23.98p)	Sets the limit for slow shutter speed when ExposureMode is set to auto or iris. * Bigger the number, faster the shutter speed. * Refer to the item "SHUTTER" of CGI Command Setting Values.
ExposureMaxGain	Set Inq	4 to **13**	Sets the maximum gain value automatically adjusted when ExposureMode is set to auto, shutter, or iris. * Refer to the item "AUTO GAIN MAX. VALUE" of CGI Command Setting Values.
ExposureMinExposureTime	Set Inq	The available values depend on the video output format. 6 to **18** to 33 (59.94p, 59.94i, 50p, 50i, 23.98p) 6 to **16** to 33 (29.97p, 25p)	Sets the limit for fast shutter speed when ExposureMode is set to auto or iris. * Bigger the number, faster the shutter speed. * Refer to the item "SHUTTER" of CGI Command Setting Values.
ExposureMode	Set Inq	**auto**, shutter, iris, manual	Sets the exposure control mode. auto : Automatically adjust iris, gain, and shutter speed. shutter : Automatically adjust gain and iris according to set shutter speed. iris : Automatically adjust gain and shutter speed according to set iris. manual: Sets iris, gain, and shutter speed independently.
FlickerReduction	Set Inq	on, **off**	Sets the Flicker cancel function to on or off.

Parameter	Set Inq	Value	Description
Gamma (BRC-X400/X401)	Set Inq	**std**, straight, pattern, movie, still, cine1, cine2, cine3, cine4, itu709	Sets the basic curve for gamma correction. std : Use standard gamma curve straight: Uses straight gamma curve pattern : Selects a gamma curve from 512 patterns built into the camera movie : Uses standard gamma curve for movie still : Uses standard gamma curve for still image cine1 : Makes the softer and calmer image by making the contrast for darker part gentle and the gradation clearer cine2 : Similar to the effect of cine1 but used when handling the video input within 100% during editing cine3 : Makes the contrast deeper than cine1 and cine2 to get clearer gradation of black cine4 : Deeper contrast than cine3 for darker part of the image. Shallower contrast for darker part than movie and deeper contrast for brighter part itu709 : Uses a gamma curve equivalent to ITU-709
GammaLevel (BRC-X400/X401)	Set Inq	0 to **7** to 14	Sets the correction level of the gamma curve.
GammaOffset (BRC-X400/X401)	Set Inq	-64 to **0** to 64	Sets the output offset of the gamma curves.
GammaPattern (BRC-X400/X401)	Set Inq	1 to **256** to 512	Sets built-in gamma curve used when gamma is set to pattern.
HighResolutionMode	Set Inq	on, **off**	Sets the high resolution mode to on or off. Setting this to on emphasizes the edge of the image. * When DetailMode is set to manual, the function is disabled.
HighSensitivityMode	Set Inq	on, **off**	Sets the high sensitivity mode to on or off.
KneeMode (BRC-X400/X401)	Set Inq	**auto**, manual	Sets the operation of the Knee function. When KneeSetting is on, the function is enabled. auto : Adjusts the knee automatically manual: Adjusts the knee by setting KneePoint or KneeSlope
KneePoint (BRC-X400/X401)	Set Inq	0 to **5** to 12	Sets the brightness level to incline Knee. Setting is applied when KneeMode is set to manual. 12 : 105% 5 : 87.5% 0 : 75%
KneeSetting (BRC-X400/X401)	Set Inq	**on**, off	Sets the Knee function to on or off.
KneeSlope (BRC-X400/X401)	Set Inq	-7 to **7**	Sets the gradient of Knee (compression rate). Setting is applied when KneeMode is set to manual.
LowLightBasisBrightness	Set Inq	**on**, off	Sets the AE Ref Low Light Basis Brightness function to on or off.

Parameter	Set Inq	Value	Description
LowLightBasisBrightnessLevel	Set Inq	4 to **7** to 10	Sets the adjustment level of the AE Ref Low Light Basis Brightness function. 4 : Level –3 7 : Level 0 10 : Level +3
NoiseReduction	Set Inq	0 to **3** to 5	Sets the strength level for Noise Reduction. When NoiseReductionMode is set to simple, the setting is applied.
NoiseReduction2DLevel	Set Inq	0 to **3** to 5	Sets 2D NR. Setting is applied when NoiseReductionMode is set to advanced.
NoiseReduction3DLevel	Set Inq	0 to **3** to 5	Sets 3D NR. Setting is applied when NoiseReductionMode is set to advanced.
NoiseReductionMode	Set Inq	**simple**, advanced	Sets the Noise Reduction function operation mode. simple : Adjusts 2D NR and 3D NR simultaneously advanced : Adjusts each 2D NR and 3D NR
SpotlightCompensationMode	Set Inq	on, **off**	Sets the Spotlight compensation function to on or off. The Spotlight Compensation function operates when ExposureMode is set to auto, shutter, or iris. * When BacklightCompensationMode is on, this is disabled.
Stabilizer	Set Inq	on, **off**	Sets the image stabilization function to on or off.
UserMatrixBG (BRC-X400/X401)	Set Inq	-99 to **0** to 99	Sets for emphasizing or weaken only the specified color area while keeping the white convergence point of White Balance unchanged. Adjusts hue of B-G in UserMatrixBG. Applied when ColorMatrix is set to other than off.
UserMatrixBR (BRC-X400/X401)	Set Inq	-99 to **0** to 99	Sets for emphasizing or weaken only the specified color area while keeping the white convergence point of White Balance unchanged. Adjusts hue of B-R in UserMatrixBR. Applied when ColorMatrix is set to other than off.
UserMatrixGB (BRC-X400/X401)	Set Inq	-99 to **0** to 99	Sets for emphasizing or weaken only the specified color area while keeping the white convergence point of White Balance unchanged. Adjusts hue of G-B in UserMatrixGB. Applied when ColorMatrix is set to other than off.
UserMatrixGR (BRC-X400/X401)	Set Inq	-99 to **0** to 99	Sets for emphasizing or weaken only the specified color area while keeping the white convergence point of White Balance unchanged. Adjusts hue of G-R in UserMatrixGR. Applied when ColorMatrix is set to other than off.
UserMatrixRB (BRC-X400/X401)	Set Inq	-99 to **0** to 99	Sets for emphasizing or weaken only the specified color area while keeping the white convergence point of White Balance unchanged. Adjusts hue of R-B in UserMatrixRB. Applied when ColorMatrix is set to other than off.

Parameter	Set Inq	Value	Description
UserMatrixRG (BRC-X400/X401)	Set Inq	-99 to **0** to 99	Sets for emphasizing or weaken only the specified color area while keeping the white convergence point of White Balance unchanged. Adjusts hue of R-G in UserMatrixRG. Applied when ColorMatrix is set to other than off.
VisibilityEnhancer	Set Inq	on, **off**	Sets the Visibility Enhancer function to on or off.
VisibilityEnhancerLevel	Set Inq	[Value1] 0 to **3** to 6 [Value2] 0 to **2** to 3 [Value3] 0 to **1** to 2	Sets the parameter for Visibility Enhancer function. VisibilityEnhancerLevel=Value1,Value2, Value3 [Value1] Brightness level [Value2] Brightness correction [Value3] Strength correction
WhiteBalanceCbGain	Set Inq	0 to **128** to 255	Sets the B gain when WhiteBalanceMode is set to manual.
WhiteBalanceCrGain	Set Inq	0 to **128** to 255	Sets the R gain when WhiteBalanceMode is set to manual.
WhiteBalanceMode	Set Inq	**auto**, indoor, outdoor, onepushwb, atw, manual	Sets the White Balance mode. auto : Automatically adjusts the color to be closest to the image you are viewing (approx. 2500K to 7500K). indoor : Adjusts the white balance for shooting indoors (approx. 3200K). outdoor : Adjusts the white balance for shooting outdoors (approx. 5800K). onepushwb : Adjust the white balance when the white balance one push trigger command is received. Keep the white balance after adjusting. atw : Adjusts the white balance automatically to reproduce original colors of the objects (approx. 2000K to 10000K) while eliminating the influences caused by environmental illumination or lights. manual : Adjusts the white balance by specifying R gain (WhiteBalanceCrGain) and B gain (WhiteBalanceCbGain).
WhiteBalanceOffset	Set Inq	0 to **7** to 14	Sets the adjustment value for the white convergence point of White balance. The lower the value of WhiteBalanceOffset it is shifted toward blue, and the higher the value it is shifted toward red. WhiteBalanceOffset is applied when WhiteBalanceMode is set to auto, atw, or manual.
WhiteBalanceOnePushTrg	Set	on	Start adjusting the white balance when WhiteBalanceMode is set to onepushwb.

Parameter	Set Inq	Value	Description
WhiteBalanceSpeed	Set Inq	1 to **3** to 5	Sets the speed at which the camera reaches the white convergence point of White balance when WhiteBalanceMode is set to auto or atw. * Bigger the number, faster.

pictureprofile.cgi (BRC-X400/X401)

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

Parameter	Set Inq	Value	Description
PictureProfile	Set	0 to 5	Sets the Picture Profile setting. 0 : PP1 Setting with MOVIE gamma 1 : PP2 Setting with STILL gamma 2 : PP3 Setting with ITU-709 gamma for natural color tones 3 : PP4 Setting for ITU-709 standard color tones 4 : PP5 Setting with CINE1 gamma 5 : PP6 Setting with CINE2 gamma

s700p.cgi (BRC-X400/X401)

Setting (Set): command/s700p.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=s700p

Parameter	Set Inq	Value	Description
S700pCameraNo	Set Inq	**1** to 96	Sets the camera number for multi-camera system.
S700pMasterIP	Set Inq	IPv4 address (Default: **0.0.0.0**)	Setting of IP address for MSU to use in multi-camera system.
S700pSystemMode	Set Inq	**bridge**, mcs, reserved	Sets how to connect S700PTP. bridge : Bridge connection mcs : Multi-camera system connection reserved : Reserved (not used)

ptzf.cgi

Setting (Set): command/ptzf.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=ptzf

Parameter	Set Inq	Value	Description
AbsolutePanTilt	Set	[Value1] de00 to 2200 [Value2] The available values depend on the Eflip settings. fc00 to 1200 (Off) ee00 to 0400 (On) [Value3] 1 to 24	Executes the pan/tilt movement by specifying coordinate. AbsolutePanTilt=Value1,Value2,Value3 [Value1] Sets the pan position by coordinate de00 : Counterclockwise 170 deg. 0000 : Home Position 2200 : Clockwise 170 deg. [Value2] Sets the tilt position by coordinate When Eflip is set to off fc00 : –20 deg. to the lower direction 0000 : Home Position 1200 : +90 deg. to the upper direction When Eflip is set to on ee00 : –90 deg. to the lower direction 0000 : Home Position 0400 : +20 deg. to the upper direction * Refer to the item “PAN/TILT POSITION” of CGI Command Setting Values. [Value3] Sets the movement speed * Bigger the number, faster. * When SlowPanTiltMode (page 12) is on, up to 127 can be specified. However 25 to 127 is used for the maintenance. * Refer to the item “PAN/TILT POSITION” of CGI Command Setting Values.

Parameter	Set Inq	Value	Description
AbsolutePTZF	Set Inq	[Value1] de00 to 2200 [Value2] The available values depend on the Eflip settings. fc00 to 1200 (Off) ee00 to 0400 (On) [Value3] The available values depend on the Zoom Mode status and the video size of the output signal format. 0000 to 4000 (optical) 0000 to 5556 (clearimage, 4K) 0000 to 6000 (clearimage, except for 4K) 0000 to 7ac0 (full) [Value4] 0000 to f000	Executes the pan/tilt/zoom/focus movement by specifying coordinate, or returns the current coordinate. AbsolutePTZF=Value1,Value2,Value3,Value4 [Value1] Sets the pan position by coordinate de00 : Counterclockwise 170 deg. 0000 : Home Position 2200 : Clockwise 170 deg. * Refer to the item “PAN/TILT POSITION” of CGI Command Setting Values. [Value2] Sets the tilt position by coordinate When Eflip is set to off fc00 : –20 deg. to the lower direction 0000 : Home Position 1200 : +90 deg. to the upper direction When Eflip is set to on ee00 : –90 deg. to the lower direction 0000 : Home Position 0400 : +20 deg. to the upper direction * Refer to the item “PAN/TILT POSITION” of CGI Command Setting Values. [Value3] Sets the zoom position by coordinate 0000 : Wide end 4000 : Optical tele end 5556 : Clear Image Zoom tele end *1 (4K *2) 6000 : Clear Image Zoom tele end *1 (except 4K) 7ac0 : Digital Zoom tele end *1 * Refer to the item “ZOOM POSITION” of CGI Command Setting Values. * 1 Clear Image Zoom function and digital zoom function are not available for SRG-X120 and SRG-HD1M2. *2 For SRG-X400/X402/201M2/X120/HD1M2, 4K can be set only when 4K option is installed. [Value4] Sets the focus position by coordinate 0000 : Near end f000 : Far end * Refer to the item “FOCUS” of CGI Command Setting Values.

Parameter	Set Inq	Value	Description
AbsoluteZoom	Set	The available values depend on the Zoom Mode status and the video size of the output signal format. 0000 to 4000 (optical) 0000 to 5556 (clearimage, 4K) 0000 to 6000 (clearimage, except for 4K) 0000 to 7ac0 (full)	Move the zoom with specifying the absolute position. 0000 : Wide end 4000 : Optical tele end 5556 : Clear Image Zoom tele end *1 (4K *2) 6000 : Clear Image Zoom tele end *1 (except 4K) 7ac0 : Digital Zoom tele end *1 * Refer to the item “ZOOM POSITION” of CGI Command Setting Values. * 1 Clear Image Zoom function and digital zoom function are not available for SRG-X120 and SRG-HD1M2. *2 For SRG-X400/X402/201M2/X120/HD1M2, 4K can be set only when 4K option is installed.
Cancel	Set	on	Cancels the running PTZ command. Cancel=on
Move	Set	[Value1] left, right, up, down, up-left, up-right, down-left, down-right [Value2] 0 to 24	Sets the moving for Pan-Tilt by specifying direction. Move=Value1,Value2 [Value1] Sets the direction left : Left right : Right up : Up down : Down up-left : Up left up-right : Up right down-left : Down left down-right: Down right [Value2] Sets the speed for Pan-Tilt * Bigger the number, faster. When set to 0, the speed changes depending on the zoom position. * When SlowPanTiltMode (page 12) is on, up to 127 can be specified. However 25 to 127 is used for the maintenance. * Refer to to the item “PAN/TILT SPEED” of CGI Command Setting Values.
Move	Set	[Value1] tele, wide [Value2] 0 to 8	Sets the moving for Zoom by specifying direction. [Value1] Sets the direction tele : Tele wide : Wide [Value2] Sets the speed * Bigger the number, faster.

Parameter	Set Inq	Value	Description
Move	Set	[Value1] near, far, onepushaf [Value2] 0 to 8	Sets the moving for Focus by specifying direction. [Value1] Sets the direction near : Near far : Far onepushaf : perform one push auto focus. [Value2] Sets the speed * Bigger the number, faster. * The speed of performing onepushhaf is same at all values.
Move	Set	[Value1] stop [Value2] pantilt, motor, zoom, focus	Stops the moving for Pan, Tilt, Zoom, and Focus. [Value1] Stops [Value2] pantilt : Stops Pan-Tilt moving motor : Stops Pan-Tilt moving zoom : Stops Zoom moving focus : Stops Focus moving
OpticalZoomMaxMagnification	Inq	X20 (BRC-X400/X401, SRG-X400/X402/201M2) X12 (SRG-X120/HD1M2)	Returns the maximum optical zoom ratio.
PanMovementRange	Inq	[Value1] de00 [Value2] 2200	Returns the possible movement range of pan. PanMovementRange=Value1,Value2 [Value1] de00 : (Left end) [Value2] 2200 : (Right end) * Refer to the item “PAN/TILT POSITION” of CGI Command Setting Values.
PanTiltMaxVelocity	Inq	24	Returns the maximum speed of Pan/Tilt movement.
PanTiltReset	Set	on	Resets the Pan-Tilt position for the camera to recognize the position correctly and to control Pan-Tilt.

Parameter	Set Inq	Value	Description
PtzfStatus	Inq	[Value1] idle, moving, unknown [Value2] idle, moving, unknown [Value3] idle, moving, unknown [Value4] idle, moving, unknown	Returns the current status of pan / tilt / zoom / focus movement. PtzfStatus=Value1,Value2,Value3,Value4 [Value1] Returns the current status of pan. idle : Idle moving : Moving unknown : Abnormal status [Value2] Returns the current status of tilt. idle : Idle moving : Moving unknown : Abnormal status [Value3] Returns the current status of zoom. idle : Idle moving : Moving unknown : Abnormal status [Value4] Returns the current status of Focus. idle : Idle moving : Moving unknown : Abnormal status
Relative	Set	[AA] 01 to 11 [BB] 01 to 10	Executes the pan/tilt/zoom movement by specifying the direction and the amount of displacement from the current position. Specifies the value combined two values, AA (direction) and BB (amount of displacement). Relative=AABB [AA] Sets the direction 01 : Lower-left 02 : Lower 03 : Lower-right 04 : Left 06 : Right 07 : Upper-left 08 : Upper 09 : Upper-right 10 : Zoom wide 11 : Zoom tele [BB] Sets the amount of displacement relative to the video size (100%). 01 : Around 10% 02 : Around 15% 03 : Around 20% 04 : Around 25% 05 : Around 30% 06 : Around 40% 07 : Around 50% 08 : Around 66.7% 09 : Around 83.3% 10 : Around 100%

Parameter	Set Inq	Value	Description
RelativeFocus	Set	ffff1000 to 0000f000	Executes the focus position movement by specifying relative position from the current position. This command is only valid when FocusMode is set to manual. Actual movement range is also affected by the value of FocusNearLimit parameter. ffff1000 : The maximum amount to focus far direction 0000f000 : The maximum amount to focus near direction * Refer to the item “FOCUS” of CGI Command Setting Values.
RelativePanTilt	Set	[Value1] bc00 to 4400 [Value2] ea00 to 1600 [Value3] 1 to 24	Executes the pan/tilt movement by specifying relative coordinate from the current position. RelativePanTilt=Value1,Value2,Value3 [Value1] Sets the pan coordinate [Value2] Sets the tilt coordinate * Refer to the item “PAN/TILT POSITION” of CGI Command Setting Values. [Value3] Sets the speed * Refer to the item “PAN/TILT SPEED” of CGI Command Setting Values. * When SlowPanTiltMode (page 12) is on, up to 127 can be specified. However 25 to 127 is used for the maintenance.
RelativeZoom	Set	The available values depend on the Zoom Mode status and the video size of the output signal format. ffffc000 to 00004000 (optical) ffffaaaa to 00005556 (clearimage, 4K) ffffa000 to 00006000 (clearimage, except for 4K) ffff8540 to 00007ac0 (full)	Executes the zoom position movement by specifying relative position from the current position. ffffc000 to 00004000 : Optical zoom Range ffffaaaa to 00005556 : Clear Image Zoom Range *1 (4K *2) ffffa000 to 00006000 : Clear Image Zoom Range *1 (except 4K) ffff8540 to 00007ac0 : Digital zoom Range *1 * Refer to the item “ZOOM POSITION” of CGI Command Setting Values. *1 Clear Image Zoom function and digital zoom function are not available for SRG-X120 and SRG-HD1M2. *2 For SRG-X400/X402/201M2/X120/HD1M2, 4K can be set only when 4K option is installed.

Parameter	Set Inq	Value	Description
TiltMovementRange	Inq	[Value1] Depends on the Eflip settings. fc00 (Off) ee00 (On) [Value2] Depends on the Eflip settings. 1200 (Off) 0400 (On)	Returns the possible movement range of tilt. TiltMovementRange=Value1,Value2 [Value1] Lower end [Value2] Upper end * Refer to the item “PAN/TILT POSITION” of CGI Command Setting Values.
ZoomMaxVelocity	Inq	8	Returns the maximum speed of zoom movement.
ZoomMovementRange	Inq	[Value1] 0000 [Value2] 4000 [Value3] 5556 (4K) 6000 (except 4K) [Value4] 7ac0 (BRC-X400/X401, SRG-X400/X402/201M2) [Value1] 0000 [Value2] 4000 [Value3] 4000 [Value4] 4000 (SRG-X120/HD1M2)	Returns the possible movement range of zoom. ZoomMovementRange=Value1,Value2, Value3,Value4 [Value1] Wide end [Value2] Optical Zoom Tele end [Value3] Clear Image Zoom Tele end [Value4] Digital Zoom Tele end * Refer to the item “ZOOM POSITION” of CGI Command Setting Values.

presetposition.cgi

Setting (Set): command/presetposition.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=presetposition

Parameter	Set Inq	Value	Description
CallMode	Set Inq	freeze, **normal**	Sets the video output during preset recalling. freeze : Outputs frozen images during running the recalling. (Pict Freeze Preset function) normal : Does not freeze the camera images during recalling.
CommonSpeed	Set Inq	1 to **25**	Sets the pan/tilt speed when SpeedSelect is set to Common. * Refer to the item “PRESET RECALL SPEED” of CGI Command Setting Values.

Parameter	Set Inq	Value	Description
HomePos	Set	recall	Moves the Pan-Tilt of the camera to the Home Position. * Coordinate of the home position is Pan : 0000, Tilt : 0000. This coordinate cannot be changed.
PresetCall	Set	[Value1] 1 to 256 [Value2] 1 to 25	Recalls a registered preset. PresetCall=Value1,Value2 [Value1] The preset number to recall [Value2] (Optional) The movement speed of pan/tilt during recalling Valid when SpeedSelect is compatible. Use the value of 25 when not specified. * Refer to the item “PRESET RECALL SPEED” of CGI Command Setting Values. * Bigger the number, faster.
PresetClear	Set	1 to 256	Clears the preset corresponding to the specified number.
PresetImagingSet	Set	1	Registers the parameter setting which belongs to imaging.cgi to Preset 1.
PresetMode (BRC-X400/X401)	Set Inq	**std**, ptzfonly, trace	Sets the preset mode. std : recalls pan/tilt/zoom/focus position and camera settings ptzfonly: recalls pan/tilt/zoom/focus position trace : Operates PTZ Trace using PresetSet, PresetCall, PresetClear. * Refer to the item “Preset mode settings and behavior of preset commands” of CGI Command Setting Values.
PresetName	Set Inq	[Value1] 1 to 256 [Value2] 0 to 32 characters	Sets the name of registered preset. Specifies one of the registered preset number on setting. PresetName=Value1,Value2 Returns all the registered preset name to the inquiry. PresetName=Value11,Value21[,Value12, Value22, ...] [Value1n] Preset number [Value2n] Preset name The 32 and less alphanumeric characters can be set.
PresetNum	Inq	256	Returns the maximum number of preset that can be registered.

Parameter	Set Inq	Value	Description
PresetSet	Set	[Value1] 1 to 256 [Value2] 0 to 32 characters [Value3] on, off	Registers the current pan/tilt/focus/zoom position and camera settings as a preset position. PresetSet=Value1,Value2,Value3 [Value1] Preset number to register [Value2] Name Preset name to register The 32 and less alphanumeric characters can be set. [Value3] Thumbnail Sets whether to use the current camera image as a thumbnail on : Use off : Not use
PresetThumbnailClear	Set	1 to 256	Deletes the thumbnail of a registered preset.
SeparateSpeed	Set Inq	[Value1] 1 to 256 [Value2] 1 to 25	Sets the pan/tilt speed corresponding each preset when SpeedSelect is set to Separate. [Value1] Preset number to be set [Value2] Speed to be set * Refer to the item “PRESET RECALL SPEED” of CGI Command Setting Values.
SpeedSelect	Set Inq	**compatible**, separate, common	Sets the pan/tilt speed during recalling the preset. compatible : Uses the speed specified with the PresetCall command Value2 separate : Uses the speed set for each preset number with the SeparateSpeed command common : Uses the common speed for all preset numbers set with the CommonSpeed command

trace.cgi (BRC-X400/X401)

Setting (Set): command/trace.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=trace

Parameter	Set Inq	Value	Description
TraceDelete	Set	1 to 16	Deletes the trace of the specifiled PTZ trace number.
TraceName	Set Inq	[Value1] 1 to 16 [Value2] 0 to 32 characters	Specifies the PTZ trace number and sets the name. [Value1] PTZ trace number [Value2] PTZ trace name. 32 and less alphanumerical characters

Parameter	Set Inq	Value	Description
TracePlay	Set	start	Starts playback PTZ trace which is ready for playback.
TracePreparedPlayNumber	Inq	1 to 16	Returns the PTZ trace number which finishes readying to play. Returns 0 when the ready is not done.
TracePreparePlay	Set	1 to 16	Moves to the starting position of the specified PTZ trace number.
TraceRecording	Set	[Value1] 1 to 16 [Value2] on, off	Starts track recording on specified PTZ trace number. TraceRecording=Value1,Value2 [Value1] PTZ trace number to register [Value2] (optional) Sets whether to use the current camera image as thumbnail. on : use off : not use
TraceRecordingStatus	Inq	-	Returns the PTZ trace number which the trace is registered. Example: When the trace is registered PTZ number 1, 5, 7. TraceRecordingStatus=1,5,7
TraceStatus	Inq	none, recording, preparing, readyforplay, playing, deleting	Returns the status of the specified PTZ trace number. none : normal (status which does not correspond the following 'recording' to 'deleting') recording : in recording (interval after receiving the recording start command until stops the record) preparing : in readying the playback (interval after receiving the playback readying command until finishes the playback readying) readyforplay: Status of the finish readying for playback (The ready for playback has been done.) playing : in playing (interval after receiving the playbak command until finishes the playback) deleting : in deleting (interval after receiving the delete command until finishes the delete)
TraceStop	Set	on	The recording will stop during PTZ trace recording. The playback will stop during PTZ trace playback.
TraceThumbnailClear	Set	1 to 16	Deletes the thumbnail of the specified PTZ trace number.

tally.cgi (BRC-X400/X401)

Setting (Set): command/tally.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=tally

Parameter	Set Inq	Value	Description
TallyControl	Set Inq	on, **off**	Turns on/off the Tally Lamp. on : Turn on off : Turn off
TallyLevel	Set Inq	off, **low**, high	Sets the lighting level for the Tally Lamp. off : Always turned off regardless whether TallyControl turns on or off setting. low : Dark high: Bright

ircf.cgi

Setting (Set): command/ircf.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=ircf

Parameter	Set Inq	Value	Description
IrCutFilterLevel	Set Inq	0 to **14** to 255	Sets the threshold value for the change from the night mode to the day mode when IRCutFilterMode is set to auto. * Smaller the number, more changeable from the night mode to the day mode. * This might not switch to the day mode even the target is blight, in case the value here is big. In this case, use the camera with setting the value smaller.
IrCutFilterManual	Set Inq	on, **off**	Sets Day/Night mode. When IrCutFilterMode is set to auto, IrCutFilterManual cannot be on. on : Night mode off : Day mode
IrCutFilterMode	Set Inq	**manual**, auto	Sets whether to change the day/night mode automatically or not. manual: Sets the mode by IrCutFilterManual auto : Sets the mode automatically
IrCutFilterStatus	Inq	night, day	Returns the status of Day/Night mode. night : The camera is in Night mode. day : The camera is in Day mode.
NearIRFocusCorrection	Set Inq	on, **off**	Sets whether to enable/disable focus correction when used under IR (near infrared) light. on : Enable correction off : Disable correction

system.cgi

Setting (Set): command/system.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=system

Parameter	Set Inq	Value	Description
AudioInFunc	Inq	1	Returns whether the audio input function is available. 1 : Available
CGIVersion	Inq	-	Returns the version number of the CGI command.
ContinuousPanTiltZoomFunc	Inq	0	Returns whether to support ContinuousPanTiltZoom CGI command. 0 : Does not support
ContinuousPanTiltZoomInterval	Inq	" "	No value for this model, as it does not support ContinuousPanTiltZoom function. " " : no value
DateFormat	Set Inq	**ymd**, mdy, dmy	Setting of date and time format. ymd : YY-MM-DD mdy : MM-DD-YY dmy : DD-MM-YY
DefogFunc	Inq	1	Returns whether the Defog function is supported or not. 1 : Support
DiagDataDownloadFunc	Inq	1	Returns whether the function of the analysis data download is supported or not. 1 : Supported
DstMode	Set Inq	**on**, off	Setting for enable/disable daylight-saving time on : Enable off : Disable
EflipFunc	Inq	1	Returns whether the picture inversion function is supported or not. 1 : Supported
EncryptionCapability	Inq	1 (BRC-X400, SRG-X400/ X120) 0 (BRC-X401, SRG-X402/ 201M2/HD1M2)	Returns whether the HTTPS function is supported or not. 1 : Supported 0 : Unsupported
GmTime	Set Inq	YYMMDDhhmmssW format	Sets in Greenwich Mean Time (GMT 00:00). YYMMDD : YYMMDD [000101 - 380119] (actually defined by DateFormat) hhmmss : hhmmss (24-hour format) W : Week (Sun =1, Mon=2, ..., Sat=7) If wrong value is set for W, it is corrected automatically.
HdmiOutFunc	Inq	1	Returns whether the HDMI output is supported or not. 1 : Supported
HPoEFunc	Inq	1	Returns whether PoE+ (IEEE 802.3at) is supported or not. 1 : Supported

Parameter	Set Inq	Value	Description
IrCutFilterFunc	Inq	1	Returns whether the Day/Night function is supported or not. 1 : Supported
IrCutFilterTimeFunc	Inq	0	Returns whether to support the function to specify the time to switch, when you switch day/night mode automatically. 0 : Not supported
IRReceive	Set Inq	**on**, off	Sets whether to accept the signal from the IR remote commander or not. on : Accept off : Do not accept
MicLineSelectFunc	Inq	1	Returns whether the function to switch the audio input level is supported or not. 1 : Supported
ModelName	Inq	"BRC-X400" (BRC-X400) "BRC-X401" (BRC-X401) "SRG-X400" (SRG-X400) "SRG-X402" (SRG-X402) "SRG-201M2" (SRG-201M2) "SRG-X120" (SRG-X120) "SRG-HD1M2" (SRG-HD1M2)	Returns the model name of the camera.
NtpAuto	Set Inq	on, **off**	The setting to determine whether the IP address of NTP (Network Time Protocol) server will be acquired from the DHCP (Dynamic Host Configuration Protocol) server. on : Acquire off : Do not acquire
NtpInterval	Set Inq	100 to **3600** to 86400	Sets the synchronous period with NTP server. (Unit: second)
NtpMode	Inq	step	Returns the setting of the connection mode to NTP server.
NtpServer	Set Inq	0 to 63 characters	Setting NTP server in IPv4 address or host name style (up to 63 characters)
NtpService	Set Inq	on, **off**	Setting to determing whether synchronize with NTP server. on : Synchronize off : Do not synchronize
PanTiltFunc	Inq	1	Returns whether the Pan/Tilt function is supported or not. 1 : Supported
PasswordChanged	Inq	0, 1	Returns whether the admin password has been changed or not. 0 : Not changed 1 : Changed
Power	Inq	on, standby	Returns the status of the camera power. on : starting status standby : standby status
PtzTraceFunc	Inq	1 (BRC-X400/X401) 0 (SRG-X400/X402/X120/201M2/HD1M2)	Returns whether to correspond the PTZ trace function or not. 0: Not corresponds 1 : Corresponds

Parameter	Set Inq	Value	Description
QfhdFunc	Inq	0, 1	Returns whether to support 4K in video output format setting. 0: Not corresponds 1 : Corresponds * For SRG-X400/X402/201M2/X120/HD1M2, 0 when 4K option is not installed, 1 when 4K option is installed.
S700pFunc	Inq	1 (BRC-X400/X401) 0 (SRG-X400/X402/X120/201M2/HD1M2)	Returns whether the S700PTP protocol is supported or not. 1 : Supported 0 : Not supported
Serial	Inq	00000000 to 99999999	Returns the serial number of the camera.
SoftVersion	Inq	0 to 32 characters	Returns the software version.
SsdpDiscovery	Set Inq	**on**, off	Setting of UPnP function on or off.
StandbyMode	Set Inq	**neutral**, side	Sets whether to move the pan to the end position or not, when changes to the standby mode. neutral : Not moves to the end side : Moves to the end
SuperImposeFunc	Inq	1	Returns whether the superimpose function is supported or not. 1 : Supported
TallyLampFunc	Inq	1 (BRC-X400/X401) 0 (SRG-X400/X402/X120/201M2/HD1M2)	Returns whether Tally Lamp is available or not. 1 : Supported 0 : Not supported
TeleConvertFunc	Inq	1 (BRC-X400/X401, SRG-X402) 0 (SRG-X400/X120/201M2/HD1M2)	Returns whether supports the teleconversion function or not. 1 : Supported 0 : Not supported
ThumbnailFunc	Inq	1	Returns whether thumbnail of the Preset function is supported or not. 1 : Supported
Time	Set Inq	YYMMDDhhmmssW format	Sets the Local time. YYMMDD : YYMMDD [000101 - 380119] (actually defined by DateFormat) hhmmss : hhmmss (24-hour format) W : Week (Sun =1, Mon=2, ..., Sat=7) If wrong value is set for W, it is corrected automatically.
TimeZone	Set Inq	* Refer to the item “TIME ZONE” of CGI Command Setting Values.	Setting of timezone.
WhiteBalanceOffsetFunc	Inq	0	Returns whether setting for the offset value of White Balance B gain and R gain can be individually changed or not. 0 : Not supported
WideDynamicRangeLevelFunc	Inq	0	Returns whether supports the Wide Dynamic Range function (View-DR) or not. 0 : Not supported

Parameter	Set Inq	Value	Description
WideDynamicRangeLevelList	Inq	" "	No value for this model, as it does not support WideDynamicRangeLevel function. " " : no value

main.cgi

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

Parameter	Set Inq	Value	Description
DeleteFile	Set	silogo, silogo1, silogo2, silogo3	Deletes the Logo files. silogo : Delete Logo files of Image 1 to 3 collectively. silogo1 : Delete Logo files of Image 1. silogo2 : Delete Logo files of Image 2. silogo3 : Delete Logo files of Image 3.
FactoryDefault	Set	hard, soft	Resets the camera to the default settings. hard: Hard reset (returns all settings to the factory default) soft : Soft reset (retain the network and security settings)
System	Set	on, reboot, standby	Sets the camera power status. on : sets to the starting status reboot : reboots the camera standby: sets to the standby status * The status can be acquired on "Power" of system.cgi.

logconfig.cgi

Setting (Set): command/logconfig.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=logconfig

Parameter	Set Inq	Value	Description
AccessLogLevel	Set Inq	**info**, warning, critical	Setting of the log level of the access log. info : Save all logs of Abnormal levels. warning : Save logs of Critical and Warning levels. critical : Save only logs of Critical level.
AccessLogSize	Set Inq	200 to **1024**	Setting of maximum log size of the access log. (Unit: line)
EnableDiagDataDownload	Set Inq	on, **off**	Sets whether the analysis data is allowed to download or not. on : Allowed off : Not allowed
SystemLogLevel	Set Inq	**info**, warning, critical	Setting of the log level of the system log. info : Save all logs of Abnormal levels. warning : Save logs of Critical and Warning levels. critical : Save only logs of Critical level.

Parameter	Set Inq	Value	Description
SystemLogSize	Set Inq	200 to **1024**	Setting of the maximum log size of the system log. (Unit: line)

user.cgi

Setting (Set): command/user.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=user

<n> of the parameter tail is the number between 1 to 9.

Parameter	Set Inq	Value	Description
AdminInfo	Inq	admin	Returns the administrator name.
Administrator	Set	-	Use from Admin menu. Do not use directly.
AuthenRTSP	Set Inq	**on**, off	Setting to turn on/off the RTSP authentication.
DigestAuthNonceDuration	Set Inq	1 to **300** to 3600	Setting of the effective duration of the Nonce value in Digest Access Authentication. (Unit: second)
User<n>	Set	-	Use from Admin menu. Do not use directly.
UserInfo<n>	Inq	-	Returns user name.
UserNum	Inq	9	Returns the maximum number of registered users.

viewermode.cgi

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

Parameter	Set Inq	Value	Description
ViewerMode	Inq	0000083f, 00000fff, ffffffff	Returns the access authority of the users accessing to the camera. 0000083f : Light (when accessed via Web browser, the image can be displayed on the viewer screen.) 00000fff : Full (when accessed via Web browser, viewer screen except for the power can be operated.) ffffffff : Administrator (when accessed via Web browser, all the functions including the camera setting about this unit can be used.) * For details, refer to "Administrator and User" of "Operating Instructions."

superimpose.cgi

Setting (Set): command/superimpose.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=superimpose

<n> of the parameter tail is the number between 1 to 3. Image 1 to 3 are supported.

Parameter	Set Inq	Value	Description
SiColorArea1Image<n>	Set Inq	[Value1] black, gray1, gray2, gray3, gray4, gray5, gray6, **white**, red, green, blue, cyan, yellow, magenta [Value2] **black**, gray1, gray2, gray3, gray4, gray5, gray6, white, red, green, blue, cyan, yellow, magenta [Value3] **off**, low, high, full	Setting of color for superimpose Area1. SiColorArea1Image<n>=Value1,Value2, Value3 [Value1] Setting of superimpose text color. [Value2] Setting of superimpose background color. [Value3] Setting of permeation rate of background color. off : opacity low : low permeation rate high : high permeation rate full : fully transparent
SiColorArea2Image<n>	Set Inq	[Value1] black, gray1, gray2, gray3, gray4, gray5, gray6, **white**, red, green, blue, cyan, yellow, magenta [Value2] **black**, gray1, gray2, gray3, gray4, gray5, gray6, white, red, green, blue, cyan, yellow, magenta [Value3] **off**, low, high, full	Sets of color for superimpose Area2. SiColorArea2Image<n>=Value1,Value2, Value3 [Value1] Setting of superimpose text color. [Value2] Setting of superimpose background color. [Value3] Setting of permeation rate of background color. off : opacity low : low permeation rate high : high permeation rate full : fully transparent
SiColorArea3Image<n>	Set Inq	[Value1] black, gray1, gray2, gray3, gray4, gray5, gray6, **white**, red, green, blue, cyan, yellow, magenta [Value2] **black**, gray1, gray2, gray3, gray4, gray5, gray6, white, red, green, blue, cyan, yellow, magenta [Value3] **off**, low, high, full	Setting of color for superimpose Area3. SiColorArea3Image<n>=Value1,Value2, Value3 [Value1] Setting of superimpose text color. [Value2] Setting of superimpose background color. [Value3] Setting of permeation rate of background color. off : opacity low : low permeation rate high : high permeation rate full : fully transparent

Parameter	Set Inq	Value	Description
SiColorArea4Image<n>	Set Inq	[Value1] black, gray1, gray2, gray3, gray4, gray5, gray6, **white**, red, green, blue, cyan, yellow, magenta [Value2] **black**, gray1, gray2, gray3, gray4, gray5, gray6, white, red, green, blue, cyan, yellow, magenta [Value3] **off**, low, high, full	Setting of color for superimpose Area4. SiColorArea4Image<n>=Value1,Value2, Value3 [Value1] Setting of superimpose text color. [Value2] Setting of superimpose background color. [Value3] Setting of permeation rate of background color. off : opacity low : low permeation rate high : high permeation rate full : fully transparent
SiEnableImage<n>	Set Inq	on, **off**	Setting whether enable/disable superimpose function on : enable off : disable
SiFontSizeImage<n>	Set Inq	16, 24, **32**, 40, 48, 56, 64, 72	Setting of the font size for the superimposed text.
SiFormatArea1Image<n>	Set Inq	0 to 64 characters	Setting of content to display on superimpose Area1. The 64 and less alphanumerical characters can be set.
SiFormatArea2Image<n>	Set Inq	0 to 64 characters	Setting of content to display on superimpose Area2. The 64 and less alphanumerical characters can be set.
SiFormatArea3Image<n>	Set Inq	0 to 64 characters	Setting of content to display on superimpose Area3. The 64 and less alphanumerical characters can be set.
SiFormatArea4Image<n>	Set Inq	0 to 64 characters	Setting of content to display on superimpose Area4. The 64 and less alphanumerical characters can be set.
SiFormatTag	Inq	<datetime><silogo> <zoomratio><name>	Returns the kinds of tags which can be specified for superimpose.
SiNumPerImage	Inq	4	Returns the numbers of area available in superimpose.
SiPositionArea1Image<n>	Set Inq	[Value1] **0** to 1000 [Value2] **0** to 1000 [Value3] **left**, center, right	Setting of display position for superimpose Area1 SiPositionArea1Image<n>=Value1,Value2, Value3 [Value1] Setting the horizontal position in the screen. The left end is 0, right end is 1000. [Value2] Setting the vertical position in the screen. Top end is 0, bottom end is 1000. [Value3] Setting of the horizontal position origin for the superimpose part. left : the left end of the string center : the center of the string right : the right end of the string

Parameter	Set Inq	Value	Description
SiPositionArea2Image<n>	Set Inq	[Value1] **0** to 1000 [Value2] **0** to 1000 [Value3] **left**, center, right	Setting of display position for superimpose Area2 SiPositionArea2Image<n>=Value1,Value2, Value3 [Value1] Setting the horizontal position in the screen. The left end is 0, right end is 1000. [Value2] Setting the vertical position in the screen. Top end is 0, bottom end is 1000. [Value3] Setting of the horizontal position origin for the superimpose part. left : the left end of the string center : the center of the string right : the right end of the string
SiPositionArea3Image<n>	Set Inq	[Value1] **0** to 1000 [Value2] **0** to 1000 [Value3] **left**, center, right	Setting of display position for superimpose Area3 SiPositionArea3Image<n>=Value1,Value2, Value3 [Value1] Setting the horizontal position in the screen. The left end is 0, right end is 1000. [Value2] Setting the vertical position in the screen. Top end is 0, bottom end is 1000. [Value3] Setting of the horizontal position origin for the superimpose part. left : the left end of the string center : the center of the string right :the right end of the string
SiPositionArea4Image<n>	Set Inq	[Value1] **0** to 1000 [Value2] **0** to 1000 [Value3] **left**, center, right	Setting of display position for superimpose Area4 SiPositionArea4Image<n>=Value1,Value2, Value3 [Value1] Setting the horizontal position in the screen. The left end is 0, right end is 1000. [Value2] Setting the vertical position in the screen. Top end is 0, bottom end is 1000. [Value3] Setting of the horizontal position origin for the superimpose part. left : the left end of the string center : the center of the string right : the right end of the string

network.cgi

Setting (Set): command/network.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=network

Parameter	Set Inq	Value	Description
AutoIpv6	Set Inq	**on**, off	Setting whether acquires the IPv6 IP address automatically or not. on : Acquire automatically off : Do not acquire automatically
CameraName	Set Inq	0 to 8 characters (Default: "**CAM1**")	Setting of the camera name. The 8 and less alphanumerical characters can be set.
CurrentGateway	Inq	IPv4 address	Returns the current IPv4 address of the default gateway.
CurrentGatewayv6	Inq	IPv6 address	Returns the current address of the IPv6 default gateway.
CurrentIp	Inq	IPv4 address	Returns the current IPv4 address.
CurrentIpv6Address1	Inq	IPv6 address	Returns the current IPv6 address1.
CurrentIpv6Address2	Inq	IPv6 address	Returns the current IPv6 address2.
CurrentPrefix1	Inq	0 to 128	Returns the current IPv6 prefix value.
CurrentPrefix2	Inq	0 to 128	Returns the current IPv6 prefix2 value.
CurrentPrimaryDns	Inq	IPv4 or IPv6 address	Returns the current IP address of the primary DNS server.
CurrentSecondaryDns	Inq	IPv4 or IPv6 address	Returns the current IP address of the secondary DNS server.
CurrentSubnetmask	Inq	IPv4 address	Returns the current IPv4 subnet mask.
Dhcp	Set Inq	on, **off**	Sets On/Off of DHCP client function.
DnsAuto	Set Inq	**on**, off	Setting to enable/disable the function that the IP address of DNS server is acquired from the DHCP server. This setting is common for IPv4 and IPv6. on : Enable off : Disable
Gateway	Set Inq	IPv4 address (Default: **192.168.0.254**)	Setting of the IPv4 address of the default Gateway.
Gatewayv6	Set Inq	IPv6 address	Setting of the address of IPv6 default Gateway.
HttpMaxKeepAliveIdle	Set Inq	0 to **70** to 7200	Setting of the time to terminate the session by judging as Idle. (Unit: second) * When set to 0, the session is not cut.
HttpPort	Set Inq	**80**, 1024 to 65534	Setting of the port number to use in HTTP protocol. This setting is common for IPv4 and IPv6. * Reserved port cannot be used and overlapped with other setting ports. Refer to the item “RESERVED PORT” of CGI Command Setting Values.
Ip	Set Inq	IPv4 address (Default: **192.168.0.100**)	Setting of IPv4 address.

Parameter	Set Inq	Value	Description
IPsetupSetEnable	Set Inq	off, **on**	Setting whether the setting can be made by the RM-IP Setup Tool or not. off : Do not accept on : Accept * Setting to off prevents the unintentional change by the RM-IP Setup Tool.
Ipv6	Set Inq	IPv6 address	Setting of IPv6 address.
LinkLocalIPv6	Inq	IPv6 address	Returns the link local IPv6 address.
MacAddress	Inq	-	Returns MAC Address of the camera.
PhyStat	Inq	10half, 10full, 100half, 100full, 1000half, 1000full	Returns the connection status of the Ethernet. 10half : 10Mbps, half-duplex communication 10full : 10Mbps, full-duplex communication 100half : 100Mbps, half-duplex communication 100full : 100Mbps, full-duplex communication 1000half : 1000Mbps, half-duplex communication 1000full : 1000Mbps, full-duplex communication
Prefix	Set Inq	0 to **64** to 128	Setting of the IPv6 prefix length value
PrimaryDns	Set Inq	IPv4 or IPv6 address	Setting of the static IP address of Primary DNS server.
SecondaryDns	Set Inq	IPv4 or IPv6 address	Setting of the static IP address of Secondary DNS server.
Subnetmask	Set Inq	IPv4 address (Default: **255.255.255.0**)	Setting of the IPv4 subnet mask.
UpnpDescriptionPort	Set Inq	1024 to **52323** to 65534	Setting of the port number to answer to the Device Description. * Reserved port cannot be used and overlapped with other setting ports. Refer to the item “RESERVED PORT” of CGI Command Setting Values.
UpnpSsdpTtl	Set Inq	1 to **4** to 255	Setting of the TTL value for Advertisement sent by the camera.

qos.cgi

Setting (Set): command/qos.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=qos

Parameter	Set Inq	Value	Description
V4MangleDefaultValue	Set Inq	**0** to 63	Setting of IPv4 DSCP initial value
V4MangleFunc	Set Inq	**on**, off	On/Off setting of IPv4 QoS function

Parameter	Set Inq	Value	Description
V4MangleRule	Set Inq	[Value1] **0** to 9 [Value2] IPv4 address [Value3] **0** to 32 [Value4] **tcp**, udp, icmp, all [Value5] **0** to 65535 [Value6] **0** to 63	Setting of IPv4 DSCP setting table. Up to 10 rules can be set. V4MangleRule=Value11,Value21,Value31, Value41,Value51,Value61,Value12,Value22, Value32,Value42,Value52,Value62[,..., Value110,Value210,Value310,Value410, Value510,Value610] [Value1] Setting of rule number Smaller value means higher priorities [Value2] Setting of destination address QoS supports [Value3] Setting of subnet mask value QoS supports (bit number from the left side of network address) [Value4] Setting of protocol QoS supports [Value5] Setting of port number QoS supports Enabled when Value is TCP, UDP, or ALL. When set to 0, all the Port number is supported by QoS. [Value6] Setting of DSCP field of IP header
V6MangleDefaultValue	Set Inq	**0** to 63	Setting of IPv6 DSCP initial value
V6MangleFunc	Set Inq	on, **off**	On/Off setting of IPv6 QoS function

Parameter	Set Inq	Value	Description
V6MangleRule	Set Inq	[Value1] **0** to 9 [Value2] IPv6 address [Value3] **0** to 128 [Value4] **tcp**, udp, icmp, all [Value5] **0** to 65535 [Value6] **0** to 63	Setting of IPv6 DSCP setting table. Up to 10 rules can be set. V6MangleRule=Value11,Value21,Value31, Value41,Value51,Value61,Value12,Value22, Value32,Value42,Value52,Value62[,..., Value110,Value210,Value310,Value410, Value510,Value610]) [Value1] Setting of rule number Smaller number means higher priorities [Value2] Setting of destination network address QoS supports [Value3] Setting of subnet mask value QoS supports (bit number from the left side of network address) [Value4] Setting of protocol QoS supports [Value5] Setting of port number QoS supports Enabled when Value is TCP, UDP, or ALL When set to 0, all the Port number is supported by QoS. [Value6] Setting of DSCP field of IP header

auth.cgi

Setting (Set): command/auth.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=auth

<n> of the parameter tail is the number between 1 to 10. Corresponds the exception 1 to 10 of the Referer check which can be registered to the camera.

Parameter	Set Inq	Value	Description
BruteForceAttackCount	Set Inq	3 to **8** to 100	Setting of number of authentication failure to judge as brute-force attack.
BruteForceAttackProtection	Set Inq	**on**, off	On/Off setting of brute-force attack protection function.
BruteForceAttackReleaseMode	Set Inq	always, **timer**	Setting of condition to release brute-force attack judgment. always : Does not release after judging as attack timer : After the judgment as attack, wait for the time period set on BruteForceAttackReleaseTimer, then release
BruteForceAttackReleaseTimer	Set Inq	30 to **60** to 86400	Setting of time period to release judgment as attacker, when BruteForceAttackReleaseMode is set to “timer”. (Unit: second)
RcExceptionHostname<n>	Set Inq	0 to 63 characters	Setting of exception host name or IP address which will be excluded from Referer check to register as number set in <n>.

Parameter	Set Inq	Value	Description
RcExceptionNum	Inq	10	Returns the maximum number of registrable hosts that are not targeted for the Referrer check.
RcExceptionPort<n>	Set Inq	0 to **80** to 65535	Setting of exception port number which will be excluded from Referer check to register as number set in <n>.
RefererCheck	Set Inq	**on**, off	Setting of Referer check function on or off.

dot1x.cgi

Setting (Set): command/dot1x.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=dot1x

<n> of the parameter tail is the number between 1 to 4. Corresponds the CA certificates 1 to 4 which can be registered to the camera.

Parameter	Set Inq	Value	Description
CACertExtendedKeyUsage<n>	Inq	0 to 128 characters	Returns the extended key usage of IEEE 802.1X CA certificates.
CACertInstalled<n>	Inq	0, 1	Returns the status of each IEEE 802.1X CA certificates. 0 : Without certificates 1 : With certificates
CACertIssuerDn<n>	Inq	0 to 128 characters	Returns the issuer distinguished name of IEEE 802.1X CA certificates.
CACertSubjectDn<n>	Inq	0 to 128 characters	Returns the subject distinguished name of the IEEE 802.1X CA certificates.
CACertValidity<n>	Inq	0 to 128 characters	Returns the effective period of IEEE 802.1X CA certificates.
ClientCertAvailability	Inq	0, 1	Shows the IEEE 802.1X client certificates status. 0 : Certificates are enabled 1 : Certificates are disabled
ClientCertExtendedKeyUsage	Inq	0 to 128 characters	Returns the extended key usage of specified IEEE 802.1X client certificates.
ClientCertInstalled	Inq	0, 1	Returns the IEEE 802.1X client certificates status. 0 : Without certificates 1 : With certificates
ClientCertIssuerDn	Inq	0 to 128 characters	Returns the issuer distinguished name of IEEE 802.1X client certificates. If 802.1X client certificates is in PKCS#12 format and secret key password is not set correctly, then it returns "<Put correct private key password>".
ClientCertSubjectDn	Inq	0 to 128 characters	Returns the subject distinguished name of IEEE 802.1X client certificates. If 802.1X client certificates is in PKCS#12 format and secret key password is not set correctly, then it returns "<Put correct private key password>".

Parameter	Set Inq	Value	Description
ClientCertValidity	Inq	0 to 128 characters	Returns the effective period of IEEE 802.1X client certificates. If 802.1X client certificates is in PKCS#12 format and secret key password is not set correctly, then it returns "<Put correct private key password>".
Dot1xCACertNum	Inq	4	Returns the maximum number of IEEE 802.1X CA certificates to register on the cameras.
Dot1XEapMethod	Set Inq	**tls**, peap	Setting of the authentication method of IEEE 802.1X. tls : (By this method, the supplicant and the server authenticate each other using a certificate. This enables secure port authentication.) peap : (By this method, an EAP password is used for the supplicant authentication and a certificate is used for server authentication.)
Dot1XIdentity	Set Inq	0 to 256 characters	Setting of username to access IEEE 802.1X authentication server. The 256 and less alphanumerical characters can be set.
Dot1XPassword	Set	0 to 50 characters	Setting of password to access IEEE 802.1X authentication server. The 50 and less alphanumerical characters can be set.
Dot1XPasswordUsed	Inq	0, 1	Returns whether the password to access IEEE 802.1X authentication server is set or not. 0 : Not set 1 : Already set
Dot1XPrivPassword	Set	0 to 50 characters	Sets the password to the Private Key of the IEEE 802.1X client certificate. The 50 and less alphanumerical characters can be set.
Dot1XPrivPasswordUsed	Inq	0, 1	Returns whether the password of the IEEE 802.1X client certificate is set or not. 0 : Not set 1 : Already set
Dot1XWiredFunc	Set Inq	on, **off**	Sets whether to enable or disable the IEEE 802.1X authentication function. on : Enable function off : Disable function

dot1x-cert.cgi

Setting (Set): command/dot1x-cert.cgi?<*Parameter*>=<*Value*>

Parameter	Set Inq	Value	Description
Dot1xDeleteCert	Set	dot1xclientcert, dot1xcacert1, dot1xcacert2, dot1xcacert3, dot1xcacert4	Deletes the specified IEEE 802.1X client certificates or CA certificates. dot1xclientcert : IEEE 802.1X client certificate dot1xcacert1 : IEEE 802.1X CA certificate1 dot1xcacert2 : IEEE 802.1X CA certficate2 dot1xcacert3 : IEEE 802.1X CA certificate3 dot1xcacert4 : IEEE 802.1X CA certificate4

filtering.cgi

Setting (Set): command/filtering.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=filtering

<n> of the parameter tail is the number between 1 to3. Corresponds to the IPv4 filter 1 to 3 or IPv6 filter 1 to 3 which can be registered to the camera.

Note

If you set V4FilterDefaultRule or V6FilterDefaultRule to reject with setting IP address to grant access unregistered, even the Admin cannot access with CGI command. In this case, revert to the default status using Reset switch on the Camera.

Parameter	Set Inq	Value	Description
DosDefenseRuleNum	Inq	3	Returns possible numbers for DoS Protection setting.
FragmentDeny	Set Inq	on, **off**	Setting whether the Fragment packet is denial or not. on : Deny Fragment packet off : Does not deny Fragment packet
V4DosDefenseBurst<n>	Set Inq	**3** to 600	Setting of continuing accesses to judge as being attacked by IPv4 DoS attack protection function.
V4DosDefenseEnable<n>	Set Inq	on, **off**	On/Off Setting of the DoS Protection function of IPv4.
V4DosDefenseExpire<n>	Set Inq	1 to **60** to 86400	Setting of the predetermined time to discard the results judged as an attack with the DoS Protection function of IPv4. (Unit: second)
V4DosDefenseLimit<n>	Set Inq	1 to **5** to 100	Setting of the possible request times per minute after releasing the defense with the DoS Protection function of IPv4.
V4DosDefensePort<n>	Set Inq	0 to **80** to 65535	Setting of the port number to defend against requests with the DoS Protection function of IPv4.

Parameter	Set Inq	Value	Description
V4FilterDefaultRule	Set Inq	**allow**, reject	Setting of the basic policy for IPv4 IP Filter allow : All the other accesses whose settings are not specified by V4FilterRule parameter will be allowed. reject : All the other accesses whose settings are not specified by V4FilterRule parameter will be denied.
V4FilterFunc	Set Inq	on, **off**	On/Off setting of IPv4 IP Filter function
V4FilterRule	Set Inq	[Value1] **0** to 9 [Value2] IPv4 address [Value3] **0** to 32 [Value4] **tcp**, udp, icmp, all [Value5] **0** to 65535 [Value6] allow, reject	Setting of IPv4 Filter function rules. Up to 10 rules can be set. V4FilterRule=Value11,Value21,Value31,Value41,Value51,Value61,Value12,Value22,Value32,Value42,Value52,Value62[,...,Value110,Value210,Value310,Value410,Value510,Value610] [Value1] Setting of rule number Smaller value means higher priorities [Value2] Setting of supported network address [Value3] Setting of subnet mask value QoS supports (bit number from the left side of network address) [Value4] Setting of supported protocol tcp : TCP udp : UDP icmp : ICMP In this case, port number (Value5) will be discarded, but it is still necessary. Filter will be applied for all ICMP messages. all : TCP, UDP, ICMP The port number (Value5) designation only works for TCP and UDP. [Value5] Setting of supported port numbers 0 : When set to 0, all the Port numbers are supported. [Value6] Setting of policy allow : Specified accesses to the camera will be allowed. reject : Specified accesses to the camera will be denied.
V4SynFloodBurst	Set Inq	2 to **3** to 60	Setting of continuing numbers of SYN Packet to be judged as attacks by IPv4 SYN Flood attack protection function.
V4SynFloodExpire	Set Inq	10 to **60** to 86400	Setting of the predetermined time to discard the results judged as an attack with the SYN Flood Attack Protection function of IPv4. (Unit: second)
V4SynFloodLimit	Set Inq	1 to **5** to 1000	Setting of the possible access times per minute after releasing the defense with the SYN Flood Attack Protection function of IPv4.

Parameter	Set Inq	Value	Description
V4SynFloodProtection	Set Inq	on, **off**	On/Off Setting of the SYN Flood Attack Protection function of IPv4.
V6DosDefenseBurst<n>	Set Inq	2 to **3** to 600	Setting of continuing accesses to judge as being attacked by IPv6 DoS Attack Protection function.
V6DosDefenseEnable<n>	Set Inq	on, **off**	On/Off Setting of the DoS Attack Protection function of IPv6.
V6DosDefenseExpire<n>	Set Inq	1 to **60** to 86400	Setting of the predetermined time to discard the results judged as an attack with the DoS Attack Protection function of IPv6. (Unit: second)
V6DosDefenseLimit<n>	Set Inq	1 to **5** to 100	Setting of the number of times to defend against requests with the DoS Attack Protection function of IPv6.
V6DosDefensePort<n>	Set Inq	0 to **80** to 65535	Setting of the port number to defend against requests with the DoS Attack Protection function of IPv6.
V6FilterDefaultRule	Set Inq	**allow**, reject	Setting of the basic policy for IPv6 IP Filter allow : All the other accesses whose settings are not specified by V6FilterRule parameter will be allowed. reject : All the other accesses whose settings are not specified by V6FilterRule parameter will be denied.
V6FilterFunc	Set Inq	on, **off**	On/Off setting of IPv6 IP Filter function

Parameter	Set Inq	Value	Description
V6FilterRule	Set Inq	[Value1] **0** to 9 [Value2] IPv6 address [Value3] **0** to 128 [Value4] **tcp**, udp, icmp, all [Value5] **0** to 65535 [Value6] **allow**, reject	Setting of IPv6 Filter function rules. Up to 10 rules can be set. V6FilterRule=Value11,Value21,Value31,Value41,Value51,Value61,Value12,Value22,Value32,Value42,Value52,Value62[,...,Value110,Value210,Value310,Value410,Value510,Value610] [Value1] Setting of rule number Smaller value means higher priorities [Value2] Setting of supported network address [Value3] Setting of subnet mask value QoS supports (bit number from the left side of network address) [Value4] Setting of supported protocol tcp : TCP udp : UDP icmp : ICMP In this case, port number (Value5) will be discarded, but it is still necessary. Filter will be applied for all ICMP messages. all : TCP, UDP, ICMP The port number (Value5) designation only works for TCP and UDP. [Value5] Setting of supported port numbers When set to 0, all the Port numbers are supported. [Value6] Setting of policy allow : Specified accesses to the camera will be allowed. reject : Specified accesses to the camera will be denied.
V6SynFloodBurst	Set Inq	2 to **3** to 60	Setting of continuing numbers of SYN Packet to be judged as attacks by IPv6 SYN Flood Attack Protection function.
V6SynFloodExpire	Set Inq	10 to **60** to 86400	Setting of the predetermined time to discard the results judged as an attack with the SYN Flood Attack Protection function of IPv6 (unit: second)
V6SynFloodLimit	Set Inq	1 to **5** to 1000	Setting of the possible access times per minute after releasing the defense with the SYN Flood Attack Protection function of IPv6.
V6SynFloodProtection	Set Inq	on, **off**	On/Off setting of the SYN Flood Attack Protection function of IPv6.

iplimit.cgi

Setting (Set): command/iplimit.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=iplimit

<n> of the parameter tail is the number between 1 to 10. Corresponds to the IP Limit 1 to 10 which can be registered to the camera.
The admin can access from even IP address whose access is denied by IP Limit.

Parameter	Set Inq	Value	Description
IpLimit<n>	Set Inq	[Value1] IPv4 or IPv6 address [Value2] **8** to 128 [Value3] **allow**, deny	Setting that to be registered on numbers specified in <n>. IpLimit<n>=Value1,Value2,Value3 [Value1] Setting of IP address [Value2] Setting of subnet mask The numbers from 8 to 32 can be used for IPv4, and the ones from 8 to 128 for IPv6. [Value3] Policy Setting of access policy allow : Client with IP address specified in Value1 and Value2 will be allowed to access to the cameras deny : Client with IP address specified in Value1 and Value2 will be denied access to the cameras
IpLimitFunc	Set Inq	on, **off**	On/Off setting of IP Lmiit function.
IpLimitNum	Inq	10	IP Limit function returns the maximum numbers of IP addresses that can be registered.
IpLimitPolicy	Set Inq	allow, **deny**	Setting of IP Limit function policy. allow : All the other accesses whose settings are not specified by IpLimit<n> parameter will be allowed. deny : All the other accesses whose settings are not specified by IpLimit<n> parameter will be denied.

ssl.cgi (BRC-X400, SRG-X400/X120)

Setting (Set): command/ssl.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=ssl

Parameter	Set Inq	Value	Description
HttpsPort	Set Inq	**443**, 1024 to 65534	Setting of the port number used in HTTPS protocol.
SSLCertAvailability	Inq	1, 0	Returns the SSL certificates status. 1 : Certificates are enabled 0 : Certificates are disabled
SSLCertExtendedKeyUsage	Inq	0 to 128 characters	Returns the extended key usage of the SSL server certificates. Returns “<Put correct private key password>” if the private key password is not set correctly.

Parameter	Set Inq	Value	Description
SSLCertInstalled	Inq	1, 0	Returns the SSL server certificates status. 1 : With certificates 0 : Without certificates
SSLCertIssuerDn	Inq	0 to 128 characters	Returns the issuer distinguished name of the SSL server certificates. Returns "<Put correct private key password>" if the private key password is not set correctly.
SSLCertMode	Set Inq	auto, **user**	Setting of server certificates mode to be used in HTTPS function. auto : Uses the self-signed certificates user : Uses imported external certificates
SSLCertSubjectDn	Inq	0 to 128 characters	Returns the subject distinguished name of the SSL server certificates.
SSLCertValidity	Inq	0 to 128 characters	Returns the validity period of the SSL server certificates. Returns "<Put correct private key password>" if the private key password is not set correctly.
SSLMode	Set Inq	**Plain**, SSL, Plain-SSL, SSL-Plain	Setting of the HTTPS function mode. Plain : works on HTTP only, disabled on HTTPS. SSL : works on HTTPS only, disabled on HTTP. Plain-SSL : works on both HTTP and HTTPS. SSL-Plain : works on both HTTPS and HTTP. Works on HTTPS if it is not specified on access.
SSLPrivPassword	Set	0 to 50 characters	Setting of the server certificates private key. 50 or less alphanumeric characters can be set.
SSLPrivPasswordUsed	Inq	0, 1	Returns the status of server certificates private key to be used in HTTPS function. 0 : Not set 1 : Already set

ssl-cert.cgi (BRC-X400, SRG-X400/X120)

Setting (Set): command/ssl-cert.cgi?<*Parameter*>=<*Value*>

Parameter	Set Inq	Value	Description
DeleteCert	Set	sslcert	Deletes certificates stored in the cameras.
GenerateCert	Set	selfsignedcert	Generates a self-signed certificate for SSL.

license.cgi

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

Parameter	Set Inq	Value	Description
DeviceUniqueId (SRG-X400/X402/X120/201M2/ HD1M2)	Inq	-	Returns the device unique ID.

Parameter	Set Inq	Value	Description
QfhdLicenseStatus (SRG-X400/X402/X120/201M2/ HD1M2)	Inq	notinstalled,insalled	Returns the license status of the 4K option. notinstalled : Not installed installed : Already installed
QfhdLicenseSupport	Inq	0 (BRC-X400/X401) 1 (SRG-X400/X402/X120/ 201M2/HD1M2)	Returns whether to correspond the license function. 0 : Not corresponds 1 : Corresponds

ndi.cgi

Setting (Set): command/ndi.cgi?<*Parameter*>=<*Value*>
Inquiry (Inq): command/inquiry.cgi?inq=ndi

Parameter	Set Inq	Value	Description
NdiCameraName	Inq	0 to 8 characters	Returns the camera name.
NdiRegistKey	Set Inq	0 to 32 characters	Used for NDI connection. Do not use directly.

ndicontrol.cgi

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

Parameter	Set Inq	Value	Description
NdiInsertIFrame1	Set	on	Insert the IPicture to the video bitstream of video output1.
NdiInsertIFrame2	Set	on	Insert the IPicture to the video bitstream of video output2.
NdiInsertIFrame3	Set	on	Insert the IPicture to the video bitstream of video output3.

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 On demand, specifies the UDP port number for the camera to listen on.

Parameter	Set Inq	Value	Description
FreeDDestinationIP	Set Inq	IPv4 address	When Transfer Mode is always, specifies the client IP address to receive the metadata stream.

Supported Codecs

The following codecs are supported with the RTSP streaming function of the cameras.

Video	Audio
H.264 H.265	AAC LC

RTSP Request URL

RTSP request URLs of the cameras to achieve live streams are as follows.

Request URL	Description
rtsp://<*camera_address*>/video1	Requests video* bitstreams from codecs corresponding to the CGI parameter "ImageCodec1"** and its related parameters. * Audio bitstream can be transmitted together with this video stream depending on the situation. See "Stream Acquisition" (page 57). ** ImageCodec1 corresponds to Codec 1 setting of Image 1 in the administrator setting menu of the cameras.
rtsp://<*camera_address*>/video2	Requests video* bitstreams from codecs corresponding to the CGI parameter "ImageCodec2"** and its related parameters. * Audio bitstream can be transmitted together with this video stream depending on the situation. See "Stream Acquisition" (page 57). ** ImageCodec2 corresponds to Codec 2 setting of Image 2 in the administrator setting menu of the cameras.
rtsp://<*camera_address*>/video3	Requests video* bitstreams from codecs corresponding to the CGI parameter "ImageCodec3"** and its related CGI parameters. * Audio bitstream can be transmitted together with this video stream depending on the situation. See "Stream Acquisition" (page 57). ** ImageCodec3 corresponds to Codec 3 setting of Image 3 in the administrator setting menu of the cameras.
rtsp://<*camera_address*>/audio	Requests audio bitstreams from codecs corresponding to the CGI parametr "AudInCodec"* and its related parameters. * AudInCodec corresponds to Audio codec setting in the administrator setting menu of the cameras.

RTSP port of the camera (RTSP server) is 554 by factory default. The port can be changed by using the "camera.cgi" CGI command with the "RTSPPort" CGI parameter.

RTSP Methods

Supported Methods

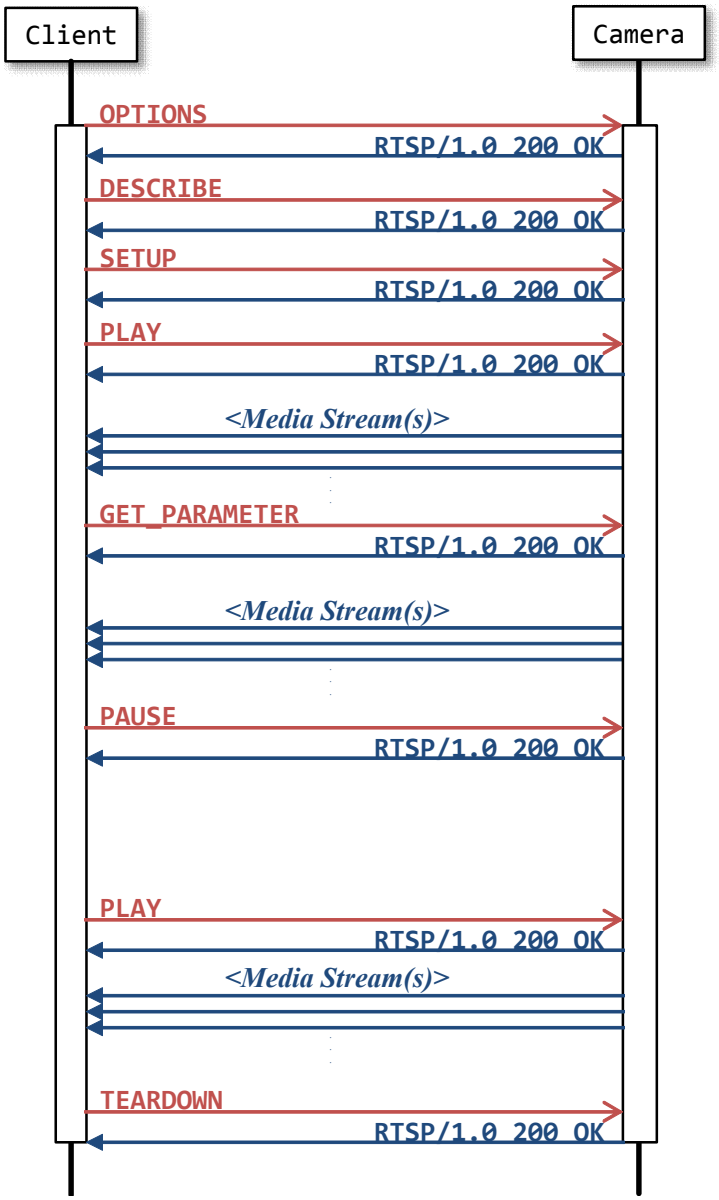
The cameras support the following RTSP methods.

Supported Method
OPTIONS
DESCRIBE
SETUP
PLAY
TEARDOWN
GET_PARAMETER
SET_PARAMETER
PAUSE

For details about the RTSP methods listed above, refer to IETF RFC 2326.

Typical Sequence of RTSP Communication

Overview of a typical RTSP communication sequence between the camera (RTSP server) and a client is as shown below.



The RTSP “GET_PARAMETER” method in the sequence above is used to keep the RTSP streaming alive. You can pause the streaming by using PAUSE command after starting live streaming by using PLAY command. To resume, send PLAY command again. The cameras resume video streaming at the current point by forcing IDR frame insertion at the point of reception of PLAY resume request. Videos before the pause and after the resume are not in sequence.
For details on this topic, refer to “Stream Acquisition” (page 57).

Stream Acquisition

<Transfer Protocols>

The RTSP function of the cameras supports the following transfer protocols to stream video and/or audio from the camera to client(s).

a) TCP bitstream
b) UDP unicast bitstream
c) UDP multicast bitstream

Details of each case above are described in the following sections.

<Number of Media Streams>

The cameras support multiple codec simultaneously as mentioned in the previous “RTSP Request URL” (page 54). The number of media streams in an RTSP session of the camera is up to 5.

<RTSP Session Timeout>

Time-out period of RTSP session on the cameras can be set with value in "RTSPTimeout." Default setting is 60 (unit: second). When the value is set to 0, RTSP session will not time-out.

For more information to change the setting of Time-out period of RTSP from Admin menu via Web browser, refer to "Streaming" tab in "Streaming" menu in Operating Instructions.

The RTSP session timeout value of the camera is indicated to a client as a “timeout” parameter (in seconds) in RTSP response to the “SETUP” request. However, when the timeout value is set to 0, the timeout parameter does not exist in the response.

To keep an RTSP stream alive, examples in this document use the RTSP “GET_PARAMETER” method before the camera automatically closes the RTSP session in accordance with the timeout pamameter.

<Closing RTSP Session>

To close UDP port linked to RTSP session and this session safely, use RTSP method "TEARDOWN."

Video Stream Acquisition

TCP Bitstream (Video)

The following diagram and captured packets show an example of acquiring a video bitstream from the camera over TCP in a situation where AudioIn is off and a client requests a video stream.

```
OPTIONS rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 1\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 1\r\n
Public: DESCRIBE, SETUP, TEARDOWN, PLAY, OPTIONS, SET_PARAMETER, GET_PARAMETER\r\n
\r\n

DESCRIBE rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 2\r\n
User-Agent <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 2\r\n
Content-Length: <Length>\r\n
Content-Type: application/sdp\r\n
Content-Base: rtsp://<camera_address>/video1/\r\n
\r\n
v=<ProtocolVersion>\r\n
o=- <SessionIdForOrigin> 1 IN IP4 <camera_address>\r\n
s=<SessionName>\r\n
t=0 0\r\n
a=range:npt=now-\r\n
c=IN IP4 <ConnectionAddress>\r\n
m=<MediaNameAndTransportAddress>\r\n
a=rtpmap:<PayloadType> <EncodingName>/<ClockRate>\r\n
a=control:trackID=1\r\n
a=framerate:<FrameRate>\r\n
a=fmtp:<Format> <FormatSpecificParameters>\r\n

SETUP rtsp://<camera_address>/video1/trackID=1 RTSP/1.0\r\n
CSeq: 3\r\n
Transport: RTP/AVP/TCP;unicast;interleaved=0-1\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 3\r\n
```

```
Session: <SessionId>[;timeout=<SessionTimeout>]\r\n
Cache-Control: must-revalidate\r\n
Transport: RTP/AVP/TCP;interleaved=0-1;ssrc=<SSRC>\r\n
\r\n

PLAY rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 4\r\n
Session: <SessionId>\r\n
Range: npt=0.000-\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 4\r\n
Session: <SessionId>\r\n
RTP-Info: url=trackID=1;seq=<SequenceNumber>;rtptime=…\r\n
\r\n

<Video stream in RTP payload over TCP>

GET_PARAMETER rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 5\r\n
Session: <SessionId>\r\n
User-Agent: <UserAgent>\r\n
\r\n

<Video stream in RTP payload over TCP>

TEARDOWN rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 6\r\n
Session: <SessionId>\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 6\r\n
Session: <SessionId>\r\n
\r\n
```

UDP Unicast Bitstream (Video)

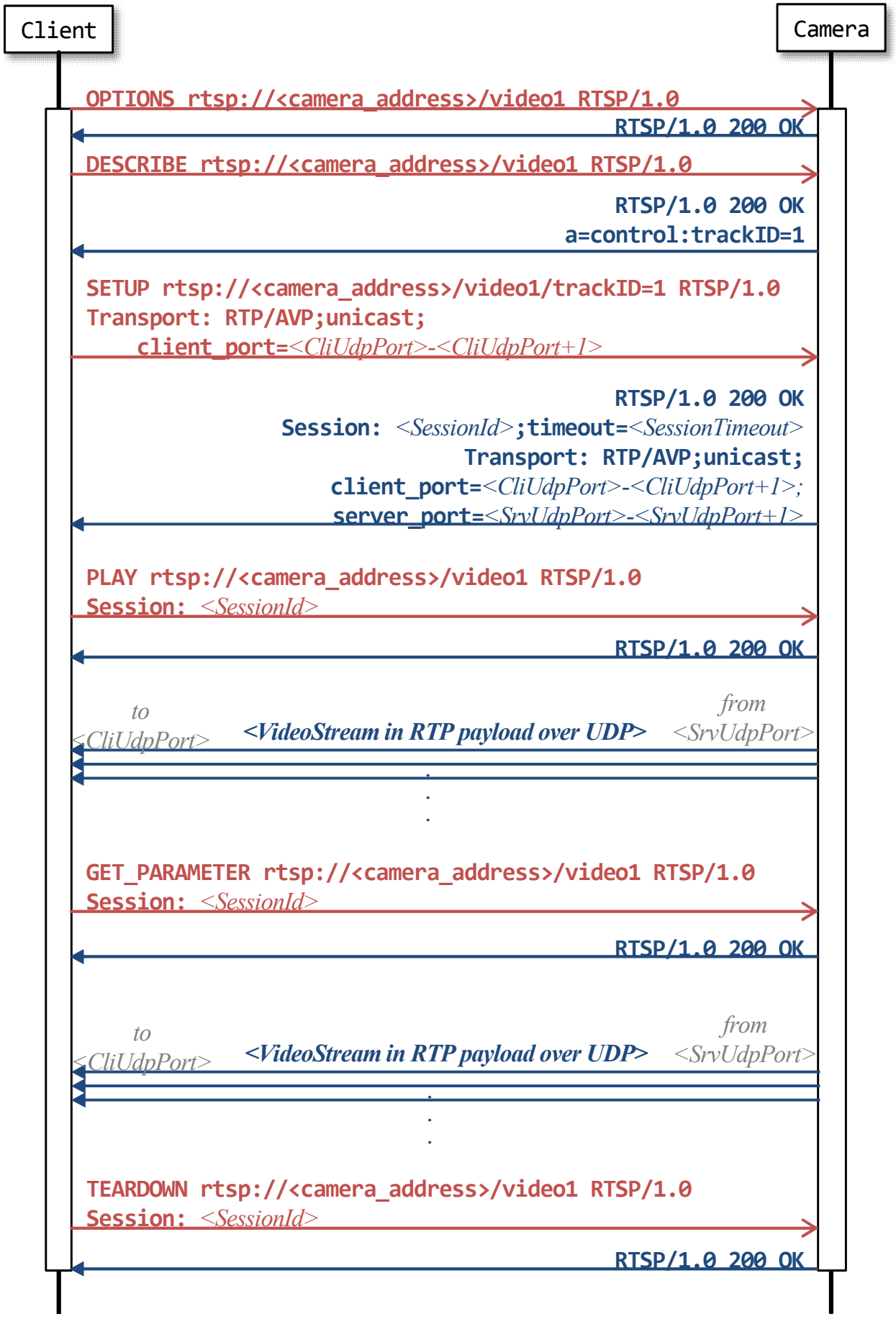
The following diagram (page 62) and captured packets (page 63 to 64) show an example of acquiring a video bitstream from the camera over UDP unicast in a situation where AudioIn is off and a client requests a video stream.

As for the UDP port numbers to be used for sending RTP/RTCP packets, “Client_port” parameter value which is added to RTSP SETUP request will be used for the client port. As for the server port (port number at the cameras side), CGI parameters shown in the table below will be applied.
For more information to set these values from Admin menu via Web browser, refer to "Unicast streaming" of "Streaming" tab in "Streaming" menu in Operating Instructions.

CGI Parameter	Corresponding to
RTSPUcVideoPort1	UDP unicast ports for “ImageCodec1” live stream.
RTSPUcVideoPort2	UDP unicast ports for “ImageCodec2” live stream.
RTSPUcVideoPort3	UDP unicast ports for “ImageCodec3” live stream.
RTSPUcAudioPort	UDP unicast ports for “AudInCodec” live stream.

If the UDP port number specified in the parameter above is already used, the cameras assign the number near the number specified by the parameter. For the software implementation at the client side, implement to accept RTP/RTCP data using port number described in “server_port” which is included in SETUP response (Do not refer to the CGI parameter setting above).

UDP Unicast Bitstream (Video) Diagram



UDP Unicast Bitstream (Video) Packet Capture

```
OPTIONS rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 1\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 1\r\n
Public: DESCRIBE, SETUP, TEARDOWN, PLAY, OPTIONS, SET_PARAMETER, GET_PARAMETER\r\n
\r\n

DESCRIBE rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 2\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 2\r\n
Content-Length: <Length>\r\n
Content-Type: application/sdp\r\n
Content-Base: rtsp://<Address>/video1/\r\n
\r\n
v=0\r\n
o=- <SessionIdForOrigin> 1 IN IP4 <camera_address>\r\n
s=<SessionName>\r\n
t=0 0\r\n
a=range:npt=now-\r\n
c=IN IP4 <ConnectionAddress>\r\n
m=<MediaNameAndTransportAddress>\r\n
a=rtpmap:<PayloadType> <EncodingName>/<ClockRate>\r\n
a=control:trackID=1\r\n
a=framerate:<FrameRate>\r\n
a=fmtp:<Format> <FormatSpecificParameters>\r\n

SETUP rtsp://<camera_address>/video1/trackID=1 RTSP/1.0\r\n
CSeq: 3\r\n
Transport: RTP/AVP;unicast;client_port=<CliUdpPort>-<CliUdpPort+1>\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 3\r\n
Session: <SessionId>[;timeout=<SessionTimeout>]\r\n
Cache-Control: must-revalidate\r\n
Transport: RTP/AVP;unicast;client_port=<CliUdpPort>-<CliUdpPort+1>;source=<Sou
rceAddress>;server_port=<SrvUdpPort>-<SrvUdpPort+1>;ssrc=<SSRC>\r\n
\r\n
```

```
PLAY rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 4\r\n
Session: <SessionId>\r\n
Range: npt=0.000-\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 4\r\n
Session: <SessionId>\r\n
RTP-Info: url=trackID=1;seq=<SequenceNumber>;rtptime=…\r\n
\r\n

<Video stream in RTP payload over UDP unicast>

GET_PARAMETER rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 5\r\n
Session: <SessionId>\r\n
User-Agent: <UserAgent>\r\n
\r\n

<Video stream in RTP payload over UDP unicast>

TEARDOWN rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 6\r\n
Session: <SessionId>\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 6\r\n
Session: <SessionId>\r\n
\r\n
```

UDP Multicast Bitstream (Video)

The following diagram (page 66) and captured packets (page 68 to 69) show an example of acquiring a video bitstream from the camera over UDP multicast in a situation where AudioIn is off and a client requests a video stream.

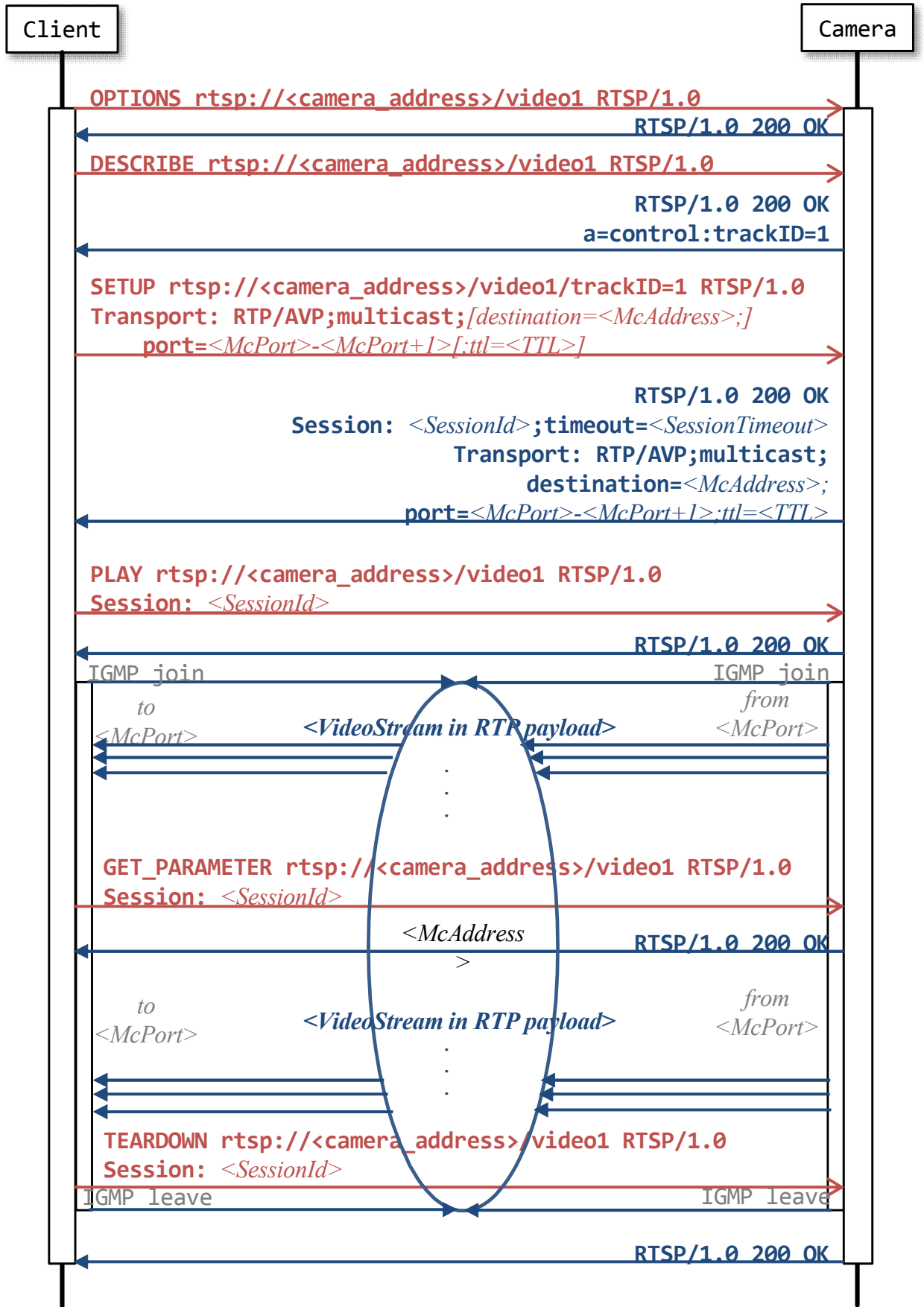
CGI parameters related to UDP multicast bitstream acquisition are listed in the table below.
For more information to change these settings from Admin menu via Web browser, refer to "Multicast streaming" of "Streaming" tab in "Streaming" menu in Operating Instructions.

CGI Parameter	Corresponding to
RTSPMcAddress	IPv4 Muticast Address By specifying “destination” parameter in SETUP request for RTSP, you can also specify the multicast address used for streaming of the session.
RTSPMcVideoPort1	Multicast port for “ImageCodec1” live streaming
RTSPMcVideoPort2	Multicast port for “ImageCodec2” live streaming
RTSPMcVideoPort3	Multicast port for “ImageCodec3” live streaming
RTSPMcAudioPort	Multicast port for “AudInCodec” live streaming
McTtl	Specifies the TTL (time to live) value used for multicast streaming By specifying “ttl” parameter in RTSP SETUP request, you can also specify the TTL value used for streaming of the session.

Note

Even if you specify the port number with “port” parameter for RTSP SETUP request, that value will not be reflected on the cameras side. Instead, the streaming port number will be decided by referring to CGI parameter settings listed in the table above.

UDP Multicast Bitstream (Video) Diagram



Note

To acquire video and/or audio bitstream over a UDP multicast, the cameras require you to enable the multicast streaming function by activating the CGI parameter “Multicast.”
For more information to enable the multi streaming function from Admin menu via Web browser, refer to "Multicast streaming" of "Streaming" tab in "Streaming" menu in Operating Instructions.

Audio Stream Acquisition

The following captured packets show examples of audio bitstream acquisition from the camera over TCP in a situation where AudioIn is on and a client requests an audio stream.
Detailed explanations about RTSP audio streaming over UDP unicast and UDP multicast are left out — these are explained through cases of video streaming described in “UDP Unicast Bitstream (Video)” (page 61) and “UDP Multicast Bitstream (Video)” (page 65).

UDP Multicast Bitstream (Video) Packet Capture

```
OPTIONS rtsp://<camera_address>/audio RTSP/1.0\r\n
CSeq: 1\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 1\r\n
Public: DESCRIBE, SETUP, TEARDOWN, PLAY, OPTIONS, SET_PARAMETER, GET_PARAMETER\r\n
\r\n

DESCRIBE rtsp://<camera_address>/audio RTSP/1.0\r\n
CSeq: 2\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 2\r\n
Content-Length: <Length>\r\n
Content-Type: application/sdp\r\n
Content-Base: rtsp://<camera_address>/audio/\r\n
\r\n

v=<ProtocolVersion>\r\n
o=- <SessionIdForOrigin> 1 IN IP4 <camera_address>\r\n
s=<SessionName>\r\n
t=0 0\r\n
a=range:npt=now-\r\n
c=IN IP4 <ConnectionAddress>\r\n
m=<MediaNameAndTransportAddress>\r\n
a=rtpmap:<PayloadType> <EncodingName>/<ClockRate>[/<EncodingParameters>]\r\n
a=control:trackID=2\r\n

SETUP rtsp://<camera_address>/audio/trackID=2 RTSP/1.0\r\n
CSeq: 3\r\n
Transport: RTP/AVP/TCP;unicast;interleaved=0-1\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 3\r\n
Session: <SessionId>[;timeout=<SessionTimeout>]\r\n
Cache-Control: must-revalidate\r\n
Transport: RTP/AVP/TCP;interleaved=0-1;ssrc=<SSRC>\r\n
```

```
\r\n

PLAY rtsp://<camera_address>/audio RTSP/1.0\r\n
CSeq: 4\r\n
Session: <SessionId>\r\n
Range: npt=0.000-\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 4\r\n
Session: <SessionId>\r\n
RTP-Info: url=trackID=2;seq=<SequenceNumber>;rtptime=…\r\n
\r\n

<Audio stream in RTP payload over TCP>

GET_PARAMETER rtsp://<camera_address>/audio RTSP/1.0\r\n
CSeq: 5\r\n
Session: <SessionId>\r\n
User-Agent: <UserAgent>\r\n
\r\n

<Audio stream in RTP payload over TCP>

TEARDOWN rtsp://<camera_address>/audio RTSP/1.0\r\n
CSeq: 6\r\n
Session: <SessionId>\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 6\r\n
Session: <SessionId>\r\n
\r\n
```

Acquiring Both Video and Audio Bitstreams

In case AudioIn is on and a client requests a video stream, the camera simultanesously transmits the video stream and an audio stream in an RTSP session. The following captured packets show an example of simultaneous video bitstream and audio bitstream acquisition from the camera.
As you can see in the example, session descriptions in RTSP response to “DESCRIBE” request contains two media descriptions — the first one is for video, the second one is for audio.

```
DESCRIBE rtsp://<camera_address>/video1 RTSP/1.0\r\n
CSeq: 3\r\n
User-Agent: <UserAgent>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 3\r\n
Content-Length: <Length>\r\n
Content-Type: application/sdp\r\n
Content-Base: rtsp://<camera_address>/video1/\r\n
\r\n
v=0\r\n
o=- <SessionIdForOrigin> 1 IN IP4 <camera_address>\r\n
s=<SessionName>\r\n
t=0 0\r\n
a=range:npt=now-\r\n
c=IN IP4 <ConnectionAddress>\r\n

m=video 0 RTP/AVP 105\r\n
a=rtpmap:105 H264/90000\r\n
a=control:trackID=1\r\n
a=framerate:30.0\r\n
a=fmtp:105 packetization-mode=1; profile-level-id=640002a; sprop-parameter-sets=Z2QAKqwsaoHgCJ+XAWiAAAH0gAB1MEI=,aO48sA==\r\n

m=audio 0 RTP/AVP 103\r\n
a=rtpmap:101 mpeg4-generic/48000/2\r\n
a=control:trackID=2\r\n
a=fmtp:103 profile-level-id=2; streamtype=5; mode=AAC-hbr; config=1190; SizeLength=13; IndexLength=3;IndexDeltaLength=3; Profile=1; bitrate=256000;\r\n

SETUP rtsp://<camera_address>/video1/trackID=1 RTSP/1.0\r\n
CSeq: 4\r\n
User-Agent: <UserAgent>\r\n
Transport: RTP/AVP;unicast;client_port=<CliUdpPrt>-<CliUdpPort+1>\r\n
```

```
\r\n

RTSP/1.0 200 OK
Server: <ServerName>\r\n
CSeq: 4\r\n
Session: <SessionId>;timeout=<SessionTimeout>\r\n
Cache-Control: must-revalidate\r\n
Transport: RTP/AVP;unicast;client_port=<CliUdpPrt>-<CliUdpPrt+1>;source=<SrcIpAddress>;server_port=<ServerPort>;ssrc=<SSRC>\r\n

SETUP rtsp://<camera_address>/video1/trackID=2 RTSP/1.0\r\n
CSeq: 5\r\n
User-Agent: <UserAgent>\r\n
Transport: RTP/AVP;unicast;client_port=<CliUdpPrt>-<CliUdpPrt+1>\r\n
Session: <SessionId>\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 5\r\n
Session: <SessionId>;timeout=<SessionTimeout>\r\n
Cache-Control: must-revalidate\r\n
Transport: RTP/AVP;unicast;client_port=<CliUdpPrt>-<CliUdpPrt+1>;source=<SrcIpAddress>;server_port=<ServerPort>;ssrc=<SSRC>\r\n

PLAY rtsp://<camera_address>/video1/ RTSP/1.0\r\n
CSeq: 6\r\n
User-Agent: <UserAgent>\r\n
Session: <SessionId>\r\n
Range: npt=0.000-\r\n
\r\n

RTSP/1.0 200 OK\r\n
Server: <ServerName>\r\n
CSeq: 6\r\n
Session: <SessionId>\r\n
RTP-Info: url=trackID=1;seq=<SeqNoTrackId1>;rtptime=0,url=trackID=2;seq=<SeqNumTrackId2>;rtptime=0\r\n
```

rtpmap Attribute

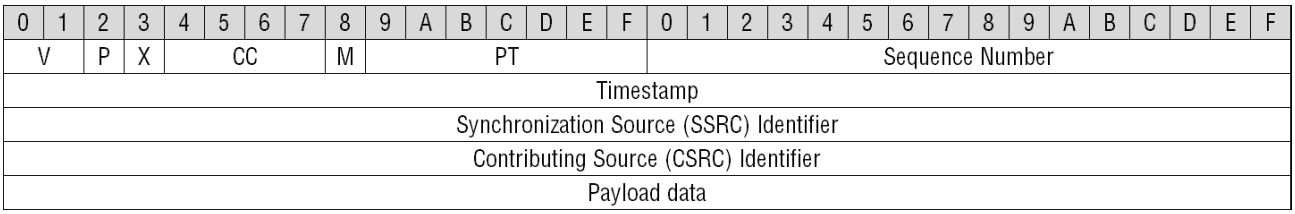
Values of “rtpmap” attributes in RTSP response to “DESCRIBE” request vary depending on the codec of media streams. Here are some examples.

Codec	rtpmap Attribute Value
H.264	a=rtpmap:105 H264/90000\r\n
H.265	a=rtpmap:96 H265/90000\r\n
AAC (128 kbps)	a=rtpmap:102 mpeg4-generic/48000/2\r\n
AAC (256 kbps)	a=rtpmap:103 mpeg4-generic/48000/2\r\n

RTP/RTCP

RTP Header Fields

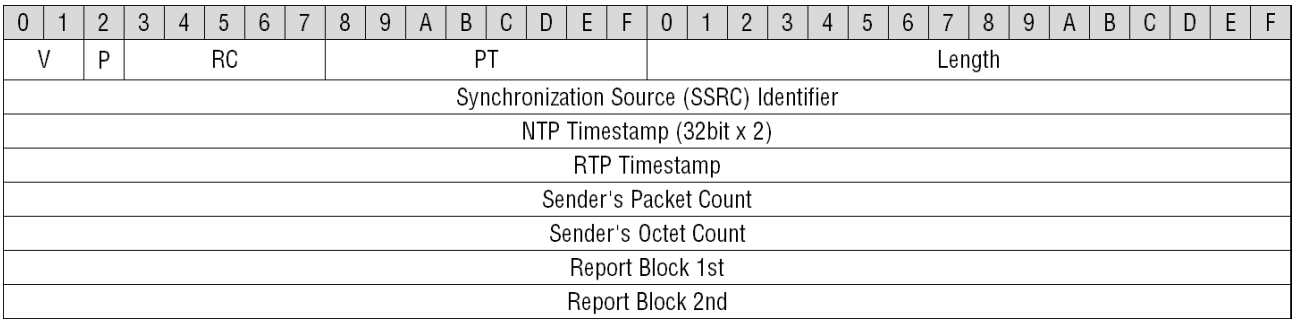
The RTP header has the following format.



Field	Bit Length	Description
Version	2	This field identifies the version of RTP. The version defined by this specification is two (2).
Padding	1	If the padding bit is set, the packet contains one or more additional padding octets at the end which are not part of the payload. The last octet of the padding contains a count of how many padding octets should be ignored.
Extension	1	If the extension bit is set, the fixed header is followed by exactly one header extension.
CSRC Count	4	The CSRC count contains the number of CSRC identifiers that follow the fixed header.
Marker	1	The interpretation of the marker is defined by a profile. It is intended to allow significant events such as frame boundaries to be marked in the packet stream.
Payload Type	7	This field identifies the format of the RTP payload and determines its interpretation by the application.
Sequence Number	16	The sequence number increments by one for each RTP data packet sent, and may be used by the receiver to detect packet loss and to restore packet sequence.
Timestamp	32	The timestamp reflects the sampling instant of the first octet in the RTP data packet. The sampling instant must be derived from a clock that increments monotonically and linearly in time to allow synchronization and jitter calculations.
Synchronization Source (SSRC) Identifier	32	The SSRC field identifies the synchronization source. This identifier is chosen randomly, with the intent that no two synchronization sources within the same RTP session will have the same SSRC identifier.
Contributing Source (CSRC) Identifier	32	The CSRC list identifies the contributing sources for the payload contained in this packet. The number of identifiers is given by the CC field.

SR: Sender Report RTCP Packet

The RTCP Sender report's header has the following format.



Field	Bit Length	Description
Version	2	Identifies the version of RTP, which is the same in RTCP packets as in RTP data packets. The version defined by this specification is two (2).
Padding	1	If the padding bit is set, the packet contains one or more additional padding octets at the end which are not part of the payload. The last octet of the padding contains a count of how many padding octets should be ignored.
Reception Report Count	5	The number of reception report blocks contained in this packet. A value of zero is valid.
Packet Type	8	Contains the constant 200 to identify this as an RTCP SR packet.
Length	16	The length of this RTCP packet in 32-bit words minus one, including the header and any padding.
Synchronization Source (SSRC) Identifier	32	The synchronization source identifier for the originator of this SR packet.
NTP Timestamp	64	Indicates the wallclock time when this report was sent so that it may be used in combination with timestamps returned in reception reports from other receivers to measure round-trip propagation to those receivers.
RTP Timestamp	32	Corresponds to the same time as the NTP timestamp (above), but in the same units and with the same random offset as the RTP timestamps in data packets.
Sender's Packet Count	32	The total number of RTP data packets transmitted by the sender since starting transmission up until the time this SR packet was generated.
Sender's Ocket Count	32	The total number of payload octets (i.e., not including header or padding) transmitted in RTP data packets by the sender since starting transmission up until the time this SR packet was generated. The count is reset if the sender changes its SSRC identifier.

WebSocket Based RTSP Streaming

This device supports RTSP streaming function with WebSocket technology, to enable video streaming using Web browsers.

HTTP URL for WebSocket Based RTSP

For connection by WebSocket, access the camera with method and Syntax below. For WebSocket based RTSP function, authentication at HTTP level is not performed.

Method

GET

Syntax

```
http://<camera_address>/websocket_rtsp
```

Example Sequence

Shown below is sample of streaming acquisition by using WebSocket.

```
GET /websocket_rtsp HTTP/1.1\r\n
Host: <Client Address>\r\n
Connection: Upgrade\r\n
User-Agent: <UserAgent>\r\n
Upgrade: websocket\r\n
Origin: http://<Camera Address>\r\n
Sec-WebSocket-Version: 13\r\n
Accept-Encoding: gzip, deflate\r\n
Accept-Language: ja,en-US;q=0.9,en;q=0.8\r\n
Sec-WebSocket-Key: hitu9qO+MVGKItYF1oxqCA==\r\n
Sec-WebSocket-Extensions: permessage-deflate; client_max_window_bits\r\n
Sec-WebSocket-Protocol: binary\r\n

\r\n

HTTP/1.1 101 Switching Protocols\r\n
Upgrade: websocket\r\n
Sec-WebSocket-Accept: LVJij6i/sLKtgQfzzLcTrSlav24=\r\n
Sec-WebSocket-Protocol: binary\r\n
X-Frame-Options: SAMEORIGIN
X-XSS-Protection: 1; mode=block\r\n
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-eval';
style-src 'self' 'unsafe-inline'; media-src 'self' blob:; img-src 'self' blob:
\r\n
Connection: upgrade\r\n
Date: <Date and Time information>\r\n
Server: <WebServer>\r\n

\r\n

<WebSocket-encoded RTSP Request from client>...
<WebSocket-encoded RTSP response from camera>...
<WebSocket-encoded RTSP Request from client>...
<WebSocket-encoded RTSP response from camera>...
<WebSocket-encoded RTSP Request from client>...
<WebSocket-encoded RTSP response from camera>...
...
```

Supplemental Remarks

Sec-WebSocket-Version:

For HTTP request to start WebSocket, HTTP header unique to WebSocket should be added. Specify “13” for Sec-WebSocket-Version header.

Sec-WebSocket-Protocol:

Specify “binary” for Sec-WebSocket-Protocol header.

RTSP Digest Authentication

Authentication at RTSP level is required where RTSP authentication setting is enabled, while authentication at HTTP level is not required for requests against /websocket_rtsp resources. In this case, add an appropriate authentication header.

Userdata Information in Video Bitstream

Userdata field (supplimental information) is added to the video bitstream delivered by RTSP streaming function. This chapter describes the data structure of Userdata field this device supports.

Userdata Information Under H.264 Video Codec

The data structure of Userdata field where the video codec is set to H.264 is described. The format of the data is like below, when H.264 Userdata is sent from the cameras as RTP Packet.

<table>
<tr><td rowspan="4">RTP Header</td><td colspan="8">NAL Unit Octet</td><td rowspan="2">Payload Type</td><td rowspan="4">Size</td><td rowspan="4">UUID</td><td rowspan="4">User Data</td><td rowspan="4">End Code</td></tr>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>F</td><td colspan="2">NRI</td><td colspan="5">NAL Unit Type</td><td rowspan="2">0x05</td></tr>
<tr><td>0</td><td colspan="2">0</td><td colspan="5">6</td></tr>
</table>

In the format above, the data details except RTP Header is described in the table below.

Field		Byte Length	Offset	Description
NAL Unit Octet		1	0	This field is 0x06
Payload Type		1	1	This field is 0x05
Size		1	2	This field shows the total byte length of UUID and “user data.”
UUID		16	3	This field shows the MAC address of the camera.
User Data	Date Time	33	19	This field shows the local time. [example] CamTim:␣2020-01-01␣Wed␣15:15:15\r\n
	Frame Rate	15	52	This field shows the current frame rate of the video bitstream. [example] FrmRate:␣60.0\r\n
	Time Stamp	22	67	This field shows the value which is incremented by 90kHz timer (about 11 milliseconds per one increment). [example] TimStamp:␣0000000001\r\n
	PTZ Position	26	89	This field shows the pan, tilt and zoom position. [example] CamPos:␣111ppppttttzzzzm\r\n If a camera supports PTZ, first 3 digits are 111. Next “pppp,”“tttt” and “zzzz” show the pan, tilt and zoom position respectively. “m” at the bottom represents the status below. “M” : Camera is working “S” : Camera is paused “P” : PTZ Trace function is under preparation for play * “R” : PTZ Trace function is under recording * “T” : PTZ Trace function is under play *
	Tally	10	115	This field shows the Tally lamp status. 0: off / 1: on [example] Tally:␣0\r\n
End Code		1	125	This field is 0x80.

* BRC-X400/X401 only

Userdata Information Under H.265 Video Codec

The data structure of Userdata field where the video codec is set to H.265 is described. The format of the data is like below, when H.265 Userdata is sent from the cameras as RTP Packet.

RTP Header	NAL Unit Header																Payload Type	Size	UUID	User Data	End Code
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7					
	F	Type							Layer ID					TID							
	0	0x27							0					1			0x05				

In the format above, the data details except RTP Header is described in the table below.

Field		Byte Length	Offset	Description
NAL Unit Header		2	0	This field is 0x4e01
Payload Type		1	2	This field is 0x05
Size		1	3	This field shows the total byte length of UUID and “user data.”
UUID		16	4	This field shows the MAC address of the camera.
User Data	Date Time	33	20	This field shows the local time. [example] CamTim:␣2020-01-01␣Wed␣15:15:15\r\n
	Frame Rate	15	53	This field shows the current frame rate of the video bitstream. [example] FrmRate:␣60.0\r\n
	Time Stamp	22	68	This field shows the value which is incremented by 90kHz timer (about 11 milliseconds per one increment). [example] TimStamp:␣0000000001\r\n
	PTZ Position	26	90	This field shows the pan, tilt and zoom position. [example] CamPos:␣111ppppttttzzzzm\r\n If a camera supports PTZ, first 3 digits are 111. Next “pppp,” “tttt” and “zzzz” show the pan, tilt and zoom position respectively. “m” at the bottom represents the status below. “M” : Camera is working “S” : Camera is paused “P” : PTZ Trace function is under preparation for play * “R” : PTZ Trace function is under recording * “T” : PTZ Trace function is under play *
	Tally	10	116	This field shows the Tally lamp status. 0: off / 1: on [example] Tally:␣0\r\n
End Code		1	126	This field is 0x80.

* BRC-X400/X401 only

CGI Command Setting Values

SHUTTER

	Video output format		
Value	**2160/29.97p * 1080/59.94p 1080/59.94i 720/59.94p**	**2160/25p * 1080/50p 1080/50i 720/50p**	**2160/23.98p * 1080/23.98p**
33	1/10000	1/10000	1/10000
32	1/6000	1/6000	1/4800
31	1/4000	1/3500	1/2400
30	1/3000	1/2500	1/1200
29	1/2000	1/1750	1/576
28	1/1500	1/1250	1/400
27	1/1000	1/1000	1/288
26	1/725	1/600	1/200
25	1/500	1/425	1/192
24	1/350	1/300	1/144
23	1/250	1/215	1/120
22	1/180	1/150	1/100
21	1/125	1/120	1/96
20	1/100	1/100	1/60
19	1/90	1/60	1/50
18	1/60	1/50	1/48
17	1/50	1/30	1/40
16	1/30	1/25	1/25
15	1/20	1/20	1/24
14	1/15	1/15	1/20
13	1/10	1/12	1/12
12	1/8	1/8	1/8
11	1/6	1/6	1/6
10	1/4	1/4	1/4
9	1/3	1/3	1/3
8	1/2	1/2	1/2
7	2/3	2/3	2/3
6	1/1	1/1	1/1

* Only when the 4K option is installed, SRG-X400/X402/201M2/X120/HD1M2 can be set.

IRIS

Value	F-number
25	F2.0
24	F2.2
23	F2.4
22	F2.6
21	F2.8
20	F3.1
19	F3.4
18	F3.7
17	F4.0
16	F4.4
15	F4.8
14	F5.2
13	F5.6
12	F6.2
11	F6.8
10	F7.3
9	F8.0
8	F8.7
7	F9.6
6	F10
5	F11
0	CLOSE

GAIN

Value	Gain
17	48 dB
16	45 dB
15	42 dB
14	39 dB
13	36 dB
12	33 dB
11	30 dB
10	27 dB
9	24 dB
8	21 dB
7	18 dB
6	15 dB
5	12 dB
4	9 dB
3	6 dB
2	3 dB
1	0 dB

* 14 to 17 can be set only when the high sensitivity mode is on.

AUTO GAIN MAX. VALUE

Value	High sensitivity mode: Off	High sensitivity mode: On
13	36 dB	48 dB
12	33 dB	45 dB
11	30 dB	42 dB
10	27 dB	39 dB
9	24 dB	36 dB
8	21 dB	33 dB
7	18 dB	30 dB
6	15 dB	27 dB
5	12 dB	24 dB
4	9 dB	21 dB

EXPOSURE COMPENSATION

Value	Level
14	+ 10.5 dB
13	+ 9.0 dB
12	+ 7.5 dB
11	+ 6.0 dB
10	+ 4.5 dB
9	+ 3.0 dB
8	+ 1.5 dB
7	0.0 dB
6	– 1.5 dB
5	– 3.0 dB
4	– 4.5 dB
3	– 6.0 dB
2	– 7.5 dB
1	– 9.0 dB
0	– 10.5 dB

IMAGE SIZE

Value			Image Size
ImageSize1	ImageSize2	ImageSize3	
3840,2160 *1 *2	–	–	3840×2160
1920,1080 *3	**1920,1080**	–	1920×1080
1280,720	1280,720	**1280,720**	1280×720
720,576	720,576	720,576	720×576
720,480	720,480	720,480	720×480
640,360	640,360	640,360	640×360

*1 These can be set on SRG-X400/X402/201M2/X120/HD1M2 only when the 4K option is installed.
*2 The default value of BRC-X400/X401.
*3 The default value of SRG-X400/X402/201M2/HD1M2.

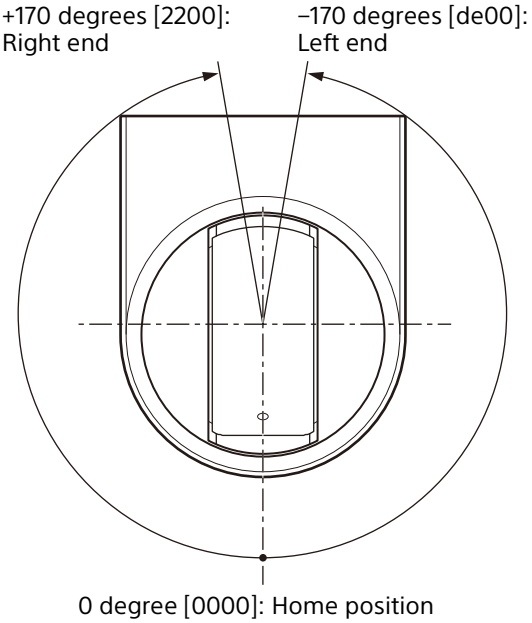
PAN/TILT POSITION

Value of pan-tilt position is hexadecimal.

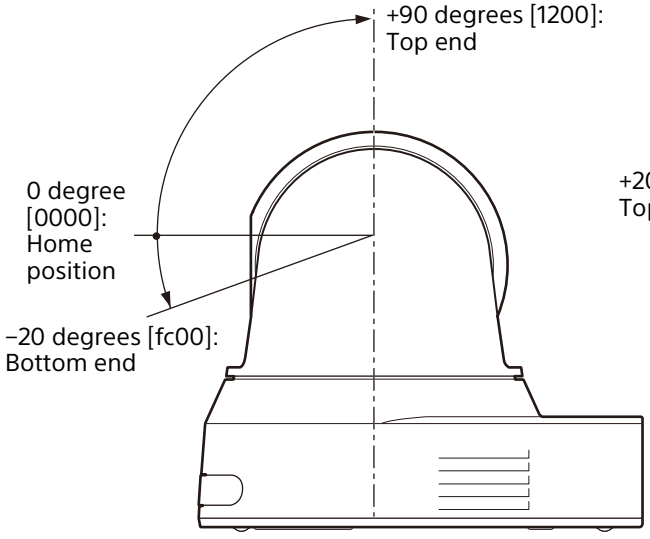
	Value	Position
Pan	de00	–170 degrees
	0000	0 degree
	2200	+170 degrees
Tilt (Eflip: Off)	fc00	–20 degrees
	0000	0 degree
	1200	+90 degrees
Tilt (Eflip: On)	ee00	–90 degrees
	0000	0 degree
	0400	+20 degrees

(Eflip: Off)

Top

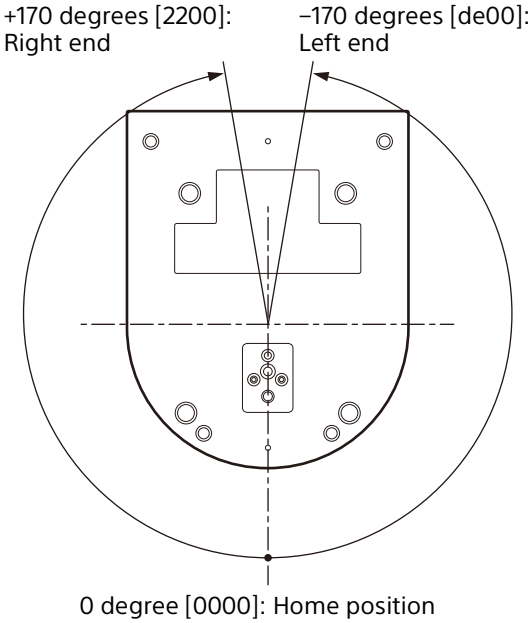


Side

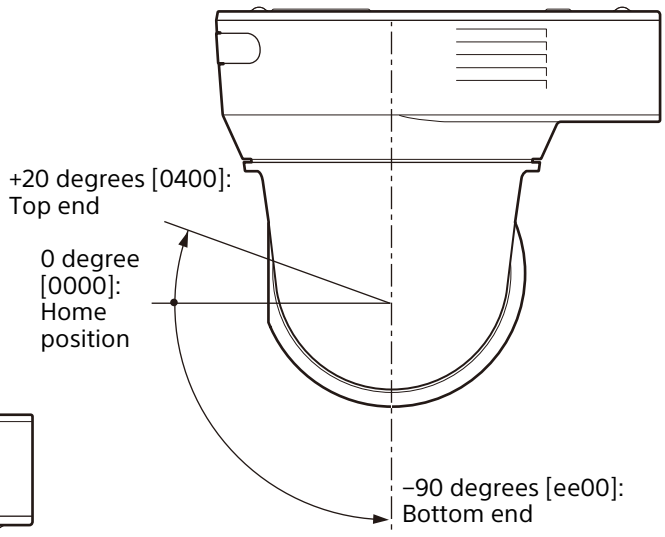


(Eflip: On)

Top



Side



PAN/TILT SPEED

PAN/TILT SPEED (SlowPanTiltMode: off) (Reference values)

Value	Rotation speed (deg/sec)	
	Pan	Tilt
24	101	91
23	91	91
22	84	84
21	80	80
20	72	72
19	69	69
18	64	64
17	62	62
16	57	57
15	54	54
14	49	52
13	47	50
12	43	34
11	41	31
10	27	29
9	24	26
8	23	16
7	11	11
6	6.7	6.7
5	2.9	2.9
4	2.2	2.2
3	1.6	1.6
2	1.3	1.3
1	1.1	1.1

PAN/TILT SPEED (SlowPanTiltMode: on) (Reference values)

Value *	Rotation speed (deg/sec)	
	Pan	Tilt
24	60	60
23	26.4	26.4
22	13.2	13.2
21	10.8	10.8
20	9.6	9.6
19	8.9	8.9
18	8.1	8.1
17	7.3	7.3
16	6.5	6.5
15	5.9	5.9
14	5.3	5.3
13	4.7	4.7
12	4.1	4.1
11	3.5	3.5
10	3.1	3.1
9	2.7	2.7
8	2.3	2.3
7	1.9	1.9
6	1.5	1.5
5	1.3	1.3
4	1.1	1.1
3	0.9	0.9
2	0.7	0.7
1	0.5	0.5

* Up to 127 can be specified. However 25 to 127 is used for the maintenance.

PRESET RECALL SPEED (Reference values)

Value	Rotation speed (deg/sec)	
	Pan	Tilt
25	300	126
24	101	91
23	91	91
22	84	84
21	80	80
20	72	72
19	69	69
18	64	64
17	62	62
16	57	57
15	54	54
14	49	52
13	47	50
12	43	34
11	41	31
10	27	29
9	24	26
8	23	16
7	11	11
6	6.7	6.7
5	2.9	2.9
4	2.2	2.2
3	1.6	1.6
2	1.3	1.3
1	1.1	1.1

FOCUS (Reference values)

Value of focus is hexadecimal.

Value	Focus distance
F000	0.08 m
E000	0.1 m
D000	0.17 m
C000	0.26 m
B000	0.35 m
A000	0.47 m
9000	0.6 m
8000	0.8 m
7000	1.0 m
6000	1.2 m
5000	1.5 m
4000	2 m
3000	3 m
2000	5 m
1000	Inf

ZOOM POSITION (Reference values) (BRC-X400/X401, SRG-X400/X402/201M2)

Value of zoom position is hexadecimal.

Value	Zoom magnification
0000	×1
0DC1	×2
186C	×3
2015	×4
2594	×5
29B7	×6
2CFB	×7
2FB0	×8
320C	×9
342D	×10
3608	×11
37AA	×12
391C	×13
3A66	×14
3B90	×15
3C9C	×16
3D91	×17
3E72	×18
3F40	×19
4000	×20
5556	×30 (When Clear Image Zoom is used)
6000	×40 (When Clear Image Zoom is used)
6AAB	×60 (When the digital zoom is used)
7000	×80 (When the digital zoom is used)
7334	×100 (When the digital zoom is used)
7556	×120 (When the digital zoom is used)
76DC	×140 (When the digital zoom is used)
7800	×160 (When the digital zoom is used)
78E4	×180 (When the digital zoom is used)
799A	×200 (When the digital zoom is used)
7A2F	×220 (When the digital zoom is used)
7AC0	×240 (When the digital zoom is used)

ZOOM POSITION (Reference values) (SRG-X120/HD1M2)

Value of zoom position is hexadecimal.

Value	Zoom magnification
0000	×1
0FB4	×2
1BF0	×3
24C5	×4
2B1E	×5
2FE4	×6
33A9	×7
36C9	×8
3983	×9
3BF7	×10
3E1C	×11
4000	×12

VIDEO OUTPUT FORMAT

Value	Video output format
720p_5994_VGA	1280×720/59.94p (HDMI: 640×480/59.94p, RGB fixed)
720p_5994	1280×720/59.94p
1080p_2997	1920×1080/29.97p
1080i_5994	1920×1080/59.94i
1080p_5994_ModeA	1920×1080/59.94p (Level A)
1080p_5994_ModeB	1920×1080/59.94p (Level B)
2160p_2997	3840×2160/29.97p *1
720p_50	1280×720/50p
1080p_25	1920×1080/25p
1080i_50	1920×1080/50i
1080p_50_ModeA	1920×1080/50p (Level A)
1080p_50_ModeB	1920×1080/50p (Level B)
2160p_25	3840×2160/25p *1
1080p_2398	1920×1080/23.98p
2160p_2398	3840×2160/23.98p *1

*1 Only when the 4K option is installed, SRG-X400/X402/201M2/X120/HD1M2 can be set.

Preset mode settings and behavior of preset commands (BRC-X400/X401)

PresetMode	PresetSet	PresetClear	PresetCall
std	Saves the pan/tilt/zoom/focus position and camera settings to the preset.	Returns the setting which are saved in the preset to the initial settings.	Calls the pan/tilt/zoom/focus position and camera settings which are saved in the preset.
ptzfonly	Saves the pan/tilt/zoom/focus position and camera settings to the preset.	Returns the setting which are saved in the preset to the initial settings.	Calls the pan/tilt/zoom/focus position which are saved in the preset.
trace	Starts the recording of PTZ trace. When the recording is in progress, stops the recording.	Deletes the settings which are saved in PTZ trace.	Executes the ready for the playback of PTZ trace recording. When the playback is ready, starts the playback.

RESERVED PORT

- 1900
- 7700 (BRC-X400/X401)
- 52380
- 52381

TIME ZONE

Value	Time Zone
Etc/GMT+12	(UTC-12:00) International Date Line West
Etc/GMT+11	(UTC-11:00) Co-ordinated Universal Time-11
America/Adak	(UTC-10:00) Aleutian Islands
Pacific/Honolulu	(UTC-10:00) Hawaii
Pacific/Marquesas	(UTC-09:30) Marquesas Islands
America/Anchorage	(UTC-09:00) Alaska
Etc/GMT+9	(UTC-09:00) Co-ordinated Universal Time-09
America/Tijuana	(UTC-08:00) Baja California
Etc/GMT+8	(UTC-08:00) Co-ordinated Universal Time-08
US/Pacific	(UTC-08:00) Pacific Time (US & Canada)
America/Phoenix	(UTC-07:00) Arizona
America/Chihuahua	(UTC-07:00) Chihuahua, La Paz, Mazatlan
US/Mountain	(UTC-07:00) Mountain Time (US & Canada)
Pacific/Easter	(UTC-06:00) Easter Island
America/Mexico_City	(UTC-06:00) Guadalajara, Mexico City, Monterrey
America/Regina	(UTC-06:00) Saskatchewan
America/Guatemala	(UTC-06:00) Central America
US/Central	(UTC-06:00) Central Time (US & Canada)
US/East-Indiana	(UTC-05:00) Indiana (East)
America/Grand_Turk	(UTC-05:00) Turks and Caicos
America/Cancun	(UTC-05:00) Chetumal
America/Port-au-Prince	(UTC-05:00) Haiti
America/Havana	(UTC-05:00) Havana
America/Bogota	(UTC-05:00) Bogota, Lima, Quito, Rio Branco
US/Eastern *1	(UTC-05:00) Eastern Time (US & Canada)
America/Asuncion	(UTC-04:00) Asuncion
America/Caracas	(UTC-04:00) Caracas
America/Cuiaba	(UTC-04:00) Cuiaba
America/Santiago	(UTC-04:00) Santiago
America/La_Paz	(UTC-04:00) Georgetown, La Paz, Manaus, San Juan
Canada/Atlantic	(UTC-04:00) Atlantic Time (Canada)
Canada/Newfoundland	(UTC-03:30) Newfoundland
America/Araguaina	(UTC-03:00) Araguaina
America/Cayenne	(UTC-03:00) Cayenne, Fortaleza
America/Godthab	(UTC-03:00) Greenland
America/Bahia	(UTC-03:00) Salvador
America/Miquelon	(UTC-03:00) Saint Pierre and Miquelon
America/Argentina/Buenos_Aires	(UTC-03:00) City of Buenos Aires
America/Sao_Paulo	(UTC-03:00) Brasilia
America/Punta_Arenas	(UTC-03:00) Punta Arenas
America/Montevideo	(UTC-03:00) Montevideo
Etc/GMT+2	(UTC-02:00) Co-ordinated Universal Time-02
Atlantic/Azores	(UTC-01:00) Azores
Atlantic/Cape_Verde	(UTC-01:00) Cabo Verde Is.
Etc/GMT	(UTC) Co-ordinated Universal Time
Europe/London	(UTC+00:00) Dublin, Edinburgh, Lisbon, London

Value	Time Zone
Africa/Monrovia	(UTC+00:00) Monrovia, Reykjavik
Africa/Casablanca	(UTC+01:00) Casablanca
Europe/Berlin	(UTC+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
Europe/Warsaw	(UTC+01:00) Sarajevo, Skopje, Warsaw, Zagreb
Europe/Paris	(UTC+01:00) Brussels, Copenhagen, Madrid, Paris
Europe/Belgrade	(UTC+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague
Africa/Lagos	(UTC+01:00) West Central Africa
Europe/Athens	(UTC+02:00) Athens, Bucharest
Asia/Amman	(UTC+02:00) Amman
Africa/Windhoek	(UTC+02:00) Windhoek
Asia/Jerusalem	(UTC+02:00) Jerusalem
Africa/Cairo	(UTC+02:00) Cairo
Asia/Gaza	(UTC+02:00) Gaza, Hebron
Europe/Kaliningrad	(UTC+02:00) Kaliningrad
Europe/Chisinau	(UTC+02:00) Chisinau
Asia/Damascus	(UTC+02:00) Damascus
Africa/Tripoli	(UTC+02:00) Tripoli
Africa/Harare	(UTC+02:00) Harare, Pretoria
Africa/Khartoum	(UTC+02:00) Khartoum
Asia/Beirut	(UTC+02:00) Beirut
Europe/Helsinki	(UTC+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius
Europe/Istanbul	(UTC+03:00) Istanbul
Asia/Kuwait	(UTC+03:00) Kuwait, Riyadh
Africa/Nairobi	(UTC+03:00) Nairobi
Asia/Baghdad	(UTC+03:00) Baghdad
Europe/Minsk	(UTC+03:00) Minsk
Europe/Moscow	(UTC+03:00) Moscow, St. Petersburg
Asia/Tehran	(UTC+03:30) Tehran
Europe/Volgograd	(UTC+04:00) Volgograd
Europe/Astrakhan	(UTC+04:00) Astrakhan, Ulyanovsk
Asia/Muscat	(UTC+04:00) Abu Dhabi, Muscat
Europe/Samara	(UTC+04:00) Izhevsk, Samara
Asia/Yerevan	(UTC+04:00) Yerevan
Europe/Saratov	(UTC+04:00) Saratov
Asia/Tbilisi	(UTC+04:00) Tbilisi
Asia/Baku	(UTC+04:00) Baku
Indian/Mauritius	(UTC+04:00) Port Louis
Asia/Kabul	(UTC+04:30) Kabul
Asia/Tashkent	(UTC+05:00) Ashgabat, Tashkent
Asia/Karachi	(UTC+05:00) Islamabad, Karachi
Asia/Yekaterinburg	(UTC+05:00) Ekaterinburg
Asia/Colombo	(UTC+05:30) Sri Jayawardenepura
Asia/Kolkata	(UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
Asia/Kathmandu	(UTC+05:45) Kathmandu
Asia/Almaty	(UTC+06:00) Astana
Asia/Omsk	(UTC+06:00) Omsk
Asia/Dhaka	(UTC+06:00) Dhaka
Asia/Rangoon	(UTC+06:30) Yangon (Rangoon)

Value	Time Zone
Asia/Krasnoyarsk	(UTC+07:00) Krasnoyarsk
Asia/Tomsk	(UTC+07:00) Tomsk
Asia/Novosibirsk	(UTC+07:00) Novosibirsk
Asia/Barnaul	(UTC+07:00) Barnaul, Gorno-Altaysk
Asia/Bangkok	(UTC+07:00) Bangkok, Hanoi, Jakarta
Asia/Hovd	(UTC+07:00) Hovd
Asia/Irkutsk	(UTC+08:00) Irkutsk
Asia/Ulaanbaatar	(UTC+08:00) Ulaanbaatar
Asia/Kuala_Lumpur	(UTC+08:00) Kuala Lumpur, Singapore
Australia/Perth	(UTC+08:00) Perth
Asia/Taipei	(UTC+08:00) Taipei
Asia/Shanghai *2	(UTC+08:00) Beijing, Chongqing, Hong Kong SAR, Urumqi
Australia/Eucla	(UTC+08:45) Eucla
Asia/Pyongyang	(UTC+09:00) Pyongyang
Asia/Seoul	(UTC+09:00) Seoul
Asia/Chita	(UTC+09:00) Chita
Asia/Yakutsk	(UTC+09:00) Yakutsk
Asia/Tokyo	(UTC+09:00) Osaka, Sapporo, Tokyo
Australia/Adelaide	(UTC+09:30) Adelaide
Australia/Darwin	(UTC+09:30) Darwin
Asia/Vladivostok	(UTC+10:00) Vladivostok
Australia/Canberra	(UTC+10:00) Canberra, Melbourne, Sydney
Australia/Brisbane	(UTC+10:00) Brisbane
Pacific/Guam	(UTC+10:00) Guam, Port Moresby
Australia/Hobart	(UTC+10:00) Hobart
Australia/Lord_Howe	(UTC+10:30) Lord Howe Island
Asia/Sakhalin	(UTC+11:00) Sakhalin
Pacific/Guadalcanal	(UTC+11:00) Solomon Is., New Caledonia
Asia/Srednekolymsk	(UTC+11:00) Chokurdakh
Pacific/Norfolk	(UTC+11:00) Norfolk Island
Pacific/Bougainville	(UTC+11:00) Bougainville Island
Asia/Magadan	(UTC+11:00) Magadan
Asia/Kamchatka	(UTC+12:00) Anadyr, Petropavlovsk-Kamchatsky
Pacific/Auckland	(UTC+12:00) Auckland, Wellington
Pacific/Fiji	(UTC+12:00) Fiji
Etc/GMT-12	(UTC+12:00) Co-ordinated Universal Time+12
Pacific/Chatham	(UTC+12:45) Chatham Islands
Pacific/Apia	(UTC+13:00) Samoa
Pacific/Tongatapu	(UTC+13:00) Nuku'alofa
Etc/GMT-13	(UTC+13:00) Co-ordinated Universal Time+13
Pacific/Kiritimati	(UTC+14:00) Kiritimati Island

*1 Default setting for BRC-X400, SRG-X400/X120
*2 Default setting for BRC-X401, SRG-X402/201M2/HD1M2