Integrated Camera Interface Specifications

Supplement for Web Control

Target Models
AW-UE150(Ver.2.28)

Second Edition

Panasonic Corporation

Change History

December 04, 2018	Initial Release
September 19, 2019	Virtual Studio client setting/information acquisition command added
	HTTPS connection method command parameter extension

Table of Contents

1. Introduction

This manual describes the specifications for video transmission and network application operation when a remote camera is operated via the network. For details on the general camera operations of the remote camera, see the separate volume "HD Integrated Camera Interface Specifications".

Panasonic shall not take any responsibility of damages caused as a result of the use of this information. This information may be changed without prior notice due to upgrade of product version in future. The usage examples are only reference examples for this series. Support cannot be offered for each program. Moreover, some information of the communication between the camera and browser is not disclosed.

About the access levels

In this manual, "Live" and "Admin" are defined as the access levels. The necessity of the ID/password during CGI execution is changed from the User auth. menu of the remote camera.

When User auth. is OFF (factory settings):

Live (Video acquisition and camera control)	... Authentication not necessary
Admin (All SETUP controls)	... ID/password for Administrator authority are necessary

When User auth. is ON:

Live (Video acquisition and camera control)	... ID/password for camera control or Administrator authority are necessary
Admin (All SETUP controls)	... ID/password for Administrator authority are necessary

About the streaming mode

The type of CGI that can be executed and the range of parameter values differ depending on the streaming mode of the remote camera.
For details, see the instruction manual.

Example) When the priority mode (/cgi-bin/set_stream_mode, /cgi-bin/get_stream_mode) is RTMP
=> Control cannot be performed for H.264 (1) to (4).

2. CGI List for Video Transmission

2.1. Transmission User Management

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
Transmission user management	/cgi-bin/getuid	FILE	2	2 (Fixed)
		vcodec	jpeg h264 h264_2 h264_3 h264_4	jpeg: During JPEG transmission h264: During H.264(1) transmission h264_2: During H.264(2) transmission h264_3: During H.264(3) transmission h264_4: During H.264(4) transmission
		reply	browser info	Command response format specification (can be omitted) browser: for the camera browser info: for the application

Usage example) Acquisition of user ID (during H264(1) transmission)
http://192.168.0.10/cgi-bin/getuid?FILE=2&vcodec=h264

The response data is as shown below.
UID=< User ID >[CR][LF]
ImageFormat=< Video format >[CR][LF]
ImageCaptureMode=< Image Capture Mode >[CR][LF]
ratio=< Aspect ratio >[CR][LF]
Maxfps=< Max fps >[CR][LF]
StreamMode=< Stream mode >[CR][LF]
iBitrate=< H.264 bitrate >[CR][LF]
iResolution=< H.264 resolution >[CR][LF]
iQuality=<H.264 quality >[CR][LF]
sDelivery=< setting >[CR][LF]
iUniPort=< Unicast port number >[CR][LF]
iMultiAdd1=< 1st octet of multicast address >[CR][LF]
iMultiAdd2=< 2nd octet of multicast address >[CR][LF]
iMultiAdd3=< 3rd octet of multicast address >[CR][LF]
iMultiAdd4=< 4th octet of multicast address >[CR][LF]
iMultiAdd=< multicast address >[CR][LF]
iMultiPort=< Multicast port number >[CR][LF]
aEnable=< Audio mode>[CR][LF]
aEnc=< Audio enc >[CR][LF]

aBitrate=< Audio bit rate >[CR][LF]
aBitrate2=< Audio bit rate >[CR][LF]
aInterval=< Audio input interval >[CR][LF]
aInPort=< Audio unicast port number >[CR][LF]
aOutInterval=< Audio output interval >[CR][LF]
aOutPort=< Audio output port >[CR][LF]
aOutStatus=< Audio output status >[CR][LF]
aOutUID=< Audio output UID >[CR][LF]
ePort=< Event notification port number >[CR][LF]
sAlarm=< Alarm status >[CR][LF]
SDrec=< Recording status >[CR][LF]
SDrec2=< Recording status >[CR][LF]
sAUX=< Aux status >[CR][LF]
iHttpPort=< HTTP port number >[CR][LF]
iMultiAuto_h264=< Multicast auto H.264(1) >[CR][LF]
iMultiAuto_h264_2=< Multicast auto H.264(2) >[CR][LF]
iMultiAuto_h264_3=< Multicast auto H.264(3) >[CR][LF]
iMultiAuto_h264_4=< Multicast auto H.264(4) >[CR][LF]
sRtspMode_h264=< Control mode H.264(1) >[CR][LF]
sRtspMode_h264_2=< Control mode H.264(2) >[CR][LF]
sRtspMode_h264_3=< Control mode H.264(3) >[CR][LF]
sRtspMode_h264_4=< Control mode H.264(4) >[CR][LF]

The description of the response data is as shown below.

Item	Value of response	Description
UID	Numeric value	User ID
ImageFormat	jpeg, h264, h264_X	During JPEG transmission During H.264(1) transmission During H.264(X) transmission
ImageCaptureMode	2m	Fixed value
ratio	16_9	Fixed value
Maxfps	30, 60	Max. frame rate
StreamMode	1	Fixed value
iBitrate	Numeric value	Bit rate setting of H.264
iResolution	320, 640, 1280, 1920, 3840 (*1)	Horizontal resolution setting of H.264 (*1): Only for AW-UE70
iQuality	fine, low	Image quality setting of H.264
sDelivery	uni, multi, uni_manual	uni: unicast (auto) multi: multicast uni_manual: unicast (manual)
iUniPort	1024 to 50000	Unicast port number (image)
iMultiAdd1	224 to 239	First octet of multicast address
iMultiAdd2	0 to 255	Second octet of multicast address
iMultiAdd3	0 to 255	Third octet of multicast address
iMultiAdd4	0 to 255	Fourth octet of multicast address

Item	Value of response	Description
iMultiAdd	(IP address)	H.264 multicast address
iMultiPort	Numeric value	Multicast port number
aEnable	off, in	off: Audio OFF in: Audio ON (reception)
aEnc	2	Fixed value (2: AAC)
aBitrate	128,96, 64	Bit rate setting of audio
aBitrate2	64	Fixed value
aInterval	20	Fixed value
aInPort	1024 to 50000	Unicast port number (audio)
aOutInterval	640	Fixed value
aOutPort	34004	Fixed value
aOutStatus	off	Fixed value
aOutUID	0	Fixed value
ePort	31004	Fixed value
sAlarm	off	Fixed value
SDrec	disable	Fixed value
SDrec2	disable	Fixed value
sAUX	disable	Fixed value
iHttpPort	Numeric value	HTTP port number
iMultiAuto_h264	0	Fixed value
iMultiAuto_h264_2	0	Fixed value
iMultiAuto_h264_3	0	Fixed value
iMultiAuto_h264_4	0	Fixed value
sRtspMode_h264	0	Fixed value
sRtspMode_h264_2	0	Fixed value
sRtspMode_h264_3	0	Fixed value
sRtspMode_h264_4	0	Fixed value

2.2. Device Information Acquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
Device information acquisition	/cgi-bin/getinfo	FILE	1	1 (Fixed)

Usage example) Acquisition of user ID (during H264(1) transmission)
http://192.168.0.10/cgi-bin/getinfo?FILE=1

The response data is as shown below.
MAC=< Mac address >[CR][LF]
SERIAL=< Serial number >[CR][LF]
VERSION=< Firmware version >[CR][LF]
NAME=< Model name >[CR][LF]
SDrec=< Recording status >[CR][LF]
SDrec2=< Recording status >[CR][LF]
sAlarm=< Alarm status >[CR][LF]
sAUX=< Aux status >[CR][LF]
ePort=< Event notification port number >[CR][LF]
aEnable=< Audio mode>[CR][LF]
aEnc=< Audio enc >[CR][LF]
aBitrate=< Audio bit rate >[CR][LF]
aBitrate2=< Audio bit rate >[CR][LF]
aInterval=< Audio input interval >[CR][LF]
aOutInterval=< Audio output interval >[CR][LF]
aOutPort=< Audio output port >[CR][LF]
aOutStatus=< Audio output status >[CR][LF]
aOutUID=< Audio output UID >[CR][LF]
aInPort_h264=< Audio with H.264/H.265 1st stream unicast port number >[CR][LF]
aInPort_h264_2=< Audio with H.264 2nd stream unicast port number >[CR][LF]
aInPort_h264_3=< Audio with H.264 3rd stream unicast port number >[CR][LF]
aInPort_h264_4=< Audio with H.264 4th stream unicast port number >[CR][LF]
sRtspMode_h264=< Control mode H.264(1)/H.265 >[CR][LF]
sRtspMode_h264_2=< Control mode H.264(2) >[CR][LF]
sRtspMode_h264_3=< Control mode H.264(3) >[CR][LF]
sRtspMode_h264_4=< Control mode H.264(4) >[CR][LF]
ImageCaptureMode=< Iimage Capture Mode >[CR][LF]
ratio=< Aspect ratio >[CR][LF]
Maxfps=< Max fps >[CR][LF]
StreamMode=< Stream mode >[CR][LF]
StreamEncode=< Encode Type>[CR][LF]
iTransmit_h264=< H.264/H.265 1st stream ON/OFF setting >
sDelivery_h264=< H.264/H.265 1st stream setting >[CR][LF]
iBitrate_h264=< H.264/H.265 1st stream bit rate >[CR][LF]

iResolution_h264=< H.264/H.265 1st stream resolution >[CR][LF]
iQuality_h264=< H.264/H.265 1st stream quality >[CR][LF]
iMultiAuto_h264=< Multicast auto H.264(1)/H.265 >[CR][LF]
iTransmit_h264_2=< H.264 2nd stream ON/OFF setting >
sDelivery_h264_2=< H.264 2nd stream setting >[CR][LF]
iBitrate_h264_2=< H.264 2nd stream bit rate >[CR][LF]
iResolution_h264_2=< H.264 2nd stream resolution >[CR][LF]
iQuality_h264_2=< H.264 2nd stream quality >[CR][LF]
iMultiAuto_h264_2=< Multicast auto H.264(2) >[CR][LF]
iTransmit_h264_3=< H.264 3rd stream ON/OFF setting >
sDelivery_h264_3=< H.264 3rd stream setting >[CR][LF]
iBitrate_h264_3=< H.264 3rd stream bit rate >[CR][LF]
iResolution_h264_3=< H.264 3rd stream resolution >[CR][LF]
iQuality_h264_3=< H.264 3rd stream quality >[CR][LF]
iMultiAuto_h264_3=< Multicast auto H.264(3) >[CR][LF]
iTransmit_h264_4=< H.264 4th stream ON/OFF setting >
sDelivery_h264_4=< H.264 4th stream setting >[CR][LF]
iBitrate_h264_4=< H.264 4th stream bit rate >[CR][LF]
iResolution_h264_4=< H.264 4th stream resolution >[CR][LF]
iQuality_h264_4=< H.264 4th stream quality >[CR][LF]
iMultiAuto_h264_4=< Multicast auto H.264(4) >[CR][LF]

The description of the response data is as shown below.

Item	Value of response	Description
MAC	XX-XX-XX-XX-XX-XX	MAC address
SERIAL	XXXXXXXXX	Product serial number
VERSION		Software version
NAME	AW-XXXX	Product number
SDrec	disable	Fixed value
SDrec2	disable	Fixed value
sAlarm	off	Fixed value
sAUX	off	Fixed value
ePort	31004	Fixed value
aEnable	off, in	off: Audio OFF in: Audio ON (reception)
aEnc	2	Fixed value (2: AAC)
aBitrate	128,96,64	Bit rate setting of audio
aBitrate2	64	Fixed value
aInterval	20	Fixed value
aOutInterval	640	Fixed value
aOutPort	34004	Fixed value
aOutStatus	off	Fixed value
aOutUID	0	Fixed value
aInPort_h264	1024 to 50000	H.264(1)/H.265 Audio reception port number
aInPort_h264_2	1024 to 50000	H.264(2) Audio reception port number

aInPort_h264_3	1024 to 50000	H.264(3) Audio reception port number
aInPort_h264_4	1024 to 50000	H.264(4) Audio reception port number
sRtspMode_h264	0	Fixed value
sRtspMode_h264_2	0	Fixed value
sRtspMode_h264_3	0	Fixed value
sRtspMode_h264_4	0	Fixed value
ImageCaptureMode	2m	Fixed value
ratio	16_9	Fixed value
Maxfps	30, 60	Max. frame rate
StreamMode	1	Fixed value
StreamEncode	1, 2	1 : H.264 2 : H.265
iTransmit_h264	1	Fixed value
sDelivery_h264	uni, multi, uni_manual	uni: Unicast (auto) multi: Multicast uni_manual Unicast (manual)
iBitrate_h264	Numeric value	Bit rate setting of H.264(1)/H.265
iResolution_h264	320, 640, 1280, 1920, 3840	Horizontal resolution setting of H.264(1)/H.265
iQuality_h264	fine, low	Image quality setting of H.264(1)/H.265
iMultiAuto_h264	0	Fixed value
iTransmit_h264_2	see.H.264(1)	see.H.264(1)
sDelivery_h264_2		
iBitrate_h264_2		
iResolution_h264_2		
iQuality_h264_2		
iMultiAuto_h264_2		
iTransmit_h264_3	see.H.264(1)	see.H.264(1)
sDelivery_h264_3		
iBitrate_h264_3		
iResolution_h264_3		
iQuality_h264_3		
iMultiAuto_h264_3		
iTransmit_h264_4	see.H.264(1)	see.H.264(1)
sDelivery_h264_4		
iBitrate_h264_4		
iResolution_h264_4		
iQuality_h264_4		
iMultiAuto_h264_4		

2.3. Camera-specific Information (Capability) Acquisition

Method : POST, GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
Camera-specific information (Capability) acquisition	/cgi-bin/get_capability	-	-	Explained under the next item

Usage example) Camera-specific information (Capability) acquisition
http://192.168.0.10/cgi-bin/get_capability

The description of the response data is as shown below.

Group name	Parameter name	Parameter value	Description
common	capability_version	1.00	Version of the capability format
	category	camera	Category
video_server.basic	type	dome	Product shape
	fisheye	no	Fisheye camera
video_server.basic.analogue_input	supported	ntsc,pal	Supported video signals of the analog camera (encoder)
video_server.peripheral.io	number	-	Not supported
video_server.image.sensor	aspect_ratio	16_9	Aspect ratio of sensor
	sd	-	Not supported
	fog	-	Not supported
	hlc	-	Not supported
video_server.image	format	jpeg, mjpeg, h264, h265	Supported image transmission format
	mode	2m_r16_9	Supported imaging mode
video_server.image.jpeg	resolution	3840x2160, 1920x1080, 1280x720, 640x360, 320x180	Resolution parameters supported in the JPEG1 shot
	quality	0 to 9	Image quality parameters supported in the JPEG1 shot
video_server.image.jpeg.resolution_each_mode	2m_r16_9	3840x2160, 1920x1080, 1280x720, 640x360, 320x180	Transmission-enabled JPEG resolution
video_server.image.jpeg.resolution_each_mode_all	2m_r16_9	3840x2160, 1920x1080, 1280x720, 640x360,	Transmission-enabled JPEG resolution

Group name	Parameter name	Parameter value	Description
		320x180	
video_server.image.jpeg.max_size	3840x2160	1920,1920,1920,1920,1920,860,860,860,860,860	Max. data size of one JPEG image per resolution Unit [Kbyte] Values are separated by a comma and enumerated Configuration: <Value 1>,<Value 2>,<Value 3>,<Value 4>,<Value 5>,<Value 6>, ,,, ,<Value (n)>, ,, When video_server.image.jpeg.quality (JPEG image quality setting parameter) is 0,1,2,3,4,5,6,7,8,9, it indicates the below-mentioned meaning. <Value 1>: Max. data size when the JPEG image quality setting is "0" <Value 2>: Max. data size when the JPEG image quality setting is "1" ... <Value 10>: Max. data size when the JPEG image quality setting is "9"
	1920 x 1080	240,240,240,240,240,120,120,120,120,120	
	1280 x 720	180,180,180,180,180,90,90,90,90,90	
	640 x 360	60,60,60,60,60,30,30,30,30,30,	
	320 x 180	30,30,30,30,30,15,15,15,15,15	
video_server.image.mjpeg	resolution	3840x2160, 1920x1080, 1280x720, 640x360, 320x180	Resolution parameters supported in the JPEG stream
	quality	0 to 9	Image quality parameters supported in the JPEG stream
	framerate	1 to 30	Frame rates supported in the JPEG stream Rounded down to the nearest whole number NTSC: 1 to 30 PAL: 1 to 25
video_server.image.mjpeg.max_framerate	2m_r16_9	30	Max. frame rate of JPEG stream
video_server.image.mjpeg.resolution_each_mode	2m_r16_9	3840x2160, 1920x1080, 1280x720, 640x360, 320x180	Setting-enabled JPEG resolution
video_server.image.mjpeg.resolution_each_mode_all	2m_r16_9	3840x2160, 1920x1080, 1280x720, 640x360,	Setting-enabled JPEG resolution

Group name	Parameter name	Parameter value	Description
		320x180	
video_server.image.h264	resolution	3840x2160, 1920x1080, 1280x720, 640x360, 320x180	Resolution parameters supported in H.264(1)
	stream_mode	bitrate, framerate, best_effort	Transmission modes supported in H.264(1)
	quality	fine, normal	Image quality parameters supported in H.264(1)
	bandwidth	512,768,1024,1536,2048,3072,4096,6144,8192,10240,12288,12800, 14336,16384, 20480,24576, 25600, 51200, 76800	Bit rate parameters supported in H.264(1)
	framerate	5,15(12.5),24(*1), 30(25),60(50)	Frame rate parameters supported in H.264(1) * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
video_server.image.h264.resolution_each_mode	2m_r16_9	3840x2160, 1920x1080, 1280x720, 640x360, 320x180	Supported H.264(1) resolutions
video_server.image.h264.max_framerate	2m_r16_9	60	Supported max. H.264(1) frame rate
video_server.image.h264-2	Same as H264-1		
video_server.image.h264-2.resolution_each_mode			
video_server.image.h264-2.max_framerate			
video_server.image.h264-3			
video_server.image.h264-3.resolution_each_mode			
video_server.image.h264-3.max_framerate			
video_server.image.h264-4			
video_server.image.h264-4.resolution_each_mode			
video_server.image.h264-4.			

Group name	Parameter name	Parameter value	Description
max_framerate			
video_server.image.h265	resolution	3830x2160	Resolution parameters supported in H.265
	bandwidth	8192,12800,25600,51200,76800	Bitrate parameters supported in H.265
	framerate	24(*1),30(25)	Frame rate parameters supported in H.265 * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
video_server.image.h265,resolution_each_mode	2m_r16_9	3840x2160	Supported H.265 resolution
video_server.image.h265.max_framerate	2m_r16_9	30	Supported max H.265 frame rate
video_server.audio	transmission	input	Audio transmission setting mode
video_server.audio.audio_input	number	1	Audio microphone input number
	encode_type	aac-1c_64K aac-1c_96K aac-1c_128K	Supported audio input encoding type
video_server.network	nw_bandwidth	0(unlimited)	Parameters supported in the overall transmission volume setting
video_server.network.ipv6	supported	yes	IPv6 support status
video_server.network.https	supported	yes	HTTPS (SSL) support status
video_server.vmd	supported	no	VMD support status

2.4. JPEG-based Image Transmission

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
JPEG image transmission (MJPEG)	/cgi-bin/jpeg	connect	Start stop	start: Starts JPEG image transmission stop: Stops JPEG image transmission
		framerate	1 4(*1) 5 12(*1) 15(12.5) 24(*1) 30(25)	1 fps 5 fps 15 (12.5) fps 30 (25) fps The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
		resolution	320 640 1280 1920 3840	320: 320 x 180 640: 640 x 360 1280: 1280 x 720 1920: 1920 x 1080 3840: 3840 x 2160
		UID	Numeric value	User ID * UID acquired by /cgi-bin/getuid
JPEG image transmission (MJPEG)	/cgi-bin/mjpeg	resolution	320 640 1280 1920 3840	320: 320 x 180 640: 640 x 360 1280: 1280 x 720 1920: 1920 x 1080 3840: 3840 x 2160
		framerate	1 4(*1) 5 12(*1) 15(12.5) 24(*1) 30(25)	1 fps 5 fps 15 (12.5) fps 30 (25) fps The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
JPEG image 1 shot request	/cgi-bin/view.cgi	action	Snapshot start stop	snapshot: Acquires one JPEG image start: Starts JPEG transmission stop: Stops JPEG transmission
		n	Numeric value	Dummy for disabling cache
Resolution setting for view.cgi	/cgi-bin/aw_ptz	cmd	%23RZL1&res=1 %23RZL0&res=1	%23RZL1&res = 1: 320 x 180 setting %23RZL0&res = 1: 640 x 360 setting

CGI item name	URL	Parameter name	Parameter value	Description
JPEG image 1 shot request	/cgi-bin/camera	resolution	320 640 1280 1920 3840	320: 320 x 180 640: 640 x 360 1280: 1280 x 720 1920: 1920 x 1080 3840: 3840 x 2160
		page	Numeric value	Dummy for disabling cache

[Notes]

In a remote camera, various techniques are provided for acquisition of a JPEG video. Use the technique suitable to your purpose.

MJPEG

By continuously displaying the videos that arrive, a movie display can be realized.
The frame rate is decided based on the arguments.
Depending on the software and hardware at the receiving side, some frame rates may not be supported.

JPEG image 1 shot

By repeating the processes of acquisition, display, and standby for a single JPEG image, a movie display can be realized.
The frame rate is decided according to the standby time in the software and hardware at the receiving side.

The characteristics of each CGI of MJPEG are as described below.

/cgi-bin/jpeg

When CGI is called once, the MJPEG stream is transmitted continuously.
Before calling, the acquisition of UID with /cgi-bin/getuid is necessary.

In Internet Explorer, the plug-in software is used when calling JPEG(1) to (3).
Specific usage examples and sequences are described in the next chapter.

/cgi-bin/mjpeg

When CGI is called once, the MJPEG stream is transmitted continuously.
Before calling, the acquisition of UID with /cgi-bin/getuid is not necessary.

It is used when calling JPEG from some mobile terminals.
In Safari, movie display is possible by entering only this CGI in the URL field of the browser. Not supported by Internet Explorer.

Usage example) When acquiring a 320 x 180 video in 30 fps in the MJPEG format:
http://192.168.0.10/cgi-bin/mjpeg?resolution=320&framerate=30

Usage example) When acquiring a 640 x 360 video in 15 fps in the MJPEG format:
http://192.168.0.10/cgi-bin/mjpeg?resolution=640&framerate=15

Usage example) When acquiring a video of approx. 5 fps in the MJPEG format (parameter omitted):
http://192.168.0.10/cgi-bin/mjpeg

The characteristics of each CGI of JPEG image 1 shot are as described below.

/cgi-bin/view.cgi

When CGI is called once, only one JPEG image is transmitted.
Before calling, the acquisition of UID with /cgi-bin/getuid is not necessary.
The resolution can be set with the /cgi-bin/aw_ptz?cmd=%23RZLx&res=1 command.
Not supported by other than 640 x 360 / 320 x 180.

Used when calling a JPEG image without the use of plug-in software in Internet Explorer.

Usage example) When acquiring a 320 x 180 video through a JPEG image 1 shot request:
http://192.168.0.10/cgi-bin/aw_ptz?cmd=%23RZL1&res=1
http://192.168.0.10/cgi-bin/view.cgi?action=start
http://192.168.0.10/cgi-bin/view.cgi?action=snapshot&n=3333
<Appropriate standby time>
http://192.168.0.10/cgi-bin/view.cgi?action=snapshot&n=3334
<Appropriate standby time>
http://192.168.0.10/cgi-bin/view.cgi?action=snapshot&n=3335

While the "start" command is mandatory after turning the power supply ON, the "stop" command is not mandatory. The "start" command may be issued any number of times without any problem.

/cgi-bin/camera

When CGI is called once, only one JPEG image is transmitted.
Before calling, the acquisition of UID with /cgi-bin/getuid is not necessary.

In Internet Explorer, the plug-in software is used when acquiring a screen shot.

The notes common for each CGI are as described below.

When a video is acquired simultaneously by several PCs and receivers, the best effort judgment is performed at the camera side. Therefore, the expected frame rate display may not be achieved.

When the WEB menu/Video over IP/JPEG/JPEG(1)~(3) transmission are OFF, the response may be in the form of a pitch black JPEG image.

As for the resolution and frame rate, the content registered in the WEB menu/Video over IP/JPEG(1)~(3) is given priority.

Therefore, even if the resolution is specified in the arguments, the response may be issued with an unexpected resolution and frame rate.

Example) If JPEG(1) = 1280 x 720/30 fps, JPEG(2) = 640 x 360/5 fps, JPEG(3) = 320 x 180/15 fps,

/cgi-bin/mjpeg?resolution=320&framerate=15
=> As instructed, the response is in the form of content of the 320 x 180 JPEG(3).

/cgi-bin/mjpeg?resolution=1280&framerate=15
=> As instructed, the response is issued by subtracting the frame rate from the content of the 1280 x 720 JPEG(1)

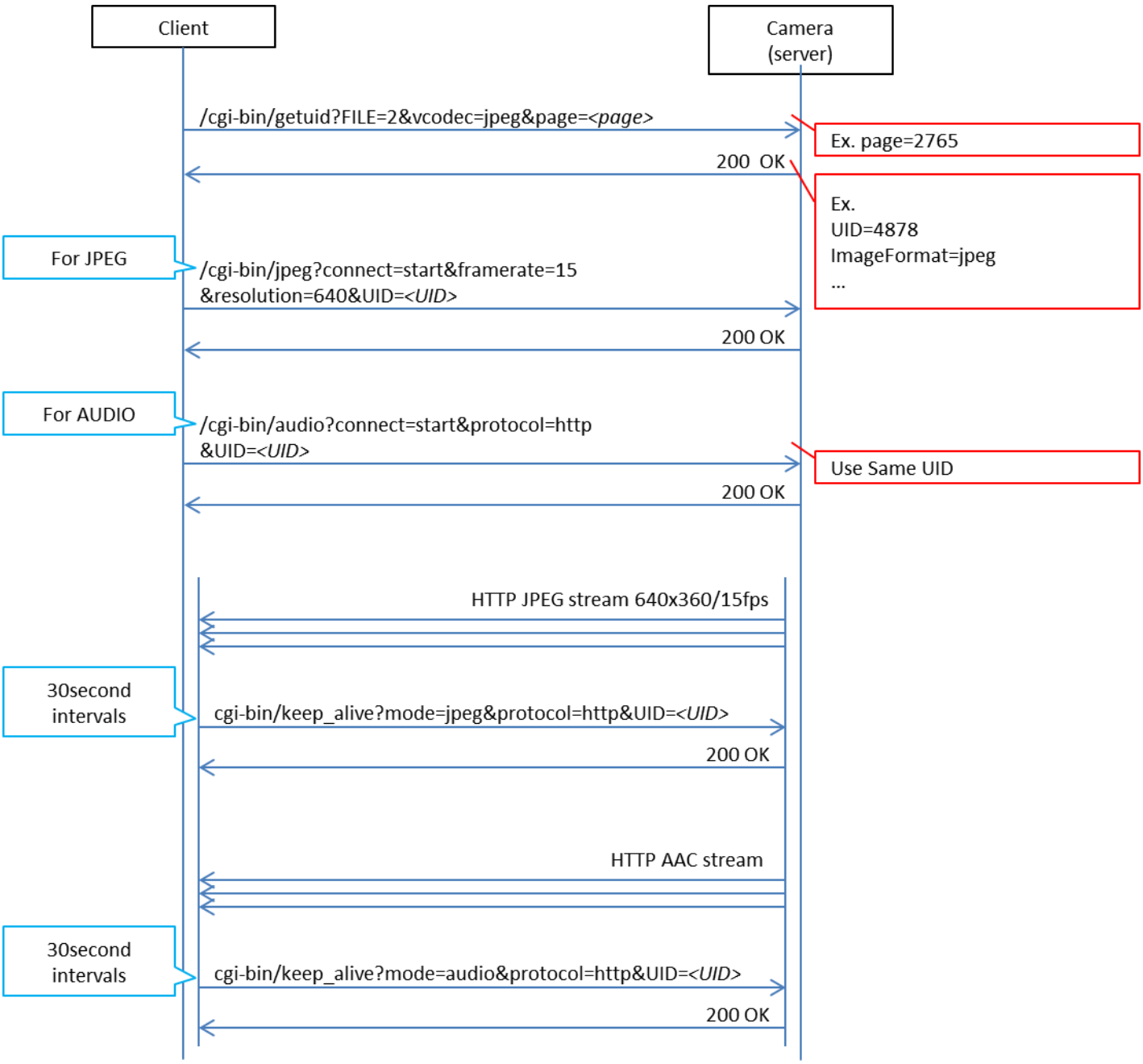
/cgi-bin/mjpeg?resolution=640&framerate=15
=> The response is issued with a resolution of 640 x 360, but the frame rate is 5 fps, which is the upper limit of JPEG(2).

/cgi-bin/mjpeg?resolution=320&framerate=1920
=> Because no content is registered in JPEG(1) to (3), the response is issued with the resolution of JPEG(1) and a frame rate of 5 fps.

/cgi-bin/mjpeg
=> Because there are no parameters, the response is issued with the resolution of JPEG(1) and a frame rate of 5 fps.

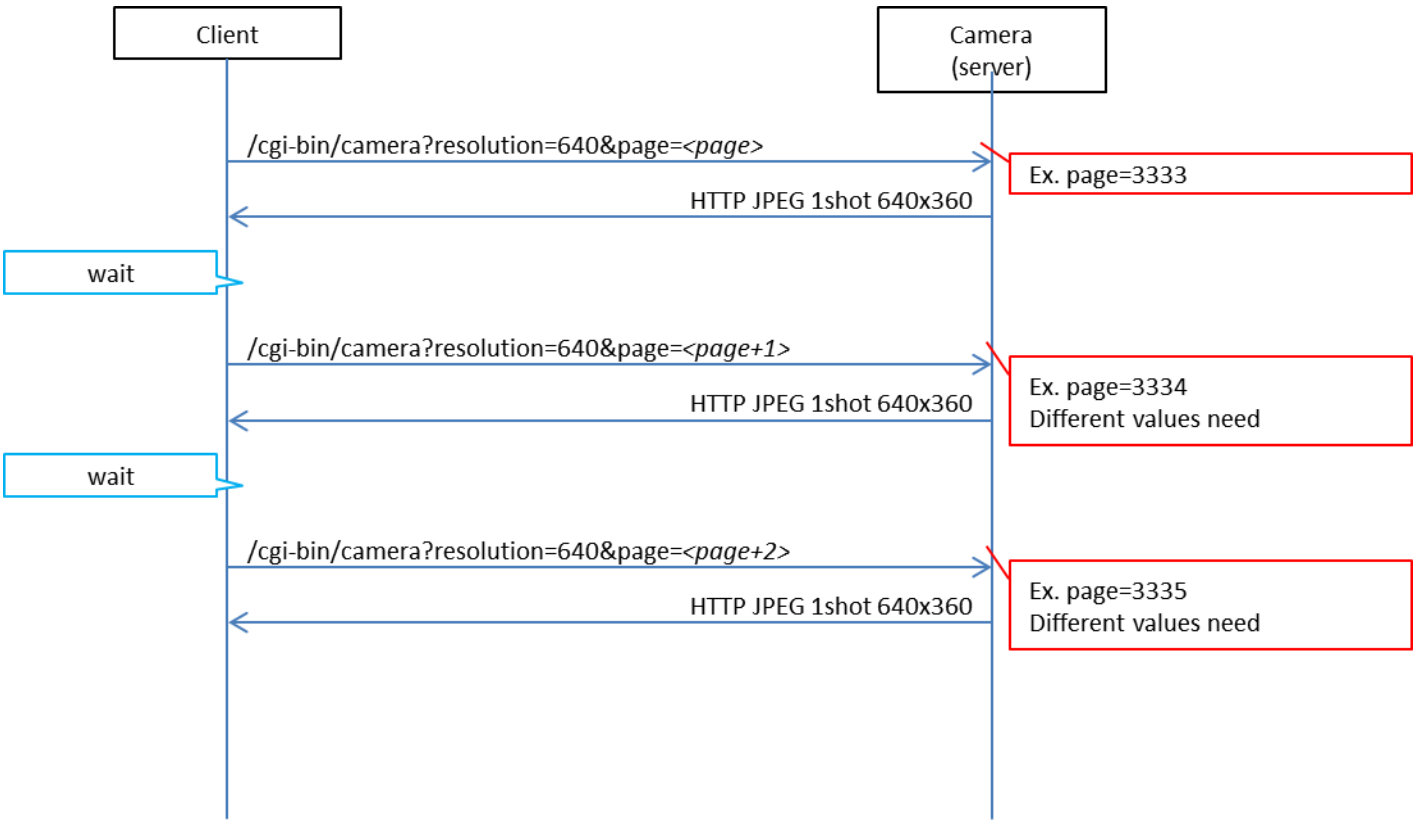
Note that if you use /cgi-bin/aw_ptz?cmd=%23RZLx&res=1, the resolution of JPEG(1) changes.

2.5. Image Transmission Sequence based on MJPEG



MJPEG Sequence

2.6. Image Transmission Sequence based on JPEG Image 1 shot



JPEG 1 shot Sequence

2.7. H264/AUDIO-based Image Transmission

Method : GET
Access level : Live

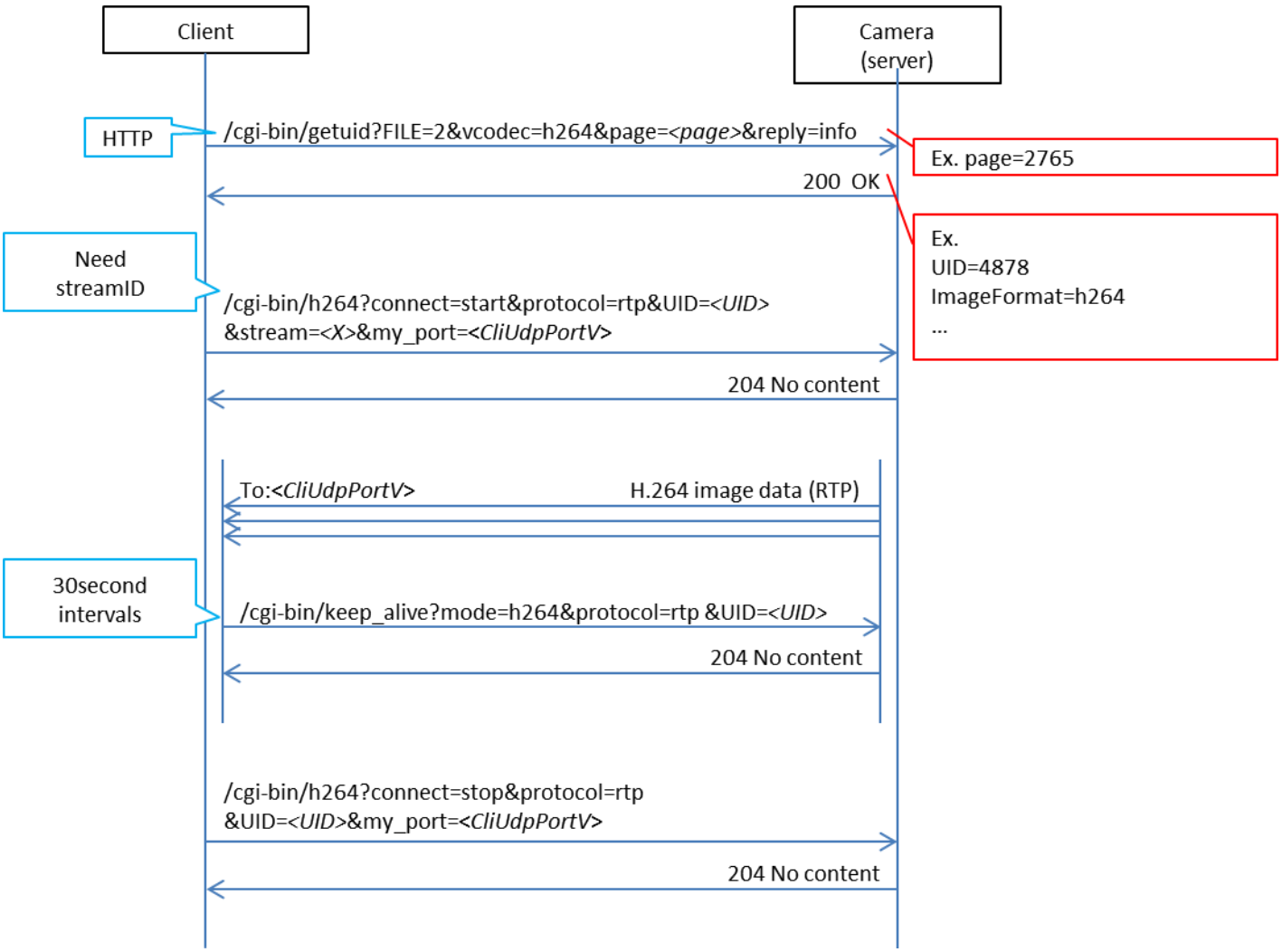
CGI item name	URL	Parameter name	Parameter value	Description
H.264 image transmission	/cgi-bin/h264	my_port	Numeric value	Reception port number of H.264 * This parameter cannot be omitted if unicast is set.
		connect	start stop	start: Starts H.264 transmission stop: Stops H.264 transmission
		protocol	rtp	rtp: RTP format (can be omitted)
		UID	Numeric value	User ID * UID acquired by /cgi-bin/getuid
		stream	1 2 3 4	1: Stream 1 2: Stream 2 3: Stream 3 4: Stream 4
Audio transmission	/cgi-bin/audio	connect	start stop	start: Starts audio transmission stop: Stops audio transmission
		protocol	rtp http	rtp: RTP transmission http: HTTP transmission
		my_port	Numeric value	Reception port number of audio data *Only when protocol = rtp Can be omitted during HTTP transmission
		UID	Numeric value	User ID * UID acquired by /cgi-bin/getuid
		mode	in	in: Fixed
Keep alive	/cgi-bin/keep_alive	mode	h.264 h.264_2 h.264_3 h.264_4 jpeg audio	h.264: H.264 keep alive h.264_2: H.264(2) keep alive h.264_3: H.264(3) keep alive h.264_4: H.264(4) keep alive jpeg: JPEG keep alive audio: Audio keep alive
		protocol	rtp http	rtp: RTP transmission http: HTTP transmission
		UID	Numeric value	User ID * UID acquired by /cgi-bin/getuid
		stream	1 2 3 4	1: Stream 1 2: Stream 2 3: Stream 3 4: Stream 4 * Can be omitted

Usage example) H264(1) image transmission start (when the port number is "40000" and User ID is "263")
http://192.168.0.10/cgi-bin/h264?my_port=40000&connect=start&protocol=rtp&UID=263&stream=1

Usage example) Audio transmission start
http://192.168.0.10/cgi-bin/audio?my_port=38004&connect=start&protocol=rtp&UID=263&mode=in

Usage example) Keep alive (JPEG)
http://192.168.0.10/cgi-bin/keep_alive?mode=jpeg&protocol=http&UID=263

2.8. Unicast Image Transmission Sequence based on H264



H264 Sequence

3. CGI List for Various Settings

3.1. Basic Settings

Method : POST
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Basic settings	/cgi-bin/set_basic	cam_title	String	Camera title (within 20 double-byte characters)
		plugin_ download	enable disable	Auto installation of plug-in software enable: Allowed disable: Not allowed
		plugin_disp	0 1	0: Real time consideration (Off) 1: Smooth display (On)

Usage example) Set the camera title
http://192.168.0.10/cgi-bin/set_basic?cam_title=he40

Method : GET
Access level : Admin

CGI 項目名	URL	パラメータ名	パラメータ値	説明
Streaming mode setting	/cgi-bin/set_stream_mode	mode	h264 h264_uhd h265_uhd rtmp ndi_hx jpeg_uhd	h264 : H.264 h264_uhd : H.264(4K) h265_uhd : H.265 rtmp : RTMP ndi_hx : NDI|HX jpeg_uhd : JPEG(UHD)

Usage example）Set the streaming mode to H.264
http://192.168.0.10/cgi-bin/set_priority_mode?mode=h264

3.2 Clock Settings

Method : POST
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
NTP settings	/cgi-bin/time	time_adjust	0 1	0: Manual 1: Synchronized with the NTP server
		ntp_addr_dhcp	0 1	0: OFF (manual input) 1: ON (acquired from DHCP)
		ntp_addr	String	IP address
		ntp_port	Numeric value	1 to 65535
		ntp_interval	Numeric value	1 to 24 (hours)
Clock settings	/cgi-bin/date_time	display	0 1	0: off 1: on
		date_year	2013 to 2035	Year
		date_month	1 to 12	Month
		date_day	1 to 31	Day
		date_hour	0 to 23	Hour
		date_min	0 to 59	Minutes
		date_sec	0 to 59	Seconds
		timezone	1 to 75	1 to 75

Usage example) NTP settings
http://192.168.0.10/cgi-bin/time?time_adjust=1&ntp_addr_dhcp=0&ntp_addr=192.168.0.1&ntp_port=123&ntp_interval=12

Usage example) Clock settings
http://192.168.0.10/cgi-bin/date_time?display=0&date_year=2015&date_month=1&date_day=1&date_hour=0&date_min=0&date_sec=0

3.3. Video over IP Settings

Method : POST
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
JPEG settings	/cgi-bin/set_jpeg	jpeg_quality	0 to 9	0 to 4: High image quality 5 to 9: Low image quality
		jpeg_quality_ch2	0 to 9	0 to 4: High image quality 5 to 9: Low image quality
		jpeg_quality_ch3	0 to 9	0 to 4: High image quality 5 to 9: Low image quality

CGI item name	URL	Parameter name	Parameter value	Description
		resol_stream1	320 640 1280 1920 3840	320: 320 x 180 640: 640 x 360 1280: 1280 x 720 1920: 1920 x 1080 3840: 3840 x 2160
		resol_stream2	320 640	320: 320 x 180 640: 640 x 360
		resol_stream3	320 640	320: 320 x 180 640: 640 x 360
		jpeg_transmit 1	0 1	0: OFF Do not transmit 1: ON Transmit
		jpeg_transmit 2	0 1	0: OFF Do not transmit 1: ON Transmit
		jpeg_transmit 3	0 1	0: OFF Do not transmit 1: ON Transmit
		jpeg_interval1	1 4(*1) 5 12(*1) 15(12.5) 24(*1) 30(25)	Frame rate of JPEG(1) 1:1fps 4:4fps 5:5fps 12:12fps 15(12.5):15(12.5)fps 24:24fps * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
		jpeg_interval2	1 4(*1) 5 12(*1) 15(12.5) 24(*1) 30(25)	Frame rate of JPEG(2) 1:1fps 4:4fps 5:5fps 12:12fps 15(12.5):15(12.5)fps 24:24fps * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
		jpeg_interval3	1 4(*1) 5 12(*1) 15(12.5) 24(*1) 30(25)	Frame rate of JPEG(3) 1:1fps 4:4fps 5:5fps 12:12fps 15(12.5):15(12.5)fps 24:24fps * The values within () are for the case

CGI item name	URL	Parameter name	Parameter value	Description
				when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
JPEG stream settings	/cgi-bin/setdata	LIVESIZE	320 640 1280 1920 3840	Resolution of JPEG(1) 320: 320 x 180 640: 640 x 360 1280: 1280 x 720 1920: 1920 x 1080 3840: 3840 x 2160
		LIVESIZE2	320 640	Resolution of JPEG(2) 320: 320 x 180 640: 640 x 360
		LIVESIZE3	320 640	Resolution of JPEG(3) 320: 320 x 180 640: 640 x 360
		LIVEQUAL1280	0 to 9	Image quality of JPEG(1) 0 to 4: High image quality 5 to 9: Low image quality
		LIVEQUAL640	0 to 9	Image quality of JPEG(2) 0 to 4: High image quality 5 to 9: Low image quality
		LIVEQUAL320	0 to 9	Image quality of JPEG(3) 0 to 4: High image quality 5 to 9: Low image quality
H.264(1) stream settings	/cgi-bin/set_h264	h264_transmit	0 1	0: OFF Do not transmit 1: ON Transmit
		h264_rtsp_mode	0 1	Internet mode settings 0: OFF 1: ON
		h264_resolution	1920 3840	1920: 1920 x 1080 3840: 3840 x 2160
		f_priority	0 1 2	0: Fixed bit rate 1: Frame rate priority 2: Best effort transmission
		framerate	5 15(12.5) 24(*1) 30(25) 60(50)	5: 5 fps 15 (12.5): 15 (12.5) fps 24: 24fps 30 (25): 30 (25) fps 60 (50): 60 (50) fps * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz

CGI item name	URL	Parameter name	Parameter value	Description
		h264_bandwidth	512	512:512(kbps)
			768	768:768(kbps)
			1024	1024:1024(kbps)
			1536	1536:1536(kbps)
			2048	2048:2048(kbps)
			3072	3072:3072(kbps)
			4096	4096:4096(kbps)
			6144	6144:6144(kbps)
			8192	8192:8192(kbps)
			10240	10240:10240(kbps)
			12288	12288:12288(kbps)
			14336	14336:14336(kbps)
			16384	16384:16384(kbps)
			20480	20480:20480(kbps)
			24576	24576:24576(kbps)
			12800	12800:12800(kbps)
			25600	25600:25600(kbps)
			51200	51200:51200(kbps)
			76800	76800:76800(kbps)
		h264_bandwidth_min	512	512:512(kbps)
			768	768:768(kbps)
			1024	1024:1024(kbps)
			1536	1536:1536(kbps)
			2048	2048:2048(kbps)
			3072	3072:3072(kbps)
			4096	4096:4096(kbps)
			6144	6144:6144(kbps)
			8192	8192:8192(kbps)
			10240	10240:10240(kbps)
			12288	12288:12288(kbps)
			14336	14336:14336(kbps)
			16384	16384:16384(kbps)
			20480	20480:20480(kbps)
			24576	24576:24576(kbps) * Can be set when f_priority = 2 (Best effort transmission)
			12800	12800:12800(kbps)
			25600	25600:25600(kbps)
			51200	51200:51200(kbps)
			76800	76800:76800(kbps)
		h264_quality	fine	fine: Image quality priority
			low	low: Motion priority
		h264_unimulti	uni	uni: unicast (auto)
			multi	multi: multicast
			uni_manual	uni_manual: unicast (manual)

CGI item name	URL	Parameter name	Parameter value	Description
		unicast_port	1024 to 50000	Port number: 1024 to 50000
		unicast_audio_port	1024 to 50000	Port number: 1024 to 50000
		multicast_addr1	224 to 239	224.0.0.0 - 239.255.255.255
		multicast_addr2	0 to 255	
		multicast_addr3	0 to 255	
		multicast_addr4	0 to 255	
		multicast_addr	*.*.*.* format *:*:*:*:*:*:*:* format	*.*.*.* format *:*:*:*:*:*:*:* format
		multicast_port	1024 to 50000	1024 to 50000
		multicast_ttl	1 to 254	1 to 254
H.264(2) stream settings	/cgi-bin/set_h264_2	h264_transmit	01	0: OFF Do not transmit1: ON Transmit
		h264_rtsp_mode	0 1	Internet mode settings 0: OFF 1: ON
		h264_resolution	320 640 1280 1920	320:320x180 640：640x360 1280：1280x720 1920: 1920x1080
		f_priority	0 1 2	0: Fixed bit rate 1: Frame rate priority 2: Best effort transmission
		framerate	5 15(12.5) 24(*1) 30(25) 60(50)	5:5fps 15(12.5):15(12.5)fps 24:24fps 30(25):30(25)fps 60(50):60(50)fps * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz

CGI item name	URL	Parameter name	Parameter value	Description
		h264_bandwidth	512 768 1024 1536 2048 3072 4096 6144 8192 10240 12288 14336 16384 20480 24576	512:512(kbps) 768:768(kbps) 1024:1024(kbps) 1536:1536(kbps) 2048:2048(kbps) 3072:3072(kbps) 4096:4096(kbps) 6144:6144(kbps) 8192:8192(kbps) 10240:10240(kbps) 12288:12288(kbps) 14336:14336(kbps) 16384:16384(kbps) 20480:20480(kbps) 24576:24576(kbps)
		h264_bandwidth_min	512 768 1024 1536 2048 3072 4096 6144 8192 10240 12288 14336 16384 20480 24576	512:512(kbps) 768:768(kbps) 1024:1024(kbps) 1536:1536(kbps) 2048:2048(kbps) 3072:3072(kbps) 4096:4096(kbps) 6144:6144(kbps) 8192:8192(kbps) 10240:10240(kbps) 12288:12288(kbps) 14336:14336(kbps) 16384:16384(kbps) 20480:20480(kbps) 24576:24576(kbps) * Can be set when f_priority = 2 (Best effort transmission)
		h264_quality	fine low	fine: Image quality priority low: Motion priority
		h264_unimulti	uni multi uni_manual	uni: unicast (auto) multi: multicast uni_manual: unicast (manual)
		unicast_port	1024 to 50000	Port number: 1024 to 50000
		unicast_audio_port	1024 to 50000	Port number: 1024 to 50000
		multicast_addr1	224 to 239	224.0.0.0 - 239.255.255.255
		multicast_addr2	0 to 255	
		multicast_add	0 to 255	

CGI item name	URL	Parameter name	Parameter value	Description
		r3		
		multicast_addr4	0 to 255	
		multicast_addr	*.*.*.* format *:*:*:*:*:*:*:* format	*.*.*.* format *:*:*:*:*:*:*:* format
		multicast_port	1024 to 50000	1024 to 50000
		multicast_ttl	1 to 254	1 to 254
H.264(3) stream settings	/cgi-bin/set_h264_3	h264_transmit	0 1	0: OFF Do not transmit 1: ON Transmit
		h264_rtsp_mode	0 1	Internet mode settings 0: OFF 1: ON
		h264_resolution	320 640 1280	320:320x180 640：640x360 1280：1280x720
		f_priority	0 1 2	0: Fixed bit rate 1: Frame rate priority 2: Best effort transmission
		framerate	5 15 (12.5) 30 (25)	5: 5 fps 15 (12.5): 15 (12.5) fps 30 (25): 30 (25) fps * The values within () are for the case when the system frequency is 50 Hz
		h264_bandwidth	512 768 1024 1536 2048 3072 4096 6144 8192	512：512(kbps) 768：768(kbps) 1024:1024(kbps) 1536：1536(kbps) 2048：2048(kbps) 3072：3072(kbps) 4096：4096(kbps) 6144:6144(kbps) 8192：8192(kbps)
		h264_bandwidth_min	512 768 1024 1536 2048 3072 4096 6144 8192	512：512(kbps) 768：768(kbps) 1024:1024(kbps) 1536：1536(kbps) 2048：2048(kbps) 3072：3072(kbps) 4096：4096(kbps) 6144:6144(kbps) 8192：8192(kbps) * Can be set when f_priority = 2 (Best effort transmission)

CGI item name	URL	Parameter name	Parameter value	Description
		h264_quality	fine low	fine: Image quality priority low: Motion priority
		h264_unimulti	uni multi uni_manual	uni: unicast (auto) multi: multicast uni_manual: unicast (manual)
		unicast_port	1024 to 50000	Port number: 1024 to 50000
		unicast_audio_port	1024 to 50000	Port number: 1024 to 50000
		multicast_addr1	224 to 239	224.0.0.0 - 239.255.255.255
		multicast_addr2	0 to 255	
		multicast_addr3	0 to 255	
		multicast_addr4	0 to 255	
		multicast_addr	*.*.*.* format *:*:*:*:*:*:*:* format	*.*.*.* format *:*:*:*:*:*:*:* format
		multicast_port	1024 to 50000	1024 to 50000
		multicast_ttl	1 to 254	1 to 254
H.264(4) stream settings	/cgi-bin/set_h264_4	h264_transmit	0 1	0: OFF Do not transmit 1: ON Transmit
		h264_rtsp_mode	0 1	Internet mode settings 0: OFF 1: ON
		h264_resolution	320 640 1280	320:320x180 640：640x360 1280：1280x720
		f_priority	0 1 2	0: Fixed bit rate 1: Frame rate priority 2: Best effort transmission
		framerate	5 15 (12.5) 30 (25)	5: 5 fps 15 (12.5): 15 (12.5) fps 30 (25): 30 (25) fps * The values within () are for the case when the system frequency is 50 Hz

CGI item name	URL	Parameter name	Parameter value	Description
		h264_bandwidth	512 768 1024 1536 2048 3072 4096 6144 8192	512：512(kbps) 768：768(kbps) 1024:1024(kbps) 1536：1536(kbps) 2048：2048(kbps) 3072：3072(kbps) 4096：4096(kbps) 6144:6144(kbps) 8192：8192(kbps)
		h264_bandwidth_min	512 768 1024 1536 2048 3072 4096 6144 8192	512：512(kbps) 768：768(kbps) 1024:1024(kbps) 1536：1536(kbps) 2048：2048(kbps) 3072：3072(kbps) 4096：4096(kbps) 6144:6144(kbps) 8192：8192(kbps) * Can be set when f_priority = 2 (Best effort transmission)
		h264_quality	fine low	fine: Image quality priority low: Motion priority
		h264_unimulti	uni multi uni_manual	uni: unicast (auto) multi: multicast uni_manual: unicast (manual)
		unicast_port	1024 to 50000	Port number: 1024 to 50000
		unicast_audio_port	1024 to 50000	Port number: 1024 to 50000
		multicast_addr1	224 to 239	224.0.0.0 - 239.255.255.255
		multicast_addr2	0 to 255	
		multicast_addr3	0 to 255	
		multicast_addr4	0 to 255	
		multicast_addr	*.*.*.* format*:*:*:*:*:*:*:*:* format	*.*.*.* format*:*:*:*:*:*:*:* format
		multicast_port	1024 to 50000	1024 to 50000
		multicast_ttl	1 to 254	1 to 254
H.265 stream settongs	/cgi-bin/set_h265	h265_transmit	0 1	0: OFF Do not transmit 1: ON Transmit

CGI item name	URL	Parameter name	Parameter value	Description
		h265_rtsp_mode	0 1	Internet mode settings 0: OFF 1: ON
		h265_resolution	3840	3840:3840x2160
		f_priority	0 1 2	0: Fixed bit rate 1: Frame rate priority 2: Best effort transmission
		framerate	24(*1) 30(25)	24:24fps 30(25):30(25)fps * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
		h264_bandwidth	8192 12800 25600 51200 76800	8192：8192(kbps) 12800:12800(kbps) 25600:25600(kbps) 51200:51200(kbps) 76800:76800(kbps)
		h264_unimulti	uni multi uni_manual	uni：unicast(auto) multi：multicast uni_manual：unicast(manual)
		unicast_port	1024～50000	Port number：1024～50000
		unicast_audio_port	1024～50000	Port number：1024～50000
		multicast_addr1	224～239	224.0.0.0 - 239.255.255.255
		multicast_addr2	0～255	
		multicast_addr3	0～255	
		multicast_addr4	0～255	
		multicast_addr	*.*.*.*format *:*:*:*:*:*:*:*format	*.*.*.*format *:*:*:*:*:*:*:*format
		multicast_port	1024～50000	1024～50000
		multicast_ttl	1～254	1～254
RTSP settings	/cgi-bin/set_rtsp	rtsp_port	1 to 65535	1 to 65535 * Set to 554 according to factory settings
		h264_rtsp_mode	0 1	Internet mode settings of H264(1) 0: OFF　Do not Transmit 1: ON　Transmit

CGI item name	URL	Parameter name	Parameter value	Description
		h264_rtsp_mode2	0 1	Internet mode settings of H264(2) 0: OFF Do not Transmit 1: ON Transmit
		h264_rtsp_mode3	0 1	Internet mode settings of H264(3) 0: OFF Do not Transmit 1: ON Transmit
		h264_rtsp_mode4	0 1	Internet mode settings of H264(4) 0: OFF Do not Transmit 1: ON Transmit
		h265_rtsp_mode	0	Internet mode settings of H265 0: OFF Do not Transmit
		h264_rtsp_req_uri1	string	URI for RTSP streming of H.264(1)
		h264_rtsp_req_uri2	string	URI for RTSP streming of H.264(2)
		h264_rtsp_req_uri3	string	URI for RTSP streming of H.264(3)
		h264_rtsp_req_uri4	string	URI for RTSP streming of H.264(4)
		h265_rtsp_req_uri1	string	URI for RTSP streming of H.265
Live screen initial stream selection	/cgi-bin/set_livestart	stream	h264 h264_2 h264_3 h264_4 jpeg jpeg_2 jpeg_3	h264：H264(1) h264_2：H.264(2) h264_3：H.264(3) h264_4：H.264(4) jpeg：JPEG(1) jpeg_2：JPEG(2) jpeg_3：JPEG(3)

Usage example) Change the resolution of H.264(4) to 320 x 180.

http://192.168.0.10/cgi-bin/set_h264_4?h264_resolution=320

Usage example) Change the RTSP waiting port at the remote camera side from 554(factory settings) to 555.

http://192.168.0.10/cgi-bin/set_rtsp?&rtsp_port=555

* The h264_rtsp_mode of set_rtsp is a mirror of the WEB menu. RTSP/RTP does not change to TCP even if turned ON.

3.4. Audio Settings

Method : POST
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Audio settings	/cgi-bin/set_audio	audio_bitrate	64 96 128	64: 64 Kbps 96: 96 Kbps 128: 128 Kbps
		audio_transmit	0 1	0: Off 1: On

Usage example) Turn ON the Audio Over IP from the device connected to the AUDIO IN terminal.
http://192.168.0.10/cgi-bin/set_audio?audio_transmit=1

3.5. Network Settings

Method : POST
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Network settings	/cgi-bin/network	dhcp	0 1	0: DHCP OFF (Static settings) 1: DHCP ON
		IP_addr1	0 to 255	IP address First octet
		IP_addr2	0 to 255	IP address Second octet
		IP_addr3	0 to 255	IP address Third octet
		IP_addr4	0 to 255	IP address Fourth octet
		netmask1	0 to 255	Subnet mask First octet
		netmask2	0 to 255	Subnet mask Second octet
		netmask3	0 to 255	Subnet mask Third octet
		netmask4	0 to 255	Subnet mask Fourth octet
		gateway1	0 to 255	Default gateway First octet
		gateway2	0 to 255	Default gateway Second octet
		gateway3	0 to 255	Default gateway Third octet
		gateway4	0 to 255	Default gateway Fourth octet
		port	1 to 65535	1 to 65535
		dns	manual auto	manual: Manual setting auto: Auto setting
		pri_server1	0 to 255	Primary server address (DNS) First octet
		pri_server2	0 to 255	Primary server address (DNS) Second octet
		pri_server3	0 to 255	Primary server address (DNS) Third octet
		pri_server4	0 to 255	Primary server address (DNS) Fourth octet
		sec_server1	0 to 255	Secondary server address (DNS) First octet
		sec_server2	0 to 255	Secondary server address (DNS) Second octet
		sec_server3	0 to 255	Secondary server address (DNS) Third octet
		sec_server4	0 to 255	Secondary server address (DNS) Fourth octet
		ip6_auto	0 1	IPv6 address manual setting 1: off 0: on
		ip6_addr	*:*:*:*:*:*:*:* format	IP address

CGI item name	URL	Parameter name	Parameter value	Description
		ip6_gateway	*:*:*:*:*:*:*:* format	Default gateway
		ip6_pri_server	*:*:*:*:*:*:*:* format	Primary server (IPv6 only)
		ip6_sec_server	*:*:*:*:*:*:*:* format	Secondary server (IPv6 only)
		ip6_dhcp	0 1	0: DHCPv6 OFF 1: DHCPv6 ON
		rtp_packet_max	1500 1280	RTP packet max. transmission size 1500: Unlimited (1500 byte) 1280: Limited (1280 byte)
		mss	1460 1280 1024	Max. segment size of TCP (MSS) 1460: Unlimited (1460 byte) 1280: Limited (1280 byte) 1024: Limited (1024 byte)
		time	20 unlimited	Effective limit 20: 20 minutes unlimited: Unlimited
		bandwidth	0 64 128 256 384 512 768 1024 2048 4096 8192 10000	Transmission volume of entire network 0: Unlimited 64 : 64kbps 128 : 128kbps 256 : 256kbps 384 : 384kbps 512 : 512kbps 768 : 768kbps 1024 : 1024kbps 2048 : 2048kbps 4096 : 4096kbps 8192 : 8192kbps 10000: Unlimited * When 10000 is received, an error is not issued, and the operation is performed by assuming "Unlimited".
Easy IP Setup protocol settings	/cgi-bin/easyipset	time	unlimited, 20	Time period during which Easy IP Setup can be performed from the time power is turned ON unlimited: Unlimited 20: 20 minutes

CGI item name	URL	Parameter name	Parameter value	Description
Transmission volume of entire network	/cgi-bin/set_bandwidth	bandwidth	0 1024 2048 4096 8192 16384 32768 10000	Transmission volume of entire network 0: Unlimited 1024 : 1024kbps 2048 : 2048kbps 4096 : 4096kbps 8192 : 8192kbps 16384:16384kbps 32768:32768kbps 10000: Unlimited * When 10000 is received, an error is not issued, and the operation is performed by assuming "Unlimited".
Max. packet length settings	/cgi-bin/set_rtp	rtp_size	1280 1500	1280: Max. packet length limit 1500: Normal packet length

Usage example) Change the IP address to 192.168.0.30

http://192.168.0.10/cgi-bin/network?IP_addr1=192&IP_addr2=168&IP_addr3=0&IP_addr4=30&netmask1=255&netmask2=255&netmask3=255&netmask4=128&gateway1=192&gateway2=168&gateway3=0&gateway4=50

3.6. Virtual Studio Settings

Method : GET
Access level : live

CGI item name	URL	Parameter name	Parameter value	Description
Vitual StudioClient Settings	/cgi-bin/set_virtual_client_info	client_1_transport	0 1	0: Regular notification of Camera status is OFF 1: Regular notification of Camera status is ON
		client_1_ipaddr	*.*.*.*format *.*.*.*/Mask length format	*.*.*.* format *.*.*.*/Mask length format (Up to 128 single-byte alphanumeric characters)
		client_1_port	Numeric Value	Port Number
		client_2_transport	0 1	0: Regular notification of Camera status is OFF 1: Regular notification of Camera status is ON

CGI item name	URL	Parameter name	Parameter value	Description
		client_2_ipaddr	*.*.*.*format *.*.*.*/Mask length format	*.*.*.* format *.*.*.*/Mask length format (Up to 128 single-byte alphanumeric characters)
		client_2_port	Numeric Value	Port Number
		client_3_transport	0 1	0: Regular notification of Camera status is OFF 1: Regular notification of Camera status is ON
		client_3_ipaddr	*.*.*.*format *.*.*.*/Mask length format	*.*.*.* format *.*.*.*/Mask length format (Up to 128 single-byte alphanumeric characters)
		client_3_port	Numeric Value	Port Number
		client_4_transport	0 1	0: Regular notification of Camera status is OFF 1: Regular notification of Camera status is ON
		client_4_ipaddr	*.*.*.*format *.*.*.*/Mask length format	*.*.*.* format *.*.*.*/Mask length format (Up to 128 single-byte alphanumeric characters)
		client_4_port	Numeric Value	Port Number

Usage example) Setting Virtual Studio Client info

http://192.168.0.10/cgi-bin/set_virtual_client_info?client_1_transport=1&client_1_ipaddr=192.168.0.11&client_1_port=1111& client_2_transport=1&client_2_ipaddr=192.168.0.12&client_2_port=1112&client_3_transport=1&client_3_ipaddr=192.168.0.13&client_3_port=1113&client_4_transport=1&client_4_ipaddr=192.168.0.14&client_1_port=1114

3.7. UPnP Settings

Method : POST
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
UPnP settings	/cgi-bin/upnp	upnp_portmap	0 1	Auto port-forwarding 0: Disabled 1: Enabled

Usage example) Set UPnP to ON
http://192.168.0.10/cgi-bin/upnp?upnp_portmap=1

3.8. Restarting

Method : POST
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Initialization	/cgi-bin/initial	cmd	reset	Camera restart
		Randomnum	Hexadecimal string	16 single-byte character string

Usage example) Restarting the remote camera
http://192.168.0.10/cgi-bin/initial?cmd=reset&Randomnum=12345

4. CGI List for Acquisition of Different Types of Information

4.1. Basic Settings Information Acquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
Basic settings information acquisition	/cgi-bin/get_basic			

The response data is as shown below.

cam_title = Camera title
plugin_download = enable/disable
plugin_disp = 0/1

4.2. NTP Settings Information Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
NTP settings information acquisition	/cgi-bin/get_time			

The response data is as shown below.

time_adjust = 0/1
ntp_addr_dhcp = 0/1
ntp_addr = String
ntp_port = Numeric value (1 to 65535)
ntp_interval = Numeric value (1 to 24)

4.3. Clock Settings Information Acquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
Clock settings information acquisition	/cgi-bin/get_date_time			

The response data is as shown below.

display = 0/1
date_year = Numeric value
date_month = Numeric value
date_day = Numeric value
date_hour = Numeric value
date_min = Numeric value
date_sec = Numeric value
timezone = Numeric value (1 to 74)

4.4. Streaming Mode Acquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
Streaming mode acquisition	/cgi-bin/get_priority_mode			

The response data is as shown below.

strean_mode = xxx
* For details on the value notified by xxx, see the parameters of set_stream_mode.

4.5. VideoOverIP Screen Information Acquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
VideoOverIP screen information acquisition	/cgi-bin/get_video_over_ip			▪ The response is issued in a random order ▪ If transmission to a specific ch is not possible due to the specifications, the response for the desired ch is not returned Example) If transmission to h264 (ch4) is not possible, h264_xxxxx_ch4 is not included in the response.

The response data is as shown below.

livestart_stream=h264/h264_2/h264_3/h264_4/jpeg/jpeg_2/jpeg_3
jpeg_quality=1/5
jpeg_quality_ch2=1/5
jpeg_quality_ch3=1/5
resol_stream1=320/640/1280/1920/3840
resol_stream2=320/640/1280
resol_stream3=320/640/1280
jpeg_transmit1=0/1
jpeg_transmit2=0/1
jpeg_transmit3=0/1
jpeg_interval1=1/4/5/12/15(12.5)/24/30(25)
jpeg_interval2=1/4/5/12/15(12.5)/24/30(25)
jpeg_interval3=1/4/5/12/15(12.5)/24/30(25)
h264_transmit_ch1=0/1
h264_transmit_ch2=0/1
h264_transmit_ch3=0/1
h264_transmit_ch4=0/1
h264_rtsp_mode_ch1=0/1
h264_rtsp_mode_ch2=0/1
h264_rtsp_mode_ch3=0/1
h264_rtsp_mode_ch4=0/1
h264_resolution_ch1=1920/3840
h264_resolution_ch2=320/640/1280/1920
h264_resolution_ch3=320/640/1280
h264_resolution_ch4=320/640/1280
h264_f_priority_ch1=0/1/2
h264_f_priority_ch2=0/1/2
h264_f_priority_ch3=0/1/2

h264_f_priority_ch4=0/1/2
h264_framerate_ch1=5/15(12.5)/24/30(25)/60(50)
h264_framerate_ch2=5/15(12.5)/24/30(25)/60(50)
h264_framerate_ch3=5/15(12.5)/30(25)
h264_framerate_ch4=5/15(12.5)/30(25)
h264_bandwidth_ch1 = Numeric value
h264_bandwidth_ch2 = Numeric value
h264_bandwidth_ch3 = Numeric value
h264_bandwidth_ch4 = Numeric value
h264_bandwidth_min_ch1 = Numeric value
h264_bandwidth_min_ch2 = Numeric value
h264_bandwidth_min_ch3 = Numeric value
h264_bandwidth_min_ch4 = Numeric value
h264_quality_ch1=fine/low1/5
h264_quality_ch2=fine/low1/5
h264_quality_ch3=fine/low1/5
h264_quality_ch4=fine/low1/5
h264_unimulti_ch1=uni/multi/uni_manual
h264_unimulti_ch2=uni/multi/uni_manual
h264_unimulti_ch3=uni/multi/uni_manual
h264_unimulti_ch4=uni/multi/uni_manual
h264_unicast_port_ch1 = Numeric value (1024 to 50000)
h264_unicast_port_ch2 = Numeric value (1024 to 50000)
h264_unicast_port_ch3 = Numeric value (1024 to 50000)
h264_unicast_port_ch4 = Numeric value (1024 to 50000)
h264_unicast_audio_port_ch1 = Numeric value (1024 to 50000)
h264_unicast_audio_port_ch2 = Numeric value (1024 to 50000)
h264_unicast_audio_port_ch3 = Numeric value (1024 to 50000)
h264_unicast_audio_port_ch4 = Numeric value (1024 to 50000)
h264_multicast_addr_ch1=xxx.xxx.xxx.xxx
h264_multicast_addr_ch2=xxx.xxx.xxx.xxx
h264_multicast_addr_ch3=xxx.xxx.xxx.xxx
h264_multicast_addr_ch4=xxx.xxx.xxx.xxx
h264_multicast_port_ch1 = Numeric value (1024 to 50000)
h264_multicast_port_ch2 = Numeric value (1024 to 50000)
h264_multicast_port_ch3 = Numeric value (1024 to 50000)
h264_multicast_port_ch4 = Numeric value (1024 to 50000)
h264_multicast_ttl_ch1 = Numeric value (1 to 254)
h264_multicast_ttl_ch2 = Numeric value (1 to 254)
h264_multicast_ttl_ch3 = Numeric value (1 to 254)
h264_multicast_ttl_ch4 = Numeric value (1 to 254)
h265_transmit_ch1=0/1
h265_rtsp_mode_ch1=0
h265_resolution_ch1=3840
h265_framerate_ch1=24/30(25)
h265_bandwidth_ch1= Numeric value
h265_unimulti_ch1=uni/multi/uni_manual
h265_unicast_port_ch1= Numeric value (1024~50000)

h265_unicast_audio_port_ch1= Numeric value (1024~50000)
h265_multicast_addr_ch1=xxx.xxx.xxx.xxx
h265_multicast_port_ch1= Numeric value (1024~50000)
h265_multicast_ttl_ch1= Numeric value (1~254)

4.6. Audio Settings Information Acquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
Audio settings information acquisition	/cgi-bin/get_audio			

The response data is as shown below.
audio_transmit=0/1
audio_bitrate=64/96/128

4.7. Virtual Studio Client Settings Information Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Virtual Studio Client Settings information acquisition	/cgi-bin/get_vstudio_client_info t			

The response data is as shown below.
client_1_transport=1（Transport is enable） or 0（Transport is unable）
client_1_ipaddr=*******
client_1_port=***
client_2_transport=1 or 0
client_2_ipaddr=*******
client_2_port=***
client_3_transport=1 or 0
client_3_ipaddr=*******
client_3_port=***
client_4_transport=1 or 0
client_4_ipaddr=*******
client_4_port=***

4.8. Host Authentication Settings Information Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Host authentication settings information acquisition	/cgi-bin/get_reg_host			

The response data is as shown below.

host = 0/1
host_addr1 = *.*.*.* format/*.*.*.*/Mask length format, level = 1/2
host_addr2 = *.*.*.* format/*.*.*.*/Mask length format, level = 1/2
host_addr3 = *.*.*.* format/*.*.*.*/Mask length format, level = 1/2
host_addr4 = *.*.*.* format/*.*.*.*/Mask length format, level = 1/2
host_addr5 = *.*.*.* format/*.*.*.*/Mask length format, level = 1/2
host_addr6 = *.*.*.* format/*.*.*.*/Mask length format, level = 1/2
host_addr7 = *.*.*.* format/*.*.*.*/Mask length format, level = 1/2
host_addr8 = *.*.*.* format/*.*.*.*/Mask length format, level = 1/2
host_addr9 = *.*.*.* format/*.*.*.*/Mask length format, level = 1/2

4.9. Network Settings Information Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Network settings information acquisition	/cgi-bin/get_network			

The response data is as shown below.

ip4_dhcp=0/1
ip4_addr=*.*.*.*
ip4_netmask=*.*.*.*
ip4_gateway=*.*.*.*
dns=auto/manual
ip4_pri_server=*.*.*.*
ip4_sec_server=*.*.*.*
ip6_auto=0/1
ip6_addr=*:*:*:*:*:*:*:*
ip6_gateway=*:*:*:*:*:*:*:*
ip6_dhcp=0/1

ip6_pri_server=*:*:*:*:*:*:*:*
ip6_sec_server=*:*:*:*:*:*:*:*
port = Numeric value (1 to 65535)
rtp_packet_max=1500/1280
mss=1024/1280/1460
bandwidth=0/64/128/256/384/512/768/1024/2048/4096/8192
time=20/unlimited

4.10. UPnP Settings Information Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
UPnP settings information acquisition	/cgi-bin/get_upnp			

The response data is as shown below.
upnp_portmap = 0/1

4.11. System Log Information Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
System log	/cgi-bin/get_systemlog	type	eventlog errorlog	eventlog: Event log errorlog: Error log
		num	Numeric value (1 to 1000)	Acquisition number
		index	Numeric value (1 to 1000)	Acquisition start position

The response data is as shown below.
no\mm/dd/yyyy hh:mm\event code\description$no\mm/dd/yyyy hh:mm\event code\description$
▪
▪
▪
* No line feed.
A "\" is entered between two parameters.
A "$" is entered between numbers, such as between No. 1 and No. 2.

4.12. UPnP Execution Results Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Status acquisition	/cgi-bin/get_status	-	-	UPnP execution result

The response data is as shown below.

http_port = Numeric value
http_status = enable/disable
https_port = Numeric value
https_status = enable/disable
addr = String

4.13. Preset Position Information Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Preset position information acquisition	/cgi-bin/get_preposi	command	list	list: Preset position registration status acquisition

The response data is as shown below.

PRESET_POSITION_REGISTRATION = String
HOME = 0
POSI1_ID = xxx
POSI2_ID = xxx
-
-
-

POSI100ID = xxx

4.14. Preset Thunbnail Acquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
Preset Thumbnail Acquisition	/cgi-bin/get_preset_thumbnail	preset_number	Numeric value (1~100)	Numeric number : Specify the preset number of the thumbnail to be acquired

4.15. RTSP Setting Information Acquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
RTSP Setting Information Acquisition	/cgi-bin/get_rtsp			

The response date is as ahow below.

rtsp_port=Numeric value (1~65535)
h264_rtsp_req_uri1=string
h264_rtsp_req_uri2=string
h264_rtsp_req_uri3=string
h264_rtsp_req_uri4=string
h265_rtsp_req_uri1=string

4.16. Other Setting Values Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
Setting value acquisition CGI	/cgi-bin/getdata	req	-	Specify the item name of the setting value to be acquired.
			img_mode	Imaging mode
			imgratio	Image ratio
			img_fps	Frame rate
			livestream	Live screen initial stream selection
			liveint	liveint: JPEG(1) refresh interval
			livequalbase	livequalbase: JPEG(1) default image quality
			livesize	livesize: JPEG(1) image resolution
			livequal	livequal: JPEG(1) image quality
			livesize2	livesize: JPEG(2) image resolution
			livequal2	livequal: JPEG(2) image quality
			livesize3	livesize: JPEG(3) image resolution
			livequal3	livequal: JPEG(3) image quality
			h264	H264(1) transmission ON/OFF
			h264rtspmode	Internet mode (H.264 transmission 1) ON/OFF
			h264bwc	Bit rate per client
			nrh264bwc	Bit rate per client at which transmission does not stop
			h264bwcmin	H.264(1) Bit rate per client (minimum)
			h264rtspmode_2	h264rtspmode_2: Internet mode (H.264 transmission 2) ON/OFF
			h264rtspmode_3	h264rtspmode_3: Internet mode (H.264 transmission 3) ON/OFF
			h264rtspmode_4	h264rtspmode_4: Internet mode (H.264 transmission 4) ON/OFF
			rtspport	rtspport: RTSP server port number
			h264size	h.264size: h.264 resolution
			h264qual	h.264qual: h.264 image quality
			h264rint	h.264rint: Refresh cycle (I frame cycle)
			h264mtd	h.264mtd: h.264 transmission method
			h264mladd1	h.264mladd1: h.264 multicast address First octet
			h264mladd2	h.264mladd2: h.264 multicast

CGI item name	URL	Parameter name	Parameter value	Description
				address Second octet
			h264mladd3	h.264mladd3: h.264 multicast address Third octet
			h264mladd4	h.264mladd4: h.264 multicast address Fourth octet
			h264mlport	h.264mlport: h.264 multicast transmission destination port number
			h264mlttl	h.264mlttl: h.264 multicast TTL
			h264uniport	h.264uniport: Unicast (for video) port number
			h264uniport2	h.264uniport2: Unicast (for audio) port number
			h264profile	H.264 profile
			h264codind	H.264 encoding system
			h264_2	h.264_2: h.264 transmission ON/OFF 2
			h264bwc_2	h.264bwc_2: Bit rate per client 2
			h264size_2	h.264size_2: h.264 resolution 2
			h264qual_2	h.264qual_2: h.264 image quality 2
			h264rint_2	h.264rint_2: Refresh cycle (I frame cycle) 2
			h264mtd_2	h.264mtd: h.264 transmission method 2
			h264mladd1_2	h.264mladd1_2: h.264 multicast address First octet 2
			h264mladd2_2	h.264mladd2_2: h.264 multicast address Second octet 2
			h264mladd3_2	h.264mladd3_2: h264 multicast address Third octet 2
			h264mladd4_2	h.264mladd4_2: h264 multicast address Fourth octet 2
			h264mlport_2	h.264mlport_2: h264 multicast transmission destination port number 2
			h264mlttl_2	h264mlttl_2: h264 multicast TTL2
			h.264uniport_2	h.264uniport_2: Unicast (for video) port number 2
			h264uniport2_2	h.264uniport2_2: Unicast (for audio) port number 2
			h264profile_2	H.264 profile 2
			h264codind_2	H.264 encoding system 2
			h264_3	h.264_2: h.264 transmission

CGI item name	URL	Parameter name	Parameter value	Description
				ON/OFF 3
			h264bwc_3	h.264bwc_3: Bit rate per client 3
			h264size_3	h.264size_3: h.264 resolution 3
			h264qual_3	h.264qual_3: h.264 image quality 3
			h264rint_3	h.264rint_3: Refresh cycle (I frame cycle) 3
			h264mtd_3	h.264mtd_3: h.264 transmission method 3
			h264mladd1_3	h.264mladd1_3: h.264 multicast address First octet 3
			h264mladd2_3	h.264mladd2_3: h.264 multicast address Second octet 3
			h264mladd3_3	h.264mladd3_3: h264 multicast address Third octet 3
			h264mladd4_3	h.264mladd4_3: h264 multicast address Fourth octet 3
			h264mlport_3	h.264mlport_3: h264 multicast transmission destination port number 3
			h264mlttl_3	h264mlttl_3: h264 multicast TTL3
			h.264uniport_3	h.264uniport_3: Unicast (for video) port number 3
			h264uniport2_3	h.264uniport2_3: Unicast (for audio) port number 3
			h264profile_3	H.264 profile 3
			h264codind_3	H.264 encoding system 3
			h264_4	h.264_4: h.264 transmission ON/OFF 4
			h264bwc_4	h.264bwc_4: Bit rate per client 4
			h264size_4	h.264size_4: h.264 resolution 4
			h264qual_4	h.264qual_4: h.264 image quality 4
			h264rint_4	h.264rint_4: Refresh cycle (I frame cycle) 4
			h264mtd_4	h.264mtd_4: h.264 transmission method 4
			h264mladd1_4	h.264mladd1_4: h.264 multicast address First octet 4
			h264mladd2_4	h.264mladd2_4: h.264 multicast address Second octet 4
			h264mladd3_4	h.264mladd3_4: h264 multicast address Third octet 4
			h264mladd4_4	h.264mladd4_4: h264 multicast address Fourth octet 4

CGI item name	URL	Parameter name	Parameter value	Description
			h264mlport_4	h264mlport_4: h264 multicast transmission destination port number 4
			h264mlttl_4	h264mlttl_4: h264 multicast TTL4
			h.264uniport_4	h.264uniport_4: Unicast (for video) port number 4
			h264uniport2_4	h.264uniport2_4: Unicast (for audio) port number 4
			h264profile_4	H.264 profile 4
			h264codind_4	H.264 encoding system 4
			h264mlauto	H264(1) multicast auto start
			h264mlauto_2	H264(2) multicast auto start
			h264mlauto_3	H264(3) multicast auto start
			h264mlauto_4	H264(4) multicast auto start
			audio_level	audio_level: Audio authorization and authentication level setting
			audio_sens	audio_sens: Sound collection sensitivity
			nrlivequal	nrlivequal: JPEG image quality at which transmission does not stop
			nrh264size	nrh264size: H.264 resolution at which transmission does not stop
			nrh264qual	nrh264qual: H.264 image quality at which transmission does not stop
			nrh264bwc_2	nrh264bwc_2: Bit rate per client 2 at which transmission does not stop
			nrh264size_2	nrh264size_2: H.264 resolution 2 at which transmission does not stop
			nrh264qual_2	nrh264qual_2: H.264 image quality 2 at which transmission does not stop
			nrh264bwc_3	nrh264bwc_3: Bit rate per client 3 at which transmission does not stop
			nrh264size_3	nrh264size_3: H.264 resolution 3 at which transmission does not stop
			nrh264qual_3	nrh264qual_3: H.264 image quality 3 at which transmission does not stop
			nrh264bwc_4	nrh264bwc_4: Bit rate per client 4 at which transmission does not stop
			nrh264size_4	nrh264size_4: H.264 resolution 4 at which transmission does not stop
			nrh264qual_4	nrh264qual_4: H.264 image quality 4 at which transmission does not stop
			h264fpriority	h264fpriority: H.264(1) transmission mode

CGI item name	URL	Parameter name	Parameter value	Description
			h264nrframerate	h264nrframerate: H.264(1) frame rate
			h264fpriority_2	h264fpriority_2: H.264(2) transmission mode
			h264nrframerate_2	h264nrframerate_2: H.264(2) frame rate
			h264fpriority_3	h264fpriority_3: H.264(3) transmission mode
			h264nrframerate_3	h264nrframerate_3: H.264(3) frame rate
			h264fpriority_4	h264fpriority_4: H.264(4) transmission mode
			h264nrframerate_4	h264nrframerate_4: H.264(4) frame rate
			h264bwcmin_2	H.264(2) Bit rate per client (minimum)
			h264bwcmin_3	H.264(3) Bit rate per client (minimum)
			h264bwcmin_4	H.264(4) Bit rate per client (minimum)
			livequalbase	JPEG default image quality
			liveframerate	Live screen initial frame rate (JPEG)
			plugin_halftone_jpeg	Enabling/disabling of half-tone function for JPEG images in Active X
			plugin_halftone_h264	Enabling/disabling of half-tone function for H.264 movies in Active X
		(None)	-	If there is no parameter specification, issue the list of setting data in a batch, as the response.

For details, see "Acquiring the List of Setting Values".

5. CGI List for HTTPS Control

5.1. Setting Information and Acquiring Certification

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
HTTPS self-signed certificate	https_self_signed	mode	get_info delete	get_info: Information confirmation delete: Delete
HTTPS CA certificate	https_signed	mode	get_info delete	get_info: Information confirmation delete: Delete
HTTPS CRT key history usage	https_crt_key	mode	refresh	Processing of CRT key refresh: Update
HTTPS connection method	set_https	live	http https	http: HTTP https: HTTPS
		https_port	1 to 65535	HTTPS port number
		https_mode	0 1	HTTPS connection mode 0: TLS1.2 1: TLS1.0/1.1/1.2
HTTPS self-signed certificate generate	https_creat_self_signed	common_name	String	Host name
		country	String	Country name
		state	String	Prefecture name
		locality	String	Locality name
		organization	String	Organization name
		organization_unit	String	Department name
HTTPS CSR generate	https_creat_signed	common_name	String	Host name
		country	String	Country name
		state	String	Prefecture name
		locality	String	Locality name
		organization	String	Organization name
		organization_unit	String	Department name
HTTPS CSR download	/cgi-bin/https_download_csr			
HTTPS CA certificate install	https_install_signed	-	-	-
HTTPS CRT key generate	https_change_crt_key	rsa_length	1024 2048	1024: 1024 bit 2048: 2048 bit

CGI item name	URL	Parameter name	Parameter value	Description
Status update	renewal	cgi_name	self_create csr_create ca_install key_create	self_create: Self-signed certificate creation status csr_create: CSR creation status ca_install: CA certificate installation status key_create: CRT key generation status

5.2. Information Acquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
HTTPS settings information acquisition	/cgi-bin/get_https			
HTTPS CRT key information acquisition	/cgi-bin/get_crt_key			

It is recommended to implement the HTTPS settings through GUI from the WEB menu.
Some models may not have the HTTPS function.

6. CGI List for RTMP Control

6.1. RTMP Stream control

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
RTMP Stream Control	/cgi-bin/rtmp_ctrl	cmd	start stop	start:RTMP Stream Start stop:RTMP Stream Stop

6.2. RTMP Stream Status Aquisition

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
RTMP Stream Status Aquisition	/cgi-bin/get_rtmp_status			0:Stream suspended 1:During Stream

The response data is as shown below.

status = Numeric value (0/1)

6.3. RTMP Server Setting

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
RTMP Server Setting	/cgi-bin/set_rtmp_param	type	0 1	0:URL, Stream key concatenation 1:URL, Stream key split
		url	String	Server URL
		key	String	Stream Key *Optional if 0 is specified for type

6.4. RTMP Server Setting Acquisition

Method : GET
Access level : Admin

CGI item name	URL	Parameter name	Parameter value	Description
RTMP Server Setting Aquisition	/cgi-bin/get_rtmp_param			

The response data is as shown below

type = 0/1

url = String

key = String

7. Acquiring the List of Setting Values

Method : GET
Access level : Live

CGI item name	URL	Parameter name	Parameter value	Description
Acquisition of list of setting values	/cgi-bin/setdata			Parameters are not required.

The response data is as shown below.

CAMTITLE,"AW-UE150"
IMAGESELECT,"2m"
IMAGERATIO,"16_9"
IMAGEFPS,"30"
LIVESTREAM,"h264_4"
LIVEINT,"30"
LIVEQUALBASE,"1"
LIVESIZE,"640"
LIVEQUAL,"5"
LIVESIZE2,"1280"
LIVEQUAL2,"5"
LIVESIZE3,"320"
LIVEQUAL3,"5"
STREAMMODE,"1"
H264,"1"
H264RTSPMODE,"0"
H264BWC,"8192"
NRH264BWC,"1024"
H264BWCMIN,"6144"
H264SIZE,"1280"
NRH264SIZE,"1280"
H264FPRIORITY,"2"
H264NRFRAMERATE,"30"
H264QUAL,"fine"
NRH264QUAL,"normal"
H264RINT,"1"
H264MTD,"multi"
H264MLADD1,"239"
H264MLADD2,"192"
H264MLADD3,"0"
H264MLADD4,"20"
H264MLADD,"239.192.0.20"
H264MLPORT,"37004"
H264MLTTL,"16"
H264UNIPORT,"32004"

H264UNIPORT2,"33004"
H264PROFILE,"0"
H264_2,"1"
H264RTSPMODE_2,"0"
H264BWC_2,"8192"
NRH264BWC_2,"1024"
H264BWCMIN_2,"4096"
H264SIZE_2,"1280"
NRH264SIZE_2,"640"
H264FPRIORITY_2,"1"
H264NRFRAMERATE_2,"30"
H264QUAL_2,"low"
NRH264QUAL_2,"normal"
H264RINT_2,"1"
H264MTD_2,"uni"
H264MLADD1_2,"239"
H264MLADD2_2,"192"
H264MLADD3_2,"0"
H264MLADD4_2,"21"
H264MLADD_2,"239.192.0.21"
H264MLPORT_2,"37004"
H264MLTTL_2,"16"
H264UNIPORT_2,"32014"
H264UNIPORT2_2,"33014"
H264PROFILE_2,"0"
H264_3,"1"
H264RTSPMODE_3,"0"
H264BWC_3,"4096"
NRH264BWC_3,"1024"
H264BWCMIN_3,"1024"
H264SIZE_3,"640"
NRH264SIZE_3,"640"
H264FPRIORITY_3,"1"
H264NRFRAMERATE_3,"30"
H264QUAL_3,"low"
NRH264QUAL_3,"normal"
H264RINT_3,"1"
H264MTD_3,"uni"
H264MLADD1_3,"-"
H264MLADD2_3,"-"
H264MLADD3_3,"-"
H264MLADD4_3,"-"
H264MLADD_3,"ff02::1"
H264MLPORT_3,"37004"
H264MLTTL_3,"16"
H264UNIPORT_3,"32024"
H264UNIPORT2_3,"33024"
H264PROFILE_3,"0"

H264_4,"1"
H264RTSPMODE_4,"1"
H264BWC_4,"1536"
NRH264BWC_4,"1024"
H264BWCMIN_4,"512"
H264SIZE_4,"320"
NRH264SIZE_4,"640"
H264FPRIORITY_4,"0"
H264NRFRAMERATE_4,"30"
H264QUAL_4,"low"
NRH264QUAL_4,"normal"
H264RINT_4,"1"
H264MTD_4,"uni"
H264MLADD1_4,"239"
H264MLADD2_4,"192"
H264MLADD3_4,"0"
H264MLADD4_4,"23"
H264MLADD_4,"239.192.0.23"
H264MLPORT_4,"37004"
H264MLTTL_4,"16"
H264UNIPORT_4,"32034"
H264UNIPORT2_4,"33034"
H264PROFILE_4,"0"
RTSPPORT,"554"
H264MLAUTO,"0"
H264MLAUTO_2,"0"
H264MLAUTO_3,"0"
H264MLAUTO_4,"0"
AUDIO,"in"
AUDIOBITRATE,"128"
PLUGIN_HALFTONE_JPEG,"0"
PLUGIN_HALFTONE_H264,"0"

The description of the response data is as shown below.

Setting name	Value	Description
CAMTITLE	String	Camera name
IMAGESELECT	2m	Imaging mode 2m: 2 M pixel
IMAGERATIO	16_9	Image ratio 16_9: 16:9 mode
IMAGEFPS	30	Frame rate 30: 30 fps

Setting name	Value	Description
LIVESTREAM	h264 h264_2 h264_3 h264_4 jpeg jpeg_2 jpeg_3	Live screen initial stream selection h264:H264(1) h264_2:H264(2) h264_3:H264(3) h264_4:H264(4) jpeg:JPEG(1) jpeg_2:JPEG(2) jpeg_3:JPEG(3)
LIVEINT	1 4(*1) 5 12(*1) 15(12.5) 24(*1) 30(25)	JPEG(1) refresh interval 1 4(*1) 5 12(*1) 15(12.5) 24(*1) 30(25) * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
LIVEQUALBASE	1	JPEG(1) default image quality 1: Image quality 1
LIVESIZE	320 640 1280 1920 3840	JPEG(1) image resolution 320:320x180 640:640x360 1280:1280x720 1920:1920x1080 3840: 3840x2160
LIVESIZE2	320 640 1280	JPEG(2) image resolution 320:320x180 640:640x360 1280:1280x720
LIVESIZE3	320 640 1280	JPEG(3) image resolution 320:320x180 640:640x360 1280:1280x720
LIVEQUAL	1 5	JPEG(1) image quality 1: Fine 5: Normal
LIVEQUAL2	1 5	JPEG(2) image quality 1: Fine 5: Normal
LIVEQUAL3	1 5	JPEG(3) image quality 1: Fine 5: Normal

Setting name	Value	Description
STREAMMODE	1	Movie transmission method 1: H264
STREAMENCODE	0 1	Compression method 1: H.264 2: H.265
H264 H264_2 H264_3 H264_4	0 1	H264 transmission ON/OFF 0: OFF 1: ON
H264RTSPMODE H264RTSPMODE_2 H264RTSPMODE_3 H264RTSPMODE_4	0 1	Internet mode ON/OFF 0: OFF 1: ON
H264BWC H264BWC_2 H264BWC_3 H264BWC_4	512,768,1024,1536, 2048,3072,4096,6144, 8192,10240,12288, 12800,14336,16384, 20480,24576,25600, 51200,76800	Bit rate per client 512 (kbps) ~ 24576 (kbps) ~ 76800 (kbps)
H264BWCMIN H264BWCMIN_2 H264BWCMIN_3 H264BWCMIN_4	512,768,1024,1536, 2048,3072,4096,6144, 8192,10240,12288, 12800,14336,16384, 20480,24576,25600, 51200,76800	Minimum bit rate per client 512 (kbps) ~ 24576 (kbps) ~ 76800 (kbps)
NRH264BWC NRH264BWC_2 NRH264BWC_3 NRH264BWC_4	Numeric value	Bit rate per client at which transmission does not stop Unit [kbps] * The value acquired by setdata depends on the minimum bit rate per client.
H264SIZE	320 640 1280 1920 3840	H264(1) resolution 320:320x180 640:640x360 1280:1280x720 1920:1920x1080
H264SIZE_2	320 640 1280 1920	H264(2) resolution 320:320x180 640:640x360 1280:1280x720 1920:1920x1080

Setting name	Value	Description
H264SIZE_3	320 640	H264(3) resolution 320:320x180 640:640x360
H264SIZE_4	320 640	H264(4) resolution 320:320x180 640:640x360
NRH264SIZE	1280 1920 3840	H264(1) resolution at which transmission does not stop 1280:1280x720 1920:1920x1080 3840: 3840x2160 (*1) The value acquired by setdata depends on the value of H264(1).
NRH264SIZE_2	320 640 1280 1920	H264(2) resolution at which transmission does not stop 320:320x180 640:640x360 1280:1280x720 1920:1920x1080 The value acquired by setdata depends on the value of H264(2).
NRH264SIZE_3	320 640	H264(3) resolution at which transmission does not stop 320:320x180 640:640x360 The value acquired by setdata depends on the value of H264(3).
NRH264SIZE_4	320 640	H264(4) resolution at which transmission does not stop 320:320x180 640:640x360 The value acquired by setdata depends on the value of H264(4).
H264FPRIORITY H264FPRIORITY_2 H264FPRIORITY_3 H264FPRIORITY_4	0 1 2	Transmission mode 0:Constant bit rate 1:Frame rate 2:Best effort
H264NRFRAMERATE	5 15(12.5) 24(*1) 30(25) 60(50)	H264(1) frame rate 5:5fps 15(12.5):15(12.5)fps 24:24fps 30(25):30(25)fps 60(50):60(50)fps * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and

Setting name	Value	Description
		23.98Hz
H264NRFRAMERATE_2	5 15(12.5) 24(*1) 30(25) 60(50)	H264(2) frame rate 5:5fps 15(12.5):15(12.5)fps 24:24fps 30(25):30(25)fps 60(50):60(50)fps * The values within () are for the case when the system frequency is 50 Hz (*1)* : When the system frequency is 24Hz and 23.98Hz
H264NRFRAMERATE_3	5 15(12.5) 30(25)	H264(3) frame rate 5:5fps 15(12.5):15(12.5)fps 30(25):30(25)fps * The values within () are for the case when the system frequency is 50 Hz
H264NRFRAMERATE_4	5 15(12.5) 30(25)	H264(4) frame rate 5:5fps 15(12.5):15(12.5)fps 30(25):30(25)fps * The values within () are for the case when the system frequency is 50 Hz
H264QUAL H264QUAL_2 H264QUAL_3 H264QUAL_4	fine low	H264 image quality fine: Image quality priority low: Motion priority
NRH264QUAL NRH264QUAL_2 NRH264QUAL_3 NRH264QUAL_4	normal	H264 image quality at which transmission does not stop normal: Standard
H264RINT H264RINT_2 H264RINT_3 H264RINT_4	1	Refresh cycle 1: 1 second
H264MTD H264MTD_2 H264MTD_3 H264MTD_4	uni uni_manual multi	H264 transmission method uni:Unicast port(AUTO) uni_manual:Unicast port(MANUAL) multi:Multicast
H264MLADD1	Numeric value	H264(1) multicast address First octet 224 to 239
H264MLADD2	Numeric value	H264(1) multicast address Second octet 0 to 255
H264MLADD3	Numeric value	H264(1) multicast address Third octet 0 to 255

Setting name	Value	Description
H264MLADD4	Numeric value	H264(1) multicast address Fourth octet 0 to 255
H264MLADD1_2	Numeric value	H264(2) multicast address First octet 224 to 239
H264MLADD2_2	Numeric value	H264(2) multicast address Second octet 0 to 255
H264MLADD3_2	Numeric value	H264(2) multicast address Third octet 0 to 255
H264MLADD4_2	Numeric value	H264(2) multicast address Fourth octet 0 to 255
H264MLADD1_3	Numeric value	H264(3) multicast address First octet 224 to 239
H264MLADD2_3	Numeric value	H264(3) multicast address Second octet 0 to 255
H264MLADD3_3	Numeric value	H264(3) multicast address Third octet 0 to 255
H264MLADD4_3	Numeric value	H264(3) multicast address Fourth octet 0 to 255
H264MLADD1_4	Numeric value	H264(4) multicast address First octet 224 to 239
H264MLADD2_4	Numeric value	H264(4) multicast address Second octet 0 to 255
H264MLADD3_4	Numeric value	H264(4) multicast address Third octet 0 to 255
H264MLADD4_4	Numeric value	H264(4) multicast address Fourth octet 0 to 255
H264MLADD	(IPv4 address) or (IPv6 address)	H264 multicast address
H264MLADD_2		
H264MLADD_3		
H264MLADD_4		
H264MLPORT	Numeric value	H264 multicast port 1024 to 50000
H264MLPORT_2		
H264MLPORT_3		
H264MLPORT_4		
H264MLTTL	Numeric value	H264 multicast TTL 1 to 254
H264MLTTL_2		
H264MLTTL_3		
H264MLTTL_4		
H264UNIPORT	Numeric value	H264 unicast (for video) port number 1024 to 50000 (only even numbers)
H264UNIPORT_2		
H264UNIPORT_3		
H264UNIPORT_4		
H264UNIPORT2	Numeric value	H264 unicast (for audio) port number 1024 to 50000 (only even numbers)
H264UNIPORT2_2		
H264UNIPORT2_3		

Setting name	Value	Description
H264UNIPORT2_4		
H264PROFILE	0	H264 profile 0: High profile
H264PROFILE_2		
H264PROFILE_3		
H264PROFILE_4		
RTSPPORT	Numeric value	RTSP server port number
H264MLAUTO	0	Multicast delivery is started automatically. 0: OFF
H264MLAUTO_2		
H264MLAUTO_3		
H264MLAUTO_4		
AUDIO	in off	Audio settings in: ON off: OFF
AUDIOBITRATE	64 96 128	Audio bit rate 64: 64 Kbps 96: 96 Kbps 128: 128 Kbps
PLUGIN_HALFTONE_JPEG	0	Enabling/disabling of half-tone function for JPEG images in Active X 0: Disabled
PLUGIN_HALFTONE_H264	0	Enabling/disabling of half-tone function for H264 in Active X 0: Disabled

8. About Control Based on RTSP

The remote camera supports general RTSP protocols as well. This chapter illustrates usage methods based on RTSP. The customer must have knowledge of RTSP/RTP/RTCP when using such usage methods.

8.1. About the URLs for an RTSP Request

The URLs for RTSP requests of the remote camera are as described below.

Request URL	Description
rtsp://<cam_ip>/mediainput/h264/stream_1	Videos set in WEB menu set_h264 of the remote camera can be requested.
rtsp://<cam_ip>/mediainput/h264/stream_2	Videos set in WEB menu set_h264_2 of the remote camera can be requested.
rtsp://<cam_ip>/mediainput/h264/stream_3	Videos set in WEB menu set_h264_3 of the remote camera can be requested.
rtsp://<cam_ip>/mediainput/h264/stream_4	Videos set in WEB menu set_h264_4 of the remote camera can be requested.
rtsp://<cam_ip>/mediainput/h265/stream_1	Videos set in WEB menu set_h265 of the remote camera can be requested.

To change the URL for RTSP request, please use cgi-bin.set_rtsp(POST command).
The RTSP port at the remote camera (RTSP Server) side is set to 554 according to the factory settings. If it is to be changed, use the cgi-bin/set_rtsp (POST command).

The relationship between "H.264/H.265 transmission" and "Audio Transmission" in the WEB menu of the remote camera is as shown below.

		Audio Transmission	
		ON	**OFF**
H.264/H.265 transmission	**ON**	Both video and audio can be used. * As for DESCRIBE, the SDP information of video + audio is issued as response.	Only video can be used. * As for DESCRIBE, only the SDP information of video is issued as response.
	OFF	Both video and audio cannot be used. * As for SETUP, 503 is issued as response.	

When "Audio Transmission" is ON, the remote camera issues a response by adding Audio information to the DESCRIBE information. If necessary, the audio can be transmitted by issuing the SETUP command. On the contrary, if the SETUP command is not issued, only the video can be transmitted. Moreover, if "Audio" in the WEB menu of the remote camera is "OFF", or nothing is connected to the "Audio IN terminal", it results in silent transmission.

In this manual, the description is provided by assuming that "H.264 transmission" and "Audio Transmission" are in the ON state.

8.2. About the rtsp Methods

The RTSP methods supported in the remote camera are as described below.

Supported Method	Description
OPTIONS	Check for the corresponding command
DESCRIBE	Acquisition of session information and Audio support
SETUP	Initialization of the session and mutual exchange of port information
PLAY	Transfer started
PAUSE	Transfer paused * Transmission is stopped, and this method is ignored during multicast.
GET_PARAMETER	Acquisition of session parameter * Operation is performed by assuming Keep Alive.
TEARDOWN	Transfer end/session end

SET_PARAMETER is not supported. 501 is issued as response.

The timeout based on GET_PARAMETER is 120 seconds. If Keep Alive from all clients is blocked including during multicast, the remote camera stops transmission.

9. About Acquisition of Stream from RTSP

The RTSP communication methods supported in the remote camera are as described below. No matter which method is used, TCP communication (554 is set as the waiting port at the remote camera side) is used during initial negotiation of RTSP.

1. UDP Unicast
   - Used for transmitting video/audio to a single client in one remote camera.
   - Although transmission to multiple clients is also supported, network bandwidth is needed for each connection.
2. UDP Multicast
   - Used for transmitting video/audio simultaneously to multiple clients in one remote camera.
   - The network bandwidth at the camera side does not increase even when transmission is performed to multiple clients.
   - A separate router that supports multicast is needed.
3. TCP Unicast
   - Used for transmitting video/audio to a single client in one remote camera.
   - The video and audio data communicated via RTP/UDP can be transmitted via TCP.

9.1. UDP Unicast

You must make the settings described below in the WEB menu as preparations at the remote camera side.

- Set H264(X),H.265/Transmission type to Unicast (AUTO).

The port number during transmission of video and audio stream is decided as described below.

- client_port (receiving port at the client side):
  The client explicitly issues a command to the remote camera in an RTSP "SETUP" sequence.
  * The methods of deciding the port number differ according to the client, and include random settings and dedicated menu.

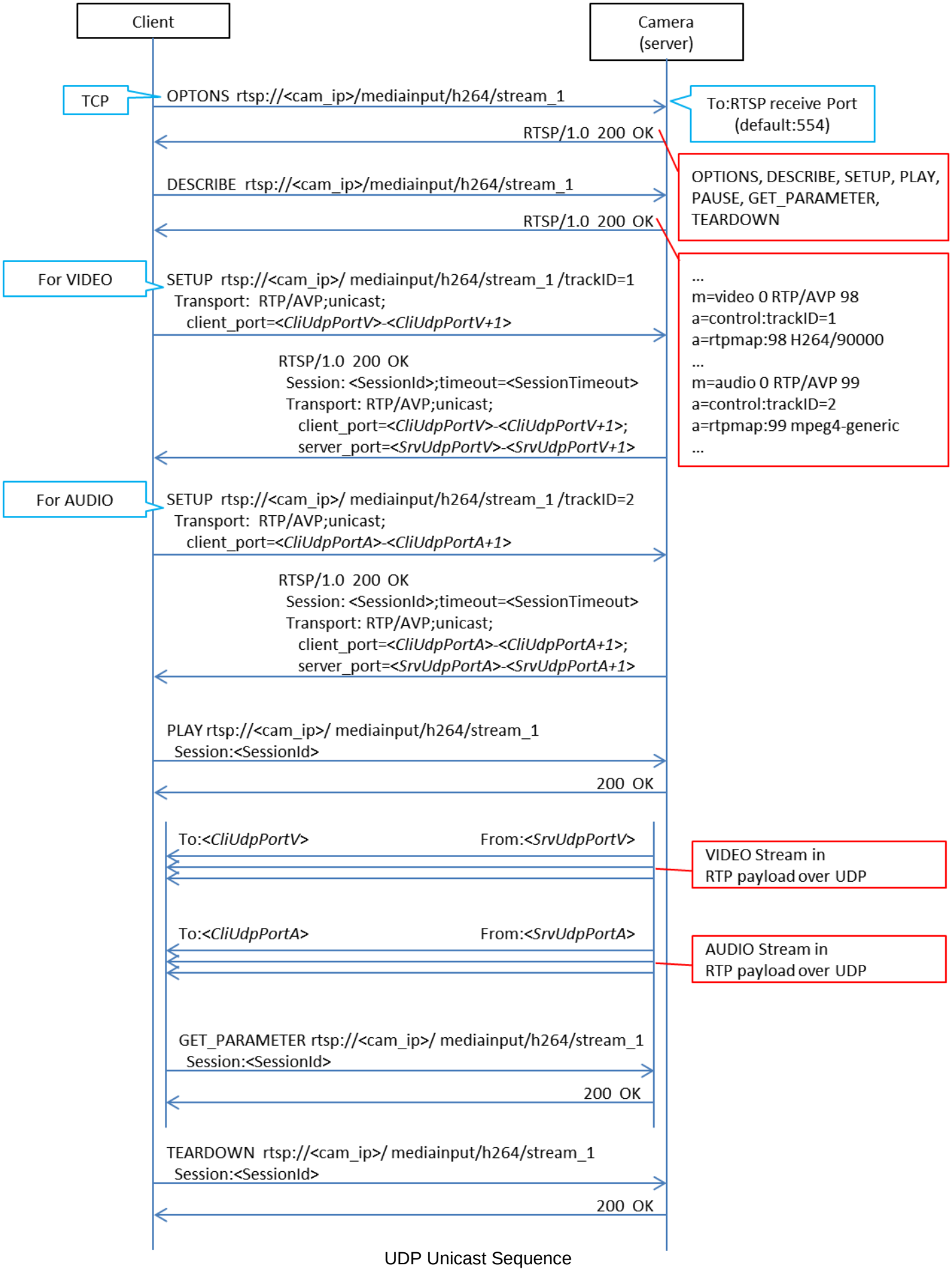
- server_port (transmitting port of the remote camera):
  The remote camera issues a response to the client through response in the RTSP "SETUP" sequence.
  * The port number is decided randomly.

Note that if you want to fix the client_port forcibly, you can do so by making the WEB menu settings described below.

- Set H264(X),H.265/Transmission type to Unicast (MANUAL).
- Set Unicast port (Image)/Unicast port (Audio).

* However, in the RTSP "SETUP" sequence, the content instructed explicitly by the client to the remote camera are ignored, and therefore, it is not used normally.

The acquisition method of video and audio stream by the UDP Unicast method is illustrated below.



UDP Unicast Sequence

```
OPTIONS rtsp://<cam_ip>/mediainput/h264/stream_1 RTSP/1.0
CSeq: 2
User-Agent: <User-Agent>

RTSP/1.0 200 OK
CSeq: 2
Public: OPTIONS, DESCRIBE, SETUP, PLAY, PAUSE, GET_PARAMETER, TEARDOWN

DESCRIBE rtsp://<cam_ip>/mediainput/h264/stream_1 RTSP/1.0
CSeq: 3
User-Agent: <User-Agent>

RTSP/1.0 200 OK
CSeq: 3
Content-Base: rtsp://<cam_ip>/mediainput/h264/stream_1/
Content-Type: application/sdp
Content-Length: <Length>

v=0
o=- 1 1 IN IP4 <cam_ip>
s=Media Presentation
e=NONE
c=IN IP4 0.0.0.0
b=AS:14464
t=0 0
a=control:*
a=range:npt=now-
m=video 0 RTP/AVP 98
b=AS:14336
a=framerate:30.0
a=control:trackID=1
a=rtpmap:98 H264/90000
a=fmtp:98 packetization-mode=1
a=h264-esid:201
m=audio 0 RTP/AVP 99
a=control:trackID=2
a=rtpmap:99 mpeg4-generic/48000/2
a=fmtp:99 streamType=5; profile-level-id=2; mode=AAC-hbr; config=1190; sizeLength=13; indexLength=3;
 indexDeltaLength=3; bitrate=128000
a=h264-esid:101

SETUP rtsp://<cam_ip>/mediainput/h264/stream_1/trackID=1 RTSP/1.0
CSeq: 4
User-Agent: <User-Agent>
Transport: RTP/AVP;unicast;client_port=<CliUdpPortV>-<CliUdpPortV+1>

RTSP/1.0 200 OK
CSeq: 4
Session: <SessionId>;timeout=120
Transport: RTP/AVP/UDP;unicast;client_port=<CliUdpPortV>-<CliUdpPortV+1>;
                                    server_port=<SrvUdpPortV>-<SrvUdpPortV+1>;ssrc=<SSRC>
```

UDP Unicast Packets (1/2)

```
SETUP rtsp://<cam_ip>/mediainput/h264/stream_1/trackID=2 RTSP/1.0
CSeq: 5
User-Agent: <User-Agent>
Transport: RTP/AVP;unicast;client_port=<CliUdpPortA>-<CliUdpPortA+1>
Session: <SessionId>

RTSP/1.0 200 OK
CSeq: 5
Session: <SessionId>;timeout=120
Transport: RTP/AVP/UDP;unicast;client_port=<CliUdpPortA>-<CliUdpPortA+1>;
                                    server_port=<SrvUdpPortA>-<SrvUdpPortA+1>;ssrc=<SSRC>

PLAY rtsp://<cam_ip>/mediainput/h264/stream_1/ RTSP/1.0
CSeq: 6
User-Agent: <User-Agent>
Session: <SessionId>
Range: npt=0.000-

RTSP/1.0 200 OK
CSeq: 6
Session: <SessionId>
RTP-Info: url=trackID=1;seq=<SequenceNumber>;rtptime=...
          url=trackID=2;seq=<SequenceNumber>;rtptime=...


<VIDEO Stream in RTP payload over UDP>
<AUDIO Stream in RTP payload over UDP>

GET_PARAMETER rtsp://<cam_ip>/mediainput/h264/stream_1/ RTSP/1.0
CSeq: 7
User-Agent: <User-Agent>
Session: <SessionId>

RTSP/1.0 200 OK
CSeq: 7
Session: <SessionId>

TEARDOWN rtsp://<cam_ip>/mediainput/h264/stream_1/ RTSP/1.0
CSeq: 8
User-Agent: <User-Agent>
Session: <SessionId>

RTSP/1.0 200 OK
CSeq: 8
Session: <SessionId>
```

UDP Unicast Packets (2/2)

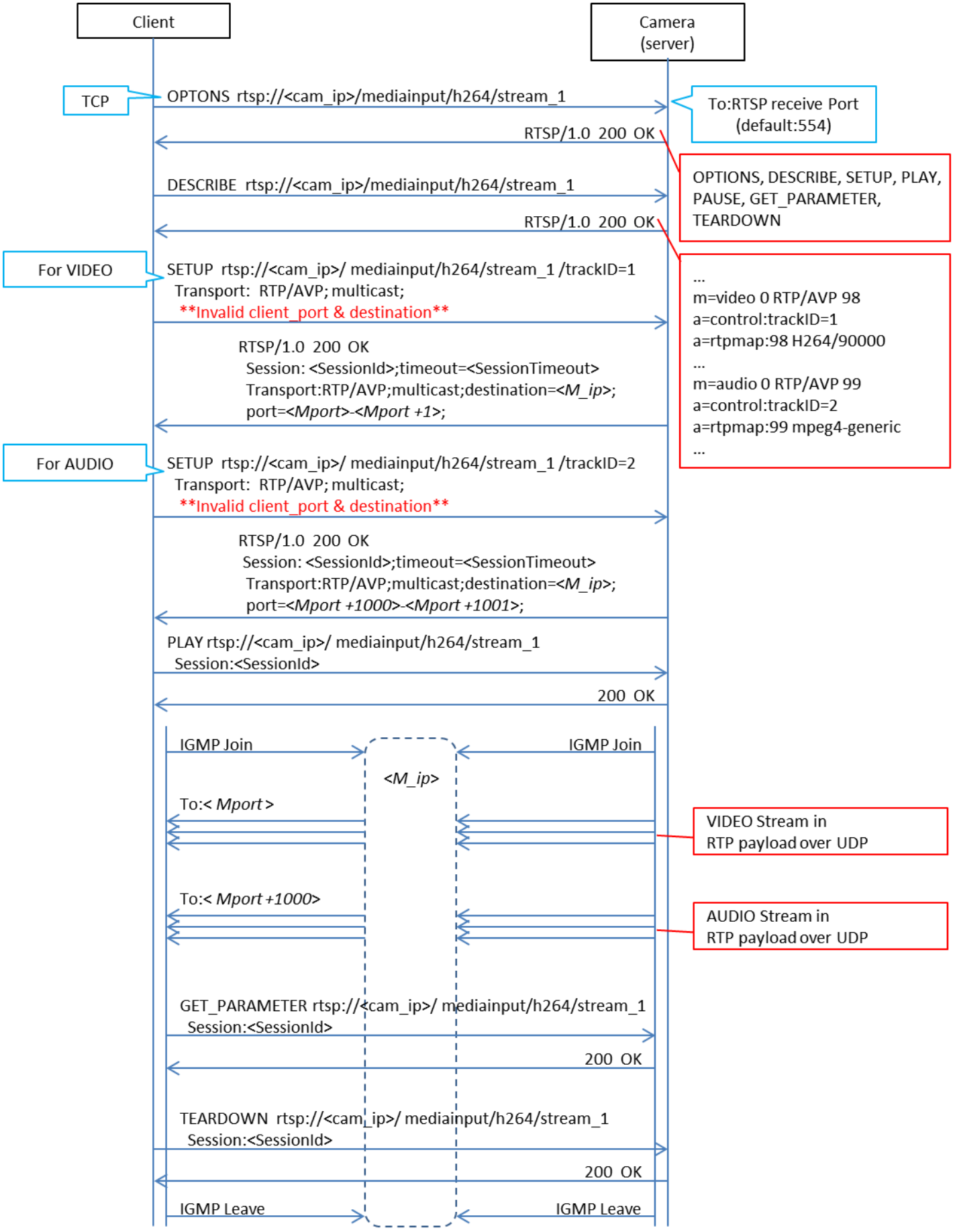
9.2. UDP Multicast

You must make the settings described below in the WEB menu as preparations at the remote camera side.

- Set H264(X),H.265/Transmission type to Multicast.
- Set H264(X),H.265/Multicast address (set to 239.192.0.20 for H264(1) according to factory settings)
- Set H264(X),H.265/Multicast port (set to 37004 for H264(1) according to factory settings)

The port number and multicast address during transmission of the video and audio stream depend on the values of the WEB menu of the remote camera, and the commands from the client side are ignored.

The acquisition method of video and audio stream by the UDP Multicast method is illustrated below.



UDP Multicast Sequence

```
OPTIONS rtsp://<cam_ip>/mediainput/h264/stream_1 RTSP/1.0
CSeq: 2
User-Agent: <User-Agent>

RTSP/1.0 200 OK
CSeq: 2
Public: OPTIONS, DESCRIBE, SETUP, PLAY, PAUSE, GET_PARAMETER, TEARDOWN

DESCRIBE rtsp://<cam_ip>/mediainput/h264/stream_1 RTSP/1.0
CSeq: 3
User-Agent: <User-Agent>

RTSP/1.0 200 OK
CSeq: 3
Content-Base: rtsp://<cam_ip>/mediainput/h264/stream_1/
Content-Type: application/sdp
Content-Length: <Length>

v=0
o=- 1 1 IN IP4 <cam_ip>
s=Media Presentation
e=NONE
c=IN IP4 0.0.0.0
b=AS:14464
t=0 0
a=control:*
a=range:npt=now-
m=video 0 RTP/AVP 98
b=AS:14336
a=framerate:30.0
a=control:trackID=1
a=rtpmap:98 H264/90000
a=fmtp:98 packetization-mode=1
a=h264-esid:201
m=audio 0 RTP/AVP 99
a=control:trackID=2
a=rtpmap:99 mpeg4-generic/48000/2
a=fmtp:99 streamType=5; profile-level-id=2; mode=AAC-hbr; config=1190; sizeLength=13; indexLength=3;
 indexDeltaLength=3; bitrate=128000
a=h264-esid:101

SETUP rtsp://<cam_ip>/mediainput/h264/stream_1/trackID=1 RTSP/1.0
CSeq: 4
User-Agent: <User-Agent>
Transport: RTP/AVP;multicast;client_port=52944-52945

RTSP/1.0 200 OK
CSeq: 4
Session: <SessionId>;timeout=120
Transport: RTP/AVP/UDP;multicast;destination=<M_ip>;
 ttl=16;port=<Mport>-<Mport+1>
```

UDP Multicast Packets (1/2)

```
SETUP rtsp://<cam_ip>/mediainput/h264/stream_1/trackID=2 RTSP/1.0
CSeq: 5
User-Agent: <User-Agent>
Transport: RTP/AVP;multicast;client_port=52946-52947
Session: <SessionId>

RTSP/1.0 200 OK
CSeq: 5
Session: <SessionId>;timeout=120
Transport: RTP/AVP/UDP;multicast;destination=<M_ip>;
 ttl=16;port=<Mport+1000>-<Mport+1001>

PLAY rtsp://<cam_ip>/mediainput/h264/stream_1/ RTSP/1.0
CSeq: 6
User-Agent: <User-Agent>
Session: <SessionId>
Range: npt=0.000-

RTSP/1.0 200 OK
CSeq: 6
Session: <SessionId>
RTP-Info: url=trackID=1;seq=<SequenceNumber>;rtptime=...
          url=trackID=2;seq=<SequenceNumber>;rtptime=...


GET_PARAMETER rtsp://<cam_ip>/mediainput/h264/stream_1/ RTSP/1.0
CSeq: 7
User-Agent: <User-Agent>
Session: <SessionId>

RTSP/1.0 200 OK
CSeq: 7
Session: <SessionId>
```

UDP Multicast Packets (2/2)

9.3. TCP Unicast

You must make the settings described below in the WEB menu as preparations at the remote camera side.

- Set H264(X),H.265/Transmission type to Unicast (AUTO).

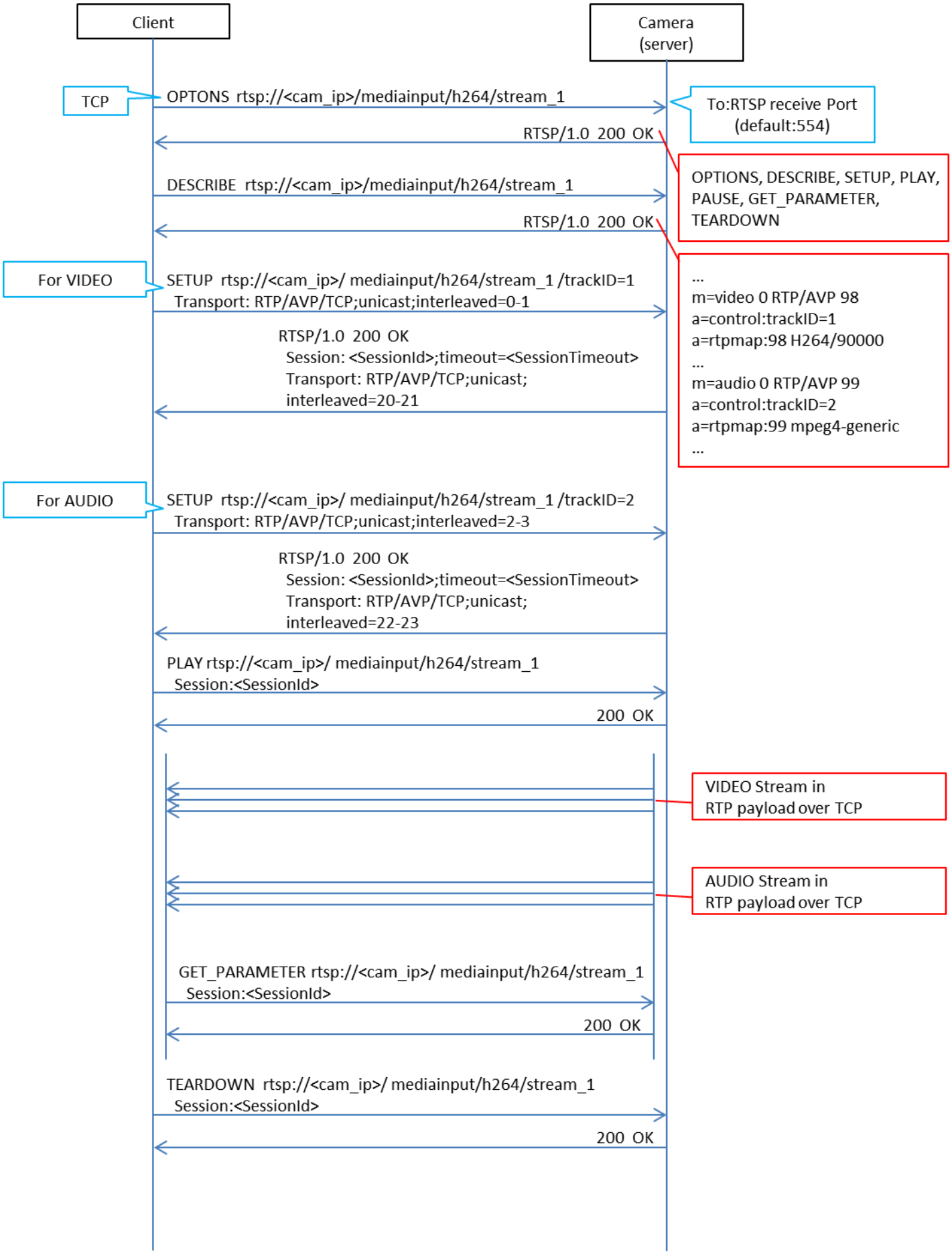
The port number during transmission of video and audio stream is decided as described below.

- client_port (receiving port at the client side):
  The transmission-side port of the client that is used in the RTSP "PLAY" sequence becomes the receiving port at the client side.
  * The methods of deciding the port number differ according to the client, and include random settings and dedicated menu.

- server_port (transmitting port of the remote camera):
  The RTSP waiting port (set to 554 according to factory settings) is used.

The interleave header specified from the client side is ignored at the camera side, and a new interleave header is issued.

The acquisition method of video and audio stream by the TCP Unicast method is illustrated below.



TCP Unicast Sequence

```
OPTIONS rtsp://<cam_ip>/mediainput/h264/stream_1 RTSP/1.0
CSeq: 2
User-Agent: <User-Agent>

RTSP/1.0 200 OK
CSeq: 2
Public: OPTIONS, DESCRIBE, SETUP, PLAY, PAUSE, GET_PARAMETER, TEARDOWN

DESCRIBE rtsp://<cam_ip>/mediainput/h264/stream_1 RTSP/1.0
CSeq: 3
User-Agent: <User-Agent>
Accept: application/sdp

RTSP/1.0 200 OK
CSeq: 3
Content-Base: rtsp://<cam_ip>/mediainput/h264/stream_1/
Content-Type: application/sdp
Content-Length: <Length>

v=0
o=- 1 1 IN IP4 <cam_ip>
s=Media Presentation
e=NONE
c=IN IP4 0.0.0.0
b=AS:14464
t=0 0
a=control:*
a=range:npt=now-
m=video 0 RTP/AVP 98
b=AS:14336
a=framerate:30.0
a=control:trackID=1
a=rtpmap:98 H264/90000
a=fmtp:98 packetization-mode=1
a=h264-esid:201
m=audio 0 RTP/AVP 99
a=control:trackID=2
a=rtpmap:99 mpeg4-generic/48000/2
a=fmtp:99 streamType=5; profile-level-id=2; mode=AAC-hbr; config=1190; sizeLength=13;
 indexLength=3; indexDeltaLength=3; bitrate=128000
a=h264-esid:101

SETUP rtsp://<cam_ip>/mediainput/h264/stream_1/trackID=1 RTSP/1.0
CSeq: 4
User-Agent: <User-Agent>
Transport: RTP/AVP/TCP;unicast;interleaved=0-1

RTSP/1.0 200 OK
CSeq: 4
Session: <SessionId>;timeout=120
Transport: RTP/AVP/TCP;unicast;interleaved=20-21;ssrc=<SSRC>
```

TCP Unicast Packets 1/2

```
SETUP rtsp://<cam_ip>/mediainput/h264/stream_1/trackID=2 RTSP/1.0
CSeq: 5
User-Agent: <User-Agent>
Transport: RTP/AVP/TCP;unicast;interleaved=2-3
Session: <SessionId>

RTSP/1.0 200 OK
CSeq: 5
Session: <SessionId>;timeout=120
Transport: RTP/AVP/TCP;unicast;interleaved=22-23;ssrc=<SSRC>

PLAY rtsp://<cam_ip>/mediainput/h264/stream_1/ RTSP/1.0
CSeq: 6
User-Agent: <User-Agent>
Session: <SessionId>
Range: npt=0.000-

RTSP/1.0 200 OK
CSeq: 6
Session: <SessionId>
RTP-Info: url=trackID=1;seq=<SequenceNumber>;rtptime=...
          url=trackID=2;seq=<SequenceNumber>;rtptime=...

GET_PARAMETER rtsp://<cam_ip>/mediainput/h264/stream_1/ RTSP/1.0
CSeq: 7
User-Agent: <User-Agent>
Session: <SessionId>

RTSP/1.0 200 OK
CSeq: 7
Session: <SessionId>
```

TCP Unicast Packets 2/2

9.4 About the rtpmap Attribute

The response of "rtpmap" with respect to the RTSP "DESCRIBE" request is as described below.

Codec	rtpmap Attribute Value
H.264	a=rtpmap:98 H264/90000
H.265	a=rtpmap:96 H265/90000
AAC	a=rtpmap:99 mpeg4-generic/48000/2

The values described above are used for both video and audio regardless of the bit rate.

10. About Control Based on RTCP

The remote camera also supports dynamic control of bit rate and frame rate according to the line status using RTCP. As a prerequisite, a client that supports RTCP/SR (Sender Report) and RTCP/RR (Receiver Report) is necessary.

You must make the settings described below in the WEB menu as preparations at the remote camera side.

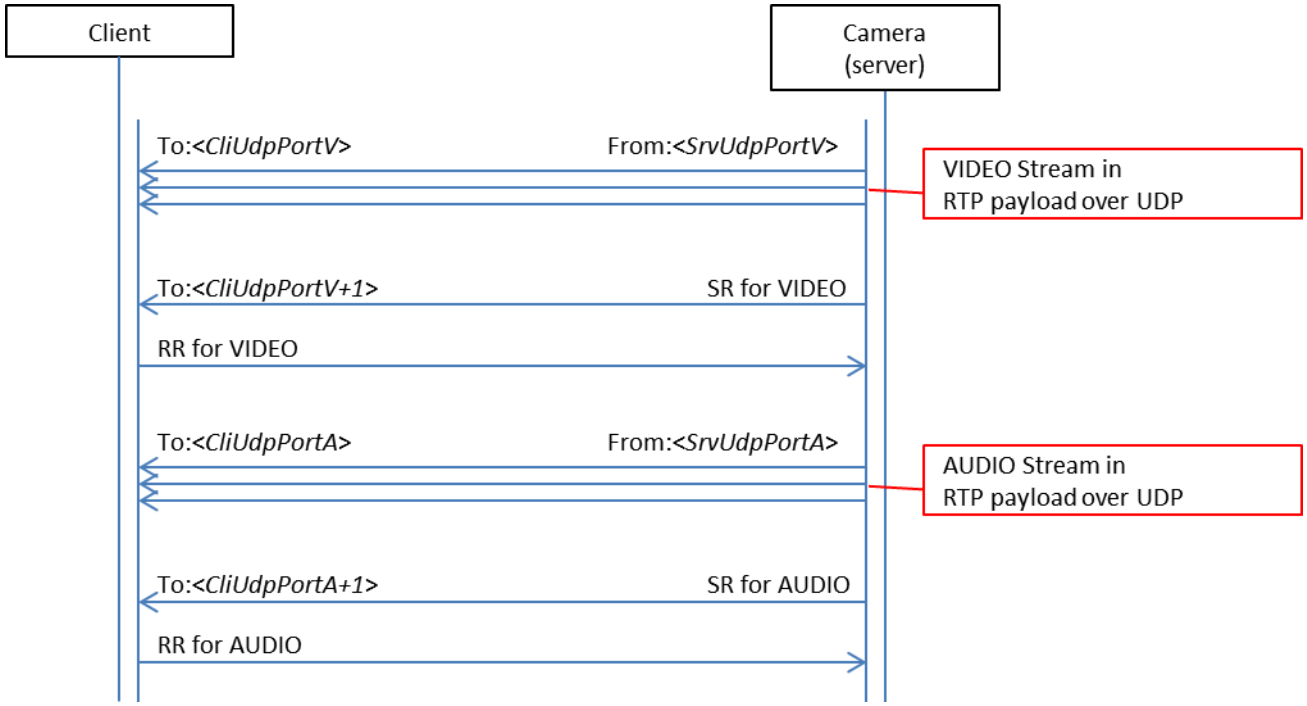
- Set H264(X),H.265/Transmission priority to Best effort.

  * In the case of the frame rate (factory settings) and constant bit rate, an RTCP/SR is transmitted and an RTCP/RR is received, but these are not used for controlling the bit rate and frame rate.

- Select H264(X),H.265/Image quality from Motion priority or Image quality priority.

  Motion priority: This is the motion priority mode. The bit rate is actively changed and supported.
  Image quality priority: This is the image quality priority mode. The frame rate is actively changed.

The sequence during RTCP control is illustrated below:



Note that in the remote camera, an RTCP/SR is transmitted every five seconds, and of the RTCP/RRs, only those related to VIDEO are used.

11. About RTP/Data Format

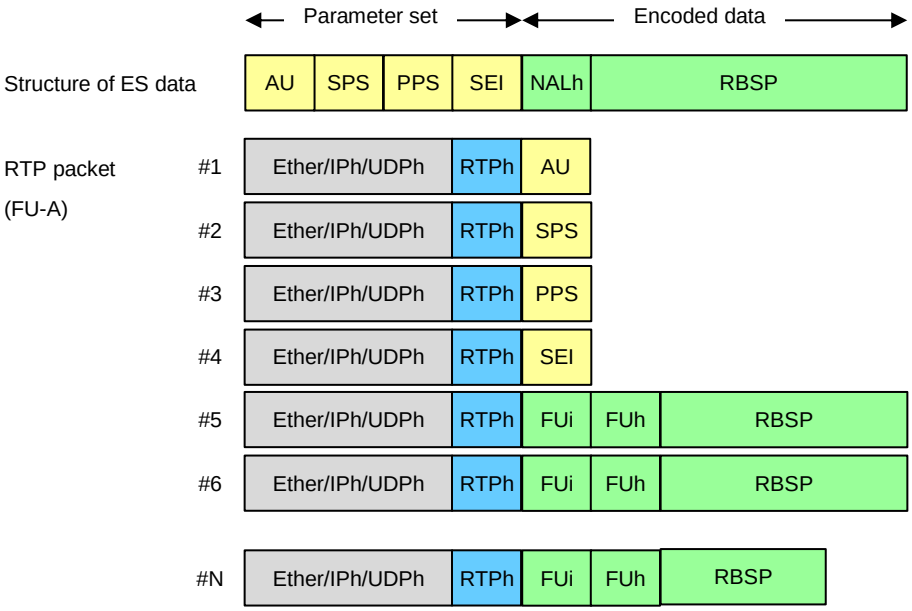
11.1. RTP Header Format

Bit / Byte	0.				8.		16.	24.
	2	1	1	4	1	7	8	8
0	V	P	X	CC	M	PT	Sequence number	
4	Timestamp							
8	SSRC (Synchronization Source Identifier)							
12	Defined by profile						Extension length	
16	Additional Information (1)							
	Additional Information (N)							

Parameter name	length(Bit)	Values and comments
V (Version)	2	2 (fixed)
P (Padding)	1	0 (fixed)
X (Extension)	1	0: false , 1: true
CC (CSRC Count)	4	0 (fixed)
M (Marker)	1	In case of the last RTP packet of a picture, this value is set to 1
PT (Payload Type)	7	98 (fixed for H.264) 99 (fixed for AAC)
Sequence number	16	The value in which one increment is done in each RTP packet is set. An initial value is generated at random.
Timestamp	32	Time stamp
SSRC	32	0x0000 0000 (fixed)
CSRC	0	Unused
Defined by profile(*)	16	0 (fixed)
Extension length(*)	16	Length of the Header Extension (Unit of 32bit word)
meta information (Additional Information) (*)		

11.2. Relationship with H.264/ES Data

The structure of ES data and RTP packet of H.264 is as shown below.



[Notes]

NALh	: NAL header (1 byte)
Fui	: FU identifier (1 byte)
Fuh	: FU header (1 byte)
Ether/IPh/UDPh	: Ether/IP header/UDP header
RTPh	: RTP header

11.3. H.264 Syntax

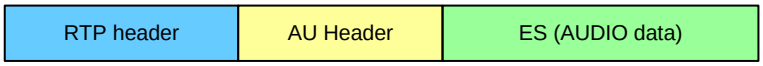
In the remote camera, the Codec information to be used changes depending on the resolution/frame rate. The following information is used when 59.94 Hz is set.

Resolution / Frame rate	Codec Info
320x180/5p,15p,30p 640x360/5p,15p,30p 1280x720/5p,15p,30p,60p 1920x1080/5p,15p,30p	H.264/High profile (no B frame) GOP interval approx 1 sec.
1920x1080/60p	H.264/High profile (no B frame) GOP interval approx 1 sec.
3840x2160/5p,15p	H.264/High profile (no B frame) GOP interval approx 0.5 sec.
3840x2160/30p	H.264/High profile (no B frame) GOP interval approx 0.5 sec.

11.4. Audio Data Format

The structure of the audio ES data and RTP packet differs depending on the audio compression method.

When the audio compression method is AAC:
An AU header (2 bytes) is inserted between the RTP header and audio data, and then transmitted.



Memo: