XC Control Protocol Specifications

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Table of Contents

1 Introduction....1
1.1 Use of this Document....1
1.1.1 Precautions for Session/Control Privileges and Related Items....1
1.2 Disclaimer....2
1.3 Notation....3
2 Protocol Overview....4
3 XC Control Protocol Specifications....5
3.1 Interface Specifications....5
3.1.1 Request....6
3.1.1.1 HTTP Request Header....6
3.1.2 Response....7
3.1.2.1 HTTP Status....7
3.1.2.2 Livescope Status....8
3.1.3 Protocol Configuration....10
3.1.3.1 Command List....10
3.1.3.2 Protocol Syntax....11
3.1.4 Sessions and Access Privileges....13
3.1.4.1 Client and Session Management....13
3.1.4.2 User Type of User Access Control Function....13
3.1.4.3 Privilege Settings and Session Priority....14
3.1.4.4 Creating a Session and Applied Restrictions....15
3.1.4.5 User Types and Creatable Session Types....16
3.1.4.6 Closing a Session....16
3.1.4.7 Limits on the Number of Clients....16
3.1.4.8 Session-based Access Privileges by Function....18
3.1.4.9 Sessionless Access Privileges by Function....19
3.2 Command Specifications....20
3.2.1 Session Control....24
3.2.1.1 Creating a Session [open.cgi] (Optional)....24
3.2.1.1.1 Commands....24
3.2.1.1.2 Response....26
3.2.1.2 Closing a Session [close.cgi] (Optional)....31
3.2.1.2.1 Commands....31
3.2.1.2.2 Response....31
3.2.1.3 Camera Control Privilege Request [claim.cgi] (Optional)....33

3.2.1.3.1 Commands 38
3.2.1.3.2 Response 38
3.2.1.4 Releasing Camera Control Privileges [yield.cgi] (Optional) 41
3.2.1.4.1 Commands 41
3.2.1.4.2 Response 41
3.2.1.5 Changing Session Attributes [session.cgi] (Optional)....43
3.2.1.5.1 Commands 43
3.2.1.5.2 Response 45
3.2.2 Information Acquisition 48
3.2.2.1 Information Acquisition [info.cgi] (Mandatory) 48
3.2.2.1.1 Commands 55
3.2.2.1.2 Response 56
3.2.2.1.3 Acquired Parameters 64
3.2.3 Camera Control 65
3.2.3.1 Camera Control [control.cgi] (Mandatory) 65
3.2.3.1.1 Commands 67
3.2.3.1.2 Response 68
3.2.3.1.3 Control Parameters....69
3.2.4 Video Retrieval 70
3.2.4.1 Still Image Retrieval [image.cgi] (Optional)....70
3.2.4.1.1 Commands 71
3.2.4.1.2 Response 72
3.2.4.2 Video Stream Retrieval [video.cgi] (Optional) 73
3.2.4.2.1 Commands 74
3.2.4.2.2 Response 75
3.2.5 Metadata Acquisition 77
3.2.5.1 Metadata Acquisition [meta.cgi] (Optional)....77
3.2.5.1.1 Commands 77
3.2.5.1.2 Response 78
3.2.6 Preset/Trace....81
3.2.6.1 Saving Preset [preset/set] (Optional) 81
3.2.6.1.1 Commands 81
3.2.6.1.2 Response 84
3.2.6.2 Recording Traces [trace/set] (Optional) 85
3.2.6.2.1 Commands 85
3.2.6.2.2 Response 87
3.2.6.3 Trace Playback [trace/control] (Optional)....88

3.2.6.3.1 Commands 89
3.2.6.3.2 Response 89
3.2.7 Standby 91
3.2.7.1 Standby Transition/Restoration [standby.cgi] (Optional) 91
3.2.7.1.1 Commands 92
3.2.7.1.2 Response 92
Model Specific Information 94
A CR-N500-dependent Information 94
A.1 Command Specifications 94
A.2 Parameter Specifications of info.cgi/control.cgi 94
A.3 H.264/H.265 Image Parameter Specifications 95
APPENDIX 97
i Fragmented MP4 97
ii Camera Search 99
iii Parameter List of info.cgi and control.cgi 1000

1 Introduction

This document specifies the XC control protocol, which is one of the Canon Remote Camera XC protocols.
With the XC control protocol, you can acquire information from the Canon remote camera and perform controlling with respect to the remote camera.

1.1 Use of this Document

This document is for developers of peripheral equipment and applications using the Canon remote camera. Use of this document requires knowledge of application development. The product-specific specifications are described in "*Model Specific Information*" of this document.

1.1.1 Precautions for Session/Control Privileges and Related Items

In "*3.1.4 Sessions and Access Privileges*" and "*3.2.1 Session Control*" of this document, "User Type" based on "Session", "Control Privileges", and their acquisition is described in many pages.
However, with remote cameras, all the information acquisition and camera control are basically possible regardless of "the presence of session" and "the presence of control privileges." There is also no restriction by the user type. (*1)
Thus, except for special cases where session-based operation or camera control privileges are necessary, it is recommended to skip reading this part because it is unnecessary information for normal information acquisition or camera control.

Note:

*1 No information acquisition or camera control can be performed when the user right restriction is set on the remote camera side.

1.2 Disclaimer

- This document is provided as is without any warranty of any kind. CANON has no responsibility or liability for any maintenance or support related to this document. The contents of the document may be changed without prior notice in the future.
- CANON will not bear any responsibility in the event of direct or indirect trouble caused by using the information in this document.
- CANON will not bear any responsibility for the programs created by using the information in this document.

1.3 Notation

The following notation and text formatting are used in this document.

"`Courier New`"	Indicates a code sample.
"*`Italic`*"	Indicates a parameter replaceable with an actual name or value.
"Verdana 0...50"	Indicates a parameter or setting value.
"<*Verdana*>"	Indicates a variable.
"**Note:**"	Indicates a special note or precaution.
"**!**"	Indicates an example of the occurrence of a phenomenon.
'*XXXXXX*'	Indicates a reference chapter or section and reference documents besides this document.

2 Protocol Overview

The XC control protocol provides camera control with respect to the remote camera and information acquisition from the remote camera. The XC control protocol is provided as an HTTP service of the remote camera.

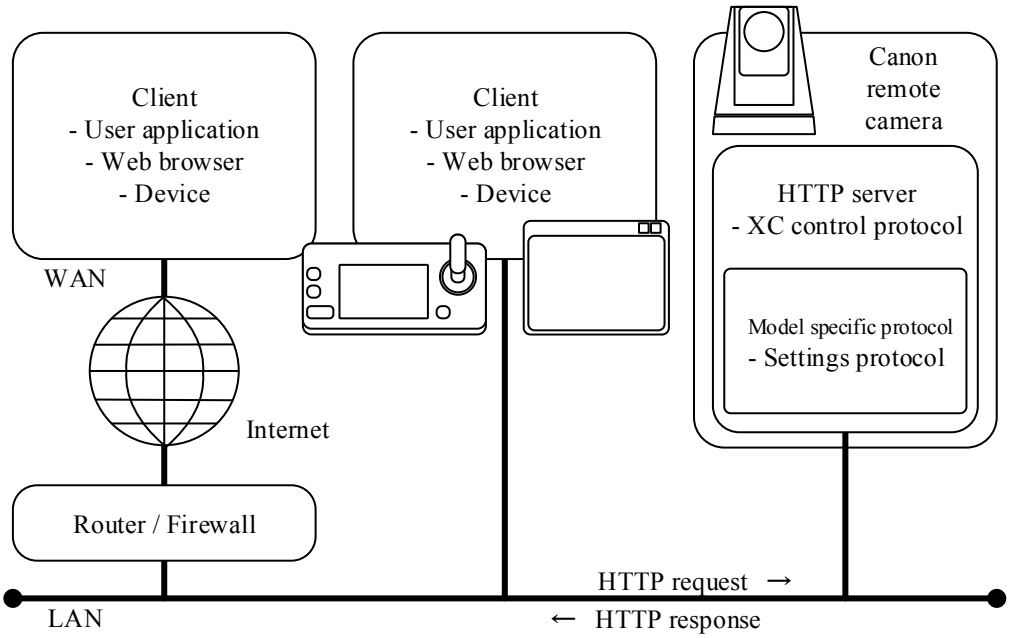

Fig. 2-1 XC Protocol Concept Diagram

3 XC Control Protocol Specifications

3.1 Interface Specifications

The interface specifications of the XC control protocol are described in the following order.

- Request format and content
- Response format and content, and list of status codes
- Protocol command configuration, syntax format
- User access management function, session/sessionless and function execution privileges

3.1.1 Request

In the XC control protocol, XC control commands are used to perform camera control. The XC control command is received by the HTTP server of the remote camera as an HTTP request.

The XC control protocol is not dependent on a specific HTTP version.
The remote cameras supported by this document are HTTP/1.1 and HTTP/2-compliant.
`GET` or `POST` can be used as the HTTP method.
The URI is made up of a XC control command or parameter that starts with `"/-wvhttp-01-/"`.
With the exception of the starting `"wvhttp"`, the URI and message body are not case-sensitive.

Syntax:

```
GET /-wvhttp-01-/<Command>[?<ParameterList>…] HTTP/1.1
```

3.1.1.1 HTTP Request Header

The following is the HTTP request header field related to the operation of the XC control protocol.
All other HTTP request headers are ignored.

- `Authorization`
- `Connection`
- `Content-Length`
- `If-Modified-Since` *1

Note:

*1 `If-Modified-Since` is referenced with a get still image command.

3.1.2 Response

Under the XC control protocol, image data and camera status information are sent from the HTTP server of the remote camera as an HTTP response.

Response:

```
HTTP/1.1 200 OK
Date: <Time stamp>
Server: vb
accept-ranges: none
cache—control: no-cache
pragma: no-cache
x-frame-options: sameorigin
expires: thu, 01 dec 1970 00:00:00 gmt
x-content-type-options: nosniff
x-xss-protection: 1; mode-block
Connection: keep-alive
livescope-status: 0
Content-Length: <Message body length>
content-type: <Message body mime-type>
<Blank line>
<Message body>
```

3.1.2.1 HTTP Status

The execution result of the HTTP protocol of the XC control command is returned with an HTTP status. The main return values and meanings are described below.

Table 3-1 List of Returned HTTP Statuses

HTTP Status	Description
200 OK	Request was processed normally.
304 Not Modified	Data is not modified.
400 Bad Request	Request is invalid.
401 Unauthorized	User authentication failed.
404 Not Found	Resource corresponding to requested URI does not exist.
411 Length Required	Content-Length is not specified.
500 Internal Server Error	Request denied due to internal processing error.
503 Service Unavailable	Request denied due to temporary overload.

3.1.2.2 Livescope Status

Livescope status is an independent extension field that indicates the execution result of the XC control command. If the Livescope status indicates an abnormality, "200 OK" is returned as the HTTP status. The return values and meanings are described below.

Table 3-2 List of Returned Livescope Statuses

Livescope Status	Description
0	Processed normally.
301 No Camera Control Right	Request denied due to no issuing of the control privilege request.
302 Camera is not available	Camera specified with <Camera> parameter does not exist.
303 Camera is not controllable	Camera cannot be controlled due to a camera abnormality.
401 Unknown Operator	Undefined command specified.
403 Invalid Parameter Value	Invalid parameter value specified.
404 Operation Timeout	Command execution not completed even at response time limit.
406 Parameter Missing	Mandatory parameter not specified.
407 Invalid Request	Invalid session function requested.
408 Conflict	Exclusive operation requested.
409 Conflict	Recording stream requested while migrating video to external memory.
501 Unknown Connection ID	Specified session does not exist.
503 Too many clients	Maximum number of connections exceeded.
507 Insufficient Privilege	Cannot access due to access privilege.
508 Request Refused	Request denied due to temporary connection limit of camera.

Livescope Status	Description
509 Standby	Access limited during standby state.
510 Switching Standby	Access limited during transition from normal state to standby state.
511 Switching Idle	Access limited during restoration from standby state to normal state.

3.1.3 Protocol Configuration

3.1.3.1 Command List

The following are the functions provided by the XC control protocol and the corresponding commands.

Table 3-3 Commands and Functions of XC Control Protocol

Commands	Functions	Support requirement
open.cgi	This creates a session.	Optional *2
close.cgi	This closes a session.	Optional *2
claim.cgi *1	This requests camera control privileges.	Optional *2
yield.cgi *1	This releases camera control privileges.	Optional *2
session.cgi	This retrieves and changes a session-specific attribute.	Optional *2
info.cgi	This is used to obtain camera information.	Mandatory
control.cgi	This is used to control a camera or a tally lamp.	Mandatory
image.cgi	This is used to retrieve a JPEG still image.	Optional
video.cgi	This is used to retrieve a video stream.	Optional
meta.cgi	This is used to obtain metadata related to focus.	Optional
preset/set	This preset-stores camera control parameters.	Optional
trace/set	This records traces.	Optional
trace/control	This playbacks traces.	Optional
standby.cgi	This is used to perform standby transition/restoration.	Optional

- Not all the commands are supported by each model of the remote cameras.
- Commands with “Mandatory” in the Support requirement column are always supported (info.cgi and control.cgi only).
- Commands with “Optional” in the Support requirement column are supported by some models.
- The support information of the optional commands of each models is described in “*Model Specific Information*”.
- Regarding mandatory requirements info.cgi and control.cgi, the supported parameters vary depending on the model.

Note:

*1 To get or release the control privilege with claim.cgi or yield.cgi, a session must be started.

*2 With remote cameras, all the information acquisition and the camera control are basically possible regardless of the presence of a session and control privileges. Therefore, these commands are not mandatory requirements.

3.1.3.2 Protocol Syntax

A XC control command is made up of a command and parameter. The following are the syntax conditions when specifying a command and parameter.

- The parameter is in the format *"<Name>=<Value>"*.
- The parameter is specified with the "&" separator in the URI query string.
- The parameter performs URL encoding.
- The parameter name and value may be partially abbreviated with the "[...]" notation. *1
- There are no limitations in the order of parameter specification. *2

Note:

*1 Most parameters can be abbreviated under the XC control protocol. Parameters that cannot be abbreviated are indicated with "Mandatory".

*2 If a parameter is specified multiple times, only the last specified parameter is used unless it is a parameter that can be specified multiple times.

Example:

```
http://192.168.100.1/-wvhttp-01-/image.cgi?pan=1000&tilt=1000
```

Note:

The XC control protocol does not support pipelining even when conforming with HTTP/1.1.

3.1.4 Sessions and Access Privileges

3.1.4.1 Client and Session Management

The XC control protocol can be used in two ways: session-based, in which a session is created and a series of command operations are performed; and sessionless, in which a command operation is performed per each request and response.
The following types of clients are available when using the XC control protocol session-based and sessionless.

■ **Session-based**

- □ **Normal session**
  In a normal session, the session ID is specified and a series of command operations are performed.
- □ **Video-less session**
  In a video-less session, a session is created without using the video transmission function and without selecting a video stream. Other functions are the same as during a normal session.

■ **Sessionless**

- □ **Event stream - client**
  An event stream - client is a client that makes a request to get an information item (info.cgi), in which the stream method is selected, without creating a session.
- □ **Video stream - client**
  A video stream - client is a client that gets a video stream (video.cgi) without creating a session.
- □ **Sessionless camera control**
  Sessionless camera control is a client that performs camera control (control.cgi) without creating a session.

3.1.4.2 User Type of User Access Control Function

The user access control function of the remote camera manages the authentication information of administrators and authorized users. A user with anonymous access that does not require authentication is called a guest user.

- Guest user: Does not require authentication and is not registered to the user list.
- Authorized user: Requires user authentication and is registered to the user list.
- Administrator: Requires authentication as an administrator.

The user access control function manages and controls the remote camera operation privileges for each of these three types of user. The administrator can configure and change the control privileges for guest and authorized users.

Table 3-4 Relationship between User Type, Granted Privileges, and Configurable Privilege Type

User Type	Overview of Granted Privileges	Configurable Privilege Type
Guest user	• According to video transmission and camera control privilege settings for guest users • Use commands permitted for guest users	• Video transmission and camera control not available • Video transmission only available • Video transmission and general camera control available
Authorized user	• According to video transmission and camera control privilege settings for authorized users • Use commands permitted for authorized users	• Video transmission and camera control not available • Video transmission only available • Video transmission and general camera control available • Video transmission and privileged camera control available
Administrator	• No restrictions on video transmission or camera control due to privilege settings • Use commands that can only be operated with administrator authorities • Use exclusive commands as an administrator	* No restrictions due to privilege settings

3.1.4.3 Privilege Settings and Session Priority

In a XC control protocol session, camera control privilege settings are applied according to the user access control function. The value indicating the level of the camera control privileges in a XC control protocol session is called the priority. Camera control privileges can be obtained preferentially by a session with higher priority.
Sessions interrupted by a higher priority session must forfeit camera control privileges.

Note:

For details on obtaining and forfeiting camera control privileges, see '*3.2.1.3 Camera Control Privilege Request [claim.cgi] (Optional)*'.

3.1.4.4 Creating a Session and Applied Restrictions

A XC control protocol session is created with a session creation request (open.cgi). The type of session (general, privileged, or administrator) is determined by the "priority" parameter specified when the session is created.

- The type of session (general or privileged) is determined by "priority" parameter specified to the session creation request command.
- Session connection time is limited by the setting of the model specific "Maximum connection time".
- Number of simultaneous session connections is limited by the model specific "Maximum number of clients".
- The administrator session is limited to only one, and there are no restrictions on the session connection time or number of connections.

Table 3-5 Session Privilege Types and Their Features

Session Type	Description
General session	Session connection time is limited by "Maximum connection time". Number of simultaneous session connections is limited by "Maximum number of connections".
Privileged session	Session connection time is unlimited. Number of simultaneous session connections is limited by "Maximum number of connections".
Administrator session	Session connection time is unlimited. Number of simultaneous session connections is limited to 1.

Priorities 1 to 4 are reserved, and if specified, it may be treated as 5.

3.1.4.5 User Types and Creatable Session Types

In a XC control protocol session, the session types that can be created are limited according to the user type.

Table 3-6 Relationship between User Types and Creatable Session Types

User Type	Creatable Session Type
Guest user	• Can only create a general session
Authorized user	• Can create a general session • Can create a privileged session with privileged camera control
Administrator	• Can create a general session • Can create a privileged session • Can create an administrator session

3.1.4.6 Closing a Session

A XC control protocol session can be closed with a session close request (close.cgi), and the connection held by the sessionless client ceases to exist when the HTTP connection is disconnected.

In addition to this external connection close operation based on a client request, the connection can be closed on the remote camera side as below.

- When the connection time limit is exceeded
- When there is no request granting a session ID within the prescribed time after a session is created

3.1.4.7 Limits on the Number of Clients

In addition to the limit on the number of connections during a normal XC control protocol session, the following limits on the number of connections also apply to session-based clients and sessionless clients.

■ **Session-based**

□ **Normal session**

Number of simultaneous normal session connections is limited by the model specific "Maximum number of clients".

Note:

That an administrator session is not included in normal sessions.

☐ **Video-less session**

The number of simultaneous connections during a video-less session is different from that of a normal session and is limited as the number of connections of a video-less session.

It is managed as the total of the number of video-less session connections, sessionless event stream client connections, and sessionless video stream connections.

■ **Sessionless**

☐ **Event stream - client**

The number of simultaneous sessionless event stream client connections is managed as the total of the number of video-less session connections, sessionless event stream client connections, and sessionless video stream connections.

Note: Note that the execution of a request to get a single information item (info.cgi) with the stream method not specified does not include the number of connections.

☐ **Video stream - client**

The number of simultaneous sessionless video stream client connections is managed as the total of the number of video-less session connections, sessionless event stream client connections, and sessionless video stream connections.

☐ **Sessionless camera control**

This function does not use a stream, so there is no limit to the number of simultaneous connections.

3.1.4.8 Session-based Access Privileges by Function

The following are the XC control protocol commands that can be operated according to the privileges configured for a session-based user.

Table 3-7 XC Control Command Access Privileges by Session-based User

User Type	Set Privileges	Session Control		Video	Information	Camera Control
		open close session	claim yield	image video	info meta	control preset trace standby
Guest user	×: Video transmission ×: Camera control	General (Limited)*1	×	×	○	×
	○: Video transmission ×: Camera control	General (Limited)*1	×	○ (Limited)*3	○	×
	○: Video transmission ○: Camera control General	General (Limited)*1	General (Limited)*2	○ (Limited)*3	○	General *4
Authorized user	×: Video transmission ×: Camera control	General (Limited)*1	×	×	○	×
	○: Video transmission ×: Camera control	General (Limited)*1	×	○ (Limited)*3	○	×
	○: Video transmission ○: Camera control General	General (Limited)*1	General (Limited)*2	○ (Limited)*3	○	General *4
	○: Video transmission ○: Camera control Privileged	Privileged (Unlimited)*1	Privileged (Unlimited)*2	○ (Unlimited)*3	○	Privileged *4
Administrator	* No restrictions due to privilege settings	General (Limited)*1	General (Limited)*2	○ (Limited)*3	○	General *4
		Privileged/ Admin (Unlimited)*1	Privileged/ Admin (Unlimited)*2	○ (Unlimited)*3	○	Privileged /Admin *4

Legend:

○: Available; ×: Unavailable (no privilege); –: Unavailable (session required)

General: camera control; Privileged: privileged camera control; Admin: administrator authorities

Note:

*1 This refers to the session connection time, and "(Limited)" is limited by the model specific "Maximum connection time".

*2 This refers to the camera control time, and "(Limited)" is limited by the model specific "Camera control time".

*3 In cases of "(Limited)", the video transmission time is limited by the session connection time.

*4 Functions permitted only in a privileged or administrator session, and functions permitted only in an administrator session. This is determined by the created session type.

3.1.4.9 Sessionless Access Privileges by Function

The following are the XC control protocol commands that can be operated according to the privileges configured for a sessionless user.

Table 3-8 XC Control Command Access Privileges by Sessionless User

User Type	Set Privileges	Session Control		Video	Information	Camera Control
		open close session	claim yield	image video	info meta	control preset trace standby
Guest user	×: Video transmission ×: Camera control	–	–	×	○	×
	○: Video transmission ×: Camera control	–	–	○ (Unlimited) *1	○	×
	○: Video transmission ○: Camera control General	–	–	○ (Unlimited) *1	○	General *2
Authorized user	×: Video transmission ×: Camera control	–	–	×	○	×
	○: Video transmission ×: Camera control	–	–	○ (Unlimited) *1	○	×
	○: Video transmission ○: Camera control General	–	–	○ (Unlimited) *1	○	General *2
	○: Video transmission ○: Camera control Privileged	–	–	○ (Unlimited) *1	○	Privileged *3
Administrator	* No restrictions due to privilege settings	–	–	○ (Unlimited) *1	○	Privileged *3

Legend:

○: Available; ×: Unavailable (no privilege); –: Unavailable (session required)

General: camera control; Privileged: privileged camera control; Admin: administrator authorities

Note:

*1 In sessionless cases, the video transmission time is not limited by the session connection time, so this is “(Unlimited)”. (*However, the video attribute has a restriction on sharing among sessionless clients.)

*2 In sessionless cases, camera control privileges are acquired and operated in the priority specified by commands. Even for users with privileged camera control, the usable functions are limited to the range of general camera control when the priority specified to Commands is a general value instead of a session.

*3 In sessionless cases, the usable functions are limited to the range of privileged camera control.

3.2 Command Specifications

This describes the XC control protocol command specifications.

The following is the notation used in this document.

Notation - List of Information Item Attributes:

The information items have different behavior depending on whether it is an item that can only be referenced, an item that can be referenced and updated, or an item that provides event notification when updated.

This behavior is called an attribute, and the attribute information is abbreviated as shown below.

Table 3-9 Attribute Notation of Information Items

Attribute	Attribute Value	Description
Can be referenced	G	Indicates an item that can be referenced with info.cgi
Can be controlled	C	Indicates an item that can be updated with control.cgi
Session-specific item	P	This is a session-specific value. Indicates an item that does not affect changes to other items
Update notification item	U	Indicates an item whereby the update provides event notification with info.cgi

Note:

Items that can be executed in a privileged session or higher are listed as “privileged”, and items that can be executed only in an administrator session are listed as “admin” in the attribute value column.

Notation - List of Subscript Abbreviations of Array Information Items:

The array subscripts are abbreviated as shown below for the items selected in an array as information items.

Some items may have a valid value range that varies according to the model.

Table 3-10 Subscript Abbreviations of Array Information Items

Abbreviation	Valid Value	Description
<Video>	1...3	Video stream number
<Preset>	1...100	Preset number (only when a preset is valid)
<Trace>	1...10	Trace number (only when a trace is valid)
<Input>	1...2	Contact input terminal number
<Output>	1...2	Contact output terminal number
<Audio>	1	Number of audio input terminals

Note:

Although there are subscripts for selecting information items also for the camera, the number of cameras is fixed at 1, so the abbreviation of *<Camera>* is not listed.

Descriptions of information items hereafter are listed as shown below.

e.g. c.1.status:=*<string>* Camera controllable status

Notation - List of Information Item Types:

The type information of information items is abbreviated as shown below.

Table 3-11 Type Notation of Information Items

Type	Type Value	Description
Character string [ASCII]	*<string>*	ASCII character string. Also includes multiple element joint type. *1
Character string [UTF-8]	*<unicode>*	Indicates a UTF-8 encoded multibyte character string type.
Signed integer	*<int>*	Indicates a signed decimal integer type.
Fixed point number	*<fixed>*	Indicates a signed decimal fixed point number type.

Note:

*1 "Multiple element joint type" is a character string with multiple elements joined with a delimiter as in *"<IP address>:<port>"*.

e.g. "192.168.100.1:80"

Notation - Value Range of Information Items:

For values, ranges, and selection items, the minimum and maximum values within all supported products are described. However, the models within those ranges may not exist.

e.g. When the models within the value range exist

Specifications of model A

Parameter	Value Type/Range	Attribute	Description
c.1.xx=<*int*>	10...100 ↑	GC-U	Integer with a range of 10 to 100

Specifications of model B

Parameter	Value Type/Range	Attribute	Description
c.1.xx=<*int*>	10...50 ↑	GC-U	Integer with a range of 10 to 50

Description in this chapter

Parameter	Value Type/Range	Attribute	Description
c.1.xx=<*int*>	10...100	GC-U	Integer with a range of 10 to 100

e.g. When the models within the value range do not exist

Specifications of model A

Parameter	Value Type/Range	Attribute	Description
c.1.yy=<*int*>	10...100 ↑	GC-U	Integer with a range of 10 to 100

Specifications of model B

Parameter	Value Type/Range	Attribute	Description
c.1.yy=<*int*>	50...200 ↑	GC-U	Integer with a range of 50 to 200

Description in this chapter

Parameter	Value Type/Range	Attribute	Description
c.1.yy=<*int*>	10...200	GC-U	Integer with a range of 10 to 200

Notation - Model Specific Information:

If the specifications for each product differ from those listed in this chapter, the differences are listed in '*Model Specific Information*'.

If model names are written in the column "Model Specific information", the function of the models are expanded or added, or the functions are limited.

3.2.1 Session Control

In the XC control protocol, obtaining camera control privileges or obtaining video stream is managed for each session individually created. With remote cameras, creating sessions are not mandatory because full access to all the camera control and information acquisition is possible. However, it is necessary to create a session to use all functions of the XC control protocol because, for example, in session-based information acquisition, it is possible to use the function to receive event notification when a difference occurs during a continuous connection.

3.2.1.1 Creating a Session [open.cgi] (Optional)

This creates a XC control protocol session.

- The type of general or privileged session is determined according to the priority specification.
- The content of the video to be obtained in the session is determined by the video stream specification.
- The video stream can be selected with either of two methods: by specifying the video codec, video size, and other video parameters, or by specifying the video stream number. It is possible to create a session without performing a video transmission by specifying "Invalid".

When a session is created successfully, the session ID, user privilege, remaining time, priority, and selected video stream information (only when specified) are returned as a response.

3.2.1.1.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-
/open.cgi?[s.priority=<Value>][&v=<Value>][&w=<Value>][&w.<Vid
eo>.frate=<Value>]
```

Preconditions and precautions:

- The session lifetime varies depending on the priority, but privileged and administrator sessions are unlimited. Guest users are limited by the model specific “Maximum connection time”.

  However, if after a session is created, there is no request (video.cgi, image.cgi, info.cgi, control.cgi, etc.) granting a session ID within the prescribed time (60 seconds), that session is cleared regardless of the privileges.
- It is limited by the model specific “Maximum number of clients”. If the maximum number of connections is exceeded, the session is not created, and 503 is returned as the Livescope status response.
- The administrator session has no restrictions on the connection time or number of connections. However, if a separate administrator session has already been established, the connection is denied, and 408 is returned as the Livescope status response.
- For video parameter specification (v), if there is no stream that conforms to the specified video size, a stream with a video size that is close to the specified value and is one size lower is selected.
- If both the video parameter specification (v) and video stream number specification (w) are specified when selecting a video stream, the video parameter specification (v) has priority.
- A session with no video stream (“video-less”) can also be created. However, a video stream must be specified for an administrator session.

Parameters:

Parameter	Value Type/Range	Description
[s.]priority =<*int*>	0...50	Specifies the session priority.*1 “0” when omitted (general session).
v =<*string*>	<*video parameter*> null	Selects the stream by the video parameter. *2 Video-less session when “null” is specified.
w =<*int*>	1...6	Selects the stream by the video stream number. Specifies a video stream number that can be referenced with info.cgi.
[w.<*Video*>.]frate =<*int*>	100...30000	Specifies the video stream frame rate. Unit: Number of frames per 1000 seconds
comparable	admin	When admin is selected in this item, realm of the HTTP response header returns "Administrator" in the case of a privileged session (*1).

Note:

*1 The value ranges have the following meanings.

0: General session

1 - 4: Reserved (if specified, it is treated as "5")

5 - 50: Privileged session

*This is ignored when an administrator session is specified.

*2 Specify <*video parameter*> with the format shown below.

<*jpg or h264*>[:<*video width*>[x<*video height*>[::<*frame rate*>]]]

*The video width and height are expressed in pixels. Specify the frame rate by the number of frames per 1000 seconds.

e.g. "jpg:480x270::30000"

*Do not specify <video width>, <video height>, and <frame rate> for H.264 data.

e.g. "h264"

*H.265 cannot be specified. If "h265" is specified, a 403 error will occur.

Specify H.265 by w.<*Video*>.type.

* For details on combinations that can be selected, see '*A.3 H.264/H.265 Image Parameter Specifications'*.

3.2.1.1.2 Response

The response content for open.cgi varies depending on whether the video parameter specification (v) or video stream number specification (w) was specified. The following shows the response content and status value returned when an error occurs.

A. Successful response [video parameter specification (v)]

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
<Parameter>:=<Value>
<Parameter>==<Value>

s:=8a96-c09b18f0
s.authority.audio:= disabled
s.authority.control:= enabled
s.authority.video:=enabled
s.origin:=192.168.100.1:80
s.duration:=0
s.priority:=0
v:=jpg:1920x1080:3:30000
```

Return value: (*The specified parameter determines whether "==" or ":=" is returned as the return value.)

Return value	Value Type/Range	Description
s :=<*string*>		Session ID
s.authority.audio :=<*string*>	disabled, enabled	Audio device privilege
s.authority.control :=<*string*>	disabled, enabled	Camera control privilege
s.authority.video :=<*string*>	disabled, enabled	Video distribution privilege
s.origin :=<*string*>	<*IP address*>:<*port*>	Camera IP address and HTTP port number *1
s.duration :=<*int*>	0…<*Maximum connection time*>	Remaining session connection time *2 Unit: Second 0: Unlimited
s.priority :=<*int*>	0…50	Session priority
v :=<*string*>	<*video parameter*>	Video parameter of selected stream *3 Not returned if video-less (v=null) is specified.
v.<*Video*>.cbr ==<*int*>	64…16384	Selected video stream target bit rate Unit: kbps *4

Note:

*1 The client protocol type determines whether to use IPv4 or IPv6 notation.

If multiple addresses are defined, the manually configured ones have priority for return, and those not configured manually are returned in the order obtained, starting with the first address.

IPv6 [<*IPv6 Address*>]:<*port*> e.g. "[3FFE:2A00:100:7031::1]:80"

IPv4 <*IPv4 Address*> :<*port*> e.g. "192.168.100.1:80"

*2 The maximum value of the remaining session connection time is the model specific "Maximum connection time".

*3 The video stream parameters are returned for <*video parameter*> with the format shown below.

<*jpg or h264*>:<*video width*>x<*video height*>:<*video quality*>:<*frame rate*>

*4 It is returned when the video codec of <*video parameter*> is "h264".

B. Successful response [video stream number specification (w)]

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
<Parameter>:=<Value>
<Parameter>==<Value>

s:=8a96-c09b18f0
s.authority.audio:= disabled
s.authority.control:= enabled
s.authority.video:=enabled

s.origin:=192.168.100.1:80
s.duration:=0
s.priority:=0
w:=1
w.1.type==h264
w.1.size==480x270
w.1.quality==0
w.1.frate==1000
w.1.crop==off
```

Return value: (*The specified parameter determines whether "==" or ":=" is returned as the return value.)

Return value	Value Type/Range	Description
s :=<*string*>		Session ID
s.authority.audio :=<*string*>	disabled, enabled	Audio device privilege
s.authority.control :=<*string*>	disabled, enabled	Camera control privilege
s.authority.video :=<*string*>	disabled, enabled	Video distribution privilege
s.origin :=<*string*>	*<IP address>:<port>*	Camera IP address and HTTP port number
s.duration :=<*int*>	0…	Remaining session connection time Unit: Second 0: Unlimited
s.priority :=<*int*>	0…50	Session priority
w :=<*int*>	1…6	Selected video stream number *1

Return value	Value Type/Range	Description
w.<*Video*>.type ==<*string*>	jpg, h264, h265	Selected video stream video codec
w.<*Video*>.type.profile ==<*string*>	baseline, main, high	Selected video stream profile *2
w.<*Video*>.kind ==<*string*>	overview	By selected video stream video type
w.<*Video*>.size ==<*string*>	<*video width*>x <*video height*>	Selected video stream size
w.<Video>.quality ==<*int*>	1…10	Selected video stream Q value Low quality 1 ←→ 10 High quality
w.<*Video*>.cbr ==<*int*>	64…16384	Selected video stream target bit rate *3 Units: kbps
w.<*Video*>.frate ==<*int*>	100…30000	Selected video stream frame rate Unit: Number of frames per 1000 seconds
w.<*Video*>.crop ==<*string*>	off on	Enable/disable digital PTZ

Note:

*1 The video stream number is a subscript indicating the video stream shown with the continually returned item w.<*Video*>.

*2 It is returned when the video codec of <*video parameter*> is "h264" or "h265".

*3 It is returned when the video codec of <*video parameter*> is "h264".

C. Error response

HTTP status return value:

HTTP Status	Meaning
401 Unauthorized	User authentication failed. ! A guest user requested a privileged or administrator session. ! An authorized user requested an administrator session.

Livescope status return value:

Livescope Status	Meaning
403 Invalid Parameter Value	Invalid parameter value specified. ! A video stream number (w) outside the valid range was specified.
407 Invalid Request	Invalid session function requested. ! An invalid video stream number (w) was specified. ! A video-less (v=null) administrator session was requested.
408 Conflict	An exclusive operation was requested. ! An administrator session was requested and excluded to an existing session.
503 Too many clients	Maximum number of connections exceeded. *1 ! A session that exceeds the maximum number of connections was requested.
507 Insufficient Privilege	Cannot access due to access privilege.

Note:

*1 The maximum number of connections is limited by the model specific “Maximum number of clients”.

3.2.1.2 Closing a Session [close.cgi] (Optional)

This closes a XC control protocol session.

3.2.1.2.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-/close.cgi?s=<SessionID>
```

Preconditions and precautions:

- A guest user cannot close a privileged session.
- A guest user or authorized user cannot close an administrator session.

Parameters:

Parameter	Value Type/Range	Description
s =<*string*>		Session ID (Mandatory)

3.2.1.2.2 Response

A. Successful response

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
OK
```

B. Error response

HTTP status return value:

HTTP Status	Meaning
401 Unauthorized	User authentication failed. ! A guest user requested a privileged or administrator session. ! An authorized user requested the closing of an administrator session.

Livescope status return value:

Livescope Status	Meaning
406 Parameter Missing	Mandatory parameter not specified. ! Mandatory parameter or session ID(s) not specified.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.1.3 Camera Control Privilege Request [claim.cgi] (Optional)

This is used to obtain camera control privileges. The priority of the session determines whether camera control privileges can be obtained and the assigned time of the control privileges.

■ **Camera control privilege request for a general session**

- The assigned time of the camera control privileges is limited by the set camera control time. *1
- If a general session has already obtained control privileges, a control privilege request from the same general session is queued until the previous session releases control privileges or the assigned time for camera control privileges has elapsed.
- Control privileges are assigned to queued control privilege requests in the order they were requested.

Note:

*1 The camera control time is limited by the setting value of the model specific “Camera control time”. However, unless another client has requested camera control privileges, control privileges can exceed the assigned time. The camera control time can also be set to an unlimited time.

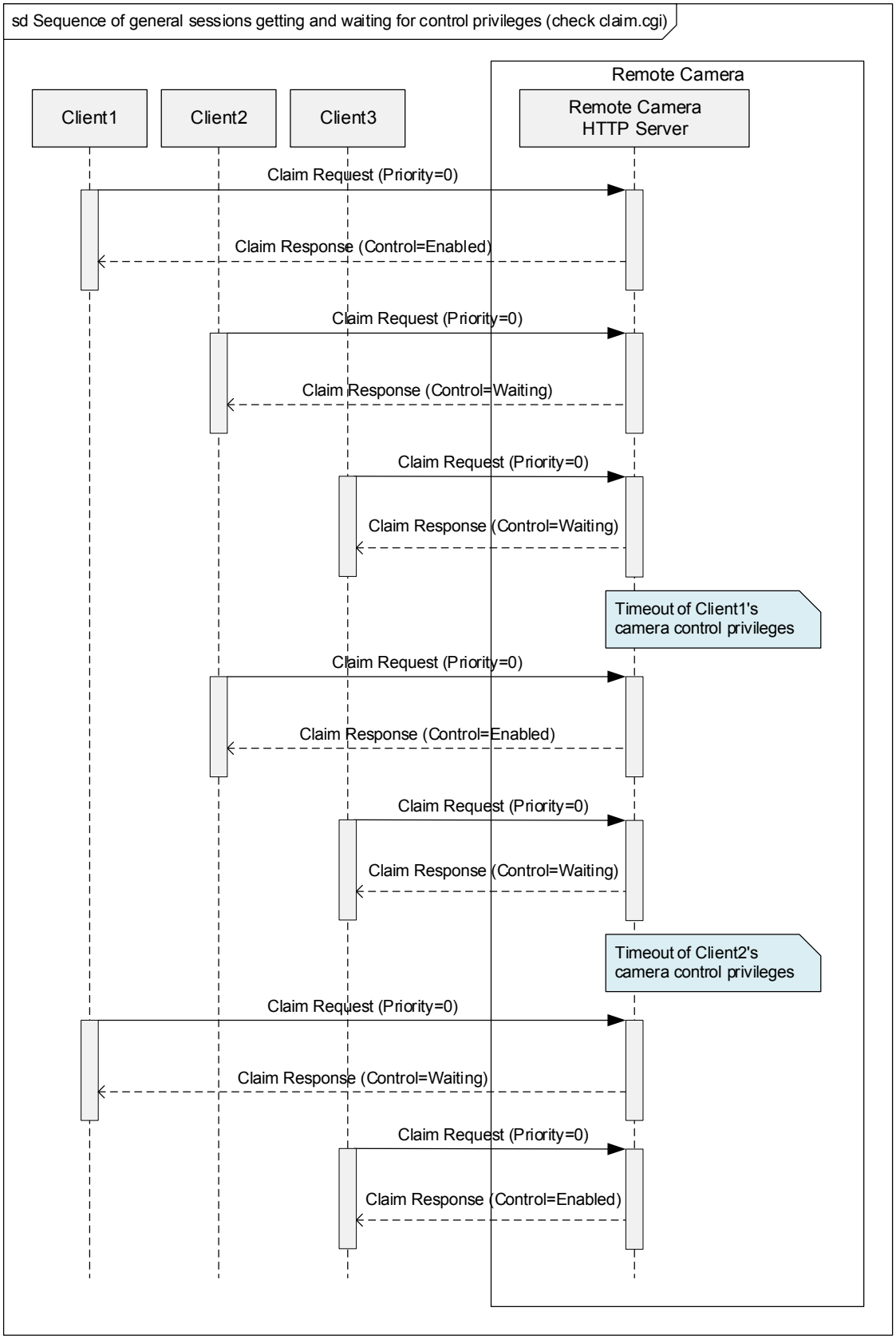

Fig. 3-1 Sequence of General Sessions Getting and Waiting for Camera Control Privileges (Check claim.cgi)

- When obtaining control privileges, in addition to using the result of the control privilege request, info.cgi can also be used to obtain notification of a change in the status of an information item.

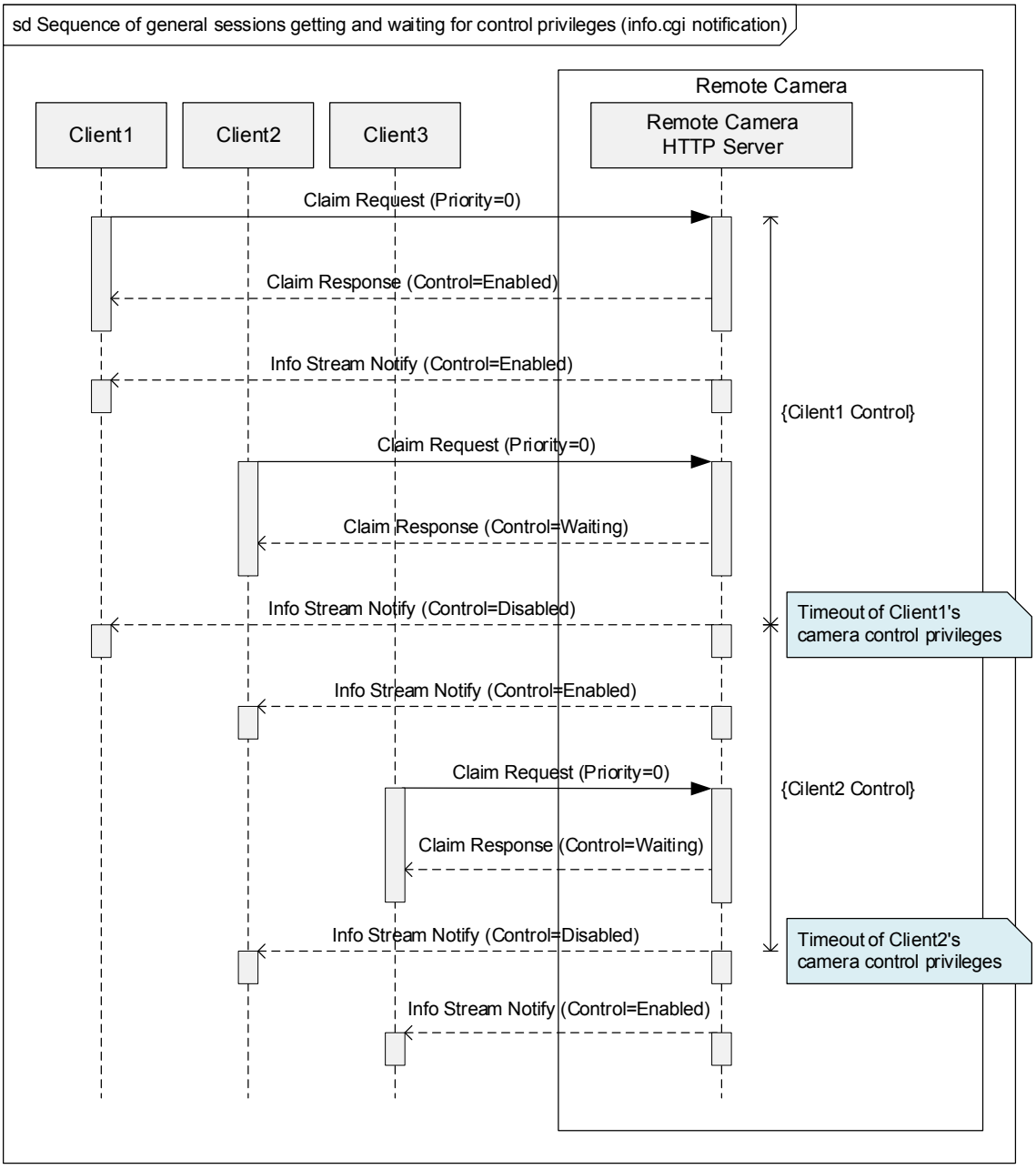

Fig. 3-2 Sequence of General Sessions Getting and Waiting for Camera Control Privileges (info.cgi Notification)

- The number of sessions queued to obtain camera control privileges is managed by the set the maximum camera control queue length. If a control privilege request exceeds the camera control queue length, a failure response is returned.

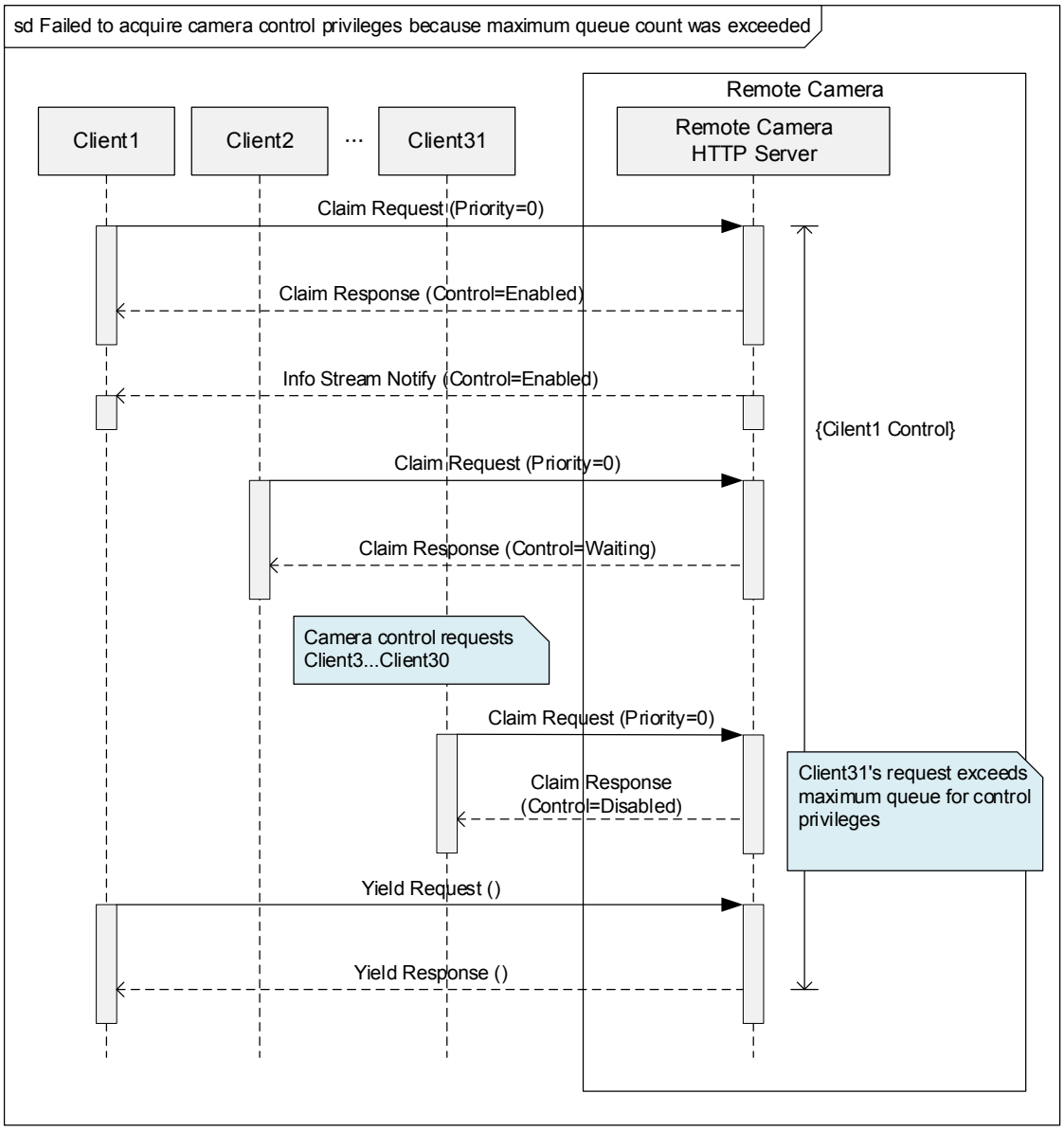

Fig. 3-3 Failed to Acquire Camera Control Privileges Because Maximum Queue Count Was Exceeded

■ **Camera control privilege request for a privileged session**

- In a privileged session, session management in which control privilege requests are queued, as in a general session, is not performed, and instead, the higher priority privileged session obtains control privileges. In this case, the control privileges of the session that had previously obtained control privileges are forfeited.

- Control privileges can also be obtained when a session with the same priority requests control privileges.
- If a privileged session requests control privileges, all queued control privilege requests of general sessions fail.

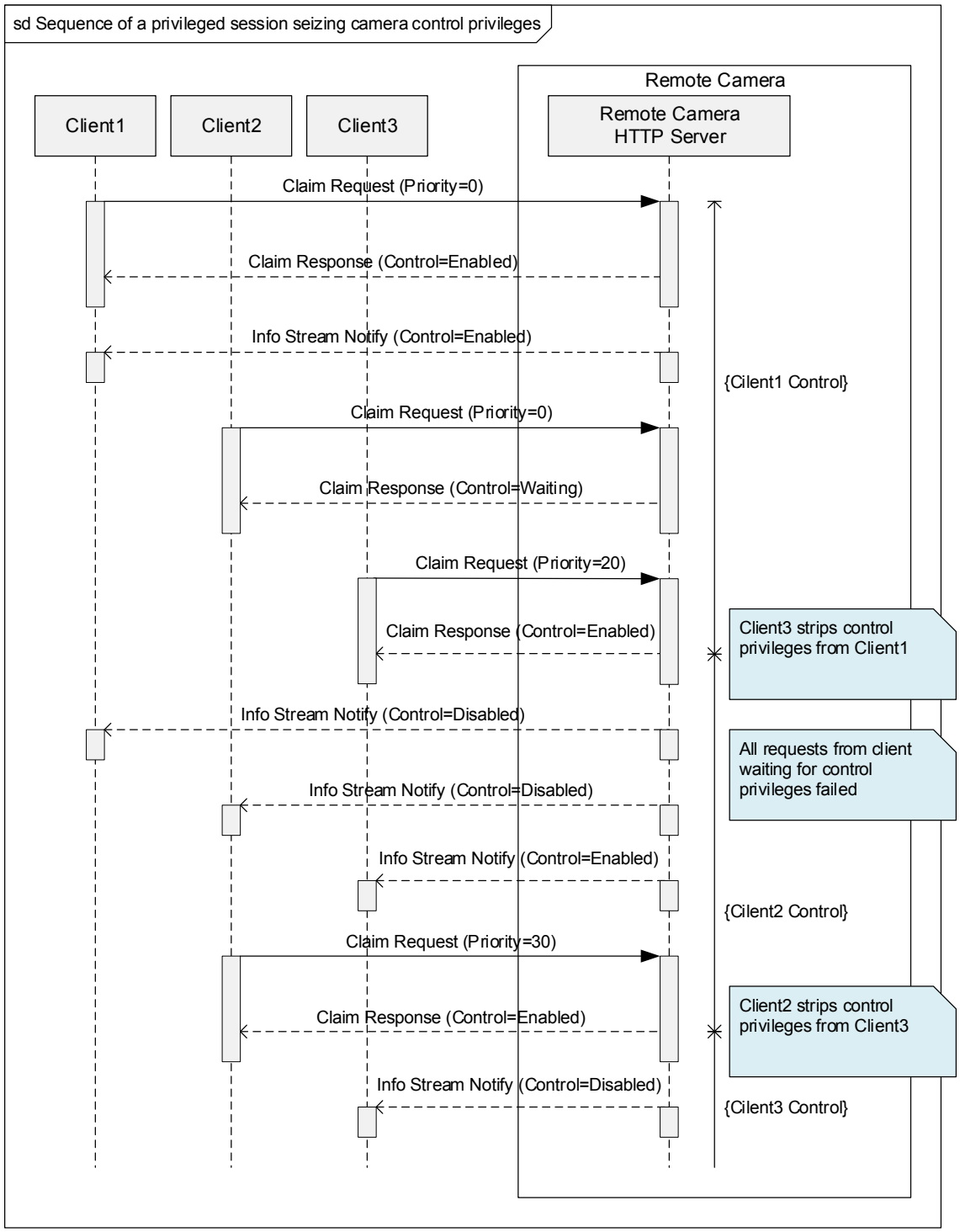

Fig. 3-4 Sequence of a Privileged Session Seizing Camera Control Privileges

3.2.1.3.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-/claim.cgi?s=<SessionID>
```

Parameters:

Parameter	Value Type/Range	Description
s =<*string*>		Session ID (Mandatory)

3.2.1.3.2 Response

A. Successful response [Change in control privileges status of own session due to control privilege request]

The following is the response when the status of the control privileges changes as a result of a processed control privilege request.

e.g. Before control privilege request = disabled → After control privilege request = enabled or waiting

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
s.control:=enabled:20000
```

Return value: (*The specified parameter determines whether "==" or ":=" is returned as the return value.)

Return value	Value Type/Range	Description
s.control :=<*string*>	enabled [:<*assigned time*>], waiting [:<*standby time*>]	Camera control privileges status of own session *1 Unit: Millisecond

Note:

*1 This shows the camera control privileges status of your own session. If "enabled" (or "waiting"), the remaining assigned time (or remaining standby time until privileges are obtained) is added in milliseconds only when both are limited.

s.control:=enabled : Obtaining camera control privileges

s.control:=waiting : Waiting to obtain camera control privileges

B. Successful response [No change in control privileges status of own session due to control privilege request]

The following is the response when the status of the control privileges does not change even when a control privilege request is processed.

e.g. Before control privilege request = disabled →
After control privilege request = disabled (failed to obtain control privileges)
Before control privilege request = waiting →
After control privilege request = waiting (continuing to wait)

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
   s.control==disabled
```

Return value: (*The specified parameter determines whether "==" or ":=" is returned as the return value.)

Return value	Value Type/Range	Description
s.control ==<*string*>	enabled [:<*assigned time*>], waiting [:<*standby time*>] disabled	Camera control privileges status of own session *1 Unit: Millisecond

Note:

*1 This shows the camera control privileges status of your own session. If "enabled" (or "waiting"), the remaining assigned time (or remaining standby time until privileges are obtained) is added in milliseconds only when both are limited.

s.control:=enabled : Obtaining camera control privileges
s.control:=waiting : Waiting to obtain camera control privileges
s.control==disabled : Failed to obtain camera control privileges

C. Error response

HTTP status return value:

HTTP Status	Meaning
401 Unauthorized	User authentication failed. ! Specified session ID(s) does not have camera control privileges.

Livescope status return value:

Livescope Status	Meaning
406 Parameter Missing	Mandatory parameter not specified. ! Mandatory parameter or session ID(s) not specified.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.1.4 Releasing Camera Control Privileges [yield.cgi] (Optional)

This releases camera control privileges. If waiting to obtain camera control privileges, this cancels the wait status.

- When releasing control privileges, in addition to using the result of the control privilege release, info.cgi can also be used to obtain notification of a change in the status of an information item.

3.2.1.4.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-/yield.cgi?s=<SessionID>
```

Parameters:

Parameter	Value Type/Range	Description
s =<*string*>		Session ID (Mandatory)

3.2.1.4.2 Response

A. Successful response [Change in control privileges status of own session due to control privilege release]

The following is the response when the status of the control privileges changes as a result of a processed control privilege release with respect to the privileges status before release of control privileges.

e.g. Before control privilege release = enabled or waiting → After control privilege release = disabled

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
s.control:=disabled
```

Return value: (*The specified parameter determines whether "==" or ":=" is returned as the return value.)

Return value	Value Type/Range	Description
s.control :=<*string*>	disabled	Camera control privileges status of own session

B. Successful response [No change in control privileges status of own session due to control privilege release]

The following is the response when the status of the control privileges does not change even when a control privilege release is processed with respect to the privileges status before release of control privileges.

e.g. Before control privilege release = disabled → After control privilege release = disabled

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
s.control==disabled
```

Return value: (*The specified parameter determines whether "==" or ":=" is returned as the return value.)

Return value	Value Type/Range	Description
s.control :=<*string*>	disabled	Camera control privileges status of own session

C. Error response

Livescope status return value:

Livescope Status	Meaning
406 Parameter Missing	Mandatory parameter not specified. ! Mandatory parameter or session ID(s) not specified.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.1.5 Changing Session Attributes [session.cgi] (Optional)

This retrieves a XC control protocol session-specific attribute or changes a specific attribute.

- A session-specific attribute can be used to change the priority and video stream.
- Changes to the session priority affect the XC control command access privileges and camera control privileges.
- The size and frame rate of the video to be retrieved in the session can be changed by changing the video stream attributes.
- The video stream can be selected with either of two methods: by specifying the video codec, video size, and other video parameters, or by specifying the video stream number.

When a session attribute is changed successfully, the changed priority and changed video stream information are returned as a response.

3.2.1.5.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-
/session.cgi?s=<SessionID>[&s.priority=<Value>][&v=<Value>][&w
=<Value>][&w.<Video>.frate=<Value>]
```

Preconditions and precautions:

- If the session priority is lowered to a general session, the session may be disconnected due to the limitation of the model specific “Maximum connection time”.
- If the session priority is lowered to a level where there are no camera control privileges, the camera control privileges are forfeited.
- If the session priority is lowered and there is a session requesting camera control privileges at a higher priority, the camera control privileges are forfeited.
- For video parameter specification (v), if there is no stream that conforms to the specified video size, a stream with a video size that is close to the specified value and is one size lower is selected.
- If both the video parameter specification (v) and video stream number specification (w) are specified when selecting a video stream, the video parameter specification (v) has priority.

- When the image.cgi or video.cgi video retrieval command is being executed for the video parameter specification (v), changes to the video codec of the video stream are denied, and 408 is returned as the Livescope status response.
- When the image.cgi or video.cgi video retrieval command is being executed for the video stream number specification (w), changes are only permitted to the type between JPEG video streams. If H.264 is specified, changes are denied, and 408 is returned as the Livescope status response.

Parameters:

Parameter	Value Type/Range	Description
s =<*string*>		Session ID (Mandatory)
[s.]priority =<*int*>	0...50	Specifies the session priority.*1 "0" when omitted (general session).
v =<*string*>	<*video parameter*>	Selects the stream by the video parameter. *2
w =<*int*>	1...6	Selects the stream by the video stream number. Specifies a video stream number that can be referenced with info.cgi.
[w.<*Video*>.]frate =<*int*>	100...30000	Specifies the video stream frame rate. Unit: Number of frames per 1000 seconds

Note:

*1 The value ranges have the following meanings.

0: General session

1 - 4: Reserved (if specified, it is treated as "5")

5 - 50: Privileged session

*This is ignored when an administrator session is specified.

*2 Specify <*video parameter*> with the format shown below.

<*jpg or h264*>[:<*video width*>[x<*video height*>[::<*frame rate*>]]]

The video width and height are expressed in pixels. Specify the frame rate by the number of frames per 1000 seconds.

e.g. "jpg:480x270::30000"

See '*A.3 H.264/H.265 Image Parameter Specifications*'.

*Do not specify <*video width*>, <*video height*>, and <*frame rate*> for H.264 data.

e.g. "h264"

*H.265 cannot be specified. If "h265" is specified, a 403 error will occur. Specify H.265 by w.<*Video*>.type.

* For details on combinations that can be selected, see '*A.3 H.264/H.265 Image Parameter Specifications*'.

3.2.1.5.2 Response

The response content for session.cgi varies depending on whether the video parameter specification (v) or video stream number specification (w) was specified. The following shows the response content and status value returned when an error occurs.

A. Successful response [video parameter specification (v)]

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
s.priority:=0
v:=jpg:1920x1080:3:30000
```

Return value: (*The specified parameter determines whether "==" or ":=" is returned as the return value.)

Return value	Value Type/Range	Description
s.priority := <*int*>	0...50	Changed session priority
v := <*string*>	<*video parameter*>	Video parameter of changed stream *1

Note:

*1 The video stream parameters are returned for <*video parameter*> with the format shown below.

<*jpg or h264*>:<*video width*>x<*video height*>:<*video quality*>:<*frame rate*>

B. Successful response [video stream number specification (w)]

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
s.priority:=0
w:=5
w.1.type==h264
w.1.size==480x270
w.1.quality==0
w.1.frate==1000
w.1.crop==off
```

Return value: (*The specified parameter determines whether "==" or ":=" is returned as the return value.)

Return value	Value Type/Range	Description
s.priority := <*int*>	0…50	Changed session priority
w := <*int*>	1…6	Changed video stream number
w.<*Video*>.type ==<*string*>	jpg, h264, h265	Changed video stream video codec
w.<*Video*>.type.profile ==<*string*>	baseline, main, high	Selected video stream profile *1
w.<*Video*>.kind ==<*string*>	overview	By selected video stream video type
w.<*Video*>.size ==<*string*>	<*video width*>x <*video height*>	Changed video stream size
w.<*Video*>.quality ==<*int*>	1…10	Changed video stream Q value Low quality 1 ←→ 10 High quality
w.<*Video*>.cbr ==<*int*>	64…16384	Changed video stream target bit rate *1 Unit: kbps
w.<*Video*>.frate ==<*int*>	100…30000	Changed video stream frame rate Unit: Number of frames per 1000 seconds

Note:

*1 It is returned when the video codec of <*video parameter*> is "h264" or "h265".

C. Error response

HTTP status return value:

HTTP Status	Meaning
401 Unauthorized	User authentication failed. ! A guest user requested a privileged session.

Livescope status return value:

Livescope Status	Meaning
403 Invalid Parameter Value	Invalid parameter value specified. ! A video stream number (w) outside the valid range was specified.
406 Parameter Missing	Mandatory parameter not specified. ! Mandatory parameter or session ID(s) not specified.
407 Invalid Request	Invalid session function requested. ! An invalid video stream number (w) was specified.
408 Conflict	An exclusive operation was requested. ! A change in the video stream was specified with the video parameter specification (v) while the video retrieval command was being executed. ! A change in the video stream to a format other than JPEG was specified with the video stream number specification (w) while the video retrieval command was being executed.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.2 Information Acquisition

The information acquisition commands of remote cameras under XC control protocol are described below.

3.2.2.1 Information Acquisition [info.cgi] (Mandatory)

This is used to obtain various remote camera information. Select whether to acquire information from a session-based or sessionless client. In addition, as needed, select the method for issuing the command and acquiring the result and the method for receiving notification each time there is a change in information in a camera due to the stream format.

■ **Session-based - Issuing a request as needed**

- At the initial information acquisition after the camera is started, all requested items are returned immediately as a response.
- At all subsequent information acquisitions, items are returned as a response only when those items are different from the initial response content. If there is no difference at the time of the information acquisition request, the response is queued until a difference exists.
- "timeout" parameter can be used to specify the response time limit.

■ **Sessionless - Issuing a request as needed**

- All requested items are returned immediately as a response for each information acquisition request.

■ **Stream format specification**

- It is possible to select the stream format for both session-based and sessionless clients. The server push mode using "multipart/x-mixed-replace" MIME type is used for the response format.

■ **Response format**

- At the initial information acquisition after the camera is started, all requested items are returned immediately as a response.
- Thereafter, an information acquisition request is not performed, and items are repeatedly returned as a response only when those items are different from the previous response content.

- There are two different formats for the response: “item name:=value” and “item name==value”.
  - item name:=value

    An item changed due to the initial response or external factors (another client control, setting change, etc.)
  - name==value

    An item changed by the command sent in the same session. However, “item name:=value” is returned in the command response.
- When the session ID is not specified, format “item name:=value” is always returned.

The following shows the behavior of info.cgi for each usage.

When the stream format is not specified in a sessionless case, all requested items are returned immediately as a response for each information acquisition request.

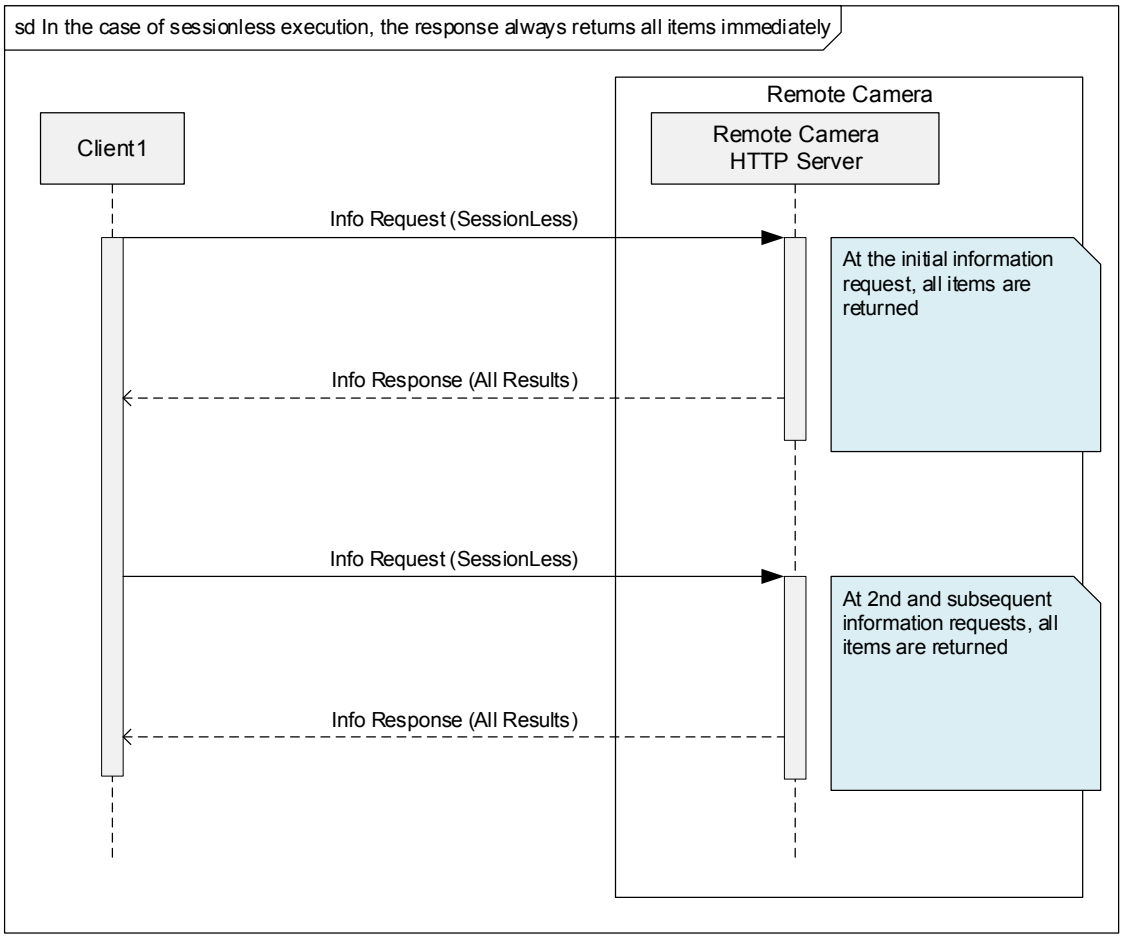

Fig. 3-5 In the Case of Sessionless Execution, the Response Always Returns All Items Immediately

When the stream format is not specified in a session-based case, in all subsequent information acquisitions, items are returned as a response only when those items are different from the initial response content.

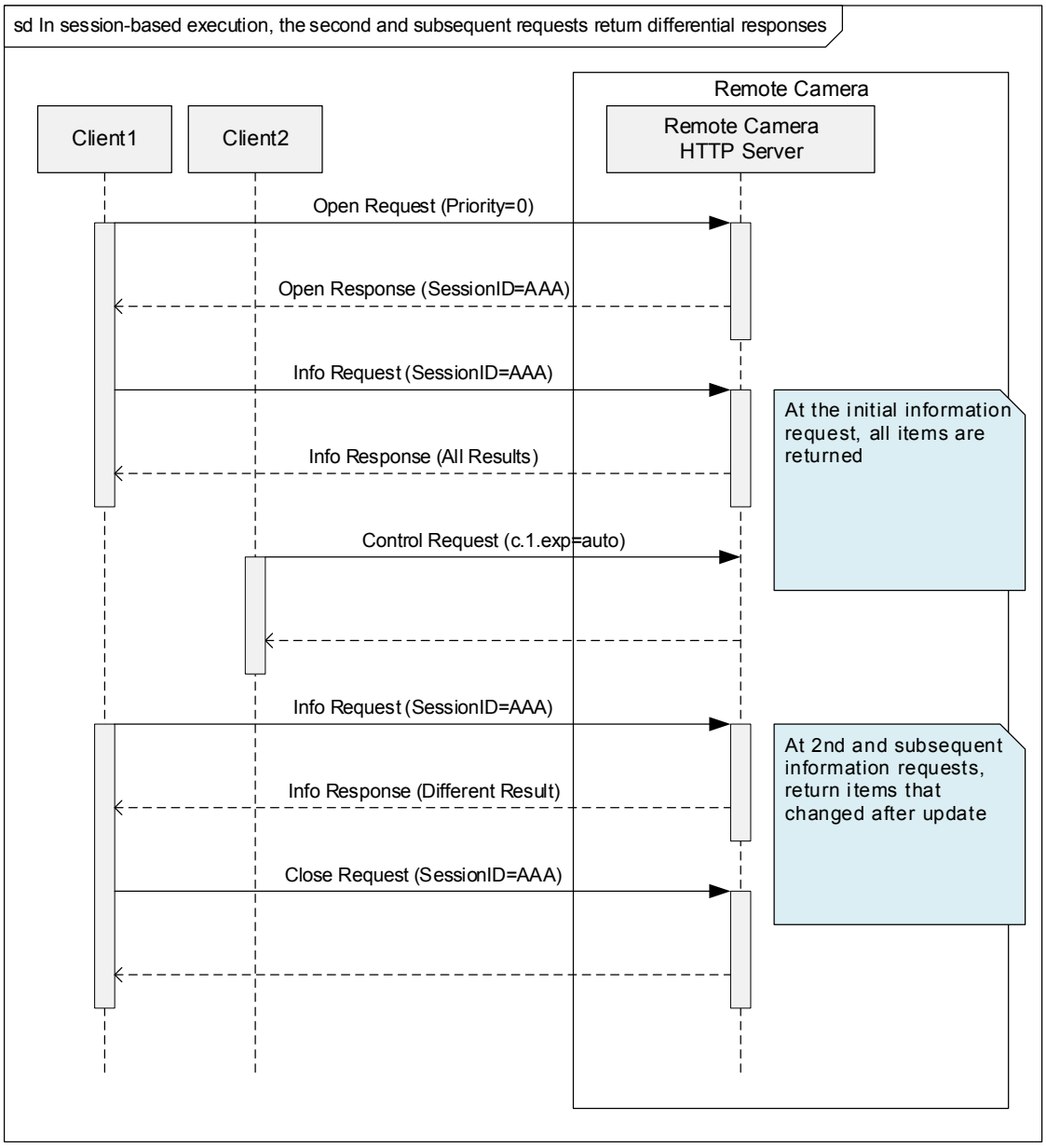

Fig. 3-6 In Session-Based Execution, the Second and Subsequent Requests Return Differential Responses

When the stream format is not specified in a session-based case, in all subsequent information acquisitions, if there is no difference at the time of the information acquisition request, the response is queued until a difference exists.

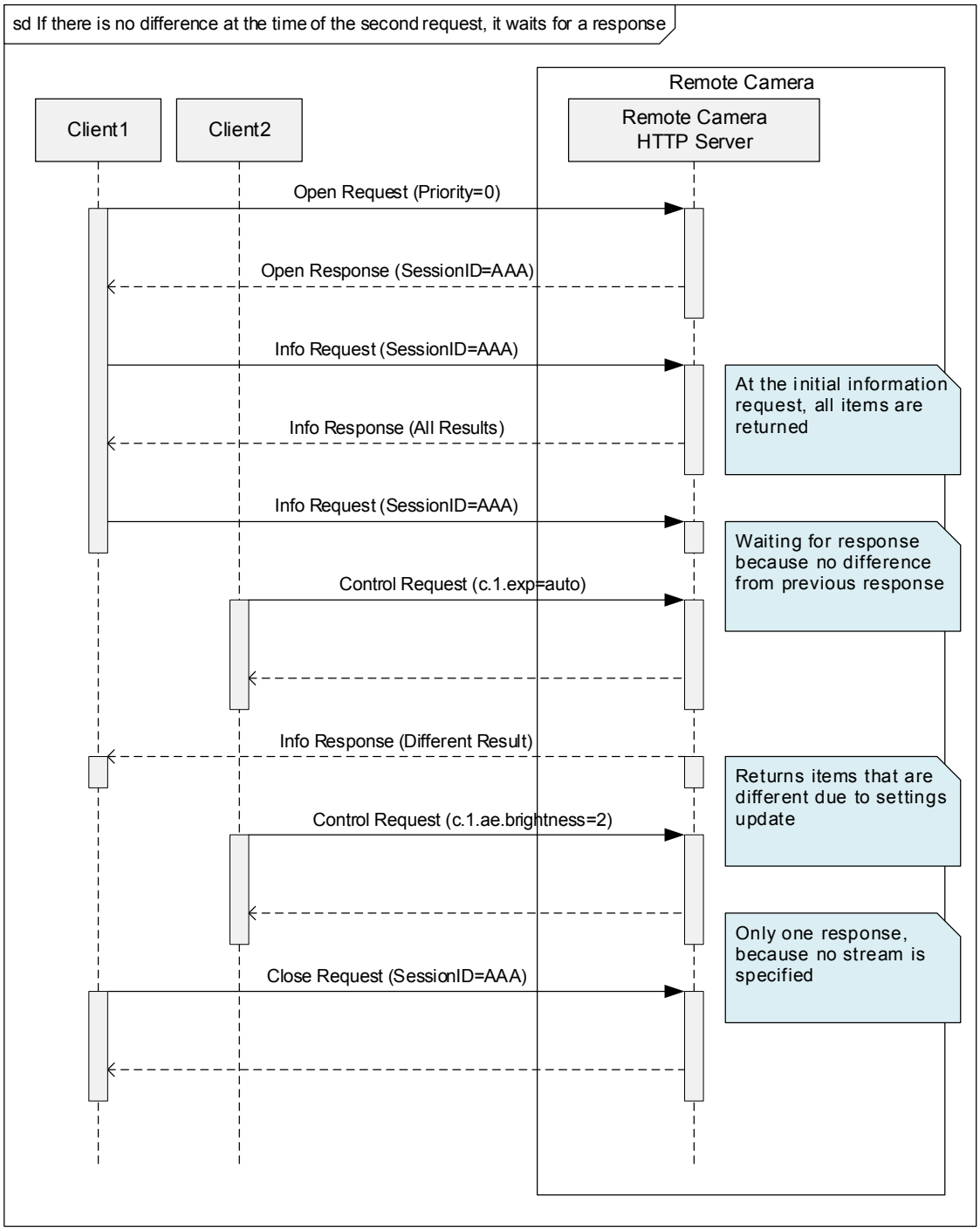

Fig. 3-7 If There Is No Difference at the Time of the Second Request, It Waits for a Response

When the stream format is specified, at the initial information acquisition after the camera is started, all requested items are returned immediately as a response.
Thereafter, an information acquisition request is not performed, and items are repeatedly returned as a response only when those items are different from the previous response content.

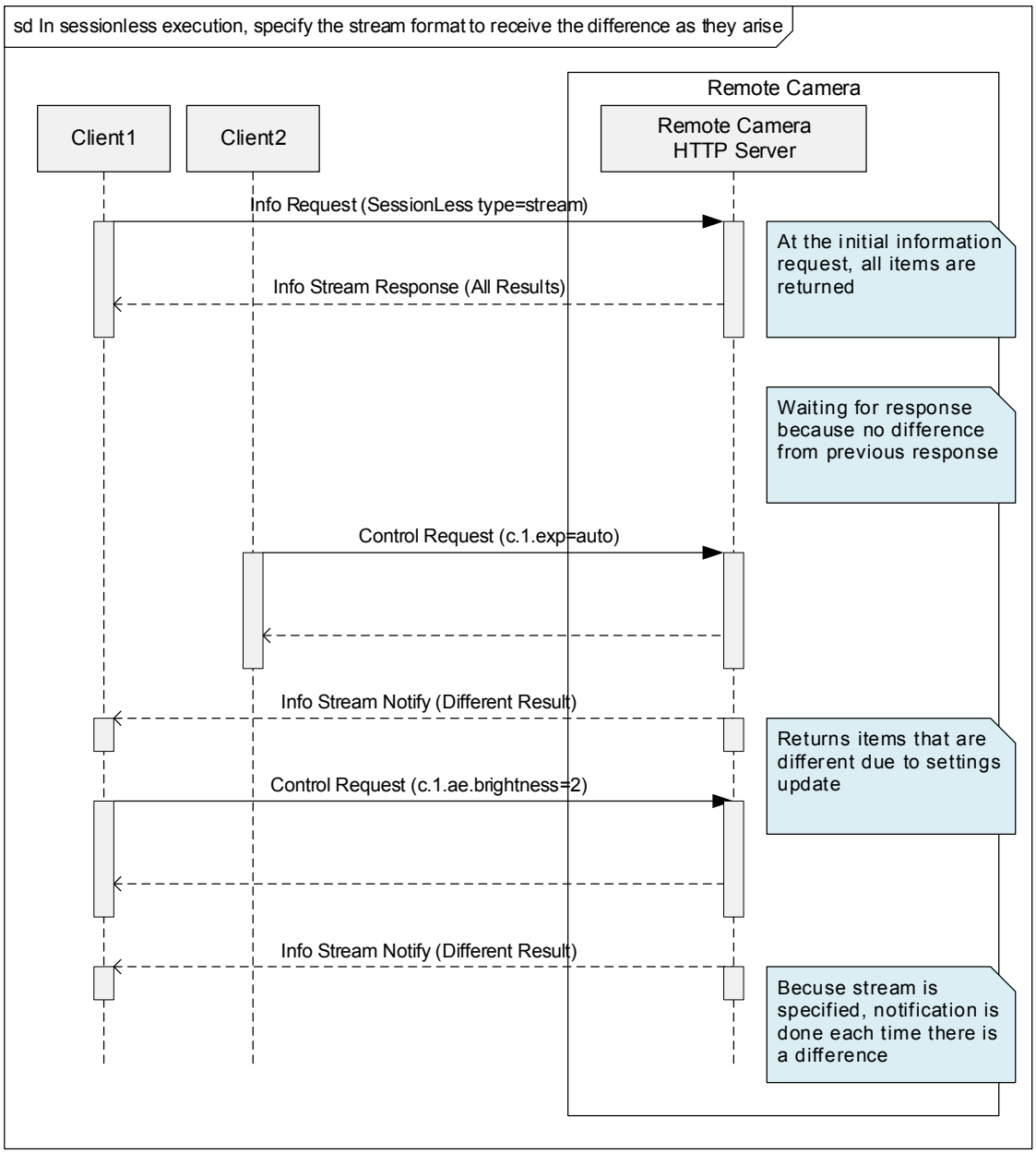

Fig. 3-8 In Sessionless Execution, Specify the Stream Format to Receive the Differences as They Arise

"timeout" specification can be used to specify the response time limit. When the response time limit specified with "timeout" elapses, only the "timestamp" item, which indicates that the time limit timed out, is returned as a response.

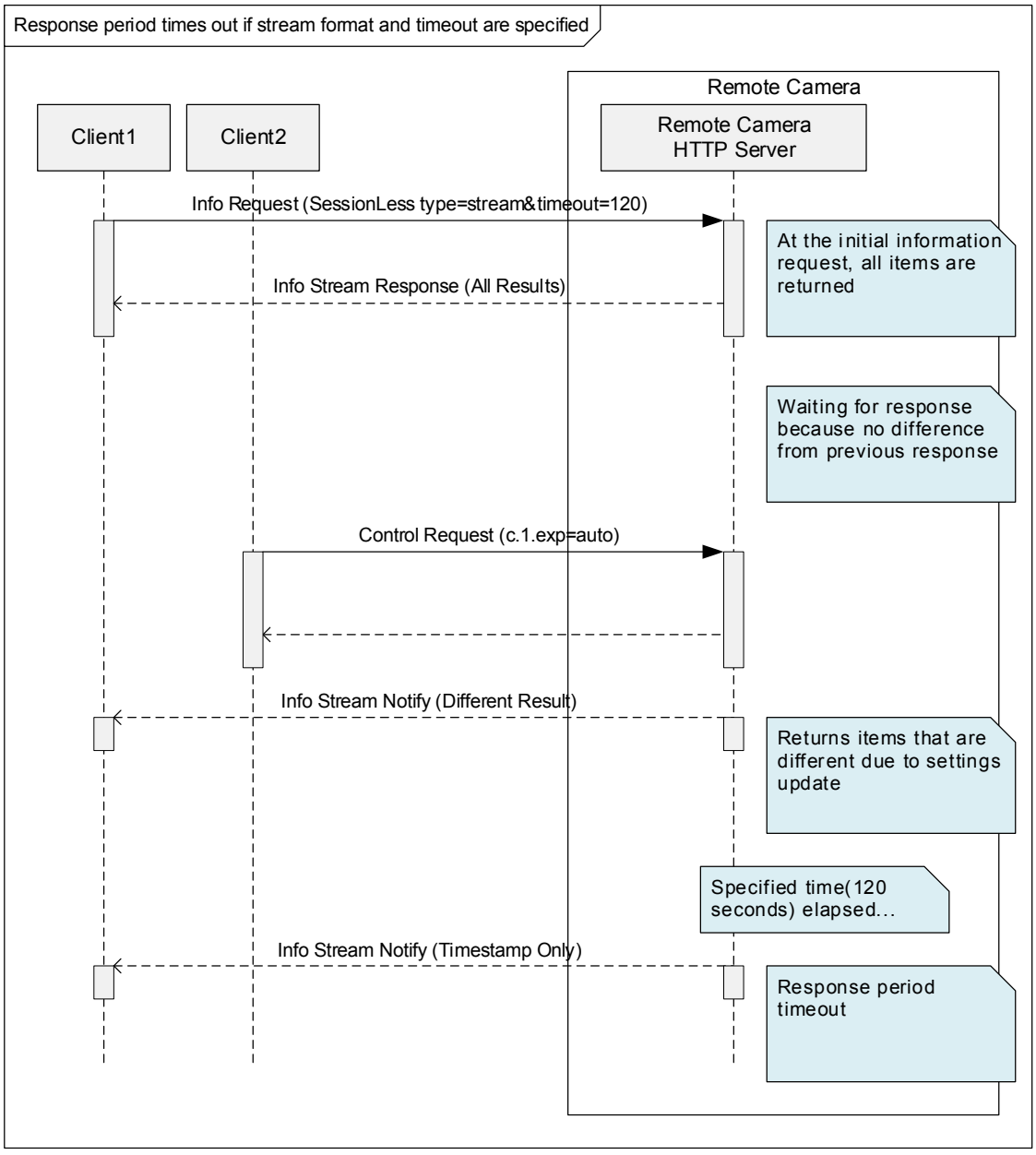

Fig. 3-9 Response Period Times Out If Stream Format and Timeout Are Specified

3.2.2.1.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-
/info.cgi?[s=<sessionID>][&item=<Value>]
[&type=<Value>][&timeout=<Value>]…
```

Preconditions and precautions:

- A request cannot be executed multiple times in the same session, and if attempted, 408 is returned as the Livescope status response.

Parameters:

Parameter	Value Type/Range	Description
s =<*string*>		Session ID
item =<*string*>	<*item name 1*> [,<*item name 2*>...]	Specifies the information item to be acquired. *1 When the specification is omitted, all the items are specified.
type =<*string*>	stream	Response format specification
timeout =<*int*>		Response time limit specification Unit: Second
interval =<*int*>	0, 33, 100, 200, 500, 10000	Minimum interval of performing notification of pan position/tilt position/zoom position during the PTZ operation Unit: Millisecond "0" = No notification "0" when omitted

Note:

*1 * The names of information items are hierarchically organized and are specified with the following format.

item=c : Specify item c (camera) or lower to the acquisition target

item=c! : Exclude item c (camera) or lower from the acquisition target

* The specification of information items can be enumerated, and in this case, the specified items are evaluated in the enumeration order.

e.g. Specification with one item `"info.cgi?item=s,c..."`

e.g. Specification with multiple items `"info.cgi?item=s&item=c..."`

* The details of the return values of the information items are described in the information categories that follow.

3.2.2.1.2 Response

There are two types of response formats for information acquisition depending on the factor for the change in value: “item name:=value” and “item name==value”.

- “item name:=value” indicates an item changed due to the initial response of the information acquisition or external factors, such as a control request from another client.
- “item name==value” indicates an item changed as a result of a control request processed in one’s own session.

Note:

The initial response is always “item name:=value”, and “item name==value” is only returned for subsequent responses of specified sessions.

A. Successful response [normal]

This indicates the initial response of an information acquisition or a response when a command is issued as needed.

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
timestamp=22149.098
realtime=1604038382.586
s.duration:=0
s.priority:=0
s.epoch:=Fri, 30 Oct 2020 14:42:48 +0900
s.hardware:=Canon CR-N500
s.hardware.id:=110
s.hardware.address:=0000XXXXXXXXXXXXXX
s.firmware:=1.0.0
s.protocol:=5.0.0
v:=jpg:1280x720:6:14980
v.list:=h264:1920x1080:0:59940,jpg:1280x720:6:14980
v.h264.cbr:=20000
w.maxsize:=1920x1080
w.count:=3
w.1.status:=enabled
w.1.type:=h264
w.1.type.profile:=high
w.1.kind:=overview
w.1.size:=1920x1080
w.1.quality:=6
w.1.cbr:=20000
w.1.frate.min:=100
w.1.frate.max:=59940
```

```
w.1.crop:=off
w.2.status:=enabled
w.2.type:=h264
w.2.type.profile:=high
w.2.kind:=overview
w.2.size:=640x360
w.2.quality:=6
w.2.cbr:=6000
w.2.frate.min:=100
w.2.frate.max:=29970
w.2.crop:=off
w.3.status:=enabled
w.3.type:=jpg
w.3.kind:=overview
w.3.size:=1280x720
w.3.quality:=6
w.3.frate.min:=100
w.3.frate.max:=14980
w.3.crop:=off
c:=1
c.count:=1
c.1.type:=Canon CR-N500
c.1.status:=enabled
c.1.shooting:=fullauto
c.1.shooting.list:=fullauto,manual
c.1.platform.status:=initialized
c.1.platform.error:=0
c.1.name.utf8:=Camera
c.1.exp:=auto
c.1.exp.list:=auto,manual
c.1.ae.gainlimit.max:=330
c.1.ae.gainlimit.max.min:=-60
c.1.ae.gainlimit.max.max:=330
c.1.ae.brightness:=0
c.1.ae.brightness.min:=-8
c.1.ae.brightness.max:=8
c.1.ae.brightness.list:=-8,-6,-4,-2,0,2,4,6,8
c.1.ae.photometry:=center
c.1.ae.photometry.list:=center,spotlight,backlight
c.1.ae.flickerreduct:=off
c.1.ae.flickerreduct.list:=off,auto
c.1.ae.resp:=1
c.1.ae.resp.min:=0
c.1.ae.resp.max:=2
c.1.me.shutter:=60
c.1.me.shutter.mode:=auto
c.1.me.shutter.mode.list:=auto,speed,slow,clearscan
c.1.me.shutter.list:=60,75,90,100,120,150,180,210,250,300,360,
420,500,600,720,840,1000,1200,1400,1700,2000
c.1.me.iris:=250
c.1.me.iris.min:=108
c.1.me.iris.max:=252
c.1.me.gain:=270
c.1.me.gain.min:=-60
c.1.me.gain.max:=330
c.1.me.gain.mode:=auto
c.1.me.gain.mode.list:=auto,manual
c.1.me.gainlimit.max:=330
c.1.me.gainlimit.max.min:=-60
c.1.me.gainlimit.max.max:=330
```

```
c.1.me.clearscan:=5997
c.1.me.clearscan.min:=5997
c.1.me.clearscan.max:=25051
c.1.me.brightness:=0
c.1.me.brightness.min:=-8
c.1.me.brightness.max:=8
c.1.me.flickerreduct:=off
c.1.me.flickerreduct.list:=off,auto
c.1.me.resp:=1
c.1.me.resp.min:=0
c.1.me.resp.max:=2
c.1.me.fno:=280
c.1.me.fno.list:=280,310,340,370,400,440,450,480,520,560,620,6
70,730,800,870,950,1000,1100
c.1.me.fno.mode:=auto
c.1.me.fno.mode.list:=auto,manual
c.1.me.photometry:=center
c.1.me.photometry.list:=center,spotlight,backlight
c.1.nd.mode:=manual
c.1.nd.mode.list:=manual
c.1.nd.filter:=0
c.1.nd.filter.list:=0,400,1600,6400
c.1.wb:=auto
c.1.wb.resp:=1
c.1.wb.resp.min:=0
c.1.wb.resp.max:=2
c.1.wb.list:=auto,manual,wb_a,wb_b,daylight,tungsten,kelvin
c.1.wb.value:=221-250
c.1.wb.action.list:=one_shot_a,one_shot_b
c.1.wb.kelvin:=4760
c.1.wb.kelvin.list:=2000,2020,2040,2060,2080,2110,2130,2150,21
70,2200,2220,2250,2270,2300,2330,2350,2380,2410,2440,2470,2500
,2530,2560,2600,2630,2670,2700,2740,2780,2820,2860,2900,2940,2
990,3030,3080,3130,3200,3230,3280,3330,3390,3450,3510,3570,364
0,3700,3770,3850,3920,4000,4080,4170,4300,4350,4440,4550,4650,
4760,4880,5000,5130,5260,5410,5600,5710,5880,6060,6300,6450,66
70,6900,7140,7410,7690,8000,8330,8700,9090,9520,10000,10530,11
110,11760,12500,13330,14290,15000
c.1.wb.shift.rgain:=0
c.1.wb.shift.rgain.min:=-50
c.1.wb.shift.rgain.max:=50
c.1.wb.shift.bgain:=0
c.1.wb.shift.bgain.min:=-50
c.1.wb.shift.bgain.max:=50
c.1.gamma:=normal1
c.1.gamma.list:=normal1,normal2,normal3,normal4,widedr,clog3
c.1.colorspace:=gamut_bt709
c.1.colorspace.list:=gamut_bt709,gamut_bt2020
c.1.colormatrix:=video
c.1.colormatrix.list:=video,neutral
c.1.colormatrix.gain:=0
c.1.colormatrix.gain.min:=-50
c.1.colormatrix.gain.max:=50
c.1.colormatrix.phase:=0
c.1.colormatrix.phase.min:=-18
c.1.colormatrix.phase.max:=18
c.1.colormatrix.rg:=0
c.1.colormatrix.rg.min:=-50
c.1.colormatrix.rg.max:=50
c.1.colormatrix.rb:=0
```

```
c.1.colormatrix.rb.min:=-50
c.1.colormatrix.rb.max:=50
c.1.colormatrix.gr:=0
c.1.colormatrix.gr.min:=-50
c.1.colormatrix.gr.max:=50
c.1.colormatrix.gb:=0
c.1.colormatrix.gb.min:=-50
c.1.colormatrix.gb.max:=50
c.1.colormatrix.br:=0
c.1.colormatrix.br.min:=-50
c.1.colormatrix.br.max:=50
c.1.colormatrix.bg:=0
c.1.colormatrix.bg.min:=-50
c.1.colormatrix.bg.max:=50
c.1.is:=on1
c.1.is.list:=off,on1,on2
c.1.nr:=5
c.1.nr.min:=0
c.1.nr.max:=12
c.1.nr.mode:=manual
c.1.nr.mode.list:=manual,auto
c.1.ac:=0
c.1.ac.min:=-10
c.1.ac.max:=50
c.1.ac.limit:=0
c.1.ac.limit.min:=-50
c.1.ac.limit.max:=50
c.1.cp:=normal1_bt709
c.1.cp.list:=normal1_bt709,normal1_bt2020,widedr_bt709,widedr_
bt2020,clog3_bt2020,clog3_bt709,off
c.1.contrast:=0
c.1.contrast.min:=0
c.1.contrast.max:=0
c.1.blacklevel:=0
c.1.blacklevel.min:=-50
c.1.blacklevel.max:=50
c.1.blacklevel.red:=0
c.1.blacklevel.red.min:=-50
c.1.blacklevel.red.max:=50
c.1.blacklevel.blue:=0
c.1.blacklevel.blue.min:=-50
c.1.blacklevel.blue.max:=50
c.1.blackgamma:=0
c.1.blackgamma.min:=-50
c.1.blackgamma.max:=50
c.1.blackgamma.range:=0
c.1.blackgamma.range.min:=-20
c.1.blackgamma.range.max:=50
c.1.blackgamma.point:=0
c.1.blackgamma.point.min:=-20
c.1.blackgamma.point.max:=50
c.1.knee:=off
c.1.knee.list:=off,on
c.1.knee.automatic:=off
c.1.knee.automatic.list:=off,on
c.1.knee.point:=95
c.1.knee.point.min:=50
c.1.knee.point.max:=109
c.1.knee.slope:=0
c.1.knee.slope.min:=-35
```

```
c.1.knee.slope.max:=50
c.1.knee.saturation:=0
c.1.knee.saturation.min:=-10
c.1.knee.saturation.max:=10
c.1.focus:=auto
c.1.focus.speed:=1
c.1.focus.speed.min:=0
c.1.focus.speed.max:=2
c.1.focus.list:=auto,manual
c.1.focus.value:=1893
c.1.focus.restrict:=off
c.1.focus.restrict.list:=off,on
c.1.focus.action.list:=far,near,one_shot,stop
c.1.focus.auto:=continuous
c.1.focus.auto.detect:=off
c.1.focus.auto.detect.list:=off,faceonly,facecatch
c.1.focus.auto.list:=continuous,afboosted
c.1.focus.auto.speed:=1
c.1.focus.auto.speed.min:=0
c.1.focus.auto.speed.max:=2
c.1.focus.auto.track:=off
c.1.focus.auto.track.frame.x:=0
c.1.focus.auto.track.frame.x.min:=0
c.1.focus.auto.track.frame.x.max:=9999
c.1.focus.auto.track.frame.y:=0
c.1.focus.auto.track.frame.y.min:=0
c.1.focus.auto.track.frame.y.max:=9999
c.1.focus.auto.track.list:=off,on
c.1.focus.auto.track.mode:=mode1
c.1.focus.auto.track.mode.list:=mode1,mode2
c.1.focus.auto.resp:=1
c.1.focus.auto.resp.min:=0
c.1.focus.auto.resp.max:=2
c.1.focus.frame.1:=auto
c.1.focus.frame.1.list:=auto,large,small
c.1.focus.frame.1.x:=5000
c.1.focus.frame.1.x.min:=0
c.1.focus.frame.1.x.max:=9999
c.1.focus.frame.1.y:=5000
c.1.focus.frame.1.y.min:=0
c.1.focus.frame.1.y.max:=9999
c.1.focus.frame.1.width:=6151
c.1.focus.frame.1.height:=5439
c.1.zoom:=7300
c.1.zoom.min:=570
c.1.zoom.max:=7300
c.1.zoom.status:=0
c.1.zoom.limit.min:=570
c.1.zoom.limit.max:=7300
c.1.zoom.speed.pos:=15
c.1.zoom.speed.dir:=15
c.1.zoom.speed.min:=0
c.1.zoom.speed.max:=15
c.1.zoom.mode:=off
c.1.zoom.mode.list:=off,dzoom,mag
c.1.zoom.d:=570
c.1.zoom.diameter:=100
c.1.zoom.mag:=100
c.1.zoom.mag.list:=100,150,300,600
c.1.pan:=0
```

```
c.1.pan.status:=0
c.1.pan.min:=-17000
c.1.pan.max:=17000
c.1.pan.limit.min:=-17000
c.1.pan.limit.max:=17000
c.1.pan.speed.mode.pos:=auto2
c.1.pan.speed.mode.dir:=auto2
c.1.pan.speed.mode.list:=manual,auto1,auto2
c.1.pan.speed.pos:=10000
c.1.pan.speed.dir:=10000
c.1.pan.speed.min:=10
c.1.pan.speed.max:=10000
c.1.pan.speed.ratio.pos:=100
c.1.pan.speed.ratio.dir:=100
c.1.pan.speed.ratio.min:=1
c.1.pan.speed.ratio.max:=1000
c.1.pan.ramp:=1
c.1.pan.ramp.min:=0
c.1.pan.ramp.max:=2
c.1.tilt:=0
c.1.tilt.status:=0
c.1.tilt.min:=-3000
c.1.tilt.max:=9000
c.1.tilt.limit.min:=-3000
c.1.tilt.limit.max:=9000
c.1.tilt.speed.mode.pos:=auto2
c.1.tilt.speed.mode.dir:=auto2
c.1.tilt.speed.mode.list:=manual,auto1,auto2
c.1.tilt.speed.pos:=10000
c.1.tilt.speed.dir:=10000
c.1.tilt.speed.min:=10
c.1.tilt.speed.max:=10000
c.1.tilt.speed.ratio.pos:=100
c.1.tilt.speed.ratio.dir:=100
c.1.tilt.speed.ratio.min:=1
c.1.tilt.speed.ratio.max:=1000
c.1.tilt.ramp:=1
c.1.tilt.ramp.min:=0
c.1.tilt.ramp.max:=2
c.1.erotate:=0
c.1.erotate.list:=0.18000
i.count:=0
o.count:=0
p:=2
p.count:=100
p.status:=0
p.1.name.utf8:=home
p.1.content:=enabled
p.1.content.ptz:=enabled
p.1.content.focus:=enabled
p.1.content.exp:=enabled
p.1.content.wb:=enabled
p.1.content.is:=enabled
p.1.content.cp:=enabled
p.1.pan.speed:=10000
p.1.tilt.speed:=10000
p.1.zoom.speed:=15
...
p.100.name.utf8:=
p.100.content:=disabled
```

```
p.100.content.ptz:=disabled
p.100.content.focus:=disabled
p.100.content.exp:=disabled
p.100.content.wb:=disabled
p.100.content.is:=disabled
p.100.content.cp:=disabled
t:=0
t.count:=10
t.status:=idle
t.1.name.utf8:=
t.1.recorded:=off
t.1.time:=0
...
t.10.name.utf8:=
t.10.recorded:=off
t.10.time:=0
a.count:=0
f.tally:=off
f.tally.mode:=preview
f.tally.mode.list:=preview,program
f.tally.list:=off,on
f.tally.level:=1
f.tally.level.min:=0
f.tally.level.max:=2
f.standby:=idle
f.standby.list:=idle,switch_standby,standby,switch_idle
```

Return value:

Return Value	Value Type/Range	Description
timestamp =<*fixed*>	<*sec.*>.<*ms*>	Remote camera specific time (Total time from camera start)
realtime =<*fixed*>	<*sec.*>.<*ms*>	Remote camera actual time (Seconds from Greenwich Mean Time)

Note:

The details of the return values of the information items are described in the information categories that follow.

B. Successful response [Stream format specification]

This indicates the content of the different response when the stream format was specified.

```
HTTP Code         : 200 OK
Content-Type      : multipart/x-mixed-replace;boundary=boundary
Livescope-Status  : 0
MessageBody       :
```

```
--boundary
Content-Type: text/plain; charset=utf-8
Content-Length: <DataLength>

timestamp=4091.450
realtime=1380159728.596
s.epoch:=Thu, 26 Sep 2013 08:34:24 +0900
s.hardware:=Canon VB
...
--boundary
Content-Type: text/plain; charset=utf-8
Content-Length: <DataLength>

timestamp=<Second.MSecond>
realtime=<Second.MSecond>
c.1.zoom:=5070
--boundary

...

--boundary
Content-Type: text/plain; charset=utf-8
Content-Length: <DataLength>

timestamp=<Second.MSecond>
realtime=<Second.MSecond>
--boundary--
```

Note:

Only the "timestamp" item is returned for the final response.

C. Error response

Livescope status return value:

Livescope Status	Meaning
403 Invalid Parameter Value	Invalid parameter value specified. ! A value other than a seconds value is specified to the"timeout" parameter.
408 Conflict	An exclusive operation was requested. ! Information acquisition was requested multiple times at the same time during the same session.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.2.1.3 Acquired Parameters

There are many parameters that can be acquired with info.cgi, and they will be described in APPENDIX '*iii Parameter List of info.cgi and control.cgi*'.

3.2.3 Camera Control

The camera control commands under XC control protocol are described below.

3.2.3.1 Camera Control [control.cgi] (Mandatory)

This is used to control a camera or a tally lamp of remote cameras. Select from control by using the camera control privileges being obtained in a session-based case and control by obtaining the temporary camera control privileges in a sessionless case.
With remote cameras, all the controls can be performed without camera control privileges.

Table 3-12 Relationship between Camera Control Privileges and Whether a Session Is Specified

Camera Control Privileges	Action in Response to Specified Request
Session-based	Use the camera control privileges being obtained in a session.
Sessionless	control.cgi obtains the temporary control privileges of the specified priority within the command process. If camera control cannot be obtained immediately, control is not performed.
Camera control privileges not needed	Some controls can be performed without camera control privileges. With remote cameras, all the controls correspond to this, which means all the controls can be performed without camera control privileges.

- A control request for multiple items can be included in one command. *1
- If one command contains both control that requires camera control privileges and control that does not, camera control privileges are required. *2

Note:

*1 If control is requested for multiple items at one time, not all control may be executed as requested, depending on the camera operation status. In particular, it is important to note that control that performs mechanical operations, such as pan, tilt, and zoom operation, requires time until the operation is completed.
To perform control requests separately, it is recommended that an interval of 30 ms or more be used between requests.

*2 If camera control privileges cannot be obtained, control not requiring camera control privileges will not be executed.

■ **Angle of View Linkage**

- Some models support the angle of view linkage function.
- This function adjusts the operating speed according to the angle of view of the zoom as a Pan/Tilt speed adjustment function.
- This function has the following three operation modes.
- The operation mode will be "auto2" when there is no designation.

Table 3-13 Operation Modes

Operation Mode	Description
manual	This mode operates at a constant speed. Pan/Tilt operation is performed at a specified speed regardless of the zoom viewing angle.
auto2 (default)	In this mode, the Pan/Tilt operation speed changes according to the zoom viewing angle. The operation speed is faster at the wide angle side and slower at the telephoto side. The speed specified by the ratio to the horizontal angle of view is regarded as the speed at the wide angle end, and operation is performed at a speed corresponding to the angle of view.
auto1	Similar to auto2, in this mode, the Pan/Tilt operation speed changes according to the zoom viewing angle. The operation speed is specified by the ratio to the horizontal angle of view.

Note:

The operation mode can be specified by the following parameters of control.cgi.

c.<c>.pan.speed.mode, c.<c>.pan.speed.mode.pos, c.<c>.pan.speed.mode.dir,

c.<c>.tilt.speed.mode, c.<c>.tilt.speed.mode.pos, c.<c>.tilt.speed.mode.dir,

3.2.3.1.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-
/control.cgi?[s=<sessionID>][&s.priority=<Priority>][&<Name>=<
Value>]…
```

Preconditions and precautions:

- If camera control privileges cannot be obtained immediately with a sessionless control request, camera control is not performed, and 301 is returned as the Livescope status response.
- Depending on the camera operation status, while the camera is executing control.cgi, a status update notification may be sent from info.cgi multiple times.
- The actual camera movement position may not match the position specified with the pan, tilt, or zoom control instructions. Confirm the actual movement position with info.cgi.
- If a control item is not specified in the command, 406 is returned as the Livescope status response.
- If an item other than the pan, tilt, or zoom speed is not specified for the control item with a sessionless control request, 406 is returned as the Livescope status response.
- "-0" is specified with a control request by the pan, tilt or zoom difference (magnification), 403 is returned as the Livescope status response.
- A session ID specification has priority over a priority specification.

3.2.3.1.2 Response

The item value of the processing result of the specified control item is returned for the response to the control request. There are three different formats for the returned response: “item name:=value”, “item name==value”, and “item name==?”.

- “item name:=value” indicates an item changed as a result of a processed control request.
- “item name==value” indicates an item not changed as a result of a processed control request.
- “item name==?” indicates that the value specified to a control item was disabled for a control item mode or control item combination.

A. Successful response [normal]

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
    <Parameter>:=<Value>
    <Parameter>==<Value>

  c.1.exp==auto
  c.1.ae.brightness:=2
  c.1.ae.photometry:=center
  c.1.me.shutter==?
  c.1.me.gain==?
```

Note:

Normally, only the result of the item is returned for the control request specified to the parameter.

The above is an example of a response, and not all items are returned with one control request.

In addition, all results related to the control request are returned for the custom settings indicated below.

B. Error response

HTTP status return value:

HTTP Status	Meaning
401 Unauthorized	User authentication failed. ! A user without privileged camera control requested control that requires privileges. ! A user other than an administrator requested control that requires administrator authorities.

Livescope status return value:

Livescope Status	Meaning
301 No Camera Control Right	Request denied due to no issuing of the control privilege request. ! Unable to obtain camera control privileges with the priority specification request.
401 Unknown Operator	Undefined command specified.
403 Invalid Parameter Value	Invalid parameter value specified. ! A value that does not match the type was specified to the parameter. ! "-0" was specified with the differential position (magnification) specification for pan, tilt, or zoom.
406 Parameter Missing	Mandatory parameter not specified. ! Control item not specified to the parameter. ! An item other than pan, tilt, and zoom speed was not specified with the priority specification request.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.3.1.3 Control Parameters

There are many parameters that can be controlled with control.cgi, and they will be described in APPENDIX *'iii Parameter List of info.cgi and control.cgi'*.

3.2.4 Video Retrieval

The camera video image data retrieval commands for the XC control protocol include image.cgi for still image retrieval and video.cgi for video stream retrieval.

3.2.4.1 Still Image Retrieval [image.cgi] (Optional)

This is used to retrieve a JPEG still image. You can select a method from using a video stream selected for a session-based client and specifying a video stream to a command for a sessionless client.

■ **Session-based**

- This uses the video stream settings of a session specified with a session ID.
  Video parameter specification (v) and video stream number specification (w) are also ignored. *1
- If the video stream setting of the specified session is H.264 or H.265, it is changed automatically to JPEG. *2

Note:

*1 The following are examples of behavior that include specification of video parameter specification (v).

First, create a XC control protocol session with the following command.

```
http://<ipaddress>/-wvhttp-01-/open.cgi?v=jpg:320x240
```

Next, execute the following command.

```
http://<ipaddress>/-wvhttp-01-
/image.cgi?s=<SessionID>&v=jpg:1280x960
```

When these commands are executed, the static image of "v=jpg:320x240" specified with the first executed command, open.cgi, is obtained.

The same result applies to video stream number specification (w).

*2 If a change in the settings occurs, notification is sent by an event using info.cgi. The changed setting is maintained even after image.cgi processing is completed and is not restored automatically to the original setting.

■ **Sessionless**

- The content of the video to be retrieved is determined by the video stream specification.
- The video stream can be selected with either of two methods: by specifying the video codec, video size, and other video parameters, or by specifying the video stream number.

3.2.4.1.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-
/image.cgi?[s=<SessionID>][&v=<Value>][&w=<Value>]
```

Preconditions and precautions:

- This command cannot be used when transmitting a video stream with video.cgi. If this command is requested, it is not executed, and 408 is returned as the Livescope status response.
- The video codec specifies the JPEG video stream for both the video parameter specification (v) and video stream number specification (w). If a format other than JPEG is specified, 403 is returned as the Livescope status response.
- For video parameter specification (v), if there is no stream that conforms to the specified video size, a stream with a video size that is close to the specified value and is one size lower is selected.
- If both the video parameter specification (v) and video stream number specification (w) are specified when selecting a video stream, the video parameter specification (v) has priority.
- The frame rate cannot be specified with this command for the video stream number specification (w).

Parameters:

Item Name	Value Type/Range	Description	Model Specific information
s =<*string*>		Session ID	
v =<*string*>	<video parameter>	Selects the stream by the video parameter. *1	
w =<*int*>	1...6	Selects the stream by the video stream number. Specifies a video stream number that can be referenced with info.cgi.	

Note:

*1 Specify <*video parameter*> with the format shown below.

<*jpg*>[:<*video width*>[x<*video height*>]]

The video width and height are expressed in pixels.

e.g. "jpg:480x270"

* For details on combinations that can be selected, see '*A.3 H.264/H.265 Image Parameter Specifications*'.

3.2.4.1.2 Response

A. Successful response

```
HTTP Code         : 200 OK
Content-Type      : image/jpeg
Livescope-Status  : 0
Livescope-Frame-Number: <JPEG data serial number> *1
MessageBody       :
```

<JpegImageData>

Note:

*1 Livescope-Frame-Number is an extension field unique to XC control protocol similar to Livescope-Status. A serial number is assigned in the order the still image request commands are received, and this can be used for sequence control on the client side.

B. Error response

HTTP status return value:

HTTP Status	Meaning
401 Unauthorized	User authentication failed. ! A user without video transmission privileges requested video transmission.

Livescope status return value:

Livescope Status	Meaning
403 Invalid Parameter Value	Invalid parameter value specified. ! A format other than JPEG was specified with the video parameter specification (v). ! A format other than JPEG was specified with the video stream number specification (w). ! A video stream number (w) outside the valid range was specified. ! "-0" was specified with the differential position (magnification) specification for pan, tilt, or zoom.
406 Parameter Missing	Mandatory parameter not specified. ! Mandatory parameter or session ID(s) not specified.
407 Invalid Request	Invalid session function requested. ! An invalid video stream number (w) was specified.

Livescope Status	Meaning
408 Conflict	An exclusive operation was requested. ! Still image retrieval was requested while executing a video stream retrieval command.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

Note:

As a usage method during session specification, JPEG still images can be continually requested, which is useful for applications compiling a pseudo-video. In sessionless mode, this is useful for applications retrieving one JPEG still image.

Still image requests during the same session are processed in the order they are received with this command, and Livescope frame numbers are assigned and returned in that order.

3.2.4.2 Video Stream Retrieval [video.cgi] (Optional)

This requests a video stream transmission. You can select a method from using a video stream selected for a session-based client and specifying a video stream to a command for a sessionless client.

■ **Session-based**

- This uses the video stream settings of a session specified with a session ID.
- The video stream transmission continues until the session is ended by the session duration end or the client ends the session, or the HTTP connection is disconnected by the client.

■ **Sessionless**

- The content of the video to be retrieved is determined by the video stream specification.
- The video stream can be selected with either of two methods: by specifying the video codec, video size, and other video parameters, or by specifying the video stream number.

The video stream transmission continues until the specified video transmission time has elapsed or the HTTP connection is disconnected by the client.

3.2.4.2.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-
/video.cgi?[s=<SessionID>][&v=<Value>][&w=<Value>][&w.<Video>.
frate=<Value>][&duration=<Value>]
```

Preconditions and precautions:

- This command cannot be used while executing still image retrieval with image.cgi. If this command is requested, 408 is returned as the Livescope status response.
- For video parameter specification (v), if there is no stream that conforms to the specified video size, a stream with a video size that is close to the specified value and is one size lower is selected.
- If both the video parameter specification (v) and video stream number specification (w) are specified when selecting a video stream, the video parameter specification (v) has priority.

Parameters:

Item Name	Value Type/Range	Description	Model Specific information
s =<*string*>		Session ID	
v =<*string*>	<*video parameter*>	Selects the stream by the video parameter. *1	
w =<*int*>	1…6	Selects the stream by the video stream number. Specifies a video stream number that can be referenced with info.cgi.	
[w.<Video>.]frate =<*int*>	100…30000	Specifies the video stream frame rate. Unit: Number of frames per 1000 seconds	
duration =<*int*>	0…<*Maximum connection time*>	Video send time specification *2 Unit: Second 0: Unlimited	

Note:

*1 Specify <*video parameter*> with the format shown below.

<*jpg or h264*>[:<*video width*>[x<*video height*>[::<*frame rate*>]]]

The video width and height are expressed in pixels. Specify the frame rate by the number of frames per 1000 seconds.

e.g. "jpg:480x270::30000"

Do not specify <*video width*>, <*video height*>, and <*frame rate*> for H.264 data.

e.g. "h264"

*2 The maximum value for the video send time is the maximum value of the session connection time. Session connection time is limited by the model specific “Maximum connection time”.

3.2.4.2.2 Response

The response content of video.cgi varies depending on the specified video codec. The following shows the response content for both JPEG and H.264 and the status value returned when an error occurs. The response content of H.265 follows H.264.

A. Successful response [video codec: JPEG specification]

```
HTTP Code         : 200 OK
Content-Type      : multipart/x-mixed-replace;boundary=boundary
Livescope-Status  : 0
MessageBody       :
```

```
--boundary
Content-Type: image/jpeg
Content-Length: <ImageLength>

<JpegImageData 1>
--boundary
Content-Type: image/jpeg
Content-Length: <ImageLength>

<JpegImageData 2>
--boundary

...

--boundary
Content-Type: image/jpeg
Content-Length: <ImageLength>

<JpegImageData Last>
--boundary--
```

B. Successful response [video codec: H.264 specification]

```
HTTP Code         : 200 OK
Content-Type      : video/mp4
Livescope-Status  : 0
MessageBody       :
```

```
<H.264VideoData>
```

C. Error response

HTTP status return value:

HTTP Status	Meaning
401 Unauthorized	User authentication failed. ! A user without video transmission privileges requested video transmission.

Livescope status return value:

Livescope Status	Meaning
403 Invalid Parameter Value	Invalid parameter value specified. ! A video stream number (w) outside the valid range was specified.
407 Invalid Request	Invalid session function requested. ! An invalid video stream number (w) was specified. ! type=rec was specified to a stream of H.264 or 10 fps or higher.
408 Conflict	An exclusive operation was requested. ! Video stream retrieval was requested while executing a still image retrieval command. ! A video stream retrieval with multiple type=rec specifications was requested.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.5 Metadata Acquisition

The metadata acquisition command meta.cgi related to focus positions under XC control protocol is described below.

3.2.5.1 Metadata Acquisition [meta.cgi] (Optional)

This is used to obtain the rectangle position of the face detected in the face priority AF or the face limitation AF of remote cameras. In addition, metadata for a focus guide for notifying a user of the direction in which the focusing degree and the focus are matched when MF is set is acquired. Select whether to acquire information from a session-based or sessionless client.

3.2.5.1.1 Commands

Syntax:

```
http://<ipaddress>/-wvhttp-01-
/meta.cgi?[s=<SessionID>][type=<Value>]
```

Parameters:

Item Name	Value Type/Range	Description	Model Specific information
s =<*string*>		Session ID	
type =<*string*>	once, stream	Transmission format once: Latest metadata is transmitted. stream: Stream format metadata is transmitted. In the stream format, all the metadata is transmitted first and any difference is transmitted from the camera later sequentially.	

3.2.5.1.2 Response

A. Successful response

This indicates the content of the response. Metadata is transmitted in the msgpack format.

```
HTTP Code         : 200 OK
Content-Type      : application/x-msgpack
Livescope-Status  : 0
MessageBody       :
```

```
{
  version: 01,00,
  timestamp: 569.647,      # time elapsed from power on [s]
  realtime: 1589940161.636, # current time (local time)
  detect: [        # detected object, 9 at maximum
    {
      type: face,   # detection type (face only)
      pos: {
        x: 9207,    # X coordinate (0-9999)
        y: 9185,    # Y coordinate (0-9999)
        w: 1152,    # width(1-10000)
        h: 2048    # height(1-10000)
      },
      main: true,   # main face or not (true, false)
      track: false  # face tracking being done or not (true,
false)
    }
  ],
  fguide: [        # focus guide, 1
    {
      status: true, # focus guide valid or invalid (true,
false)
      level: 0,     # focusing being done (0-2:2 is focusing)
      angle: 35,    # focusing degree (0-60: 0 is focusing)
      dir: front,   # focus information (front: front pin,
behind: back pin)
      pos: {
        x: 8192,    # X coordinate (0-9999)
        y: 8192,    # Y coordinate (0-9999)
        w: 1280,    # width(1-10000)
        h: 1456    # height(1-10000)
      }
    }
  ]
}
```

Metadata:

Item Name	Sub Item Name	Sub-sub Item Name	Value Type/ Range	Description	Model Specific information
detect				Detected face (9 at maximum)	
	type :=<*string*>		face	Detection type Fixed to "face"	
	pos	x :=<*int*>	0...9999	x coordinate of detected face Upper left start point of rectangle	
		y :=<*int*>	0...9999	y coordinate of detected face Upper left start point of rectangle	
		w :=<*int*>	1...10000	Width of detected face	
		h :=<*int*>	1...10000	Height of detected face	
	main :=<*string*>		true, false	Whether it is main face or not	
	track :=<*string*>		true, false	Whether face tracking is being done or not	
fguide				Focus guide (1 only)	
	status :=<*string*>		true, false	Enable/disable focus guide indication	
	level :=<*int*>		0...2	Whether focusing is being done 0: Focusing	
	angle :=<*int*>		0...60	Score of focusing 60: In perfect focus	
	dir :=<*string*>		front, behind	Focus information front: front pin behind: back pin	
	pos	x :=<*int*>	0...9999	x coordinate of focus guide Upper left start point of rectangle	
		y :=<*int*>	0...9999	y coordinate of focus guide Upper left start point of rectangle	
		w :=<*int*>	1...10000	Width of focus guide	
		h :=<*int*>	1...10000	Height of focus guide	

B. Error response

Livescope status return value:

Livescope Status	Meaning
401 Unknown Operator	Undefined command specified.

3.2.6 Preset/Trace

Command preset/set for saving control parameters of the camera and commands trace/set and trace/control for recording/posturing traces are described below.

Note that there is no dedicated command for executing the saved preset. It is necessary to specify parameters "Preset Information [p]" by the camera control command control.cgi. For more information on the Preset Information [p], see '*iii Parameter List of info.cgi and control.cgi*'.

3.2.6.1 Saving Preset [preset/set] (Optional)

This is used to save the current camera angles such as pan, tilt, and zoom and a part or all of the camera control parameters such as focus and exposure as preset. The command is also used for deleting saved presets. Things that can be saved as preset include pan, tilt, zoom, focus, exposure, white balance, IS (image stabilizer), and CP (image quality adjustment).

If the preset number (p) is not specified, 406 is returned as the Livescope status. If setting of the preset name (name) fails, 403 is returned as the Livescope status, and the other parameters specified at the same time are not set.

3.2.6.1.1 Commands

Syntax:

```
http://<ipddress>/-wvhttp-01-/preset/set?[s=<session-
id>][&p=<Value>][&name=<Value>][&all=<Value>]
```

Parameters:

Item Name	Value Type/Range	Description	Model Specific information
s =<*string*>		Session ID	
p =<*int*>	1...100	Preset number [Mandatory]	
name =<*unicode*> >		Preset name (UTF-8) Null value specification or omission allowed.	
all =<*string*>	enabled, disabled, ignored	All the parameters to be saved are saved as preset or deleted. enabled: Saved to preset. disabled: Deleted from preset. ignored: Nothing happens.	

Item Name	Value Type/Range	Description	Model Specific information
		When "all" and parameters besides "all" are specified, the latter will be prioritized. "ignored" when omitted.	

Item Name	Value Type/Range	Description	Model Specific information
ptz =<*string*>	enabled, disabled, ignored	The PTZ parameter is saved/deleted. enabled: Saved to preset. disabled: Deleted from preset. ignored: Nothing happens. "ignored" when omitted.	
focus =<*string*>	enabled, disabled, ignored	The focus parameter is saved/deleted. enabled: Saved to preset. disabled: Deleted from preset. ignored: Nothing happens. "ignored" when omitted.	
exp =<*string*>	enabled, disabled, ignored	The exposure parameter is saved/deleted. enabled: Saved to preset. disabled: Deleted from preset. ignored: Nothing happens. "ignored" when omitted.	
wb =<*string*>	enabled, disabled, ignored	The WB parameter is saved/deleted. enabled: Saved to preset. disabled: Deleted from preset. ignored: Nothing happens. "ignored" when omitted.	
is =<*string*>	enabled, disabled, ignored	The IS (image stabilizer) parameter is saved/deleted. enabled: Saved to preset. disabled: Deleted from preset. ignored: Nothing happens. "ignored" when omitted.	
cp =<*string*>	enabled, disabled, ignored	The CP (image quality adjustment) parameter is saved/deleted. enabled: Saved to preset. disabled: Deleted from preset. ignored: Nothing happens. "ignored" when omitted.	
pan.speed =<*int*>	c.<c>.pan.speed.min… c.<c>.pan.speed.max e.g. 10…10000	Pan speed If the parameter is omitted when "all=enabled" or "ptz=enabled" is specified, the maximum speed is set. If the parameter is omitted in other cases, the speed does not change.	
tilt.speed =<*int*>	c.<c>.tilt.speed.min… c.<c>.tilt.speed.max e.g. 10…10000	Tilt speed If the parameter is omitted when "all=enabled" or "ptz=enabled" is specified, the maximum speed is set. If the parameter is omitted in other cases, the speed does not change.	
zoom.speed =<*int*>	c.<c>.zoom.speed.min… c.<c>.zoom.speed.max e.g. 0…15	Zoom speed If the parameter is omitted when "all=enabled" or "ptz=enabled" is specified, the maximum speed is set. If the parameter is omitted in other cases, the speed does not change.	

3.2.6.1.2 Response

A. Successful response

This indicates the content of the response.

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
p:=1
p.1.name.utf8:=Preset1
p.1.content.ptz:=enabled
p.1.content.focus:=enabled
p.1.content.exp:=enabled
p.1.content.wb:=enabled
p.1.content.is:=enabled
p.1.content.cp:=enabled
p.1.pan.speed=<pan speed>
p.1.tilt.speed=<tilt speed>
p.1.zoom.speed=<zoom speed>
```

Note:

The pan, tilt, and zoom speeds are not included in the response in the case of p.<p>.content.ptz=disabled.

B. Error response

Livescope status return value:

Livescope Status	Meaning
403 Invalid Parameter Value	Invalid parameter value specified. ! Preset name setting failed.
406 Parameter Missing	Mandatory parameter not specified. ! Preset number not specified.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.6.2 Recording Traces [trace/set] (Optional)

This is used to record traces (camera operation details and timing).

Start command (cmd=start) is sent to start recording at the current camera position, and stop command (cmd=stop) is sent to stop the recording. During a period from the start command to the stop command reception, the executed PTZ control and the manual focus control command are saved.

The contents recorded when the stop command is received are saved in the camera.

When recording is started (cmd=start), the current camera state can be specified as a start position, and the items to be saved can be selected from pan, tilt, zoom, focus, exposure, white balance, IS (image stabilizer), and CP (image quality adjustment).

Interrupt command (cmd=cancel) can be sent to stop the recording after it is started.

If cmd is omitted, or if trace number (t) is not specified during cmd=start or cmd=delete, 406 is returned as the Livescope status.

If a non-executable command is sent (for example, if the trace record start command is sent during the trace playback), 408 is returned as the Livescope status.

If setting of the name fails, 403 is returned, and the other parameters specified at the same time are not set.

3.2.6.2.1 Commands

Syntax:

```
http://<ipddress>/-wvhttp-01-/trace/set?[s=<session-
id>][&t=<Value>][&cmd=<Value>][&all=<Value>]
```

Parameters:

Item Name	Value Type/Range	Description	Model Specific information
s =<*string*>		Session ID	
t =<*int*>	1...10	Trace number [Mandatory] May be omitted for "cmd=stop" or "cmd=cancel".	
name =<*unicode*>		Trace name (UTF-8) Null value specification or omission allowed. The trace name can be set when specification of "cmd=start" or "cmd" is omitted.	

Item Name	Value Type/Range	Description	Model Specific information
cmd =<*string*>	start, stop, cancel, delete	This operates trace recording. start: This starts trace recording. stop: This stops trace recording (saves it in the camera). cancel: This interrupts trace recording (does not save it in the camera). delete: This deletes traces recording (the trace name also becomes a null value). When this is omitted, no trace recording operation is performed and only the trace name can be set.	
all =<*string*>	enabled, disabled	All the parameters to be saved are saved to the trace start position or deleted from the trace start position. enabled: Saved to trace start position. disabled: Deleted from trace start position. When "all" and parameters besides "all" are specified, the latter will be prioritized. "disabled" when omitted.	
ptz =<*string*>	enabled, disabled	The PTZ parameter is saved to the trace start position or deleted from the trace start position. enabled: Saved to trace start position. disabled: Deleted from trace start position. When "all" and parameters besides "all" are specified, the latter will be prioritized. "disabled" when omitted.	
focus =<*string*>	enabled, disabled	The focus parameter is saved to the trace start position or deleted from the trace start position. enabled: Saved to trace start position. disabled: Deleted from trace start position. When "all" and parameters besides "all" are specified, the latter will be prioritized. "disabled" when omitted.	
exp =<*string*>	enabled, disabled	The exposure parameter is saved to the trace start position or deleted from the trace start position. enabled: Saved to trace start position. disabled: Deleted from trace start position. When "all" and parameters besides "all" are specified, the latter will be prioritized. "disabled" when omitted.	
wb =<*string*>	enabled, disabled	The WB parameter is saved to the trace start position or deleted from the trace start position. enabled: Saved to trace start position. disabled: Deleted from trace start position. When "all" and parameters besides "all" are specified, the latter will be prioritized. "disabled" when omitted.	
is =<*string*>	enabled, disabled	The IS (image stabilizer) parameter is saved to the trace start position or deleted from the trace start position. enabled: Saved to trace start position. disabled: Deleted from trace start position. When "all" and parameters besides "all" are specified, the latter will be prioritized. "disabled" when omitted.	

Item Name	Value Type/Range	Description	Model Specific information
cp =<*string*>	enabled, disabled	The CP (image quality adjustment) parameter is saved to the trace start position or deleted from the trace start position. enabled: Saved to trace start position. disabled: Deleted from trace start position. When "all" and parameters besides "all" are specified, the latter will be prioritized. "disabled" when omitted.	

3.2.6.2.2 Response

A. Successful response

This indicates the content of the response.

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
t:=<t>
t.<t>.name.utf8:=<UTF-8 character string> *1
t.<t>.content.ptz:=<value> *2
t.<t>.content.focus:=<value> *2
t.<t>.content.exp:=<value> *2
t.<t>.content.wb:=<value> *2
t.<t>.content.is:=<value> *2
t.<t>.content.cp:=<value> *2
```

Note:

*1 The trace name is returned during cmd=start or cmd=delete.

*2 These values are returned during cmd=start.

B. Error response

Livescope status return value:

Livescope Status	Meaning
403 Invalid Parameter Value	Invalid parameter value specified. ! Trace number outside specification rage. ! Trace name setting failed.
406 Parameter Missing	Mandatory parameter not specified. ! Trace number not specified in mandatory case.
408 Conflict	An exclusive operation was requested. ! Trace recording start command sent during trace playback.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.6.3 Trace Playback [trace/control] (Optional)

This is used to playback recorded traces (camera operation details and timing).
Preparation command (cmd=prepare) for moving to the camera position where the trace recording started, start command (cmd=start) for starting the trace playback, and stop command (cmd=stop) for stopping the trace playback are sent.
To correctly playback the recorded trace, a preparation command is mandatory beforehand, but this is not mandatory under the protocol. However, in such as case, there is no guarantee that the trace playback will be done correctly.
If trace number (t) is not specified during "cmd=prepare" or "cmd=start", 406 is returned as the Livescope status.
If trace number (t) of which no trace recording is performed is specified during "cmd=prepare" or "cmd=start", 403 is returned as the Livescope status.
If a command that cannot be executed by the camera is sent (for example, if the trace playback start command is sent during the trace recording), 408 is returned as the Livescope status.

3.2.6.3.1 Commands

Syntax:

```
http://<ipddress>/-wvhttp-01-/trace/control?[s=<session-id>][&t=<Value>][&cmd=<Value>]
```

Parameters:

Item Name	Value Type/Range	Description	Model Specific information
s =<*string*>		Session ID	
t =<*int*>	1...10	Trace number [Mandatory] May be omitted for "cmd=stop".	
cmd =<*string*>	prepare, start, stop	This operates trace playback. prepare: Moves to trace start position. start: Starts trace playback. stop: Stops trace playback.	

3.2.6.3.2 Response

A. Successful response

This indicates the content of the response.

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
t:=<t>
```

B. Error response

Livescope status return value:

Livescope Status	Meaning
403 Invalid Parameter Value	Invalid parameter value specified. ! Trace number outside specification rage.
406 Parameter Missing	Mandatory parameter not specified. ! Trace number not specified to the parameter.
408 Conflict	An exclusive operation was requested. ! Trace playback command sent during trace recording.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.

3.2.7 Standby

The standby transition/restoration command standby.cgi of cameras under the XC control protocol is described below.

3.2.7.1 Standby Transition/Restoration [standby.cgi] (Optional)

This is used to change the camera status to the standby mode (power saving mode) or restores the status from the standby mode.
During the transition from the normal camera state to the standby camera state, during the standby mode, and during the restoration to the normal state from the standby state, camera behaviors and limitation of each state are as follows.

■ **During transition to standby mode**

- Video transmission (video.cgi, image.cgi) is stopped.
- Notification on the standby state is sent to each application (info.cgi), and all the sessions are deleted.
- When the standby restoration command is received, 510 is returned as the Livescope status.
- If the standby transition command is received again, it is ignored.
- Regarding receivable commands, refer to the following standby state. Capture.

■ **Standby state**

- Acceptable commands are open.cgi, close.cgi, session.cgi, info.cgi, and standby.cgi only.
- When other commands are received, 509 is returned as the Livescope status.
- Only the video-less session (v=null) can be accepted by open.cgi.
- All the parameters are returned by info.cgi.
- Command standby.cgi only accepts the restoration command from the standby state.

■ **Restoration from Standby**

- All the sessions are deleted.
- When a standby transition command is received, 510 is returned as the Livescope status.
- If the standby restoration command is received again, it is ignored.

■ **Normal state**

- Notification on restoration to the normal state is sent by info.cgi.
- If the standby restoration command is sent, the success is returned.

If the cmd parameter is not specified, 406 is returned as the Livescope status.

3.2.7.1.1 Commands

Syntax:

```
http://<ipddress>/-wvhttp-01-/standby.cgi?[s=<session-id>][&cmd=<Value>]
```

Parameters:

Item Name	Value Type/Range	Description	Model Specific information
s =<*string*>		Session ID	
cmd =<*string*>	standby, idle	This is used for transition to the standby state and restoration from the standby state [Mandatory]. standby: Transition to standby state. idle: Restoration from standby state.	

3.2.7.1.2 Response

A. Successful response

This indicates the content of the response.

```
HTTP Code         : 200 OK
Content-Type      : text/plain;charset=utf-8
Livescope-Status  : 0
MessageBody       :
```

```
OK.
```

B. Error response

Livescope status return value:

Livescope Status	Meaning
406 Parameter Missing	Mandatory parameter not specified. ! cmd parameter not specified.
501 Unknown Connection ID	Specified session does not exist. ! Invalid session ID(s) specified.
509 Standby	Access limited during standby state. ! Command control.cgi received during standby state.
510 Switching Standby	Access limited during transition from normal state to standby state. ! Standby restoration command received during standby transition.
511 Switching Idle	Access limited during restoration from standby state to normal state. ! Standby transition command received during standby restoration.

Model Specific Information

A CR-N500-dependent Information

A.1 Command Specifications

The supported/non-supported information of CR-N500 with respect to each command under the XC control protocol is shown in the table below.

Table A-1 Support for CR-N500 Commands under XC Control Protocol

Commands	Functions	Support requirement	Support for CR-N500
open.cgi	This creates a session.	Optional	Supported
close.cgi	This closes a session.	Optional	Supported
claim.cgi	This requests camera control privileges.	Optional	Supported
yield.cgi	This releases camera control privileges.	Optional	Supported
session.cgi	This retrieves and changes a session-specific attribute.	Optional	Supported
info.cgi	This is used to obtain camera control privileges.	Mandatory	Supported
control.cgi	This is used to control a camera or a tally lamp.	Mandatory	Supported
image.cgi	This is used to retrieve a JPEG still image.	Optional	Supported
video.cgi	This is used to retrieve a video stream.	Optional	Supported
meta.cgi	This is used to obtain metadata related to focus.	Optional	Supported
preset/set	This preset-stores camera control parameters.	Optional	Supported
trace/set	This records traces.	Optional	Supported
trace/control	This playbacks traces.	Optional	Supported
standby.cgi	This is used to perform standby transition/restoration.	Optional	Supported

A.2 Parameter Specifications of info.cgi/control.cgi

CR-N500-dependent specifications of parameters info.cgi and control.cgi under the XC control protocol will be described in APPENDIX '*iii Parameter List of info.cgi and control.cgi*'.

A.3 H.264/H.265 Image Parameter Specifications

The following are the H.264/H.265 image parameters that supported by the H.264/H.265 video transmission functions of CR-N500. Some parameters depend on the frame frequency of the remote camera, and the capture range changes.

Table i-1 H.265 Image Parameters

Parameter	Value Range	Default Value
Video Resolution [pxl]	For frame frequency of 59.94 and 50 Hz: 1920x1080, 1280x720, 640x360 For frame frequency of 29.97, 23.98, and 25 Hz: 3840x2160, 1920x1080, 1280x720, 640x360	1920x1080
Frame Rate [fps]	For frame frequency of 59.94 Hz: 59.94, 29.97, 14.98, 4.99 For frame frequency of 29.97 Hz: 29.97, 14.98, 4.99 For frame frequency of 23.98 Hz: 23.98, 11.99, 5.99 For frame frequency of 50 Hz: 50.00, 25.00, 12.50, 5.00 For frame frequency of 25 Hz: 25.00, 12.50, 5.00	59.94
I Frame Interval [sec]	0.5, 1	1
Bit Rate Control	VBR, CBR	VBR
Target Bit Rate [Mbps]	1...80 Depends on the video resolution/frame rate.	20

Table i-2 H.264 Image Parameters

Parameter	Value Range	Default Value
Video Resolution	640x360	640x360
Frame Rate [fps]	For frame frequency of 59.94 Hz: 59.94, 29.97, 14.98, 4.99 For frame frequency of 29.97 Hz: 29.97, 14.98, 4.99 For frame frequency of 23.98 Hz: 23.98, 11.99, 5.99 For frame frequency of 50 Hz: 50.00, 25.00, 12.50, 5.00 For frame frequency of 25 Hz: 25.00, 12.50, 5.00	29.97
I Frame Interval [sec]	ALL I, 0.5, 1	1
Bit Rate Control	VBR, CBR	VBR
Target Bit Rate [Mbps]	1...10 Depends on the video resolution/frame rate.	6

APPENDIX

i Fragmented MP4

The H.264/H.265 transmission function of remote cameras transmits image data in the fragmented MP4 format. A stream with only one video track can be handled, and this video stream forms a stream in the fragmented MP4 format. Namely, a moov header and moof header are created, and these are sent coupled with the picture data.

Note:

A stream in the fragmented MP4 format conforms to *'ISO/IEC 14496-10'* and *'ISO/IEC 14496-15'*. For details on the moov and moof headers, see these documents.

■ **Fragment data structure**

The following shows the fragmented data structure of models supported by this document. In addition to the HTTP header, there are moov and moof headers, and picture data for the first fragment is sent for the mdat header.

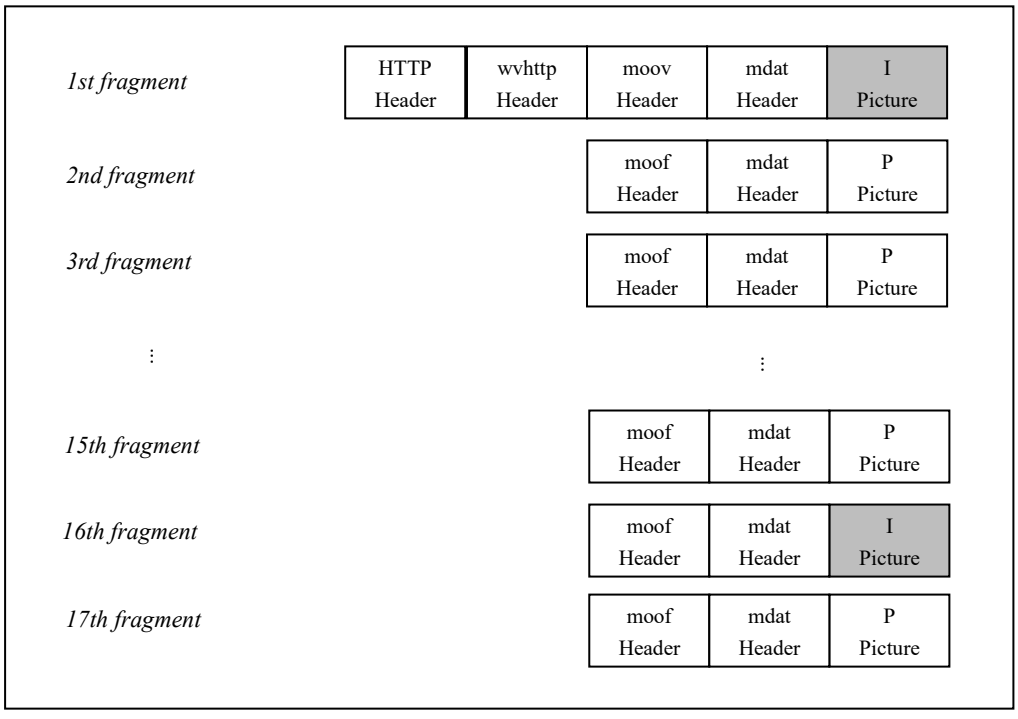

Fig. i-1 Fragment Data Structure within a Fragmented MP4 Format Stream

■ **moov header**

The moov header is transmitted only once at the start of the fragment transmission. This header mainly contains the initial setting items required for video playback. For example, the setting values for the video image size, frame rate, and time information are included in the moov header.

In addition, the file size of the pictures transmitted together with the moov header is included in the stsz box, and the starting picture is always the I picture. The models supported by this document support H.264/H.265, and, therefore, [SPS], [PPS], and [VUI] fields are added to the moov header. All of these fields are within the [avcC] box.

■ **Time information at transmission start**

The current time (in seconds) is stored in [mvhd][tkhd] in the MP4 header at the start of transmission. This time varies for each client. This is not the video image capture time. The starting point of the current time is 1900/01/01 00:00.

■ **SPS (Sequence Parameter Set) field**

SPS contains the profile and level for all sequences.

■ **PPS (Picture Parameter Set) field**

PPS contains information related to all pictures.

However, PPS does not contain the setting value of the Q value.

■ **VUI (Video Usability Information) field**

VUI contains information on the aspect ratio, brightness, and color space.

■ **moof header**

The moof header contains the sequence number and frame type. The file size of the pictures transmitted together with the moof header is included in the trun box.

When [first_sample_flags] in the trun box is 0x0, the starting picture of the fragment is the I picture; otherwise, it is the P picture.

ii Camera Search

For remote camera equipment search, the mDNS (Multicast DNS) function, which is specified in RFC6762, is supported.
mDNS notifies another host on the network of the host name and the IP address by multicast transmission of the IP address of the remote camera and the information of the host name that is automatically generated.
The automatically set host name is canon-<*MACADDRESS*>.local. The "MACADDRESS" the MAC address of the remote camera.
The multicast address uses the following in IPv4 and IPv6.

- IPv6 : ff02::fb
- IPv4 : 224.0.0.251

iii Parameter List of info.cgi and control.cgi

Parameters that can be acquired by info.cgi and parameters used for control by control.cgi are as follows.

- System Information [s]
- Video Information [v]
- Video Information [w]
- Camera Information [c]
- Light Amount Correction Information [c]
- Color Correction Information [c]
- IS/NR/Sharpness [c]
- Focus Information [c]
- Zoom Information [c]
- Pan/Tilt Information [c]
- Preset Information [p]
- Trace Information [t]
- Audio Device Information [a]
- Contact Input/Output Information [i/o]
- Tally Lamp Information [f]
- Standby Information [f]

These parameters are described in the table below. Note the following points.

- With info.cgi, parameters with attribute "G" can be acquired from the camera among the following parameters.
- With control.cgi, parameters with attribute "C" can be used to control the camera among the following parameters.
- Follow the notation item in '*3.2 Command Specifications*' for other information and notation method.
- Regarding model specific information of parameters (models written in the column "Model Specific information"), the information is written after the separate table. **Bold letters** in the table correspond to the model specific information.

Table iii-1 Parameters of info.cgi/control.cgi

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
System Information [s]	s.origin :=<*string*>	<IP address>:<port number>	--P-	Camera server IP address and port number	
System Information [s]	s.duration :=<*int*>	0…<Maximum connection time>	--PU	Remaining session time	
System Information [s]	s.priority :=<*int*>	0...50	-CPU	Session priority 0: General session 1...4: Reserved (if specified, it is treated as "5") 5...50: Privileged session	
System Information [s]	s.control :=<*string*>	enabled [:<assigned time>], waiting [:<standby time>] disabled	--PU	Indicates the state of camera control privileges Unit: Millisecond enabled: Obtaining camera control privileges waiting: Waiting to obtain camera control privileges disabled: Failed to obtain camera control privileges	
System Information [s]	s.epoch :=<*string*>	<date and time>	G--U	Start time e.g. Wed, 24 Jun 2020 17:07:45 +0900	
System Information [s]	s.hardware :=<*string*>		G---	Model name e.g. CR-N500	
System Information [s]	s.hardware.id :=<*string*>		G---	Hardware ID e.g. 110	
System Information [s]	s.hardware.address :=<*string*>		G---	MAC address e.g. 000085000000	
System Information [s]	s.firmware :=<*string*>		G---	Firmware version e.g. 1.0.0	
System Information [s]	s.protocol :=<*string*>		G---	Protocol version e.g. 5.0.0	
Video Information [v]	v.list :=<*string*>	jpg, h264	G--U	Parameter list of video stream H.265 is not treated in parameter v. <jpg or h264>:<video width>x<video height>:<video quality>:<frame rate> *<video quality> is 0: Fixed bit rate (CBR) 1…9: Variable bit rate (value is Q value) e.g. jpg: 1920x1080:3:30000, h264: 480x270:0:30000	
Video Information [v]	v.h264.cbr :=<*string*>		G-PU	H.264 target bit rate Unit: kbs	
Video Information [w]	w.maxsize :=<*string*>	3840x2160	G---	Maximum video size of stream	
Video Information [w]	w.count :=<*int*>	3	G--U	Number of stream lists	
Video Information [w]	w.<w>.status :=<*int*>	enabled, disabled	G--U	Status of stream	
Video Information [w]	w.<w>.type :=<*string*>	jpg, h264, h265	G--U	Stream video codec	
Video Information [w]	w.<w>.type.profile :=<*string*>	baseline, main, high	G--U	Profile of video codec	
Video Information [w]	w.<w>.kind :=<*string*>	overview	G--U	By stream video type	
Video Information [w]	w.<w>.size :=<*string*>	<video width>x<video height> 320x240, 640x480, 1280x960, 320x180, 640x360, 1280x720, 480x270, 960x540, 1920x1080	G--U	Video size of stream	
Video Information [w]	w.<w>.quality :=<*int*>	1…10	G--U	Q value of stream Low quality 1 ←→ 10 High quality	
Video Information [w]	w.<w>.cbr :=<*int*>	64…16384	G--U	Stream target bit rate Unit = kbps	
Video Information [w]	w.<w>.frate :=<*int*>	w.<w>.frate.min… w.<w>.frate.max	GCPU	Frame rate value of stream	
Video Information [w]	w.<w>.frate.min :=<*int*>	100	G--U	Minimum configurable stream frame rate value	
Video Information [w]	w.<w>.frate.max :=<*int*>	30000	G--U	Maximum configurable stream frame rate value	
Video Information [w]	w.<w>.crop :=<*string*>	off	G--U	Presence of cutout Fixed to "off".	
Camera Information [c]	c :=<*int*>	1	GC--	Selected camera number Always 1.	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Camera Information [c]	c.count :=<*int*>	1	G---	Number of cameras Always 1.	
Camera Information [c]	c.<c>.type :=<*string*>		G---	Type of camera	
Camera Information [c]	c.<c>.status :=<*string*>	enabled, disabled	G--U	Camera controllable status *"disabled" is displayed immediately after startup. After initialization, "enabled" is displayed.	
Camera Information [c]	c.<c>.shooting :=<*string*>	Selected from c.<c>.shooting.list	GC-U	Capture mode	
Camera Information [c]	c.<c>.shooting.list :=<*string*>	fullauto, manual	G---	Capture mode list	
Camera Information [c]	c.<c>.platform.status :=<*string*>		G--U	Platform operation status	
Camera Information [c]	c.<c>.platform.error :=<*int*>		G--U	Platform deviation information	
Camera Information [c]	c.<c>.name.utf8 :=<*unicode*>		G--U	Camera name (UTF-8) *This item is visible only when the camera name is set.	
Light Amount Correction Information [c]	c.<c>.exp :=<*string*>	Selected from c.<c>.exp.list	GC-U	Exposure mode *If the exposure mode is set to "manual" when the capture mode is set to "fullauto", the capture mode is changed to "manual". If the capture mode is changed to "fullauto" and then returned to "manual" when the capture mode is "manual" and the exposure mode is "manual", the exposure mode remains "manual". If the capture mode is changed to "fullauto" and then returned to "manual" when the capture mode is "manual" and the exposure mode is "auto", the exposure mode remains "auto".	
Light Amount Correction Information [c]	c.<c>.exp.list :=<*string*>	auto, manual	G---	Exposure mode list (auto is program AE)	
Light Amount Correction Information [c]	c.<c>.ae.brightness :=<*int*>	c.<c>.ae.brightness.min… c.<c>.ae.brightness.max	G--U	Correction compensation value is the value obtained by multiplying 4 to the EV value. Dark -8 ←→ 8 Light *When all of the c.<c>.me.diaphragm.mode, c.<c>.me.shutter.mode, c.<c>.me.gain.mode are "manual", the value is changed but it is not reflected to the image.	
Light Amount Correction Information [c]	c.<c>.ae.brightness.min :=<*int*>	-8	G---	Minimum configurable exposure compensation value	
Light Amount Correction Information [c]	c.<c>.ae.brightness.max :=<*int*>	8	G---	Maximum configurable exposure compensation value	
Light Amount Correction Information [c]	c.<c>.ae.brightness.list :=<*string*>	-8,-6,-4,-2,0,2,4,6,8	G---	Exposure compensation list	
Light Amount Correction Information [c]	c.<c>.ae.photometry :=<*string*>	Selected from c.<c>.ae.photometry.list	G--U	Metering mode *When all of the c.<c>.me.diaphragm.mode, c.<c>.me.shutter.mode, c.<c>.me.gain.mode are "manual", the value is changed but it is not reflected to the image.	
Light Amount Correction Information [c]	c.<c>.ae.photometry.list :=<*string*>	center, backlight, spotlight	G---	Metering mode list center: Center-weighted metering backlight: Metering mainly on part with low exposure spotlight: Metering mainly on part with high exposure	
Light Amount Correction Information [c]	c.<c>.ae.gainlimit.max :=<*int*>	c.<c>.ae.gainlimit.max.min… c.<c>.ae.gainlimit.max.max	GC-U	Gain limit on the maximum (upper) side Value obtained by multiplying 10 to dB Received by increments of 0.5 dB (5 as I/F). *The range changes when c.<c>.gamma is "clog3""widedr".	
Light Amount Correction Information [c]	c.<c>.ae.gainlimit.max.min :=<*int*>		G--U	Minimum configurable gain limit value on maximum (upper) side Changes depending on gamma value.	
Light Amount Correction Information [c]	c.<c>.ae.gainlimit.max.max :=<*int*>	360	G--U	Maximum configurable gain limit value on maximum (upper) side	CR-N500
Light Amount Correction Information [c]	c.<c>.ae.flickerreduct :=<*string*>	Selected from c.<c>.ae.flickerreduct.list	GC-U	Flicker reduction	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Light Amount Correction Information [c]	c.<c>.ae.flickerreduct.list :=<*string*>	off, auto	G---	Flicker reduction list	
Light Amount Correction Information [c]	c.<c>.ae.resp :=<*int*>	0...2	GC-U	AE response (convergence speed for automatic exposure)	
Light Amount Correction Information [c]	c.<c>.ae.resp.min :=<*int*>	0	G--U	Minimum configurable AE response value	
Light Amount Correction Information [c]	c.<c>.ae.resp.max :=<*int*>	2	G--U	Maximum configurable AE response value	
Light Amount Correction Information [c]	c.<c>.me.shutter :=<*int*>	Selected from c.<c>.me.shutter.list	GC-U	Shutter speed list Only valid when the shutter speed mode is "speed" or "slow".	
Light Amount Correction Information [c]	c.<c>.me.shutter.list :=<*string*>	When the combination of shutter.mode and camera frame frequency is (For auto/speed/clearscan&59.94Hz) 60,75,90... 1400,1700,2000 (For auto/speed/clearscan&29.97Hz) 30,34,40...1400,1700,2000 (For auto/speed/clearscan&23.98Hz) 24,25,30...1400,1700,2000 (For auto/speed/clearscan&50.00Hz) 50,60,75...1400,1700,2000 (For auto/speed/clearscan&25.00Hz) 25,29,30...1400,1700,2000 (For slow & 59.94Hz) 4, 8, 15, 30 (For slow & 29.97Hz) 4, 8, 15 (For slow & 23.98Hz) 3, 6, 12 (For slow & 50.00Hz) 3, 6, 12, 25 (For slow & 59.94Hz) 3, 6, 12	G--U	Shutter speed list Changes by the shutter speed list mode and the camera frame rate.	
Light Amount Correction Information [c]	c.<c>.me.shutter.mode :=<*string*>	Selected from c.<c>.me.shutter.mode.list	GC-U	Shutter speed mode	
Light Amount Correction Information [c]	c.<c>.me.shutter.mode.list :=<*string*>	auto, speed, slow, clearscan	G---	Shutter speed mode list	
Light Amount Correction Information [c]	c.<c>.me.clearscan :=<*int*>	c.<c>.me.clearscan.min… c.<c>.me.clearscan.max	GC-U	Shutter speed during clear scan Value obtained by multiplying 100 to Hz	
Light Amount Correction Information [c]	c.<c>.me.clearscan.min :=<*string*>	59.94Hz: 5994 29.97Hz: 2997 23.98Hz: 2398 50.00Hz: 5000 25.00Hz: 2500	G--U	Minimum configurable shutter speed value during clear scan Value obtained by multiplying 100 to Hz Changes by the camera frame frequency.	
Light Amount Correction Information [c]	c.<c>.me.clearscan.max :=<*string*>	59.94Hz: 25038 29.97Hz: 25038 23.98Hz: 25038 50.00Hz: 25040 25.00Hz: 25040	G--U	Maximum configurable shutter speed value during clear scan Value obtained by multiplying 100 to Hz Changes by the camera frame frequency.	
Light Amount Correction Information [c]	c.<c>.me.iris :=<*int*>	c.<c>.me.iris.min… c.<c>.me.iris.max	GC-U	Aperture value (abstract value)	
Light Amount Correction Information [c]	c.<c>.me.iris.min :=<*int*>		G--U	Minimum configurable aperture value	
Light Amount Correction Information [c]	c.<c>.me.iris.max :=<*int*>		G--U	Maximum configurable aperture value	
Light Amount Correction Information [c]	c.<c>.me.diaphragm :=<*int*>	Selected from c.<c>.me.diaphragm.list	GC-U	Aperture value (F-number)	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Light Amount Correction Information [c]	c.<c>.me.diaphragm.list :=<*string*>	280,320,340,370,400,450,440,480,520, 560, 620,670,730,800,870,950,1000,1100	G--U	Aperture value (F-number) list Value obtained by multiplying 100 to F-number Changes depending on zoom value.	
Light Amount Correction Information [c]	c.<c>.me.diaphragm.mode :=<*string*>	Selected from c.<c>.me.diaphragm.mode.list	GC-U	Aperture (F-number) mode	
Light Amount Correction Information [c]	c.<c>.me.diaphragm.mode.list :=<*string*>	auto, manual	G---	Aperture (F-number) mode list	
Light Amount Correction Information [c]	c.<c>.me.fno:=<int>		G--U	Aperture (F-number) Read only	
Light Amount Correction Information [c]	c.<c>.me.gain :=<*int*>	c.<c>.me.gain.min… c.<c>.me.gain.max	GC-U	Gain *3 Value obtained by multiplying 10 to dB Received by increments of 0.5 dB (5 as I/F). *When the exposure mode is switched to "manual", the control range (minimum/maximum gain value range) may be exceeded.	
Light Amount Correction Information [c]	c.<c>.me.gain.min :=<*int*>	-60	G--U	Minimum configurable gain value Changes depending on gamma value.	
Light Amount Correction Information [c]	c.<c>.me.gain.max :=<*int*>	330	G--U	Maximum configurable gain value	
Light Amount Correction Information [c]	c.<c>.me.gain.mode :=<*string*>	Selected from c.<c>.me.gain.mode.list	GC-U	Gain mode	
Light Amount Correction Information [c]	c.<c>.me.gain.mode.list :=<*string*>	auto, manual	G---	Gain mode list	
Light Amount Correction Information [c]	c.<c>.me.gainlimit.max :=<*int*>	c.<c>.me.gainlimit.max.min… c.<c>.me.gainlimit.max.max	GC-U	Gain limit on the maximum (upper) side Value obtained by multiplying 10 to dB Received by increments of 0.5 dB (5 as I/F).	
Light Amount Correction Information [c]	c.<c>.me.gainlimit.max.min :=<*int*>		G--U	Minimum configurable gain limit value on maximum (upper) side Changes depending on gamma value.	
Light Amount Correction Information [c]	c.<c>.me.gainlimit.max.max :=<*int*>	360	G--U	Maximum configurable gain limit value on maximum (upper) side	CR-N500
Light Amount Correction Information [c]	c.<c>.me.brightness :=<*int*>	c.<c>.me.brightness.min… c.<c>.me.brightness.max	GC-U	Correction compensation value is the value obtained by multiplying 4 to the EV value. Dark -8 ←→ 8 Light *When all of the c.<c>.me.diaphragm.mode, c.<c>.me.shutter.mode, c.<c>.me.gain.mode are "manual", the value is changed but it is not reflected to the image.	
Light Amount Correction Information [c]	c.<c>.me.brightness.min :=<*int*>	-8	G---	Minimum configurable exposure compensation value	
Light Amount Correction Information [c]	c.<c>.me.brightness.max :=<*int*>	8	G---	Maximum configurable exposure compensation value	
Light Amount Correction Information [c]	c.<c>.me.photometry :=<*string*>	Selected from c.<c>.me.photometry.list	GC-U	Metering mode *When all of thec.<c>.me.diaphragm.mode, c.<c>.me.shutter.mode, c.<c>.me.gain.mode, and c.<c>.me.gain.mode are "manual", the value is changed but it is not reflected to the image.	
Light Amount Correction Information [c]	c.<c>.me.photometry.list :=<*string*>	center, spotlight, backlight	G---	Metering mode list center: Center-weighted metering backlight: Metering mainly on part with low exposure spotlight: Metering mainly on part with high exposure	
Light Amount Correction Information [c]	c.<c>.me.resp :=<*int*>	c.<c>.me.resp.min… c.<c>.me.resp.max	GC-U	ME response (convergence speed for automatic exposure)	
Light Amount Correction Information [c]	c.<c>.me.resp.min :=<*int*>	0	G--U	Minimum configurable ME response value	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Light Amount Correction Information [c]	c.<c>.me.resp.max :=<*int*>	2	G--U	Maximum configurable ME response value	
Light Amount Correction Information [c]	c.<c>.me.flickerreduct :=<*string*>	Selected from c.<c>.me.flickerreduct.list	G--U	Flicker reduction	
Light Amount Correction Information [c]	c.<c>.me.flickerreduct.list :=<*string*>	off, auto	G---	Flicker reduction list	
Light Amount Correction Information [c]	c.<c>.nd.mode :=<*string*>	Selected from c.<c>.nd.mode.list	G--U	ND filter mode	
Light Amount Correction Information [c]	c.<c>.nd.mode.list :=<*string*>	manual	G---	ND filter mode list	CR-N500
Light Amount Correction Information [c]	c.<c>.nd.filter :=<*int*>	Selected from c.<c>.nd.filter.list	GC-U	ND filter mode is specified.	CR-N500
Light Amount Correction Information [c]	c.<c>.nd.filter.list :=<*string*>	0, 400, 1600, 6400	G---	ND filter list 400 -> 1/4 1600 -> 1/16 6400 -> 1/64 0: ND filter OFF	CR-N500
Color Correction Information [c]	c.<c>.wb :=<*string*>	Selected from c.<c>.wb.list	GC-U	White balance mode *If other modes besides wb=auto is specified when the capture mode is "fullauto", the capture mode changes to "manual".	
Color Correction Information [c]	c.<c>.wb.list :=<*string*>	auto, manual, kelvin, daylight, tungsten, wb_a, wb_b	G---	White balance mode list	
Color Correction Information [c]	c.<c>.wb.action :=<*string*>	Selected from c.<c>.wb.action.list	-C--	One-shot white balance If this is specified when the capture mode is "fullauto", it is ignored. wb search is performed, the value is saved to wb_a or wb_b, and c.<c>.wb is changed to wb_a orwb_b.	
Color Correction Information [c]	c.<c>.wb.action.list :=<*string*>	one_shot_a,one_shot_b	G---	One-shot white balance list	
Color Correction Information [c]	c.<c>.wb.value :=<*string*>	<R gain value>-<B gain value>	GC-U	R gain, B gain (0 to 1023) Only valid when the white balance mode is "manual".	
Color Correction Information [c]	c.<c>.wb.kelvin :=<*int*>	Selected from c.<c>.wb.kelvin.list	GC-U	Color temperature (K) Only valid when the white balance mode is "kelvin".	
Color Correction Information [c]	c.<c>.wb.kelvin.list :=<*string*>	2000,2020,2040...13330,14290,15000	G---	List of color temperature	
Color Correction Information [c]	c.<c>.wb.resp :=<*int*>	c.<c>.wb.resp.min… c.<c>.wb.resp.max	GC-U	WB response (threshold that activates AWB restart)	
Color Correction Information [c]	c.<c>.wb.resp.min :=<*int*>	0	G---	Minimum WB response value	
Color Correction Information [c]	c.<c>.wb.resp.max :=<*int*>	2	G---	Maximum WB response value	
Color Correction Information [c]	c.<c>.cp :=<*string*>	Selected from c.<c>.cp.list	GC-U	Custom picture (Custom of image quality mode) *When this item is specified, c.<c>.gamma, c.<c>.colorspace, and c.<c>.colormatrix are changed to predetermined combination for each custom picture.	
Color Correction Information [c]	c.<c>.cp.list :=<*string*>	normal1_bt709, normal1_bt2020, widedr_bt709, widedr_bt2020, clog3_bt2020, clog3_bt709, off	G---	Custom picture list	CR-N500
Color Correction Information [c]	c.<c>.gamma :=<*string*>	Selected from c.<c>.gamma.list	GC-U	Gamma *When this item is changed, the custom picture is automatically changed to "off".	
Color Correction Information [c]	c.<c>.gamma.list :=<*string*>	normal1, normal2, normal3, normal4, widedr, clog3	G---	Gamma list	CR-N500
Color Correction Information [c]	c.<c>.colorspace :=<*string*>	Selected from c.<c>.colorspace.list	GC-U	Color space *When this item is changed, the custom picture is automatically changed to "off".	
Color Correction Information [c]	c.<c>.colorspace.list :=<*string*>	gamut_bt709, gamut_bt2020	G---	Color space list	
Color Correction Information [c]	c.<c>.colormatrix :=<*string*>	Selected from c.<c>.colormatrix.list	GC-U	Color matrix *When this item is changed, the custom picture is automatically changed to "off".	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Color Correction Information [c]	c.<c>.colormatrix.list :=<*string*>	video, neutral	G---	Color matrix list	
Color Correction Information [c]	c.<c>.colormatrix.gain :=<*int*>	c.<c>.colormatrix.gain.min… c.<c>.colormatrix.gain.max	GC-U	Overall color density of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.gain.min :=<*int*>	-50	G--U	Minimum configurable overall color density value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.gain.max :=<*int*>	50	G--U	Maximum configurable overall color density value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.phase :=<*int*>	c.<c>.colormatrix.phase.min… c.<c>.colormatrix.phase.max	GC-U	Overall hue of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.phase.min :=<*int*>	-18	G--U	Minimum configurable overall hue value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.phase.max :=<*int*>	18	G--U	Maximum configurable overall hue value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.rg :=<*int*>	c.<c>.colormatrix.rg.min… c.<c>.colormatrix.rg.max	GC-U	Color matrix R-G	
Color Correction Information [c]	c.<c>.colormatrix.rg.min :=<*int*>	-50	G--U	Minimum configurable R-G value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.rg.max :=<*int*>	50	G--U	Maximum configurable R-G value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.rb :=<*int*>	c.<c>.colormatrix.rb.min… c.<c>.colormatrix.rb.max	GC-U	Color matrix R-B	
Color Correction Information [c]	c.<c>.colormatrix.rb.min :=<*int*>	-50	G--U	Minimum configurable R-B value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.rb.max :=<*int*>	50	G--U	Maximum configurable R-B value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.gr :=<*int*>	c.<c>.colormatrix.gr.min… c.<c>.colormatrix.gr.max	GC-U	Color matrix G-R	
Color Correction Information [c]	c.<c>.colormatrix.gr.min :=<*int*>	-50	G--U	Minimum configurable G-R value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.gr.max :=<*int*>	50	G--U	Maximum configurable G-R value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.gb :=<*int*>	c.<c>.colormatrix.gb.min… c.<c>.colormatrix.gb.max	GC-U	Color matrix G-B	
Color Correction Information [c]	c.<c>.colormatrix.gb.min :=<*int*>	-50	G--U	Minimum configurable G-B value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.gb.max :=<*int*>	50	G--U	Maximum configurable G-B value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.br :=<*int*>	c.<c>.colormatrix.br.min… c.<c>.colormatrix.br.max	GC-U	Color matrix B-R	
Color Correction Information [c]	c.<c>.colormatrix.br.min :=<*int*>	-50	G--U	Minimum configurable B-R value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.br.max :=<*int*>	50	G--U	Maximum configurable B-R value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.bg :=<*int*>	c.<c>.colormatrix.bg.min… c.<c>.colormatrix.bg.max	GC-U	Color matrix B-G	
Color Correction Information [c]	c.<c>.colormatrix.bg.min :=<*int*>	-50	G--U	Minimum configurable B-G value of color matrix	
Color Correction Information [c]	c.<c>.colormatrix.bg.max :=<*int*>	50	G--U	Maximum configurable B-G value of color matrix	
Color Correction Information [c]	c.<c>.blacklevel :=<*int*>	c.<c>.blacklevel.min… c.<c>.blacklevel.max	GC-U	Black level（Black: Master Pedestal）	
Color Correction Information [c]	c.<c>.blacklevel.min :=<*int*>	-50	G--U	Minimum configurable value of black level	
Color Correction Information [c]	c.<c>.blacklevel.max :=<*int*>	50	G--U	Maximum configurable value of black level	
Color Correction Information [c]	c.<c>.blacklevel.red :=<*int*>	c.<c>.blacklevel.red.min… c.<c>.blacklevel.red.max	GC-U	Individual adjustment value of black color fogging (RED) (Black: Master Black Red）	
Color Correction Information [c]	c.<c>.blacklevel.red.min :=<*int*>	-50	G--U	Minimum configurable individual adjustment value of black color fogging (RED)	
Color Correction Information [c]	c.<c>.blacklevel.red.max :=<*int*>	50	G--U	Maximum configurable individual adjustment value of black color fogging (RED)	
Color Correction Information [c]	c.<c>.blacklevel.blue :=<*int*>	c.<c>.blacklevel.blue.min… c.<c>.blacklevel.blue.max	GC-U	Individual adjustment value of black color fogging (BLUE) (Black: Master Black Red）	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Color Correction Information [c]	c.<c>.blacklevel.blue.min :=<*int*>	-50	G--U	Minimum configurable individual adjustment value of black color fogging (BLUE)	
Color Correction Information [c]	c.<c>.blacklevel.blue.max :=<*int*>	50	G--U	Maximum configurable individual adjustment value of black color fogging (BLUE)	
Color Correction Information [c]	c.<c>.blackgamma :=<*int*>	c.<c>.blackgamma.min… c.<c>.blackgamma.max	GC-U	Gamma correction value of low brightness part (Black Gamma: Level)	
Color Correction Information [c]	c.<c>.blackgamma.min :=<*int*>	-50	G--U	Minimum configurable gamma correction value of low brightness part	
Color Correction Information [c]	c.<c>.blackgamma.max :=<*int*>	50	G--U	Maximum configurable gamma correction value of low brightness part	
Color Correction Information [c]	c.<c>.blackgamma.range :=<*int*>	c.<c>.blackgamma.range.min… c.<c>.blackgamma.range.max	GC-U	Point adjustment value from reference gamma (Black Gamma: Range)	
Color Correction Information [c]	c.<c>.blackgamma.range.min :=<*int*>	-20	G--U	Minimum configurable point adjustment value from reference gamma	
Color Correction Information [c]	c.<c>.blackgamma.range.max :=<*int*>	50	G--U	Maximum configurable point adjustment value from reference gamma	
Color Correction Information [c]	c.<c>.blackgamma.po*int* :=<int>	c.<c>.blackgamma.point.min… c.<c>.blackgamma.point.max	GC-U	Vertex position adjustment value from reference gamma (Black Gamma: Point)	
Color Correction Information [c]	c.<c>.blackgamma.po*int* .min :=<int>	-20	G--U	Minimum configurable vertex position adjustment value from reference gamma	
Color Correction Information [c]	c.<c>.blackgamma.po*int* .max :=<int>	50	G--U	Maximum configurable vertex position adjustment value from reference gamma	
Color Correction Information [c]	c.<c>.knee :=<*string*>	Selected from c.<c>.knee.list	GC-U	Enable/disable of knee (Knee: Active)	
Color Correction Information [c]	c.<c>.knee.list :=<*string*>	on, off	G---	List of enabling/disabling knee	
Color Correction Information [c]	c.<c>.knee.automatic :=<*string*>	Selected from c.<c>.knee.automatic.list	GC-U	Enable/disable of automatic knee adjustment (Knee: Automatic)	
Color Correction Information [c]	c.<c>.knee.automatic.list :=<*string*>	on, off	G---	List of enabling/disabling automatic knee adjustment	
Color Correction Information [c]	c.<c>.knee.slope :=<*int*>	c.<c>.knee.slope.min… c.<c>.knee.slope.max	GC-U	Knee slope (Knee: Slope)	
Color Correction Information [c]	c.<c>.knee.slope.min :=<*int*>	-35	G--U	Minimum configurable knee slope value	
Color Correction Information [c]	c.<c>.knee.slope.max :=<*int*>	50	G--U	Maximum configurable knee slope value	
Color Correction Information [c]	c.<c>.knee.po*int* :=<int>	c.<c>.knee.point.min… c.<c>.knee.point.max	GC-U	Knee point (Knee: Point)	
Color Correction Information [c]	c.<c>.knee.po*int* .min :=<int>	50	G--U	Minimum configurable knee point value	
Color Correction Information [c]	c.<c>.knee.po*int* .max :=<int>	109	G--U	Maximum configurable knee point value	
Color Correction Information [c]	c.<c>.knee.saturation :=<*int*>	c.<c>.knee.saturation.min… c.<c>.knee.saturation.max	GC-U	Knee saturation (Knee: Saturation)	
Color Correction Information [c]	c.<c>.knee.saturation.min :=<*int*>	-10	G--U	Minimum configurable knee saturation value	
Color Correction Information [c]	c.<c>.knee.saturation.max :=<*int*>	10	G--U	Maximum configurable knee saturation value	
Color Correction Information [c]	c.<c>.wb.shift.rgain :=<*int*>	c.<c>.wb.shift.rgain.min… c.<c>.wb.shift.rgain.max	GC-U	Adjusts the white balance shift amount of red color light and shade. (White Balance: R Gain)	
Color Correction Information [c]	c.<c>.wb.shift.rgain.min :=<*int*>	-50	G--U	Minimum configurable value of the white balance shift amount of red color light and shade	
Color Correction Information [c]	c.<c>.wb.shift.rgain.max :=<*int*>	50	G--U	Maximum configurable value of the white balance shift amount of red color light and shade	
Color Correction Information [c]	c.<c>.wb.shift.bgain :=<*int*>	c.<c>.wb.shift.bgain.min… c.<c>.wb.shift.bgain.max	GC-U	Adjusts the white balance shift amount of blue color light and shade. (White Balance: B Gain)	
Color Correction Information [c]	c.<c>.wb.shift.bgain.min :=<*int*>	-50	G--U	Minimum configurable value of the white balance shift amount of blue color light and shade	
Color Correction Information [c]	c.<c>.wb.shift.bgain.max :=<*int*>	50	G--U	Maximum configurable value of the white balance shift amount of blue color light and shade.	
IS/NR/Sharpness [c]	c.<c>.is :=<*string*>	Selected from c.<c>.is.list	GC-U	Image stabilizer	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
IS/NR/Sharpness [c]	c.<c>.is.list :=<*int*>	off, on1, on2 off: No use on1: For small amplitude on2: For large amplitude	G---	Image stabilizer list	
IS/NR/Sharpness [c]	c.<c>.nr :=<*int*>	c.<c>.nr.min… c.<c>.nr.max	GC-U	Noise reduction level (Noise Reduction)	
IS/NR/Sharpness [c]	c.<c>.nr.min :=<*int*>	0	G---	Minimum configurable value of noise reduction level	
IS/NR/Sharpness [c]	c.<c>.nr.max :=<*int*>	12	G---	Maximum configurable value of noise reduction level	
IS/NR/Sharpness [c]	c.<c>.nr.mode :=<*string*>	Selected from nr.mode.list	GC-U	Noise reduction mode	
IS/NR/Sharpness [c]	c.<c>.nr.mode.list :=<*string*>	manual, auto	G---	Noise reduction mode list	
IS/NR/Sharpness [c]	c.<c>.ac :=<*int*>	c.<c>.ac.min… c.<c>.ac.max	GC-U	Sharpness (Sharpness: Level)	
IS/NR/Sharpness [c]	c.<c>.ac.min :=<*int*>	-10	G--U	Minimum configurable sharpness value	
IS/NR/Sharpness [c]	c.<c>.ac.max :=<*int*>	50	G--U	Maximum configurable sharpness value	
IS/NR/Sharpness [c]	c.<c>.ac.limit :=<*int*>	c.<c>.ac.limit.min… c.<c>.ac.limit.max	GC-U	Limit of sharpness value (Sharpness: Limit)	
IS/NR/Sharpness [c]	c.<c>.ac.limit.min :=<*int*>	-50	G--U	Minimum configurable value of sharpness value limit	
IS/NR/Sharpness [c]	c.<c>.ac.limit.max :=<*int*>	50	G--U	Maximum configurable value of sharpness value limit	
Focus Information [c]	c.<c>.focus :=<*string*>	Selected from c.<c>.focus.list	GC-U	Focus mode Values returned are "auto" and "manual" only. When one-shot focus is specified, the mode becomes"manual" when the focus operation is done.	
Focus Information [c]	c.<c>.focus.list :=<*string*>	auto, manual	G---	Focus mode list	
Focus Information [c]	c.<c>.focus.action :=<*string*>	Selected from c.<c>.focus.action.list	-C--	Focus action	
Focus Information [c]	c.<c>.focus.action.list :=<*string*>	stop, one_shot, near, far	G--U	Focus action list one_shot: One-shot AF near: Focus movement to short distance side far: Focus movement to long distance side stop: Focus operation stop	
Focus Information [c]	c.<c>.focus.value :=<*int*>	0...2048	GC-U	Focus value	
Focus Information [c]	c.<c>.focus.restrict :=<*string*>	Selected from c.<c>.focus.restrict.list	GC-U	Focus limit	
Focus Information [c]	c.<c>.focus.restrict.list :=<*string*>	off, on	G---	Focus limit list	
Focus Information [c]	c.<c>.focus.speed :=<*int*>	c.<c>.focus.speed.min… c.<c>.focus.speed.max	GC-U	MF speed	
Focus Information [c]	c.<c>.focus.speed.min :=<*int*>	0	G---	Minimum configurable MF speed value	
Focus Information [c]	c.<c>.focus.speed.max :=<*int*>	2	G---	Maximum configurable MF speed value	
Focus Information [c]	c.<c>.focus.auto :=<*string*>	Selected from c.<c>.focus.auto.list	GC-U	AF mode When the focus frame size is "auto", "continuous" operation is performed. When the digital zoom ratio is "300" or "600", "continuous" operation is performed.	
Focus Information [c]	c.<c>.focus.auto.list :=<*string*>	continuous, afboosted	G---	AF mode list	
Focus Information [c]	c.<c>.focus.auto.speed :=<*int*>	c.<c>.focus.auto.speed.min… c.<c>.focus.auto.speed.max	GC-U	AF speed	
Focus Information [c]	c.<c>.focus.auto.speed.min :=<*int*>	0	G---	Minimum configurable AF speed value	
Focus Information [c]	c.<c>.focus.auto.speed.max :=<*int*>	2	G---	Maximum configurable AF speed value	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Focus Information [c]	c.<c>.focus.frame.<f> :=<*string*>	Selected from c.<c>.focus.frame.<f>.list	GC-U	AF frame size	
Focus Information [c]	c.<c>.focus.frame.<f>.list :=<*string*>	auto, large, small	G---	AF frame size list	
Focus Information [c]	c.<c>.focus.frame.<f>.x :=<*int*>	c.<c>.focus.frame.<f>.x.min… c.<c>.focus.frame.<f>.x.max	GC-U	Center coordinate in horizontal direction of AF frame	
Focus Information [c]	c.<c>.focus.frame.<f>.x.min :=<*int*>	0	G---	Minimum configurable center coordinate value in horizontal direction of AF frame	
Focus Information [c]	c.<c>.focus.frame.<f>.x.max :=<*int*>	9999	G---	Maximum configurable center coordinate value in horizontal direction of AF frame	
Focus Information [c]	c.<c>.focus.frame.<f>.y :=<*int*>	c.<c>.focus.frame.<f>.y.min… c.<c>.focus.frame.<f>.y.max	GC-U	Center coordinate in vertical direction of AF frame	
Focus Information [c]	c.<c>.focus.frame.<f>.y.min :=<*int*>	0	G---	Minimum configurable center coordinate value in vertical direction of AF frame	
Focus Information [c]	c.<c>.focus.frame.<f>.y.max :=<*int*>	9999	G---	Maximum configurable center coordinate value in vertical direction of AF frame	
Focus Information [c]	c.<c>.focus.frame.<f>.width :=<*int*>		G--U	AF frame width	
Focus Information [c]	c.<c>.focus.frame.<f>.height :=<*int*>		G--U	AF frame height	
Focus Information [c]	c.<c>.focus.detect :=<*string*>	Selected from c.<c>.focus.detect.list	GC-U	Face detection AF setting Forcibly set to "off" depending on the digital zoom ratio, digital teleconverter ratio, and shutter speed value.	
Focus Information [c]	c.<c>.focus.detect.list :=<*string*>	off, faceonly, facecatch	G---	Face detection AF setting list	
Focus Information [c]	c.<c>.focus.auto.track :=<*string*>	Selected from c.<c>.focus.auto.track.list	GC-U	Tracking start and stop	
Focus Information [c]	c.<c>.focus.auto.track.list :=<*string*>	off, on	G---	Tracking start and stop list	
Focus Information [c]	c.<c>.focus.auto.track.mode :=<*string*>	Selected from c.<c>.focus.auto.track.mode.list	GC-U	Tracking mode	
Focus Information [c]	c.<c>.focus.auto.track.mode.list :=<*string*>	mode1, mode2	G---	Tracking mode list	
Focus Information [c]	c.<c>.focus.auto.track.frame.x :=<*int*>	c.<c>.focus.auto.track.frame.x.min… c.<c>.focus.auto.track.frame.x.max	GC-U	x coordinate (center) of tracking start	
Focus Information [c]	c.<c>.focus.auto.track.frame.x.min :=<*int*>		G---	Minimum configurable x coordinate (center) value of tracking start	
Focus Information [c]	c.<c>.focus.auto.track.frame.x.max :=<*int*>		G---	Maximum configurable x coordinate (center) value of tracking start	
Focus Information [c]	c.<c>.focus.auto.track.frame.y :=<*int*>	c.<c>.focus.auto.track.frame.y.min… c.<c>.focus.auto.track.frame.y.max	GC-U	y coordinate (center) of tracking start	
Focus Information [c]	c.<c>.focus.auto.track.frame.y.min :=<*int*>		G---	Minimum configurable y coordinate (center) value of tracking start	
Focus Information [c]	c.<c>.focus.auto.track.frame.y.max :=<*int*>		G---	Maximum configurable y coordinate (center) value of tracking start	
Focus Information [c]	c.<c>.focus.auto.resp :=<*int*>	c.<c>.focus.auto.resp.min… c.<c>.focus.auto.resp.max	GC-U	AF response (threshold that activates AF restart)	
Focus Information [c]	c.<c>.focus.auto.resp.min :=<*int*>	0	G---	Minimum configurable AF response value	
Focus Information [c]	c.<c>.focus.auto.resp.max :=<*int*>	2	G---	Maximum configurable AF response value	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Zoom Information [c]	c.<c>.zoom :=<*int*>	c.<c>.zoom.min… c.<c>.zoom.max zoom.mode= when off:570...7300 when dzoom:28...7300 when mag: The value obtained by dividing the min-max value when off by the 100th fraction of zoom.mag (rounded down to the nearest whole number) d[±]<difference>, v[±]<difference>, tele, wide, stop	GC-U	・Absolute position specification Zoom value (optical zoom ratio, digital zoom ratio, angle of view including teleconverter ratio) ・Relative position specification Specify a relative position from the current zoom position. d: Specify by zoom position v: Specify by standard ratio (100=current ratio) v200 is 2 times zoom v50 is 0.5 times zoom ・Operation specification tele: move to telephoto side wide: move to wide-angle side stop: stop movement	
Zoom Information [c]	c.<c>.zoom.status :=<*int*>	0, 1	G--U	Zoom operation status 0: During stop 1: During movement	
Zoom Information [c]	c.<c>.zoom.d :=<*int*>		G---	Digital zoom border value (optical telephoto end)	
Zoom Information [c]	c.<c>.zoom.mode :=<*string*>	Selected from c.<c>.zoom.mode.list	GC-U	Digital zoom mode	
Zoom Information [c]	c.<c>.zoom.mode.list :=<*string*>	off, dzoom, mag	G---	Digital zoom mode list	
Zoom Information [c]	c.<c>.zoom.dzoom :=<>		G--U	Digital zoom ratio	
Zoom Information [c]	c.<c>.zoom.mag :=<*int*>	Selected from c.<c>.zoom.mag.list	-C-U	Digital zoom ratio (digital teleconverter) When this is set, c.<c>.zoom.mode is automatically changed to "mag".	
Zoom Information [c]	c.<c>.zoom.mag.list :=<*string*>	100, 150, 300, 600	G---	Digital zoom ratio list (digital teleconverter)	CR-N500
Zoom Information [c]	c.<c>.zoom.diameter :=<*int*>		---U	Zoom ratio (angle of view including optical zoom ratio, digital zoom ratio, and teleconverter ratio)	
Zoom Information [c]	c.<c>.zoom.min :=<*int*>	570	G--U	Zoom telephoto side control limit This changes in other mode besides the off mode in accordance with the digital zoom ratio and the teleconverter ratio.	
Zoom Information [c]	c.<c>.zoom.max :=<*int*>	7300	G--U	Zoom wide-angle side control limit This changes in accordance with the teleconverter ratio during the mag mode.	
Zoom Information [c]	c.<c>.zoom.limit.min :=<*int*>	570	G--U	Zoom telephoto side movable limit	
Zoom Information [c]	c.<c>.zoom.limit.max :=<*int*>	7300	G--U	Zoom wide-angle side movable limit	
Zoom Information [c]	c.<c>.zoom.speed :=<*int*>	c.<c>.zoom.speed.min… c.<c>.zoom.speed.max	-CP-	Operation specification/position specification zoom speed	
Zoom Information [c]	c.<c>.zoom.speed.pos :=<*int*>	c.<c>.zoom.speed.min… c.<c>.zoom.speed.max	GCPU	Position specification zoom speed	
Zoom Information [c]	c.<c>.zoom.speed.dir :=<*int*>	c.<c>.zoom.speed.min… c.<c>.zoom.speed.max	GCPU	Operation specification zoom speed	
Zoom Information [c]	c.<c>.zoom.speed.min :=<*int*>	0	G---	Minimum zoom speed	
Zoom Information [c]	c.<c>.zoom.speed.max :=<*int*>	15	G---	Maximum zoom speed	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Pan/Tilt Information [c]	c.<c>.pan :=<*int*>	c.<c>.pan.min… c.<c>.pan.max, d[±]<difference>, v[±]<difference>, right, left, stop	GC-U	・Absolute position specification Specify absolute position for pan Expressed by the angle of view (1 = 0.01 degrees), the actual front is specified as 0 and the right is specified as positive. ・Relative position specification Specify the relative position from the current camera orientation. d: Specify angle of view (1=0.01 degrees) v: Specify standard screen (100=half the screen) Moves to the right edge as the center of the screen with v100. Moves to the left edge as the center of the screen with -v100. ・Operation specification right: move to the right left: move to the left stop: stop movement	
Pan/Tilt Information [c]	c.<c>.pan.status :=<*int*>	0, 1	G--U	Pan operation status 0: During stop 1: During movement	
Pan/Tilt Information [c]	c.<c>.pan.min :=<*int*>	-17000	G--U	Left side control limit of pan operation	
Pan/Tilt Information [c]	c.<c>.pan.max :=<*int*>	17000	G--U	Right side control limit of pan operation	
Pan/Tilt Information [c]	c.<c>.pan.limit.min :=<*int*>	-17000	G--U	Left side movable limit of pan operation	
Pan/Tilt Information [c]	c.<c>.pan.limit.max :=<*int*>	17000	G--U	Right side movable limit of pan operation	
Pan/Tilt Information [c]	c.<c>.pan.speed.mode :=<*string*>	Selected from c.<c>.pan.speed.mode.list	-CP-	Pan operating speed mode	
Pan/Tilt Information [c]	c.<c>.pan.speed.mode.pos :=<*string*>	Selected from c.<c>.pan.speed.mode.list	GC-U	Position specification pan operating speed mode	
Pan/Tilt Information [c]	c.<c>.pan.speed.mode.dir :=<*string*>	Selected from c.<c>.pan.speed.mode.list	GC-U	Operation specification pan operating speed mode	
Pan/Tilt Information [c]	c.<c>.pan.speed.mode.list :=<*string*>	manual,auto1,auto2	G---	Pan operating speed mode list manual: Controlled at a constant speed. auto1: Speed control in accordance with the ratio to the horizontal angle of view c.<c>.pan.speed.ratio is used. auto2: The speed specified by speed control in accordance with the ratio to the horizontal angle of view c.<c>.pan.speed is regarded as the speed at the wide angle end, and operation is performed at a speed corresponding to the angle of view.	
Pan/Tilt Information [c]	c.<c>.pan.speed :=<*int*>	c.<c>.pan.speed.min… c.<c>.pan.speed.max	-CP-	Pan speed during “manual” or “auto2” 100 sets the speed of movement to once per second	
Pan/Tilt Information [c]	c.<c>.pan.speed.pos :=<*int*>	c.<c>.pan.speed.min… c.<c>.pan.speed.max	GCPU	Position specification pan speed during “manual” or “auto2”	
Pan/Tilt Information [c]	c.<c>.pan.speed.dir :=<*int*>	c.<c>.pan.speed.min… c.<c>.pan.speed.max	GCPU	Operation specification pan speed during “manual” or “auto2”	
Pan/Tilt Information [c]	c.<c>.pan.speed.min :=<*int*>	10	G---	Minimum configurable pan speed value during “manual” or “auto2”	
Pan/Tilt Information [c]	c.<c>.pan.speed.max :=<*int*>	10000	G---	Maximum configurable pan speed value during “manual” or “auto2”	
Pan/Tilt Information [c]	c.<c>.pan.speed.ratio :=<*int*>	c.<c>.pan.speed.ratio.min… c.<c>.pan.speed.ratio.max	-CP-	Pan speed during “auto1” The operation speed is specified by the ratio to the horizontal angle of view. The speed at which one screen moves per second is set to 100.	
Pan/Tilt Information [c]	c.<c>.pan.speed.ratio.pos :=<*int*>	c.<c>.pan.speed.ratio.min… c.<c>.pan.speed.ratio.max	GCPU	Position specification pan speed during “auto1”	
Pan/Tilt Information [c]	c.<c>.pan.speed.ratio.dir :=<*int*>	c.<c>.pan.speed.ratio.min… c.<c>.pan.speed.ratio.max	GCPU	Operation specification pan speed during “auto1”	
Pan/Tilt Information [c]	c.<c>.pan.speed.ratio.min :=<*int*>		G---	Minimum configurable pan speed value during “auto1”	
Pan/Tilt Information [c]	c.<c>.pan.speed.ratio.max :=<*int*>		G---	Maximum configurable pan speed value during “auto1”	
Pan/Tilt Information [c]	c.<c>.pan.ramp :=<*int*>	0...2	GC-U	Pan acceleration	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Pan/Tilt Information [c]	c.<c>.pan.ramp.min :=<*int*>	0	G---	Minimum configurable pan acceleration value	
Pan/Tilt Information [c]	c.<c>.pan.ramp.max :=<*int*>	2	G---	Maximum configurable pan acceleration value	
Pan/Tilt Information [c]	c.<c>.tilt :=<*int*>	c.<c>.tilt.min… c.<c>.tilt.max, d[±]<difference>, v[±]<difference>, up, down, stop	GC-U	・Absolute position specification Specify absolute position for tilt Expressed by the angle of view (1 = 0.01 degrees), the actual front is specified as 0 and up is specified as positive. ・Relative position specification Specify the relative position from the current camera orientation. d: Specify angle of view (1=0.01 degrees) v: Specify standard screen (100=half the screen) Moves to the upper edge as the center of the screen with v100. Moves to the bottom edge as the center of the screen with -v100. ・Operation specification up: move up down: move down stop: stop movement	
Pan/Tilt Information [c]	c.<c>.tilt.status :=<*int*>	0, 1	G--U	Tilt operation status 0: During stop 1: During movement	
Pan/Tilt Information [c]	c.<c>.tilt.min :=<*int*>	-3000	G--U	Downward control limit of tilt operation	
Pan/Tilt Information [c]	c.<c>.tilt.max :=<*int*>	9000	G--U	Upward control limit of tilt operation	
Pan/Tilt Information [c]	c.<c>.tilt.limit.min :=<*int*>	-3000	G--U	Downward movable limit of tilt operation	
Pan/Tilt Information [c]	c.<c>.tilt.limit.max :=<*int*>	9000	G--U	Upward movable limit of tilt operation	
Pan/Tilt Information [c]	c.<c>.tilt.speed.mode :=<*string*>	Selected from c.<c>.tilt.speed.mode.list	-CP-	Tilt operating speed mode	
Pan/Tilt Information [c]	c.<c>.tilt.speed.mode.pos :=<*string*>	Selected from c.<c>.tilt.speed.mode.list	GC-U	Positional tilt operating speed mode	
Pan/Tilt Information [c]	c.<c>.tilt.speed.mode.dir :=<*string*>	Selected from c.<c>.tilt.speed.mode.list	GC-U	Operational tilt operating speed mode	
Pan/Tilt Information [c]	c.<c>.tilt.speed.mode.list :=<*string*>	manual,auto1,auto2	G---	Tilt operating speed mode list manual: Controlled at a constant speed. auto1: Speed control in accordance with the ratio to the vertical angle of view c.<c>.tilt.speed.ratio is used. auto2: The speed specified by speed control in accordance with the ratio to the vertical angle of view c.<c>.tilt.speed is regarded as the speed at the wide angle end, and operation is performed at a speed corresponding to the angle of view.	
Pan/Tilt Information [c]	c.<c>.tilt.speed :=<*int*>	c.<c>.tilt.speed.min… c.<c>.tilt.speed.max	-CP-	Tilt speed during “manual” or “auto2” 100 sets the speed of movement to once per secon	
Pan/Tilt Information [c]	c.<c>.tilt.speed.pos :=<*int*>	c.<c>.tilt.speed.min… c.<c>.tilt.speed.max	GCPU	Position specification tilt speed during “manual” or “auto2”	
Pan/Tilt Information [c]	c.<c>.tilt.speed.dir :=<*int*>	c.<c>.tilt.speed.min… c.<c>.tilt.speed.max	GCPU	Operation specification tilt speed during “manual” or “auto2”	
Pan/Tilt Information [c]	c.<c>.tilt.speed.min :=<*int*>	10	G---	Minimum configurable tilt speed value during “manual” or “auto2”	
Pan/Tilt Information [c]	c.<c>.tilt.speed.max :=<*int*>	10000	G---	Maximum configurable tilt speed value during “manual” or “auto2”	
Pan/Tilt Information [c]	c.<c>.tilt.speed.ratio :=<*int*>	c.<c>.tilt.speed.ratio.min… c.<c>.tilt.speed.ratio.max	-C-U	Tilt speed during “auto1” The operation speed is specified by the ratio to the horizontal angle of view. The speed at which one screen moves per second is set to 100.	
Pan/Tilt Information [c]	c.<c>.tilt.speed.ratio.pos :=<*int*>	c.<c>.tilt.speed.ratio.min… c.<c>.tilt.speed.ratio.max	GC-U	Position specification tilt speed during “auto1”	
Pan/Tilt Information [c]	c.<c>.tilt.speed.ratio.dir :=<*int*>	c.<c>.tilt.speed.ratio.min… c.<c>.tilt.speed.ratio.max	GC-U	Operation specification tilt speed during “auto1”	
Pan/Tilt Information [c]	c.<c>.tilt.speed.ratio.min :=<*int*>		G---	Minimum configurable tilt speed value during “auto1”	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Pan/Tilt Information [c]	c.<c>.tilt.speed.ratio.max :=<*int*>		G---	Maximum configurable tilt speed value during “auto1”	
Pan/Tilt Information [c]	c.<c>.tilt.ramp :=<*int*>	0...2	GC-U	Tilt acceleration	
Pan/Tilt Information [c]	c.<c>.tilt.ramp.min :=<*int*>	0	G---	Minimum configurable tilt acceleration value	
Pan/Tilt Information [c]	c.<c>.tilt.ramp.max :=<*int*>	2	G---	Maximum configurable tilt acceleration value	
Pan/Tilt Information [c]	c.<c>.erotate :=<*int*>	Selected from c.<c>.erotate.list	GC-U	Video inversion	
Pan/Tilt Information [c]	c.<c>.erotate.list :=<*string*>	0, 18000	G---	Video inversion list	
Preset Information [p]	p :=<*int*>	0...100	GC-U	Preset number controlled last time *0 is returned until the first preset execution after start.	
Preset Information [p]	p.status :=<*int*>	0, 1	G--U	Preset operation status 0: During stop 1: During movement	
Preset Information [p]	p.count :=<*int*>	100	G---	Number of preset information settings Valid setting number is returned.	
Preset Information [p]	p.<p>.name.utf8 :=<*unicode*>	0...64	G--U	Preset name (UTF-8) Visible only when the preset name is set.	
Preset Information [p]	p.<p>.content :=<*string*>	enabled, disabled	G--U	Preset parameter saving flag Any parameter that is registered to preset is “enabled”.	
Preset Information [p]	p.<p>.content.ptz :=<*string*>	enabled, disabled	G--U	Preset PTZ flag	
Preset Information [p]	p.<p>.content.focus :=<*string*>	enabled, disabled	G--U	Preset focus flag	
Preset Information [p]	p.<p>.content.exp :=<*string*>	enabled, disabled	G--U	Preset exp flag	
Preset Information [p]	p.<p>.content.wb :=<*string*>	enabled, disabled	G--U	Preset wb flag	
Preset Information [p]	p.<p>.content.is :=<*string*>	enabled, disabled	G--U	Preset is flag	
Preset Information [p]	p.<p>.content.cp :=<*string*>	enabled, disabled	G--U	Preset cp flag	
Preset Information [p]	p.<p>.zoom.speed :=<*int*>	0...15	G--U	Preset zoom speed	
Preset Information [p]	p.<p>.pan.speed :=<*int*>	10...10000	G--U	Preset pan speed	
Preset Information [p]	p.<p>.tilt.speed :=<*int*>	10...10000	G--U	Preset tilt speed	
Trace Information [t]	t :=<*int*>	0...10	G--U	Trace number controlled last time *0 is returned until the first trace execution after start.	
Trace Information [t]	t.count :=<*int*>	10	G---	Number of trace information settings Valid setting number is returned.	
Trace Information [t]	t.status :=<*string*>	idle, recording, preparing, prepared, playing	G--U	Trace status	
Trace Information [t]	t.<t>.name.utf8 :=<*unicode*>	0...64	G--U	Trace name (UTF-8) Visible only when the trace name is set.	
Trace Information [t]	t.<t>.recorded :=<*string*>	off, on	G--U	Trace recording status	
Trace Information [t]	t.<t>.time :=<*int*>	0...300	G--U	Trace time Unit: Second	
Audio Device Information [a]	a.count :=<*int*>	0	G---	Number of audio devices	
Contact Input/Output Information [i/o]	i.count :=<*int*>	0	G---	Number of contact input terminals	
Contact Input/Output Information [i/o]	o.count :=<*int*>	0	G---	Number of contact output terminals	
Tally Lamp Information [f]	f.tally :=<*string*>	Selected from f.tally.list	GC-U	Use/non-use of tally lamp	
Tally Lamp Information [f]	f.tally.list :=<*string*>	off, on	G---	List for tally lamp use	

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Model Specific Information
Tally Lamp Information [f]	f.tally.mode :=<*string*>	Selected from f.tally.mode.list	GC-U	Tally lamp mode	
Tally Lamp Information [f]	f.tally.mode.list :=<*string*>	preview, program	G---	Tally lamp mode list	
Standby Information [f]	f.standby :=<*string*>	Selected from f.standby.list	G--U	Standby	
Standby Information [f]	f.standby.list :=<*string*>	idle, standby	G---	Standby list	

Table ⅲ-2 CR-N500-dependent Information of info.cgi/control.cgi

Parameter Type	Item Name	Value Type/Range	Attribute	Description	Capture/ exposure mode
Light Amount Correction Information [c]	c.<c>.ae.gainlimit.max.max :=<*int*>	**Fixed to 360 (equivalent to 36 dB)**	G--U	Maximum configurable gain limit value on maximum (upper) side	
Light Amount Correction Information [c]	c.<c>.me.gainlimit.max.max :=<*int*>	**Fixed to 360 (equivalent to 36 dB)**	G--U	Maximum configurable gain limit value on maximum (upper) side	
Light Amount Correction Information [c]	c.<c>.nd.mode.list :=<*string*>	**Fixed to manual**	G---	ND filter mode list	
Light Amount Correction Information [c]	c.<c>.nd.filter :=<*int*>	Selected from c.<c>.nd.filter.list	G**C**-U	ND filter mode is specified. The ND filter can be specified/read.	
Light Amount Correction Information [c]	c.<c>.nd.filter.list :=<*string*>	**0, 400, 1600, 6400**	G---	ND filter list 400 -> 1/4 1600 -> 1/16 6400 -> 1/64 0: ND filter OFF	
Color Correction Information [c]	c.<c>.cp.list :=<*string*>	**normal1_bt709, normal1_bt2020, widedr_bt709, widedr_bt2020, clog3_bt2020, clog3_bt709, off**	G---	Custom picture list	
Color Correction Information [c]	c.<c>.gamma.list :=<*string*>	**normal1, normal2, normal3, normal4, widedr, clog3**	G---	Gamma list	
Zoom Information [c]	c.<c>.zoom.mag.list :=<*string*>	**100, 150, 300, 600**	G---	Digital zoom ratio list (digital teleconverter)	

(End)