



# **Remote Camera Settings Protocol Specifications**

Canon Inc.

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| 000      | May 19, 2021  | -        | First edition   |
| 001      | Nov. 11, 2021 | -        | Added support information for CR-X300   |
| 002      | Dec. 07, 2022 | -        | Added support information for CR-N700   |
| 003      | Sep. 1, 2023  | -        | Added support information for CR-N500/CR-N300 firmware 1.3.0<br>Added support information for CR- X300 firmware 1.1.0<br>Added support information for CR-N7 firmware 1.2.0<br>Added support information for CR-N100                  |
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| 006      | Jul. 31, 2025 | -        | Updated the version of product(s) that supports the XC protocol to the latest firmware  |

# Chapter 1. Introduction

This document specifies the settings protocol, which is used for Canon remote cameras. It is possible to use the settings protocol to view and update the settings items for Canon remote camera.

This document applies to the combinations of models and firmware versions listed below. As a general rule, the entire text of this document applies only to these combinations, unless otherwise specified.

*Table 1. Combinations of Models and Firmware Versions to which This Document Applies*

| Model   | Firmware Version |
|---------|------------------|
| CR-N700 | 1.6.0            |
| CR-N500 | 1.7.0            |
| CR-N300 | 1.7.0            |
| CR-N100 | 1.2.0            |
| CR-X300 | 1.4.0            |

## 1.1. Use of this Document

This document is for developers of peripheral equipment and applications using the Canon remote cameras. Use of this document requires knowledge of application development.

## Chapter 2. Terms

Some of the terms related to this document are explained below.

*Table 2. Terms*

| Terms                 | Description   |
|-----------------------|---|
| 802.1x Authentication | A method for authenticating users on LANs standardized by IEEE.   |
| DDNS                  | An abbreviation of Dynamic Updates in the Domain Name System. Mechanism for dynamically registering and managing correspondence between dynamically assigned IP addresses and their host names. |
| H.264 / H.265         | The video encoding method standardized jointly by ITU-T and ISO/IEC.  |
| ISO 3166-1 alpha-2    | This has been standardized by ISO as a country code using two Latin characters.   |
| ISO 639               | An international standard for language codes that has been standardized by ISO.   |
| JPEG                  | Digital video image compression method. Abbreviation of Joint Photographic Experts Group.<br>Generally refers to the image data formed by using the JPEG compression method.                    |
| RTP                   | An abbreviation of Real-time Transport Protocol.<br>Communication protocol for transmitting continuous data streams such as audio and video in real time.                                       |
| RTCP                  | An abbreviation of Real-time Transport Control Protocol.<br>Communication protocol for flow control of RTP transmission/reception.  |
| RTSP                  | An abbreviation of Real Time Streaming Protocol.<br>Communication protocol for controlling streaming media.   |



## Chapter 3. Protocol Overview

The settings protocol is one of the protocols that provides the function for viewing and updating the remote camera setting items.

The settings protocol is provided as an HTTP service of the remote camera.

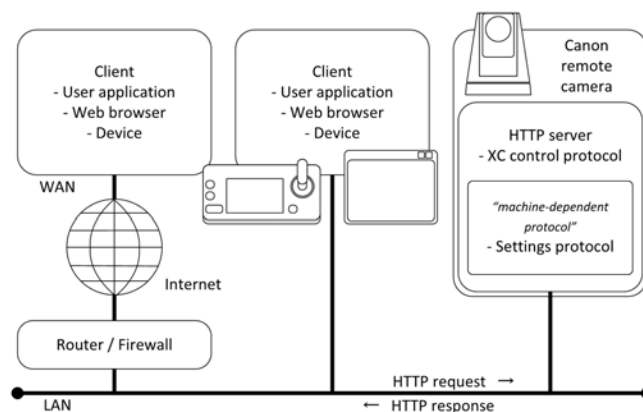


Figure 1. Settings Protocol Concept Diagram

# Chapter 4. Settings Protocol

## 4.1. Interface Specifications

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

- System for transaction and session settings
- Structure of requests and responses
- Overview of protocol commands and syntax

### 4.1.1. Transactions and Sessions

The settings protocol specifies processes that should be executed in the following format. Each process that should be executed is called a “transaction”.

Syntax:

```
GET /admin/-set-?<transaction1>=<parameter1>[&<transaction2>=<parameter2>...] HTTP/1.1
```

In the settings protocol, it is possible to read and write the various setting values for a combination of multiple transactions in a batch.

When executing a read or write for multiple setting values, if an error occurs during the process or a write from another client is executed at the same time, the integrity of the read values and the setting values on the camera may be lost.

In the settings protocol, the integrity of the setting values is ensured by grouping a series of transactions as a “session” and processing reads and writes in a batch.

Example:

```
GET /admin/-set-?ig00=1&ig01=0 HTTP/1.1
```

#### NOTE

In the example, the two transactions that are writes of the specified settings “RTSP (ig00)” and “RTSP authentication method (ig01)” are grouped and published as one session.

#### 4.1.1.1. System for Maintaining Session Integrity

Sessions operate based on the following procedure and system to maintain the integrity of a series of transactions.

- The client that starts the session is identified by its IP address.<sup>[1]</sup>

- Parallel sessions are not allowed. If a session has been established already and then there is a request by another client (IP address) to start a session (OPEN), the new request is denied.
- If a setting value is changed (WRITE) before a session starts, the session starts implicitly.
- Updates (WRITE) by each transaction during a session are temporarily performed for the work area. They are reflected in the main settings when saving the session (SAVE).
- Integrity between the results of setting operations by each transaction is verified by automatically running a settings change verification (VERIFY) when saving (SAVE) a series of setting operations.
- The session closes when you finish saving (SAVE) a series of setting operations or when you finish discarding a series of setting operations (CLOSE).

It is possible to view setting values that have not been updated without starting a session. In addition, locking is not performed based on sessions in which setting is being performed.

#### 4.1.1.2. Transaction Type

The following transaction types are defined. Sessions are built by using transactions to view and update a series of setting values.

Table 3. Transaction Type

| Transaction Type              | Transaction Command | Description   |
|-------------------------------|---------------------|---|
| Start session                 | OPEN                | Intentionally starts a session.<br><b>Note:</b> It is possible to schedule a session before executing a WRITE.  |
| View setting values           | READ                | Views setting values in the work area.  |
| Change setting values         | WRITE               | Changes setting values in the work area.<br><b>Note:</b> If OPEN has not been executed, the session starts automatically.                                     |
| Verify setting change details | VERIFY              | Checks the integrity of a combination of setting values.<br><b>Note:</b> It is possible to intentionally execute a check before executing a SAVE.             |
| Save setting change details   | SAVE                | Performs a VERIFY and saves setting values if there are no errors.<br><b>Note:</b> Automatically performs a REBOOT when items requiring a reboot are updated. |

| Transaction Type         | Transaction Command | Description   |
|--------------------------|---------------------|---|
| Discard session          | CLOSE               | Discards settings changes in the work area and closes the session.<br><b>Note:</b> This can also be executed by a client other than the session owner |
| Reboot                   | REBOOT              | Restarts the remote camera.   |
| Restore initial settings | REVERT              | Returns the setting values to the factory default settings, and restarts.   |

### 4.1.2. Request

In the settings protocol, setting values are viewed and updated using settings protocol parameters that show the transaction type. Settings protocol parameters are received by the HTTP server for the remote camera as parameters for an HTTP request.

- The settings protocol complies with HTTP/ 1.1, HTTP/2 and CGI/1.1.
- It is possible to use GET or POST as an HTTP method.
- The URI is made from settings protocol parameters that start with “/admin/-set-”.
- Basic authentication or Digest authentication is required for system administrators.

Syntax:

```
GET /admin/-set-?<Name1>=<Value1>[&<Name2>=<Value2>...] HTTP/1.1
```

### 4.1.3. Response

The results from viewing and updating setting values in the settings protocol are sent as an HTTP response from the HTTP server for the remote camera.

The settings protocol response is made up of the HTTP status and five processing results.

- Status
- Server errors
- Parameter errors
- List of viewed setting values
- Reboot information

Syntax:

```

HTTP/1.1 200 OK
Pragma: no-cache
Cache-Control: no-cache
Accept-Ranges: none
Content-Type: text/plain; charset=utf-8 *1
Content-Length: <MessageBodyLengthValue>
Date: <TimeStamp>
Server: VB
<blank Line>
Status=<StatusCode> *2
[ServerError=<ErrorCode>[,<ErrorCode>]] *3
[SettingError=<ErrorCode>[,<ErrorCode>]] *4
[Type<Name1>=<DataType1>]
[Val<Name1>=<Value1>] *5
reboot=[<NeedsReboot>] *6
END

```

**NOTE**

Content-Type is always “text/plain; charset=utf-8” and the end of the line is LF (line feed) with no CR (carriage return).

For information about Status, see '[Status](#)'.

The return of a ServerError is determined based on the value of Status. For details, see '[Server errors](#)'.

The return of a SettingError is determined based on the value of Status. For details, see '[Parameter errors](#)'.

URL encoding is performed on returned setting values.

For information about reboot, see '[Reboot Information](#)'.

**4.1.3.1. HTTP Status**

The processing results for HTTP protocol levels are returned as the HTTP status. The main return values and a description of these values are shown below.

*Table 4. HTTP Status*

| 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.               |

#### 4.1.3.2. Status

Status is a message body item that shows an error that has occurred in transaction processing when a request is processed at the HTTP protocol level.

When an error is reported in Status, the HTTP status is returned as “200 OK”. The status return values and meanings are shown below.

Table 5. Status

| Status              | Description  |
|---------------------|--|
| 0 : Success         | Processed normally.<br><b>Note:</b> Server errors and parameter errors are not returned. |
| 1 : Server Error    | Server errors<br><b>Note:</b> A server error value is returned.                          |
| 2 : Parameter Error | Parameter errors<br><b>Note:</b> A parameter error value is returned.                    |

#### 4.1.3.3. Server errors

A server error is a message body item that is returned when an error occurs in command processing. If multiple errors occur, errors are listed using ‘,’ separation.

The return values and meanings are shown below.

Table 6. Server Errors

| Server errors                 | Description   |
|-------------------------------|---|
| 4 : Unknown CGI parameter     | An unknown CGI parameter was specified. <sup>[2]</sup>  |
| 5 : Conflict CGI access       | An OPEN, WRITE, or SAVE transaction was locked by a session on another client. <sup>[3]</sup>   |
| 6 : Unknown Element           | An unknown setting item was specified in a READ transaction. <sup>[4]</sup>   |
| 7 : Can't allocate memory     | Could not secure work memory. <sup>[3]</sup>  |
| 9 : Subscript is over maximum | The subscript specified in the array-type setting variable for a WRITE or WRCHECK transaction exceeds the maximum number of arrays. <sup>[4][5]</sup> |

#### 4.1.3.4. Parameter errors

Parameter errors are message body items that show errors that have occurred when processing verification of setting change details for setting values specified in the settings protocol. If multiple errors occur, errors are listed using ‘,’ separation.

There are two types of parameter error: “single-item errors” and “combination errors”.

- In the process for verifying setting change details, errors detected in checks based on the data type are “single item errors”.<sup>[6]</sup>When there is a single-item error, setting values in the work area are not updated and other transaction processes are not affected.]
- In the process for verifying setting change details, errors detected in integrity checks for combined setting items are “combination errors”.<sup>[6]</sup>

The following shows the return value, message, and description.

Table 7. Parameter Errors

| Parameter errors             | Description  |
|------------------------------|--|
| C000 : read only             | Single-item error: Constant error<br>A change in value was specified for an item that cannot be changed                              |
| C001 : not specified         | Single-item error<br>A null value was specified for a required setting item  |
| C002 : invalid format        | Single-item error<br>The value which does not match the data type of the setting item was specified.                                 |
| C003 : out of range          | Single-item error<br>The setting item has a range limit and the specified value is out of the range                                  |
| C004 : illegal value         | Combination error<br>The value which does not match the format of the setting item was specified. <sup>[7]</sup>                     |
| C005 : illegal combination   | Combination error<br>An inconsistency was detected in the combination of setting items   |
| C006 : duplicate value       | Combination error<br>The same value was specified for more than one item that does not allow duplication                             |
| C007 : inconsistent value    | Combination error<br>A setting value that contradicts another setting item was detected  |
| C008 : password unacceptable | Single-item error: Administrator password item<br>The administrator password and the confirmation input did not match <sup>[8]</sup> |
| C009 : system file not found | Combination error<br>Did not find the required system file in the setting  |

| Parameter errors                             | Description  |
|--|--|
| C021 : string too long                       | Single-item error: string setting item<br>The specified string exceeds the upper limit                                 |
| C022 : illegal characters                    | Single-item error: string setting item<br>The specified string contains a character that is not allowed <sup>[9]</sup> |
| C023 : string too short                      | Single-item error: string setting item<br>The specified string falls below the lower limit                             |
| C024 : invalid user name                     | Single-item error<br>An invalid user name was specified in the user name   |
| C025 : password strength is too weak         | Single-item error<br>A weak password was specified   |
| C201 : too many list entries                 | Single-item error: list setting item<br>The number of specified list setting items exceeds the upper limit             |
| C601 : too many user entries                 | Single-item error: user list item<br>The number of specified user setting items exceeds the upper limit                |
| C602 : invalid user name is found            | Single-item error: user list item<br>An invalid user name was specified in the user setting item <sup>[10]</sup>       |
| C603 : invalid password is found             | Single-item error: user list item<br>An invalid password was specified in the user setting item <sup>[11]</sup>        |
| C611 : access from all hosts is prohibited   | Single-item error: host list item<br>The specified value does not allow access to all hosts                            |
| C612 : too many access control entries       | Single-item error: host list item<br>The number of access control setting items exceeds the upper limit                |
| C613 : incorrect address is found            | Single-item error: host list item<br>An incorrect address was specified in the access control setting item             |
| C616 : duplicate entries are found           | Single-item error: host list item<br>Duplicate access control setting items were specified                             |
| C619 : user name and password are duplicated | Single-item error: user list item<br>Duplicate user name and password were specified in the user setting item          |



#### 4.1.3.5. 4.1.3.5 Reboot Information

Reboot information is a message body item that shows whether there has been a change to a setting item that requires a reboot in order to apply the value. It is appended immediately before the end string of the response, “END” to a SAVE or WRCHECK '[Check Setting Details \(WRCHECK\)](#)' request.

The reboot information values and their meanings are shown below.

*Table 8. Reboot Information*

| Reboot information | Description  |
|--------------------|--|
| 0                  | Setting items that require a reboot in order to apply the value have not been changed. |
| 1                  | Setting items that require a reboot in order to apply the value have been changed.     |

Example: Reboot required

```
HTTP/1.1 200 OK
. . .
Status=0
reboot=1
END
```

### 4.1.4. Structure of the Settings Protocol

The settings protocol is made up of one command, and individual requests are expressed using parameters.

#### 4.1.4.1. Syntax for the Settings Protocol

The settings protocol command is made up of the command name and parameters. The syntax requirements for specifying command names and parameters are shown below.

- The command name is in the format “-set-”.
- Command names and parameters are separated using ‘?’.
- The parameter is in the format “<Name>=<Value>”.
- When specifying multiple parameters, use the ‘&’ separator in the URI query string.<sup>[12]</sup>
- The parameter performs URL encoding.<sup>[13]</sup>
- There are no limitations in the order of parameter specification.<sup>[14]</sup>

Example:

```
http://192.168.100.1/admin/-set-?ig00=1&pt=4&em=2
```

## 4.2. Command Specifications

The command specifications for the settings protocol are explained below.

### 4.2.1. Types of Transactions (pt)

The type of transaction to request is specified by the “pt” parameter. For the "transaction types" in '[Transaction Type](#)', the methods for specifying the actual command parameters are shown below.

- WRITE is not specified for this transaction type. Specify it using the “pa” transaction attribute.
- READ is not specified for this transaction type. Specify it using the “el” setting value view and the “tl” setting type view.

The transaction types specified with “pt” and their details are shown below.

Table 9. Transaction Type (pt)

| Transaction Type              | Pt | Transaction Command | Description  |
|-------------------------------|----|---------------------|--|
| None                          | 0  | NONE                | No action <sup>[15]</sup>  |
| Start session                 | 1  | OPEN                | Starts a session.  |
| Verify setting change details | 2  | CHECK               | Checks the integrity of a partial combination of setting values. <sup>[16]</sup> |
| Verify setting change details | 3  | VERIFY              | Checks the integrity of a complete combination of setting values.                |
| Save setting change details   | 4  | SAVE                | Saves the setting value (Executes an implicit VERIFY).                           |
| Discard session               | 5  | CLOSE               | Discards settings changes and closes the session.                                |
| Reboot                        | 6  | REBOOT              | Reboot (Executes an implicit CLOSE)  |
| Restore initial settings      | 7  | REVERT              | Recovers the factory default settings (Executes an implicit REBOOT).             |
| Forced settings change        | 8  | COMPL               | Continuous execution of CLOSE + WRITE + SAVE                                     |
| Check setting details         | 9  | WRCHECK             | Check WRITE parameter  |

#### 4.2.1.1. Commands

Syntax:

```
http://<ipaddress>/admin/-set-?pt=<Value>
```

The details of types that combine the actions of multiple transactions are shown below.

##### 4.2.1.1.1. Forced Change of Settings Details (COMPL)

COMPL is a transaction that combines CLOSE, WRITE, and SAVE. CLOSE removes conflicts with other transactions, and executes a setting value change and save all at once.

- If COMPL is specified without specifying WRITE with the transaction attribute (pa) '4.2.2 Transaction Attributes (pa)', CLOSE and SAVE cannot be executed.
- If an error occurs in the VERIFY that is implicitly performed when a WRITE or SAVE is executed, the WRITE or SAVE is not completed, but a CLOSE is executed.
- If an error occurs in the VERIFY, SAVE is not completed, but the session that started with the WRITE remains ESTABLISHED. Note that the setting values updated in the work area are retained.

##### 4.2.1.1.2. Check Setting Details (WRCHECK)

The WRCHECK transaction is a transaction that checks WRITE parameters. It performs WRITE-equivalent processes but does not change setting values.

It is possible to check whether there are any problems with change details if you perform this transaction before making the changes. It is possible to also retrieve the setting items and setting values for which an error message or error occurred by combining this with '[Error Message Settings \(em\)](#)'.

- The setting value is not changed, but WRITE-equivalent processes are performed. Therefore, if there is a conflict with another transaction, it is locked.

#### 4.2.1.2. Protocol example

##### ■ Normal

```
GET /admin/-set-?pt=4&ha03=20

HTTP/1.1 200 OK
Content-Type: text/plain; charset=utf-8
. . .
Server: VB

Status=0
```

```
reboot=0
END
```

**NOTE**

This is an example of changing the setting item, "Maximum number of clients (ha03)", to 20 and saving it.

### 4.2.2. Transaction Attributes (pa)

Append the attribute parameter "pa" to the transaction type and controls the transaction behavior. The transaction attributes and their details are shown below.

Table 10. Transaction Attributes (pa)

| Transaction Attribute  | pa | Target Transaction | Description   |
|------------------------|----|--------------------|---|
| Forced session start   | h  | OPEN, WRITE        | Force starts when there are no changes to setting values          |
| Restrict session start | p  | WRITE, SAVE, CLOSE | Processing is not allowed while a session is not started          |
| Maintain session       | s  | SAVE               | Maintains the session even after the setting value has been saved |

#### 4.2.2.1. Commands

Syntax:

```
http://<ipaddress>/admin/-set-?pt=<Value>&pa=<Value1>[<Value2>...]
```

- For "pa", it is possible to specify multiple attributes at the same time.  
e.g. "pa=ps" Specifies the restrict session start 'p' and the maintain session 's'.
- Attribute values that are outside of the targets are ignored in the executed transaction.
- Even if you specify an attribute value that is undefined, it will be ignored and an error will not occur.

### 4.2.3. Session Identifier (id)

IP addresses are used to identify each client, but it is possible to also use the "id" session identifier to explicitly specify an IPv4 address.

#### 4.2.3.1. Commands

Syntax:

```
http://<ipaddress>/admin/-set-?pt=<Value>&id=<ipaddress>
```

- Specify the setting value with an IP address in decimal notation.
- If you specify a value that cannot be interpreted as an IP address, such as “0.0.0.0” or “255.255.255.255”, an error occurs and all transactions for that session are discarded.
- If you specify a session identifier, it is given priority over IP addresses detected in the IP layer when evaluating.
- Session identifiers are evaluated only in OPEN, WRITE, and SAVE transactions. They are ignored in other non-target transactions.

#### 4.2.4. View Setting Value (el)

View setting value is the READ transaction which specifies the parameter “el”.

##### 4.2.4.1. Commands

Syntax:

```
http://<ipaddress>/admin/-set-?el=<Name1>[, <Name2>...]
```

- For information regarding the item name definitions for setting items, see '[Specifications for View/Setting Information Items](#)'.
- It is possible to omit the subscript specification for array-type setting items. In this case, it is assumed that all array elements have been specified.
- It is impossible to specify subscript for non-array-type setting items.
- It is possible to specify “el=\*”. In this case, it is assumed that all setting items have been specified.

##### 4.2.4.2. Response

Syntax:

```
HTTP/1.1 200 OK
. . .
Val<Name1>=<Value1>
Val<Name2>=<Value2>
. . .
END
```

- The “Val” prefix, which shows a view of the setting value, is attached to the returned item name.

#### 4.2.4.3. Protocol Example

##### ■ Viewing the setting value

```
GET /admin/-set-?el=ha03,ha06

HTTP/1.1 200 OK
Content-Type: text/plain; charset=utf-8
. . .
Server: VB

Status=0
Valha03=30
Valha06=0
END
```

##### NOTE

This is an example of retrieving the setting values for the “Maximum number of clients (ha03)” and “Maximum connection time (ha06)” setting items.

##### ■ Viewing array items

```
GET /admin/-set-?el=ip10

HTTP/1.1 200 OK
Content-Type: text/plain; charset=utf-8
. . .
Server: VB

Status=0
Valip10-0=192.168.100.1
Valip10-1=192.168.100.2
Valip10-2=192.168.100.3
Valip10-3=192.168.100.4
Valip10-4=192.168.100.5
Valip10-5=192.168.100.6
Valip10-6=192.168.100.7
Valip10-7=192.168.100.8
Valip10-8=192.168.100.9
Valip10-9=192.168.100.10
Valip10-10=192.168.100.11
Valip10-11=192.168.100.12
Valip10-12=192.168.100.13
Valip10-13=192.168.100.14
Valip10-14=192.168.100.15
Valip10-15=192.168.100.16
Valip10-16=192.168.100.17
Valip10-17=192.168.100.18
Valip10-18=192.168.100.19
Valip10-19=192.168.100.20
```

END

**NOTE**

This is an example of acquiring the setting item "Host access-restricted network address (ip10)". The network address is a reference example.

Since the setting item "Host access -restricted network address (ip10)" is an array-type setting item, all array values reply in "el=ip10". To retrieve individual values, you need to specify an array element subscript (an integer of 0 or more) at the end, such as "el=ip10-2".

For information about array types, see '[Data Type Specifications](#)'.

### ■ Viewing the elements of array items

```
GET /admin/-set-?el=ip10-2 *1
```

```
HTTP/1.1 200 OK
```

```
Content-Type: text/plain; charset=utf-8
```

```
. . .
```

```
Server: VB
```

```
Status=0
```

```
Valip10-2=192.168.100.3
```

```
END
```

**NOTE**

This is an example of acquiring the third network address (subscript: 2) of setting item "Host access -restricted network address (ip10)"

## 4.2.5. View Setting Type (tl)

View setting type is the READ transaction for which the "tl" parameter is specified.

### 4.2.5.1. Commands

Syntax:

```
http://<ipaddress>/admin/-set-?tl=<Name1>[,<Name2>...]
```

- "tl" is used in the same way as view setting value "el".

### 4.2.5.2. Response

Syntax:

```
HTTP/1.1 200 OK
```

```

. . .
Typ<Name1>=<DataType1>
Typ<Name2>=<DataType2>
. . .
END

```

- The “Typ” prefix, which shows a view of the setting type, is attached to the returned item name.
- For information on returned data types, see '[Data Type Specifications](#)'.
- For information regarding the item type definitions for setting items, see '[Specifications for View/Setting Information Items](#)'.

#### 4.2.5.3. Protocol Example

##### ■ Viewing the setting type

```

GET /admin/-set-?tl=ha03,ha06

HTTP/1.1 200 OK
Content-Type: text/plain; charset=utf-8
. . .
Server: VB

Status=0
Typha03=int%280%2C30%29
Typha06=int%280%2C65535%29
END

```

#### NOTE

This is an example of retrieving the setting types for the “Maximum number of clients (ha03)” and “Maximum connection time (ha06)” setting items.  
 “int%280%2C30%29” is the URL encoding result for “int(0,30)”.  
 “int%280%2C65535%29” is the URL encoding result for “int(0,65535)”.

#### 4.2.6. Language Setting (lg)

The encoding schema for multibyte strings (unicode type) used in settings protocol requests and responses is UTF-8. This language setting is specified using “lg” and two ISO 639 letters. It is possible to use “lg” to specify the language of unicode type<sup>[17]</sup> setting items. The language setting values are shown below.

Table 11. Language Settings

| Language Setting Value lg | Description       |
|---------------------------|-------------------|
| en                        | English (default) |



| Language Setting Value lg | Description |
|---------------------------|-------------|
| ja                        | Japanese    |

#### 4.2.6.1. Commands

Syntax:

```
http://<ipaddress>/admin/-set-?lg=<Language>&<Name1>=<Value1>...
```

- Language setting values are not case-sensitive.
- If the language setting is omitted or an invalid setting value is entered, the language setting will be interpreted as being the default setting of English.
- The language setting for a string is not checked. If you set English and specify a string in another language such as Japanese, it will not result in an error.
- If you execute a READ for a setting item using a language setting that is different from the WRITE language setting, the resulting READ value is a null value.
- The HTTP Accept-Language header field is ignored.

#### 4.2.7. Changing Setting Values

WRITE does not require a specification to show the transaction type. It directly specifies a setting item for “<Name>” in the format “<Name>=<Value>”.

##### 4.2.7.1. Commands

The syntax for specifying a setting item is a simple-type (non-array type) to point to one value, and an array type to point to an array element.

###### ■ Simple type

A simple-type (non-array type) setting item that points to one value is specified with “<Name>”.

Syntax:

```
http://<ipaddress>/admin/-set-?<Name1>=<Value1>[&<Name2>=<Value2>...]
```

Example:

```
http://<ipaddress>/admin/-set-?ca01=192.168.100.1
```

###### ■ Array type

An array-type setting item that points to an array element is specified with “<Name>-<Index>”.

Syntax:

```
http://<ipaddress>/admin/-set-?<Name1>-<Index1>=<Value1>[&<Name1>-<Index2>=<Value2>...]
```

Example:

```
http://<ipaddress>/admin/-set-?pt=4&db02-0=Camera
```

- For information regarding the item name definitions for setting items, see '[Specifications for View/Setting Information Items](#)'.
- It is impossible to omit the subscript specification for array-type setting items.
- It is impossible to specify subscript for non-array-type setting items.
- If the setting value “<Value>” is a numerical type, the leading whitespace is ignored.  
e.g. “ha03= 10” is the same as “ha03=10”.
- If the setting value “<Value>” is a numerical type, a trailing whitespace is treated as a format error and “C002:invalid format” is returned.  
e.g. “ha03=10 ” is a format error for a numerical value.
- If the setting value “<Value>” is not a numerical type, leading and trailing whitespaces are treated as a value.  
e.g. “db02-0=camera”, “db02-0= camera”, and “db02-0=camera ” are different values.

#### 4.2.7.2. Protocol Example

##### ■ Setting simple types

```
GET /admin/-set-?em=2&pt=4&ha03=10 *1

HTTP/1.1 200 OK
Content-Type: text/plain; charset=utf-8
. . .
Server: VB

Status=0
reboot=0
END
```

#### NOTE

This is an example of setting the “Maximum number of clients (ha03)” setting item to 10.

### ■ Setting an array-type element

```
GET /admin/-set-?em=2&pt=4&ip10-3=192.168.100.30 *1
```

```
HTTP/1.1 200 OK
Content-Type: text/plain; charset=utf-8
. . .
Server: VB

Status=0
reboot=0
END
```

#### NOTE

This is an example of setting the network address "192.168.100.30" to the 4th (subscript: 3) of setting item "Host access -restricted network address (ip10)".

### ■ Setting a multi-byte character for a simple-type

```
GET /admin/-set-?em=2&pt=4&db02-0=%E3%82%AB%E3%83%A1%E3%83%A9 *1
```

```
HTTP/1.1 200 OK
Content-Type: text/plain; charset=utf-8
. . .
Server: VB

Status=0
reboot=0
END
```

#### NOTE

This is an example of setting "Camera" for the "Camera name (multibyte characters) (db02-0)" setting item.

## 4.2.8. Error Message Settings (em)

These settings specify the output level for error messages that show transaction processing results and the details of errors that have occurred. In the error message setting, specify the "em" parameter.

The error message setting values are shown below.

Table 12. Error Message Settings

| Error Message Setting Value em | Description                          |
|--------------------------------|--------------------------------------|
| 0                              | No message displayed (default value) |

| Error Message Setting Value em | Description  |
|--------------------------------|--|
| 1                              | Message displayed (No setting item name displayed)                   |
| 2                              | Message displayed (Setting item name and settingvalue are displayed) |
| 3                              | Error number displayed (Setting item namedisplayed)                  |

#### 4.2.8.1. Commands

Syntax:

```
http://<ipaddress>/admin/-set-?em=<Value>
```

#### 4.2.8.2. Response

Syntax: [em=0] No message displayed

```
HTTP/1.1 200 OK
. . .
Status=<TransactionStatus>
[ServerError=<ErrorCode>[,<ErrorCode>]]
[SettingError=<ErrorCode>[,<ErrorCode>]]
. . .
END
```

Syntax: [em=1] Message displayed (No setting item name displayed)

```
HTTP/1.1 200 OK
. . .
Status=<TransactionStatus>
[ServerError=<ErrorCode>:<ErrorMessage>[,<ErrorCode>:<ErrorMessage>]]
[SettingError=<ErrorCode>:<ErrorMessage>[,<ErrorCode>:<ErrorMessage>]]
. . .
END
```

Syntax: [em=2] Message displayed (Setting item name displayed)

```
HTTP/1.1 200 OK
. . .
Status=<TransactionStatus>
[ServerError=<ErrorCode>:<ErrorMessage>(<Name>=<Value>)[,<ErrorCode>:<ErrorMessage>(<Name>=<Value>
)]]
[SettingError=<ErrorCode>:<ErrorMessage>(<Name>=<Value>)[,<ErrorCode>:<ErrorMessage>(<Name>=<Value>
>)]]
```

```
. . .  
END
```

#### 4.2.8.3. Protocol example

##### ■ [em=0] No message displayed

```
GET /admin/-set-?em=0&pt=4&ha03=100  
  
HTTP/1.1 200 OK  
Content-Type: text/plain; charset=utf-8  
. . .  
Server: VB  
  
Status=2  
SettingError=C003  
reboot=0  
END
```

#### NOTE

This is an example of setting the “Maximum number of clients (ha03)” setting item to 100.

##### ■ [em=1] Message displayed (No setting item name displayed)

```
GET /admin/-set-?em=1&pt=4&ha03=100  
  
HTTP/1.1 200 OK  
Content-Type: text/plain; charset=utf-8  
. . .  
Server: VB  
  
Status=2  
SettingError=C003%3Aout+of+range  
reboot=0  
END
```

#### NOTE

“C003%3Aout+of+range” is the URL encoding result for “C003: out of range”.

##### ■ [em=2] Message displayed (Setting item name displayed)

```
GET /admin/-set-?em=2&pt=4&ha03=100  
  
HTTP/1.1 200 OK  
Content-Type: text/plain; charset=utf-8
```

```

. . .
Server: VB

Status=2
SettingError=C003%Aout+of+range%28ha03%3D100%29
reboot=0
END

```

**NOTE** “%28ha03%3D100%29” is the URL encoding result for “(ha03=100)”.

## 4.3. Data Type Specifications

The value formats and ranges for each setting item are specified for each setting value that is handled by the settings protocol. When changing settings, the values are checked based on the rules for that item. The settings protocol data types and data type notation specifications are explained below.

### ■ Numerical value types:

There are ‘int’ decimal types and ‘fixed’ fixed-point types. The minimum value and maximum value sets (min, max) are added to the type name and shown as int(-5, 5) or fixed(0.00, 10.00). The maximum value for int and uint are shown as ‘-’.

Table 13. Data Type Specification - Integer Type

| Type  | Description   | Example of values/Range            |
|-------|---|------------------------------------|
| int   | Signed decimal integer type, maximum value 2147483647   | e.g. int(-65536, 65535) int(10, -) |
| uint  | Unsigned decimal integer type, maximum value 4294967295 | e.g. uint(0, 256) uint(256, -)     |
| fixed | Signed decimal fixed point number type                  | e.g. fixed(-270.00, 270.00)        |

### ■ Bit type:

‘hex’ specifically states the maximum number of bytes. For example, it is shown as hex[4]. It is possible to set a bit string with less than the maximum number of bytes.

Table 14. Data Type Specification - Bit Type

| Type | Description   | Example of values/Range |
|------|---|-------------------------|
| hex  | Hexadecimal. Setting values can be omitted by the byte. | e.g. hex[24] : 24Byte   |

### ■ Obfuscated password type:

Hexadecimal string corresponding to bit string with obfuscated password. A combination of the minimum and maximum character lengths (min,max) after obfuscation cancellation is added to the type name as the character length range specification and is expressed as hpass[36](8,32).

*Table 15. Data Type Specification - Obfuscated Password Type*

| Type  | Description              | Example of values/Range |
|-------|--------------------------|-------------------------|
| hpass | Obfuscated password type | e.g. hpass[36](8,32)    |

■ Camera control parameter type:

Types include 'coord', which is used in the pan/tilt range and the shooting range for the visibility range, and 'scope', which is used in the zoom range.

*Table 16. Data Type Specification - Camera Control Parameter Type*

| Type  | Description   | Example of values/Range |
|-------|---|-------------------------|
| coord | Coordinates<br><b>Note:</b> Same as fixed(-179.99, 180.00)  |                         |
| scope | Hexadecimal (Setting values can be omitted by the byte)<br><b>Note:</b> Same as fixed(0.01, 300.00) |                         |

■ Video transfer parameter type:

As the data type representing the video resolution range, there is vscale. The element is represented by adding a pair of minimum value, min, and maximum value, max (min, max) using "x". The combined format is represented by "width" x "height", where "width" represents the width of the video while "height" represents the height of the video.

*Table 17. Data Type Specification - Video Transfer Parameter Type*

| Type   | Description     | Example of values/Range    |
|--------|-----------------|----------------------------|
| vscale | Resolution type | vscale(640x360, 3840x2180) |

■ Character string type:

The type name is defined according to the application, and the character set for each type is different. They are all single-byte characters, the maximum length is explicitly shown, and they are expressed as pass[15], mail[63] (multi-line strings are [line length x number of lines]).

*Table 18. Data Type Specification - Character String Type*

| Type | Description | Example of values/Range   |
|------|-------------|---|
| name | Name        | Range (alphanumeric character, '-' (hyphen), and '_' (underscores)) |

| Type  | Description   | Example of values/Range  |
|-------|---|--|
| pass  | Password<br><b>Note:</b> The character length specified range may be added and expressed as pass[31](8,31). | Range (0x20 to 0x7E)   |
| host  | Host name   | Range (alphanumeric character, '-'(hyphen), '_'(underscores), '.'(period), and ','(comma))                           |
| mail  | E-mail address  | Range (alphanumeric character, '-'(hyphen), '_'(underscores), '.'(period), ':'(double quotation) and '@'(at symbol)) |
| atext | Sentence  | 0x20 ~ 0x7E, \t, \r, \n  |
| uri   | URI type  | 0x21 ~ 0x7E  |
| const | Constant<br><b>Note:</b> A return-specific item type that cannot be changed                                 |  |
| uname | User name   | Range (alphanumeric character, '-'(hyphen) and '_'(underscores) (except first character))                            |

#### ■ Name type:

Used for applications such as the camera name and preset names. The character set for each is different and type names are defined for each character set.

Table 19. Data Type Specification - Name Type

| Type    | Description | Example of values/Range                                      |
|---------|-------------|--|
| ascii   | ASCII       | Range (0x20 to 0x7E) Except for ' ' (double quotation marks) |
| char    | CHARACTER   | Range (0x20 to 0x7E)   |
| unicode | UNICODE     | Multibyte strings with UTF-8 encoding                        |
| nchar   | NCHARACTER  | Range (0x20 to 0x7E) Except for ',' (comma)                  |

Example: Camera name (multibyte characters) (db02-0) unicode

```
GET /admin/-set-?db02-0=%E3%82%AB%E3%83%A1%E3%83%A9 HTTP/1.1
```



### ■ Date and time type:

date is used to set the expiration period of SSL and the date. time is used to set the time.

Table 20. Data Type Specification - Date Time Type

| Type | Description                   | Example of values/Range      |
|------|-------------------------------|------------------------------|
| date | Date type “yyyymmdd” notation | Range (20010101 to 20311231) |
| time | Time type “hhmmss” notation   | Range (000000 to 235959)     |

### ■ Network address type:

Used to set network IP addresses. It is possible to specify both IPv4/v6 but setting items are prepared individually.

Table 21. Data Type Specification - Network Address Type

| Type    | Description   | Example of values/Range |
|---------|---|-------------------------|
| inaddr  | IPv4 address type “xxx.xxx.xxx.xxx” decimal notation<br><b>Note:</b> It is impossible to specify 0.0.0.0 or 255.255.255.255.  |                         |
| inaddr6 | IPv6 address type<br>“xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx” hexadecimal notation<br><b>Note:</b> It is possible to omit a sequence of zeros. For example, fd00::1. |                         |
| inaddrx | IPv4 / IPv6 address shared type<br><b>Note:</b> The notation is based on inaddr and inaddr6.  |                         |
| mcaddrx | IPv4 / IPv6 address shared type<br><b>Note:</b> The notation is based on inaddr and inaddr6.  |                         |

### ■ Local port type:

Local port number. It is the same as int(1,65535). However, it has a unique value in the server, and multiple local port type setting values cannot have the same value.

Table 22. Data Type Specification - Local Port Type

| Type  | Description | Example of values/Range |
|-------|-------------|-------------------------|
| lport | Local port  |                         |

| Type    | Description          | Example of values/Range  |
|---------|----------------------|--|
| hport   | HTTP port            | It is possible to only specify 80 or 1024 to 65535.                        |
| hspport | HTTPS port           | It is possible to only specify 443 or 1024 to 65535.                       |
| rport   | RTSP port            | It is possible to only specify 554 or 1024 to 65535.                       |
| mcport  | RTSP Multicast port  | It is possible to only specify even numbers in the range of 1024 to 65535. |
| amcport | Audio Multicast port | It is possible to only specify 1024 to 65530.                              |

■ User account type:

Management list element type for registered users.

Expressed in the format “username” or “username=<password>” (“username” is a name type and “<password>” is a pass type). Specify the “<password>” portion as a numeric string in ASCII character encoding, showing the name characters as three-digit decimals. It is impossible to view the set password.

Table 23. Data Type Specification - User Account Type

| Type      | Description  | Example of values/Range                                   |
|-----------|--|---|
| uaccent   | User account type  | e.g.<br>“username=1120971151151191111<br>14100”“password” |
| obuaccent | User account type<br>“username” is a name type and “password” is an hpass type. Set an obfuscated password for “password”. |   |

■ Record type:

This is a general composite data type that uses a “:” separated format to combine multiple elements. The element type can be used to combine different types, such as “date:time” or “coordinate vertex aggregation” in other defined elementary data types. It is impossible to omit elements.

Table 24. Data Type Specification - Record Type

| Type      | Description | Example of values/Range                               |
|-----------|-------------|---|
| record( ) | Record      | e.g. record(date, time) Date:time (“20130930:144820”) |

Example: Date and time (bc20) record(date, time)

```
GET /admin/-set-?bc20=20140123%3A150333 HTTP/1.1
```

#### ■ List type:

This is a general composite data type that uses a ‘,’ separated CSV format to combine multiple elements. The element type can be used as a variable length list for the same type, in an elementary data type or record type. The maximum number of items is added to the type and expressed as uaccent <15>. Element duplication and order are not defined in the type.

*Table 25. Data Type Specification - List Type*

| Type | Description | Example of values/Range                    |
|------|-------------|--|
| < >  | List        | e.g. uaccent<15> User (+ password)<br>List |

Example: Domain name (ib23) host[63] <6>

```
GET /admin/-set-?pt=4&ib23=domain1%2Cdomain2 HTTP/1.1
```

**NOTE** “domain1%2Cdomain2” is the URL encoding result for “domain1, domain2”.

#### ■ Array type:

Array types with multiple elements are shown as a number of array elements rather than expressed as a data type. Access to array-type items is specified by appending the “-N” subscript to the information item name. Note that some information items only have one element.

*Table 26. Data Type Specification - Array Type*

| Type                  | Description | Example of values/Range  |
|-----------------------|-------------|--|
| Number of array items | Array type  | e.g. ip10-0=192.168.100.1 Host<br>access -restricted network address |

## 4.4. Specifications for View/Setting Information Items

Information items that can be viewed/set in READ/WRITE transactions of the settings protocol specifications are explained by function.

Notation item List of attributes:

Each information item has different behaviors depending on the role, such as items that can only be viewed, items that can be viewed and updated, and items that require a reboot to apply the updated value.

These behaviors are called attributes. They are shown as abbreviations of the attribute value, as shown in the following table.

*Table 27. View/Setting Items - Attribute Information*

| Attribute   | Attribute Value | Description   |
|---|-----------------|---|
| Can be referenced   | R               | Shows items that can be read by READ transactions                                     |
| Can be set  | W               | Shows items that can be written by WRITE transactions                                 |
| Automatic reboot when set   | B               | Shows items that automatically reboot at the time of a SAVE transaction               |
| Requires a reboot to apply the setting                                  | b               | Shows items that require an explicit REBOOT after a SAVE to apply the values          |
| A null value can be set   | O               | Shows items that can take a null value in a WRITE transaction                         |
| Values are retained even when resetting to the factory default settings | P               | Shows items that retain the values prior to a REVERT when a REVERT is performed       |
| Not possible/not required   | -               | Shows that each attribute behavior is not possible, or does not need to be considered |

A legend of the table for setting information item specifications is shown below.

### Legend for the table of setting items

| Item | Type     | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|----------|-------|---------------|------------|---|----------------------------|
| xx00 | int(0,3) |       | 0             | RWB--      | Non-array-type integers with a range of 0 to 3      |                            |
| yy01 | name     | 20    |               | RW-OP      | Array-type string<br><b>Note:</b> xxxxxxxxxxxxxxxxx |                            |

- **Type:** Shows the item data type.
- **Array:** Shows the number of elements if the item is an array. If this is blank, it indicates that the item is not an array.
- **Initial value:** Shows the initial value for the item. If this is blank, it indicates that there is no initial value.
- **Attributes:** The attribute is expressed in 5 digits. Each digit has the following meaning. It shows how the item behaves.
  - First digit: Whether the setting can be viewed
  - Second digit: Whether the setting can be changed
  - Third digit: Whether a reboot is required and whether the device reboots automatically
  - Fourth digit: Whether a null value can be specified
  - Fifth digit: Status of values that the specified value retains after the device is restored to factory defaults
- **Description:** Shows a description of item value ranges, restrictions, etc.
- **Model Specific Information:** Shows the differences between models that are new functions or significantly added functions.

The description policy of this chapter is as follows.

- Cover all specifications of supported products.  
e.g. For items that are in an exclusive relationship in terms of function selection, both are described in this chapter.
- For values, ranges, and selection options, 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 type range exist

## Specifications of Model A

| Item | Type     | Array | Initial Value | Attributes | Description                                    |
|------|----------|-------|---------------|------------|--|
| xx00 | int(0,2) |       | 0             | RWB--      | Non-array-type integers with a range of 0 to 2 |

## Specifications of Model B

| Item | Type     | Array | Initial Value | Attributes | Description                                    |
|------|----------|-------|---------------|------------|--|
| xx00 | int(0,1) |       | 0             | RWB--      | Non-array-type integers with a range of 0 to 1 |

## Description in this chapter

| Item | Type     | Array | Initial Value | Attributes | Description                                    |
|------|----------|-------|---------------|------------|--|
| xx00 | int(0,2) |       | 0             | RWB--      | Non-array-type integers with a range of 0 to 2 |

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

## Specifications of Model A

| Item | Type     | Array | Initial Value | Attributes | Description                                    |
|------|----------|-------|---------------|------------|--|
| yy01 | int(0,1) |       | 1             | RWB--      | Non-array-type integers with a range of 0 to 1 |

## Specifications of Model B

| Item | Type     | Array | Initial Value | Attributes | Description                                    |
|------|----------|-------|---------------|------------|--|
| yy01 | int(1,2) |       | 1             | RWB--      | Non-array-type integers with a range of 1 to 2 |

## Description in this chapter

| Item | Type     | Array | Initial Value | Attributes | Description                                    |
|------|----------|-------|---------------|------------|--|
| yy01 | int(0,2) |       | 1             | RWB--      | Non-array-type integers with a range of 0 to 2 |

### 4.4.1. System Information

Table 28. View/Setting Items - System Information

| Item | Type                | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|---------------------|-------|---------------|------------|---|----------------------------|
| aa00 | uname[15]<br>(5,15) |       |               | RW—P       | Name of system administrator  |                            |
| aa01 | pass[32]<br>(8,32)  |       |               | -W—P       | Administration password <sup>[18]</sup><br><b>Note:</b> For null values, the value is not changed                     |                            |
| aa02 | pass[32]<br>(8,32)  |       |               | -W—P       | 管Administration password (for confirmation) <sup>[18]</sup><br><b>Note:</b> Specify the same value as aa01            |                            |
| aa11 | hpass[36]<br>(8,32) |       |               | -W-OP      | Administration password (obfuscation) <sup>[19]</sup><br><b>Note:</b> Save the password with an obfuscated aa01 value |                            |
| bb00 | const               |       | admin         | R----      | URL for the settings page   |                            |

### 4.4.2. Device Attribute Information

Table 29. View/Setting Items - Device Attribute Information

| Item | Type  | Array | Initial Value   | Attributes | Description                      | Model Specific Information |
|------|-------|-------|-----------------|------------|----------------------------------|----------------------------|
| ra00 | const |       | CR-xxxxx        | R----      | Model Name                       |                            |
| ra01 | const |       | Ver. x.x.x      | R----      | Firmware version <sup>[20]</sup> |                            |
| ra02 | const |       | (Unit specific) | R----      | MAC address <sup>[21]</sup>      |                            |
| ra09 | const |       | 1               | R----      | Number of video input channels   |                            |
| ra10 | const |       | 3840x2160       | R----      | Maximum image size               |                            |

| Item | Type  | Array | Initial Value   | Attributes | Description                                | Model Specific Information   |
|------|-------|-------|-----------------|------------|--|------------------------------|
| ra11 | const |       | en, ja, zh*3    | R----      | Supports multiple languages                |                              |
| ra12 | const |       | xxxxxx          | R----      | Serial number <sup>[21]</sup>              |                              |
| ra13 | const |       | xxxxxx          | R----      | Build number <sup>[20]</sup>               |                              |
| ra17 | const |       | 3               | R----      | Maximum number of streams                  |                              |
| ra19 | const |       | (Unit specific) | R----      | MAC address (wireless LAN) <sup>[21]</sup> | Not used for CR-X300/CR-N100 |
| ra20 | const |       | 1               | R----      | Maximum number of JPEG streams             |                              |
| ra21 | const |       | 2               | R----      | Maximum number of H.264/ AVC streams       |                              |
| ra22 | const |       | 1               | R----      | Maximum number of H.265/ HEVC streams      |                              |

### 4.4.3. Clocks and Time Zones

Table 30. View/Setting Items - Clocks and Time Zones

| Item | Type                | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|---------------------|-------|---------------|------------|---|----------------------------|
| bc00 | fixed(-12.00,14.00) |       | 9             | RW—P       | Time zone (difference from GMT)   |                            |
| bc01 | int(0,1)            |       | 0             | RW—P       | Procedure for setting the clock<br>0: Specify the time based on bc20<br>1: NTP server <sup>[22]</sup>   |                            |
| bc10 | host[63]            |       |               | RW-OP      | IP address of the NTP server<br><b>Note:</b> This can only be specified when the procedure for setting the clock (bc01) is NTP server (1). This is ignored for null values. |                            |



| Item | Type                | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|---------------------|-------|---------------|------------|---|----------------------------|
| bc11 | int(0,3)            |       | 0             | RW—P       | Procedure for using DHCP <sup>[23]</sup><br>0: Do not use<br>1: Use DHCP<br>2: Use DHCPv6<br>3: Use both DHCP/DHCPv6  |                            |
| bc12 | const               | 2     |               | R—O-       | The NTP address reported from the DHCP server<br>bc12-0: DHCP address<br>bc12-1: DHCPv6 address   |                            |
| bc13 | int(5,1440)         |       | 5             | RW—P       | NTP sync interval   |                            |
| bc14 | record (date, time) |       | 2             | R—O-       | NTP last sync time  |                            |
| bc20 | record (date, time) |       |               | RW—P       | Date and time<br><b>Note:</b> Valid if the procedure for setting the clock (bc01) is “specify the time based on bc20” (0).<br>Ignored if any other value. <sup>[24]</sup> |                            |
| bc30 | boolean             |       | 0             | RW—P       | Daylight Saving Time<br>0: Do not use<br>1: Use   |                            |
| bc32 | const               |       | JST-9         | R---P      | Manual time zone  |                            |
| bc34 | ascii[63]           |       | Asia/Tokyo    | RW—P       | City name (zoneinfo) <sup>[25]</sup>  |                            |

#### 4.4.4. Networks

When using the settings protocol to specify an IPv4/IPv6 address, note that it will no longer be possible to access the camera if you set an invalid address.

Table 31. View/Setting Items - Networks

| Item | Type        | Array | Initial Value   | Attributes | Description   | Model Specific Information |
|------|-------------|-------|-----------------|------------|---|----------------------------|
| ca01 | int (0,1)   |       | 1               | RWB-P      | IPv4 address setting method<br>0: Manual setting <sup>[26]</sup><br>1: Automatic setting (DHCP) |                            |
| ca02 | inaddr      |       | 192.168.100.1   | RWB-P      | IPv4 address  |                            |
| ca03 | inaddr      |       | 255.255.255     | RWB-P      | Subnet mask   |                            |
| ca11 | int(1,3)    |       | 1               | R----      | LAN interface<br>1: Auto<br>2: Full duplex<br>3: Half duplex                                    |                            |
| ca20 | boolean     |       | 1               | RWB-P      | Use IPv6 <sup>[27]</sup><br>0: Do not use<br>1: Use   |                            |
| ca22 | const       | 6     | (Unit specific) | R—O-       | IPv6 address (auto set) <sup>[28]</sup>   |                            |
| ca23 | boolean     |       | 1               | RWB-P      | Auto set (router advertisement)<br>0: Disable<br>1: Enable                                      |                            |
| ca24 | inaddr6     |       |                 | RWBOP      | IPv6 address (manual setting)   |                            |
| ca25 | int(16,128) |       | 64              | RWB-P      | Prefix length   |                            |
| ca26 | const       | 6     | (Unit specific) | R—O-       | Prefix length (auto set) <sup>[29]</sup>  |                            |
| ca30 | const       |       | (Unit specific) | R—O-       | IPv4 address (AutoIP)   |                            |
| ca31 | const       |       | (Unit specific) | R—O-       | IPv4 Address (DHCP)   |                            |
| ca32 | const       |       | (Unit specific) | R—O-       | Net mask<br><b>Note:</b> Value reported from the DHCP server                                    |                            |
| ca33 | const       |       | (Unit specific) | R—O-       | Gateway<br><b>Note:</b> Value reported from the DHCP server                                     |                            |

| Item | Type          | Array | Initial Value   | Attributes | Description  | Model Specific Information   |
|------|---------------|-------|-----------------|------------|--|------------------------------|
| ca34 | boolean       |       | 1               | RW—P       | Use AutoIP<br>0: Do not use<br>1: Use              |                              |
| ca40 | const         |       | (Unit specific) | R—O-       | IPv6 address (link-local)                          |                              |
| ca41 | const         | 5     | (Unit specific) | R—O-       | IPv6 address (router advertisement)                |                              |
| ca42 | const         | 5     | (Unit specific) | R—O-       | IPv6 address (DHCPv6)                              |                              |
| ca43 | const         |       | (Unit specific) | R—O-       | Prefix length (link-local)                         |                              |
| ca44 | const         | 5     | (Unit specific) | R—O-       | Prefix length (router advertisement)               |                              |
| ca45 | const         | 5     | (Unit specific) | R—O-       | Prefix length (DHCPv6)                             |                              |
| ca46 | boolean       |       | 1               | RWB-P      | Use DHCPv6<br>0: Do not use<br>1: Use              |                              |
| ca50 | boolean       |       | 1               | RW—P       | Use mDNS<br>0: Do not use<br>1: Use                |                              |
| cc01 | inaddr        |       |                 | RW-OP      | IPv4 default gateway address <sup>[30]</sup>       |                              |
| cc02 | inaddr6       |       |                 | RW-OP      | IPv6 default gateway address <sup>[31]</sup>       |                              |
| cf00 | int(576,1500) |       | 1500            | RWB-P      | Maximum packet size <sup>[27]</sup>                |                              |
| cf01 | int(576,1500) |       | 1500            | RWB-P      | Maximum packet size (wireless LAN) <sup>[27]</sup> | Not used for CR-X300/CR-N100 |
| ch00 | int(0,1)      |       | 0               | RW—P       | Use wireless LAN<br>0: Do not use<br>1: Use        | Not used for CR-X300/CR-N100 |

| Item | Type            | Array | Initial Value | Attributes | Description  | Model Specific Information   |
|------|-----------------|-------|---------------|------------|--|------------------------------|
| ch02 | inaddr          |       | 192.168.101.1 | RWB-P      | IPv4 address (wireless LAN)  | Not used for CR-X300/CR-N100 |
| ch03 | inaddr          |       | 255.255.255   | RWB-P      | Net mask (wireless LAN)  | Not used for CR-X300/CR-N100 |
| ch04 | int(1,11)       |       | 1             | RW---      | Channel setting (wireless LAN)   | Not used for CR-X300/CR-N100 |
| ch70 | char[32]        | 1     |               | RW-OP      | SSID <sup>[32]</sup>   | Not used for CR-X300/CR-N100 |
| ch71 | pass[63](8,63)  | 1     |               | -W—P       | Encryption key <sup>[32]</sup><br><b>Note:</b> For null values, the value is not changed                     | Not used for CR-X300/CR-N100 |
| ch81 | hpass[67](8,63) | 1     |               | -W—P       | Encryption key (obfuscation) <sup>[32][33]</sup><br><b>Note:</b> Save the key with an obfuscated ch71 value. | Not used for CR-X300/CR-N100 |

#### 4.4.4.1. DNS/DDNS

Table 32. View/Setting Items - DNS/DDNS

| Item | Type        | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|-------------|-------|---------------|------------|---|----------------------------|
| ib00 | inaddrx     |       |               | RW-OP      | Name server address 1 <sup>[34]</sup>   |                            |
| ib01 | inaddrx     |       |               | RW-OP      | Name server address 2   |                            |
| ib10 | host[63]    |       |               | RW-OP      | Host name <sup>[34]</sup>   |                            |
| ib21 | int(0,3)    |       | 0             | RW—P       | Retrieve the DNS setting from DHCP <sup>[35]</sup><br>0: Do not use<br>1: Use DHCP<br>2: Use DHCPv6<br>3: Use DHCP / DHCPv6 |                            |
| ib22 | const       | 2     |               | R—O-       | The DNS address reported from the DHCP server<br><b>Note:</b> ib22-0 is for DHCP.Ib22-1 is for DHCPv6.                      |                            |
| ib23 | host[63]<6> |       |               | RW-OP      | Domain name   |                            |

## 4.4.5. Camera

### 4.4.5.1. Camera Settings

Table 33. View/Setting Items - Camera Settings

| Item | Type     | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|----------|-------|---------------|------------|---|----------------------------|
| da00 | const    |       | 0             | R----      | Main camera (built-in camera)<br>0: Built-in camera |                            |
| da05 | int(1,2) |       | 2             | RW---      | Image flip<br>1: Enable<br>2: Disable               |                            |

### 4.4.5.2. Camera Control

Table 34. View/Setting Items - Camera Control

| Item | Type        | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|-------------|-------|---------------|------------|--|----------------------------|
| db00 | const       | 1     | 1             | R----      | Use camera   |                            |
| db02 | unicode[15] | 1     | Camera        | RW-O-      | Camera name (multibyte characters)                                       |                            |
| db07 | const       | 1     | 1             | R----      | Camera control port  |                            |
| db09 | boolean     | 1     | 1             | RW---      | Tally lamp control<br>0: Do not use<br>1: Use                            |                            |
| db10 | int(0,2)    | 1     | 1             | RW---      | Brightness of tally lamp<br>0: Low<br>1: Medium<br>2: High               |                            |
| db20 | boolean     | 1     | 0             | RW---      | Apply the restriction to visibility range<br>0: Do not apply<br>1: Apply |                            |
| db21 | coord       | 1     |               | RW-O-      | Visibility range: Top edge <sup>[36]</sup>                               |                            |
| db22 | coord       | 1     |               | RW-O-      | Visibility range: Bottom edge <sup>[36]</sup>                            |                            |
| db23 | coord       | 1     |               | RW-O-      | Visibility range: Left edge <sup>[36]</sup>                              |                            |
| db24 | coord       | 1     |               | RW-O-      | Visibility range: Right edge <sup>[36]</sup>                             |                            |
| db25 | scope       | 1     |               | RW-O-      | Visibility range: Telephoto <sup>[36]</sup>                              |                            |
| db26 | scope       | 1     |               | RW-O-      | Visibility range: Wide angle <sup>[36]</sup>                             |                            |
| db30 | boolean     | 1     | 0             | RW---      | Use the extension digital zoom<br>0: Do not use<br>1: Use                |                            |
| db31 | int(4,20)   | 1     | 5             | RW---      | Maximum digital zoom ratio   |                            |
| db32 | boolean     | 1     | 0             | RW---      | Use digital zoom<br>0: Do not use<br>1: Use                              |                            |
| db35 | boolean     | 0     | 1             | RW---      | Use auto flip<br>0: Do not use<br>1: Use                                 | CR-X300 only               |

| Item | Type    | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|---------|-------|---------------|------------|---|----------------------------|
| db90 | boolean | 1     | 1             | RW---      | Fan operation<br>0: Auto mode<br>1: Always on mode                          | CR-N700 only               |
| db97 | boolean | 0     | 0             | RW---      | Output still image during preset execution<br>0: Do not Output<br>1: Output | Not used for CR-N100       |

## 4.4.6. Video

### 4.4.6.1. Capture Video

Table 35. View/Setting Items - Capture Video

| Item | Type                     | Array | Initial Value   | Attributes | Description  | Model Specific Information |
|------|--------------------------|-------|-----------------|------------|--|----------------------------|
| dc01 | const                    | 3     | 0               | R---       | Video type<br>0: Normal<br>1: Digital PTZ                            |                            |
| dc02 | int(0,2) <sup>[37]</sup> | 3     | <sup>[38]</sup> | RW---      | Video codec<br>0: JPEG<br>1: H.264/AVC<br>2: H.265/HEVC              |                            |
| dc06 | int(1,8) <sup>[39]</sup> | 3     | <sup>[40]</sup> | RW---      | Frame rate <sup>[41]</sup><br>1 to 8:<br>Frame rate Small to Large   |                            |
| dc07 | int(0,10)                | 3     | 10              | RW---      | I Frame Interval<br>0: I Frame for all<br>1 to 10: Value x 1/10 sec. |                            |
| dc08 | int(0,1)                 | 3     | 1               | RW---      | Bit Rate Control<br>0: CBR<br>1: VBR                                 |                            |
| dc09 | int(1000,80000)<br>0)    | 3     | <sup>[42]</sup> | RW---      | Target bit rate  |                            |

| Item | Type                        | Array | Initial Value        | Attributes | Description   | Model Specific Information |
|------|-----------------------------|-------|----------------------|------------|---|----------------------------|
| dc22 | vscale(640x360,3840x2160)   | 3     | <a href="#">[43]</a> | RW---      | Video size (width x height)<br>The possible combinations are as follows:<br>640x360<br>1280x720<br>1920x1080<br>3840x2160 |                            |
| de10 | boolean                     | 0     | 0                    | RW---      | Zoom speed resolution<br>0: Normal (128 steps)<br>1: Interchangeable mode (24 steps)                                      |                            |
| de11 | boolean                     | 0     | 0                    | RW---      | Focus speed resolution<br>0: Normal (64 steps)<br>1: Interchangeable mode (8 steps)                                       |                            |
| de60 | boolean                     | 0     | 0                    | RW---      | Apply pan-tilt movement range restrictions<br>0: Do not apply<br>1: Apply   |                            |
| de61 | int(-36000,36000)           | 0     |                      | RW-O-      | Tilt movement range: top edge   |                            |
| de62 | int(-36000,36000)           | 0     |                      | RW-O-      | Tilt movement range: bottom edge  |                            |
| de63 | int(-18000,18000)           | 0     |                      | RW-O-      | Pan movement range: left edge   |                            |
| de64 | int(-18000,18000)           | 0     |                      | RW-O-      | Pan movement range: right edge  |                            |
| dp01 | vscale(1920x1080,3840x2160) |       | 3840x2160            | RWB--      | Maximum resolution<br>1920x1080<br>3840x2160  | CR-N700 only               |



| Item | Type           | Array           | Initial Value | Attributes           | Description   | Model Specific Information         |
|------|----------------|-----------------|---------------|----------------------|---|------------------------------------|
| dp10 | int(2398,5994) |                 | 5994          | RWB--                | Frame frequency (Hz) <sup>[44]</sup><br>Specify a 100-fold value of the frequency.<br>2398: 23.98Hz<br>2500: 25.00Hz<br>2997: 29.97Hz<br>5000: 50.00Hz<br>5994: 59.94Hz |                                    |
| dp20 | int(0,4)       | <sup>[45]</sup> | 1             | RW---                | HDMI/SDI output signal format<br>0: 720p<br>1: 1080p<br>2: 1080i<br>3: 2160p<br>4: 720x480i(NTSC),<br>720x576i(PAL)   | 4 can be selected only for CR-N700 |
| dp21 | int(0,1)       | <sup>[45]</sup> | 0             | RW---                | 3G-SDI mapping<br>0: Level A<br>1: Level  | Not used for CR-N100               |
| dp30 | int(0,1)       |                 | 0             | RW---                | Select the priority HDMI/SDI output destination <sup>[44]</sup><br>0: HDMI<br>1: SDI  | Not used for CR-N100               |
| dp40 | int(0,2)       |                 | 0             | RWB— <sup>[46]</sup> | Select the color bars type<br>0: SMPTE<br>1: EBU<br>2: ARIB   |                                    |
| dp41 | int(0,3)       | 2               | 0             | RW---                | Color bars test tone<br>0: OFF<br>1: -12dB<br>2: -18dB<br>3: -20dB  | CR-N700 only                       |
| dp50 | int(0,1)       | 2               | 1             | RW---                | Crop output resolution setting<br>0: HD<br>1: FullHD<br><b>Note:</b> dp50-0 Crop1, dp50-1 Crop2   | CR-N700 only                       |

**NOTE**

The array elements in dc01 through dc02, dc06 through dc09, and dc22 correspond to the main stream and the sub streams 1 to 2.

*Table 36. Relationship between frame frequency and frame rate of main stream (dc06-0) and substream 2 (dc06-2)*

| Frame frequency[Hz] |       |                     | 59.94 | 29.97 | 23.98 | 50    |
|---------------------|-------|---------------------|-------|-------|-------|-------|
| 25                  | dp10  |                     |       | 0     | 1     | 2     |
| 3                   | 4     | Frame rate<br>[fps] | dc06  | 1     | 5.00  | 5.00  |
| 5.99                | 5     |                     |       | 5     | 2     | 5.00  |
| 5.00                | 5.99  |                     |       | 5     | 5     | 3     |
| 5.00                | 5.00  |                     |       | 5.99  | 5     | 5     |
| 4                   | 5.00  |                     |       | 5.00  | 5.99  | 5     |
| 5                   | 5     |                     |       | 14.99 | 14.99 | 11.99 |
| 12.5                | 12.5  |                     |       | 6     | 29.97 | 29.97 |
| 23.98               | 25    |                     |       | 25    | 7     | 59.94 |
| 29.97               | 23.98 | 50                  | 25    | 8     | 59.94 | 29.97 |

*Table 37. Relationship between frame frequency and frame rate of substream 1 (dc06-1)*

| Frame frequency(Hz) |      |                     | 59.94 | 29.97 | 23.98 | 50    |
|---------------------|------|---------------------|-------|-------|-------|-------|
| 25                  | dp10 |                     |       | 0     | 1     | 2     |
| 3                   | 4    | Frame rate<br>[fps] | dc06  | 1     | 5.00  | 5.00  |
| 5.99                | 5    |                     |       | 5     | 2     | 5.00  |
| 5.00                | 5.99 |                     |       | 5     | 5     | 3     |
| 5.00                | 5.00 |                     |       | 5.99  | 5     | 5     |
| 4                   | 5.00 |                     |       | 5.00  | 5.99  | 5     |
| 5                   | 5    |                     |       | 14.99 | 14.99 | 11.99 |
| 12.5                | 12.5 | 6                   | 29.97 | 29.97 | 23.98 | 25    |

## 4.4.7. Servers

### 4.4.7.1. Camera Server

*Table 38. View/Setting Items - Camera Server*

| Item | Type            | Array | Initial Value | Attributes | Description                               | Model Specific Information |
|------|-----------------|-------|---------------|------------|---|----------------------------|
| ha03 | int(0,15)       |       | 15            | RW---      | Maximum number of clients <sup>[47]</sup> |                            |
| ha05 | fixed(0.1,60.0) |       | 15            | RW---      | Maximum frame rate                        |                            |
| ha06 | int(0,65535)    |       | 0             | RW---      | Maximum connection time                   |                            |
| ha07 | int(1,3600)     |       | 20            | RW---      | Camera control time                       |                            |

#### 4.4.7.2. Audio Server

Table 39. View/Setting Items - Audio Server

| Item | Type       | Array | Initial Value | Attributes | Description  | Model Specific Information   |
|------|------------|-------|---------------|------------|--|--|
| hb01 | int(1,100) |       | 50            | RW---      | Input volume   |  |
| hb08 | boolean    |       | 0             | RW---      | Attenuator<br>0: Disable<br>1: Enable  |  |
| hb30 | int(0,5)   |       | 0             | RW---      | Audio input connection method<br>0: MIC terminal/LINE<br>1: MIC terminal/MIC<br>2: MIC terminal/MIC (MIC power-ON)<br>3: INPUT terminal/LINE<br>4: INPUT terminal/MIC<br>5: INPUT terminal/MIC+48V | For CR-N300/N100, the range of int (0,2) is effective.<br>For CR-X300, data type is const, initial value is 2, attributes are "R----". |

| Item | Type        | Array | Initial Value | Attributes | Description                                   | Model Specific Information           |
|------|-------------|-------|---------------|------------|---|--------------------------------------|
| hb40 | boolean     |       | 1             | RW---      | Use of audio input<br>0: Do not use<br>1: Use | For CR-X300, the initial value is 0. |
| hb43 | int(64,192) |       | 128           | RW---      | Sound bit rate (kbps)                         |                                      |

#### 4.4.7.3. 4.4.7.3 HTTP Server

Table 40. View/Setting Items - HTTP Server

| Item | Type     | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|----------|-------|---------------|------------|--|----------------------------|
| ia00 | hport    |       | 80            | RW—P       | HTTP port number <sup>[48]</sup><br><b>Note:</b> It is possible to only specify 80 or in the range of 1024 to 65535.   |                            |
| ia05 | hport    |       | 443           | RW—P       | HTTPS port number <sup>[48]</sup><br><b>Note:</b> It is possible to only specify 443 or in the range of 1024 to 65535. |                            |
| ia06 | int(0,1) |       | 1             | RWB--      | Authentication method<br>0: Basic authentication<br>1: Digest authentication   |                            |

#### 4.4.7.4. RTP/RTSP

Table 41. View/Setting Items - RTP/RTSP

| Item | Type       | Array | Initial Value | Attributes | Description   | Model Specific Information           |
|------|------------|-------|---------------|------------|---|--------------------------------------|
| ig00 | boolean    |       | 1             | RW---      | RTSP<br>0: Do not use<br>1: Use   | For CR-N700, the initial value is 0  |
| ig01 | int(0,2)   |       | 0             | RW---      | RTSP authentication method<br>0: Digest authentication<br>1: Basic authentication<br>2: No authentication |                                      |
| ig02 | rport      |       | 554           | RW---      | RTSP port number<br>554 or 1024 to 65535  |                                      |
| ig12 | mcaddrx    | 3     | 0.0.0.0       | RW---      | Multicast address(For video)  |                                      |
| ig13 | mcport     | 3     | 0             | RW---      | Multicast port number(For video)<br>0 or 1024 to 65534 (even numbers)                                     |                                      |
| ig14 | int(0,255) | 3     | 1             | RW---      | Multicast TTL(For video) <sup>[49]</sup><br>0 to 255  |                                      |
| ig20 | boolean    | 3     | 1             | RW---      | Audio transmission<br>0: Do not use<br>1: Use   | For CR-X300, the initial value is 0. |
| ig21 | mcaddrx    | 1     | 0.0.0.0       | RW---      | Multicast address(For audio) <sup>[50]</sup>  |                                      |
| ig22 | amcport    | 1     | 0             | RW---      | Multicast port number(For audio) <sup>[50]</sup><br>0 or 1024 to 65530 (even numbers)                     |                                      |
| ig23 | int(0,255) | 1     | 1             | RW---      | Multicast TTL(For audio) <sup>[49][50]</sup><br>0 to 255  |                                      |
| ig24 | const      | 1     | 2             | R----      | Audio Compression Method<br>1: G.711<br>2: AAC-LC   |                                      |

**NOTE**

The array elements in ig12 through ig14, and ig20 correspond to the main stream and the sub streams 1 to 2.

## 4.4.8. Communication

### 4.4.8.1. Standard Communication

Table 42. View/Setting Items - Standard Communication

| Item | Type     | Array | Initial Value | Attributes | Description  | Model Specific Information                            |
|------|----------|-------|---------------|------------|--|---|
| hc00 | boolean  |       | 1             | RW---      | Use of standard serial communication<br>0: Do not use<br>1: Use  | For CR-X300, data type is const, attribute is "R---". |
| hc01 | int(0,7) |       | 0             | RW-O-      | Serial device address<br>0: Auto<br>1 to 7: Set manually   |   |
| hc10 | boolean  |       | 1             | RW---      | Use of standard communication<br>0: Do not use<br>1: Use   |   |
| hc11 | int(0,1) |       | 0             | RW---      | Command response method<br>0: Use the standard IP communication command response port<br>1: Use the source port number |   |
| hc13 | boolean  |       | 1             | RW---      | Inquiry about camera IP settings<br>0: Do not allow 1: Allow   |   |
| hc14 | boolean  |       | 0             | RW---      | Network configuration for camera IP setting<br>0: Do not allow 1: Allow  |   |

### 4.4.8.2. NDI|HX

Table 43. View/Setting Items - NDI|HX

| Item | Type              | Array | Initial Value | Attributes | Description   | Model Specific Information           |
|------|-------------------|-------|---------------|------------|---|--------------------------------------|
| ih00 | boolean           |       | 0             | RW---      | Use of NDI HX<br>0: Do not use<br>1: Use            |                                      |
| ih01 | boolean           |       | 0             | RW---      | Use of Discovery Server<br>0: Do not use<br>1: Use  |                                      |
| ih02 | inaddr            |       |               | RW-O-      | Discovery Server address<br>0: Do not use<br>1: Use |                                      |
| ih03 | boolean           |       | 0             | RW---      | Use of group setting<br>0: Do not use<br>1: Use     |                                      |
| ih04 | nchar[16]<br><10> |       | public        | RW---      | Group name  |                                      |
| ih10 | boolean           |       | 0             | RW---      | Use of multicast<br>0: Do not use<br>1: Use         |                                      |
| ih14 | int(1,255)        |       | 1             | RW---      | Multicast TTL                                       |                                      |
| ih20 | boolean           |       | 1             | RW---      | Audio transmission<br>0: Do not use<br>1: Use       | For CR-X300, the initial value is 0. |

#### 4.4.8.3. RTMP

Table 44. View/Setting Items - RTMP

| Item | Type    | Array | Initial Value | Attributes | Description                            | Model Specific Information |
|------|---------|-------|---------------|------------|--|----------------------------|
| ii00 | boolean |       | 0             | RW---      | Use of RTMP<br>0: Do not use<br>1: Use |                            |

| Item | Type     | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|----------|-------|---------------|------------|--|----------------------------|
| ii10 | int(1,2) |       | 1             | RW---      | Use of video stream<br>1: Main stream<br>2: Sub stream 1 |                            |
| ii11 | boolean  |       | 0             | RW---      | Use of audio stream<br>0: Do not use<br>1: Use           |                            |
| ii20 | uri[256] |       |               | RW-O-      | RTMP URL   |                            |
| ii21 | uri[256] |       |               | RW-O-      | RTMP stream key  |                            |

#### 4.4.8.4. SRT

Table 45. View/Setting Items -SRT

| Item | Type      | Array | Initial Value | Attributes | Description  | Model Specific Information           |
|------|-----------|-------|---------------|------------|--|--------------------------------------|
| ij00 | boolean   |       | 0             | RW---      | Use of SRT<br>0: Do not use<br>1: Use                                      |                                      |
| ij10 | boolean   |       | 1             | RW---      | Use of audio stream<br>0: Do not use<br>1: Use                             | For CR-X300, the initial value is 0. |
| ij20 | int(0,1)  |       | 1             | RW---      | Connection mode<br>0 : caller<br>1 : listner                               |                                      |
| ij21 | host[255] |       |               | RW-O-      | Destination IP address<br><b>Note:</b> Used when in caller mode (required) | For CR-N100, the type is “inaddr x”. |



| Item | Type             | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|------------------|-------|---------------|------------|---|----------------------------|
| ij22 | int(1024,65535)  |       | 1             | RW-O-      | Destination port number<br><b>Note:</b> Used when in caller mode (required) |                            |
| ij23 | sport            |       | 5100          | RW---      | Standby port number<br><b>Note:</b> Used in listener mode (required)        |                            |
| ij24 | int(1,255)       |       | 64            | RW---      | TTL   |                            |
| ij25 | int(20,8000)     |       | 250           | RW---      | Latency<br><b>Note:</b> The unit is [ms]                                    |                            |
| ij26 | char[64]         |       |               | RW-O-      | Stream ID   |                            |
| ij27 | int(0,3)         |       | 0             | RW---      | Encryption method<br>0: Off<br>1: AES-128<br>2: AES-192<br>3: AES-256       |                            |
| ij28 | pass[79](10,79)  |       |               | -W-O-      | Passphrase<br><b>Note:</b> 10 to 79 characters                              |                            |
| ij29 | boolean          | 0     | 0             | RW---      | Use of ABR<br>0: Do not use<br>1: Use                                       | Not used for CR-N100       |
| ij38 | hpass[84](10,79) |       |               | -W-O-      | Passphrase (Obfuscation)<br><b>Note:</b> save the obfuscated ij28 value     |                            |

#### 4.4.8.5. FreeD

Table 46. View/Setting Items -FreeD

| Item | Type    | Array | Initial Value | Attributes | Description                             | Model Specific Information |
|------|---------|-------|---------------|------------|---|----------------------------|
| ik00 | boolean |       | 0             | RW---      | Use of FreeD<br>0: Do not use<br>1: Use | Not used for CR-N100       |

| Item | Type                      | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|---------------------------|-------|---------------|------------|---|----------------------------|
| ik01 | int(16,1000)              |       |               | RW-O-      | Output cycle<br><b>Note:</b> The unit is [ms]   | Not used for CR-N100       |
| ik02 | boolean                   |       | 1             | RW---      | FreeD auto flip linkage<br>0: During auto flip image flip, 0-degrees is stored in the roll angle.<br>1: During auto flip image flip, 180-degrees is stored in the roll angle. | CR-X300 only               |
| ik11 | inaddr                    | 4     |               | RW-O-      | FreeD client IP address   | Not used for CR-N100       |
| ik12 | int(1024,65535)           | 4     | 40000         | RW---      | FreeD client port number  | Not used for CR-N100       |
| ik13 | int(0,1)                  | 4     | 0             | RW---      | Message type<br>0 : D1<br>1 : A2  | Not used for CR-N100       |
| ik20 | int(0,255)                |       | 255           | RW---      | Camera ID   | Not used for CR-N100       |
| ik21 | boolean                   |       | 0             | RW---      | Use of XYZ Offset<br>0: Do not use<br>1: Use  | Not used for CR-N100       |
| ik22 | fixed(-131072.0,131071.9) |       | 0             | RW---      | X-value   | Not used for CR-N100       |
| ik23 | fixed(-131072.0,131071.9) |       | 0             | RW---      | Y-value   | Not used for CR-N100       |
| ik24 | fixed(-131072.0,131071.9) |       | 0             | RW---      | Z-value   | Not used for CR-N100       |

#### 4.4.8.6. 4.4.8.6Serial Port

Table 47. View/Setting Items - Serial Ports

| Item | Type            | Array | Initial Value | Attributes | Description  | Model Specific Information  |
|------|-----------------|-------|---------------|------------|--|---|
| rc10 | boolean         |       | 1             | RW---      | Use of serial port<br>0: Do not use<br>1: Use                                  | For CR-X300, int(0,2) <sup>[51]</sup> , initial value is 2, attribute is "RWB--". |
| rc11 | const           |       | 3             | R----      | Serial port connection type<br>1: RS485<br>2: RS485_4<br>3: RS422<br>4: RS232C |   |
| rc12 | int(9600,38400) |       | 9600          | RW---      | Baud rate setting [bps]  |   |
| rc13 | const           |       | 8             | R----      | Data length [bit]<br>7: 7 bit<br>8: 8 bit                                      |   |
| rc14 | const           |       | 1             | R----      | Start bit [bit]<br>1: 1 bit  |   |
| rc15 | const           |       | 1             | R----      | Stop bit [bit]<br>1: 1 bit<br>2: 2 bit   |   |
| rc16 | const           |       | 0             | R----      | Parity<br>0: None<br>1: Odd<br>2: Even   |   |

#### 4.4.8.7. Infrared Remote Controller

Table 48. View/Setting Items - Infrared Remote Controller

| Item | Type    | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|---------|-------|---------------|------------|--|----------------------------|
| rd00 | boolean |       | 1             | RW---      | Use of infrared remote controller<br>0: Do not use<br>1: Use | Not used for CR-X300       |

#### 4.4.8.8. GenLock

Table 49. View/Setting Items - GenLock

| Item | Type                     | Array           | Initial Value | Attributes | Description   | Model Specific Information |
|------|--------------------------|-----------------|---------------|------------|---|----------------------------|
| re00 | int(0,2) <sup>[52]</sup> | <sup>[53]</sup> | 0             | RW---      | Use of GenLock Input/HD Sync Output<br>0: Do not use<br>1: Use of GenLock Input<br>2: Use of HD Sync Output <sup>[52]</sup> | Not used for CR-N300/N100  |
| re01 | int(-1023,1023)          |                 | 0             | RW---      | GenLock adjustment<br><b>Note:</b> 10 ms units  | Not used for CR-N300/N100  |
| re10 | boolean                  |                 | 0             | RW---      | SYNC scan mode<br>0: P<br>1: PsF  | CR-N700 only               |

#### 4.4.8.9. 4.4.8.9 Timecode

Table 50. View/Setting Items -Timecode

| Item | Type    | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|---------|-------|---------------|------------|--|----------------------------|
| rf00 | boolean | 0     | 0             | RW---      | Timecode terminal setting<br>0: INPUT<br>1: OUTPUT | CR-N700 only               |

| Item | Type    | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|---------|-------|---------------|------------|---|----------------------------|
| rf01 | boolean | 0     | 1             | RW---      | Superimposed SDI timecode output<br>0: Disable<br>1: Enable | Not used for CR-N100       |

#### 4.4.8.10. External Device

Table 51. View/Setting Items – External Device

| Item | Type  | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|-------|-------|---------------|------------|--|----------------------------|
| sp00 | const | 0     | 0             | R----      | Enable external device input event<br>0: Disable<br>1: Enable  | CR-X300 only               |
| sp01 | const | 1     | 0             | R----      | Preset (External device input)<br>0: Do not specify<br>1: Home position<br>2 to 65: Preset number                            | CR-X300 only               |
| sp30 | const | 1     | 0             | R----      | Operation during an active event<br>0: Disable<br>1: Enable  | CR-X300 only               |
| sp31 | const | 1     | 0             | R----      | Operation during an inactive event<br>0: Disable<br>1: Enable  | CR-X300 only               |
| sp80 | const | 1     | 0             | R----      | Reverse the input on/off<br>0: Not reverse<br>1: Reverse   | CR-X300 only               |
| sp92 | const | 1     | 0             | R----      | External device output during an active event<br>0: Disable<br>1: External device output on<br>2: External device output off | CR-X300 only               |

| Item | Type    | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|---------|-------|---------------|------------|--|----------------------------|
| sp93 | const   | 1     | 0             | R----      | External device output during an inactive event<br>0: Disable<br>1: External device output on<br>2: External device output off | CR-X300 only               |
| sp96 | const   | 1     | 0             | R----      | Day/Night camera control when active<br>0: Disable<br>1: Transit to Day mode<br>2: Transit to Night mode                       | CR-X300 only               |
| sp97 | const   | 1     | 0             | R----      | Day/Night camera control when inactive<br>0: Disable<br>1: Transit to Day mode<br>2: Transit to Night mode                     | CR-X300 only               |
| sq00 | const   | 1     | 1             | R----      | Output type<br>0: Pulse<br>1: Continuous   | CR-X300 only               |
| sq01 | const   | 1     | 1             | R----      | Pulse hold time [sec]  | CR-X300 only               |
| sq80 | boolean | 1     | 0             | RW---      | AUX output operation mode<br>0: Normally open<br>1: Normally closed  | CR-X300 only               |

## 4.4.9. Security

### 4.4.9.1. User Access Control

Table 52. View/Setting Items - User Access Control

| Item | Type        | Array | Initial Value | Attributes | Description                            | Model Specific Information |
|------|-------------|-------|---------------|------------|--|----------------------------|
| gb00 | uaccent<15> |       |               | RW-O-      | User (+ password) List <sup>[54]</sup> |                            |

| Item | Type          | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|---------------|-------|---------------|------------|--|----------------------------|
| gb10 | obuaccent<15> |       |               | RW-O-      | User (+password) List (password obfuscation) <sup>[33]</sup><br><b>Note:</b> Save the password with an obfuscated gb00 value   |                            |
| gb50 | int(0,2)      |       | 2             | RW---      | Set camera permissions for registered users <sup>[55]</sup><br>0: No access privileges<br>1: Video transmission only<br>2: General camera control + video transmission |                            |
| gb51 | int(0,2)      |       | 2             | RW---      | Set camera permissions for general users <sup>[55]</sup><br>0: No access privileges<br>1: Video transmission only<br>2: General camera control + video transmission    |                            |

#### 4.4.9.2. Host Access Restrictions

Table 53. View/Setting Items - Host Access Restrictions

| Item | Type     | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|----------|-------|---------------|------------|--|----------------------------|
| ip00 | boolean  |       | 0             | RW—P       | Apply host access restrictions (IPv4)<br>0: Do not apply<br>1: Apply |                            |
| ip01 | boolean  |       | 0             | RW—P       | Apply host access restrictions (IPv6)<br>0: Do not apply<br>1: Apply |                            |
| ip02 | int(0,1) |       | 0             | RW—P       | Default policy (IPv4)<br>0: Allow access<br>1: Prohibit access       |                            |

| Item | Type        | Array | Initial Value | Attributes | Description  | Model Specific Information |
|------|-------------|-------|---------------|------------|--|----------------------------|
| ip03 | int(0,1)    |       | 0             | RW—P       | Default policy (IPv6)<br>0: Allow access<br>1: Prohibit access |                            |
| ip10 | inaddr      | 20    |               | RW-OP      | Network address  |                            |
| ip11 | int(1,32)   | 20    | 32            | RW—P       | Net mask   |                            |
| ip12 | int(0,1)    | 20    | 0             | RW—P       | IPv4 policy<br>0: Allow<br>1: Prohibit                         |                            |
| ip20 | inaddr6     | 20    |               | RW-OP      | Prefix   |                            |
| ip21 | int(16,128) | 20    | 128           | RW—P       | Prefix length  |                            |
| ip22 | int(0,1)    | 20    | 0             | RW—P       | IPv6 policy<br>0: Allow<br>1: Prohibit                         |                            |

#### 4.4.9.3. SSL

Table 54. View/Setting Items - SSL

| Item | Type      | Array | Initial Value | Attributes | Description   | Model Specific Information |
|------|-----------|-------|---------------|------------|---|----------------------------|
| ss00 | int(0,2)  |       | 0             | RW—P       | SSL communication <sup>[56]</sup><br>0: HTTP<br>1: HTTP/HTTPS<br>2: HTTPS |                            |
| ss10 | char[2]   |       |               | RW-OP      | Country name (c) <sup>[57]</sup>  |                            |
| ss11 | char[128] |       |               | RW-OP      | State/Province name (ST)  |                            |
| ss12 | char[128] |       |               | RW-OP      | Locality name (L)   |                            |
| ss13 | char[64]  |       |               | RW-OP      | Organization name (O)   |                            |
| ss14 | char[64]  |       |               | RW-OP      | Organizational unit name (OU)   |                            |
| ss15 | char[64]  |       |               | RW-OP      | Common name (CN)  |                            |
| ss16 | date      |       |               | RW-OP      | Validity period start date <sup>[58]</sup>                                |                            |
| ss17 | date      |       |               | RW-OP      | Validity period end date <sup>[58]</sup>                                  |                            |



- [1] When there is an HTTP proxy between the remote camera and the client, the proxy IP address is recognized by the remote camera as the IP address of the client. If the IP address is not fixed in the proxy settings, due to a multiplexed HTTP proxy for example, an unexpected (as a different client) lock may occur.
- [2] Errors in transaction type and session identifier values also result in this error. Parameters are added to error messages using parentheses.
- [3] In this case, all transactions are invalid, including READ.
- [4] Operations for these setting items are ignored, but other setting items and transactions are processed. Even if “Show Setting Values” is specified in the error message setting (em), the inputted value for this item is not outputted for security reasons. For information on the error message setting (em), see '[Error Message Settings \(em\)](#)'.
- [5] If you specify a value that exceeds the maximum integer (2147483647), it results in “4:Unknown CGI parameter”.
- [6] When there is a combination error, the setting item is not necessarily restored when the error is detected because a check is performed for the updated setting value in the work area. SAVE is not successful while there is a combination error because SAVE transactions implicitly execute a VERIFY.
- [7] This applies when there is a format error in the IP address value or subnet mask value, or the host portion of the IP address or default gateway is all 0 or all 1.
- [8] Even if “Show Setting Values” is specified in the error message setting (em), the inputted value for this item is not outputted for security reasons. For information on the error message setting (em), see '[Error Message Settings \(em\)](#)'.
- [9] This applies when each string type contains a character that cannot be specified. e.g. The DDNS host name (host type) contains a '\*’.
- [10] This applies when the user name (name type) of the uacnt type (name type = pass type) contains a character that cannot be specified. e.g. The user name for the access control (name type) contains a '@’.
- [11] This applies when the password (pass type) of the uacnt type (name type = pass type) contains a character or character code that cannot be specified. e.g. The password (pass type) for access control contains a control code (such as CR(13)).
- [12] It is possible to also use the same separator as GET in the body of POST messages.
- [13] Alphanumeric characters (0-9, A-Z, a-z) and '\*' (asterisk), '-' (hyphen), '.' (period), '@' (at symbol), and '\_' (underscores) are not converted. A single-byte space is converted to a '+' (plus) and other characters are converted by the byte to '%' + hexadecimal double-digit notation.
- [14] If the same parameter is specified multiple times, the last specified parameter is used, unless that parameter can be specified multiple times.
- [15] Can be specified in combination with READ. Does not need to be specified.
- [16] The action is the same as VERIFY (complete check) for this model.
- [17] As the unicode-type setting item, there is “Camera name (db02)”. For information on unicode types, see '[Data Type Specifications](#)'.
- [18] The administration password (aa01) and administration password (for confirmation) (aa02) must be updated with a single WRITE. Values are only updated for the same string. Null values are not updated.
- [19] In case the obfuscated password information is necessary, contact the sales company or distributors from which the product was purchased.
- [20] The firmware version and build number values depend on the firmware version installed at the time that the values are retrieved.
- [21] The MAC address and serial number values depend on the individual camera.
- [22] When specifying “NTP server” (1), IP address of the NTP server (bc10) also need to be specified.
- [23] When specifying either “Use DHCPv6” (2) or “Use DHCP/DHCPv6” (3), specify “Use” (1) for the following two items in '[Networks](#)': Use IPv6 (ca20) Use DHCPv6 (ca46)
- [24] Specify in the format yyyyymmdd:HHMMSS (four digits for the year, and two digits for the month, day, hour, minute, and second).
- [25] For the description method, see the database of 'IANA'.
- [26] For specifying both “Manual setting” (0) and “Register” (1) to “Register the host name to the DDNS” (ib20) in '[DNS/DDNS](#)', it is also necessary to set Name server address 1 (ib00).
- [27] For specifying “Use” (1) for Use IPv6 (ca20), set the maximum packet size (cf00) to 1280 or higher.
- [28] The IPv6 address that is currently operating is set. If an IPv6 address has not been assigned, the value is null.
- [29] The prefix length of the IPv6 address that is currently operating is set. If an IPv6 address has not been assigned, the value is

null.

[30] It is necessary to specify a value that is different from the IPv4 address (ca02).

[31] It is necessary to specify a value that is different from the IPv6 address (ca40).

[32] SSID (ch70) and the encryption key (ch71) or encryption key (obfuscated) (ch81) must be changed simultaneously.

[33] In case the obfuscated password information is necessary, contact the sales company or distributors from which the product was purchased.

[34] When setting “Register” (1) for Register the host name to the DDNS (ib20), it is necessary to set any of the following: Name server address 1 (ib00) Host name (ib10) However, if the IPv4 address setting method (ca01) in 'Networks' is “Automatic setting (DHCP)” (1), the value for Name server address 1 (ib00) is not checked.

[35] When specifying “DHCP is used” (1) for Retrieve the DNS setting from DHCP (ib21), “Automatic setting (DHCP)” (1) needs to be set for IPv4 address setting method (ca01) in 'Networks'.

[36] Specify the combination of values for each item so that they have the following relationship. Top edge of visible range (db21) > Bottom edge of visible range (db22) Left edge of visible range (db23) < Right edge of visible range (db24) Visible range Telephoto (db25) ≤ Visible range Wide angle (db26) If one value is null, the condition above is ignored.

[37] The type varies depending on the array. dc02-0 : int(1,2) dc02-1 : int(1,1) dc02-2 : int(0,0)

[38] The initial value varies depending on the array. dc02-0 : 1 dc02-1 : 1 dc02-2 : 0

[39] The type varies depending on the array. dc06-0 : int(1,8) dc06-1 : int(1,6) dc06-2 : int(1,8)

[40] The initial value varies depending on the array. dc06-0 : 7 dc06-1 : 6 dc06-2 : 5

[41] For the frame rate (dc06), an available value is determined by the frame frequency (dp10). For more information, see 'Relationship between frame frequency and frame rate of main stream (dc06-0) and substream 2 (dc06-2)' and 'Relationship between frame frequency and frame rate of substream 1 (dc06-1)'.

[42] The initial value varies depending on the array. dc09-0 : 20000 dc09-1 : 6000 dc09-2 : 1000

[43] The initial value varies depending on the array. dc22-0 : 1920x1080 dc22-1 : 640x360 dc22-2 : 1280x720

[44] Selectable only when dp20 = 3

[45] Only CR-N700 has a capacity of 2.

[46] Only CR-N700 has the attribute RW---

[47] The maximum number of clients represents the total number of video stream connections with “XC Control Protocol”. Note, however, that it is different from the number of clients related to video transmission in other communications, such as RTP/RTSP, standard communication, NDI|HX, and RTMP.

[48] Specify a port other than HTTP port number (ia00), HTTPS port number (ia05), or RTSP port (ig02) in 'RTP/RTSP'.

[49] This specification is ignored when using IPv6.

[50] This specification is ignored except when Audio transmission (ig20) is set to “Enable” (1).

[51] Options are followings: 0: Not used 1: Standard Communication (Serial) 2: NU

[52] The type is boolean and 2 cannot be selected on CR-N500, CR-X300.

[53] The array is 1 for CR-N700.

[54] Register and delete users and change passwords in a batch. The information contained in the list is used in the final registration. User names cannot be duplicated. Specify the password portion as a character code string (a numeric string in which each character is represented by three decimal digits). This is required when registering a new user and changing the password for a registered user. It is not necessary to specify the password portion, if the password of a registered user is not to be changed. To register a new user, specify the user name and password as a set.

[55] For registered users, specify higher camera permissions than general users.

[56] If SSL communication (ss00) is “HTTP/HTTPS” (1) or “HTTPS” (2), certificates must already be installed.

[57] The country code is specified in the ISO 3166-1 alpha-2 two uppercase Roman characters. e.g. Japan : JP United States : US Great Britain : GB

[58] Specify so that Validity period start date (ss16) ≤ Validity period end date (ss17). When specifying Validity period start date (ss16) and Validity period end date (ss17), always set a value for both.

# Appendix A: Settings for RTP/RTSP Video Transmission

This appendix explains the procedure for starting video transmission using RTP/RTSP. The procedure assumes that IP address settings are completed and it is possible to access the front page of the camera. For details about how to access the front page, refer to “Settings Guide”. When authentication is requested in each process, authentication is performed using the user name and password of the administrator or registered user, and the description in the procedure is omitted.

In this appendix, all IP addresses are described as “192.168.100.1”.

When implementing, replace the IP address to suit your environment.

In addition, there is no particular specification regarding a media player that is compatible with RTSP based on the assumption that a media player is available and ready to operate.

## A.1. Settings Parameters Relating to RTP/RTSP Video Transmission

For the settings parameters for RTP/RTSP, see '[RTP/RTSP](#)'.

## A.2. Initial Settings Values and Starting Video Transmission

Table 55. Initial Settings Values

| Stream       | Video codec | Video size | Target bit rate | Frame rate | I Frame Interval |
|--------------|-------------|------------|-----------------|------------|------------------|
| Main stream  | H.264       | 1920x1080  | 20Mbps          | 59.94fps   | 1 sec            |
| Sub stream 1 | H.264       | 640x360    | 6Mbps           | 29.97fps   | 1 sec            |
| Sub stream 2 | JPEG        | 1280x720   | 1Mbps           | 15fps      | -                |

### NOTE

The default values of the video size, target bit rate, and frame rate vary depending on the model.

Start up a media player supporting RTSP and open the URL below.

```
rtsp://192.168.100.1:554/rtpstream/config(1|2|3)
```

The main stream corresponds to config1, and the sub streams correspond to config2 to 3. For the transmission protocol, follow the media player settings.

**NOTE**

The RTSP port number specified with the URL is the same value as ig02 (RTSP port number).

The HTTP port number specified with the URL is the same value as ia00 (HTTP port number).

The HTTPS port number specified with the URL is the same value as ia05 (HTTPS port number).

## A.3. Commands to Use Keep-alive

When transmitting video, the default session time is 60 seconds. To keep a session, you need to perform a Keep-alive.

It is possible to use the following commands in a streaming Keep-alive.

*Table 56. Commands for Keep-alive*

| Protocol | Commands                    |
|----------|-----------------------------|
| RTSP     | anyRTSP method              |
| RTSP     | SET_PARAMETER (Recommended) |
| RTCP     | Receiver Reports            |

(End)