

**Models GX10/GX20/GP10/GP20**

**Paperless Recorder  
Communication Command  
User's Manual**

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## Introduction

Thank you for purchasing the SMARTDAC+ GX10/GX20/GP10/GP20 (hereafter referred to as the GX and GP) Series.

This manual explains the dedicated commands for the GX/GP. To ensure correct use, please read this manual thoroughly before beginning operation.

## Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
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## Revisions

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## How to Use This Manual

This manual explains the dedicated communication commands for the GX/GP and how to use them. For details on the features of the GX/GP and how to use it, see the following manuals.

- Models GX10/GX20/GP10/GP20 Paperless Recorder First Step Guide (IM 04L51B01-02EN)
- Models GX10/GX20/GP10/GP20 Paperless Recorder User's Manual (IM 04L51B01-01EN)

## Conventions Used in This Manual

Unit		
	K	Denotes 1024. Example: 768K (file size)
	k	Denotes 1000.
Markings		
		Improper handling or use can lead to injury to the user or damage to the instrument. This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions. The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."
	<b>WARNING</b>	Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.
	<b>CAUTION</b>	Calls attention to actions or conditions that could cause light injury to the user or cause damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.
	<b>Note</b>	Calls attention to information that is important for the proper operation of the instrument.

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## 1.1 Operations over an Ethernet Network

You can control the GX/GP by sending commands from a PC over an Ethernet network. There are various types of commands: setting commands, output commands, operation commands, communication control commands, and instrument information output commands.

### 1.1.1 Preparing the Instrument

#### GX/GP Configuration

Configure the GX/GP to connect to the Ethernet network that you want to use. For instructions on how to configure the GX/GP, see section 1.16, “Configuring the Ethernet Communication Function” in the *Models GX10/GX20/GP10/GP20 Paperless Recorder User's Manual* (IM 04L51B01-01EN).

#### PC

The PC that you will use must meet the following requirements.

- The PC is connected to the Ethernet network that you want to use.
- The PC can run programs that you have created (see section 1.1.2, “Sending Commands and Receiving Responses,” below).

### 1.1.2 Sending Commands and Receiving Responses

#### Programs

When you send a command to the GX/GP, it will return a response. You can control the GX/GP by writing a program that sends commands and processes responses and then executing the program. You need to create the programs.

Example: If you send the commands “FSnap.GET” from your PC to the GX/GP, the GX/GP will return the snapshot data of its screen.

For details on commands and responses, see chapter 2, “Commands and Responses.”

#### Notes on Creating Programs

- **When Not Using the Login Function**

You can start using commands immediately after communication is established with the GX/GP.

- **When Using the Login Function**

Log in to the GX/GP using a system administrator account or a normal user account that is registered in the GX/GP. Log in by connecting to the GX/GP and then sending the “CLogin” command.

## 1.2 Operations over the Serial Interface

You can control the GX/GP by sending commands from a PC through the serial interface. There are various types of commands: setting commands, output commands, operation commands, communication control commands, and instrument information output commands. Except for a few special commands, the commands are the same as those used over an Ethernet network.

### 1.2.1 Preparing the Instrument

#### **GX/GP Configuration**

Configure the GX/GP to use serial communication. For instructions on how to configure the GX/GP, see section 1.17, “Configuring the Serial Communication Function (/C2 and /C3 options)” in the *Models GX10/GX20/GP10/GP20 Paperless Recorder User’s Manual* (IM 04L51B01-01EN).

#### **PC**

The PC that you will use must meet the following requirements.

- The PC is connected to the GX/GP through the serial interface.
- The PC can run programs that you have created (see section 1.2.2, “Sending Commands and Receiving Responses,” below).

### 1.2.2 Sending Commands and Receiving Responses

#### **Programs**

When you send a command to the GX/GP, it will return a response. You can control the GX/GP by writing a program that sends commands and processes responses and then executing the program. You need to create the programs.

Example: If you send the commands “FSnap,GET” from your PC to the GX/GP, the GX/GP will return the snapshot data of its screen.

For details on commands and responses, see chapter 2, “Commands and Responses.”

#### **Notes on Creating Programs**

##### **• For RS-232**

When you connect a PC to the GX/GP through the serial interface, the GX/GP will be ready to receive commands.

##### **• For RS-422/485**

The device that receives an open command (ESC O) from a PC will be ready to receive commands. The connection will close in the following situations.

- When the GX/GP receives a connection-close command (ESC C).
- When another device is opened.

Example: If you open the device at address 1 and then open the device at address 2, the connection with the device at address 1 will be closed automatically.



# 2.1 Command Transmission and GX/GP Responses

## 2.1.1 General Communication

The GX/GP can work with various applications through the use of commands. The communication that is achieved through commands is referred to as “general communication.”

## 2.1.2 Command Types and Functions

The following types of commands are available. The first character of command names represents the command type. For example, in the command “SRangeAI,” “S” represents the command type. The second and subsequent characters represent the contents of commands.

Type	Description
Operation commands Example: OSetTime	Commands that start with “O.” These commands are used to operate the GX/GP.
Setting commands Example: SRangeAI	Commands that start with “S.” These commands change the GX/GP settings.
Output commands Example: FData	Commands that start with “F.” These commands cause the GX/GP to output measured data and other types of data.
Control commands Example: CChecksum	Commands that start with “C.” These commands control the communication with the GX/GP.
Instrument information output commands Example: _MFG	Commands that start with an underscore. These commands cause the GX/GP to output its instrument information.

## 2.1.3 Command Syntax

### A Single Command

A single command consists of a command name, parameters, delimiters, and terminator. The command name is written in the beginning, and parameters follow. Delimiters are used to separate the command name from parameters and between each parameter. A delimiter is a symbol that indicates a separation. A terminator is attached to the end of a command.

Command name,parameter 1,parameter 2 terminator

Delimiters

#### Example of a Command

SRangeAI,0001,VOLT,2V,OFF,-15000,18000,0

### Commands in a Series (Setting commands only)

You can send multiple setting commands in a series. When writing a series of commands, separate each command with a sub delimiter. A sub delimiter is a symbol that indicates a separation. A terminator is attached to the end of the series. The maximum number of bytes that can be sent at once is 8000 bytes (8000 characters).

Command name,parameter 1,parameter 2;command name,parameter1 terminator

(Command 1)                      (Command 2)

Sub delimiter

**Notes on Writing Commands in a Series**

- Only setting commands can be written in a series.
- Queries (see the next section) cannot be written in a series.
- If there is an error in one of the commands in a series, the commands before it are canceled, and those after it are not executed.

**Example of a Command**

SRangeAI,0001,VOLT,2V,OFF,-15000,18000,0;SRangeAI,0002,SKIP

**Queries**

Queries are used to inquire the GX/GP settings. To send a query, append a question mark to the command name or parameter. When the GX/GP receives a query, it returns the relevant setting as a character string in an appropriate syntax. Queries can be used on some of the available setting and operation commands.

Command name? terminator

Command name,parameter1? terminator

**Examples of Queries and Responses**

Query	Example of Responses
SRangeAI?	SRangeAI,0001,VOLT,2V,OFF,-20000,20000,0 SRangeAI,0002,..... .....
SRangeAI,0001?	SRangeAI,0001,VOLT,2V,OFF,-20000,20000,0

**Command Names**

A command name is a character string consisting of up to 16 alphanumeric characters. The first character represents the command type.

**Notes on Writing Commands Names**

- Command names are not case sensitive.
- Spaces before the character string are ignored.

## Parameters

Parameters are characteristic values that are attached to commands.

### Notes on Writing Parameters

- Write parameters in their appropriate order.
- Spaces around and in the middle of parameters are ignored. Exception is the character strings that users specify.
- You can omit the setting command parameters that do not need to be changed from their current settings. If you omit parameters, write only the delimiters.  
Example: `SRangeAI,0001,,,,,1800,0` terminator
- If parameters are omitted and there are multiple delimiters at the end of the command, those delimiters can be omitted.  
Example: `SRangeAI,0001,VOLT,2V,,,,,terminator` -> `SRangeAI,0001,VOLT,2Vterminator`

There are two types of parameters: predefined expressions and user-defined character strings.

### How to Write User-Defined Character Strings (Parameters)

- Enclose user-defined character strings in single quotation marks.  
Example      The command for setting the channel 0001 tag to "SYSTEM1" is shown below.  
`STagIO,0001,'SYSTEM1'`
- There are two types of user-defined character strings depending on the type of characters that can be used.

#### Character Strings Consisting Only of Characters in the ASCII Code Range (0x00 to 0x7f)

In this manual, applicable parameters are indicated with "ASCII."

Example      p3      Tag number (up to 16 characters, ASCII)

You can use alphanumeric characters and some of the symbols. For the ASCII characters that you can use, see appendix 1.

#### Character Strings Consisting of Characters in the UTF-8 Code Range

In this manual, applicable parameters are indicated with "UTF-8."

Example      p2      Tag (up to 32 characters, UTF-8)

UTF-8 codes include ASCII codes. You can use UTF-8 characters, including the ASCII characters above. For the ASCII characters that you can use, see appendix 1.

## Delimiters

Commas are used as delimiters.

## Sub delimiters

Semicolons are used as sub delimiters.

## Terminators

"CR+LF" is used as a terminator, meaning "CR" followed by "LF." Expressed in ASCII code, it is 0x0d0x0a.

### 2.1.4 GX/GP Responses

The GX/GP returns the following responses to commands.

- If the GX/GP successfully completes the processing of a received output request command, it outputs the requested data.
- If the GX/GP successfully completes the processing of a received command that is not an output request command, it outputs an affirmative response.
- If a command syntax error, setting error, or other error occurs, the GX/GP outputs a negative response.

For each command the GX/GP receives, it returns a single response. The controller (PC) side must process commands and responses in accordance with this command-response rule. If the command-response rule is not followed, the operation of the GX/GP is not guaranteed. For details on the response syntax, see [2.9 Responses to Commands](#).

## 2.2 List of Commands

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Command	Description	Page
CCheckSum	Sets the checksum	2-51
CSFilter	Sets the status filter	2-51
CLogin	Log in via communication	2-51
CLogout	Log out via communication	2-51
ESC O	Opens an instrument (RS-422/485 only)	2-51
ESC C	Closes an instrument (RS-422/485 only)	2-51

## 2.2.5 Instrument Information Commands

Command	Description	Page
_MFG	Outputs the instrument manufacturer	2-52
_INF	Outputs the instrument's product name	2-52
_COD	Outputs the instrument's basic specifications	2-52
_VER	Outputs the instrument's firmware version information	2-52
_OPT	Outputs the instrument's option installation information	2-52

_TYP	Outputs the instrument's temperature unit, and daylight saving time installation information	2-52
_ERR	Outputs the instrument's error number information	2-52
_UNS	Outputs the instrument's unit configuration information	2-52
_UNR	Outputs the instrument's unit configuration information	2-52
_MDS	Outputs the instrument's module configuration information	2-52
_MDR	Outputs the instrument's module configuration information	2-52

## 2.2.6 Conditions for Executing Commands

A command can be executed only when the GX/GP can execute the setting change or operation that the command specifies. Commands are invalid in the following circumstances.

- The GX/GP is not in a condition to accept the operation.  
For example, if the GX/GP is not recording, you cannot write a message.
- If the GX/GP does not have the function or is not using the function.

The "Setup Item" column in section 2.2.1, "Setting Commands" contains the GX/GP suffix codes that are required for using the commands.

- Operation lock or user restriction is placed on the operation.

The following table lists the commands that are invalid according to the limitation types (p1 of the SOpLimit command or p2 of the SUserLimit command).

Limitation Type	Invalid Command
Memory	ORec
Math	OMath
DataSave	OExecRec
Message	OMessage
Batch	OBatName, OBatComment, OBatText
AlarmACK	OAlarmAck
Comm	OEmail, OIPApply
DispOpe	SHomeKind, SHomeMonitor, SFavoriteKind, SFavoriteMonitor, Smonitor, SMultiPattern, SMultiKind, ODispRate
DateSet	OExecSNTP, OSetTime
ChangeSet	Sxxxx <sup>*1</sup> , OLoadConf
File	OLoadConf, OSaveConf, Fmedia

\*1 Setting commands except for SHomeKind, SHomeMonitor, SFavoriteKind, SFavoriteMonitor, Smonitor, SMultiPattern, and SMultiKind

- The command is not applicable to the model.  
The following commands can be used only on certain models.

Command	Applicable Models
SViewAngle	GX10, GP10
SMultiPattern	GX20, GP20
SMultiKind	GX20, GP20



## 2.3 Parameters

This section describes parameters.

### 2.3.1 Measuring Range Parameters

#### AI Channel Span

Specify the span using an integer.

**Example** If the range is -2.0000 V to 2.0000 V and you want to set the span lower limit to 0.5000 V and the span upper limit to 1.8000 V, set the parameters to 5000 and 18000, respectively.

`SRangeAI, 0001, VOLT, 2V, FF, 5000, 18000, 0`

#### Scaling

Scaling is possible on AI and DI channels. Scaling is specified by a mantissa and decimal place.

**Example** To set the scaling to -10.00 to 20.00, set the scaling lower limit to -1000, scaling upper limit to 2000, and the decimal place to 2. The decimal place value represents the number of digits to the right of the decimal point.

#### Math Channel and Communication Channel Span

Set the span of math channels and communication channels using a mantissa and decimal place.

**Example** To set the span to 1.000 to 2.000, set the scaling lower limit to 1000, scaling upper limit to 2000, and the decimal place to 3.

### 2.3.2 Parameter Notation and Range

The table below shows the principle parameter notations and ranges of values.

Type	Notation and Range of Values
AI channel	Specify as "unit number+module number+channel."
DI channel	
DO channel	<b>Example</b> The AI channel whose unit number is 0, module number is 1, and channel number is 02 is 0102.
Math channel	GX20/GP20: 001 to 100 GX10/GP10: 001 to 050  For SGroup and SMailAlarm commands, insert "A" in front. <b>Example</b> A001
Communication channel	GX20/GP20: 001 to 300 GX10/GP10: 001 to 050  For SGroup and SMailAlarm commands, insert "C" in front. <b>Example</b> C001
Number of report channels	GX20/GP20: 1 to 60 GX10/GP10: 1 to 50
Number of display groups	GX20/GP20: 1 to 50 GX10/GP10: 1 to 30
Number of channels that can be registered to display groups	GX20/GP20: 20 GX10/GP10: 10

Type	Notation and Range of Values
Modbus command number	GX20/GP20: 1 to 100 GX10/GP10: 1 to 50

### 2.3.3 Parameter Number Specification

When specifying consecutive channel numbers or group numbers in a setting command, you can specify them using a range instead of specifying each number one by one.

- Use a hyphen to separate the first number and the last number. For I/O channels, you can specify a range that spans over multiple slots that modules are installed in.
- You can specify the minimum number by omitting the number before the hyphen and the maximum number by omitting the number after the hyphen. If you want to specify all numbers from the first number to the last number, specify only the hyphen.

#### Example 1

To specify 3 to 10: "3-10"

To specify 3 to the maximum number: "3-"

To specify the first number to 10: "-10"

To specify all numbers: "-"

#### Example 2

A command that sets the channel ranges of AI modules installed in slots 0, 1, and 2 to Skip.

`SRangeAI, 0001-0210, Skip` or

`SRangeAI, -0210, Skip`

If a different module is installed in slot 1, queries will work, but setting commands will result in error.



## 2.4 Setting Commands

### SScan

#### Scan Interval

Sets the scan interval.

**Syntax** `SScan,p1,p2`  
     p1 Scan group (1)  
     p2 Scan interval (100ms, 200ms, 500ms, 1s, 2s, 5s)

**Query** `SScan[,p1]?`

**Example** Set the scan interval to 1 second.  
`SScan,1,1s`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

### SScanGroup

#### Scan Group

Registers a measurement channel in scan group 1.

**Syntax** `SScanGroup,p1,p2,p3`  
     p1 Unit number (0)  
     p2 Module number (0 to 9)  
     p3 Scan group (1)  
     1 Scan group 1

**Query** `SScanGroup[,p1[,p2]]?`

**Example** Set the module whose module number is 2 in scan group 1.  
`SScanGroup,0,2,1`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

### SModeAI

#### AI Module

Sets the mode and A/D integration time of an AI module.

**Syntax** `SModeAI,p1,p2,p3,p4`  
     p1 Unit number (0)  
     p2 Module number (0 to 9)  
     p3 Mode  
         2CH 2 channel mode  
         10CH 10 channel mode  
     p4 AD integration time (Auto, 50Hz, 60Hz, Common)

**Query** `SModeAI[,p1[,p2]]?`

**Example** For the module whose module number is 2, set the mode to 10CH and the AD integration time to Auto.  
`SModeAI,0,2,10CH,Auto`

#### Description

- You cannot use this command to configure settings while recording is in progress.

- You cannot use this command to configure settings while computation is in progress.
- You can set the parameters in the following combinations.

Scan Interval	Mode (p3)	Integration time (p4)			
		Auto	50Hz	60Hz	Common
100ms	2CH	Yes	Yes	Yes	No
	10CH	Yes	No	No	No
200ms	2CH	Yes	Yes	Yes	No
	10CH	Yes	No	No	No
500ms	—	Yes	Yes	Yes	No
1s	—	Yes	Yes	Yes	Yes
2s	—	Yes	Yes	Yes	Yes
5s	—	Yes	Yes	Yes	Yes

### SModeDI

#### DI Module

Sets the mode of a DI module.

**Syntax** `SModeDI,p1,p2,p3`  
     p1 Unit number (0)  
     p2 Module number (0 to 9)  
     p3 Mode (Normal, Remote)  
         Normal DI input  
         Remote Remote control input

**Query** `SModeDI[,p1[,p2]]?`

**Example** Set the module whose module number is 2 as a remote control input module.  
`SModeDI,0,2,Remote`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- Only one module can be set to remote. If different modules are set to remote numerous times, the last module will be the remote module.

### SScaleOver

#### Detection of Values That Exceed the Scale

Sets how to detect measurement over-range.

**Syntax** `SSclOver,p1`  
     /P1 How to detect values that exceed the scale  
         FREE Assume scale over-range when the measurement range is exceeded.  
         OVER Assume scale over-range when  $\pm 105\%$  of the scale is exceeded.

**Query** `SSclOver?`

**Example** Assume scale over-range when the measurement range is exceeded.  
`SSclOver,FREE`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- The setting specified with this command is valid if at least one module is installed.

## SMemory

### Recording Mode

Sets the type of data to record.

**Syntax** `SMemory, p1`  
     p1   Recording mode  
         D     Display data  
         D+E1   Display data and event data  
         E1    Event data

**Query** `SMemory?`

**Example** Record display data.  
`SMemory, D`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SDispData

### Display Data Recording

Sets the display data recording mode.

**Syntax** `SDispData, p1, p2`  
     p1   Recording interval (5s, 10s, 15s, 30s, 1min, 2min, 5min, 10min, 15min, 20min, 30min, 1h, 2h, 4h, 10h)/div.  
     p2   File save interval (10min, 20min, 30min, 1h, 2h, 3h, 4h, 6h, 8h, 12h, 1day, 2day, 3day, 5day, 7day, 14day, 31day)

**Query** `SDispData?`

**Example** Set the recording interval to 1 minute and file save interval to 12 hours.  
`SDispData, 1min, 12h`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- You cannot choose a recording interval that is shorter than the scan interval.
- You cannot choose a recording interval that is not an integer multiple of the scan interval.
- File save interval is valid when display data recording is enabled (recording mode of the **SMemory** command).

## SEventData

### Event Data Recording

Sets the event data recording mode.

**Syntax** `SEventData, p1, p2, p3, p4, p5, p6`  
     p1   Scan group (1)  
     p2   Recording interval (100ms, 200ms, 500ms, 1s, 2s, 5s, 10s, 15s, 20s, 30s, 1min, 2min, 5min, 10min, 15min, 20min, 30min)  
     p3   Operation mode

Free	Starts recording at recording start and stops recording at recording stop.
SingleTrigger	After a trigger event occurs, the GX/GP will record for the specified time and stop.
RepeatTrigger	After a trigger event occurs, the GX/GP will record for the specified time and stop. Then, the GX/GP will enter the trigger-wait state.
p4	Data length (10min, 20min, 30min, 1h, 2h, 3h, 4h, 6h, 8h, 12h, 1day, 2day, 3day, 5day, 7day, 14day, 31day)
p5	Pre-trigger (0, 5, 25, 50, 75, 95, 100) [%]
p6	Trigger source key (Off, On)

**Query** `SEventData[, p1]?`

**Example** Record event data in Free mode at a recording interval of 1 second. Separate the data into different files every 2 hours.

`SEventData, 1, 1s, Free, 2h`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- You cannot choose a recording interval that is shorter than the scan interval.
- You cannot choose a recording interval that is not an integer multiple of the scan interval.
- This setting is valid when event data recording is enabled (recording mode of the **SMemory** command).

## SRecDisp

### Channel for Recording Display Data

Sets the channel for recording display data.

**Syntax** `SRecDisp, p1, p2, p3`  
     p1   Number (1 to 500, see "Description")  
     p2   Channel type  
         Off   Do not record display data.  
         IO    I/O channel  
         Math   Math channel  
         Com   Communication channel  
     p3   Channel number

**Query** `SRecDisp[, p1]?`

**Example** Assign the display data of I/O channel 0005 to number 010 and record.

`SRecDisp, 010, IO, 0005`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p2=Off, you cannot set p3.
- There is a limit to the number of recording channels depending on the recording interval (**SDispData** command).

Recording Interval	Number of Recording Channels
5 s/div	100
10 s/div	200
15 s/div or higher	500

- You cannot set a channel more than once.

## SRecEvent

### Channel for Recording Event Data

Sets the channel for recording event data.

**Syntax** `SRecEvent, p1, p2, p3, p4`  
 p1 Scan group (1)  
 p2 Number (001 to 500, see “Description”)  
 p3 Channel type  
     Off Do not record event data.  
     IO I/O channel  
     Math Math channel  
     Com Communication channel  
 p4 Channel number

**Query** `SRecEvent[, p1[, p2]]?`

**Example** Assign the event data of I/O channel 0006 to number 011 and record.

`SEventData, 1, 011, IO, 0006`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p3=Off, you cannot set p4.
- This setting is valid when event data recording is enabled (recording mode of the **SMemory** command).
- There is a limit to the number of recording channels depending on the recording interval (**SEventData** command).

Recording Interval	Number of Recording Channels
100 ms	100
200 ms	200
500 ms or more	500

- You cannot set a channel more than once.

## SRecManual

### Channel for Recording Manual Sampled Data

Sets the channel for recording manual sampled data.

**Syntax** `SRecManual, p1, p2, p3`  
 p1 Number (1 to 50)  
 p2 Channel type  
     Off Do not record manual sampled data.  
     IO I/O channel  
     Math Math channel  
     Com Communication channel  
 p3 Channel number

**Query** `SRecManual[, p1]?`

**Example** Assign the manual sampled data of I/O channel 0003 to number 2 and record.

`SRecManual, 2, IO, 0003`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p2=Off, you cannot set p3.
- You cannot set a channel more than once.

## SBatch

### Batch Function

Configures the batch function's basic settings.

**Syntax** `SBatch, p1, p2, p3`  
 p1 Enable or disable (Off, On)  
 p2 Number of lot number digits (Off, 4, 6, 8)  
     Off Do not use lot numbers.  
     4 4-digit lot number  
     6 6-digit lot number  
     8 8-digit lot number  
 p3 Auto increment (Off, On)

**Query** `SBatch?`

**Example** Enable the batch function. Use 4-digit lot numbers. Automatically increment the lot number in the next operation.

`SBatch, On, 4, On`

#### Description

- You cannot use this command to configure settings while recording is in progress.

## STextField

### Batch Text

Sets a batch text.

**Syntax** `STextField, p1, p2, p3`  
 p1 Field number (1 to 24)  
 p2 Title (up to 20 characters, UTF-8)  
 p3 Character string (up to 30 characters, UTF-8)

**Query** `STextField[, p1]?`

**Example** For field number 3, set the field title to “OPERATOR” and the character string to “RECORDER1.”

`STextField, 3, 'OPERATOR', 'RECORDER1'`

#### Description

- You cannot use this command to configure settings while recording is in progress.

## SDirectory

### Name of Directory to Save Data

Sets the name of the directory to save data.

**Syntax** `SDirectory, p1`  
 p1 Directory name (up to 20 characters, ASCII)

**Query** `SDirectory?`

**Example** Set the directory name to “DATA0.”

`SDirectory, 'DATA0'`

#### Description

## 2.4 Setting Commands

- For the characters that you can use in the directory name (p1), see [Appendix 1](#).
- The following character strings cannot be used for directory names.

Character String
AUX
CON
PRN
NUL
CLOCK\$
COM0 to COM9
LPT0 to LPT9

- You cannot use a character string that starts or ends with a period or space for directory names.

### SFileHead

#### File Header

Sets the file header character string.

**Syntax** SFileHead,p1  
p1 File header (up to 50 characters, UTF-8)

**Query** SFileHead?

**Example** Set the file header to "GX\_DATA."  
SFileHead,'GX\_DATA'

### SFileName

#### File Naming Rule

Sets the file naming rule for data files.

**Syntax** SFileName,p1,p2  
p1 File naming rule  
Date Date  
Serial Serial number  
Batch Batch name  
p2 Specified file name (up to 16 characters, ASCII)

**Query** SFileName?

**Example** Set the file naming rule to "Date." Set the specified file name to "Recorder1\_data."  
SSFileName,Date,'Recorder1\_data'

#### Description

- If the batch setting is disabled (SBatch: p1=Off), you cannot specify p1=Batch.
- If p1=Batch, p2 is invalid.
- For the characters that you can use in the specified file name (p2), see [Appendix 1](#).

### SMediaSave

#### Automatic Data File Saving

Sets the auto saving of data files to an external storage medium.

**Syntax** SMediaSave,p1,p2  
p1 Auto saving to an external storage medium (Off, On)  
p2 Media FIFO (Off, On)

**Query** SMediaSave?

**Example** Enable the auto saving to the external storage medium and media FIFO.  
SMediaSave,On,On

### SFileFormat

#### Display/Event Data File Format

Sets the file format of display data files and event data files.

**Syntax** SFileFormat,p1  
p1 File format (Binary, Text)

**Query** SFileFormat?

**Example** Create files in text format.  
SFileFormat,Text

#### Description

- The types of data that you can set file formats for are display data and event data.
- The file saving methods that the specified file format is applied to are auto saving, saving of unsaved data, manual saving, and FTP data transfer.

**SRangeAI****Measurement Range of AI Channel**

Sets the measurement range of an AI channel.

**Unused Channels**

**Syntax** `SRangeAI, p1, p2`  
 p1 Channel number  
 p2 Input type (Skip)

**Channels Whose Input Type Is DI and No Math**

**Syntax** `SRangeAI, p1, p2, p3, p4, p5, p6`  
 p1 Channel number  
 p2 Input type (DI)  
 p3 Range (see "Description.")  
 P4 Calculation type (Off)  
 p5 Span lower limit  
 p6 Span upper limit

**Channels Whose Input Type Is Volt, TC, or RTD and No Calculation**

**Syntax** `SRangeAI, p1, p2, p3, p4, p5, p6, p7`  
 p1 Channel number  
 p2 Input type (Volt, TC, RTD)  
 p3 Range (see "Description.")  
 P4 Calculation type (Off)  
 p5 Span lower limit  
 p6 Span upper limit  
 p7 Bias (–999999 to 999999)

**Delta Channels**

**Syntax** `SRangeAI, p1, p2, p3, p4, p5, p6, p7, p8`  
 p1 Channel number  
 p2 Input type (Volt, TC, RTD, DI)  
 p3 Range (see "Description.")  
 P4 Calculation type (Delta)  
 p5 Span lower limit  
 p6 Span upper limit  
 p7 Bias (–999999 to 999999) (can be set when p2 is not set to DI)  
 p8 Reference channel number

**Scaling Channels**

**Syntax** `SRangeAI, p1, p2, p3, p4, p5, p6, p7, p8, p9, p10, p11`  
 p1 Channel number  
 p2 Input type (Volt, TC, RTD, DI)  
 p3 Range (see "Description.")  
 P4 Calculation type (Scale)  
 p5 Span lower limit  
 p6 Span upper limit  
 p7 Bias (–999999 to 999999) (can be set when p2 is not set to DI)  
 p8 Decimal Place (0 to 5)  
 p9 Scaling lower limit  
 p10 Scaling upper limit  
 p11 Unit (up to 6 characters, UTF-8)

**Unified Signal Input Channels (Input Type Is GS)**

**Syntax** `SRangeAI, p1, p2, p3, p4, p5, p6, p7, p8, p9, p10, p11, p12, p13`  
 p1 Channel number

p2 Input type (GS)  
 p3 Range (see "Description.")  
 P4 Calculation type (Scale)  
 p5 Span lower limit  
 p6 Span upper limit  
 p7 Bias (–999999 to 999999)  
 p8 Decimal Place (0 to 5)  
 p9 Scaling lower limit  
 p10 Scaling upper limit  
 p11 Unit (up to 6 characters, UTF-8)  
 p12 Low-cut function (Off, On)  
 p13 Low-cut output (Zero, Linear)

**Square Root Channels**

**Syntax** `SRangeAI, p1, p2, p3, p4, p5, p6, p7, p8, p9, p10, p11, p12, p13, p14`  
 p1 Channel number  
 p2 Input type (Volt, GS)  
 p3 Range (see "Description.")  
 P4 Calculation type (Sqrt)  
 p5 Span lower limit  
 p6 Span upper limit  
 p7 Bias (–999999 to 999999)  
 p8 Decimal Place (0 to 5)  
 p9 Scaling lower limit  
 p10 Scaling upper limit  
 p11 Unit (up to 6 characters, UTF-8)  
 p12 Low-cut function (Off, On)  
 p13 Low-cut output (Zero, Linear)  
 p14 Low-cut point (0 to 50)

**Query** `SRangeAI[, p1]?`

**Example** Measure -0.5000 to 1.0000 V on channel 0002.  
 No scaling. No bias.  
`SRangeAI, 0002, Volt, 2V, Off, -5000, 10000, 0`

**Description**

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p2=TC/RTD/DI, you cannot specify p4=Sqrt.
- If p2=GS, you cannot specify p4=Off/Delta.
- If p2=DI, you cannot set p7.
- The settable items for p3 are shown below.

## 2.4 Setting Commands

p2=Volt	p2=TC	p2=RTD	p2=GS	p2=DI
20mV	R	Pt100	1-5V	Level
60mV	S	Pt100-H	0.4-2V	DI
200mV	B	JPt100		
1V	K	JPt100-H		
2V	K-H	Cu10GE		
6V	E	Cu10LN		
20V	J	Cu10WEED		
50V	T	Cu10BAILEY		
	N	Cu10a392		
	W	Cu10a393		
	L	Cu25		
	U1	Cu53		
	PLATINEL	Cu100		
	PR20-40	J263B		
	WRe3-25	Ni100SAMA		
	KpvsAu7Fe	Ni100DIN		
	NiNiMo	Ni120		
	WWRe26	Pt25		
	N14	Pt50		
	XK	Pt200WEED		
		Cu10G		
		Cu50G		
		Cu100G		
		Pt46G		
		Pt100G		

### SRangeDI

#### Measurement Range of DI Channel

Sets the measurement range of a DI channel.

##### Unused Channels

**Syntax** SRangeDI, p1, p2  
p1 Channel number  
p2 Input type (Skip)

##### Channels That Are Not Delta or Scaling

**Syntax** SRangeDI, p1, p2, p3, p4, p5, p6  
p1 Channel number  
p2 Input type (DI)  
p3 Fixed at "-."  
P4 Calculation type (Off)  
p5 Span lower limit (0 to 1)  
p6 Span upper limit (0 to 1)

##### Delta Channels

**Syntax** SRangeDI, p1, p2, p3, p4, p5, p6, p7  
p1 Channel number  
p2 Input type (DI)  
p3 Fixed at "-."  
P4 Calculation type (Delta)  
p5 Span lower limit (0 to 1)  
p6 Span upper limit (0 to 1)  
p7 Reference channel number

##### Scaling Channels

**Syntax** SRangeDI, p1, p2, p3, p4, p5, p6, p7, p8, p9, p10  
p1 Channel number  
p2 Input type (DI)  
p3 Fixed at "-."  
P4 Calculation type (Scale)  
p5 Span lower limit (0 to 1)  
p6 Span upper limit (0 to 1)

p7 Decimal Place (0 to 5)  
p8 Scaling lower limit  
p9 Scaling upper limit  
p10 Unit (up to 6 characters, UTF-8)

**Query** SRangeDI[, p1] ?

**Example** Measure 0 to 1 on channel 0103. No scaling.

SRangeDI, 0103, DI, -, Off, 0, 1

##### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

### SRangeDO

#### DO Channel Operation

Sets the DO channel operation.

##### Alarm Output

**Syntax** SRangeDO, p1, p2, p3, p4, p5, p6, p7, p8, p9

p1 Channel number  
p2 Output type (Alarm)  
p3 Span lower limit (0 to 1)  
P4 Span upper limit (0 to 1)  
p5 Unit (up to 6 characters, UTF-8)  
p6 Energize or de-energize  
Energize Energize the relay (DO channel) during output.  
De\_energize De-energize the relay (DO channel) during output.  
p7 Operation  
And Operate when all set alarms are in the alarm state.  
Or Operate when any of the set alarms are in the alarm state.  
p8 Hold or nonhold  
Hold Hold output until an alarm ACK operation.  
Nonhold Clear output when the alarm is cleared.  
p9 Relay (DO channel) action on acknowledge (Normal, Reset)

##### Alarm Output (Reflash)

**Syntax** SRangeDO, p1, p2, p3, p4, p5, p6, p7, p8, p9

p1 Channel number  
p2 Output type (Alarm)  
p3 Span lower limit (0 to 1)  
P4 Span upper limit (0 to 1)  
p5 Unit (up to 6 characters, UTF-8)  
p6 Energize or de-energize  
Energize Energize the relay (DO channel) during output.  
De\_energize De-energize the relay (DO channel) during output.  
p7 Action (Reflash)  
p8 Reflash time (500ms, 1s, 2s)



- p9 Relay (DO channel) action on acknowledge

**Manual Output**

Specifies the output value.

**Syntax** `SRangeDO,p1,p2,p3,p4,p5,p6`

- p1 Channel number  
 p2 Output type (Manual)  
 p3 Span lower limit (0 to 1)  
 p4 Span upper limit (0 to 1)  
 p5 Unit (up to 6 characters, UTF-8)  
 p6 Energize or de-energize
- |             |   |
|-------------|---|
| Energize    | Energize the relay (DO channel) during output.    |
| De_energize | De-energize the relay (DO channel) during output. |

**Query** `SRangeDO[,p1]?`

**Example** Output an alarm on channel 0203. Set the span lower limit to 0 and span upper limit to 1. Specify energize operation, logic or operation, and hold operation. Set the action on ACK to Normal. Set the unit to "Unit."  
`SRangeDO,0203,Alarm,0,1,Unit,Energize,Or,Hold,Normal`

**Description**

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p2=Manual, you cannot set p7 or subsequent parameters.
- If p7=And or Or, you cannot set the reflash time.

**SMoveAve****Moving Average**

Sets the moving average of an AI channel.

**Syntax** `SMoveAve,p1,p2,p3`

- p1 Channel number  
 p2 Enable or disable (Off, On)  
 p3 Number of samples (2 to 100)

**Query** `SMoveAve[,p1]?`

**Example** Set the number of moving average samples for channel 0002 to 12.  
`SMoveAve,0002,On,12`

**SBurnOut****Behavior When a Sensor Burns Out**

Sets the behavior for when a burnout occurs on an AI channel.

**Syntax** `SBurnOut,p1,p2`  
 p1 Channel number  
 p2 Burnout processing (Off, Up, Down)

**Query** `SBurnOut[,p1]?`

**Example** Set the measured result to positive overflow (Up) when a burnout is detected on channel 0001.  
`SBurnOut,0001,Up`

**Description**

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

**SRjc****Reference Junction Compensation Method**

Sets the reference junction compensation method of an AI channel.

**Syntax** `SRjc,p1,p2,p3`  
 p1 Channel number  
 p2 Mode

- Internal Use the internal compensation function.  
 External Use an external compensation device.

- p3 Compensation temperature
- |              |                 |
|--------------|-----------------|
| -200 to 800  | -20.0 to 80.0°C |
| -40 to 1760  | -40 to 1760°F   |
| 2531 to 3532 | 253.1 to 353.2K |

**Query** `SRjc[,p1]?`

**Example** Perform reference junction compensation of channel 0003 using the internal compensation circuit.  
`SRjc,0003,Internal`  
 Perform reference junction compensation of channel 0004 using an external compensation device. Set the compensation temperature to -2.3°C.  
`SRjc,0004,External,-23`

**Description**

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p2=Internal, p3 is invalid.

**SAlarmIO****Alarm**

Sets the alarm for AI and DI channels.

**Do Not Set Alarms**

**Syntax** `SAlarmIO,p1,p2,p3`  
 p1 Channel number  
 p2 Alarm number (1 to 4)  
 p3 Alarm on or off (Off)

**Do Not Output Alarms**

**Syntax** `SAlarmIO,p1,p2,p3,p4,p5,p6,p7`  
 p1 Channel number  
 p2 Alarm number (1 to 4)  
 p3 Alarm on or off (On)  
 p4 Alarm type (H, L, DH, DL, RH, RL, TH, TL)  
 p5 Value  
 p6 Detection (Off, On)

## 2.4 Setting Commands

p7 Output (Off)

### Output Alarms

**Syntax** `SAlarmIO,p1,p2,p3,p4,p5,p6,p7,p8`

p1 Channel number

p2 Alarm number (1 to 4)

p3 Alarm on or off (On)

p4 Alarm type (H, L, DH, DL, RH, RL, TH, TL)

p5 Value

p6 Detection (Off, On)

p7 Output

DO Output to a relay (DO channel)

SW Output to an internal switch

p8 Number

If p7=DO Relay (DO channel) number

If p7=SW Internal switch number (001 to 100)

**Query** `SAlarmIO[,p1[,p2]]?`

**Example** Set a high limit alarm (H) on alarm number 2 of channel 0001. Set the alarm value to 1.8000V. Use the alarm detection function. When an alarm occurs, output to the relay (DO channel) at number 0205.

`SAlarmIO,0001,2,On,H,18000,On,DO,0205`

### Description

- You cannot set this on a "Skip" channel.
- If p3=Off, you cannot set p4 or subsequent parameters.
- If p7=Off, you cannot set p8.
- For the alarm values of p5, use the values in the following table.

Channel Type	Input Type	Calculation Type	Alarm Type		
			H, L, TH, TL	RH, RL	DH, DL
AI channel	Volt, GS, TC, RTD	Off	(1)	(3)	
		Delta	(1)	(3)	(5)
		Scale	(2)		
		Sqrt	(2)	(4)	
	DI	Off	0, 1	1	
		Delta	(1)	(3)	(5)
DI channel	DI	Scale	(2)	(4)	
		Same as the DI input of AI channels			

- (1) Within the measurement range
- (2) -5% to 105% of the scale but within -999999 to 999999 excluding the decimal point
- (3) 1 digit to (measurement upper limit – measurement lower limit)
- (4) 1 digit to (scale upper limit – scale lower limit) but within 1 to 999999 excluding the decimal point
- (5) Within the difference measurement range

- You cannot set DO channels or internal switches whose output type is set to Manual as output destination numbers.

## SAlmHysIO

### Alarm Hysteresis

Sets the alarm hysteresis for AI and DI channels.

**Syntax** `SAlmHysIO,p1,p2,p3`

p1 Channel number

p2 Alarm number (1 to 4)

p3 Hysteresis

Alarm Type	Hysteresis Range
H, L, DH, DL	0.0% to 5.0% of the span or scale width

**Query** `SAlmHysIO[,p1[,p2]]?`

**Example** Set a 0.5% hysteresis on alarm 3 of channel 0002.

`SAlmHysIO,0002,3,5`

### Description

- Hysteresis specified for delay high and low limit alarms (TH and TL) and high and low limits on rate-of-change alarms (RH and RL) do not apply.

## SAlmDlyIO

### Alarm Delay

Sets the delay alarm time for an AI or DI channel.

**Syntax** `SAlmDlyIO,p1,p2,p3,p4`

p1 Channel number

p2 Hour (0 to 24)

p3 Minute (0 to 59)

p4 Second (0 to 59)

**Query** `SAlmDlyIO[,p1]?`

**Example** Set the channel 0001 alarm delay to 2 minutes 30 seconds.

`SAlmDlyIO,0001,0,2,30`

### Description

- Set the delay time so that it is an integer multiple of the scan interval (**SScan** command).

## STagIO

### Tag

Sets a tag to an AI, DI, or DO channel.

**Syntax** `STagIO,p1,p2,p3`

p1 Channel number

p2 Tag (up to 32 characters, UTF-8)

p3 Tag number (up to 16 characters, ASCII)

**Query** `STagIO[,p1]?`

**Example** Set the channel 0001 tag to "SYSTEM1" and the tag number to "TI002."

`STagIO,0001,'SYSTEM1','TI002'`

## SColorIO

### Channel Color

Sets the color an AI, DI, or DO channel.

**Syntax** `SColorIO,p1,p2,p3,p4`

p1 Channel number

p2 R value of RGB display colors (0 to 255, see "Description.")

p3 G value of RGB display colors (0 to 255, see "Description.")

p4 B value of RGB display colors (0 to 255, see "Description.")

**Query** `SColorIO[,p1]?`

**Example** Set the channel 0001 display color to red.

`SColorIO,0001,255,0,0`



**Description**

- The RGB values for different colors are indicated in the following table.

Color		R	G	B
Red	Red	255	0	0
Green	Green	0	153	51
Blue	Blue	0	51	255
Blue violet	Blue violet	102	51	204
Brown	Brown	153	51	0
Orange	Orange	255	153	51
Yellow green	Yellow green	170	221	51
Light blue	Light blue	153	204	255
Violet	Violet	221	153	221
Gray	Gray	153	153	153
Lime	Lime	102	255	0
Cyan	Cyan	0	255	255
Dark blue	DarkBlue	0	0	153
Yellow	Yellow	255	255	0
Light gray	Light gray	204	204	204
Purple	Purple	136	0	136
Black	Black	0	0	0
Pink	Deeppink	255	17	153
Rosy brown	Rosybrown	204	153	153
Pale green	Palegreen	187	255	153
Dark gray	Gray31	102	102	102
Olive	Olive	153	153	0
Dark cyan	Dark cyan	0	153	153
Spring green	Spring green	0	221	119

**SZoneIO****Waveform Display Zone**

Sets the waveform display zone of an AI, DI, or DO channel.

**Syntax** SZoneIO, p1, p2, p3  
 p1 Channel number  
 p2 Zone lower limit [%] (0 to 95)  
 p3 Zone upper limit [%] (5 to 100)

**Query** SZoneIO[, p1]?

**Example** Set the waveform zone of channel 0001 waveform to 0% to 30%.  
 SZoneIO, 0001, 0, 30

**SScaleIO****Scale Display**

Sets the scale display of an AI, DI, or DO channel.

**Syntax** SScaleIO, p1, p2, p3  
 p1 Channel number  
 p2 Scale display position (Off, 1 to 10)  
 p3 Number of scale divisions (4 to 12, C10)

**Query** SScaleIO[, p1]?

**Example** Display the channel 0001 scale at display position 1. Display four equally spaced main scale marks.  
 SScaleIO, 0001, 1, 4

**SBarIO****Bar Graph Display**

Sets the bar graph display of an AI, DI, or DO channel.

**Syntax** SBarIO, p1, p2, p3

p1 Channel number  
 p2 Bar display base position  
     Lower Lower  
     Center Center  
     Upper Upper  
 p3 Number of scale divisions (4 to 12)

**Query** SBarIO[, p1]?

**Example** Display the measured values of channel 0001 on a bar graph with the center set as the base position (Center). Display four equally spaced main scale marks.  
 SBarIO, 0001, Center, 4

**SPartialIO****Partial Expanded Display**

Sets the partial expanded display of an AI channel waveform.

**Syntax** SPartialIO, p1, p2, p3, p4  
 p1 Channel number  
 p2 Partial expanded On/Off (On, Off)  
 p3 Partial expanded boundary position [%] (1 to 99)  
 p4 Partial expanded boundary value (span lower limit + 1 digit to span upper limit - 1 digit)

**Query** SPartialIO[, p1]?

**Example** For channel 0001 whose measurement range is 0 to 1.0000 V, display the measured value of 0.7500 V at the 50% position.  
 SPartialIO, 0001, On, 50, 7500

**Description**

- You cannot set this on a "Skip" channel. p2 is fixed to Off.
- If p2=Off, you cannot set p3 or subsequent parameters.
- P2=On can be specified when the difference between the span upper and lower limits is 2 digits or greater.

**SBandIO****Color Scale Band**

Sets the color scale band of an AI channel.

**Syntax** SBandIO, p1, p2, p3, p4, p5, p6, p7  
 p1 Channel number  
 p2 Color scale band (Off, In, Out)  
 p3 R value of the color scale band RGB colors (0 to 255)  
 p4 G value of the color scale band RGB colors (0 to 255)  
 p5 B value of the color scale band RGB colors (0 to 255)  
 p6 Upper limit of the color scale band display (span lower limit to span upper limit)  
 p7 Lower limit of the color scale band display (span lower limit to span upper limit)

**Query** SBandIO[, p1]?

**Example** For channel 0001, set a blue band in the range of -0.5000 to 1.0000.  
 SBandIO, 0001, In, 0, 0, 255, 5000, 10000

## 2.4 Setting Commands

### Description

- You cannot set this on a “Skip” channel. p2 is fixed to Off.
- If p2=Off, you cannot set p3 or subsequent parameters.
- For details on RGB values, see “Description” of the **SColorIO** command.

## SAlmMarkIO

### Alarm Mark

Sets the display of the marker that indicates the specified alarm position of an AI or DI channel.

**Syntax** SAlmMarkIO,p1,p2,p3,p4,p5,p6,p7,p8,p9,p10,p11,p12,p13,p14,p15  
p1 Channel number  
p2 Whether to display the alarm mark on the scale (Off, On)  
p3 Alarm mark type  
Alarm Display the default alarm mark  
Fixed Display the mark with the specified color  
p4 R value of the RGB mark colors for alarm 1 ( 0 to 255)  
p5 G value of the RGB mark colors for alarm 1 ( 0 to 255)  
p6 B value of the RGB mark colors for alarm 1 ( 0 to 255)  
p7 R value of the RGB mark colors for alarm 2 ( 0 to 255)  
p8 G value of the RGB mark colors for alarm 2 ( 0 to 255)  
p9 B value of the RGB mark colors for alarm 2 ( 0 to 255)  
p10 R value of the RGB mark colors for alarm 3 ( 0 to 255)  
p11 G value of the RGB mark colors for alarm 3 ( 0 to 255)  
p12 B value of the RGB mark colors for alarm 3 ( 0 to 255)  
p13 R value of the RGB mark colors for alarm 4 ( 0 to 255)  
p14 G value of the RGB mark colors for alarm 4 ( 0 to 255)  
p15 B value of the RGB mark colors for alarm 4 ( 0 to 255)

**Query** SAlmMarkIO[,p1]?

**Example** Display the alarm marks for alarms 1 to 4 of channel 0001 in fixed colors red, brown, orange, and yellow, respectively.  
SAlmMarkIO,0001,On,Fixed,255,0,0,165,42,42,255,165,0,255,255,0

### Description

- For details on RGB values, see “Description” of the **SColorIO** command.

## SValueIO

### Upper/Lower Limit Display Characters

Sets the upper/lower limit display characters of DI channel or DO channel.

**Syntax** SValueIO,p1,p2,p3  
p1 Channel number  
p2 Lower limit display string (up to 8 characters, UTF-8)  
p3 Upper limit display string (up to 8 characters, UTF-8)

**Query** SValueIO[,p1]?

**Example** For channel 0001, set the lower limit to “OFF” and the upper limit to “ON.”  
SValueIO,0001,'OFF','ON'

## SCalibIO

### Calibration Correction

Sets the calibration correction for AI channels.

#### Disable Calibration Correction

**Syntax** SCalibIO,p1,p2  
p1 Channel number  
p2 Linearizer mode (Off)

#### Use Calibration Correction

**Syntax** SCalibIO,p1  
p1 Channel number  
p2 Linearizer mode  
Appro Linearizer approximation  
Bias Linearizer bias  
p3 Number of set points (2 to 12)  
p4 Input value of set point 1  
p5 Output value of set point 1  
p6 Input value of set point 2  
p7 Output value of set point 2  
p8 Input value of set point 3  
p9 Output value of set point 3  
p10 Input value of set point 4  
p11 Output value of set point 4  
p12 Input value of set point 5  
p13 Output value of set point 5  
p14 Input value of set point 6  
p15 Output value of set point 6  
p16 Input value of set point 7  
p17 Output value of set point 7  
p18 Input value of set point 8  
p19 Output value of set point 8  
p20 Input value of set point 9  
p21 Output value of set point 9  
p22 Input value of set point 10  
p23 Output value of set point 10  
p24 Input value of set point 11  
p25 Output value of set point 11  
p26 Input value of set point 12  
p27 Output value of set point 12

**Query** SCalibIO[,p1]?

**Example** Set three set points on channel 0001 (measurement range: 0 to 1.0000 V). Set the set points as follows: when the input value is 0 V, the output value is 0.0010 V; when the input value is 0.5000 V, the output value is 0.5020 V; when the input value is 1.0000 V, the output value is 0.9970 V.  
SCalibIO,0001,Appro,3,0,10,5000,5020,10000,9970

### Description

- If p2=Off, you cannot set p3 or subsequent parameters.

- You cannot specify set points beyond the number of points specified by p3.
- If the AI channel input type (p2 of SRangeAI) is set to Skip or DI, you cannot specify anything other than p2=Off.

**SMathBasic**

**Math Action (/MT)**

Sets the basic operation of math channels.

<b>Syntax</b>	<code>SMathBasic,p1,p2,p3,p4</code>	
p1	Indication on computation error	
	+Over	Display the computed value as +Over.
	-Over	Display the computed value as -Over.
p2	SUM and AVE computation when overflow data is detected	
	Error	Sets the computation result to computation error.
	Skip	Discards the data that overflowed and continues the computation.
	Limit	Computes by substituting upper or lower limit values in the data that overflowed. <ul style="list-style-type: none"><li>• For channels that do not have linear scaling specified, the upper or lower limit of the measuring range</li><li>• For channels that have linear scaling specified, the scaling upper or lower limit</li><li>• For math channels, the specified span upper or lower limit.</li></ul>
p3	MAX, MIN, and P-P computation when overflow data is detected	
	Over	Computes using data that overflowed.
	Skip	Discards the data that overflowed and continues the computation.
p4	START/STOP key action	
	Off	Computation does not start even when recording starts.
	Start/Stop	Computation starts when recording starts.
	Reset+ Start/Stop	Computation resets and starts when recording starts.

**Query** `SMathBasic?`

**Example** Set the indication on computation error to “+Over,” computation when overflow data is detected to “Skip,” and start computation when recording starts.  
`SMathBasic,+Over,Skip,Skip,Start/Stop`

**Description**

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## 2.4 Setting Commands

- The math function is an option (/MT).

### SKConst

#### Constant (/MT)

Sets a constant for use in computations.

**Syntax** SKConst,p1,p2  
p1 Constant number (1 to 100)  
p2 Value (–9.999999E+29 to –1E–30,  
0, 1E–30 to 9.999999E+29, seven  
significant digits)

**Query** SKConst[,p1]?

**Example** Set constant number 12 to 1.0000E–10.  
SKConst,12,1.0000E–10

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

### SRangeMath

#### Computation Expression (/MT)

Sets the computation expression of a math channel.

#### Unused Channels

**Syntax** SRangeMath,p1,p2  
p1 Channel number  
p2 Computation expression on/off (Off)

#### Used Channels

**Syntax** SRangeMath,p1,p2,p3,p4,p5,p6,p7,p8  
p1 Channel number  
p2 Computation expression on/off (On)  
p3 Math channel type (Normal)  
p4 Expression (up to 120 characters, ASCII)  
p5 Decimal Place (0 to 5)  
p6 Span lower limit (–9999999 to 99999999)  
p7 Span upper limit (–9999999 to 99999999)  
p8 Unit string (up to 6 characters, UTF-8)

**Query** SRangeMath[,p1]?

**Example** Set expression 0001+0002 in math channel 015. Set the measurement range is 0.0 to 100.0%.  
SRangeMath,015,On,Normal,0001+  
0002,1,0,1000,' %'

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- A blank character string cannot be used in expressions.
- You cannot set the span upper and lower limits to the same value.

### STlogMath

#### TLOG (/MT)

Sets the TLOG of a math channel.

**Syntax** STlogMath,p1,p2,p3,p4,p5  
p1 Channel number

p2 Timer Type  
Timer Timer  
MatchTimeTimer Match time timer  
p3 Timer number (1 to 4)  
p4 Sum scale (Off, /sec, /min, /hour)  
p5 Reset (On, Off)

**Query** STlogMath[,p1]?

**Example** Assign timer 2 to math channel 015. Set the sum scale to Off and disable reset.  
STlogMath,015,Timer,2,Off,Off

#### Description

- You cannot use this command to configure settings while computation is in progress.

### SRolAveMath

#### Rolling Average (/MT)

Sets rolling average on a math channel.

**Syntax** SRolAveMath,p1,p2,p3,p4  
p1 Channel number  
p2 Enable or disable (Off, On)  
p3 Sample interval (1 to 6s, 10s, 12s, 15s,  
20s, 30s, 1 to 6min, 10min, 12min, 15min,  
20min, 30min, 1h)  
p4 Number of samples (1 to 1500)

**Query** SRolAveMath[,p1]?

**Example** On math channel 015, take the rolling average of 30 data values over 1 minute intervals and use the results as the computed values.  
SRolAveMath,015,On,1min,30

### SAlarmMath

#### Alarm (/MT)

Sets the alarm of a math channel.

#### Do Not Set Alarms

**Syntax** SAlarmMath,p1,p2,p3  
p1 Channel number  
p2 Alarm number (1 to 4)  
p3 Alarm on or off (Off)

#### Do Not Output Alarms

**Syntax** SAlarmMath,p1,p2,p3,p4,p5,p6,p7  
p1 Channel number  
p2 Alarm number (1 to 4)  
p3 Alarm on or off (On)  
p4 Alarm type (H, L, TH, TL)  
p5 Alarm value (within the span range)  
p6 Detection (Off, On)  
p7 Output (Off)

#### Output Alarms

**Syntax** SAlarmMath,p1,p2,p3,p4,p5,p6,p7,p8  
p1 Channel number  
p2 Alarm number (1 to 4)  
p3 Alarm on or off (On)  
p4 Alarm type (H, L, TH, TL)  
p5 Alarm value (within the span range)  
p6 Detection (Off, On)  
p7 Output

DO	Output to a relay (DO channel)
SW	Output to an internal switch
p8 Number	
If p7=DO	Relay (DO channel) number
If p7=SW	Internal switch number (001 to 100)

**Query** `SAlarmMath[,p1]?`

**Example** Set a high limit alarm (H) on alarm number 2 of math channel 015. Set the alarm value to 85.0. When an alarm occurs, output to the relay (DO channel) at number 0105.  
`SAlarmMath,015,2,On,H,850,On,DO,0105`

#### Description

- You cannot set this on a "Off" channel.
- If p3=Off, you cannot set p4 or subsequent parameters.
- If p7=Off, you cannot set p8.
- You cannot set DO channels or internal switches whose output type is set to Manual as output destination numbers.

## SAlmHysMath

### Alarm Hysteresis (/MT)

Sets the alarm hysteresis for a math channel.

**Syntax** `SAlmHysMath,p1,p2,p3`  
p1 Channel number  
p2 Alarm number (1 to 4)  
p3 Hysteresis

Alarm Type	Hysteresis Range
H, L	0 to 100000

**Query** `SAlmHysMath[,p1[,p2]]?`

**Example** Set a hysteresis on alarm 3 of math channel 015.  
`SAlmHysMath,015,3,10`

#### Description

- Hysteresis specified for delay high and low limit alarms (TH and TL) does not apply.

## SAlmDlyMath

### Alarm Delay (/MT)

Sets the delay alarm time for a math channel.

**Syntax** `SAlmDlyMath,p1,p2,p3,p4`  
p1 Channel number  
p2 Hour (0 to 24)  
p3 Minute (0 to 59)  
p4 Second (0 to 59)

**Query** `SAlmDlyMath[,p1]?`

**Example** Set the math channel 015 alarm delay to 2 minutes 30 seconds.  
`SAlmDlyMath,015,0,2,30`

#### Description

- Set the delay time so that it is an integer multiple of the scan interval (**SScan** command).

## STagMath

### Tag (/MT)

Sets the tag of a math channel.

**Syntax** `STagMath,p1,p2,p3`  
p1 Channel number  
p2 Tag (up to 32 characters, UTF-8)  
p3 Tag number (up to 16 characters, ASCII)

**Query** `STagMath[,p1]?`

**Example** Set the math channel 015 tag to "SYSTEM1" and the tag number to "TI002."  
`STagMath,015,'SYSTEM1','TI002'`

## SColorMath

### Channel Color (/MT)

Sets the color of a math channel.

**Syntax** `SColorMath,p1,p2,p3,p4`  
p1 Channel number  
p2 R value of RGB display colors (0 to 255)  
p3 G value of RGB display colors (0 to 255)  
p4 B value of RGB display colors (0 to 255)

**Query** `SColorMath[,p1]?`

**Example** Set the math channel 015 display color to red.  
`SColorMath,015,255,0,0`

#### Description

- For details on RGB values, see "Description" of the **SColorIO** command.

## SZoneMath

### Waveform Display Zone (/MT)

Sets the waveform display zone of a math channel.

**Syntax** `SZoneMath,p1,p2,p3`  
p1 Channel number  
p2 Zone lower limit [%] (0 to 95)  
p3 Zone upper limit [%] (5 to 100)

**Query** `SZoneMath[,p1]?`

**Example** Set the waveform zone of math channel 015 waveform to 0% to 30%.  
`SZoneMath,015,0,30`



## SScaleMath

### Scale Display (/MT)

Sets the scale display of a math channel.

**Syntax** `SScaleMath,p1,p2,p3`  
 p1 Channel number  
 p2 Scale display position (Off, 1 to 10)  
 p3 Number of scale divisions (4 to 12, C10)

**Query** `SScaleMath[,p1]?`

**Example** Display the math channel 015 scale at display position 1. Display four equally spaced main scale marks.  
`SScaleMath,015,1,4`

## SBarMath

### Bar Graph Display (/MT)

Sets the bar graph display of a math channel.

**Syntax** `SBarMath,p1,p2,p3`  
 p1 Channel number  
 p2 Bar display base position  
     Lower Lower  
     Center Center  
     Upper Upper  
 p3 Number of scale divisions (4 to 12)

**Query** `SBarMath[,p1]?`

**Example** Display the computed values of math channel 015 on a bar graph with the center set as the base position (Center). Display four equally spaced main scale marks.  
`SBarMath,015,Center,4`

## SPartialMath

### Partial Expanded Display (/MT)

Sets the partial expanded display of a math channel waveform.

**Syntax** `SPartialMath,p1,p2,p3,p4`  
 p1 Channel number  
 p2 Partial expanded On/Off (On, Off)  
 p3 Partial expanded boundary position [%] (1 to 99)  
 p4 Partial expanded boundary value

**Query** `SPartialMath[,p1]?`

**Example** For channel 015 whose measurement range is 0 to 1.0000 V, display the measured value of 0.7500 V at the 50% position.  
`SPartialMath,015,On,50,7500`

#### Description

- You cannot set this on a "Off" channel. p2 is fixed to Off.
- If p2=Off, you cannot set p3 or subsequent parameters.
- P2=On can be specified when the difference between the span upper and lower limits is 2 digits or greater.

## SBandMath

### Color Scale Band (/MT)

Sets the color scale band of a math channel.

**Syntax** `SBandMath,p1,p2,p3,p4,p5,p6,p7`  
 p1 Channel number  
 p2 Color scale band (Off, In, Out)  
 p3 R value of the color scale band RGB colors (0 to 255)  
 p4 G value of the color scale band RGB colors (0 to 255)  
 p5 B value of the color scale band RGB colors (0 to 255)  
 p6 Upper limit of the color scale band display (span lower limit to span upper limit)  
 p7 Lower limit of the color scale band display (span lower limit to span upper limit)

**Query** `SBandMath[,p1]?`

**Example** For math channel 015, set a blue band in the range of -0.5000 to 1.0000.  
`SBandMath,015,In,0,0,255,5000,10000`

#### Description

- You cannot set this on a "Off" channel. p2 is fixed to Off.
- If p2=Off, you cannot set p3 or subsequent parameters.
- For details on RGB values, see "Description" of the [SColorIO](#) command.

## SAlmMarkMath

### Alarm Mark (/MT)

Sets the display of the marker that indicates the specified alarm position of a math channel.

**Syntax** `SAlmMarkMath,p1,p2,p3,p4,p5,p6,p7,p8,p9,p10,p11,p12,p13,p14,p15`  
 p1 Channel number  
 p2 Whether to display the alarm mark on the scale (Off, On)  
 p3 Alarm mark type  
     Alarm Display the default alarm mark  
     Fixed Display the mark with the specified color  
 p4 R value of the RGB mark colors for alarm 1 (0 to 255)  
 p5 G value of the RGB mark colors for alarm 1 (0 to 255)  
 p6 B value of the RGB mark colors for alarm 1 (0 to 255)  
 p7 R value of the RGB mark colors for alarm 2 (0 to 255)  
 p8 G value of the RGB mark colors for alarm 2 (0 to 255)  
 p9 B value of the RGB mark colors for alarm 2 (0 to 255)  
 p10 R value of the RGB mark colors for alarm 3 (0 to 255)  
 p11 G value of the RGB mark colors for alarm 3 (0 to 255)  
 p12 B value of the RGB mark colors for alarm 3 (0 to 255)  
 p13 R value of the RGB mark colors for alarm 4 (0 to 255)

p14 G value of the RGB mark colors for alarm 4 (0 to 255)

p15 B value of the RGB mark colors for alarm 4 (0 to 255)

**Query** `SAlmMarkMath[,p1]?`

**Example** Display the alarm marks for alarms 1 to 4 of math channel 015 in fixed colors red, brown, orange, and yellow, respectively.  
`SAlmMarkMath,015,On,Fixed,255,0,0,165,42,42,255,165,0,255,255,0`

#### Description

- For details on RGB values, see “Description” of the **SColorIO** command.

## SRangeCom

### Measurement Range (/MC)

Sets the measurement range of a communication channel.

#### Unused Channels

**Syntax** `SRangeCom,p1,p2`  
 p1 Channel number  
 p2 Enable or disable (Off)

#### Used Channels

**Syntax** `SRangeCom,p1,p2,p3,p4,p5,p6`  
 p1 Channel number  
 p2 Enable or disable (On)  
 p3 Decimal Place (0 to 5)  
 p4 Span lower limit (-9999999 to 99999999)  
 p5 Span upper limit (-9999999 to 99999999)  
 p6 Unit string (up to 6 characters, UTF-8)

**Query** `SRangeCom[,p1]?`

**Example** Measure 0.00 to 100.00% on communication channel 025.  
`SRangeCom,025,On,2,0,10000,' %'`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p2=Off, you cannot set p3 or subsequent parameters.
- You cannot set the span upper and lower limits to the same value.

## SValueCom

### Preset Operation (/MC)

Sets the preset operation of a communication channel.

**Syntax** `SValueCom,p1,p2,p3`  
 p1 Channel number  
 p2 Value at power-on (Preset, Last)  
 p3 Preset value (-9.999999E+29 to -1E-30, 0, 1E-30 to 9.999999E+29)

**Query** `SValueCom[,p1]?`

**Example** At power-on, replace the communication channel 025 value with the preset value of 0.5.  
`SValueCom,025,Preset,0.5`

## SWDCom

### Watchdog Timer (/MC)

Sets the watchdog timer of a communication channel.

#### Channels That Do Not Use Watchdog Timers

**Syntax** `SWDCom,p1,p2`  
 p1 Channel number  
 p2 Watchdog timer usage (Off)

#### Channels That Use Watchdog Timers

**Syntax** `SWDCom,p1,p2,p3,p4`  
 p1 Channel number  
 p2 Watchdog timer usage (On)

## 2.4 Setting Commands

- p3 Watchdog timer (1 to 120) [s]
- p4 Value at timer expired (Preset, Last)

**Query** `SWDCom[,p1]?`

**Example** Set the watchdog timer of communication channel 025 to 60 seconds. Replace the communication channel 025 value with its preset value at watchdog timer expiration.

`SWDCom,025,On,60,Preset`

### Description

- If p2=Off, you cannot set p3 or subsequent parameters.

## SAlarmCom

### Alarm (/MC)

Sets the alarm of a communication channel.

#### No Alarm Setting

**Syntax** `SAlarmCom,p1,p2,p3`

- p1 Channel number
- p2 Alarm number (1 to 4)
- p3 Alarm on or off (Off)

#### Do Not Output Alarms

**Syntax** `SAlarmCom,p1,p2,p3,p4,p5,p6,p7`

- p1 Channel number
- p2 Alarm number (1 to 4)
- p3 Alarm on or off (On)
- p4 Alarm type (H, L, TH, TL)
- p5 Alarm value (within the span range)
- p6 Detection (Off, On)
- p7 Output (Off)

#### Output Alarms

**Syntax** `SAlarmCom,p1,p2,p3,p4,p5,p6,p7,p8`

- p1 Channel number
- p2 Alarm number (1 to 4)
- p3 Alarm on or off (On)
- p4 Alarm type (H, L, TH, TL)
- p5 Alarm value (within the span range)
- p6 Detection (Off, On)
- p7 Output (Off)
  - DO Output to a relay (DO channel)
  - SW Output to an internal switch
- p8 Number
  - If p7=DO Relay (DO channel) number
  - If p7=SW Internal switch number (001 to 100)

**Query** `SAlarmCom[,p1]?`

**Example** Set a high limit alarm (H) on alarm number 2 of communication channel 025. Set the alarm value to 85.0%. When an alarm occurs, output to the relay (DO channel) at number 0105.  
`SAlarmCom,025,2,On,H,850,On,DO,0105`

### Description

- You cannot set this on a “Off” communication channel.

- If p3=Off, you cannot set p4 or subsequent parameters.
- If p7=Off, you cannot set p8.
- You cannot set DO channels or internal switches whose output type is set to Manual as output destination numbers.

## SAlmHysCom

### Alarm Hysteresis (/MC)

Sets the alarm hysteresis for a communication channel.

**Syntax** `SAlmHysCom,p1,p2,p3`

- p1 Channel number
- p2 Alarm number (1 to 4)
- p3 Hysteresis

Alarm Type	Hysteresis Range
H, L	0 to 100000

**Query** `SAlmHysCom[,p1]?`

**Example** Set a hysteresis on alarm 3 of communication channel 025.

`SAlmHysCom,025,3,10`

### Description

- Hysteresis specified for delay high and low limit alarms (TH and TL) does not apply.

## SAlmDlyCom

### Alarm Delay (/MC)

Sets the delay alarm time for a communication channel.

**Syntax** `SAlmDlyCom,p1,p2,p3,p4`

- p1 Channel number
- p2 Hour (0 to 24)
- p3 Minute (0 to 59)
- p4 Second (0 to 59)

**Query** `SAlmDlyCom[,p1]?`

**Example** Set the communication channel 025 alarm delay to 2 minutes 30 seconds.

`SAlmDlyCom,025,0,2,30`

### Description

- Set the delay time so that it is an integer multiple of the scan interval (**SScan** command).

## STagCom

### Tag (/MC)

Sets the tag of a communication channel.

**Syntax** `STagCom,p1,p2,p3`

- p1 Channel number
- p2 Tag (up to 32 characters, UTF-8)
- p3 Tag number (up to 16 characters, ASCII)

**Query** `STagCom[,p1]?`

**Example** Set the communication channel 025 tag to “SYSTEM1” and the tag number to “TI002.”

`STagCom,025,'SYSTEM1','TI002'`



## SColorCom

### Channel Color (/MC)

Sets the color of a communication channel.

**Syntax** SColorCom,p1,p2,p3,p4  
 p1 Channel number  
 p2 R value of RGB display colors (0 to 255)  
 p3 G value of RGB display colors (0 to 255)  
 p4 B value of RGB display colors (0 to 255)

**Query** SColorCom[,p1]?

**Example** Set the communication channel 025 display color to red.  
 SColorCom,025,255,0,0

#### Description

- For details on RGB values, see “Description” of the [SColorIO](#) command.

## SZoneCom

### Waveform Display Zone (/MC)

Sets the waveform display zone of a communication channel.

**Syntax** SZoneCom,p1,p2,p3  
 p1 Channel number  
 p2 Zone lower limit [%] (0 to 95)  
 p3 Zone upper limit [%] (5 to 100)

**Query** SZoneCom[,p1]?

**Example** Set the waveform zone of communication channel 025 waveform to 0% to 30%.  
 SZoneCom,025,0,30

## SScaleCom

### Scale Display (/MC)

Sets the scale display of a communication channel.

**Syntax** SScaleCom,p1,p2,p3  
 p1 Channel number  
 p2 Scale display position (Off, 1 to 10)  
 p3 Number of scale divisions (4 to 12, C10)

**Query** SScaleCom[,p1]?

**Example** Display the communication channel 025 scale at display position 1. Display four equally spaced main scale marks.  
 SScaleCom,025,1,4

## SBarCom

### Bar Graph Display (/MC)

Sets the bar graph display of a communication channel.

**Syntax** SBarCom,p1,p2,p3  
 p1 Channel number  
 p2 Bar display base position  
     Lower    Lower  
     Center   Center  
     Upper    Upper  
 p3 Number of scale divisions (4 to 12)

**Query** SBarCom[,p1]?

**Example** Display the values of communication channel 025 on a bar graph with the center set as the base position (Center). Display four equally spaced main scale marks.  
 SBarCom,025,Center,4

## SPartialCom

### Partial Expanded Display (/MC)

Sets the partial expanded display of a communication channel waveform.

**Syntax** SPartialCom,p1,p2,p3,p4  
 p1 Channel number  
 p2 Partial expanded On/Off (On, Off)  
 p3 Partial expanded boundary position [%] (1 to 99)  
 p4 Partial expanded boundary value

**Query** SPartialCom[,p1]?

**Example** For channel 025 whose measurement range is 0 to 1.0000 V, display the measured value of 0.7500 V at the 50% position.  
 SPartialCom,025,On,50,7500

#### Description

- You cannot set this on a “Off” channel. p2 is fixed to Off.
- If p2=Off, you cannot set p3 or subsequent parameters.
- P2=On can be specified when the difference between the span upper and lower limits is 2 digits or greater.

## SBandCom

### Color Scale Band (/MC)

Sets the color scale band of a communication channel.

**Syntax** SBandCom,p1,p2,p3,p4,p5,p6,p7  
 p1 Channel number  
 p2 Color scale band (Off, In, Out)  
 p3 R value of the color scale band RGB colors (0 to 255)  
 p4 G value of the color scale band RGB colors (0 to 255)  
 p5 B value of the color scale band RGB colors (0 to 255)  
 p6 Upper limit of the color scale band display (span lower limit to span upper limit)  
 p7 Lower limit of the color scale band display (span lower limit to span upper limit)

**Query** SBandCom[,p1]?

**Example** For communication channel 025, set a blue band in the range of -0.5000 to 1.0000.  
 SBandCom,025,In,0,0,255,5000,10000

#### Description

- You cannot set this on a “Off” channel. p2 is fixed to Off.
- If p2=Off, you cannot set p3 or subsequent parameters.
- For details on RGB values, see “Description” of the [SColorIO](#) command.

## SAlmMarkCom

### Alarm Mark (/MC)

Sets the display of the marker that indicates the specified alarm position of a communication channel.

**Syntax** `SAlmMarkCom,p1,p2,p3,p4,p5,p6,p7,p8,p9,p10,p11,p12,p13,p14,p15`  
 p1 Channel number  
 p2 Whether to display the alarm mark on the scale (Off, On)  
 p3 Alarm mark type  
     Alarm Display the default alarm mark  
     Fixed Display the mark with the specified color  
 P4 R value of the RGB mark colors for alarm 1 (0 to 255)  
 p5 G value of the RGB mark colors for alarm 1 (0 to 255)  
 p6 B value of the RGB mark colors for alarm 1 (0 to 255)  
 p7 R value of the RGB mark colors for alarm 2 (0 to 255)  
 p8 G value of the RGB mark colors for alarm 2 (0 to 255)  
 p9 B value of the RGB mark colors for alarm 2 (0 to 255)  
 p10 R value of the RGB mark colors for alarm 3 (0 to 255)  
 p11 G value of the RGB mark colors for alarm 3 (0 to 255)  
 p12 B value of the RGB mark colors for alarm 3 (0 to 255)  
 p13 R value of the RGB mark colors for alarm 4 (0 to 255)  
 p14 G value of the RGB mark colors for alarm 4 (0 to 255)  
 p15 B value of the RGB mark colors for alarm 4 (0 to 255)

**Query** `SAlmMarkCom[,p1]?`

**Example** Display the alarm marks for alarms 1 to 4 of communication channel 025 in fixed colors red, brown, orange, and yellow, respectively.  
`SAlmMarkCom,025,On,Fixed,255,0,0,165,42,42,255,165,0,255,255,0`

#### Description

- For details on RGB values, see “Description” of the [SColorIO](#) command.

## SAlmLimit

### Rate-of-Change Alarm Interval

Sets the rate-of-change interval of the rate-of-change alarm.

**Syntax** `SAlmLimit,p1,p2`  
 p1 Interval for the low limit on rate-of-change alarm  
     1 to 32 Integer multiple of the scan interval  
 p2 Interval for the high limit on rate-of-change alarm  
     1 to 32 Integer multiple of the scan interval

**Query** `SAlmLimit?`

**Example** Set the intervals for the low limit on rate-of-change alarm and high limit on rate-of-change alarm to 10 times and 20 times the scan interval, respectively.  
`SAlmLimit,10,20`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SAlmSts

### Alarm Display Hold/Nonhold

Sets the alarm display hold/nonhold operation.

**Syntax** `SAlmSts,p1`  
 p1 Operation  
     Hold  
     NonHold

**Query** `SAlmSts?`

**Example** Hold the alarm display until an alarm ACK operation.  
`SAlmSts,Hold`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## STimer

### Timer

Sets a timer.

#### Do Not Use Timers

**Syntax** `STimer,p1,p2`  
 p1 Timer number (1 to 4)  
 p2 Timer type (Off)

#### Relative Timer

**Syntax** `STimer,p1,p2,p3,p4,p5,p6`  
 p1 Timer number (1 to 4)  
 p2 Timer type (Relative)  
 p3 Interval: Days (0 to 31)  
 P4 Interval: Hours (HH) (00 to 23)

- p5 Interval: Minutes (MM) (00 to 59)  
p6 Action on Math start (Off, On)

**Absolute Timer****Syntax** `STimer, p1, p2, p3, p4, p5`

- p1 Timer number (1 to 4)  
p2 Timer type (Absolute)  
p3 Interval (1min, 2min, 3min, 4min, 5min, 6min, 10min, 12min, 15min, 20min, 30min, 1h, 2h, 3h, 4h, 6h, 8h, 12h, 24h)  
P4 Reference time: Hours (HH) (00 to 23)  
p5 Reference time: Minutes (MM) (00 to 59)

**Query** `STimer[, p1]?`**Example** Set timer number 2 to relative timer at 6 hours 30 minutes. Reset the timer when computation starts.`STimer, 2, Relative, 0, 6, 30, On`**Description**

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p2=Off, you cannot set p3 or subsequent parameters.
- If p2=Relative and p3=0, you cannot set "00:00" (for p4 and p5).

**SMatchTimer****Match Time Timer**

Sets a match time timer.

**Do Not Use Match Time Timers****Syntax** `SMatchTimer, p1, p2`

- p1 Match time timer number (1 to 4)  
p2 Type (Off)

**Match Time Timer That Synchronizes Once a Year****Syntax** `SMatchTimer, p1, p2, p3, p4, p5, p6, p7`

- p1 Match time timer number (1 to 4)  
p2 Type (Year)  
p3 Start time: Month (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec)  
P4 Start time: Day (1 to 31, depends on the month)  
p5 Interval: Hours (HH) (00 to 23)  
p6 Interval: Minutes (MM) (00 to 59)  
p7 Timer action  
Single Single shot  
Repeat Repeat

**Match Time Timer That Synchronizes Once a Month****Syntax** `SMatchTimer, p1, p2, p3, p4, p5, p6`

- p1 Match time timer number (1 to 4)  
p2 Type (Month)  
p3 Start time: Day (1 to 31, depends on the month)  
P4 Interval: Hours (HH) (00 to 23)  
p5 Interval: Minutes (MM) (00 to 59)  
p6 Timer action  
Single Single shot

Repeat Repeat

**Match Time Timer That Synchronizes Once a Week****Syntax** `SMatchTimer, p1, p2, p3, p4, p5, p6`

- p1 Match time timer number (1 to 4)  
p2 Type (Week)  
p3 Start time: Day of week  
Sun  
Mon  
Tue  
Wed  
Thu  
Fri  
Sat  
P4 Interval: Hours (HH) (00 to 23)  
p5 Interval: Minutes (MM) (00 to 59)  
p6 Timer action  
Single Single shot  
Repeat Repeat

**Match Time Timer That Synchronizes Once a Day****Syntax** `SMatchTimer, p1, p2, p3, p4, p5`

- p1 Match time timer number (1 to 4)  
p2 Type (Day)  
p3 Interval: Hours (HH) (00 to 23)  
P4 Interval: Minutes (MM) (00 to 59)  
p5 Timer action  
Single Single shot  
Repeat Repeat

**Query** `SMatchTimer[, p1]?`**Example** Sets match time timer number 2 to a timer that operates on 21 hours 30 minutes on April 17 every year.`SMatchTimer, 2, Year, Apr, 17, 21, 30, Repeat`**Description**

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p2=Off, you cannot set p3 or subsequent parameters.

**SEventAct****Event Action**

Sets an event action.

**Syntax** `SEventAct, p1, p2, p3, p4, p5, p6, p7, p8, p9, p10`  
`SEventAct, p1, p2, p3, p4, p5, p6, p7, p8, p9, p10`  
`SEventAct, p1, p2, p3, p4, p5, p6, p7, p8, p9, p10`  
 p1 Event action number (1 to 50)  
 p2 Type (Off, On)  
 p3 Event type (see the table below)  
 P4 Source element number (see the table below)  
 p5 Alarm level (see the table below)

## 2.4 Setting Commands

- p6 Operation mode (see the table below)
- p7 Action type (see the table below)
- p8 Source element number (see the table below)
- p9 Action detail 1 (see the table below)
- p10 Action detail 2 (see the table below)

p3 Event Type	Value	P4 Source Element Number	p5 Alarm Level	p6 Operation mode
Internal Switch	SW	1 to 100	-	Rising, Falling, Both
Remote control input	DI	Channel number	-	Rising, Falling, Both
Relay (DO channel)	DO	Channel number	-	Rising, Falling, Both
Alarm (I/O channel)	AlarmIO	Channel number	1 to 4	Rising, Falling, Both
Alarm (math channel)	AlarmMath	Channel number	1 to 4	Rising, Falling, Both
Alarm (communication channel)	AlarmCom	Channel number	1 to 4	Rising, Falling, Both
Alarm	AlarmAll	-	-	Rising, Falling, Both
Timer	Timer	1 to 4	-	Edge
Match time timer	MatchTimeTimer	1 to 4	-	Edge

Conditions p6	p7 Action Type	Value	p8 Source Element Number	p9 Action Detail 1	p10 Action Detail 2
Rising, Falling, Edge	Recording	Memory	-	Start, Stop	-
	Math (math channel)	Math	-	Start, Stop, Reset	-
	Display rate switch	RateChange	1, 2	-	-
	Flag	Flag	1 to 20	-	-
	Manual sample	ManualSample	-	-	-
	Alarm ACK	AlarmACK	-	-	-
	Snapshot	Snapshot	-	-	-
	Time adjustment	TimeAdjust	-	-	-
	Display data save	SaveDisplay	-	-	-
	Event data save	SaveEvent	1	-	-
	Event trigger	Trigger	1	-	-
	Message	Message	1 to 100	All, Select	1 to 50
	Display group change	GroupChange	1 to 50	-	-
	Relative timer reset	TimerReset	1 to 4	-	-
	Settings load	ConfigLoad	1 to 3	-	-
	Favorite screen display	PlayList	1 to 20	-	-
	Recording start/stop	MemoryStartStop	-	-	-
	Math start/stop	MathStartStop	-	-	-
Both	Display rate switch 1/2	RateChange1_2	-	-	-
	Flag On/Off	FlagOn_Off	1 to 20	-	-

**Query** SEventAct[,p1]?

Invalid parameters are returned as blanks in queries.

**Example** Execute memory start on the rising edge of the remote control input (channel 0101). Use event action number 2.

SEventAct,2,On,DI,0101,,Rising,Memory,,Start

### Description

- There are limitations to event and action combinations. For details, see section 1.14 in the *Models GX10/GX20/GP10/GP20 Paperless Recorder User's Manual* (IM 04L51B01-01EN).
- Write only delimiters (commas) for irrelevant parameters (invalid even if a value is specified).
- Event type "DI" is the channel of the DI module that has been set to remote module (**SModeDI** command).
- Math channel and flag are an option (/MT).
- Communication channels are an option (/MC).

## SReport

### Report Type (/MT)

Sets the type of report to create.

#### No Reports

**Syntax** SReport,p1  
p1 Type (Off)

#### Hourly and Daily Reports

**Syntax** SReport,p1,p2  
p1 Type (Hour+Day)  
p2 Time to create reports: Hour (HH) (00 to 23)

#### Daily and Weekly Reports

**Syntax** SReport,p1,p2,p3  
p1 Type (Day+Week)  
p2 Day to create reports (Mon, Tue, Wed, Thu, Fri, Sat, Sun)  
p3 Time to create reports: Hour (HH) (00 to 23)

#### Daily and Monthly Reports

**Syntax** SReport,p1,p2,p3  
p1 Type (Day+Month)  
p2 Day to create reports (1 to 28)  
p3 Time to create reports: Hour (HH) (00 to 23)

#### Batch Reports

**Syntax** SReport,p1,p2  
p1 Type (Batch)  
p2 Recording interval (10min, 15min, 30min, 1h)

#### Day Custom Reports

**Syntax** SReport,p1,p2,p3,p4,p5  
p1 Type (Custom)  
p2 Recording interval (10min, 15min, 30min, 1h)  
p3 File creation interval (4h, 6h, 8h, 12h, 24h)  
p4 Time to create reports: Hour (HH) (00 to 23)  
p5 Time to create reports: Minute (MM) (00 to 59)

**Query** SReport[,p1]?

**Example** Create daily reports at 09:00 every day and monthly reports at 09:00 on the first day of each month.

SReport,Day+Month,1,09

### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p1=Off, you cannot set p2 or subsequent parameters.

## SRepData

### Report Data (/MT)

Sets the data type and file type of reports.

**Syntax** SRepData, p1, p2, p3, p4, p5, p6  
 p1 Data type 1 (Max, Min, Ave, Sum, Inst)  
 p2 Data type 2 (Off, Max, Min, Ave, Sum, Inst)  
 p3 Data type 3 (Off, Max, Min, Ave, Sum, Inst)  
 p4 Data type 4 (Off, Max, Min, Ave, Sum, Inst)  
 p5 Data type 5 (Off, Max, Min, Ave, Sum, Inst)  
 Off No  
 Max Maximum value  
 Min Minimum value  
 Ave Average value  
 Sum Integrated value  
 Inst Instantaneous value  
 p6 File type  
 Combine 1 file  
 Separate Separate

**Query** SRepData?

**Example** Record the maximum, minimum, and average values in daily and monthly reports. Generate the daily and monthly reports in a single file.  
 SRepData, Max, Min, Ave, Off, Combine

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SRepTemp

### Report Output (/MT)

Sets the report output mode.

**Syntax** SRepTemp, p1, p2, p3  
 p1 EXCEL template  
 Off Disabled  
 On Enabled  
 p2 PDF output (Off, On)  
 p3 Printer output (Off, On)

**Query** SRepTemp?

**Example** Generate reports that use the Excel template.  
 SRepTemp, On, Off, Off

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SRepCh

### Report Channel (/MT)

Assigns a channel to a report channel.

#### Not Assign a Channel

**Syntax** SRepCh, p1, p2  
 p1 Report Channel Number  
 p2 Usage (Off)

#### Assign a Channel

**Syntax** SRepCh, p1, p2, p3, p4  
 p1 Report Channel Number  
 p2 Usage  
 IO I/O channel  
 Math Math channel  
 Com Communication channel  
 p3 Channel number  
 p4 Sum scale (Off, /sec, /min, /hour, /day)

**Query** SRepCh[, p1]?

**Example** Assign I/O channel 0002 to report channel 1.  
 Set the sum scale to Off.  
 SRepCh, 001, IO, 0002, Off

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- If p2=Off, you cannot set p3 or subsequent parameters.
- Communication channels are an option (/MC).

## SLcd

### LCD

Sets the brightness and backlight saver of the LCD.

**Syntax** SLcd, p1, p2, p3, p4  
 p1 Brightness (1 to 6)  
 p2 Backlight saver mode  
 Off Not used  
 Dimmer Dimmer  
 TimeOff Off  
 p3 Backlight saver saver time (1min, 2min, 5min, 10min, 30min, 1h)  
 p4 Backlight saver restore  
 Key+Touch Key or touchscreen  
 Key+Touch+Alarm Key, touchscreen, or alarm

**Query** SLcd?

**Example** Set the LCD brightness to 3 and the screen backlight saver type to DIMMER. Set the amount time of until the GX/GP switches to saver mode to 5 minutes and the event that causes the GX/GP to return from saver mode to the pressing of a key and tapping of the touchscreen.  
 SLcd, 3, Dimmer, 5min, Key+Touch

#### Description

- p3 and subsequent parameters are valid when p2=Off.



## SViewAngle

### View Angle

Set the view angle.

**Syntax** SViewAngle,p1  
 p1 View Angle  
     Upper Easy to view from above  
     Lower Easy to view from below

**Query** SViewAngle?

**Example** Set the view angle so that it is easy to view from above.  
 SViewAngle,Upper

#### Description

- This command is valid for the GX10/GP10.

## SBackColor

### Screen Background Color

Sets the screen background color.

**Syntax** SBackColor,p1,p2,p3  
 p1 R value of RGB background colors (0 to 255)  
 p2 G value of RGB background colors (0 to 255)  
 p3 B value of RGB background colors (0 to 255)

**Query** SBackColor?

**Example** Set the background color to black.  
 SBackColor,0,0,0

#### Description

- For details on RGB values, see “Description” of the **SColorIO** command.

## SGrpChange

### Automatic Group Switching Time

Sets the time for automatically switching between display groups.

**Syntax** SGrpChange,p1  
 p1 Automatic group switching time (5s, 10s, 20s, 30s, 1min)

**Query** SGrpChange?

**Example** Set the switching time to 1 minute.  
 SGrpChange,1min

## SAutoJump

### Jump Default Display Operation

Sets the amount of time that must elapse until the GX/GP returns to the specified screen (standard screen) when there is no user interaction.

**Syntax** SAutoJump,p1  
 p1 Jump default display operation (Off, 1min, 2min, 5min, 10min, 20min, 30min, 1h)

**Query** SAutoJump?

**Example** Set the automatic return time to 5 minutes.  
 SAutoJump,5min

## SDateFormat

### Calendar Display Format

Sets the calendar display format.

**Syntax** SDateFormat,p1  
 p1 1st weekday (Sun, Mon)

**Query** SDateFormat?

**Example** Set the first weekday to Monday.  
 SDateFormat,Mon

## SBarDirect

### Bar Graph Display Direction

Sets the bar graph display direction.

**Syntax** SBarDirect,p1  
 p1 Direction  
     Horizontal Horizontal  
     Vertical Vertical

**Query** SBarDirect?

**Example** Display bar graphs horizontally.  
 SBarDirect,Horizontal

## SChgMonitor

### Value Modification from the Monitor

Enables or disables the feature that allows values to be changed from the monitor.

**Syntax** SChgMonitor,p1  
 p1 Disable or enable (Off, On)

**Query** SChgMonitor?

**Example** Enable the feature that allows values to be changed from the monitor.  
 SChgMonitor,On

## STrdWave

### Trend Waveform Display

Sets the trend waveform display mode.

**Syntax** STrdWave,p1,p2  
 p1 Waveform display direction  
     Horizontal Horizontal  
     Vertical Vertical  
 p2 Trend clear  
     Off Do not clear  
     On Clear

**Query** STrdWave?

**Example** Set the trend waveform to horizontal display and clear the waveform when recording is started.  
 STrdWave,Vertical,On

## STrdScale

### Scale

Set the scale.

**Syntax** STrdScale,p1,p2,p3

p1	Number of digits to display for scale values.
Normal	Normal
Fine	Fine
p2	Current value display
Mark	Mark
Bar	Bar graph
p3	Number of digits to display for channels that are added to the current value mark
0-digit	0 digits (not show channel numbers)
3-digit	3 digits
4-digit	4 digits

**Query** STrdScale?

**Example** Set the number of digits to display for scale values to "Fine," display the value indicators on a bar graph, and set the number of digits to display for channels that are added to the current value mark to 4 digits.

STrdScale,Fine,Bar,4-digit

## STrdLine

### Trend Line Width, Grid

Sets the trend waveform line width and the grid in the display area.

**Syntax** STrdLine,p1,p2

p1	Line width
Thick	Thick
Normal	Normal
Thin	Thin
p2	Grid
Auto	Auto
4 to 12	Number of grid lines

**Query** STrdLine?

**Example** Set the trend waveform line width to "Thin" and the number of grid lines to 10.

STrdLine,Thin,10

## STrdRate

### Trend Interval Switching

Sets the trend interval switching.

**Syntax** STrdRate,p1,p2

p1	Trend interval switching
Off	Not switch
On	Switch
p2	Second trend interval (5s, 10s, 15s, 30s, 1min, 2min, 5min, 10min, 15min, 20min, 30min, 1h, 2h, 4h, 10h).

**Query** STrdRate?

**Example** Set the second trend interval to 30 seconds.

STrdRate,On,30s

#### Description

- You cannot set parameter p1 while recording is in progress.

- You cannot set parameter p1 while computation is in progress.
- p2 is valid only when p1=On.
- You cannot choose a second trend interval that is shorter than the scan interval.

## STrdKind

### Trend Type

Sets the type of trend waveform to display.

**Syntax** STrdKind,p1

p1 Type  
Fixed to "T-Y"

**Query** STrdKind?

**Example** Display using rectangular coordinates.

STrdKind,T-Y

## STrdPartial

### Partial Expanded Trend Display

Enable or disable the partial expanded trend display.

**Syntax** STrdPartial,p1

p1 Disable or enable (Off, On)

**Query** STrdPartial?

**Example** Enable the partial expanded trend display.

STrdPartial,On

## SMsgBasic

### Message Writing

Sets the message writing operation.

**Syntax** SMsgBasic,p1,p2,p3

p1	Message writing method
Common	Write messages to all display groups.
Separate	Write messages to only the groups that are displayed.
p2	Power failure message (Off, On)
p3	Change message (Off, On)

**Query** SMsgBasic?

**Example** Write messages to only the groups that are displayed. Enable the power failure message and change message.

SMsgBasic,Separate,On,On

## SGroup

### Display Group

Sets the display group.

**Syntax** SGroup,p1,p2,p3,p4

p1	Group number
p2	Enable or disable (Off, On)
p3	Group name (up to 16 characters, UTF-8)
p4	Channel list

Specify using channel numbers. 4-digit numbers for I/O channels. Numbers that start with “A” for math channels (A015). Numbers that start with “C” for communication channels (C020). Use periods to separate channel numbers (see example).

**Query** `SGroup[,p1]?`

**Example** Assign channels 0001, 0003, 0005, A001, and C023 to group 2 and name it “GROUP A.”  
`SGroup,2,On,'GROUP A','0001.0003.0005.A001.C023'`

## STripLine

### Display Group Trip Line

Sets a trip line for a display group.

**Syntax** `STripLine,p1,p2,p3,p4,p5,p6,p7,p8`  
 p1 Group number  
 p2 Trip line number (1 to 4)  
 p3 Enable or disable (Off, On)  
 p4 Display position [%] (1 to 100)  
 p5 R value of RGB display colors (0 to 255)  
 p6 G value of RGB display colors (0 to 255)  
 p7 B value of RGB display colors (0 to 255)  
 p8 Line width  
     Thin                      Thin  
     Normal                  Normal  
     Thick                    Thick

**Query** `STripLine[,p1[,p2]]?`

**Example** Display trip line 2 using a thick line in red at the 80% position of group 2.  
`STripLine,2,2,On,80,255,0,0,Thick`

#### Description

- p4 and subsequent parameters are valid only when p3=On.
- For details on RGB values, see “Description” of the [SColorIO](#) command.

## SSclBmp

### Scale Bitmap Image Usage

Sets whether to display a bitmap scale image in the trend display of a display group.

**Syntax** `SSclBmp,p1,p2`  
 p1 Group number  
 p2 Enable or disable (Off, On)

**Query** `SSclBmp[,p1]?`

**Example** Use a bitmap scale image on display group 3.  
`SSclBmp,3,On`

#### Description

- Specify the bitmap file to use from the front panel of the GX/GP.

## SMessage

### Message

Sets messages.

**Syntax** `SMessage,p1,p2`

p1 Message number (1 to 100)  
 p2 Message string (up to 32 characters, UTF-8)

**Query** `SMessage[,p1]?`

**Example** Assign character string “MESSAGE77” to message number 77.  
`SMessage,77,'MESSAGE77'`

## STimeZone

### Time Zone

Sets the time zone.

**Syntax** `STimeZone,p1,p2`  
 p1 Time zone: Hour (-13 to 13)  
 p2 Time zone: Minute (0 to 59)

**Query** `STimeZone?`

**Example** Set the time offset to 9 hours ahead of GMT.  
`STimeZone,9,0`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SDateBasic

### Gradual Time Adjustment

Sets the gradual time adjustment feature.

**Syntax** `SDateBasic,p1,p2`  
 p1 Boundary value for gradually adjusting the time (Off, 5s, 10s, 15s)  
 p2 Action to take when the boundary value for gradually adjusting the time is exceeded.  
     NotChange                  Do not change  
     Change                      Change

**Query** `SDateBasic?`

**Example** Set the boundary value to 15 seconds. When the offset exceeds the boundary value, do not change the time.  
`SDateBasic,15s,NotChange`

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SDateFormat

### Date Format

Sets the date format.

**Syntax** `SDateFormat,p1,p2,p3`  
 p1 Date format  
     YYMMDD                  Year, month, day  
     MMDDYY                  Month, day, year  
     DDMMYY                  Date, month, year  
 p2 Delimiter  
     /                          Slash



.	Dot (period)
-	Hyphen
p3	Month display
Digit	Display the month using numerals (1 to 12)
Letter	Display the month using characters (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec)

**Query** SDateFormat?

**Example** Set the date format to "year, month, day," and display the month using numerals.  
SDaeFormat,YYMMDD,/,Digit

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SDst

### Daylight Saving Time

Set the daylight saving time.

**Syntax** SDst,p1,p2,p3,p4,p5,p6,p7,p8,p9

p1 Enable or disable (Use, Not)

p2 Start time: Month (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec)

p3 Start time: Week (1st, 2nd, 3rd, 4th, Last)

p4 Start time: Weekday (Sun, Mon, Tue, Wed, Thu, Fri, Sat)

p5 Start time: Hour (0 to 23)

p6 End time: Month (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec)

p7 End time: Week (1st, 2nd, 3rd, 4th, Last)

p8 End time: Weekday (Sun, Mon, Tue, Wed, Thu, Fri, Sat)

p9 End time: Hour (0 to 23)

**Query** SDst?

**Example** Switch to daylight saving time at hour 0 on the first Sunday of June and switch back at hour 0 on the first Sunday of December.  
SDst,On,Jun,1st,Sun,0,Dec,1st,Sun,0

## SLang

### Language

Sets the language to use.

**Syntax** SLang,p1

p1 Language (Japanese, English, German, French, Chinese)

**Query** SLang?

**Example** Set the language to Japanese.  
SLang,Japanese

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## STemp

### Temperature Unit

Sets the temperature unit.

**Syntax** STemp,p1

p1 Temperature unit

C Celsius

F Fahrenheit

**Query** STemp?

**Example** Set the temperature unit to Celsius.  
STemp,C

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SDPoint

### Decimal Point Type

Sets the decimal point type.

**Syntax** SDPoint,p1

p1 Decimal point type

Point Use points.

Comma Use commas.

**Query** SDPoint?

**Example** Use a comma for the decimal point.  
SDPoint,Comma

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SFailAct

### Fail Relay (DO Channel) Operation (/FL)

Sets the fail relay (DO channel) operation.

**Syntax** SFailAct,p1

p1 Operation

Fail Output fail information.

Status Output instrument information.

**Query** SFailAct?

**Example** Output fail signals from the fail relay (DO channel).  
SFailAct,Fail

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SFailSts

### Instrument Status to Output (/FL)

Sets the instrument status to output from the fail relay (DO

## 2.4 Setting Commands

channel).

**Syntax** `SFailSts, p1, p2, p3, p4, p5`  
p1 Memory/media status (Off, On)  
p2 Measurement error (Off, On)  
p3 Communication error (Off, On)  
p4 Recording stop (Off, On)  
p5 Alarm (Off, On)

**Query** `SFailSts?`

**Example** Output all information.  
`SFailSts, On, On, On, On, On`

### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.

## SPrinter

### Printer

Sets the printer.

**Syntax** `SPrinter, p1, p2, p3, p4, p5, p6`  
p1 IP address (0. 0. 0. 0 to 255. 255. 255. 255)  
p2 Paper size (A4, A3, Letter)  
p3 paper orientation (Horizontal, Vertical)  
p4 Resolution [dpi] (300, 600)  
p5 Number of copies (1 to 10)  
p6 Snapshot (Off, On)

**Query** `SPrinter?`

**Example** Set the IP address to "192.168.111.24," the paper size to A3, the paper orientation to horizontal, the resolution to 600, the number of copies to 2, and snapshot to On.  
`SPrinter, 192.168.111.24, A3, Horizontal, 600, 2, On`

## SLed

### LED Indicator Operation

Sets the operation of the LED indicators on the front panel.

**Syntax** `SLed, p, p2`  
p1 Type (Function)  
p2 Operation  
Off Power state  
AlarmAll Alarm

**Query** `SLed?`

**Example** Set the LED indicator operation to "Alarm."  
`SLed, Function, AlarmAll`

## SSound

### Sound

Sets touch and warning sounds.

**Syntax** `SSound, p1, p2`  
p1 Touch sound (Off, On)  
p2 Warning sound (Off, On)

**Query** `SSound?`

**Example** Enable touch and warning sounds.  
`SSound, On, On`

## SInstruTag

### Instruments Tag

Sets tags.

**Syntax** `SInstruTag, p1, p2`  
p1 Tag (up to 32 characters, UTF-8)  
p2 Tag number (up to 16 characters, ASCII)

**Query** `SInstruTag?`

**Example** Set the tag to assign to the GX/GP to "GX" and the tag number to "12345."  
`SInstruTag, 'GX', '12345'`

## SConfCmt

### Setting File Comment

Sets the setting file comment.

**Syntax** `SConfCmt, p1`  
p1 Setting file comment (up to 50 characters, UTF-8)

**Query** `SConfCmt?`

**Example** Set "SETTING FILE COMMENT."  
`SConfCmt, 'SETTING FILE COMMENT'`

## SUsbInput

### USB Input Device

Specifies the USB input device.

**Syntax** `SUsbInput, p1`  
p1 USB input device type  
Japanese\_109 Japanese keyboard  
English\_104 English keyboard

**Query** `SUsbInput?`

**Example** Specify the English keyboard.  
`SUsbInput, English_104`

## SSwitch

### Internal Switch Operation

Sets the internal switch operation.

**Syntax** `SSwitch, p1, p2, p3`  
p1 Internal switch number (1 to 100)  
p2 Output type  
Alarm Output alarms  
Manual Specify the output value  
p3 Operation  
And Operate when all set alarms are in the alarm state.  
Or Operate when any of the set alarms are in the alarm state.

**Query** `SSwitch[, p1]?`

**Example** Output an alarm on internal switch 3. Use "OR" logic.

SSwitch, 3, Alarm, Or

**Description**

- p3 is valid when p2=Alarm.

**SSerialBasic****Serial Communication Basics (/C2 or /C3)**

Sets basic serial communication parameters.

**Not Use**

**Syntax** SSerialBasic, p1  
p1 Function (Off)

**Normal**

**Syntax** SSerialBasic, p1, p2, p3, p4, p5, p6, p7  
p1 Function (Normal)  
p2 Address (1 to 99)  
p3 Baud rate [bps] (1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200)  
p4 Parity (Odd, Even, None)  
p5 Stop bits (1, 2)  
p6 Data length [bit] (7, 8)  
p7 Handshaking (Off:Off, XON:XON, XON:RS, CS:RS)

**Modbus Master and Modbus Slave**

**Syntax** SSerialBasic, p1, p2, p3, p4, p5  
p1 Function (Master, Slave)  
p2 Address (1 to 247)  
p3 Baud rate [bps] (1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200)  
p4 Parity (Odd, Even, None)  
p5 Stop bits (1, 2)

**Query** SSerialBasic?

**Example** Set the baud rate to 9600, the data length to 8, the parity check to ODD, the stop bits to 1, the handshaking to OFF:OFF, the address to 02, and the protocol to NORMAL.  
SSerialBasic, Normal, 2, 9600, Odd, 1, 8, Off:Off

**Description**

- You can set p1=Master only on GXs/GPs that have the /MC option.
- The settings specified with this command takes effect with the **OSeriApply** command. The GX/GP serial settings do not change until you send the OSeriApply command.

**SModMaster****Modbus Master (/C2/MC or /C3/MC)**

Sets the Modbus master operation.

**Syntax** SModMaster, p1, p2, p3, p4, p5, p6  
p1 Master function (Off, On)  
p2 Read cycle (100ms, 200ms, 500ms, 1s, 2s, 5s, 10s)  
p3 Communication timeout (100ms, 200ms, 250ms, 500ms, 1s, 2s, 5s, 10s, 1min)  
p4 Gap between messages (Off, 5ms, 10ms, 20ms, 50ms, 100ms)

- p5 Recovery action: retransmission (Off, 1, 2, 3, 4, 5, 10, 20)  
p6 Recovery action: wait time (Off, 5s, 10s, 30s, 1min, 2min, 5min)

**Query** SModMaster?

**Example** Set the read cycle to 500ms, the communication timeout to 250ms, the gap between messages to 10ms, the retransmission to 2, and the recovery wait time to 5min.

SModMaster, On, 500ms, 250ms, 2, 5min

**SModMCmd****Modbus Master Transmission Command (/C2/MC or /C3/MC)**

Sets a transmit command of the Modbus master.

**Syntax** SModMCmd, p1, p2, p3, p4, p5, p6, p7, p8  
p1 Command number (1 to 100)  
p2 Command type  
Off Disable command  
Write Write a value to a Modbus register of another device  
Read Read a value from a Modbus register of another device  
p3 Slave number (1 to 247)  
p4 Data type  
BIT Bit String data  
INT16 16-bit signed integer  
UINT16 16-bit unsigned integer  
INT32\_B 32-bit signed integer (big endian)  
INT32\_L 32-bit signed integer (little endian)  
UINT32\_B 32-bit unsigned integer (big endian)  
UINT32\_L 32-bit unsigned integer (little endian)  
FLOAT\_B 32-bit floating point (big endian)  
FLOAT\_L 32-bit floating point (little endian)  
p5 Register (1 to 465535)  
p6 Channel type  
IO I/O channel  
Math Math channel  
Com Communication channel  
p7 First channel  
p8 Last channel

**Query** SModMCmd[p1]?

**Example** Register the following command in command number 2: read the 32-bit signed integer data that is assigned to registers 30003 (upper 16 bits) and 30004 (lower 16 bits) in the slave device assigned to address 5 into channel C002.

SModMCmd, 2, Read, 5, INT32\_B, 30003, Com, 002, 002

**Description**

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- If p2=Read, set the communication channel in p6, p7, and p8.
- Set the same type of channel in p7 and p8.
- Math channels are an option (/MT).
- For details on data types, registers, and channel types, see section 4.5.1, “Modbus Client and Master Function” in the *Models GX10/GX20/GP10/GP20 Paperless Recorder User’s Manual* (IM 04L51B01-01EN).

### SlpAddress

#### IP Address Information

Sets the IP address information.

**Syntax** `SlpAddress,p1,p2,p3`  
p1 IP address (0.0.0.0 to 255.255.255.255)  
p2 Subnet mask (0.0.0.0 to 255.255.255.255)  
p3 Default gateway (0.0.0.0 to 255.255.255.255)

**Query** `SlpAddress?`

**Example** Set the IP address to 192.168.111.24, the subnet mask to 255.255.255.0, and the default gateway to 192.168.111.20.  
`SlpAddress,192.168.111.24,255.255.255.0,192.168.111.20`

#### Description

- The settings specified with this command takes effect with the [OIApply](#) command. The GX/GP IP address does not change until you send the OIApply command.

### SClient

#### Client Function

Sets the client function.

**Syntax** `SClient,p1,p2`  
p1 Client type (FTP, SMTP, SNTP, MODBUS)  
p2 Client Function (Off, On)

**Query** `SClient[p1]?`

**Example** Use the FTP client function.  
`SClient,FTP,On`

#### Description

- Modbus client is valid on models with the /MC communication channel option.

### SDns

#### DNS Information

Sets the DNS information.

##### Host (GX)

**Syntax** `SDns,p1,p2,p3`  
p1 Setting type (Host)  
p2 Host name (up to 64 characters, ASCII)  
p3 Domain name (up to 64 characters, ASCII)

##### DNS Server

**Syntax** `SDns,p1,p2,p3`  
p1 Setting type (Server)  
p2 Primary DNS server (0.0.0.0 to 255.255.255.255)  
p3 Secondary DNS server (0.0.0.0 to 255.255.255.255)

##### Suffix Setup

**Syntax** `SDns,p1,p2,p3`  
p1 Setting type (Suffix)  
p2 Primary domain suffix (up to 64 characters, ASCII)  
p3 Secondary domain suffix (up to 64 characters, ASCII)

**Query** `SDns[p1]?`

**Example** Set the IP address of the primary DNS server to 192.168.111.1 and the IP address of the secondary DNS server to 192.168.111.10  
`SDns,Server,192.168.111.1,192.168.111.10`

#### Description

- The settings specified with this command takes effect with the [OIApply](#) command. The GX/GP IP address does not change until you send the OIApply command.

### SDhcp

#### DHCP Client

Sets the DHCP client.

##### Do Not Obtain the IP Address Automatically

**Syntax** `SDhcp,p1`  
p1 Automatic IP address assignment (Off)

##### Obtain the IP Address Automatically

**Syntax** `SDhcp,p1,p2,p3`  
p1 Automatic IP address acquisition (On)  
p2 DNS information acquisition (Off, On)  
p3 Automatic host name registration (Off, On)

**Query** `SDhcp?`

**Example** Automatically obtain the IP address and DNS information and automatically register the host name.  
`SDhcp,On,On,On`

#### Description

- The settings specified with this command takes effect with the [OIApply](#) command. The GX/GP IP address does not change until you send the OIApply command.

## SFtpKind

### File to Transfer via FTP

Sets the file to transfer via FTP.

**Syntax** SFtpKind,p1,p2  
 p1 Setting type  
     Data           Automatically transfer display and event data files when files are generated.  
     Report        Automatically transfer report data files when files are generated.  
     Snapshot      Automatically transfer snapshot data files when files are generated.  
     AlarmSummary Transfer alarm summaries  
     ManualSample Automatically transfer manual sampled data files when manual sampling is executed.  
 p2 Enable or disable transfer (Off, On)

**Query** SFtpKind[p1]?

**Example** Automatically transfer display and event data files.  
 SFtpKind,Data,On

#### Description

- The report function is an option (/MT).

## SFtpTime

### FTP Transfer Time Shift

Sets the amount of time to shift file transfers that are carried out by the FTP client function.

**Syntax** SFtpTime,p1,p2  
 p1 Setting type  
     Data       Display and event data files  
     Report     Report files  
 p2 Transfer shift time [minutes] (0 to 120)

**Query** SFtpTime[p1]?

**Example** Shift (delay) FTP transfers of report data files by 30 minutes.  
 SFtpTime,Report,30

#### Description

- The report function is an option (/MT).

## SFtpCnct

### FTP Client Connection Destination Server

Sets the FTP client connection destination server

**Syntax** SFtpCnct,p1,p2,p3,p4,p5,p6,p7  
 p1 Server  
     Primary   Primary  
     Secondary Secondary  
 p2 Server name (up to 64 characters, ASCII)  
 p3 Port number (1 to 65535)

p4 User name (up to 32 characters, ASCII)  
 p5 Password (up to 32 characters, ASCII)  
 p6 Directory name (up to 64 characters, ASCII)  
 p7 PASV mode (Off, On)

**Query** SFtpCnct[p1]?

The password is displayed using asterisks.

**Example** For the primary server, assign the name "server1" and port number 21. Set the user name to "Administrator1," the password to "password1," and the directory to "directory1." Set PASV mode to Off.  
 SFtpCnct,Primary,'server1',21,'Administrator1','password1','directory1',Off

## SSmtpLogin

### SMTP User Authentication

Sets the SMTP user authentication method.

**Syntax** SSmtpLogin,p1  
 p1 User authentication type  
     Off           Not use authentication.  
     Auth-Smtp    Use Authentication SMTP.  
     POP3         Use POP Before SMTP (unencrypted).  
     APOP         Use POP Before SMTP (encrypted).

**Query** SSmtpLogin?

**Example** Do not use authentication.  
 SSmtpLogin,Off

## SSmtpCnct

### SMTP Client Connection Destination Server

Sets the SMTP client connection destination server

**Syntax** SSmtpCnct,p1,p2,p3,p4,p5  
 p1 Destination server type (SMTP, POP)  
 p2 Server name (up to 64 characters, ASCII)  
 p3 Port number (1 to 65535)  
 p4 User name (up to 32 characters, ASCII)  
 p5 Password (up to 32 characters, ASCII)

**Query** SSmtpCnct[p1]?

The password is displayed using asterisks.

**Example** Connect to SMTP server "SMTPserver1." Set the port number to 25, the user name to "administrator1," and the password to "password1."  
 SSmtpLogin,SMTP,'SMTPserver1',25,'administrator1','password1'

## SMailHead

### Mail Header (Recipient Address)

Sets the mail header including the recipient address.

**Syntax** SMailHead,p1,p2,p3,p4  
 p1 Sender address (up to 64 characters, ASCII)



## 2.4 Setting Commands

- p2 Recipient address 1 (up to 150 characters, ASCII)  
p3 Recipient address 2 (up to 150 characters, ASCII)  
P4 Character string to add to the subject (up to 32 characters, ASCII)

**Query** SMailHead?

**Example** Set the sender address to "recorder1@data.com" and the recipient address to "pc1@data.com." Add "part1" to the subject.  
SMailHead, 'recorder1@data.com',  
'pc1@data.com',, 'part1'

### SMailBasic

#### Common Section of the Mail Body

Sets the items that are common to the body of all mails.

**Syntax** SMailBasic, p1, p2  
p1 Header string (up to 128 characters, UTF-8)  
p2 Include source URL (Off, On)

**Query** SMailBasic?

**Example** Set the header to "recorder1," and include the source URL.  
SMailBasic, 'recorder1', On

### SMail

#### Destination and Behavior for Each Mail Type

Sets the destination and behavior for each mail type.

##### Alarm Notification

**Syntax** SMail, p1, p2, p3, p4, p5, p6  
p1 Setting type (Alarm)  
p2 Recipient (Off, 1, 2, 1+2)  
Off Not send  
1 Send to recipient 1  
2 Send to recipient 1  
1+2 Send to recipient 1 and 2  
p3 Inclusion of instantaneous data (Off, On)  
P4 Alarm action  
On Send mails when alarms occur  
On+Off Send mails when alarms occur and when they are cleared  
p5 Inclusion of tag number or channel number in subject (Off, On)

##### Scheduled Transmission

**Syntax** SMail, p1, p2, p3  
p1 Setting type (Time)  
p2 Recipient (Off, 1, 2, 1+2)  
p3 Inclusion of instantaneous data (Off, On)

##### Report Notification

**Syntax** SMail, p1, p2  
p1 Setting type (Report)  
p2 Recipient (Off, 1, 2, 1+2)

##### Media Alarm Notification

**Syntax** SMail, p1, p2  
p1 Setting type (Media)  
p2 Recipient (Off, 1, 2, 1+2)

##### Power failure notification

**Syntax** SMail, p1, p2  
p1 Setting type (Power)  
p2 Recipient (Off, 1, 2, 1+2)

##### System Error Notification

**Syntax** SMail, p1, p2  
p1 Setting type (System)  
p2 Recipient (Off, 1, 2, 1+2)

**Query** SMail[p1]?

**Example** Send alarm notifications to recipient 1 when alarms occur and when they are cleared. Include instantaneous data at the time of transmission, and include the tag number or channel number in the subject.  
SMail, Alarm, 1, On, On+Off, On

##### Description

- The report function is an option (/MT).

### SMailAlarm

#### Alarm Notification Mail Target Channels

Detects the alarm status of the specified channels and sends alarm notifications.

**Syntax** SMailAlarm, p1  
p1 Channel string (up to 249 characters, up to 50 channels)

- Use channel number to specify the channels. 4-digit numbers for I/O channels. Numbers that start with "A" for math channels (A015). Numbers that start with "C" for communication channels (C020).
- Use periods to separate channel numbers (see example).

**Query** SMailAlarm?

**Example** Set the target channels to channels 0001, 0101, and A025.  
SMailAlarm, '0001.0101.A025'

### SMailTime

#### Scheduled Transmission Times

Sets the scheduled transmission times.

**Syntax** SMailTime, p1, p2, p3, p4  
p1 Recipient (1 or 2)  
p2 Reference time: Hours (HH) (00 to 23)  
p3 Reference time: Minutes (MM) (00 to 59)  
P4 Interval (1h, 2h, 3h, 4h, 6h, 8h, 12h, 24h)

**Query** SMailTime[, p1]?

**Example** Send mail to recipient 1 every day at 08:30.  
SMailTime, 1, 08, 30, 24

### SSntpCnct

#### SNTP Client

Sets the SNTP client operation and the connection destination server.

**Syntax** SSntpCnct, p1, p2, p3, p4, p5, p6, p7  
p1 Server name (up to 64 characters, ASCII)

- p2 Port number (1 to 65535)  
 p3 Reference time: Hours (HH) (00 to 23)  
 P4 Reference time: Minutes (MM) (00 to 59)  
 p5 Access interval (6h, 12h, 24h)  
 p6 Timeout (10s, 30s, 90s)  
 p7 Time adjust on start action (Off, On)

**Query** SSntpCnct?

**Example** Set the server name to "sntpserver1," the port number to "123," the timeout to 30s. Query the time every day at 12:00 and at memory start.  
 SSntpCnct,'sntpserver1',123,12,00,24,30s,On

## SModClient

### Modbus Client Operation

Sets the Modbus client operation.

**Syntax** SModClient,p1,p2,p3,p4  
 p1 Read cycle (100ms, 200ms, 500ms, 1s, 2s, 5s, 10s)  
 p2 Recovery wait time (Off, 5s, 10s, 30s, 1min, 2min, 5min)  
 p3 Keep connection (Off, On)  
 P4 Connection timeout [s] (1 to 10)

**Query** SModClient?

**Example** Set the read cycle to 100ms, the recovery wait time to Off, and the connection timeout to 1 second.

SModClient,100ms,off,on,1

#### Description

- This command is valid on models with the /MC communication channel option.

## SModCList

### Modbus Client Connection Destination Server (/MC)

Sets the Modbus client connection destination server.

**Syntax** SModCList,p1,p2,p3  
 p1 Registration number (1 to 16)  
 p2 Server name (up to 64 characters, ASCII)  
 p3 Port number (1 to 65535)

**Query** SModCList[,p1]?

**Example** Assign server name "recorder1" and port number "502" to registration number 1.  
 SModCList,1,'recorder1',502

## SModCCmd

### Modbus Client Transmission Command (/MC)

Sets the Modbus client transmission command.

**Syntax** SModCCmd,p1,p2,p3,p4,p5,p6,p7,p8,p9  
 p1 Command number (1 to 100)  
 p2 Command type  
     Off           Disable command  
     Write        Write a value to a Modbus register of another device.

**Read** Read a value from a Modbus register of another device.

- p3 Server number (1 to 16)  
 P4 Unit number (1 to 255)  
 p5 Data type  
     BIT           Bit String data  
     INT16        16-bit signed integer  
     UINT16       16-bit unsigned integer  
     INT32\_B      32-bit signed integer (big endian)  
     INT32\_L      32-bit signed integer (little endian)  
     UINT32\_B     32-bit unsigned integer (big endian)  
     UINT32\_L     32-bit unsigned integer (little endian)  
     FLOAT\_B      32-bit floating point (big endian)  
     FLOAT\_L      32-bit floating point (little endian)  
 p6 Register (1 to 465535)  
 p7 Channel type  
     IO           I/O channel  
     Math         Math channel  
     Com          Communication channel

p8 First channel

p9 Last channel

**Query** SModCCmd[p1]?

**Example** Register the following command in command number 2: read the 32-bit signed integer data that is assigned to registers 30003 (upper 16 bits) and 30004 (lower 16 bits) in the server device assigned to address 5 and unit number 1 into channel C002.

SModCCmd,2,Read,5,1,INT32\_B,30003,Com,C002,C002

#### Description

- If p2=Read, set the communication channel in p7, p8, and p9.
- Set the same type of channel in p8 and p9.
- Math channels are an option (/MT).
- For details on data types, registers, and channel types, see section 4.5.1, "Modbus Client and Master Function" in the *Models GX10/GX20/GP10/GP20 Paperless Recorder User's Manual* (IM 04L51B01-01EN).

## SServer

### Server Function

Enables or disables the server function.

**Syntax** SServer,p1,p2,p3  
 p1 Server type (FTP, HTTP, SNTP, MODBUS, GENE)  
 p2 Operation (Off, On)  
 p3 Port number (1 to 65535)

**Query** SServer[,p1]?

**Example** Use the FTP server function.  
 SServer,FTP,On,21

#### Description

- You cannot specify a port number that is used by another function.



- The settings specified with this command takes effect with the **OIPApply** command.

## SKeepAlive

### Keepalive

Sets the keepalive function.

**Syntax** SKeepAlive,p1  
p1 Operation (Off, On)

**Query** SKeepAlive?

**Example** Use keepalive.  
SKeepAlive,On

## STimeOut

### Communication Timeout

Sets the communication timeout function.

**Syntax** STimeOut,p1,p2  
p1 Timeout function (Off, On)  
p2 Timeout value [minutes] (1 to 120)

**Query** STimeOut?

**Example** Enable the communication timeout, and set the timeout value to 3 minutes.  
STimeOut,On,3

## SFtpFormat

### FTP Server Directory Output Format

Sets the FTP server directory output format.

**Syntax** SFtpFormat,p1  
p1 FTP server directory output format (MS-DOS, UNIX)

**Query** SFtpFormat?

**Example** Specify MS-DOS.  
SFtpFormat,MS-DOS

## SModDelay

### Modbus Server Delay Response

Sets the Modbus server delay response.

**Syntax** SModDelay,p1  
p1 Delay response (Off, 10ms, 20ms, 50ms)

**Query** SModDelay?

**Example** Specify no delay response.  
SModDelay,Off

## SModLimit

### Modbus Server Connection Limit

Enables or disables the Modbus server connection limit function.

**Syntax** SModLimit,p1  
p1 Connection limit (Off, On)

**Query** SModLimit?

**Example** Enable connection limit.  
SModLimit,On

## SModList

### IP Address to Allow Connection to Modbus Server

Sets the IP address to allow connection to Modbus server.

**Syntax** SModList,p1,p2,p3  
p1 Registration number (1 to 10)  
p2 Enable or disable registration (Off, On)  
p3 IP address (0.0.0.0 to 255.255.255.255)

**Query** SModList[,p1]?

**Example** Register IP address "192.168.111.24" to registration number 1.  
SModList,1,On,192.168.111.24

## SSecurity

### Security Function

Sets the security function.

**Syntax** SSecurity,p1,p2,p3,p4  
p1 Operations on the GX/GP (Off, Login, Operate)  
p2 Operations via communication (Off, Login)  
p3 Auto logout (Off, 1min, 2min, 5min, 10min)  
p4 Operation without login (Off, On)

**Query** SSecurity?

**Example** Use the login function when operating the GX/GP directly or via communication. When logged in, automatically log out if there is no user activity for 5 minutes. The screen can be changed even when logged out.  
SSecurity,Login,Login,5min,On

#### Description

- You cannot use this command to configure settings while recording is in progress.
- You cannot use this command to configure settings while computation is in progress.
- You cannot use this command to configure settings when logged in as a user (when the user level is User).

## SOpePass

### Password to Unlock Operation

Sets the password that is used to release the operation lock.

**Syntax** SOpePass,p1  
p1 Password (up to 20 characters, ASCII)

**Query** SOpePass?

The password is displayed using asterisks.

**Example** Set the password to "password1."  
SOpePass,'password1'

#### Description

- You cannot use this command to configure settings when logged in as a user (when the user level is User).

## SOpelimit

### Operation Lock Details

Sets which operations to lock.

**Syntax** `SOpelimit,p1,p2`  
 p1 Authority of user

Memory	Memory
Math	Computations
DataSave	Data save
Message	Message
Batch	Batch
AlarmACK	Alarm ACK
Comm	Communication
DispOpe	Touch operation
ChangeSet	Setting operation
DateSet	Date/time settings
File	File operation

p2 Free/Lock

Free	Not lock
Lock	Lock

**Query** `SOpelimit[,p1]?`

**Example** Prohibit operations for changing settings.  
`SOpelimit,ChangeSet,Lock`

#### Description

- You cannot use this command to configure settings when logged in as a user (when the user level is User).

## SUser

### User Settings

Register users.

**Syntax** `SUser,p1,p2,p3,p4,p5,p6,p7`  
 p1 User number (1 to 50)  
 p2 User level

Off	Not Use
Admin	Administrator level
User	User level

p3 Login mode

Key	Log in using keys
Comm	Log in via communication (including Web)
Key+Comm	Log into using keys and via communication.

p4 User name (up to 20 characters, ASCII)  
 p5 Password (up to 20 characters, ASCII)  
 p6 Enable or disable user limitation (Off, On)  
 p7 User limitation number (1 to 10)

**Query** `SUser[,p1]?`

The password of p5 are displayed using asterisks.

**Example** Register a user-level user to user number 3. Set the user name to "user10" and the password to "pass012." Allow login only using keys, and specify user limitation number 5.  
`SUser,3,User,Key,'user10','pass012',On,5`

#### Description

- If p1=1, p2 is fixed to Admin. In addition, you cannot set p3 to Comm.
- If p2=Admin, p6 is fixed to Off.
- You cannot enter NULL or spaces in p4 or p5.
- For the characters that you can use in the specified password (p5), see [Appendix 1](#).
- You cannot use this command to configure settings when logged in as a user (when the user level is User).

## SUserLimit

### Authority of User

Sets user operation limitations.

**Syntax** `SUserLimit,p1,p2,p3`  
 p1 User limitation number (1 to 10)  
 p2 Authority of user (see p1 of the [SOpelimit](#) command)  
 p3 Free/Lock (Free, Lock)

**Query** `SUserLimit[,p1]?`

**Example** Set user limitation number 1 so that changing settings is prohibited.  
`SUserLimit,1,ChangeSet,Lock`

#### Description

- You cannot use this command to configure settings when logged in as a user (when the user level is User).

## SMonitor

### Monitor Screen Display Information

Sets the monitor screen display information.

**Syntax** `SMonitor,p1,p2`  
 p1 Information type (see the table below)  
 p2 Status (see the table below)

## 2.4 Setting Commands

Information Type		Status
p1	Description	p2
Digital	Digital value display	Off, On
Scroll	Auto scroll	Off, On
Message	Message display	Stream, List
Trend	All channel/group display	Group, All
Axis	Time axis on historical trend	1, 2, 3, 4, 5, 6, 7, 8
Value	Digital value display on historical trend	4Value, Max, Min
Data	Historical data type	Disp, Event1
DigitalWave	Digital waveform display	Off, On
Alarm	Alarm display	Watch, List
Alarm_Sort	Alarm sort item	Time, Channel, Level, Type
Alarm_Order	Alarm sort order	Ascending, Descending
Message_Sort	Message sort item	Datetime, WriteTime, Message, Group, User
Message_Order	Message sort order	Ascending, Descending
Memory_Data	Memory data type	Disp, Event1
Overview	Overview display	Grouping, All
Multi_No	Multi panel number	1 to 20
DigitalPos	Digital display position	Default, Top, Bottom, Left, Right
DigitalLabel	Display string display	Off, On
Modbus_M	Modbus master status display type	Overview, List
Modbus_C	Modbus client status display type	Overview, List

**Query** SMonitor[,p1]?

**Example** Set the trend display to all-channel display.  
SMonitor,Trend,All

### Description

- Modbus\_M and Modbus\_C are an option (/MC).

## SMultiPattern

### Multi Panel Division

Sets the multi panel multi panel pattern.

**Syntax** SMultiPattern,p1,p2,p3  
p1 Registration number (1 to 20)  
p2 Multi panel pattern  
Wide2 Split 2 Wide  
Tall2 Split 2 Tall  
Wide3 Split 3 Wide  
Tall3 Split 3 Tall  
Split4 Split 4 Even  
Even5 Split 5 Even  
Odd5 Split 5 Odd  
Even6 Split 6 Even  
Odd6 Split 6 Odd  
p3 Multi panel name (up to 16 characters, UTF-8)

**Query** SMultiPattern[,p1]?

**Example** Set the panel of registration number 1 to "Split 2 Wide." Set the multi panel name to "Monitor1."  
SMultiPattern,1,Wide2,'Monitor1'

### Description

- This command is only valid for the GX20/GP20.

## SMultiKind

### Multi Panel

Set the screens to display on the multi panel.

**Syntax** SMultiKind,p1,p2,p3,p4  
p1 Registration number (1 to 20)  
p2 Screen position (1 to 6)  
p3 Screen type  
Trend Trend  
Digital Digital  
Bar Bar graph  
Overview OVERVIEW  
Alarm Alarm summary  
Message Message summary  
Memory Memory summary  
Report Report summary  
Modbus-M Modbus master status  
Modbus-C Modbus client status  
Action- Event log  
Log  
Error-Log Error log  
Commu-Log Communication log  
Ftp-Log FTP log  
Web-Log Web log  
Mail-Log Mail log  
Modbus- Modbus log  
Log  
Sntp-Log SNTP log  
Dhcp-Log DHCP log  
Network Network information  
p4 Display group number

**Query** SMultiKind[,p1[,p2]]?

**Example** Display the bar graph of display group 8 in screen position 3 of the registration number 1 panel.  
SMultiKind,1,3,Bar,8

### Description

- This command is only valid for the GX20/GP20.
- Report is an option (/MT).
- Modbus-M and Modbus-C are an option (/MC).

## SHomeMonitor

### Standard Screen Information

Sets the standard screen display information.

**Syntax** SHomeMonitor,p1,p2  
p1 Information type (see the table of the SMonitor command)

p2 Status (see the table of the **SMonitor** command)

**Query** `SHomeMonitor[,p1]?`

**Example** Set the trend display to all-channel display.  
`SHomeMonitor,Trend,All`

## SHomeKind

### Standard Screen

Set the standard screen.

**Syntax** `SHomeKind,p1,p2`

p1 Screen type

Trend	Trend
Digital	Digital
Bar	Bar graph
Overview	OVERVIEW
Alarm	Alarm summary
Message	Message summary
Memory	Memory summary
Report	Report summary
Modbus-M	Modbus master status
Mosbus-C	Modbus client status
Action-Log	Event log
Error-Log	Error log
Commu-Log	Communication log
Ftp-Log	FTP log
Web-Log	Web log
Mail-Log	Mail log
Modbus-Log	Modbus log
Sntp-Log	SNTP log
Dhcp-Log	DHCP log
Network	Network information
Setting	Settings
SaveLoad	Save load
SystemInfo	System information
Multi	Multi panel

p2 Display group number

**Query** `SHomeKind?`

**Example** Set the standard screen to trend of display group 1.  
`SHomeKind,Trend,1`

#### Description

- Report is an option (/MT).
- Modbus-M and Modbus-C are an option (/MC).
- Multi is a GX20/GP20 display.

## SFavoriteKind

p3 Status (see the table of the **SMonitor** command)

**Query** `SFavoriteMonitor[,p1[,p2]]?`

**Example** Set the trend display to all-channel display.  
`SFavoriteMonitor,1,Trend,All`

## SFavoriteKind

### Favorite Screen

Set the favorite screen.

**Syntax** `SFavoriteKind,p1,p2`

- p1 Favorites number (1 to 20)
- p2 Enable or disable (Off, On)
- p3 Screen type (see p1 of the **SHomeKind** command)
- p4 Display group number
- p5 Multi panel name (up to 16 characters, UTF-8)

**Query** `SFavoriteKind[,p1]`

**Example** Register the trend display of display group 2 to favorites screen number 1. Set the multi panel name to "Favorite01."  
`SFavoriteKind,1,On,Trend,2,'Favorite01'`

## 2.5 Output Commands

### FData

#### Outputs the Most Recent Channel Data

Outputs the most recent I/O channel, math channel, and communication channel data.

**Syntax** `FData,p1,p2,p3`  
p1 Output format  
0 The most recent data in ASCII format  
1 The most recent data in binary format  
p2 First channel  
p3 Last channel

**Example** Output the most recent data of channels 0001 to 0020 in ASCII format.

`FData,0,0001,0020`

#### Description

- If you omit p2 and p3, all channels will be output.
- Channel ranges whose first channel and end channel are different channel types are interpreted as follows:

First Channel	Last Channel	Setting
0001	A100	0001 to 9999, A001 to A100
A001	C300	A001 to A100, C001 to C300
C001	A100	Not allowed (will result in error)
A001	0001	Not allowed (will result in error)

- For the ASCII output format, see [page 2-57](#).
- For the binary output format, see [page 2-83](#).

### FRelay

#### Outputs the Most Recent Relay (DO Channel) and Internal Switch Status

Outputs the most recent relay (DO Channel) and internal switch status.

**Syntax** `FRelay,p1`  
p1 Output information  
0 The most recent relay (DO channel) status in ASCII format  
1 The most recent internal switch status in ASCII format

**Example** Output the relay (DO channel) status.

`FRelay,0`

#### Description

- For the output format, see [page 2-58](#) or [page 2-59](#).

### FFifoCur

#### Outputs Channel FIFO Data

Outputs the I/O channel, math channel, and communication channel FIFO data.

#### Acquire the FIFO Data

**Syntax** `FFifoCur,p1,p2,p3,p4,p5,p6,p7`  
p1 FIFO data output (0)  
p2 Scan group (1)

p3 First channel  
p4 Last channel  
p5 Read start position (-1, 0 to 9999999999)  
-1 The most recent read position  
p6 Read end position (-1, 0 to 9999999999)  
-1 The most recent read position  
p7 Maximum number of blocks to read (1 to 9999)

**Example** Read the measured data of channels 0001 to 0020. Set the read start position to 180 and the read end position to the most recent position. Set the maximum number of blocks to read to 9999.

`FFifoCur,0,1,0001,0020,180,-1,9999`

#### Acquire the FIFO Data Read Range

**Syntax** `FFifoCur,p1,p2`  
p1 FIFO read range output (1)  
p2 Scan group (1)

**Example** Acquire the current readable range.

`FFifoCur,1,1`

#### Description

- For the binary output format, see [page 2-86](#).

### FSnap

#### Snapshot

Outputs a snapshot data (screen image data) file.

**Syntax** `FSnap,p1`  
p1 Screen image data output (GET)

**Example** Acquire screen image data.

`FSnap,GET`

#### Description

- A PNG image file will be stored in the data block of the binary output file (see [page 2-55](#)).

### FUser

#### Outputs the User Level

Outputs information about the users who are currently logged in.

**Syntax** `FUser,p1`  
p1 Information about the users who are currently logged in  
0 Refer to your own user information.  
1 Refer to information about all users who are currently logged in.

**Example** Refer to information about all users who are currently logged in.

`FUser,1`

#### Description

- For the ASCII output format, see [page 2-60](#).

**FAddr****Outputs the IP Address**

Outputs the GX/GP IP address information.

**Syntax** FAddr, p1  
 p1 Address output (IP)  
 Output address information that includes the IP address, subnet mask, default gateway, and DNS server as well as the host name and domain name.

**Example** Output the GX/GP IP address information.  
 FAddr, IP

**Description**

- For the ASCII output format, see [page 2-62](#).

**FStat****Outputs the GX/GP Status**

Outputs the GX/GP status.

**Syntax** FStat, p1  
 p1 Status output (0)

**Example** Output the GX/GP status.  
 FStat, 0

**Description**

- For the ASCII output format, see [page 2-63](#).

**FLog****Outputs the Log**

Outputs the alarm summary, message summary, error log, etc.

**Syntax** FLog, p1, p2  
 p1 Status output (0)  
 ALARM Alarm summary  
 MSG Message summary  
 EVENT Event log  
 ERROR Error log  
 DHCP Ethernet address setting log  
 GENERAL General log  
 MODBUS Modbus log  
 FTP FTP client log  
 SNTP SNTP client log  
 MAIL E-mail log  
 WEB Web log  
 p2 Maximum log readout length

p1	Read range
ALARM	1 to 1000
MSG	1 to 500
GENERAL	1 to 200
Other than those above.	1 to 50

**Example** Output 600 alarm summary entries.  
 FLog, ALARM, 600

**Description**

- For the ASCII output format, see [page 2-64](#).

**FMedia****Outputs External Storage Medium and Internal Memory Information**

Outputs external storage medium and internal memory information.

**File list**

**Syntax** FMedia, p1, p2, p3, p4  
 p1 Output type (DIR)  
 p2 Path name (up to 100 characters)  
 Path name for outputting the file list  
 p3 File list output start position (1 to 99999999)  
 p4 File list output end position (1 to 99999999, -1)  
 Last position for outputting the file list.  
 If you specify -1, the maximum possible number of files (as large as the GX/GP internal communication buffer allows) will be output.

**Example** Output all the file lists in the DRV0 directory.

FMedia, DIR, /DRV0/

Output the file lists of items 10 to 20 in the DRV0 directory.

FMedia, DIR, /DRV0/, 10, 20

**Description**

- Path names (p2) for the internal memory and the external media are listed below. Set the path name using a full path.  
 Internal memory: /MEMO/DATA/  
 SD memory card: /DRV0/  
 USB flash memory: /USB0/
- If you omit p3 and p4, the maximum possible number of files (as many as the GX internal communication buffer allows) will be output.
- For the ASCII output format, see [page 2-75](#).

**Data in Files**

**Syntax** FMedia, p1, p2, p3, p4  
 p1 Output type (GET)  
 p2 Path name (up to 100 characters)  
 Path name of the file for outputting data  
 p3 Data output start position (in bytes) (0 to 2147483647)  
 p4 Data output end position (in bytes) (0 to 2147483647, -1)  
 The last data output position. If you specify -1, the maximum file size (as large as the GX/GP internal communication buffer allows) will be output.

**Example** Output all the data in file xyz in the DRV0/DATA0 directory.

FMedia, GET, /DRV0/DATA0/xyz

**Description**

- If you omit p3 and p4, the maximum file size (as large as the GX/GP internal communication buffer allows) will be output.
- The file data will be stored in the data block of the binary output file (see [page 2-55](#)).

**Free Space on the External Storage Medium**



## 2.5 Output Commands

**Syntax** FMedia,p1

p1 Output type (CHKDSK)

**Example** Output the free space on the external storage medium.

FMedia,CHKDSK

### Description

- For the ASCII output format, see [page 2-75](#).

## FCnf

### Outputs Setting Data

Outputs the GX/GP setting data.

**Syntax** FCnf,p1

p1 Operation

ALL	Read all settings.
IO	Read I/O settings.
MATH	Read Math settings.
COMM	Read communication settings.
GROUP	Read display group settings.
IP	Read IP address settings.
SECURITY	Read security settings.
OTHERS	Read settings other than above.

You can specify multiple items in the list above. Separate each item with a colon (see the example).

**Example** Read I/O and Math settings.

FCnf,IO:MATH

### Description

- If you omit p1, all settings will be read.
- The setting data is output as the responses to the command queries. The following table lists p1 and the corresponding commands.

p1	Command
IO	SModeAI, SModeDI, SScaleOver, SRangeAI, SRangeDI, SRangeDO, SMoveAve, SBurnOut, SRjc, SAlarmIO, SAlmHysIO, SAlmDlyIO, STagIO, SColorIO, SZoneIO, SScaleIO, SBarIO, SPartialIO, SBandIO, SAlmMarkIO, SValueIO, SCalibIO
MATH	SMathBasic, SKConst, SWconst, SRangeMath, STlogMath, SRolAveMath, SAlarmMath, SAlmHysMath, SAlmDlyMath, STagMath, SColorMath, SZoneMath, SScaleMath, SBarMath, SPartialMath, SBandMath, SAlmMarkMath
COMM	SRangeCom, SValueCom, SWDCom, SAlarmCom, SAlmHysCom, SAlmDlyCom, STagCom, SColorCom, SZoneCom, SScaleCom, SBarCom, SPartialCom, SBandCom, SAlmMarkCom
GROUP	SGroup, STripLine, SSclBmp
IP	SIPAddress, SDns, SDhcp
SECURITY	SSecurity, SOpePass, SOpeLimit, SUser, SUserLimit

- For the output format, see [page 2-76](#).

## FChInfo

### Outputs Decimal Place and Unit Information

Outputs decimal place and unit information.

**Syntax** FChInfo,p1,p2

p1 First channel

p2 Last channel

**Example** Output the decimal place and unit information of channels 0001 to 0003.

FChInfo,0001,0003

### Description

- If you omit p1 and p2, all channels will be output.
- For the output format, see [page 2-76](#).

## FSysConf

### Queries the System Configuration and Reconfigures Modules

Queries the system configuration and reconfigures modules.

**Query the System Configuration**

**Syntax** FSysConf

**Example** Query the System Configuration.

FSysConf

### Description

- For the output format, see [page 2-77](#).

### Reconfigures Modules

Aligns the module configuration settings that are recognized by the GX/GP and the actual module configuration.

**Syntax** FSysConf,p1

p1 Module reconfiguration (1)

**Example** Reconfigure the modules.

FSysConf,1



## 2.6 Operation Commands

### OSetTime

#### Sets the Time

Sets the time.

**Syntax** `OSetTime,p1`  
**p1** Time to set  
 "YYYY/MO/DD\_HH:MI:SS" (the underscore denote a space), "YYYY/MO/DD", or "HH:MI:SS."  
 YYYY Year (2001 to 2035)  
 MO Month (01 to 12)  
 DD Day (01 to 31)  
 HH Hour (00 to 23)  
 MI Minute (00 to 59)  
 SS Second (00 to 59)

**Query** `OSetTime?`  
 The OSetTime query outputs the GX/GP current time.

**Example** Set the time to 23:00:00 on May 24, 2013.  
`OSetTime,2013/05/24 23:00:00`

### ORec

#### Starts or Stops Recording

Starts or stops recording.

**Syntax** `ORec,p1`  
**p1** Recording start or stop  
 0 Start  
 1 Stop

**Query** `ORec?`

**Example** Start recording.  
`ORec,0`

### OAlarmAck

#### Clears Alarm Output

Clears alarm output (performs an alarm ACK).

**Syntax** `OAlarmAck,p1`  
**p1** Alarm output clearance (0)

**Example** Clear the alarm output.  
`OAlarmAck,0`

### OExecRec

#### Generates a Manual Trigger, Executes Manual Sample, Takes a Snapshot, or Causes a Timeout

Generates a manual trigger, executes manual sample, takes a snapshot, or divides the data being recorded into separate files.

**Syntax** `OExecRec,p1`

- p1** Alarm output clearance type (0)
- 0 Execute manual sampling.
  - 1 Generate a manual trigger.
  - 2 Take a snapshot.
  - 3 Cause a display data timeout (divide files).
  - 4 Cause an event data timeout (divide files).

**Example** Execute manual sampling.  
`OExecRec,0`

### OExecSNTP

#### Queries the Time Using SNTP

Queries the time using SNTP.

**Syntax** `OExecSNTP,p1`  
**p1** Time query execution (0)

**Example** Query the time using SNTP.  
`OExecSNTP,0`

### OMessage

#### Message Writing

Writes a message.

##### Write a Preset Message

**Syntax** `OMessage,p1,p2,p3`  
**p1** Action type (PRESET)  
**p2** Message number (1 to 100)  
**p3** Display group number  
 ALL Write to all display groups  
 1 to 50 Write to specified groups  
 You can specify multiple groups at once. To do so, separate display groups with a colon.

**Example** Write the message in preset message number 8 to display groups 1 and 2.  
`OMessage,PRESET,8,1:2`

##### Write a Free Message

**Syntax** `OMessage,p1,p2,p3,p4`  
**p1** Action type (FREE)  
**p2** Message number (1 to 10)  
**p3** Display group number  
 ALL Write to all display groups  
 1 to 50 Write to specified groups  
 You can specify multiple groups at once. To do so, separate display groups with a colon.  
**p4** Message string to write (up to 32 characters, UTF-8)

**Example** Write a free message "MARK" in display groups 3, 8, and 11.  
`OMessage,FREE,3:8:11,'MARK'`

**OPassword****Changes the Password**

Changes the password.

**Syntax** `OPassword, p1, p2, p3`  
 p1 Old password (up to 20 characters, ASCII)  
 p2 New password (up to 20 characters, ASCII)  
 p3 New password (enter the same password as p2)

**Example** Change the password from "PASS001" to "WORD005."  
`OPassword, 'PASS001', 'WORD005', 'WORD005'`

**Description**

- For the characters that you can use for the password, see [Appendix 1](#).

**OMath****Starts, Stops, or Resets Computation or Clears the Computation Dropout Status Display**

Starts or stops computation, resets computed values, or clears the computation dropout status display.

**Syntax** `OMath, p1`  
 p1 Action type (0)  
 0 Start computation  
 1 Stop computation  
 2 Reset computation  
 3 Clear the computation dropout status display

**Query** `OMath?`

**Example** Start computation.  
`OMath, 0`

**Description**

- You cannot use this command while the GX/GP is saving or loading setup data.

**OSaveConf****Saves Setting Data**

Saves the GX/GP setting data to the GX/GP external storage medium.

**Syntax** `OSaveConf, p1, p2, p3`  
 p1 File name (up to 240 characters, ASCII)  
 Specify the path and file name, excluding the extension.  
 p2 Medium  
 SD SD memory card  
 USB USB flash memory  
 p3 Setting file comment (up to 50 characters, UTF-8)

**Example** Save setting data to a file named "SETFILE1" to the SD memory card.  
`OSaveConf, SD, 'SETFILE1'`

**Description**

- If you omit p3, the default setting file comment will be added. You can edit the default setting file comment from the GX/GP front panel.

**OCommCh****Sets a Communication Channel to a value**

Sets a communication channel to a value.

**Syntax** `OCommCh, p1, p2`  
 p1 Communication channel  
 p2 Value  
 The setting range is as follows:  
 -9.9999999E+29 to -1.0000000E-30, 0,  
 1.0000000E-30 to 9.9999999E+29  
 The number of significant digits is 8.

**Query** `OCommCh[, p1]?`

**Example** Set communication channel C001 to 2.5350.  
`OCommCh, C001, 2.5350`

**OEMail****Starts or Stops the E-mail Transmission Function**

Starts or stops the e-mail transmission function.

**Syntax** `OEMail, p1`  
 p1 Action type  
 0 Start the e-mail transmission function.  
 1 Stop the e-mail transmission function.

**Example** Start the e-mail transmission function.  
`OEMail, 0`

**OMBRestore****Recovers Modbus manually**

Resumes command transmission from Modbus client or Modbus master to devices in which communication errors have occurred.

**Syntax** `OMBRestore, p1`  
 p1 Action type  
 0 Modbus client (Ethernet)  
 1 Modbus master (serial)

**Example** Manually recover the Modbus client.  
`OMBRestore, 0`

**ORTReset****Resets a Relative Timer**

Resets a relative timer.

**Syntax** `ORTReset, p1`  
 p1 Timer type  
 0 All timers  
 1 to 4 Timer number

**Example** Reset relative timer 2.  
`ORTReset, 2`

## OMTReset

### Resets the Match Time Timer

Resets the match time timer

**Syntax** OMTReset, p1  
 p1 Timer type  
     0 All timers  
     1 to 4 Timer number

**Example** Reset match time timer 2.  
 OMTReset, 2

## OCmdRelay

### Outputs the DO Channel and Internal Switch Status

Outputs the DO channel and internal switch status.

**Syntax** OCmdRelay, p1  
 p1 Specification of a setting

- Express the setting. Set a channel status as follows: [channel number]-[status]. Use a hyphen as a separator.
- You can specify the following values for the channel number.  
 DO channel number  
 Internal switch number
- You can specify the following values for the status.  
 Off: Off status  
 On: On status
- You can specify the status of multiple channels at once. To do so, use a semicolon to separate channels as follows: [channel number]-[status]:[channel number]-[status]:. . . You can specify up to a total of 32 channels that consist of DO channels and internal switches.

**Example** Set channels 0101, 0102, and 0103 to On and internal switches S001 and S002 to Off.  
 OCmdRelay, 0101-On:0102-On:0103-On:S001-Off:S002-Off

#### Description

- If any of the channels that you specify do not exist or are not set to manual output (**SRangeDO** command), the settings of all channels are canceled, and a command error results.

## OBatName

### Sets a Batch Name

Sets a batch name.

**Syntax** OBatName, p1  
 p1 Always set this to 1.  
 p2 Batch number (up to 32 characters, ASCII)  
 p3 Lot number (up to 8 digits, ASCII)

**Query** OBatName?

**Example** Set the batch name structure to batch number "PRESSLINE" and the lot number 007.  
 OBatName, 1, 'PRESSLINE', 007

#### Description

- For the characters that you can use in the specified batch number (p2), see [Appendix 1](#).
- The character limitations on the batch number (p2) are the same as those for directory names. See the explanation for the **SDirectory** command.

## OBatComment

### Sets a Batch Comment

Sets a batch comment.

**Syntax** OBatComment, p1, p2, p3  
 p1 Always set this to 1.  
 p2 Comment number (1 to 3)  
 p3 Comment string (up to 50 characters, UTF-8)

**Query** OBatComment?

**Example** Set comment number 2 to "THIS PRODUCT IS COMPLETED."  
 OBatComment, 1, 2, 'THIS PRODUCT IS COMPLETED'

## OBatText

### Sets a Batch Text

Sets a batch text.

**Syntax** OBatText, p1, p2, p3, p4  
 p1 Always set this to 1.  
 p2 Field number (1 to 24)  
 p3 Field title (up to 20 characters, UTF-8)  
 p4 Field string (up to 30 characters, UTF-8)

**Query** OBatText?

**Example** For field number 1, set the title to "Ope" and the character string to "GX."  
 OBatText, 1, 'Ope', 'GX'

## ODispRate

### Switches the Trend Interval

Switches between first trend interval (normal trend interval) and second trend interval.

**Syntax** ODispRate, p1  
 p1 Trend interval  
     NORMAL First trend interval (normal trend interval)  
     SECOND Second trend interval

**Example** Switch from first trend interval to second trend interval.  
 ODispRate, SECOND

#### Description

- Set the second trend interval with the **STrdRate** command.

## OLoadConf

### Loads Setting Data

Loads a setting data file from the GX/GP external storage medium into the GX/GP.

**Syntax** `OLoadConf, p1, p2, p3`  
**p1** File name (up to 240 characters, ASCII)  
 Specify the path and file name, excluding the extension.  
**p2** Medium  
     SD      SD memory card  
     USB     USB flash memory  
**p3** Settings to load  
     ALL      All settings  
     SECURITY Security settings only  
     IP       IP address settings only  
     OTHERS   All settings except for security and IP address settings

**Example** Load all settings from the setting file "SETTING1" on the SD memory card.

`OLoadConf, 'SETTING1', SD, ALL`

#### Description

- If you omit parameter p2, the medium is set to the SD memory card.
- If you omit parameter p3, all settings will be loaded.

## OSeriApply

### Applies Serial Communication Settings

Applies serial communication settings.

**Syntax** `OSeriApply, p1`  
**p1** Apply the settings (0).

**Example** Apply serial communication settings.  
`OSeriApply, 0`

#### Description

- This command applies the serial communication settings specified by the **SSerialBasic** command.
- When you send this command, the serial communication settings take effect when the GX/GP returns a response. After this process, the connection will be cut off.

## OIPApply

### Applies the IP Address

Applies Ethernet communication settings.

**Syntax** `OIPApply, p1`  
**p1** Apply the settings (0).

**Example** Apply the IP address settings.  
`OIPApply, 0`

#### Description

- This command applies the IP address settings specified by the **SlpAddress**, **SDhcp**, **SDns**, and **SServer** commands.

- When you send this command, the IP address settings take effect when the GX/GP returns a response. After this process, the connection will be cut off. This includes Ethernet connections to other devices (Modbus server, FTP server, etc.).

## OInit

### Clears Measured Data and Initializes Setting Data

Clears the measured data in internal memory. The command also initializes setting data.

**Syntax** `OInit, p1`  
**p1** The types of data to be initialized and cleared  
     SECURITY Security settings  
     Memory    Display data, event data, manual sampled data, report data, alarm summary, message summary, and all logs  
     OTHERS    Settings other than security settings  
     ALL       All measured data and settings  
 You can specify multiple items at once. To do so, separate items with a colon.

**Example** Delete the measured data, summary, and logs in the internal memory.

`OInit, MEMORY`

## 2.7 Communication Control Commands

### CCheckSum

#### Sets the Checksum

Sets the presence or absence of checksum.

**Syntax** `CChecksum,p1`  

`p1` Checksum usage

0	Do not compute
1	Compute

#### Query

**Example** Enable the checksum.  
`CChecksum,1`

### CSFilter

#### Sets the Status Filter

Sets the filter used when outputting the GX/GP status.

**Syntax** `CSFilter,p1`  

`p1` Filter values for status information numbers 1 to 4 (0.0.0.0 to 255.255.255.255)

**Query** `CSFilter?`

**Example** Set the status filter value to 255.127.63.31.  
`CSFilter,255.127.63.31`

#### Description

- The status filter is applied to each communication connection.

### CLogin

#### Log in over a Communication Path

Logs in over a communication path.

**Syntax** `CLogin,p1,p2`  

`p1` User name

`p2` password

**Example** Log in using the user name “admin” and password “password.”  
`CLogin,admin,password`

#### Description

- For the characters that you can use for the password, see [Appendix 1](#).

### CLogout

#### Log Out over a Communication Path

Logs out over a communication path.

**Syntax** `CLogout`

**Example** Logs out from the GX/GP.  
`CLogout`

### ESC O

#### Opens an Instrument (RS-422/485 command)

Starts communication with the GX/GP. ESC in ASCII code is 0x1B. For details, see [Appendix 1](#).

**Syntax** `ESC O p1`  

`p1` Instrument address (01 to 99)

**Example** Open the instrument at address 99.  
`ESC O 99`

#### Description

- Specify the address of the instrument that you want to communicate with.
- You can only open one instrument at any given time.
- If you execute ESC O, any instrument that is already open will be automatically closed.
- Use a capital “O.”
- For this command, use CR+LF for the terminator.
- For the responses to this command, see [page 2-56](#).

### ESC C

#### Closes an Instrument (RS-422/485 command)

Ends communication with the GX/GP. ESC in ASCII code is 0x1B. For details, see [Appendix 1](#).

**Syntax** `ESC C p1`  

`p1` Instrument address (01 to 99)

**Example** Close the instrument at address 77.  
`ESC C 77`

#### Description

- This command closes the connection to the instrument you are communicating with.
- Use a capital “C.”
- For this command, use CR+LF for the terminator.
- For the responses to this command, see [page 2-56](#).

## 2.8 Instrument Information Output Commands

### **\_MFG**

#### **Outputs the Instrument Manufacturer**

Outputs the instrument manufacturer.

**Syntax** `_MFG`

##### **Description**

- For the ASCII output format, see [page 2-78](#).

### **\_INF**

#### **Outputs the Instrument's Product Name**

Outputs the instrument's product name.

**Syntax** `_INF`

##### **Description**

- For the ASCII output format, see [page 2-78](#).

### **\_COD**

#### **Outputs the Instrument's Basic Specifications**

Outputs the instrument's basic specifications.

**Syntax** `_COD`

##### **Description**

- For the ASCII output format, see [page 2-78](#).

### **\_VER**

#### **Outputs the Instrument's Firmware Version Information**

Outputs the instrument's firmware version information.

**Syntax** `_VER`

##### **Description**

- For the ASCII output format, see [page 2-79](#).

### **\_OPT**

#### **Outputs the Instrument's Option Installation Information**

Outputs the instrument's option installation information.

**Syntax** `_OPT`

##### **Description**

- For the ASCII output format, see [page 2-79](#).

### **\_TYP**

#### **Outputs the Instrument's Temperature Unit and Daylight Saving Time Installation Information**

Outputs whether the instrument's Fahrenheit temperature unit and daylight saving time setting is enabled or disabled.

**Syntax** `_TYP`

##### **Description**

- For the ASCII output format, see [page 2-80](#).

### **\_ERR**

#### **Outputs the Instrument's Error Number Information**

Outputs the error description that corresponds to the error number.

**Syntax** `_ERR, p1, p2, . . .`

Write the details of the negative response returned from the GX/GP in p1, p2, etc.

**Example** Output the error description when negative response "E1, 10:1:2, 500:2:5" is returned.

`_ERR, 10:1:2, 500:2:5`

##### **Description**

- For the ASCII output format, see [page 2-80](#).

### **\_UNS or \_UNR**

#### **Outputs the Instrument's Unit Configuration Information**

Outputs the instrument's unit configuration information.

**Syntax** `_UNS` Outputs the status that is recognized by the device.  
`_UNR` Outputs the installation status.

##### **Description**

- For the ASCII output format, see [page 2-81](#).

### **\_MDS or \_MDR)**

#### **Outputs the Instrument's Module Configuration Information**

Outputs the instrument's module configuration information.

**Syntax** `_MDS` Outputs the status that is recognized by the device.  
`_MDR` Outputs the installation status.

##### **Description**

- For the ASCII output format, see [page 2-82](#).

## 2.9 Responses to Commands

This section explains the responses that GX/GP returns in response to commands. There are three types of responses: affirmative response, negative response, and data output response.

### 2.9.1 Affirmative Response (For commands other than output request commands)

If the GX/GP successfully completes the processing of a received command that is not an output request command, it returns an affirmative response.

#### Syntax

`E0CRLF`

“CRLF” is the terminator that the GX/GP uses. “CRLF” will be used in the explanation of the syntax. In the response examples, “CRLF” will be omitted.

### 2.9.2 Negative Response

If a command syntax error, setting error, or other error occurs, the GX/GP returns a negative response.

#### Syntax

`E1,p,p,...,pCRLF`

- p** Error number and the position of error occurrence  
The detailed format of p is indicated below. The GX/GP outputs the error number, the position of the command where the error occurred, and the position of the parameter where the error occurred, each separated by a colon.
- `en:cp:pp`
- `en` Error number.
  - `cp` A value indicating the command position where the error occurred. The position is numbered in order with the first command as 1. For a single command, the GX/GP outputs 1.
  - `pp` A value indicating the parameter position where the error occurred. The position is numbered in order with the first parameter in each command as 1. For errors that pertain to the entire command (for example, error in the command name), the GX/GP outputs 0.  
If errors occur in multiple parameters, the GX/GP outputs numbers separated by commas in ascending order.

#### Response Example 1

If error number 3 occurs in the second parameter of a single command, the GX/GP outputs:

`E1,3:1:2`

#### Response Example 2

If error number 1 occurs in the third parameter and error number 100 occurs in the fifth parameter of a single command, the GX/GP outputs:

`E1,1:1:3,100:1:5`



### Response Example 3

In a string of two commands, if error number 10 occurs in the second parameter of the first command and error number 500 occurs in the fifth parameter of the second command, the GX/GP outputs:

```
E1,10:1:2,500:2:5
```

### Error Messages

You can use the “instrument’s error number information output command” (`_ERR`) to output the error message that corresponds to an error number of a negative response.

## 2.9.3 Data Output Response

There are two types of data output: ASCII and binary.

### ASCII Output

The responses to the following commands are in ASCII.

- Queries for operation commands and setting commands
- ASCII data output requests of output commands

#### Syntax

`EACRLF`

ASCII string data . . . . . `CRLF`

ASCII string data . . . . . `CRLF`

|

ASCII string data . . . . . `CRLF`

`ENCRLF`

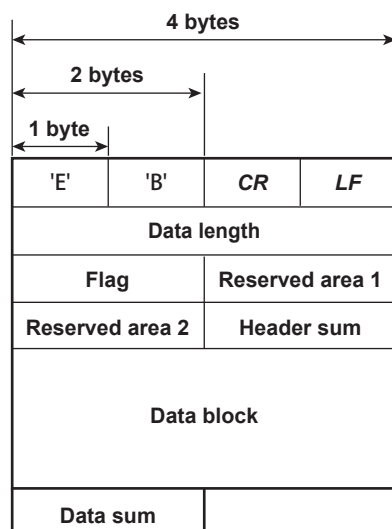
The GX/GP adds a header (EA) in front of the ASCII string output data and a footer (EN) at the end. The GX/GP adds the two characters `CRLF` to the end of headers, footers, and ASCII string data.

## Binary Output

The responses to output commands consisting of binary data output requests are in binary.

### Format

The following figure shows the binary output format. The GX/GP adds a header to the front of binary output data and a checksum at the end. The request data is entered in the data block.



### EBCRLF

The EBCRLF block stores ASCII code "E," ASCII code "B," followed by "CR" "LF." This indicates that the output data is binary.

### Data length (32 bits, big endian)

The data length block indicates the length of "flag + reserved area 1 + reserved area 2 + header sum + data block + data sum" in bytes.

### Flag (16 bits, big endian)

The flag block indicates information of the entire data block.

Bit	Flag Value		Flag Meaning
	0	1	
15	Always zero		Not used
14	No	Yes	Data sum inclusion
13	Always zero		Not used
:			
1			
0	Intermediate data	Last data	If the output data is continuous data, this flag indicates whether the last value in the data block is intermediate data or last data.

### Reserved area 1 (16 bits), reserved area 2 to (16 bits)

Not used

### Header sum (16 bits, big endian)

The header sum block indicates the sum of "data length + flag + reserved area 1 + reserved area 2."

**Data Block**

The actual output data. The format varies depending on the output content. For details, see section 2.11, “[Format of the Data Block of Binary Output](#).”

**Data sum (16 bits, big endian)**

The data sum block indicates the sum of the data block. Use the CChecksum command to specify whether to include data sum. By default, check sum is set to “No.” Whether data sum is included is expressed by a flag in the header block. If the data sum block is not included, the area itself will not be included. For the check sum calculation method, see [Appendix 5 Check Sum Calculation Method](#).

**2.9.4 Output in Response to RS-422/485 Commands**

The table below shows the responses to the ESC O command and ESC C command. ESC in ASCII code is 0x1B. For details, see [Appendix 1 ASCII Character Codes](#).

Syntax	Meaning	Response
ESC O _xxCRLF (_: Space)	Opens an instrument	<ul style="list-style-type: none"> <li>Response from the destination instrument ESC OxxCRLF</li> <li>If there is no instrument at the address specified by the command* No response</li> </ul>
ESC C _xxCRLF (_: Space)	Closes an instrument	<ul style="list-style-type: none"> <li>Response from the destination instrument ESC CxxCRLF</li> <li>If there is no instrument at the address specified by the command* No response</li> </ul>

\* Some possible reasons why the condition “there is no instrument at the address specified by the command” occurs are command error, the address assigned to the instrument is different, the instrument is not turned on, and the instrument is not connected through serial interface.

- “xx” in the table represents the instrument address. You can specify any address within the range of 01 to 99 and within the addresses assigned to the communication target instruments.
- You can only open one instrument at any given time.
- When you open an instrument with the ESC O command, you can send commands to it.
- If you open an instrument with the ESC O command, any instrument that is already open will be automatically closed.
- Use CR+LF for the terminator.

## 2.10 ASCII Output Format

This section explains the ASCII output format.

- In the following format descriptions, the terminator is denoted by "<crLf>."
- One space (ASCII code : 0x 20) is denoted by an underscore. Consecutive spaces are denoted by alternating underscores and overscores (   ).
- An I/O channel is expressed as a four-digit number (e.g., 0102), a math channel is expressed as "A" followed by a three-digit number (e.g., A015), and a communication channel is expressed as "C" followed by a three-digit number (e.g., C120).

### 2.10.1 Most Recent Channel Data (FData)

The output in response to the command "FData,0" is shown below.

#### Syntax

```
EA<crLf>
DATE_ yy/mo/dd<crLf>
TIME_ hh:mm:ss.mmmt<crLf>
s_ ccca1a2a3a4uuuuuufdddddE-pp<crLf>
s_ ccca1a2a3a4uuuuuufdddddE-pp<crLf>
...
s_ ccca1a2a3a4uuuuuufdddddE-pp<crLf>
EN<crLf>
```

yy/mo/dd	Data time (year, month, day)
yy	Year (00 to 99)
mo	Month (01 to 12)
dd	Day (01 to 31)
hh:mm:ss.mmmt	Data time (hour, minute, second, millisecond)
hh	Hour (00 to 23)
mm	Minute (00 to 59)
ss	Second (00 to 59)
mmm	Millisecond (000 to 999)
	A period is inserted between the minute and millisecond.
t	Reserved (space)
s	Data status
	N Normal
	D Differential input
	S Skip
	O Over
	E Errors
	B Burnout
	C Communication channel error
cccc	Channel number (I/O channel, math channel, communication channel)
a1a2a3a4	a1 Alarm status (level 1)
	a2 Alarm status (level 2)
	a3 Alarm status (level 3)
	a4 Alarm status (level 4)
	a1, a2, a3, and a4 is set to one of the following:
	H High limit alarm
	L Low limit alarm
	h Difference high limit alarm
	l Difference low limit alarm
	R High limit on rate-of-change alarm
	r Low limit on rate-of-change alarm
	T Delay high limit alarm
	t Delay low limit alarm
	Space No alarm
uuuuuu	Unit (fixed to 10 characters. Output flush left. Unused character positions are filled with spaces.)
	mV _ _ _ _ mV

	$\begin{array}{c} \text{V} \quad - \quad - \quad - \quad - \quad \text{V} \\ \wedge \quad \text{C} \quad = \quad = \quad = \quad \text{C} \\ \text{---} \quad - \quad - \quad - \quad - \end{array}$
f	Sign (+ or -)
ddddddddd	Mantissa (00000000 to 99999999; 8 digits) For erroneous data (data status is E), the mantissa is 99999999. If the data status is O ( $\pm$ over), the mantissa is 99999999 (+over) or -99999999 (-over). If the data status is B (burnout), the mantissa is 99999999 (+burnout) or -99999999 (-burnout).
pp	Exponent (00 to 05)

### 2.10.2 Most Recent (DO Channel) Status (FRelay)

The output in response to the command "FRelay,0" is shown below.

#### Syntax

```
EA<crlf>
M00:aaa...<crlf>
M01:aaa...<crlf>
M02:aaa...<crlf>
M03:aaa...<crlf>
M04:aaa...<crlf>
M05:aaa...<crlf>
M06:aaa...<crlf>
M07:aaa...<crlf>
M08:aaa...<crlf>
M09:aaa...<crlf>
EN<crlf>
```

aaa... Outputs the relay (DO channel) status of module numbers 00 to 09.  
If the module installed in the corresponding module number is not a DO module, a hyphen is output.  
If the module installed in the corresponding module number is a DO module, "1" or "0" is output for the number of channels in the module in ascending order by channel number.  
"1" indicates relay (DO channel) ON state, and "0" indicates relay (DO channel) OFF state.

### 2.10.3 Internal Switch Status (FRelay)

The output in response to the command "FRelay,1" is shown below.

#### Syntax

```
EA<crLf>
S001-010:aaaaaaaaa<crLf>
S011-020:aaaaaaaaa<crLf>
S021-030:aaaaaaaaa<crLf>
S031-040:aaaaaaaaa<crLf>
S041-050:aaaaaaaaa<crLf>
S051-060:aaaaaaaaa<crLf>
S061-070:aaaaaaaaa<crLf>
S071-080:aaaaaaaaa<crLf>
S081-090:aaaaaaaaa<crLf>
S091-100:aaaaaaaaa<crLf>
EN<crLf>
```

aaa...

The most recent internal switch status is output.

The internal switch status is output 10 channels per line over 10 lines.

"1" indicates that the internal switch is ON, and "0" indicates that the internal switch is OFF.

2.10.4 Users Who Are Currently Logged In (FUser)

The output in response to the command “FUser,0” is shown below.

Syntax

EA<crLf>  
p\_l\_uuuuuuuuuuuuuuuuuuuuuu\_abcdefghijk<crLf>  
EN<crLf>

p	Login mode
	M Via general communication
	W Via Web (HTTP server)
	F Via FTP server
	S RS-232 or RS-422/485
	D Via front panel
l	User level
	A Administrator
	U User
uuuuuuuuuuuuuuuuuuuuuu	User name (fixed to 20 characters. Unused character positions are filled with spaces.)
abcdefghijk	Authority of user
	F Free
	L Lock
	a through l represent actions.
	a Memory
	b Math
	c Data save
	d Message
	e Batch
	f Alarm ACK
	g Communication
	h Touch operation
	i Time set
	j Setting operation
	k External media



2.10.5 All Users Who Are Currently Logged In (FUser)

The output in response to the command “FUser,1” is shown below.

Syntax

EA<crLf>  
p\_l\_uuuuuuuuuuuuuuuuuuuuuu\_abcdefghijk<crLf>  
p\_l\_uuuuuuuuuuuuuuuuuuuuuu\_abcdefghijk<crLf>  
p\_l\_uuuuuuuuuuuuuuuuuuuuuu\_abcdefghijk<crLf>  
p\_l\_uuuuuuuuuuuuuuuuuuuuuu\_abcdefghijk<crLf>  
EN<crLf>

p	Login mode
	M Via general communication
	W Via Web (HTTP server)
	F Via FTP server
	S RS-232 or RS-422/485
	D Via front panel
l	User level
	A Administrator
	U User
uuuuuuuuuuuuuuuuuuuuuu	User name (fixed to 20 characters. Unused character positions are filled with spaces.)
abcdefghijk	Authority of user
	F Free
	L Lock
	a through n represent actions.
	a Memory
	b Math
	c Data save
	d Message
	e Batch
	f Alarm ACK
	g Communication
	h Touch operation
	i Time set
	j Setting operation
	k External media

### 2.10.6 Instrument Address (FAddr)

The output in response to the command "FAddr,IP" is shown below.

#### Syntax

```
EA<crLf>
IP_Address_ _ _ :xxx.xxx.xxx.xxx<crLf>
Subnet_Mask_ _ _ :xxx.xxx.xxx.xxx<crLf>
Default_Gateway_ :xxx.xxx.xxx.xxx<crLf>
Primary_DNS_ _ _ :xxx.xxx.xxx.xxx<crLf>
Secondary_DNS_ _ _ :xxx.xxx.xxx.xxx<crLf>
Host_ _ _ _ _ _ :yyyyyyyyyyyyyyyyyyyy...<crLf>
Domain_ _ _ _ _ :zzzzzzzzzzzzzzzzzzzz...<crLf>
EN<crLf>
```

xxx	IP address number (0 to 255)
yyy...	Host name (fixed to 64 characters. Unused character positions are filled with spaces.)
zzz...	Domain name (fixed to 64 characters. Unused character positions are filled with spaces.)

### 2.10.7 GX status (FStat)

The output in response to the command "FStat,0" is shown below.

#### Syntax

```
EA<crLf>
aaa.bbb.ccc.ddd<crLf>
EN<crLf>
```

aaa        Status information 1 (see table below)  
 bbb        Status information 2 (see table below)  
 ccc        Status information 3 (see table below)  
 ddd        Status information 4 (see table below)

#### Status Information 1

Bit	Name	Description
0	-	-
1	Memory sampling	Set to 1 during recording
2	Computing	Set to 1 while computation is in progress.
3	Alarm activated	Set to 1 when an alarm is activated.
4	Accessing medium	Set to 1 while the SD medium is being accessed.
5	E-mail started	Set to 1 while the e-mail transmission has been started.
6	Buzzer activated	Set to 1 when the buzzer is activated.
7	-	-

#### Status Information 2

Bit	Name	Description
0	-	-
1	-	-
2	Memory end	Set to 1 when the free space in the external memory is low.
3	Touch operation login	Set to 1 when a user is logged in through touch operation.
4	-	-
5	-	-
6	Measurement error	Set to 1 while measurement errors are detected on an AI module or when a burnout has occurred.
7	Communication error	Set to 1 when there is any command that is blocking Modbus master or Modbus client communication.

Status 3 and 4 are edge operations. They are cleared when read.

#### Status Information 3

Bit	Name	Description
0	Computation dropout	Set to 1 when computation cannot keep up.
1	Decimal and unit information setting	Set to 1 when the decimal or unit information is changed.
2	Command error	Set to 1 when there is a command syntax error.
3	Execution error	Set to 1 when there is a command execution error.
4	SNTP error at startup	Set to 1 when SNTP time synchronization fails at startup.
5	-	-
6	-	-
7	-	-

**Status Information 4**

Bit	Name	Description
0	-	
1	Medium access complete	Set to 1 when a display, event, manual-sample, report, or screen-image data file is saved to the external storage medium. Set to 1 when settings have been successfully saved or loaded.
2	Report generation complete	Set to 1 when report generation is complete.
3	Timeout	Set to 1 when a timer expires.
4	-	-
5	-	-
6	-	-
7	-	-

**2.10.8 Alarm Summary (FLog)**

The output in response to the command "FLog,ALARM" is shown below.

**Syntax**

```
EA<crlf>
yyyy/mo/dd_hh:mm:ss.ttt_kkk_cccc_lss<crlf>
...
EN<crlf>
```

```

yyyy/mo/dd_hh:mm:ss.ttt  Time of alarm occurrence
                           yyyy      Year (1900 to 2099)
                           mo        Month (01 to 12)
                           dd        Day (01 to 31)
                           hh        Hour (00 to 23)
                           mm        Minute (00 to 59)
                           ss        Second (00 to 59)
                           ttt       Millisecond (000 to 999)
                           A period is inserted between the minute and
                           millisecond.

kkk      Alarm cause
         OFF      Alarm release
         ON_      Alarm occurrence
         ACK      All channel alarm ACK
         ALL      All channel alarm OFF

cccc      Channel number (set to four spaces if the alarm cause is
"ACK" or "ALL")

l         Alarm level (1 to 4)

ss        Alarm type
         H_      High limit alarm
         h_      Difference high limit alarm
         L_      Low limit alarm
         l_      Difference low limit alarm
         R_      High limit on rate-of-change alarm
         r_      Low limit on rate-of-change alarm
         T_      Delay high limit alarm
         t_      Delay low limit alarm
```

2.10.9 Message Summary (FLog)

The output in response to the command “FLog,MSG” is shown below.

Syntax

EA<crlf>  
yyyy/mo/dd\_hh:mm:ss\_YYYY/MO/DD\_HH:MM:SS\_t\_mmm...m\_zzz\_ggg...g\_uuu...  
u<crlf>  
...  
EN<crlf>

yyyy/mo/dd_hh:mm:ss	Time when the message was written
YYYY	Year (1900 to 2099)
mo	Month (01 to 12)
dd	Day (01 to 31)
hh	Hour (00 to 23)
mm	Minute (00 to 59)
ss	Second (00 to 59)
YYYY/MO/DD_HH:MM:SS	Data position where message was written
YYYY	Year (1900 to 2099)
MO	Month (01 to 12)
DD	Day (01 to 31)
HH	Hour (00 to 23)
MM	Minute (00 to 59)
SS	Second (00 to 59)
t	Message type
	N Normal message
	H Freehand message
mmm...m	Message (fixed to 48 characters. Unused character positions are filled with spaces.) For freehand message, the string “(image)” is output.
zzz	Operation property (3 characters)
	KEY Touchscreen operation
	REM Remote
	COM Ethernet communication
	SER Serial communication
	ACT Event action
	SYS System
ggg...g	Target group (multiple groups are expressed using dot delimiters) (fixed to 16 characters. Unused character positions are filled with spaces.)
	ALL All display groups
	aa.bb.cc.dd... Multiple display groups
uuu...u	User name (fixed to 20 characters. Unused character positions are filled with spaces.)

2.10.10 Event log (FLog)

The output in response to the command “FLog,EVENT” is shown below.

Syntax

```
EA<crlf>
yyyy/mo/dd_hh:mm:ss_zzz_-sss...s_uuu...u<crlf>
...
EN<crlf>
```

yyyy/mo/dd_hh:mm:ss	Time of event occurrence	
	yyyy	Year (1900 to 2099)
	mo	Month (01 to 12)
	dd	Day (01 to 31)
	hh	Hour (00 to 23)
	mm	Minute (00 to 59)
	ss	Second (00 to 59)
zzz	Event cause	
	KEY	Touchscreen operation
	REM	Remote
	COM	Ethernet communication
	SER	Serial communication
	ACT	Event action
	SYS	System
sss...s	Event string (fixed to 16 characters. Unused character positions are filled with spaces.)	
uuu...u	User name (fixed to 20 characters. Unused character positions are filled with spaces.)	

2.10.11 Error Log (FLog)

The output in response to the command “FLog,ERROR” is shown below.

Syntax

EA<crlf>  
yyyy/mo/dd\_hh:mm:ss\_nnn\_uuu...u<crlf>  
...  
EN<crlf>

yyyy/mo/dd_hh:mm:ss	Time of error occurrence
yyyy	Year (1900 to 2099)
mo	Month (01 to 12)
dd	Day (01 to 31)
hh	Hour (00 to 23)
mm	Minute (00 to 59)
ss	Second (00 to 59)
nnn	Error code (001 to 999)
uuu...u	Error message (fixed to 80 characters. Unused character positions are filled with spaces.)



### 2.10.12 Address Setting Log (FLog)

The output in response to the command "FLog,DHCP" is shown below.

#### Syntax

```
EA<crLf>
yyyY/mo/dd_hh:mm:ss_kkk...k_mmm...m<crLf>
...
EN<crLf>
```

```
yyyY/mo/dd_hh:mm:ss Time of occurrence
                        yyyY    Year (1900 to 2099)
                        mo      Month (01 to 12)
                        dd      Day (01 to 31)
                        hh      Hour (00 to 23)
                        mm      Minute (00 to 59)
                        ss      Second (00 to 59)

kkk...k                Type (fixed to 15 characters. Unused character positions are
                        filled with spaces. See table below.)

mmm...m                Message (fixed to 20 characters. Unused character positions are
                        filled with spaces. See table below.)
```

Type	Message	Error Message
LINK	ON	Ethernet connection detected
	OFF	Ethernet disconnection detected
SET	Address (e.g., 10.0.122.3)	IP address set
DHCP	OFF	DHCP disabled
	ON	DHCP enabled
	RENEWING	Acquired IP address renewing
	RELEASING	Acquired IP address releasing
	REJECTING	Acquired IP address rejecting*
	RENEWED	IP address renewed
	RELEASED	IP address released
	EXTENDED	IP address extension application complete
	ESEND	DHCP message transmission failed
	ESERVER	DHCP server search failed
	ESERVFAIL	DHCP server response failed (reception timeout)
	ERENEWED	IP address renewal failed
	ERELEASED	IP address release failed
	EEXTENDED	IP address extension application failed
DNS	EEXPIRED	IP address lease expiration
	UPDATED	DNS host name registration complete
	REMOVED	DNS host name removal complete
	EFORMERR	DNS message syntax error
	ESERVFAIL	DNS server processing error
	ENXDOMAIN	DNS server query rejected (domain does not exist)
	EREFUSED	DNS server query rejected (process not allowed)
	EYXDOMAIN	DNS server query rejected (record exists)
	EYXRESET	DNS server query rejected (record exists)
	ENXRESET	DNS server query rejected (record does not exist)
	ENOTAUTH	DNS server query rejected (not authenticated)
	ENOTZONE	DNS server query rejected (query error)
	ENOTIMP	DNS server query rejected (The command is not implemented.)
	ENONAME	Tried to register an blank host name to the DNS server.

\* If the GX/GP cannot accept the IP address obtained from the DHCP server, the GX/GP will reject the address and immediately return a response to the DHCP server.

### 2.10.13 General log (FLog)

The output in response to the command “FLog,General” is shown below.

#### Syntax

```
EA<crlf>
yyyy/mo/dd_hh:mm:ss_nn_uuu...u_fdmmm...m<crlf>
...
EN<crlf>
```

yyyy/mo/dd_hh:mm:ss	Time of command Tx/Rx
yyyy	Year (1900 to 2099)
mo	Month (01 to 12)
dd	Day (01 to 31)
hh	Hour (00 to 23)
mm	Minute (00 to 59)
ss	Second (00 to 59)
nn	Connection ID
s0	Serial (general)
e0	Ethernet connection #0 (general)
e1	Ethernet connection #1 (general)
e2	Ethernet connection #2 (general)
uuu...u	User name (fixed to 20 characters. Unused character positions are filled with spaces.)
f	Multiple command flag
Space	Single command
*	Multiple commands
d	Tx/Rx
>	Tx (command: connected instrument to GX/GP)
<	Rx (Response: GX/GP to connected instrument)
mmm...m	Message (fixed to 40 characters. Unused character positions are filled with spaces.) The GX/GP normally outputs the data that has been transmitted or received as-is, but it sometimes outputs special messages. Special messages are shown below.
(output)	Data output
(Over length)	Command length too long
(timed out)	Timeout
(disconnected)	Disconnection (occurs when an Ethernet connection is disconnected)

### 2.10.14 Modbus Communication Log (FLog)

The output in response to the command "FLog,Modbus" is shown below.

#### Syntax

```
EA<crLf>
yyyy/mo/dd_hh:mm:ss_c_XXXXXX_kkk...k_nnn_d<crLf>
...
EN<crLf>
```

```
yyyy/mo/dd_hh:mm:ss Time of error occurrence
                        yyyy      Year (1900 to 2099)
                        mo        Month (01 to 12)
                        dd        Day (01 to 31)
                        hh        Hour (00 to 23)
                        mm        Minute (00 to 59)
                        ss        Second (00 to 59)

c                      Communication type
                        M          Modbus master
                        C          Modbus client

XXXXXX                Event that occurred (fixed to 6 characters)
                        ACTIVE     Activated
                        READY_     Command ready state
                        CLOSE_     Disconnected
                        HALT_      Command halted

kkk...k               Details (fixed to 15 characters. Unused character positions are
                        filled with spaces. See table below.)

nnn                   Command number (0 to 999)
d                     Command type
                        R          Read
                        W          Write
                        N          Miscellaneous
```

Detail*	Meaning
SKIP	Command not set.
INVALID	Command cannot be executed.
WAITING	Server/slave communication recovery wait.
CLOSED	Server/slave connection closed.
RESOLVING	Server/slave connection being established (resolving address).
CONNECTING	Server/slave connection being established (requesting connection).
UNREACH	Server/slave connection failed (peer not found).
TIMEDOUT	Server/slave connection failed (timeout occurred).
BROKEN	Response message corrupt (CRC error).
ERR_FC	Response message was an illegal function message.
ERR_ADDR	Response message was an illegal data address message.
ERR_VALUE	Response message was an illegal data value message.
ERR_DEVICE	Response message was a slave device failure message
ERR_ACK	Response message was an acknowledge message.
ERR_BUSY	Response message was a slave device busy message.
ERR_NEGATIVE	Response message was a negative acknowledge message.
ERR_GATE_PATH	Response message was a gateway path unavailable message.
ERR_GATE_TARGET	Response message was a gateway target device failed to respond message.
BAD_SLAVE	The slave address of the response message is invalid (does not match the command).
BAD_FC	The function code of the response message is invalid (does not match the command).
BAD_ADDR	The address of the response message is invalid (does not match the command).

Detail*	Meaning
BAD_NUM	The register of the response message is invalid (does not match the command).
BAD_CNT	The number of registers in the response message is invalid (does not match the command).
NO_DATA	Data has not yet been received once.
BAD_DATA	Data conversion of the response message failed.
VALID	Data is being acquired normally.
DROP_OUT	Communication dropout occurred due to the inability to keep up.

\* “\_” expresses an underscore.

### 2.10.15 FTP Client Log (FLog)

The output in response to the command “FLog,FTP” is shown below.

#### Syntax

```
EA<CrLf>
yyyy/mo/dd_hh:mm:ss_XXXXXXXX_k_fff...<CrLf>
...
EN<CrLf>
```

yyyy/mo/dd\_hh:mm:ss Time of error occurrence

YYYY Year (1900 to 2099)  
 mo Month (01 to 12)  
 dd Day (01 to 31)  
 hh Hour (00 to 23)  
 mm Minute (00 to 59)  
 ss Second (00 to 59)

XXXXXXXX

Detailed code (fixed to 9 characters)

TCPIP\_ \_ \_ Internal processing error  
 HOSTNAME \_ \_ Unable to resolve server host name  
 UNREACH \_ \_ Unable to connect to server  
 CONNECT \_ \_ Unable to connect to data port  
 SEND \_ \_ \_ Transmission to data port failed  
 RECV \_ \_ \_ Reception from data port failed  
 REPLY \_ \_ = Received reject response from server  
 SERVER \_ \_ = Invalid server response  
 CMDSEND \_ \_ Error in sending command to control port  
 CMDRECV \_ \_ Error in receiving command from control port  
 USER \_ \_ = Invalid user name  
 PASS \_ \_ \_ Invalid password  
 ACCT \_ \_ \_ Internal processing error  
 TIMEOUT \_ \_ Response timeout  
 LINK \_ \_ \_ Ethernet cable not connected  
 FILE \_ \_ \_ File access failed  
 NOFD \_ \_ \_ Internal processing error  
 NOID \_ \_ \_ Internal processing error  
 PARAM \_ \_ = Internal processing error

k Server type (P, S)

fff...f File name (fixed to 51 characters including extension. Unused character positions are filled with spaces.)

**2.10.16 SNTP (Time Adjustment) Client Log (FLog)**

The output in response to the command “FLog,SNTP” is shown below.

```
Syntax
EA<crlf>
yyyy/mo/dd_hh:mm:ss_nnn_xxxxxxxx<crlf>
...
EN<crlf>

yyyy/mo/dd_hh:mm:ss Time of error occurrence
                        YYYY      Year (1900 to 2099)
                        mo        Month (01 to 12)
                        dd        Day (01 to 31)
                        hh        Hour (00 to 23)
                        mm        Minute (00 to 59)
                        ss        Second (00 to 59)

nnn                    Error code
xxxxxxxx              Detailed code (fixed to 9 characters)
                        SUCCESS_ _ Success
                        EOVER_ _ Adjustment limit exceeded
                        EDORMANT_ Internal processing error
                        EHOSTNAME Host name lookup failed
                        ETCPIP_ _ Internal processing error
                        ESEND_ = Packet transmission failed
                        ETIMEDOUT Response timeout occurred
                        EBROKEN_ _ Response packet corrupt
                        ELINK_ _ Ethernet cable not connected
```

2.10.17 E-Mail Client Log (FLog)

The output in response to the command “FLog,Mail” is shown below.

Syntax

```
EA<crlf>
yyyy/mo/dd_hh:mm:ss_ffffff_eeeeeeeeeeee_n_uuu...u<crlf>
...
EN<crlf>
```

yyyy/mo/dd\_hh:mm:ss    Time of transmission

yyyy	Year (1900 to 2099)
mo	Month (01 to 12)
dd	Day (01 to 31)
hh	Hour (00 to 23)
mm	Minute (00 to 59)
ss	Second (00 to 59)

ffffff    Cause (fixed to 6 characters)

ALARM_	Alarm mail
TIMER_	Scheduled mail
POWER_	Power-on, power failure recovery
Memory	Low external storage memory
ERROR_	Error notification
REPORT	Report file
TEST_	Test mail

eeeeeeeeeeee    Detailed error code (fixed to 12 characters)

HOSTNAME _ _	Unable to resolve server host name
TIMEOUT _ _	Communication with server timed out
LINK _ _ _	Ethernet cable not connected
UNREACH _ _	Unable to connect to server
HELO _ _ _	Server rejected greeting message
MAILFROM _ _	Server rejected sender
RCPTTO _ _	Server rejected recipient
DATA _ _ _	Server rejected the data transmission command
TCPIP _ _ _	Internal processing error
INVAL _ _ _	Internal processing error
SMTPAUTH _ _	SMTP AUTH authentication failed
ANOTSUPPORT _	Unsupported authentication method
POP3UNREACH _	Unable to connect to POP3 server
POP3TIMEOUT _	POP3 server connection timed out
POP3HOSTNAME	Unable to resolve POP3 host name
POP3AUTH _ _	POP3 server authentication failed

n    recipient

1	Recipient 1
2	Recipient 2
+	Recipient 1+2

uuu...u    Recipient mail address (fixed to 30 chararg. Unused character positions are filled with spaces.)  
The user name section of the recipient mail address (the “XXXX” section of “XXXX@abc.def.ghi”) is output.

### 2.10.18 Web Log (FLog)

The output in response to the command "FLog,WEB" is shown below.

#### Syntax

```
EA<crLf>
yyyy/mo/dd_hh:mm:ss_XX.XXX.XXX.XXX_mmmmmmmmm_uuu...u_ccc_nnn...<crLf>
...
EN<crLf>
```

yyyy/mo/dd\_hh:mm:ss Time of error occurrence  
     YYYY Year (1900 to 2099)  
     mo Month (01 to 12)  
     dd Day (01 to 31)  
     hh Hour (00 to 23)  
     mm Minute (00 to 59)  
     ss Second (00 to 59)  
 XXX.XXX.XXX.XXX Source IP address  
 mmmmmmmmm HTTP query method  
     GET GET method  
     POST POST method  
 uuu...u Access destination URL (fixed to 24 characters. Unused  
     character positions are filled with spaces.)  
 ccc HTTP response code (fixed to 32 characters. Unused character  
     positions are filled with spaces. See table below.)  
 nnn... Error message (see table below)

HTTP Response Code	Error Message
100	Continue
101	Switching Protocols
201	Created
202	Accepted
203	Non-Authoritative Information
204	No Content
205	Reset Content
206	Partial Content
400	Bad Request
401	Unauthorized
403	Forbidden
404	Not Found
405	Method Not Allowed
406	Not Acceptable
407	Proxy Authentication Required
408	Request Time-out
409	Conflict
410	Gone
411	Length Required
412	Precondition Failed
413	Request Entity Too Large
414	Request-URI Too Large
415	Unsupported Media Type
500	Internal Server Error
501	Not Implemented
502	Bad Gateway
503	Server Unavailable
504	Gateway Time-out
505	HTTP Version Not Supported



2.10.19 External Storage Medium and Internal Memory File List (FMedia)

The output in response to the command “FMedia,DIR” is shown below.

Syntax

```
EA<crlf>
yy/mm/dd_hh:mi:ss_l1l...l_fff...<crlf>
yy/mm/dd_hh:mi:ss_<DIR>_ddddddddd...<crlf>
EN<crlf>
```

yyyy/mo/dd_hh:mm:ss	Time of file generation
yy	Year (1900 to 2099)
mm	Month (01 to 12)
dd	Day (01 to 31)
hh	Hour (00 to 23)
mi	Minute (00 to 59)
ss	Second (00 to 59)
l1l...l	File size (fixed to 10 characters. Unused character positions are filled with spaces.)
fff...	For directories, <DIR> is output. File name

2.10.20 External Storage Medium Free Space (FMedia)

The output in response to the command “FMedia,CHKDSK” is shown below.

Syntax

```
EA<crlf>
zzzzzzzz_Kbytes_free<crlf>
EN<crlf>
```

zzzzzzzz	Free space (KB)
----------	-----------------

**2.10.21 Setting Data (FCnf)**

The output in response to the command “FCnf” is shown below.

**Syntax**

```
EA<crLf>
<Response to a setting query>
EN<crLf>
```

The setting data is output in the format of the response to a setting query.

**2.10.22 Decimal Place and Unit Information (FChInfo)**

The output in response to the command “FChInfo” is shown below.

**Syntax**

```
EA<crLf>
s_cccc_uuuuuuuuuu,pp<crLf>
s_cccc_uuuuuuuuuu,pp<crLf>
s_cccc_uuuuuuuuuu,pp<crLf>
EN<crLf>
```

s	Data status
	N Normal
	D Differential input
	S Skip
cccc	Channel number (I/O channel, math channel, communication channel)
uuuuu...	Unit information (fixed to 10 characters. Unused character positions are filled with spaces.)
pp	Decimal place (00 to 05)

2.10.23 System Configuration (FSysConf)

The output in response to the command “FSysConf” is shown below.

Syntax

```
EA<crLf>
Unit:00
00:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
01:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
02:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
03:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
04:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
05:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
06:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
07:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
08:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
09:cccccccccccccccc_uuuuuuuuuuuuuuuu_defghijklmnopqrs<crLf>
EN<crLf>

cccccccccccccccc      Module models that are actually installed
                        ----- Module not installed (16 hyphens)
                        GX90XA-10-U2 Analog input module
                        GX90XD-16-11 Digital input module
                        GX90YD-06-11 Digital output module

uuuuuuuuuuuuuuuuuuuu  Module models recognized by the GX
                        ----- Module not installed (16 hyphens)
                        GX90XA-10-U2 Analog input module
                        GX90XD-16-11 Digital input module
                        GX90YD-06-11 Digital output module

defghijklmnopqrs      Module status
                        - Normal
                        x Error
                        d to s express the following items.
                        d   System data error
                        e   Calibration value error
                        f   Parameter error
                        g   Reserved (-)
                        h   FRAM error
                        i   Reserved (-)
                        j   Reserved (-)
                        k   Reserved (-)
                        l   A/D error
                        m   RJC error
                        n   Reserved (-)
                        o   Reserved (-)
                        p   Reserved (-)
                        q   Reserved (-)
                        r   Reserved (-)
                        s   Reserved (-)
```

2.10.24 Instrument Manufacturer (\_MFG)

The output in response to the command “\_MFG” is shown below. Outputs the instrument manufacturer.

Output Example

```
EA<crLf>
YOKOGAWA<crLf>
EN<crLf>
```

2.10.25 Instrument’s Product Name (\_INF)

The output in response to the command “\_INF” is shown below.

Output Example

```
EA<crLf>
'GX20/GP20',123456789,xx-xx-xx-xx-xx-xx,Rx.xx.xx <crLf>
EN<crLf>
```

'GX20/GP20'	Product name
123456789	Product serial number
xx-xx-xx-xx-xx-xx	MAC address (xx's are hexadecimals)
Rx.xx.xx	Firmware version

2.10.26 Instrument’s Basic Specifications (\_COD)

The output in response to the command “\_COD” is shown below.

Output Example

```
EA<crLf>
'GX20',-1,J,1,M <crLf>
EN<crLf>
```

'GX20'	Model
-1	Type
	-1 100 channels
	-2 500 channels
J	Display language
	J Japanese
	E English
	C Chinese
1	Supply voltage
	Blank When the product name is GX10/GX20
	1 When the product name is GP10/GP20
M	Power cord
	Blank When the product name is GX10/GX20
	M PSE cable
	D UL/CSA cable
	F VDE cable
	R SAA cable
	Q BS cable
	H GB cable
	N INMETRO cable

2.10.27 Instrument’s Firmware Version Information (\_VER)

The output in response to the command “\_VER” is shown below.

Output Example

```
EA<crLf>
B999999,Rx.xx.xx,'Main Program'<crLf>
B999999,Rx.xx.xx,'Web Program'<crLf>
EN<crLf>
```

B999999	Firmware part number (first line), Web program part number (second line)
Rx.xx.xx	Firmware version (first line), Web program version (second line)

2.10.28 Instrument’s Option Installation Information (\_OPT)

The output in response to the command “\_OPT” is shown below.

Output Example

```
EA<crLf>
/C2,'RS-232'<crLf>
/C3,'RS-422/485'<crLf>
/D5,'VGA output'<crLf>
/FL,'Fail output (1 point)'<crLf>
/MT,'Mathematical function (with report function)'<crLf>
/MC,'Communication channel function'<crLf>
/P1,'24 VDC/AC power supply'<crLf>
/UH,'USB interface (Host 2 ports)'<crLf>
/U__0,'Model pre-installed with analog (universal) input module(s)'<crLf>
/CR__, 'Model pre-installed with digital output module(s) and/or digital input module(s)'<crLf>
EN<crLf>
```

/C2	RS-232
/C3	RS-422/485
/D5	VGA output
/FL	Fail output, 1 point
/MT	Math (including the report function)
/MC	Communication channel function
/P1	24VDC/AC power supply
/UH	USB interface (host 2 ports)
/AS	Advanced security function (part 11 compliant)
/UX1X20	Model pre-installed with analog (universal) input modules
X1	Terminal type
S	Screw terminal
C	Clamp terminal
X2	Number of analog (universal) input modules installed
	1, 2, 3, 4, 5, 6, 7, 8, 9, A (where A represents 10)
/CRY1Y2	Model pre-installed with digital output modules and/or digital input modules
Y1	Number of digital output (C contact) modules installed
	1,2,3,4,5
Y2	Number of digital input modules installed
	1,2

### 2.10.29 Instrument's Temperature Unit and Daylight Saving Time Installation Information (\_TYP)

The output in response to the command "\_TYP" is shown below.

#### Output Example

```
EA<crLf>
DST,'Summer time/Winter time'<crLf>
DEGF,'degF'<crLf>
EN<crLf>
```

DST	Daylight saving time enabled
DEGF	Fahrenheit temperature unit enabled

### 2.10.30 Instrument's Error Number Information (\_ERR)

The output in response to the command "\_ERR" is shown below.

#### Output Example

```
EA<crLf>
10:1:2,'Dram Error'<crLf>
500:2:5,'Media Error'<crLf>
EN<crLf>
```

### 2.10.31 Instrument's Unit Configuration Information (\_UNS or \_UNR)

The output in response to the command "\_UNS" or "\_UNR" is shown below.

#### Syntax

```
EA<crLf>
p1,p2,p3,p4,p5,p6,p7,p8,p9,p10<crLf>
p1,p2,p3,p4,p5,p6,p7,p8,p9,p10<crLf>
...
EN<crLf>
```

#### Output Example

```
EA<crLf>
Main,0,'GX20-1J',123456789,xx-xx-xx-xx-xx-xx,R1.01,/MT /C2,0,10,0
<crLf>
EN<crLf>
```

One line (p1 to p10) contains configuration information of a single unit.

p <sub>n</sub>	Value	Description
p1	Main, Sub	Unit dependency (main or sub) information. Fixed to "Main."
p2	0,1	Unit address number. Fixed at 0.
p3	'GX20-1J', 'COMM-LAN'	Unit name (model name). Enclosed in single quotation marks.
p4	123456789	Product serial number.
p5	xx-xx-xx- xx-xx-xx	MAC address.
p6	R1.01	Firmware version. The output format is "R+version."
p7	/MT /C2	Options. Codes of installed options delimited by spaces.
p8	0	Fixed at 0.
p9	10	Maximum number of installable modules. If there are not installable modules, 0 is output.
p10	0	Unit status. The unit status is output in a character string.



### 2.10.32 Instrument's Module Configuration Information (\_MDS or MDR)

The output in response to the command “\_MDS” or “\_MDR” is shown below.

#### Syntax

```
EA<crLf>
p1,p2,p3,p4,p5,p6,p7,p8,p9,p10,p11<crLf>
p1,p2,p3,p4,p5,p6,p7,p8,p9,p10,p11<crLf>
...
EN<crLf>
```

#### Output Example

```
EA<crLf>
Main,0,0,'AI',1234567,R1.02,,0,0,0,xxx<crLf>
Main,0,1,'DO',1234567,R1.01,,0,0,16,xxx<crLf>
EN<crLf>
```

One line (p1 to p10) contains configuration information of a single module.

p <sub>n</sub>	Value	Description
p1	Main, Sub	Unit dependency (main or sub) information. Fixed to “Main.”
p2	0, 1, 2	Address number of the unit that the module is installed in. Fixed at 0.
p3	0, 1, 2	Slot number of the unit that the module is installed in (0 reference).
p4	'AI', 'DO', 'DI'	Module name (model name). Enclosed in single quotation marks.
p5	1234567	Product serial number.
p6	R1.01, R1.02	Module firmware version. The output format is “R+version.”
p7	HS	Options. Codes of installed options delimited by spaces.
p8	0	Fixed at 0.
p9	0, 10, 8	Maximum number of input channels allowed on the module. If there are no inputs, 0 is output.
p10	0, 16	Maximum number of output channels allowed on the module. If there are no outputs, 0 is output.
p11	xxx	Module status. The module status is output in a character string.

## 2.11 Format of the Data Block of Binary Output

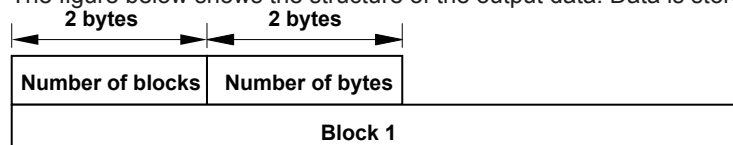
This section explains the data that is stored in the data block in the binary output of data output response.

### 2.11.1 Most Recent Channel Data (FData)

The output in response to the command "FData,1" is shown below. Outputs the most recent I/O channel, math channel, and communication channel data.

#### Configuration

The figure below shows the structure of the output data. Data is stored in "Block 1."



#### Number of Blocks (16 bits)

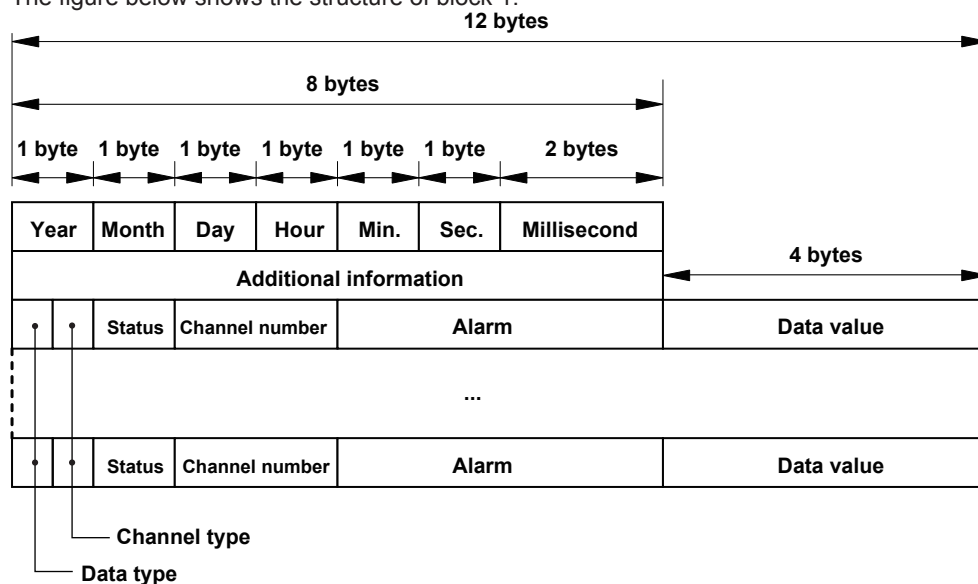
Always 1.

#### Number of Bytes (16 bits)

Stores the number of bytes of block 1.

#### Block 1

The figure below shows the structure of block 1.



#### Data Time

Item (Number of Bits)	Value
Year (8 bits)	0 to 99
Month (8 bits)	1 to 12
Day (8 bits)	1 to 31
Hour (8 bits)	0 to 23
Minute (8 bits)	0 to 59
Second (8 bits)	0 to 59
Millisecond (16 bits)	0 to 999

**Additional Information (64 bits)**

Bit 0: Daylight saving time (0: standard time; 1: daylight saving time)

**Data Type (4 bits)**

Indicates the data type. (1: 32 bit integer; 2: 32 bit floating point)

**Channel Type (4 bits)**

Indicates the channel type.

Value	Channel Type
1	I/O channel
2	Math channel
3	Communication channel

**Status (8 bits)**

Indicates the channel status.

Value	Channel Status
0	No error
1	Skip
2	+Over
3	-OVER
4	+Burnout
5	-Burnout
6	A/D error
7	Invalid data
16	Math result is NaN.
17	Communication error

**Channel Number (16 bits)**

Indicates the channel number. Stored in the following manner depending on the channel type.

Channel Type	Channel Number		
I/O channel	<div><div>6 bits</div><div>10 bits</div></div> <table><tr><td>Reserved</td><td>Channel number</td></tr></table>	Reserved	Channel number
Reserved	Channel number		
Math channel	<div><div>6 bits</div><div>10 bits</div></div> <table><tr><td>Reserved</td><td>Channel number</td></tr></table>	Reserved	Channel number
Reserved	Channel number		
Communication channel	<div><div>6 bits</div><div>10 bits</div></div> <table><tr><td>Reserved</td><td>Channel number</td></tr></table>	Reserved	Channel number
Reserved	Channel number		

**Alarm (32 bits)**

Indicates the alarm status.

8 bits	8 bits	8 bits	8 bits
Alarm 1	Alarm 2	Alarm 3	Alarm 4

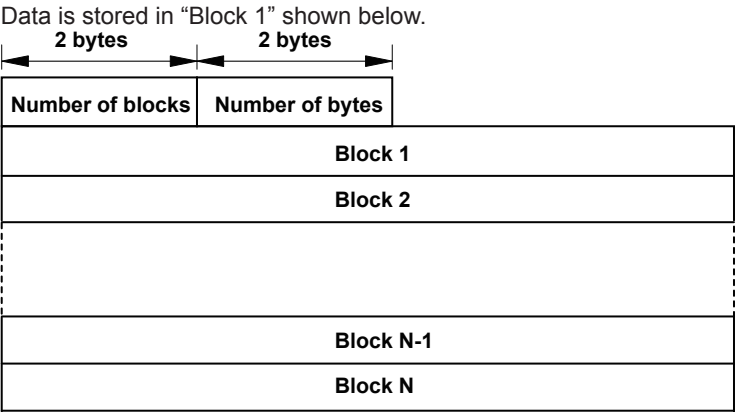
The eight bit values of alarm 1 to alarm 4 are described in the table below.

Bit	Value	Description
0 to 5	0	No alarm
	1	High limit alarm
	2	Low limit alarm
	3	Difference high limit alarm
	4	Difference low limit alarm
	5	High limit on rate-of-change alarm
	6	Low limit on rate-of-change alarm
	7	Delay high limit alarm
	8	Delay low limit alarm
6	0	No alarm is activated.
	1	An alarm is activated.
7	0	Alarm nonhold state
	1	Alarm hold state

2.11.2 Channel FIFO Data (FFifoCur)

The output in response to the command “FFifoCur,0” is shown below. Outputs the I/O channel, math channel, and communication channel FIFO data.

Configuration



**Number of Blocks (16 bits)**  
Number of stored blocks. Stores the number of blocks that can be output within the range specified by the read start position and end position.

**Number of Bytes (16 bits)**  
Stores the number of bytes per block.

Block

The content of the block is the same as that of “Block 1” described in section 2.11.1, “Most Recent Channel Data (FData).”

### 2.11.3 FIFO Data Read Range (FFifoCur)

The output in response to the command "FFifoCur,1" is shown below. Outputs FIFO data read position information.

8 bytes	
Additional information (always 0)	
The read position of the oldest data in the FIFO (1 to 9999999999)	
The read position of the most recent data in the FIFO (1 to 9999999999)	

#### The read position of the oldest data in the FIFO

This is the oldest data number within the readable data range.

#### The read position of the most recent data in the FIFO

This is the most recent data number within the readable data range.

Blank



## Appendix 1 ASCII Character Codes

The ASCII character code table is shown below.

		Upper 4 Bits							
		0	1	2	3	4	5	6	7
Lower 4 Bits	0			SP (space)	0	@	P	'	p
	1			!	1	A	Q	a	q
	2			"	2	B	R	b	r
	3			#	3	C	S	c	s
	4			\$	4	D	T	d	t
	5			%	5	E	U	e	u
	6			&	6	F	V	f	v
	7			'	7	G	W	g	w
	8			(	8	H	X	h	x
	9			)	9	I	Y	i	y
	A	LF (line feed)		*	:	J	Z	j	Z
	B		ESC	+	:	K	[	k	{
	C			,	<	L	\	l	
	D	CR (return)		-	=	M	]	m	}
	E			.	>	N	^	n	~
	F			/	?	O	_	o	

### Characters Used in Commands

In addition to alphanumeric characters, the following characters are used: commas as delimiters, semicolons as sub delimiters, question marks as query symbols, single quotation marks to indicate user-defined character strings, and "CR" (return) "LF" (line feed) as terminators.

### Characters That Can Be Used in User-Defined Character Strings

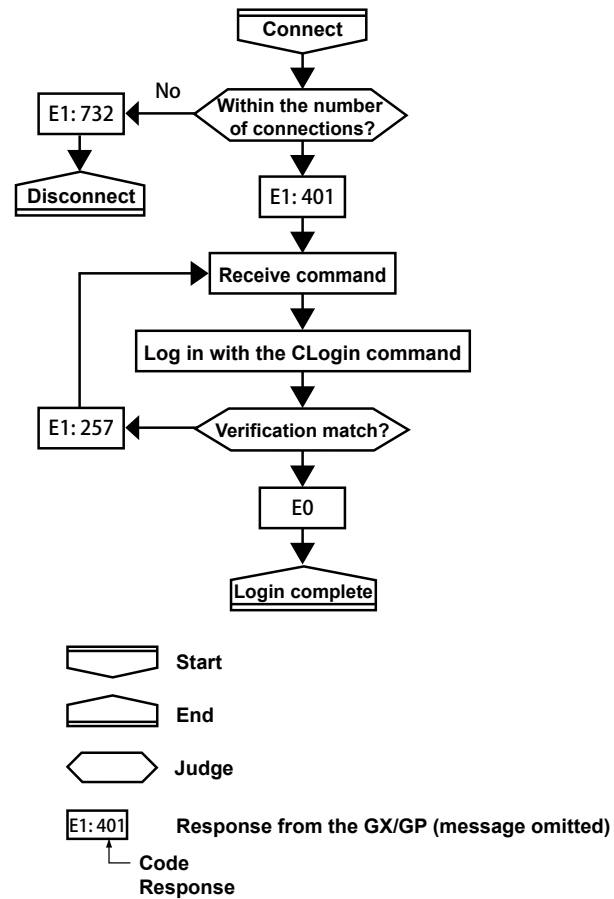
The table below shows the characters that can be used in user-defined character strings (tags, tag No., messages, etc.).

Item	Command and Parameter	Description
Directory name	p1 of the SDirectory command	The characters other than those in blue cells and those in thick frames can be used.
File name	p2 of the SFileName command	
Batch number	p2 of the OBatName command	
Password	p5 of SUser	The characters other than those in blue cells and SP (space) can be used.
	p1, p2, and p3 of OPassword	
	p2 of CLogin	
Character strings that users specify other than those above		The characters other than those in blue cells can be used.

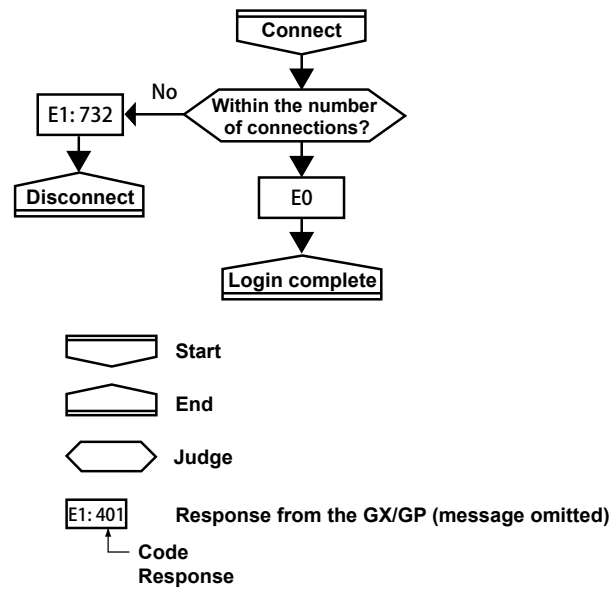
## Appendix 2 Login Procedure

To communicate using the general communication feature, you must log in to the GX/GP from your PC. If you complete the procedure successfully up to "Login complete" in the following figure, you will be able to use the commands.

### When Using the Login Function



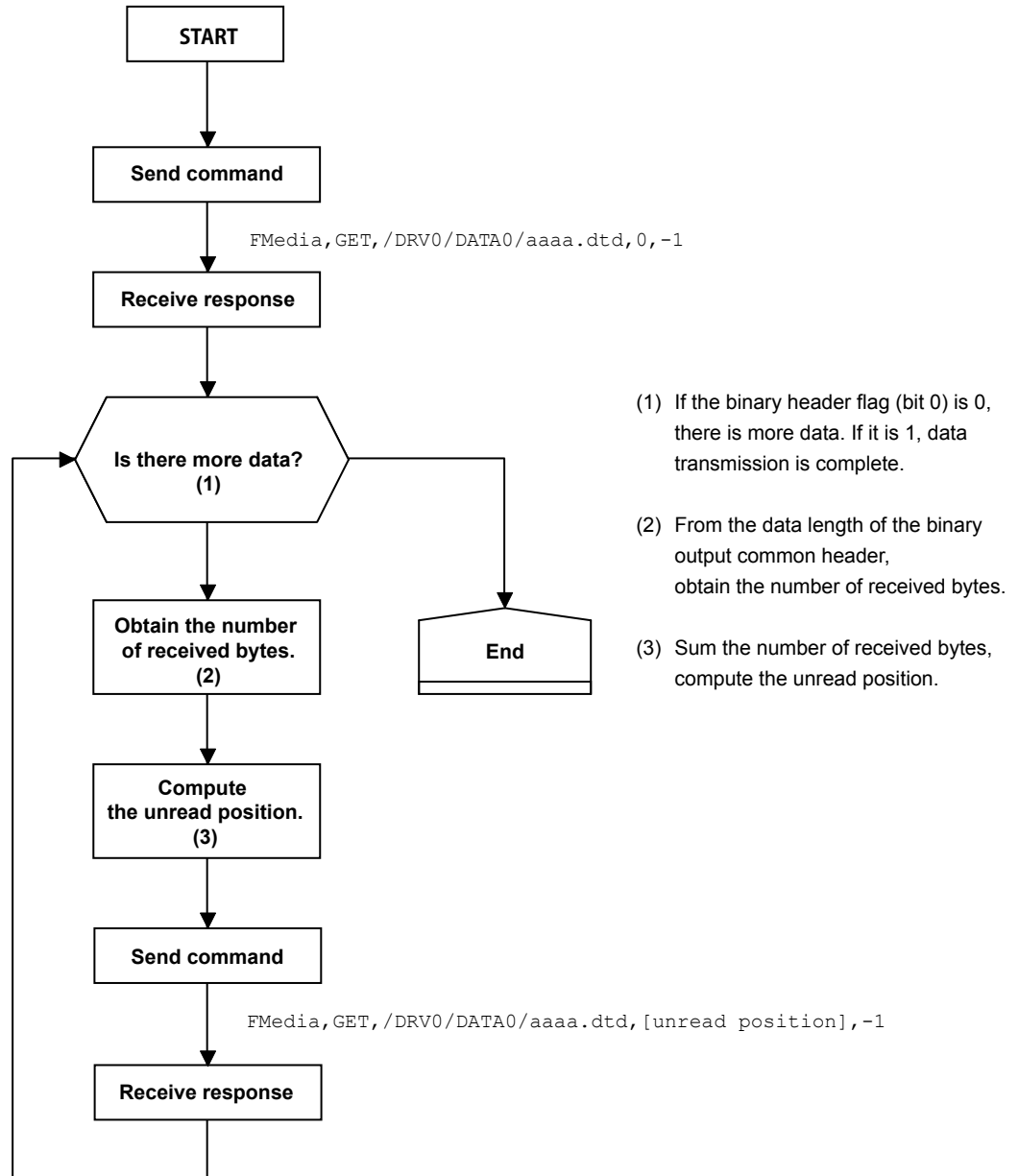
## When Not Using the Login Function



## Appendix 3 Output Flow Chart of External Storage Medium Files and File Lists

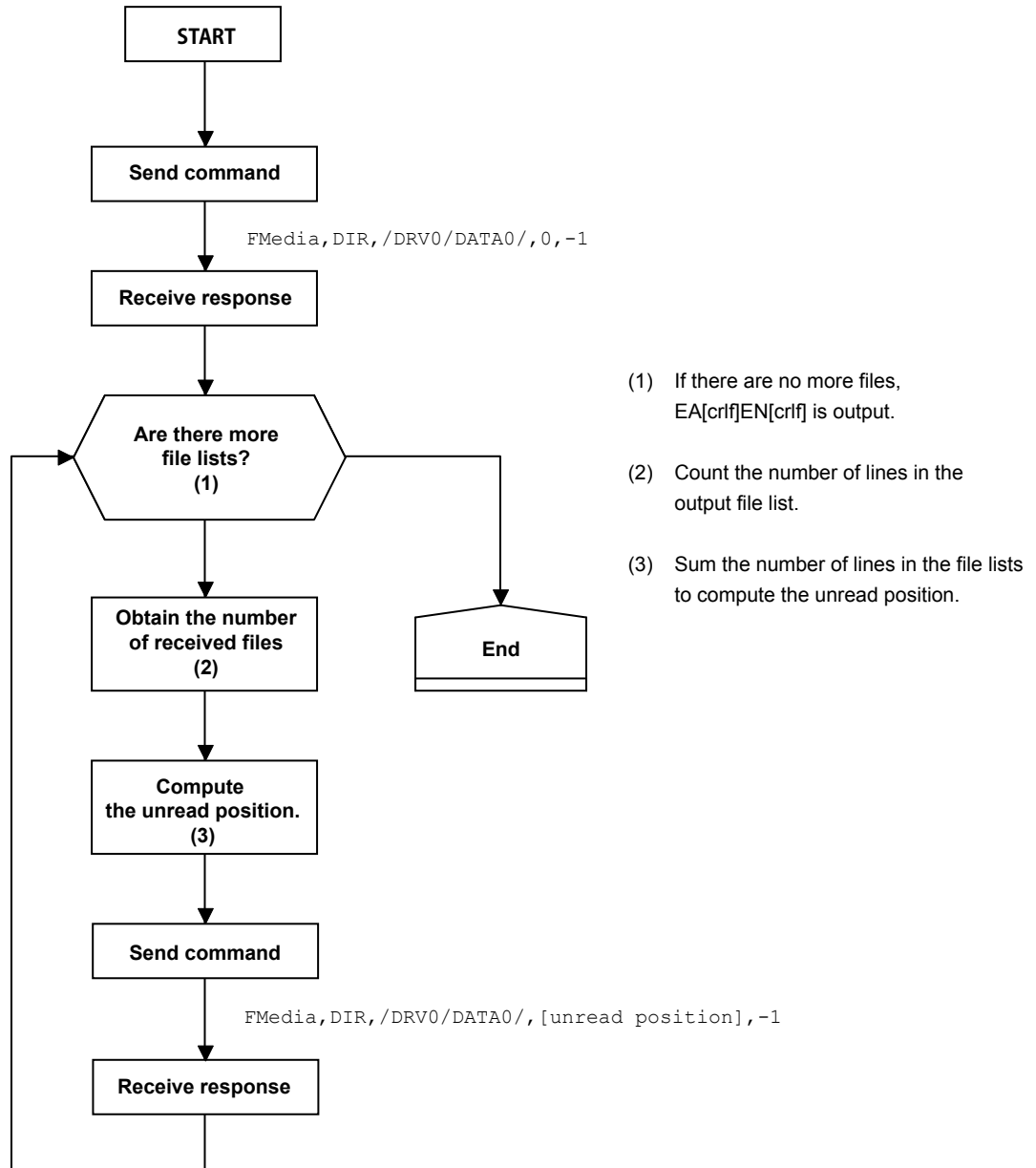
### Example for Outputting File aaaa.dtd

The flow chart for outputting file aaaa.dtd in the DATA0 directory on the external storage medium is shown below.



## Example for Outputting a File List

The flow chart for outputting the list of files in the DATA0 directory on the external storage medium is shown below.



## Appendix 4 FIFO Data Output Flow Chart

### Overview of the FIFO Buffer

The GX/GP internal memory is equipped with a dedicated FIFO (First-In-First-Out) buffer for outputting measured data. Measured data is written to the buffer at every scan interval. The PC can continuously retrieve the most recent measured data from the FIFO buffer. The size of the internal memory allocated for the FIFO buffer varies depending on the model. The number of data entries that the FIFO buffer can store varies depending on the number of channels and scan interval. The number of data entries that the FIFO buffer can store and the data length can be determined with the following formula.

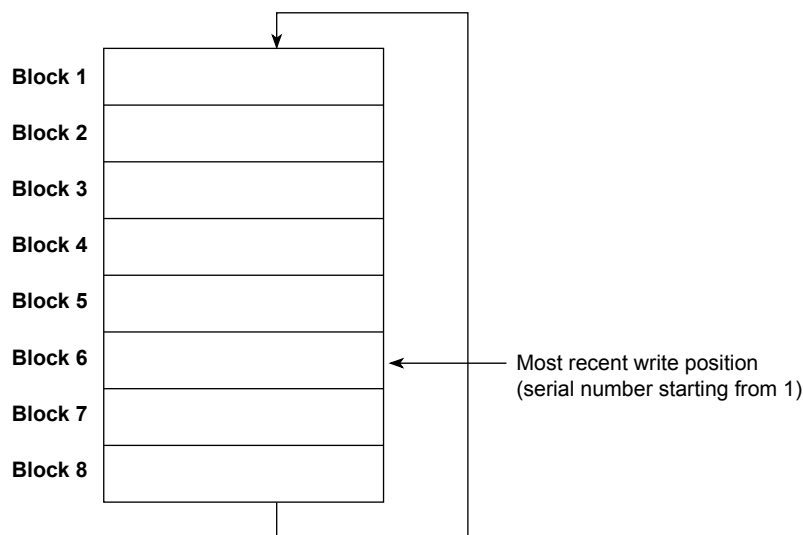
Data entries =  $2000000 \div \{16 + (12 \times [\text{number of channels}])\}$  (fractions truncated)

Data length = [data entries] × [scan interval]

Example If there are 10 I/O channels, 10 math channels, and 10 communication channels, and the scan interval is 100 ms, the number data entries will be 5319, and the data length will be 531.9 seconds or 8.865 minutes.

### Example of FIFO Buffer Operation

The following example shows the case when the scan interval is 1 second and the FIFO internal memory size is for 8 scan intervals.



### Writing of Measured Data in the FIFO Buffer

Writing to the FIFO buffer takes place every scan interval. If measured data is written to block 8, the most recent value will be written to block 1 in the next scan interval, overwriting the old value. This is called FIFO wraparound.

On the other hand, the most recent write position is managed using serial numbers starting with 1. The serial number does not return to 1 even when a FIFO wraparound occurs.

### Reading Measured Data

The FFifoCur,0 command is used to read measured data. The read start position and read end position are specified using serial numbers. You can use the FFifoCur,1 command to read the serial numbers for the positions that data can be read from.

## Appendix 5 Check Sum Calculation Method

The check sum of binary data is calculated using an algorithm like the one shown below.

```
int CalcSum(unsigned char *buf, int len)
{
    int    odd;
    unsigned long    sum;
    unsigned char    *p;

    sum = 0;
    odd = len & 1;
    len >>= 1;

    for (p = buf ; len ; len --, p += 2)
    {
        sum += (*p << 8) | *(p + 1);
    }

    if (odd)    sum += (*p << 8);

    sum = (sum & 0xffff) + ((sum >> 16) & 0xffff);
    if (sum > 0xffff)    sum = sum - 0xffff;

    return ((~sum) & 0xffff);
}
```

Blank