

SC-HG1 Series

FB Library Reference Manual for Mitsubishi MELSEC iQ-R series Sequencer



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How to import the FBs described in this manual to GX Works3

From the GX Works3 menu, choose [Project] - [Library Operation] - [Register to Library List] to select and import your desired FB from the list of programs (with a file extension of mslm). (If the menu is disabled, open an existing project or create a new project.)

The FB is added to the "library" on the [Library] tab displayed when you choose [View] - [Docking Window] - [Element Selection] - [Library] from the menu.

[Customer Precautions]

- * Sample programs are not guaranteed to work correctly.
- * Use them at your own risk.



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Reference Manual Revision History

Reference manual number	Revision date	Record of changes
WUME-SCHG1IQRFB-1	2019/06/03	Newly created

1. Overview

1.1. Functional overview

This FB library is intended for use in accessing the information output from, and the configuration and management, of optically connectable controllers via Panasonic Industrial Devices SUNX Co., Ltd.'s CC-Link Communication Unit SC-HG1-C or CC-Link IE Field Communication Unit SC-HG1-CEF connected to the MELSEC CC-Link/CC-Link IE Field master module.

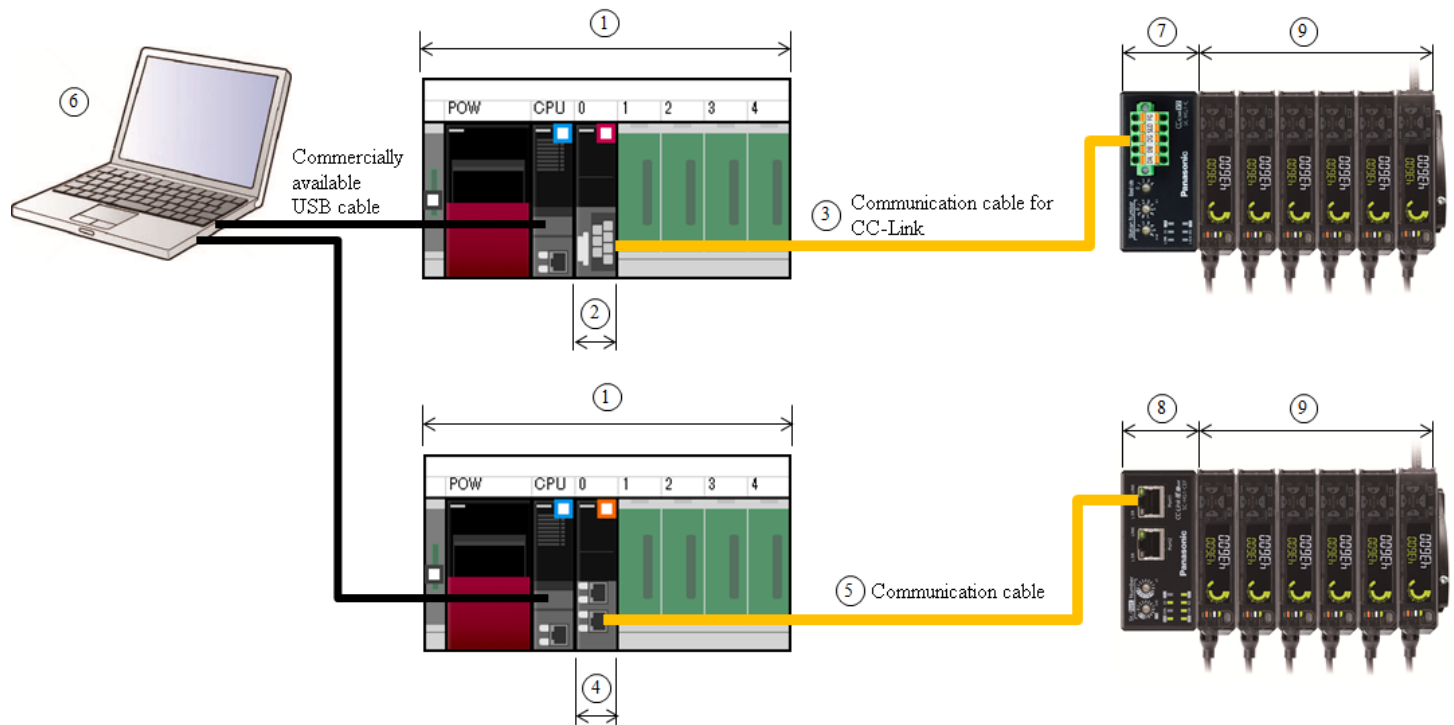
1.2. Functional contents of the FB library

No.	FB name (*1)	Description
1	P+SUNX-SC-HG1_InitializeUnit_R	Initialize settings request without reboot.
2	P+SUNX-SC-HG1_ClearError_R	Error clear is executed.
3	P+SUNX-SC-HG1_CheckOutData_R	Read connecting controller output and detected value.
4	P+SUNX-SC-HG1_ExecuteCommand_R	Set command execution.
5	P+SUNX-SC-HG1_ExecuteTeaching_R	Perform teaching for set controller on own timing.
6	P+SUNX-SC-HG1_SetOutHold_R	Output operation setting.
7	P+SUNX-SC-HG1_SetResponseSpeed_R	Execute to read or write response speed.
8	P+SUNX-SC-HG1_SetLeverRatio_R	Set lever ratio.
9	P+SUNX-SC-HG1_SetOutputMode_R	Normally open or normally closed setting for controller.
10	P+SUNX-SC-HG1_SetThreshold_R	High threshold, low threshold and hysteresis setting.
11	P+SUNX-SC-HG1_ExecutePreset_R	Execute preset.
12	P+SUNX-SC-HG1_SetDataBank_R	Data bank load or save.
13	P+SUNX-SC-HG1_SetAlarm_R	Alarm setting.
14	P+SUNX-SC-HG1_CheckMaintenance_R	Retrieve maintenance information.
15	P+SUNX-SC-HG1_ExecuteKeyLock_R	Execute or perform reset to keylock and Eco setting.

*1 This reference manual omits the FB version information such as "_00A" that is normally indicated behind a FB name.



1.3. System configuration example



No.	Device name	Description
1	MELSEC iQ-R series Sequencer	Use the base unit, the power supply unit, and the iQ-R series Sequencer CPU module.
2	CC-Link Master/local module	Use RJ61BT11.
3	Communication cable for CC-Link	Connect the CC-Link master/local module and the communication unit. Use a cable recommended by the CC-Link Partner Association.
4	CC-Link IE Field Master/local module	Use RJ71EN71. Configure the network combination setting so that only the CC-Link IE field network is used. For more information, refer to "GX Works3 Operating Manual".
5	Communication cable	Connect the CC-Link IE Field master/local module and the communication unit. Use a cable recommended by the CC-Link Partner Association or compliant with the following specifications. Ethernet cable compliant with the 1000BASE-T standard: Category 5e or higher (STP with double shields) straight cable
6	Windows® PC	Configure various settings, using the following tool on a Windows® PC. • GX Works3 Connect the PC to the CPU module via a commercially available USB cable and configure the basic settings of the communication unit.
7	CC-Link Communication Unit	Use SC-HG1-C.
8	CC-Link IE Field Communication unit	Use SC-HG1-CEF.
9	Controller	Use an NPN output type controller that can be connected via the horizontal coupling connector. For information on compliant controllers, see "Appendix 1.3 Connectable models".

1.4. Global labels

1.4.1. Global label configuration

Use GX Works3 to configure the global labels.

(1) G_bRX The global label for remote input (RX) access is described below:

Item	Description
Label name	Enter "G_bRX".
Data type	Select "bit".
Class	Select "VAR_GLOBAL".
Assign (device/label)	Add an index register "Z9" to the starting device configured for the module parameter link refresh setting. In the following example, X1000Z9 is configured.

(2) G_bRY The global label for remote output (RY) access is described below:

Item	Description
Label name	Enter "G_bRY".
Data type	Select "bit".
Class	Select "VAR_GLOBAL".
Assign (device/label)	Add an index register "Z9" to the starting device configured for the module parameter link refresh setting. In the following example, Y1000Z9 is configured.

(3) G_dRW_r The global label for remote register (RW_r) access is described below:

Item	Description
Label name	Enter "G_dRW _r ".
Data type	Select "double word [signed]".
Class	Select "VAR_GLOBAL".
Assign (device/label)	Add an index register "Z8" to the starting device configured for the module parameter link refresh setting. In the following example, W0Z8 is configured.

(4) G_dRW_w The global label for remote register (RW_w) access is described below:

Item	Description
Label name	Enter "G_dRW _w ".
Data type	Select "double word [signed]".
Class	Select "VAR_GLOBAL".
Assign (device/label)	Add an index register "Z8" to the starting device configured for the module parameter link refresh setting. In the following example, W1000Z8 is configured.



	Label Name	Data Type		Class	Assign (Device/Label)
1	G_bRX	Bit	...	VAR_GLOBAL	X1 000Z9
2	G_bRY	Bit	...	VAR_GLOBAL	Y1 000Z9
3	G_dRWw	Double Word[Signed]	...	VAR_GLOBAL	W0Z8
4	G_dRWw	Double Word[Signed]	...	VAR_GLOBAL	W1 000Z8
5			...		

Navigation window → Label → Global label

Figure 1.4.1-1: Examples of configuring global labels

1.4.2. Checking the number of index register points

Two index registers, "Z9" and "Z8", are used.

Ensure that the number of index register points are higher than or equal to 10.

Setting Item List

Input the Setting Item to Search

+

Name Setting

+

Operation Related Setting

+

Interrupt Settings

+

Service Processing Setting

+

File Setting

+

Memory/Device Setting

+

Device/Label Memory Area Setting

+

Index Register Setting

+

Refresh Memory Setting

+

Device Latch Interval Setting

+

Pointer Setting

+

Internal Buffer Capacity Setting

+

RAS Setting

+

Program Setting

+

SFC Setting

+

Refresh Setting between Multiple

Item List

Find Result

Setting Item

Item

Setting

Index Register Setting

Points Setting

Total Points

14 Word

10 Points

2 Points

Local Setting

Points Setting

Local Index Register (Z)

0 Points

Local Long Index Register (LZ)

0 Points

Start

Index Register (Z)

0

Long Index Register (LZ)

0

Explanation

Set the points of index register (Z).

[Setting range]

0 to 24 [Points](2 Points Unit)

Setting is in the following range.

Check

Restore the Default Settings

Apply

Navigation window → Parameter → (CPU module) → CPU parameter

Memory/device setting → Index register setting

Figure 1.4.2-1: Link refresh setting examples

1.4.3. Identifying the starting device

A starting device is configured for each CC-Link or CC-Link IE Field master/local module. Check the link refresh setting configured for the CC-Link or CC-Link IE Field master/local module connected to the communication unit where you want to run the FB.

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB									
-	SW									
1	RX	352	00000	0015F		Specify Device	X	352	01000	0115F
2	RY	352	00000	0015F		Specify Device	Y	352	01000	0115F
3	RWr	44	00000	0002B		Specify Device	W	44	00000	0002B
4	RWw	44	00000	0002B		Specify Device	W	44	01000	0102B

Navigation window → Parameter → Module information → (Destination CC-Link / CC-Link IE Field master)

→ Module parameter

Basic setting → Link refresh setting

Figure 1.4.3-1: Link refresh setting examples

1.5. Related manuals

MELSEC iQ-R CPU Module User's Manual (Startup)

MELSEC iQ-R CPU Module User's Manual (Application)

MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)

MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)

MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)

MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)

MELSEC iQ-R Programming Manual (CPU Module Instructions, Standard Functions/Function Blocks)

GX Works3 Operating Manual

CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual

CC-Link IE Field Communication Unit for SC-HG1-CEF User's Manual

Contact-Type Digital Displacement Sensor HG-S Series User's Manual

1.6. Precaution

Before use, be sure to read the User's Manuals of the products you are going to use.

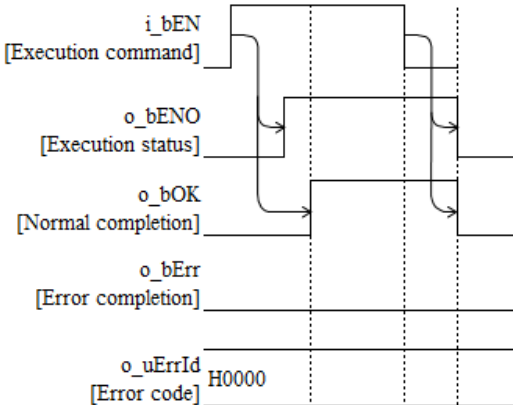
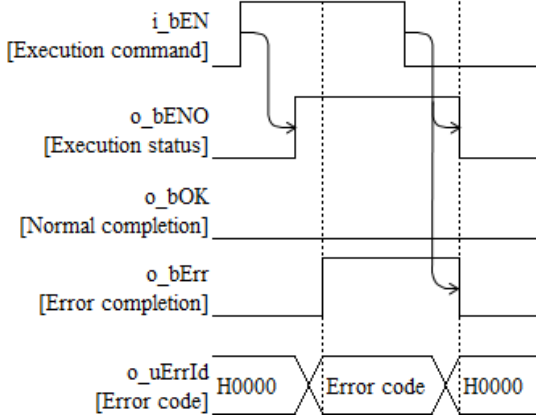
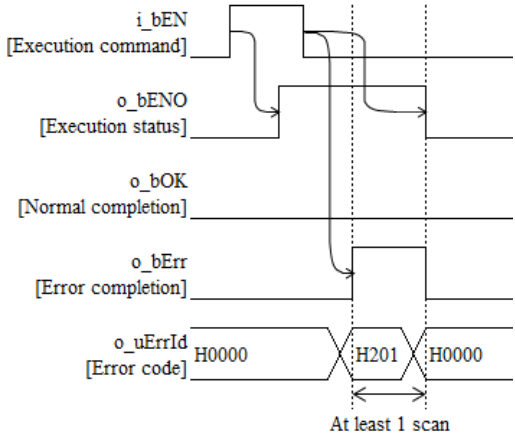
2. Details of the FB library

2.1. P+SUNX-SC-HG1_InitializeUnit_R (initialization)

Name
P+SUNX-SC-HG1_InitializeUnit_R

Functional contents

Item	Description																
Functional overview	Initialize settings request without reboot.																
Symbol	<div><div><div>P+SUNX-SC-HG1_InitializeUnit_R</div><div><div><div>Execution command</div><div>B : i_bEN</div></div><div><div>CC-Link IE Field Flag</div><div>B : i_bIeFieldFlag</div></div><div><div>Start I/O No.</div><div>UW : i_uStartIONo</div></div><div><div>Station No.</div><div>UW : i_uStationNo</div></div></div><div><div><div>o_bENO : B</div><div>o_bOK : B</div><div>o_bErr : B</div><div>o_uErrId : UW</div></div><div><div>Execution status</div><div>Normal completion</div><div>Error completion</div><div>Error code</div></div></div></div></div>																
Target devices	Target module	RJ61BT11															
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
		Series	Model														
		MELSEC iQ-R series	R04CPU	R04ENCPU													
R08CPU			R08ENCPU														
R16CPU			R16ENCPU														
R32CPU	R32ENCPU																
R120CPU	R120ENCPU																
Target engineering tool	GX Works3 Version 1.030G or later																
Program language	Ladder																
Number of basic steps	280 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																
FB dependencies	None																

Item	Description	
Description of functions	When Execution Command (i_bEN) is turned ON, this FB requests initialization.	
FB compilation method	Macro type	
FB behavior	Pulse execution type (multi-scan execution type)	
i_bEN input condition	None	
I/O signal flow movement	<p>[Normal completion]</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p>  <p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p> 

Item	Description
Restrictions and precautions	<ul style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) This FB does not check the module error. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index register Z9. Do not use Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C. (11) Executing this FB on SC-HG1-CEF results in an FB error. (12) If you are using two or more CC-Link master/local modules and want to control the SC-HG1-C connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	Station No. (i_uStationNo) is outside the valid range	Set the Station No. (i_uStationNo) to a value from 1 to 64.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
102	CC-Link IE Field Flag (i_bleFieldFlag) is ON and Execution Command (i_bEN) is ON	Turn ON Execution Command (i_bEN) with CC-Link IE Field Flag (i_bleFieldFlag) OFF.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).



Labels To Be Used

■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIEFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF. To execute this FB, turn OFF this flag.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (decimal)	Specify the station number of the communication unit you want to configure.

■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



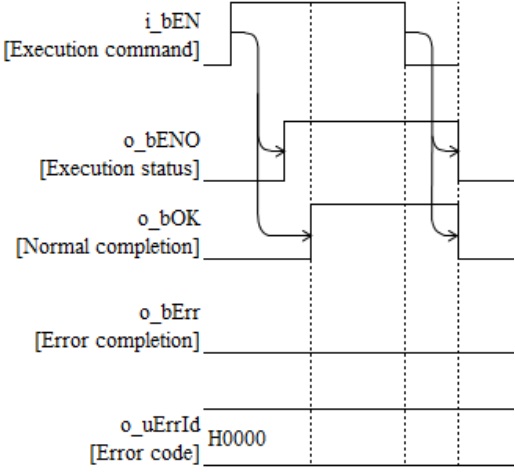
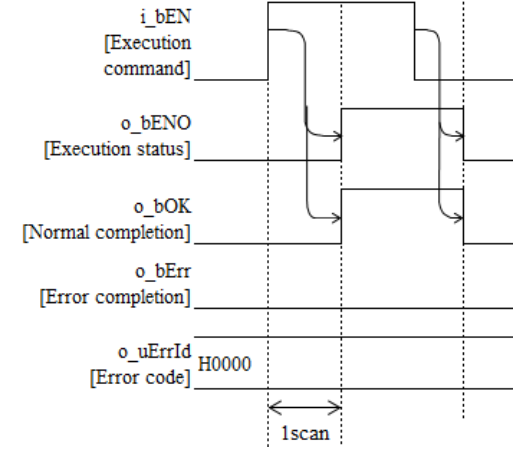
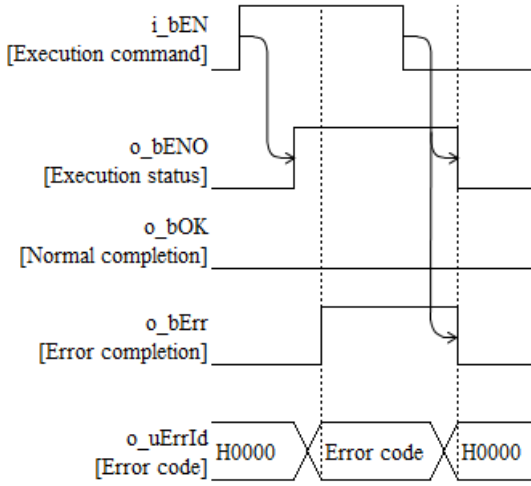
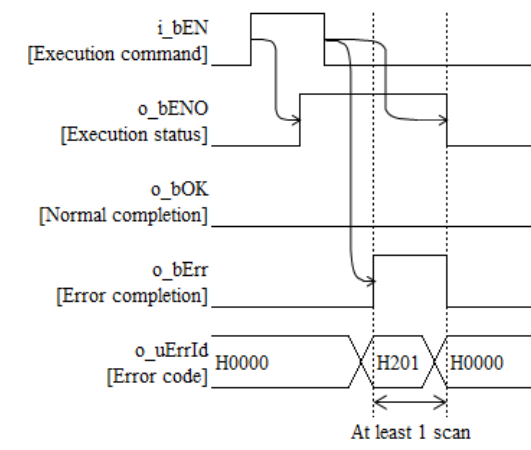
2.2. P+SUNX-SC-HG1_ClearError_R (error clear)

Name

P+SUNX-SC-HG1_ClearError_R

Functional contents

Item	Description																
Functional overview	Error clear is executed.																
Symbol	<div><div><div>P+SUNX-SC-HG1_ClearError_R</div><div><div><div>Execution command</div><div>B : i_bEN</div></div><div><div>CC-Link IE Field Flag</div><div>B : i_bIeFieldFlag</div></div><div><div>Start I/O No.</div><div>UW : i_uStartIONo</div></div><div><div>Station No.</div><div>UW : i_uStationNo</div></div></div><div><div><div>o_bENO : B</div><div>o_bOK : B</div><div>o_bErr : B</div><div>o_uErrId : UW</div></div><div><div>Execution status</div><div>Normal completion</div><div>Error completion</div><div>Error code</div></div></div></div></div>																
Target devices	Target module	RJ61BT11															
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
		Series	Model														
		MELSEC iQ-R series	R04CPU	R04ENCPU													
R08CPU			R08ENCPU														
R16CPU			R16ENCPU														
R32CPU	R32ENCPU																
R120CPU	R120ENCPU																
Target engineering tool	GX Works3 Version 1.030G or later																
Program language	Ladder																
Number of basic steps	273 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																
FB dependencies	None																

Item	Description	
Description of functions	When Execution Command (i_bEN) is turned ON, this FB resets the communication unit error. If no error has occurred, Normal Completion (o_bOK) turns ON in one scan.	
FB compilation method	Macro type	
FB behavior	Pulse execution type (multi-scan execution type)	
i_bEN input condition	None	
I/O signal flow movement	<p>[Normal completion]</p> <p>If executed with a communication unit error:</p>  <p>If executed without a communication unit error:</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p>  <p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p> 



Item	Description
Restrictions and precautions	<ul style="list-style-type: none"> (1) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (2) Use this FB as a macro type FB. (3) You cannot use this FB in an interrupt program. (4) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (5) Do not execute this FB while requesting the initialization because turning ON Execution Command (i_bEN) while requesting the initialization results in the error code "200" (in hexadecimal) even if each input label is set to a correct input value. (6) Configure the global label as instructed in "1.4 Global labels". (7) This FB uses the index register Z9. Do not use Z9 in an interrupt program. (8) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (9) Do not run this FB on any device other than SC-HG1-C. (10) Executing this FB on SC-HG1-CEF results in an FB error. (11) If you are using two or more CC-Link master/local modules and want to control the SC-HG1-C connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	Set the Station No. (i_uStationNo) to a value from 1 to 64.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
102	CC-Link IE Field Flag (i_bleFieldFlag) is ON and Execution Command (i_bEN) is ON	Turn ON Execution Command (i_bEN) is ON with CC-Link IE Field Flag (i_bleFieldFlag) OFF.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bleFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF. To execute this FB, turn OFF this flag.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (decimal)	Specify the station number of the communication unit you want to configure.

■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.3. P+SUNX-SC-HG1_CheckOutData_R (controller output read)

Name

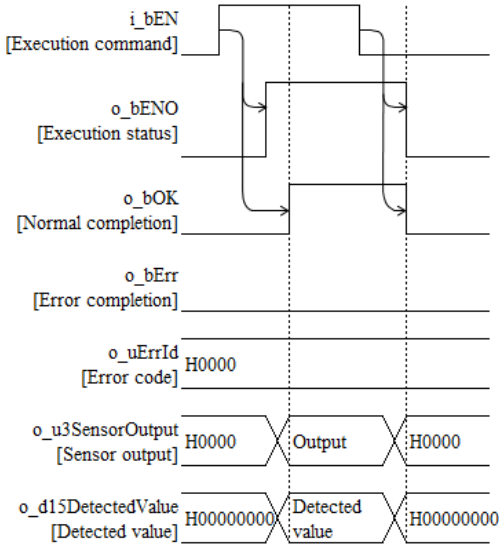
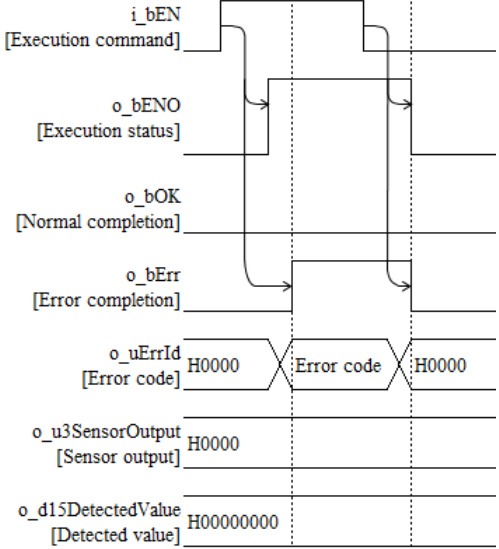
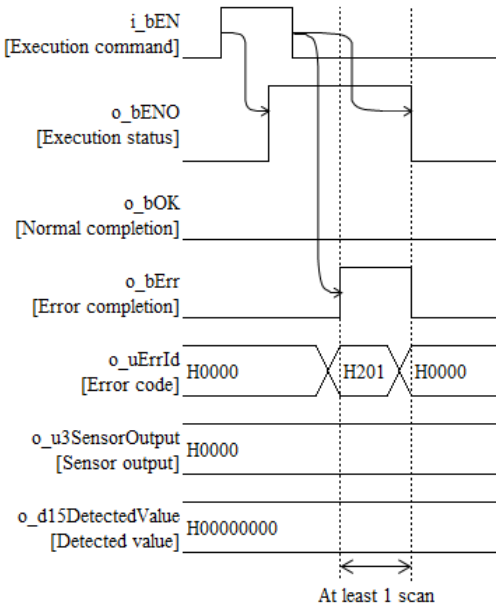
P+SUNX-SC-HG1_CheckOutData_R

Functional contents

Item	Description																
Functional overview	Read connecting controller output and detected value.																
Symbol	<div><div><div>P+SUNX-SC-HG1_CheckOutData_R</div><div><div>Execution command</div><div>B : i_bEN</div><div>CC-Link IE Field Flag</div><div>B : i_bIEFieldFlag</div><div>Start I/O No.</div><div>UW : i_uStartIONo</div><div>Station No.</div><div>UW : i_uStationNo</div><div>Response data</div><div>UW : i_uResponseData</div></div><div><div>o_bENO : B</div><div>o_bOK : B</div><div>o_bErr : B</div><div>o_uErrId : UW</div><div>o_u3SensorOutput : UW</div><div>o_d15DetectedValue : D</div></div><div><div>Execution status</div><div>Normal completion</div><div>Error completion</div><div>Error code</div><div>Sensor output</div><div>Detected value</div></div></div></div>																
Target devices	Target module	RJ61BT11 RJ71EN71															
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
	Series	Model															
	MELSEC iQ-R series	R04CPU	R04ENCPU														
R08CPU		R08ENCPU															
R16CPU		R16ENCPU															
R32CPU		R32ENCPU															
R120CPU		R120ENCPU															
Target engineering tool	GX Works3 Version 1.030G or later																
Program language	Ladder																
Number of basic steps	573 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																
FB dependencies	None																

Item	Description										
Description of functions	When Execution Command (i_bEN) is turned ON, this FB outputs the connected controller output to Sensor Output (o_u3SensorOutput) as 16-bit word data and outputs the output data to Detected Value (o_d15DetectedValue) in accordance with the input value of Response Data (i_uResponseData).										
	<table><tr><th>Response Data (i_uResponseData) input value</th><th>Output data</th></tr><tr><td>0</td><td>Judgment value*</td></tr><tr><td>1</td><td>Normal measurement value*</td></tr><tr><td>2</td><td>Calculated value*</td></tr><tr><td>3</td><td>Sensor head value*</td></tr></table>	Response Data (i_uResponseData) input value	Output data	0	Judgment value*	1	Normal measurement value*	2	Calculated value*	3	Sensor head value*
	Response Data (i_uResponseData) input value	Output data									
	0	Judgment value*									
	1	Normal measurement value*									
	2	Calculated value*									
3	Sensor head value*										
* For information on the judgment value, normal measurement value, calculated value, and sensor head value, refer to "Contact-Type Digital Displacement Sensor HG-S Series User's Manual".											
Sensor Output (o_uSensorOutput) has three arrays and outputs the output data in accordance with the following table.											
<table><tr><th colspan="2">Output label</th><th>Output data</th></tr><tr><td rowspan="3">Sensor output</td><td>o_u3SensorOutput[0]</td><td>Controller judgment output 1</td></tr><tr><td>o_u3SensorOutput[1]</td><td>Controller judgment output 2</td></tr><tr><td>o_u3SensorOutput[2]</td><td>Controller judgment output 3</td></tr></table>	Output label		Output data	Sensor output	o_u3SensorOutput[0]	Controller judgment output 1	o_u3SensorOutput[1]	Controller judgment output 2	o_u3SensorOutput[2]	Controller judgment output 3	
Output label		Output data									
Sensor output	o_u3SensorOutput[0]	Controller judgment output 1									
	o_u3SensorOutput[1]	Controller judgment output 2									
	o_u3SensorOutput[2]	Controller judgment output 3									
FB compilation method	Macro type										
FB behavior	Pulse execution type (multi-scan execution type)										
i_bEN input condition	None										



Item	Description	
I/O signal flow movement	[Normal completion]	[Error completion] If an FB error occurs:
		
		If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:
		

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) The Sensor Output (o_u3SensorOutput) and Detected Value (o_d15DetectedValue) used by this FB are cleared when Execution Command (i_bEN) is turned OFF. All the output labels are OFF or zero while Execution Status (o_bENO) is OFF. Carefully note this when you turn ON and OFF Execution Command (i_bEN) and then update the data. (7) When executed in CC-Link mode 1 on SC-HG1-C, this FB acquires the Detected Value (o_d15DetectedValue) for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Then this FB acquires the Sensor Output (o_u3SensorOutput) in a batch fashion. Carefully note that, due to the above reason, executing this FB in CC-Link mode 1 on SC-HG1-C while varying the displacement amount may cause differences in the relationship between the detected value and output. (8) Configure the global label as instructed in "1.4 Global labels". (9) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (10) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (11) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (12) If you are using two or more CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
103	Response Data (i_uResponseData) is outside the valid range	Specify a value within the valid range.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bleFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bleFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bleFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Response Data	i_uResponseData	Word [Unsigned]	0 to 3	Select the data you want to output to Detected Value (o_d15DetectedValue). 0: Judgment value 1: Normal measurement value 2: Calculated value 3: Sensor head value



■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Sensor output	o_u3SensorOutput[n]	Word [Unsigned]	0	Stores the word information (consisting of 16 pieces of bit information) that represents the connected controller's output status. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device 3 arrays exist and the output occurs in accordance with the following. o_u3SensorOutput[0]: Controller judgment output 1 o_u3SensorOutput[1]: Controller judgment output 2 o_u3SensorOutput[2]: Controller judgment output 3
Detected value	o_d15DetectedValue[n]	Double word [Signed]	0	Stores the controller detected values. 15 arrays exist and each array stores the detected value of the (n+1)th controller from the parent device.



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.4. P+SUNX-SC-HG1_ExecuteCommand_R (execute specified command)

Name

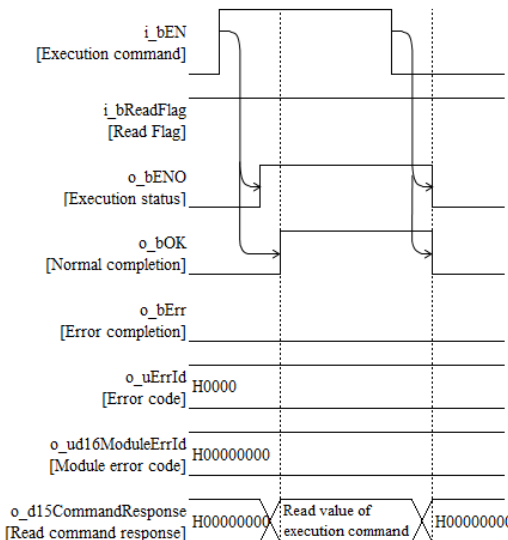
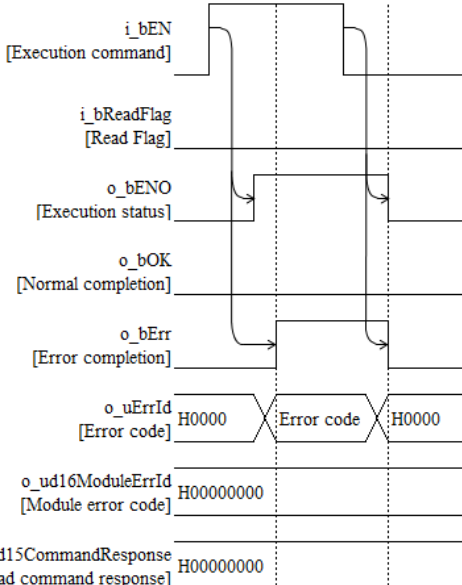
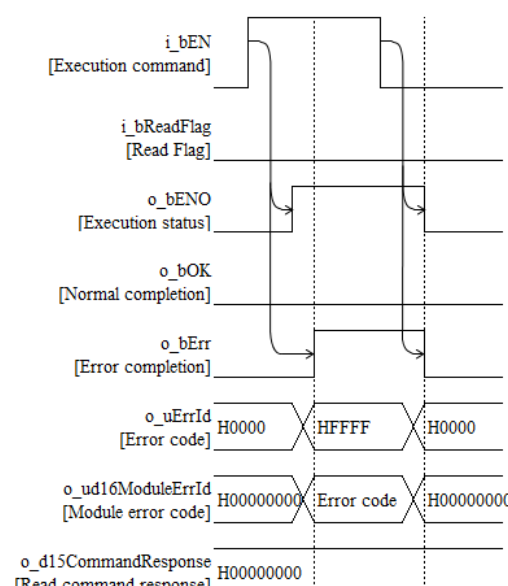
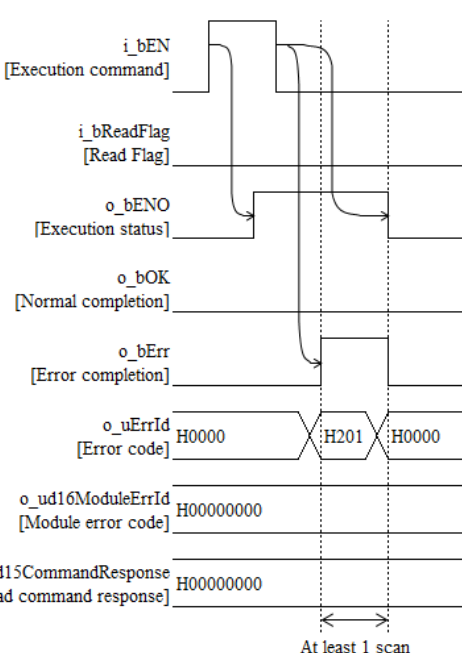
P+SUNX-SC-HG1_ExecuteCommand_R

Functional contents

Item	Description																
Functional overview	Set command execution.																
Symbol	<div><div><div><div>P+SUNX-SC-HG1_ExecuteCommand_R</div><div><div><div>Execution command</div><div>B</div><div>:</div><div>i_bEN</div><div>o_bENO</div><div>:</div><div>B</div></div><div>CC-Link IE Field Flag</div><div>B</div><div>:</div><div>i_bIEFieldFlag</div><div>o_bOK</div><div>:</div><div>B</div></div><div>Start I/O No.</div><div>UW</div><div>:</div><div>i_uStartIONo</div><div>o_bErr</div><div>:</div><div>B</div></div><div>Station No.</div><div>UW</div><div>:</div><div>i_uStationNo</div><div>o_uErrId</div><div>:</div><div>UW</div></div><div>Read flag</div><div>B</div><div>:</div><div>i_bReadFlag</div><div>o_ud16ModuleErrId</div><div>:</div><div>UD</div></div> <div>All controller set</div> <div>B</div> <div>:</div> <div>i_bAllSetRequest</div> <div>o_d15CommandResponse</div> <div>:</div> <div>D</div> <div>Set controller</div> <div>UW</div> <div>:</div> <div>i_uSetController</div> <div>Input command</div> <div>UW</div> <div>:</div> <div>i_uCommand</div> <div>Command data</div> <div>D</div> <div>:</div> <div>i_dCommandData</div> <div><div>Execution status</div><div>Normal completion</div><div>Error completion</div><div>Error code</div><div>Module error code</div><div>Command response</div></div>																
Target devices	Target module	RJ61BT11 RJ71EN71															
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
	Series	Model															
	MELSEC iQ-R series	R04CPU	R04ENCPU														
R08CPU		R08ENCPU															
R16CPU		R16ENCPU															
R32CPU		R32ENCPU															
R120CPU		R120ENCPU															
Target engineering tool	GX Works3 Version 1.030G or later																
Program language	Ladder																
Number of basic steps	1135 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																
FB dependencies	None																

Item	Description
Description of functions	<p>When i_bEN (Execution Command) is turned ON, this FB executes the command input to Input Command (i_uCommand).</p> <p>If Read Flag (i_bReadFlag) is OFF, the command is written to the controller specified by Set Controller (i_uSetController).</p> <p>If All Controller Set (i_bAllSetRequest) is ON at this time, the value input to Set Controller (i_uSetController) is ignored and the command is written to and executed on all the connected controllers.</p> <p>To execute writing, input the written data to Command Data (i_dCommandData).</p> <p>If Read Flag (i_bReadFlag) is ON, the value input to Set Controller (i_uSetController) is ignored and the command is read from and executed on all the connected controllers regardless of whether All Controller Set (i_bAllSetRequest) is ON or OFF.</p> <p>The result of reading is output to Command Response (o_d15CommandResponse).</p>
FB compilation method	Macro type
FB behavior	Pulse execution type (multi-scan execution type)
i_bEN input condition	None



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>Read Flag (i_bReadFlag) is ON</p> <p>(When it is OFF, only the controller settings are changed.)</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p> 
	<p>If a module error occurs:</p> 	<p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p> 

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Do not execute any command not documented in the SC-HG1-C / SC-HG1-CEF User's Manual. (7) Executing a read-only command with Read Flag (i_bReadFlag) OFF turns ON Normal Completion (o_bOK) but does not output the response value to Command Response (o_d15CommandResponse). Similarly, executing a write-only command with Read Flag (i_bReadFlag) ON turns ON Normal Completion (o_bOK) but does not execute writing. Check the attributes of each command documented in the SC-HG1-C / SC-HG1-CEF User's Manual and configure this FB with correct input values. (8) Executing writing with this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute writing on controllers belonging to different groups in the same scan timing. (9) Configure the global label as instructed in "1.4 Global labels". (10) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (11) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (12) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (13) If you are using two or more CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".



Item	Description
Related manuals	MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup) MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup) MELSEC iQ-R CC-Link IE Field Network User's Manual (Application) GX Works3 Operating Manual CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual Contact-Type Digital Displacement Sensor HG-S Series User's Manual



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0 or turn ON All Controller Set (i_bAllSetRequest). Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
105	Input Command (i_uCommand) is outside the valid range	Enter the correct command.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIeFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Read Flag	i_bReadFlag	Bit	ON, OFF	Start the FB with label ON to execute it in data read mode. Start the FB with label OFF to execute it in data write mode.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)



Name	Variable name	Data type	Valid range	Description
All Controller Set	i_bAllSetRequest	Bit	ON, OFF	Starting the FB with this label ON sends the command to all the controllers. Starting the FB with this label OFF sends the command to the controller specified by Set Controller (i_uSetController).
Input Command	i_uCommand	Word [Unsigned]	H0 to H111(hexadecimal)	For information on available commands and the command data, refer to the SC-HG1-C or SC-HG1-CEF User's Manual.
Command Data	i_dCommandData	Double word [Signed]	-32768 to 32767 (decimal) The valid range differs from command to command.	

■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Command Response	o_d15CommandResponse[n]	Double word [Signed]	0	Stores the response data after the execution of the read command. 15 arrays exist and each store write command responses. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.5. P+SUNX-SC-HG1_ExecuteTeaching_R (execute teaching)

Name

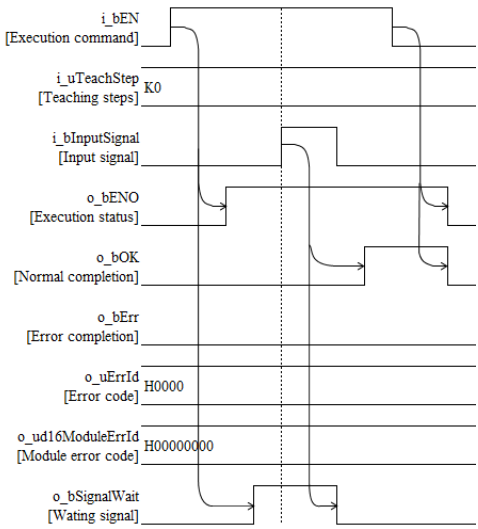
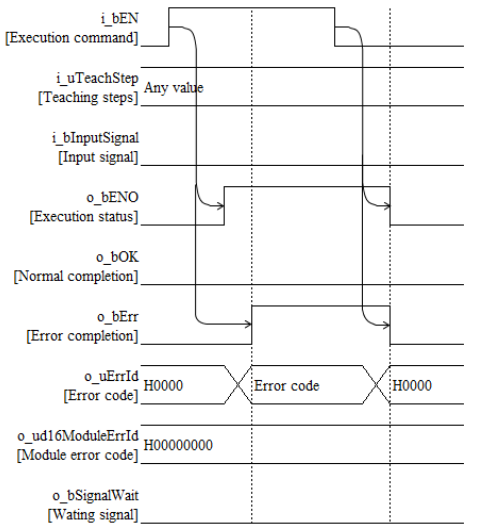
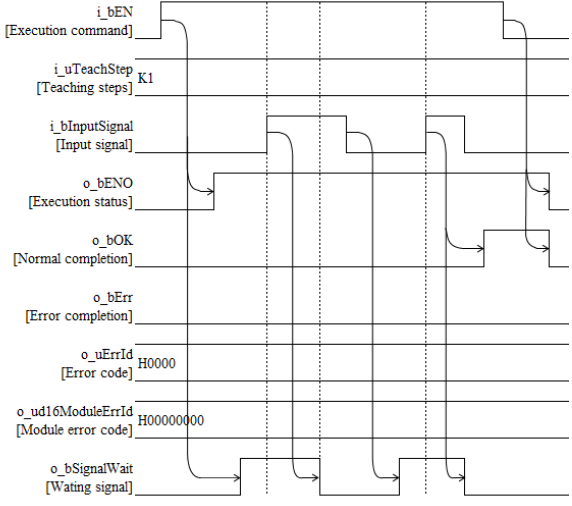
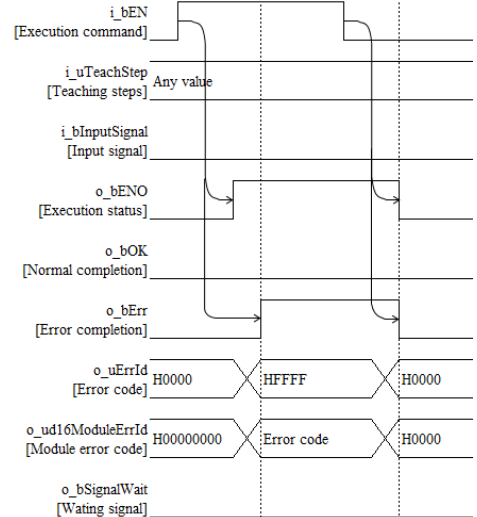
P+SUNX-SC-HG1_ExecuteTeaching_R

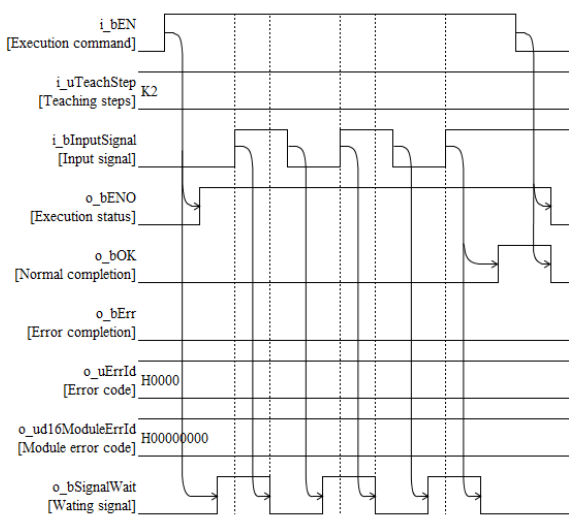
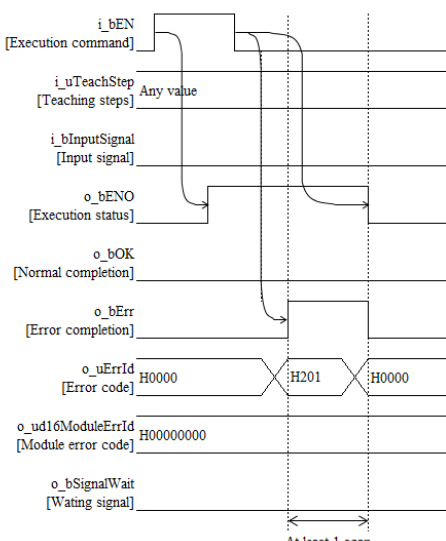
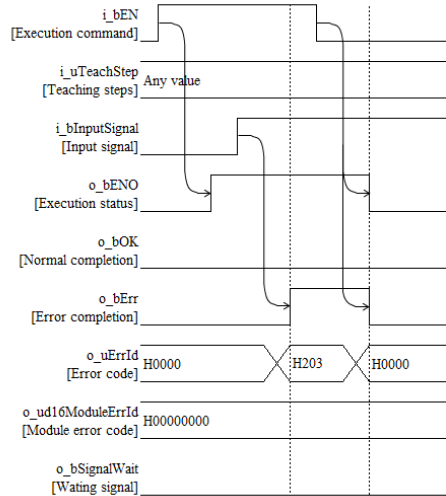
Functional contents

Item	Description		
Functional overview	Perform teaching for set controller on own timing.		
Symbol	<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div><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Item	Description								
Description of functions	<p>When Execution Command (i_bEN) is turned ON, this FB operates as specified in accordance with various input values. The various settings are executed on the controller specified by Set Controller (i_uSetController).</p> <p>Teaching Steps (i_uTeachStep) allows you to select one of the following three teaching types: "1-point teaching", "2-point teaching", and "3-point teaching".</p> <table border="1"> <thead> <tr> <th>Setting values</th><th>Teaching operation</th></tr> </thead> <tbody> <tr> <td>0</td><td>1-point teaching</td></tr> <tr> <td>1</td><td>2-point teaching</td></tr> <tr> <td>2</td><td>3-point teaching</td></tr> </tbody> </table> <p>Selecting "1-point teaching" requires you to set Shift Amount (i_udShiftAmount). The setting of Shift Amount (i_udShiftAmount) x 0.0001mm is applied to the controller as a tolerance value. The input value is ignored if you specify a different teaching setting.</p> <p>If you select 2-point teaching, the larger displacement amount is used as the High Threshold and the smaller as the Low Threshold regardless the order you input them in.</p> <p>If you select 3-point teaching, the displacement amount settings are sorted in the descending order regardless the order you input them in; the value in the middle between the maximum and the median is as the High Threshold, the value in the middle between the median and the minimum as the Low Threshold.</p> <p>Upon completion of the various settings, Waiting Signal (o_bSignalWait) turns ON to indicate the readiness for teaching.</p> <p>Check that Waiting Signal (o_bSignalWait) is ON and, in the timing you want to perform teaching, turn Input Signal (i_bInputSignal) from OFF to ON to ensure that the displacement amount required for teaching is applied to the controllers. If you need to configure the settings twice or more times, temporarily turn Input Signal (i_bInputSignal) from ON to OFF and wait for Waiting Signal (o_bSignalWait) to turn ON, then turn Input Signal (i_bInputSignal) from OFF to ON.</p> <p>Normal Completion (o_bOK) turns ON when the teaching is complete.</p>	Setting values	Teaching operation	0	1-point teaching	1	2-point teaching	2	3-point teaching
Setting values	Teaching operation								
0	1-point teaching								
1	2-point teaching								
2	3-point teaching								
FB compilation method	Macro type								
FB behavior	Pulse execution type (multi-scan execution type)								
i_bEN input condition	None								



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>If Teaching Steps (i_uTeachStep) is 0</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p> 
	<p>If Teaching Steps (i_uTeachStep) is 1</p> 	<p>If a module error occurs:</p> 

Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>If Teaching Steps (i_uTeachStep) is 2</p> 	<p>[Error completion]</p> <p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p> 
		<p>Input Signal (i_bInputSignal) is turned from OFF to ON with Waiting Signal (o_bSignalWait) OFF</p> 

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) This FB executes multiple commands. You can stop this FB by turning OFF Execution Command (i_bEN). You cannot, however, cancel the commands that have been executed before you stop the FB. (7) Teaching Steps (i_uTeachStep) set to 1 or 2 requires you to turn Input Signal (i_bInputSignal) from OFF to ON twice or three times. Once the Input signal is accepted to turn OFF Execution Command (i_bEN), teaching is not performed. If this is the case, execute teaching from the 1st point again. (8) Executing this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute controllers belonging to different groups in the same scan timing. Once you turn Input Signal (i_bInputSignal) from OFF to ON and then from ON to OFF, ensure that the displacement amount for the teaching target controller does not change to perform teaching at the same displacement amount until Waiting Signal (o_bSignalWait) turns from OFF to ON. (9) Configure the global label as instructed in "1.4 Global labels". (10) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (11) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (12) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (13) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".



Item	Description
Related manuals	MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup) MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup) MELSEC iQ-R CC-Link IE Field Network User's Manual (Advanced) GX Works3 Operating Manual CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual Contact-Type Digital Displacement Sensor HG-S Series User's Manual



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0. Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
106	Teaching Steps (i_uTeachStep) is outside the valid range	Set Teaching Steps (i_uTeachStep) to a value not greater than 2.
107	"1-point teaching" is selected and Shift Amount (i_udShiftAmount) is outside the valid range.	Selecting "1-point teaching " requires you to set Shift Amount (i_udShiftAmount) to a value within the valid range.
108	Input Signal (i_bInputSignal) is ON and Execution Command (i_bEN) is ON	Turn OFF Input Signal (i_bInputSignal) and then turn ON Execution Command (i_bEN)



Error code (hexadecimal)	Description	Meaning
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
203	Input Signal (i_bInputSignal) is turned from OFF to ON with Waiting Signal (o_bSignalWait) OFF	Check that Waiting Signal (o_bSignalWait) is ON and then turn ON Input Signal (i_bInputSignal). Teaching is not executed but the teaching operation has been changed. Check for any problem.
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIeFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)



Name	Variable name	Data type	Valid range	Description
Teaching Steps	i_uTeachStep	Word [Unsigned]	0 to 2	Set the teaching type. 0: 1-point teaching 1: 2-point teaching 2: 3-point teaching
Shift Amount	i_udShiftAmount	Double word [Unsigned]	0 to 1999999 (decimal)	Selecting "1-point teaching" from Teaching Steps (i_uTeachStep) requires you to set the shift amount. The setting x 0.0001mm is applied to the controller as a tolerance value.
Input Signal	i_bInputSignal	Bit	ON, OFF	Turn ON this label when you want to execute teaching. An FB error occurs if you turn it ON with Waiting Signal (o_bSignalWait) OFF.

■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Waiting Signal	o_bSignalWait	Bit	OFF	ON: Waiting for teaching input OFF: No teaching accepted



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.6. P+SUNX-SC-HG1_SetOutHold_R (output operation setting)

Name

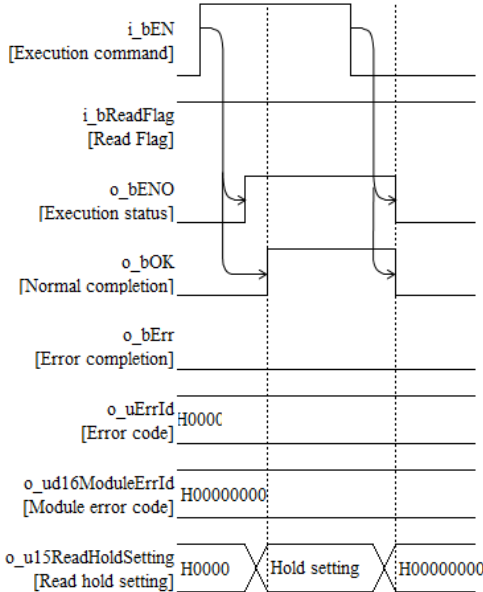
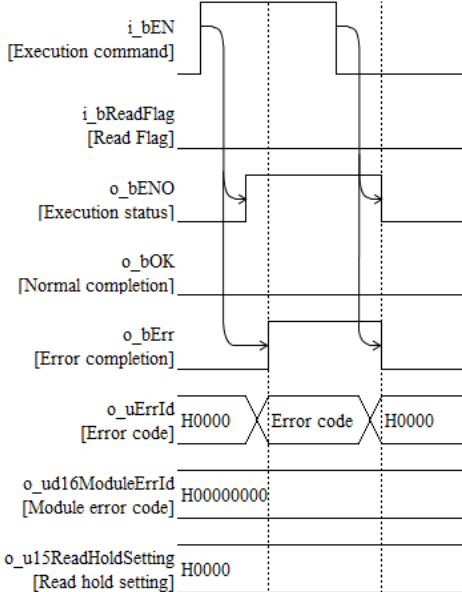
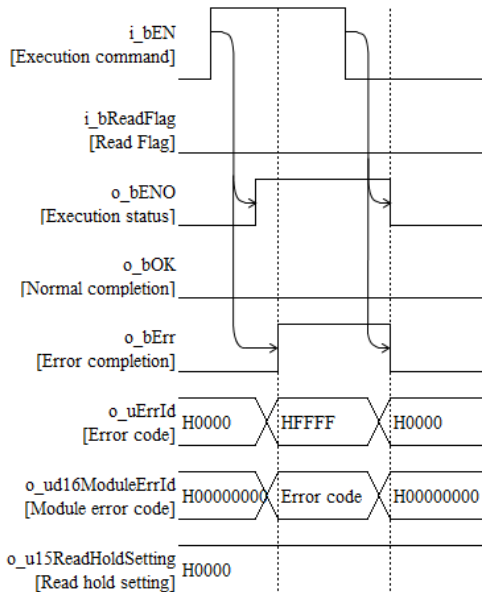
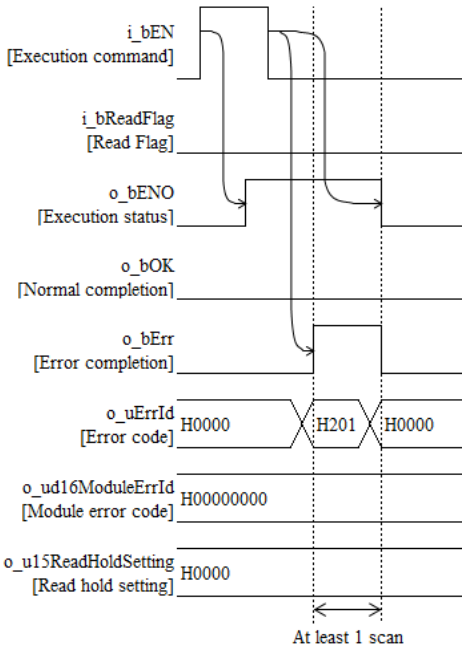
P+SUNX-SC-HG1_SetOutHold_R

Functional contents

Item	Description																	
Functional overview	Output operation setting.																	
Symbol	<div><div><div>Execution command</div><div>CC-Link IE Field Flag</div><div>Start I/O No.</div><div>Station No.</div><div>Read flag</div><div>Set controller</div><div>Hold setting</div><div>Self trigger level</div><div>Static span</div><div>Self delay timer</div></div><div><div>P+SUNX-SC-HG1_SetOutHold_R</div><div><div>B : i_bEN</div><div>B : i_bIEFieldFlag</div><div>UD : i_uStartIONo</div><div>UD : i_uStationNo</div><div>B : i_bReadFlag</div><div>UD : i_uSetController</div><div>UD : i_uHoldSetting</div><div>D : i_dSelfTriggerLevel</div><div>UD : i_udStaticSpan</div><div>UD : i_uSelfDelayTimer</div></div><div><div>o_bENO : B</div><div>o_bOK : B</div><div>o_bErr : B</div><div>o_uErrId : UD</div><div>o_ud16ModuleErrId : UD</div><div>o_u15ReadHoldSetting : UD</div></div><div><div>Execution status</div><div>Normal completion</div><div>Error completion</div><div>Error code</div><div>Module error code</div><div>Read hold setting</div></div></div></div>																	
Target devices	Target module	RJ61BT11 RJ71EN71																
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>			Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
	Series	Model																
MELSEC iQ-R series	R04CPU	R04ENCPU																
	R08CPU	R08ENCPU																
	R16CPU	R16ENCPU																
	R32CPU	R32ENCPU																
	R120CPU	R120ENCPU																
Target engineering tool	GX Works3 Version 1.030G or later																	
Program language	Ladder																	
Number of basic steps	1353 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																	
FB dependencies	P+SUNX-SC-HG1_SetOutHold_R └P+SUNX-SC-HG1_ExecuteCommand_R																	

Item	Description																																																		
Description of functions	<p>When Execution Command (i_bEN) is turned ON, this FB executes the settings on the controller specified by Set Controller (i_uSetController) in accordance with the various input values.</p> <p>If Execution Command (i_bEN) is turned ON with Read Flag (i_bReadFlag) ON, however, all the hold settings for all the connected controllers are output to Read Hold Setting (o_u15ReadHoldSetting) in accordance with the data values shown in the table below. In this case, other set values are ignored, and no setting takes place. If Read Flag (i_bReadFlag) is OFF, you can execute various settings by entering the data values corresponding to hold settings in Hold Setting (i_uHoldSetting).</p> <div><div><div>H</div><div><div></div><div></div><div></div><div></div></div><div>(Hex)</div></div><div><div>Measurement mode</div><div>Trigger mode</div><div>Self trigger delay</div><div>Self trigger edge direction</div></div></div> <table><tr><th>Setting values</th><th>Measurement mode</th><th>Trigger mode</th><th>Self trigger edge direction</th><th>Self trigger delay</th></tr><tr><td>0</td><td>Sample hold</td><td>One shot</td><td>Leading edge</td><td>Static span</td></tr><tr><td>1</td><td>Peak hold</td><td>Hold</td><td>Trailing edge</td><td>Delay timer</td></tr><tr><td>2</td><td>Bottom hold</td><td>-</td><td>—</td><td>—</td></tr><tr><td>3</td><td>Peak-to-peak hold</td><td>-</td><td>-</td><td>-</td></tr><tr><td>4</td><td>Peak-to-peak hold/2</td><td>-</td><td>-</td><td>-</td></tr><tr><td>5</td><td>NG hold</td><td>-</td><td>-</td><td>-</td></tr><tr><td>6</td><td>Self sample hold</td><td>-</td><td>-</td><td>-</td></tr><tr><td>7</td><td>Self peak hold</td><td>-</td><td>-</td><td>-</td></tr><tr><td>8</td><td>Self bottom hold</td><td>-</td><td>-</td><td>-</td></tr></table> <p>For more information on the output operation in each measurement mode, refer to "Contact-Type Digital Displacement Sensor HG-S Series User's Manual"</p>	Setting values	Measurement mode	Trigger mode	Self trigger edge direction	Self trigger delay	0	Sample hold	One shot	Leading edge	Static span	1	Peak hold	Hold	Trailing edge	Delay timer	2	Bottom hold	-	—	—	3	Peak-to-peak hold	-	-	-	4	Peak-to-peak hold/2	-	-	-	5	NG hold	-	-	-	6	Self sample hold	-	-	-	7	Self peak hold	-	-	-	8	Self bottom hold	-	-	-
Setting values	Measurement mode	Trigger mode	Self trigger edge direction	Self trigger delay																																															
0	Sample hold	One shot	Leading edge	Static span																																															
1	Peak hold	Hold	Trailing edge	Delay timer																																															
2	Bottom hold	-	—	—																																															
3	Peak-to-peak hold	-	-	-																																															
4	Peak-to-peak hold/2	-	-	-																																															
5	NG hold	-	-	-																																															
6	Self sample hold	-	-	-																																															
7	Self peak hold	-	-	-																																															
8	Self bottom hold	-	-	-																																															
FB compilation method	Macro type																																																		
FB behavior	Pulse execution type (multi-scan execution type)																																																		
i_bEN input condition	None																																																		



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>Read Flag (i_bReadFlag) is ON</p> <p>(When it is OFF, only the controller settings are changed.)</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p> 
	<p>If a module error occurs:</p> 	<p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p>  <p style="text-align: right;">At least 1 scan</p>

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Executing writing with this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute writing on controllers belonging to different groups in the same scan timing. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (11) If you are using two or more CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0. Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
109	Hold Setting (i_uHoldSetting) is outside the valid range	Specify a value within the valid range.
10A	Self Trigger Level (i_dSelfTriggerLevel) is outside the valid range	Specify a value from -1999999 to 1999999.
10B	Static Span (i_udStaticSpan) is outside the valid range	Specify a value from 0 to 1999999.
10C	Self Delay Timer (i_uSelfDelayTimer) is outside the valid range	Specify a value from 0 to 9999.



Error code (hexadecimal)	Description	Meaning
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bleFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bleFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bleFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Read Flag	i_bReadFlag	Bit	ON, OFF	Start the FB with label ON to execute it in data read mode. Start the FB with label OFF to execute it in data write mode.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)



Name	Variable name	Data type	Valid range	Description
Hold Setting	i_uHoldSetting	Word [Unsigned]	bits 15 to 12 0 to 8 bits 11 to 8 0,1 bits 7 to 4 0,1 bits 3 to 0 0,1	<ul style="list-style-type: none"> - Measurement mode (bits 15 to 12) <ul style="list-style-type: none"> 0 = Sample hold 1 = peak hold 2 = Bottom hold 3 = Peak-to-peak hold 4 = Peak-to-peak hold/2 5 = NG hold 6 = Self sample hold 7 = Self peak hold 8 = Self bottom hold - Trigger mode (bits 11 to 8) <ul style="list-style-type: none"> 0 = One-shot 1 = Hold - Self trigger edge direction (bits 7 to 4) <ul style="list-style-type: none"> 0 = Leading edge 1 = Trailing edge - Self trigger delay (bits 3 to 0) <ul style="list-style-type: none"> 0 = Static span 1 = Delay timer
Self Trigger Level	i_dSelfTriggerLevel	Double word [Signed]	-1999999 to 1999999 (decimal)	Setting Hold Setting (i_uHoldSetting) to H6***, H7***, or H8*** requires you to set the self trigger level. The setting x 0.0001mm is applied to the controller as the self trigger level.
Static Span	i_udStaticSpan	Double word [Unsigned]	0 to 1999999 (decimal)	Setting Hold Setting (i_uHoldSetting) to H6**0, H7**0, or H8**0 requires you to set the static span. The setting x 0.0001mm is applied to the controller as the static span.
Self Delay Timer	i_uSelfDelayTimer	Word [Unsigned]	0 to 9999 (decimal)	Setting Hold Setting (i_uHoldSetting) to H6**1, H7**1, or H8**1 requires you to set the self delay timer. The setting unit is [ms].



■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Read Hold Setting	o_u15ReadHoldSetting[n]	Word [Unsigned]	0	15 arrays exist and store hold settings. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.7. P+SUNX-SC-HG1_SetResponseSpeed_R (write speed mode)

Name

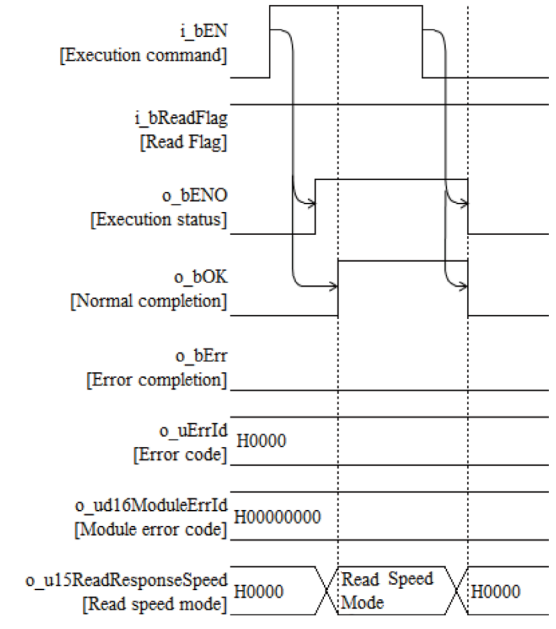
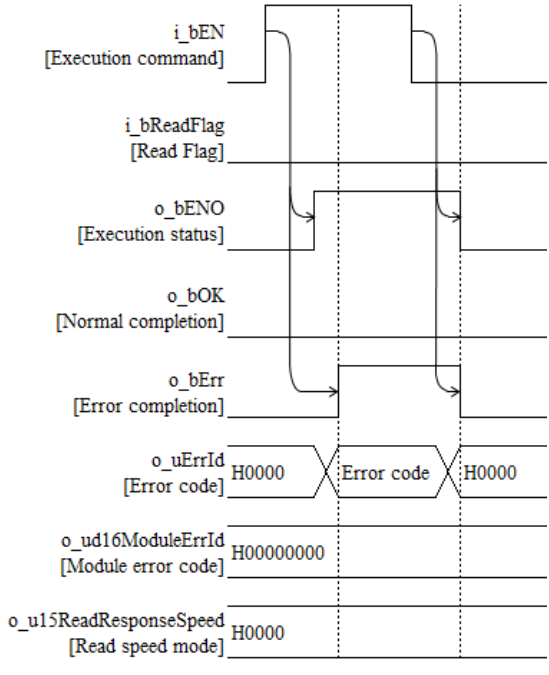
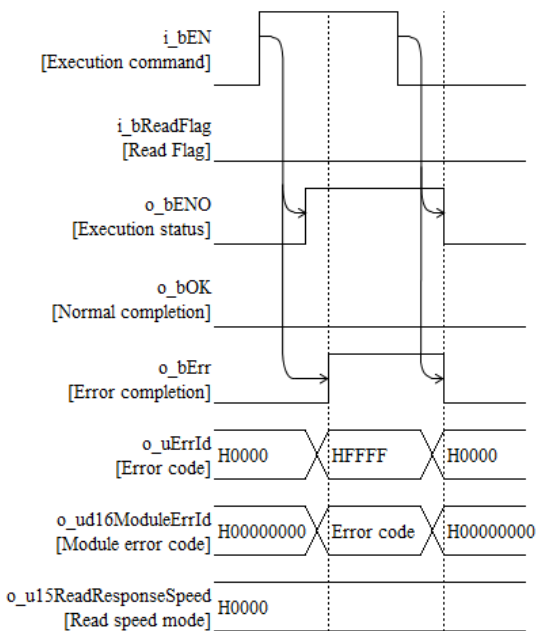
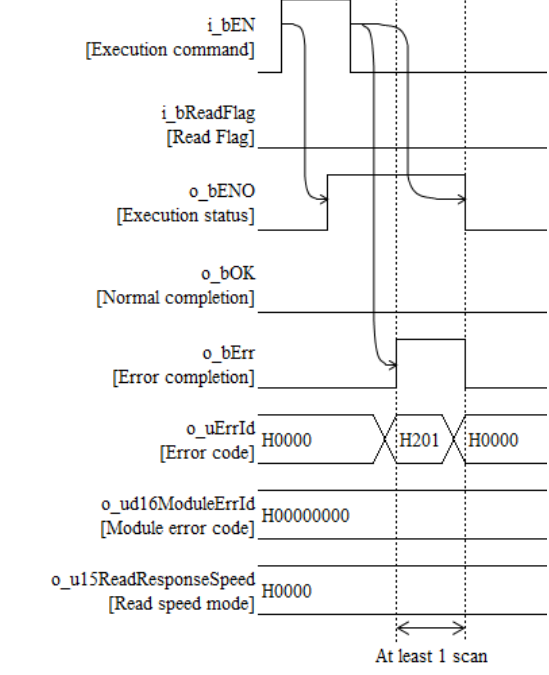
P+SUNX-SC-HG1_SetResponseSpeed_R

Functional contents

Item	Description																
Functional overview	Execute to read or write response speed.																
Symbol	<div><div><div>P+SUNX-SC-HG1_SetResponseSpeed_R</div><div><div>Execution command</div><div>B : i_bEN</div><div>o_bENO : B</div><div>Execution status</div></div><div><div>CC-Link IE Field Flag</div><div>B : i_bIeFieldFlag</div><div>o_bOK : B</div><div>Normal completion</div></div><div><div>Start I/O No.</div><div>UW : i_uStartIONo</div><div>o_bErr : B</div><div>Error completion</div></div><div><div>Station No.</div><div>UW : i_uStationNo</div><div>o_uErrId : UW</div><div>Error code</div></div><div><div>Read flag</div><div>B : i_bReadFlag</div><div>o_ud16ModuleErrId : UD</div><div>Module error code</div></div><div><div>Set controller</div><div>UW : i_uSetController</div><div>o_u15ReadResponseSpeed : UW</div><div>Read speed mode</div></div><div><div>Speed mode</div><div>UW : i_uResponseSpeed</div><div></div><div></div></div></div></div>																
Target devices	Target module	RJ61BT11 RJ71EN71															
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
		Series	Model														
		MELSEC iQ-R series	R04CPU	R04ENCPU													
R08CPU			R08ENCPU														
R16CPU			R16ENCPU														
R32CPU	R32ENCPU																
R120CPU	R120ENCPU																
Target engineering tool	GX Works3 Version 1.030G or later																
Program language	Ladder																
Number of basic steps	1227 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																
FB dependencies	P+SUNX-SC-HG1_SetResponseSpeed_R └P+SUNX-SC-HG1_ExecuteCommand_R																

Item	Description
Description of functions	<p>When Execution Command (i_bEN) is turned ON, this FB executes the settings on the controller specified by Set Controller (i_uSetController) in accordance with the value input to Speed Mode (i_uResponseSpeed).</p> <p>When Execution Command (i_bEN) is turned ON with Read Flag (i_bReadFlag) ON, however, the speed modes for all the connected controllers are output to Read Speed Mode (o_u15ReadResponseSpeed). In this case, the values input to Set Controller (i_uSetController) and Speed Mode (i_uResponseSpeed) are ignored and no setting takes place.</p>
FB compilation method	Macro type
FB behavior	Pulse execution type (multi-scan execution type)
i_bEN input condition	None



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>Read Flag (i_bReadFlag) is ON</p> <p>(When it is OFF, only the controller settings are changed.)</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p> 
	<p>If a module error occurs:</p> 	<p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p> 



Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Executing writing with this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute writing on controllers belonging to different groups in the same scan timing. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (11) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0. Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
10D	Speed Mode (i_uResponseSpeed) is outside the valid range	Specify a value within the valid range.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bleFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bleFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bleFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Read Flag	i_bReadFlag	Bit	ON, OFF	Start the FB with label ON to execute it in data read mode. Start the FB with label OFF to execute it in data write mode.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)



Name	Variable name	Data type	Valid range	Description
Speed Mode	i_uResponseSpeed	Word [Unsigned]	0 to 5	0: 3ms 1: 5 ms 2: 10 ms 3: 100 ms 4: 500 ms 5: 1000 ms

■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Read Speed Mode	o_u15ReadResponseSpeed[n]	Word [Unsigned]	0	15 arrays exist and store speed modes. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.8. P+SUNX-SC-HG1_SetLeverRatio_R (lever ratio setting)

Name

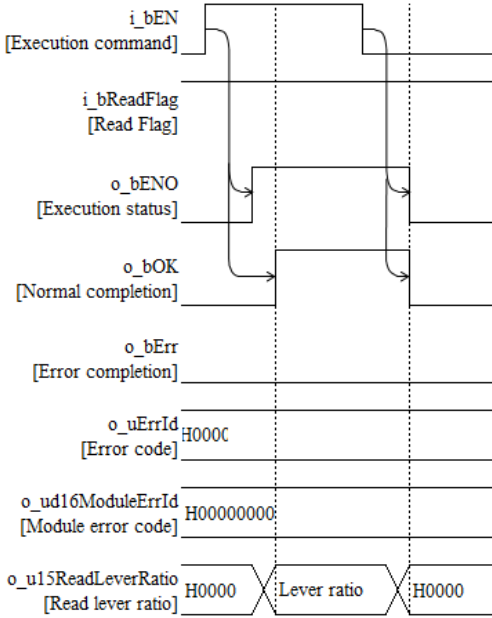
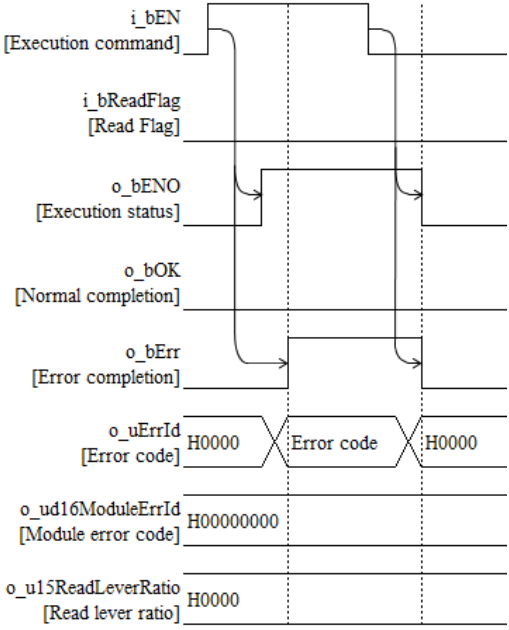
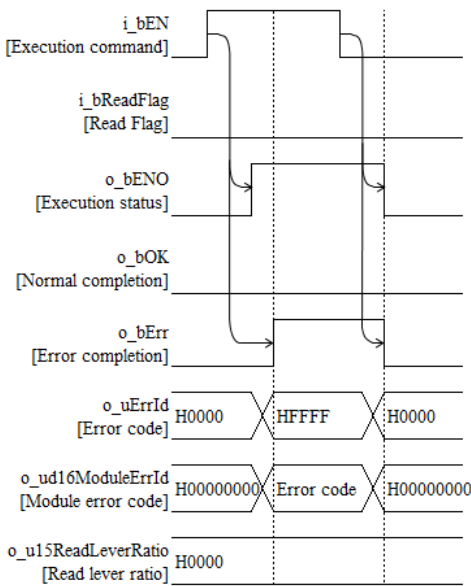
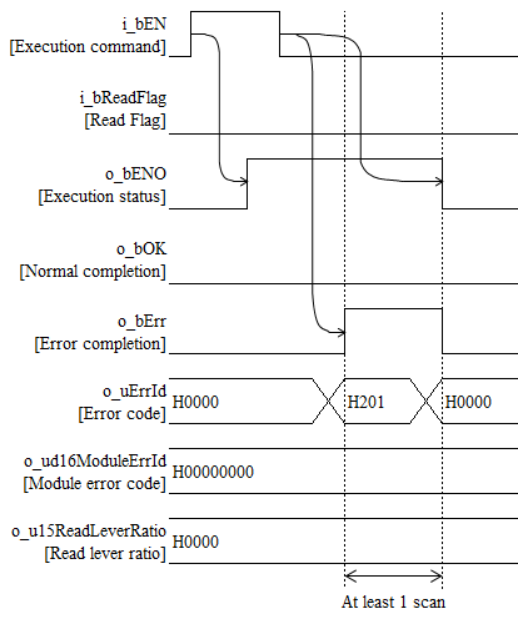
P+SUNX-SC-HG1_SetLeverRatio_R

Functional contents

Item	Description																	
Functional overview	Set lever ratio.																	
Symbol	<div><div><div><div><div></div><div>Execution command</div></div><div><div>B</div><div>: i_bEN</div></div></div><div><div>CC-Link IE Field Flag</div><div>B</div><div>: i_bIeFieldFlag</div></div><div><div>Start I/O No.</div><div>UW</div><div>: i_uStartIONo</div></div><div><div>Station No.</div><div>UW</div><div>: i_uStationNo</div></div><div><div>Read flag</div><div>B</div><div>: i_bReadFlag</div></div><div><div>Set controller</div><div>UW</div><div>: i_uSetController</div></div><div><div>Write Lever Ratio</div><div>UW</div><div>: i_uLeverRatio</div></div></div><div><div><div>P+SUNX-SC-HG1_SetLeverRatio_R</div></div><div><div>o_bENO</div><div>: B</div></div><div><div>o_bOK</div><div>: B</div></div><div><div>o_bErr</div><div>: B</div></div><div><div>o_uErrId</div><div>: UW</div></div><div><div>o_ud16ModuleErrId</div><div>: UD</div></div><div><div>o_u15ReadLeverRatio</div><div>: UW</div></div></div><div><div>Execution status</div><div>Normal completion</div><div>Error completion</div><div>Error code</div><div>Module error code</div><div>Read lever ratio</div></div></div>																	
Target devices	Target module	RJ61BT11 RJ71EN71																
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>			Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
	Series	Model																
	MELSEC iQ-R series	R04CPU	R04ENCPU															
R08CPU		R08ENCPU																
R16CPU		R16ENCPU																
R32CPU		R32ENCPU																
R120CPU		R120ENCPU																
Target engineering tool	GX Works3 Version 1.030G or later																	
Program language	Ladder																	
Number of basic steps	1232 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																	
FB dependencies	P+SUNX-SC-HG1_SetLeverRatio_R └P+SUNX-SC-HG1_ExecuteCommand_R																	

Item	Description
Description of functions	<p>When Execution Command (i_bEN) is turned ON, this FB executes the settings on the controller specified by Set Controller (i_uSetController) in accordance with the value input to Write Lever Ratio (i_uLeverRatio).</p> <p>When Execution Command (i_bEN) is turned ON with Read Flag (i_bReadFlag) ON, however, the lever ratios for all the connected controllers are output to Read Lever Ratio (o_u15ReadLeverRatio). In this case, the values input to Set Controller (i_uSetController) and Write Lever Ratio (i_uLeverRatio) are ignored and no setting takes place.</p>
FB compilation method	Macro type
FB behavior	Pulse execution type (multi-scan execution type)
i_bEN input condition	None



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>Read Flag (i_bReadFlag) is ON</p> <p>(When it is OFF, only the controller settings are changed.)</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p> 
	<p>If a module error occurs:</p> 	<p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p> 

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Executing writing with this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute writing on controllers belonging to different groups in the same scan timing. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (11) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0. Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
10E	Write Lever Ratio (i_uLeverRatio) is outside the valid range	Specify a value within the valid range.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bleFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bleFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bleFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Read Flag	i_bReadFlag	Bit	ON, OFF	Start the FB with label ON to execute it in data read mode. Start the FB with label OFF to execute it in data write mode.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)



Name	Variable name	Data type	Valid range	Description
Written Lever Ratio	i_uLeverRatio	Word [Unsigned]	1 to 1000	The input value x 0.1 is applied as the lever ratio.

■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Read Lever Ratio	o_u15ReadLeverRatio[n]	Word [Unsigned]	0	15 arrays exist and store lever ratios. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.9. P+SUNX-SC-HG1_SetOutputMode_R (output logic settings)

Name

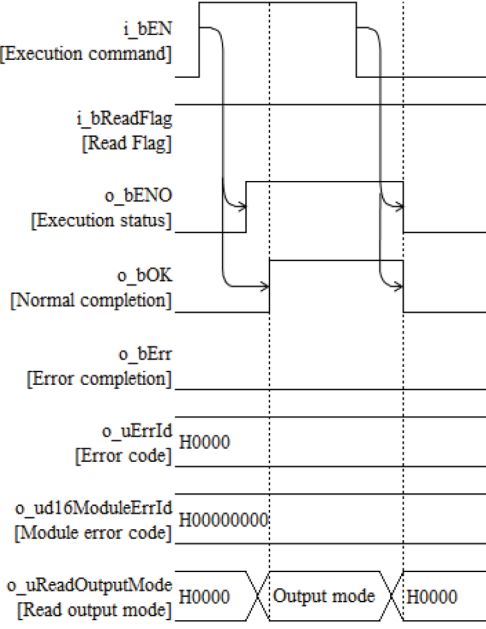
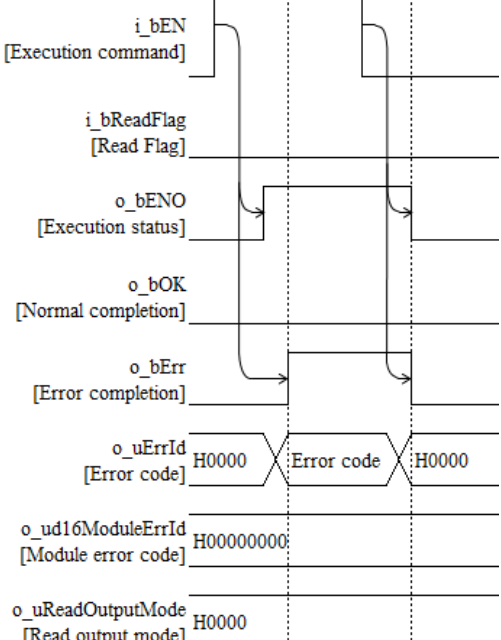
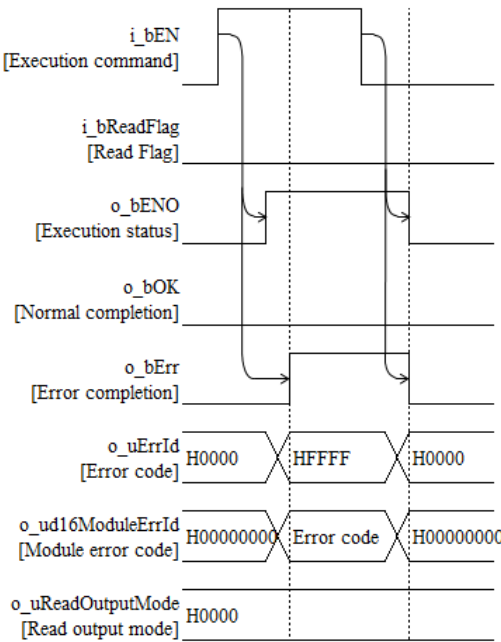
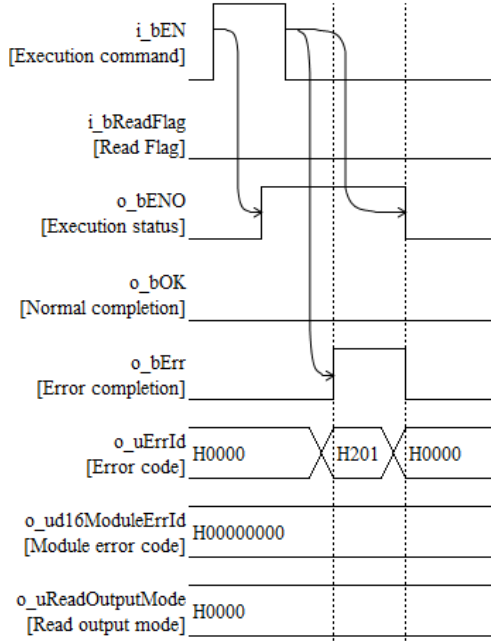
P+SUNX-SC-HG1_SetOutputMode_R

Functional contents

Item	Description																	
Functional overview	Normally open or normally closed setting for controller.																	
Symbol	<div><div><div>P+SUNX-SC-HG1_SetOutputMode_R</div><div><div>Execution command</div><div>B : i_bEN</div><div>o_bENO : B</div><div>Execution status</div></div><div><div>CC-Link IE Field Flag</div><div>B : i_bIEFieldFlag</div><div>o_bOK : B</div><div>Normal completion</div></div><div><div>Start I/O No.</div><div>UW : i_uStartIONo</div><div>o_bErr : B</div><div>Error completion</div></div><div><div>Station No.</div><div>UW : i_uStationNo</div><div>o_uErrId : UW</div><div>Error code</div></div><div><div>Read flag</div><div>B : i_bReadFlag</div><div>o_ud16ModuleErrId : UD</div><div>Module error code</div></div><div><div>Set controller</div><div>UW : i_uSetController</div><div>o_uReadOutputMode : UW</div><div>Read output mode</div></div><div><div>NC flag</div><div>B : i_bNCFlag</div><div></div><div></div></div></div></div>																	
Target devices	Target module	RJ61BT11 RJ71EN71																
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>			Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
		Series	Model															
		MELSEC iQ-R series	R04CPU	R04ENCPU														
R08CPU			R08ENCPU															
R16CPU			R16ENCPU															
R32CPU	R32ENCPU																	
R120CPU	R120ENCPU																	
Target engineering tool	GX Works3 Version 1.030G or later																	
Program language	Ladder																	
Number of basic steps	1231 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																	
FB dependencies	P+SUNX-SC-HG1_SetOutputMode_R └P+SUNX-SC-HG1_ExecuteCommand_R																	

Item	Description
Description of functions	<p>When Execution Command (i_bEN) is turned ON, this FB executes the settings on the controller specified by Set Controller (i_uSetController) in accordance with the value input to NC Flag (i_bNCFlag).</p> <p>If Execution Command (i_bEN) is turned ON with NC Flag (i_bNCFlag) OFF, the setting "NO" is applied to the controller specified by Set Controller (i_uSetController).</p> <p>If Execution Command (i_bEN) is turned ON with NC Flag (i_bNCFlag) ON, the setting "NC" is applied to the controller specified by Set Controller (i_uSetController).</p> <p>When Execution Command (i_bEN) is turned ON with Read Flag (i_bReadFlag) ON, however, the output logic settings for all the connected controllers are output to Read Output Mode (o_uReadOutputMode). In this case, the values input to Set Controller (i_uSetController) and NC Flag (i_bNCFlag) are ignored and no setting takes place.</p>
FB compilation method	Macro type
FB behavior	Pulse execution type (multi-scan execution type)
i_bEN input condition	None



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>Read Flag (i_bReadFlag) is ON</p> <p>(When it is OFF, only the controller settings are changed.)</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p> 
	<p>If a module error occurs:</p> 	<p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p>  <p style="text-align: right;">At least 1 scan</p>

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Executing writing with this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute writing on controllers belonging to different groups in the same scan timing. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (11) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0. Check if the Start is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIeFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Read Flag	i_bReadFlag	Bit	ON, OFF	Start the FB with label ON to execute it in data read mode. Start the FB with label OFF to execute it in data write mode.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)



Name	Variable name	Data type	Valid range	Description
NC Flag	i_bNCFlag	Bit	ON, OFF	When started with this flag ON, the setting "NC" is applied. When started with this flag OFF, the setting "NO" is applied.

■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Read Output Mode	o_uReadOutputMode	Word [Unsigned]	0	Stores the output logic settings in the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. ON: NC OFF: No. bit 0: Master device bit 1: 1st slave device to bit 14: 14th slave device bit 15: Not used



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.10. P+SUNX-SC-HG1_SetThreshold_R (threshold settings)

Name

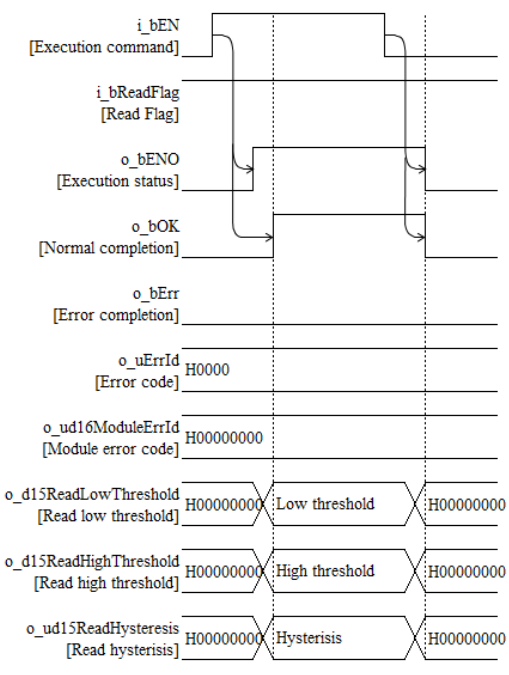
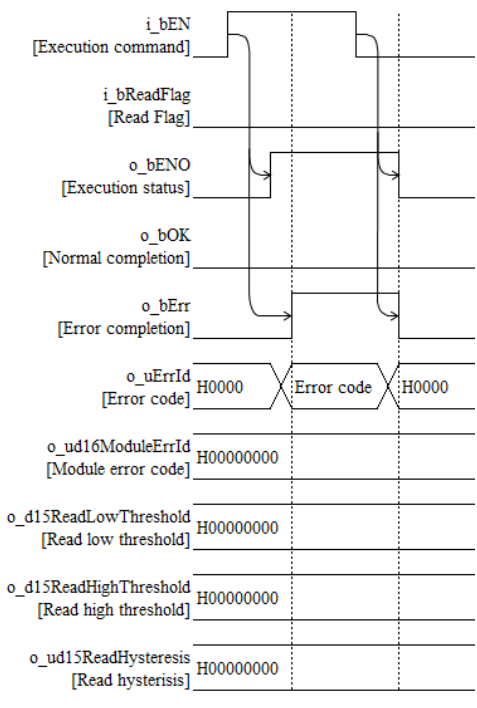
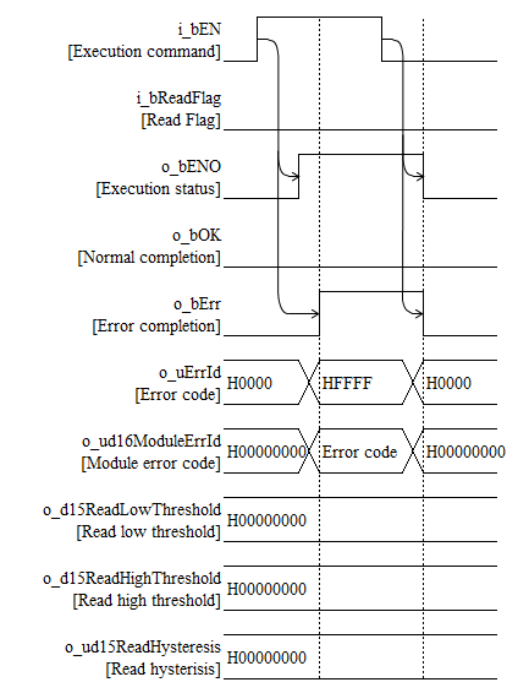
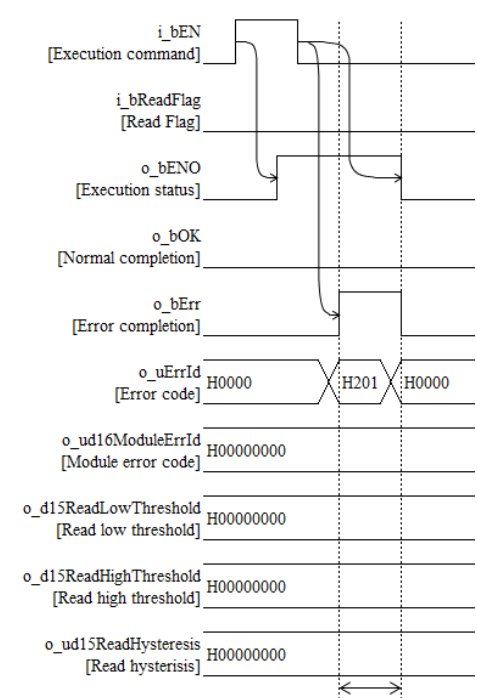
P+SUNX-SC-HG1_SetThreshold_R

Functional contents

Item	Description																																																			
Functional overview	High threshold, low threshold and hysteresis setting.																																																			
Symbol	<table><tr><td colspan="4">P+SUNX-SC-HG1_SetThreshold_R</td></tr><tr><td>Execution command</td><td>B</td><td>: i_bEN</td><td>o_bENO : B</td><td>Execution status</td></tr><tr><td>CC-Link IE Field Flag</td><td>B</td><td>: i_bIeFieldFlag</td><td>o_bOK : B</td><td>Normal completion</td></tr><tr><td>Start I/O No.</td><td>UW</td><td>: i_uStartIONo</td><td>o_bErr : B</td><td>Error completion</td></tr><tr><td>Station No.</td><td>UW</td><td>: i_uStationNo</td><td>o_uErrId : UW</td><td>Error code</td></tr><tr><td>Read flag</td><td>B</td><td>: i_bReadFlag</td><td>o_ud16ModuleErrId : UD</td><td>Module error code</td></tr><tr><td>Set controller</td><td>UW</td><td>: i_uSetController</td><td>o_d15ReadLowThreshold : D</td><td>Read low threshold</td></tr><tr><td>Low threshold</td><td>D</td><td>: i_dLowThreshold</td><td>o_d15ReadHighThreshold : D</td><td>Read high threshold</td></tr><tr><td>High threshold</td><td>D</td><td>: i_dHighThreshold</td><td>o_ud15ReadHysteresis : UD</td><td>Read hysteresis</td></tr><tr><td>Hysteresis value</td><td>UD</td><td>: i_udHysteresis</td><td></td><td></td></tr></table>			P+SUNX-SC-HG1_SetThreshold_R				Execution command	B	: i_bEN	o_bENO : B	Execution status	CC-Link IE Field Flag	B	: i_bIeFieldFlag	o_bOK : B	Normal completion	Start I/O No.	UW	: i_uStartIONo	o_bErr : B	Error completion	Station No.	UW	: i_uStationNo	o_uErrId : UW	Error code	Read flag	B	: i_bReadFlag	o_ud16ModuleErrId : UD	Module error code	Set controller	UW	: i_uSetController	o_d15ReadLowThreshold : D	Read low threshold	Low threshold	D	: i_dLowThreshold	o_d15ReadHighThreshold : D	Read high threshold	High threshold	D	: i_dHighThreshold	o_ud15ReadHysteresis : UD	Read hysteresis	Hysteresis value	UD	: i_udHysteresis		
P+SUNX-SC-HG1_SetThreshold_R																																																				
Execution command	B	: i_bEN	o_bENO : B	Execution status																																																
CC-Link IE Field Flag	B	: i_bIeFieldFlag	o_bOK : B	Normal completion																																																
Start I/O No.	UW	: i_uStartIONo	o_bErr : B	Error completion																																																
Station No.	UW	: i_uStationNo	o_uErrId : UW	Error code																																																
Read flag	B	: i_bReadFlag	o_ud16ModuleErrId : UD	Module error code																																																
Set controller	UW	: i_uSetController	o_d15ReadLowThreshold : D	Read low threshold																																																
Low threshold	D	: i_dLowThreshold	o_d15ReadHighThreshold : D	Read high threshold																																																
High threshold	D	: i_dHighThreshold	o_ud15ReadHysteresis : UD	Read hysteresis																																																
Hysteresis value	UD	: i_udHysteresis																																																		
Target devices	Target module	RJ61BT11 RJ71EN71																																																		
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU																																			
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R16CPU			R16ENCPU																																																	
R32CPU	R32ENCPU																																																			
R120CPU	R120ENCPU																																																			
Target engineering tool	GX Works3 Version 1.030G or later																																																			
Program language	Ladder																																																			
Number of basic steps	1417 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																																																			
FB dependencies	P+SUNX-SC-HG1_SetThreshold_R └P+SUNX-SC-HG1_ExecuteCommand_R																																																			

Item	Description
Description of functions	<p>When Execution Command (i_bEN) is turned ON, this FB executes the settings on the controller specified by Set Controller (i_uSetController) in accordance with the values input to High Threshold (i_dHighThreshold), Low Threshold (i_dLowThreshold), and Hysteresis value (i_udHysteresis).</p> <p>When Execution Command (i_bEN) is turned ON with Read Flag (i_bReadFlag) ON, however, the High Threshold, Low Threshold, and Hysteresis values for all the connected controllers are output to Read High Threshold (o_d15ReadHighThreshold), Read Low Threshold (o_d15ReadLowThreshold), and Read Hysteresis (o_ud15ReadHysteresis). In this case, the various input values are ignored, and no setting takes place.</p>
FB compilation method	Macro type
FB behavior	Pulse execution type (multi-scan execution type)
i_bEN input condition	None



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>Read Flag (i_bReadFlag) is ON (When it is OFF, only the controller settings are changed.)</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p> 
	<p>If a module error occurs:</p> 	<p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p>  <p style="text-align: right;">At least 1 scan</p>

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Executing writing with this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute writing on controllers belonging to different groups in the same scan timing. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (11) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0. Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
10F	The Low Threshold (i_dLowThreshold) value is higher than the High Threshold (i_dHighThreshold) value.	Correct the settings so that the Low Threshold (i_dLowThreshold) value is lower than the High Threshold (i_dHighThreshold) value.
110	Low Threshold (i_dLowThreshold) is outside the valid range	Specify a value within the valid range.
111	High Threshold (i_dHighThreshold) is outside the valid range	Specify a value within the valid range.
112	Hysteresis Value (i_udHysteresis) is outside the valid range	Specify a value within the valid range.
113	Hysteresis Value (i_udHysteresis) is larger than the difference between Low Threshold (i_dLowThreshold) and High Threshold (i_dHighThreshold)	Make Hysteresis Value (i_udHysteresis) smaller than the difference between Low Threshold (i_dLowThreshold) and High Threshold (i_dHighThreshold)



Error code (hexadecimal)	Description	Meaning
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIeFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag OFF to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Read Flag	i_bReadFlag	Bit	ON, OFF	Start the FB with label ON to execute it in data read mode. Start the FB with label OFF to execute it in data write mode.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)



Name	Variable name	Data type	Valid range	Description
Low Threshold	i_dLowThreshold	Double word [Signed]	-1999999 to 1999999	Specify the Low Threshold value.
High Threshold	i_dHighThreshold	Double word [Signed]	-1999999 to 1999999	Specify the High Threshold value.
Hysteresis Value	i_udHysteresis	Double word [Unsigned]	0 to 1999999	Specify the Hysteresis value.



■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Read Low Threshold	o_d15ReadLowThreshold[n]	Double word [Signed]	0	15 arrays exist and store Read Low Threshold values. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device
Read High Threshold	o_d15ReadHighThreshold[n]	Double word [Signed]	0	15 arrays exist and store Read High Threshold values. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device
Read Hysteresis	o_ud15ReadHysteresis[n]	Double word [Unsigned]	0	15 arrays exist and store Read Hysteresis values. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.

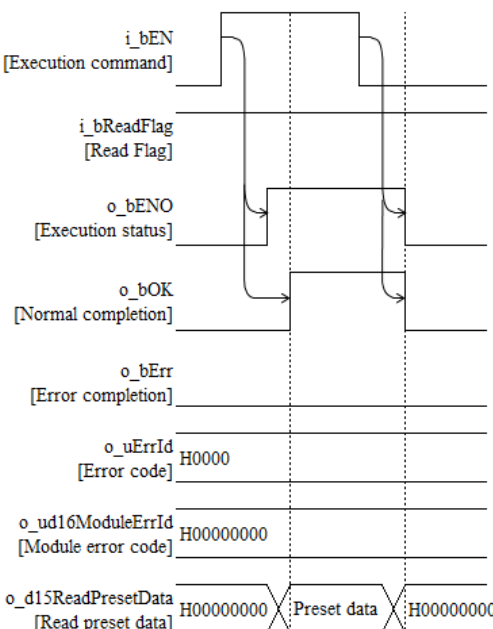
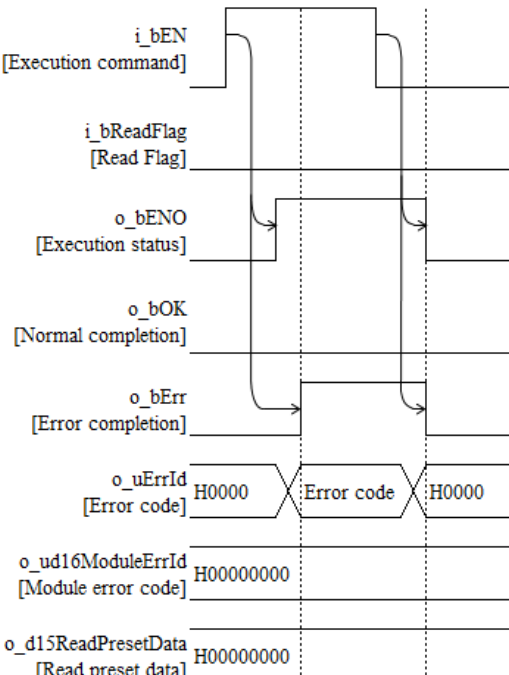
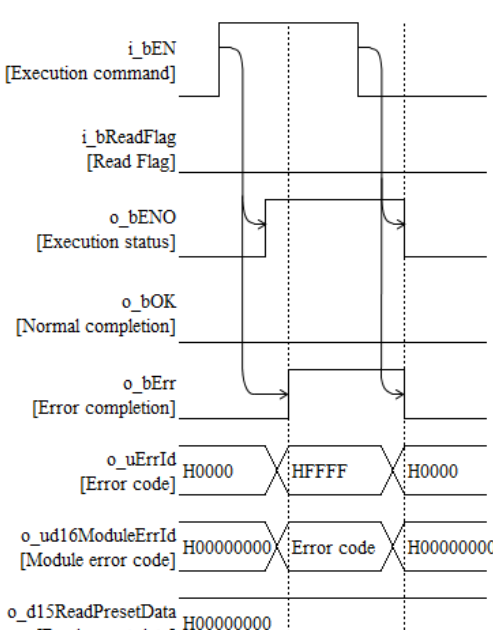
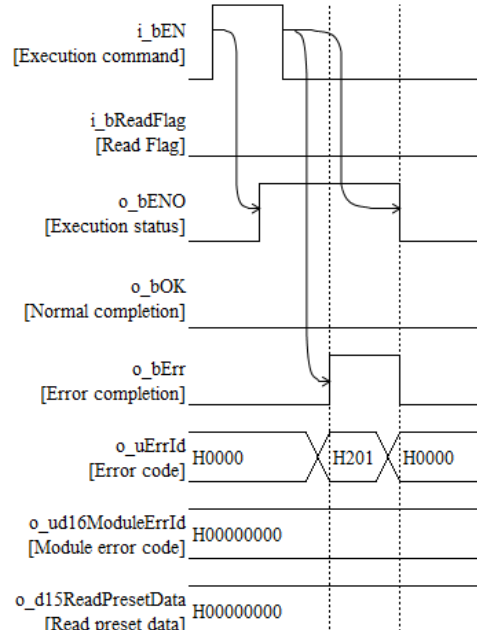


2.11. P+SUNX-SC-HG1_ExecutePreset_R (turn on or off the preset)

Name																	
P+SUNX-SC-HG1_ExecutePreset_R																	
Functional contents																	
Item	Description																
Functional overview	Execute preset.																
Symbol	<div><div><div><div><div></div><div>Execution command</div></div><div>B : i_bEN</div></div><div><div><div></div><div>CC-Link IE Field Flag</div></div><div>B : i_bIEFieldFlag</div></div><div><div><div></div><div>Start I/O No.</div></div><div>UW : i_uStartIONo</div></div><div><div><div></div><div>Station No.</div></div><div>UW : i_uStationNo</div></div><div><div><div></div><div>Read flag</div></div><div>B : i_bReadFlag</div></div><div><div><div></div><div>Set controller</div></div><div>UW : i_uSetController</div></div><div><div><div></div><div>Preset value</div></div><div>D : i_dPresetData</div></div><div><div><div></div><div>Reset flag</div></div><div>B : i_bReset</div></div></div><div><div><div><div></div><div>P+SUNX-SC-HG1_ExecutePreset_R</div></div><div><div><div></div><div>o_bENO : B</div></div><div><div></div><div>o_bOK : B</div></div><div><div></div><div>o_bErr : B</div></div><div><div></div><div>o_uErrId : UW</div></div><div><div></div><div>o_ud16ModuleErrId : UD</div></div><div><div></div><div>o_d15ReadPresetData : D</div></div></div><div><div><div></div><div>Execution status</div></div><div><div></div><div>Normal completion</div></div><div><div></div><div>Error completion</div></div><div><div></div><div>Error code</div></div><div><div></div><div>Module error code</div></div><div><div></div><div>Read preset data</div></div></div></div></div></div>																
Target devices	Target module	RJ61BT11 RJ71EN71															
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
		Series	Model														
		MELSEC iQ-R series	R04CPU	R04ENCPU													
R08CPU			R08ENCPU														
R16CPU			R16ENCPU														
R32CPU	R32ENCPU																
R120CPU	R120ENCPU																
Target engineering tool	GX Works3 Version 1.030G or later																
Program language	Ladder																
Number of basic steps	1285 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																
FB dependencies	P+SUNX-SC-HG1_ExecutePreset_R └P+SUNX-SC-HG1_ExecuteCommand_R																

Item	Description
Description of functions	<p>When Execution Command (i_bEN) is turned ON, this FB executes the preset on the controller specified by Set Controller (i_uSetController) in accordance with the value input to Preset Value (i_dPresetData). If Execution Command (i_bEN) is turned ON with the Reset Flag (i_bReset) ON, the preset is reset.</p> <p>When Execution Command (i_bEN) is turned ON with Read Flag (i_bReadFlag) ON, however, the preset values stored in all the connected controllers are output to Read Preset Data (o_d15ReadPresetData). In this case, the values input to Set Controller (i_uSetController), Preset Value (i_dPresetData), and Reset Flag (i_bReset) are ignored and no setting takes place.</p>
FB compilation method	Macro type
FB behavior	Pulse execution type (multi-scan execution type)
i_bEN input condition	None



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>Read Flag (i_bReadFlag) is ON</p> <p>(When it is OFF, only the controller settings are changed.)</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p> 
	<p>If a module error occurs:</p> 	<p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p>  <p style="text-align: right;">At least 1 scan</p>

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Executing writing with this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute writing on controllers belonging to different groups in the same scan timing. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (11) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No. (i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0. Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
114	Preset Value (i_dPresetData) is outside the valid range	Specify a value within the valid range.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIeFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Read Flag	i_bReadFlag	Bit	ON, OFF	Start the FB with label ON to execute it in data read mode. Start the FB with label OFF to execute it in data write mode.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)



Name	Variable name	Data type	Valid range	Description
Preset Value	i_dPresetData	Double word [Signed]	-1999999 to 1999999	Set the preset value.
Reset Flag	i_bReset	Bit	ON, OFF	Starting the FB with this flag ON resets the preset.

■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Read Preset Data	o_d15ReadPresetData	Double word [Signed]	0	15 arrays exist and store Read Preset values. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.12. P+SUNX-SC-HG1_SetDataBank_R (save or load data bank)

Name

P+SUNX-SC-HG1_SetDataBank_R

Functional contents

Item	Description																
Functional overview	Data bank load or save.																
Symbol	<div><div><div><div><div></div><div>Execution command</div></div><div><div>B</div><div>: i_bEN</div></div></div><div><div>CC-Link IE Field Flag</div><div>B</div><div>: i_bIEFieldFlag</div></div><div><div>Start I/O No.</div><div>UW</div><div>: i_uStartIONo</div></div><div><div>Station No.</div><div>UW</div><div>: i_uStationNo</div></div><div><div>Set controller</div><div>UW</div><div>: i_uSetController</div></div><div><div>Load flag</div><div>B</div><div>: i_bLoadFlag</div></div><div><div>Data bank No.</div><div>UW</div><div>: i_uDataBankNo</div></div></div><div><div><div>P+SUNX-SC-HG1_SetDataBank_R</div></div><div><div>o_bENO</div><div>: B</div></div><div><div>o_bOK</div><div>: B</div></div><div><div>o_bErr</div><div>: B</div></div><div><div>o_uErrId</div><div>: UW</div></div><div><div>o_ud16ModuleErrId</div><div>: UD</div></div></div><div><div>Execution status</div><div>Normal completion</div><div>Error completion</div><div>Error code</div><div>Module error code</div></div></div>																
Target devices	Target module	RJ61BT11 RJ71EN71															
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
		Series	Model														
		MELSEC iQ-R series	R04CPU	R04ENCPU													
R08CPU			R08ENCPU														
R16CPU			R16ENCPU														
R32CPU	R32ENCPU																
R120CPU	R120ENCPU																
Target engineering tool	GX Works3 Version 1.030G or later																
Program language	Ladder																
Number of basic steps	1202 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																
FB dependencies	P+SUNX-SC-HG1_SetDataBank_R ↳P+SUNX-SC-HG1_ExecuteCommand_R																



Item	Description	
Description of functions	When Execution Command (i_bEN) is turned ON on the controller specified by Set Controller (i_uSetController), this FB saves the setting value to the data bank identified by the value of Data Bank No. (i_uDataBankNo) if Load Flag (i_bLoadFlag) is OFF or, if Load Flag (i_bLoadFlag) is ON, loads the data bank identified by the value Data Bank No. (i_uDataBankNo).	
FB compilation method	Macro type	
FB behavior	Pulse execution type (multi-scan execution type)	
i_bEN input condition	None	
I/O signal flow movement	[Normal completion]	[Error completion] If an FB error occurs:
	If a module error occurs:	If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:



Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Executing this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute controllers belonging to different groups in the same scan timing. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (11) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No. (i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No. (i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0. Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
115	Data Bank No. (i_uDataBankNo) is outside the valid range	Specify a value within the valid range.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No. (i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIeFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)
Load Flag	i_bLoadFlag	Bit	ON, OFF	When started with this flag ON, the FB loads data bank. When started with this flag OFF, the FB saves data bank.
Data Bank No.	i_uDataBankNo	Word [Unsigned]	1 to 3	Specify the data bank number.



■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit

FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.

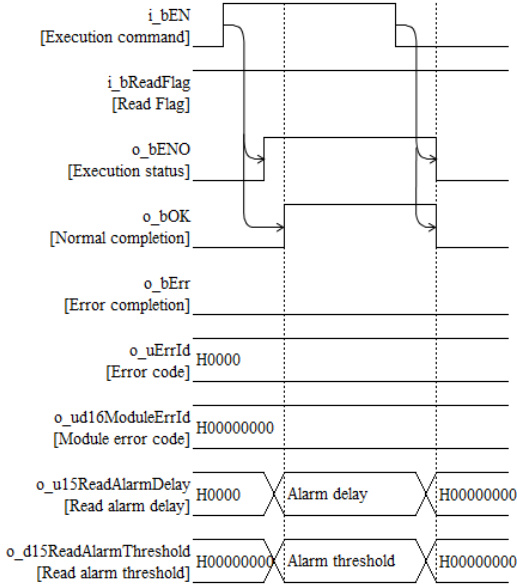
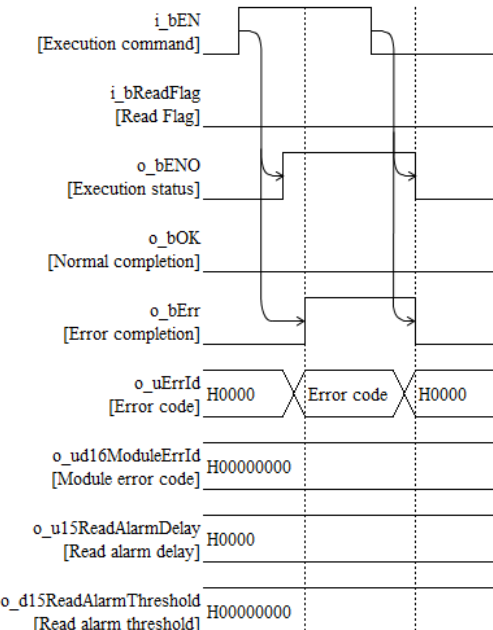
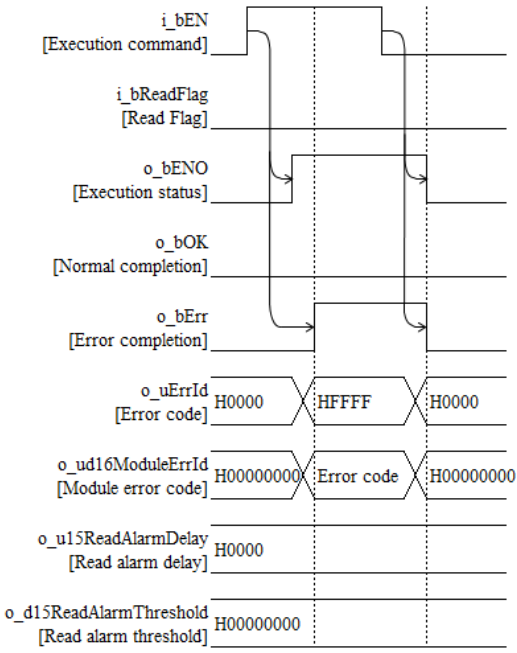
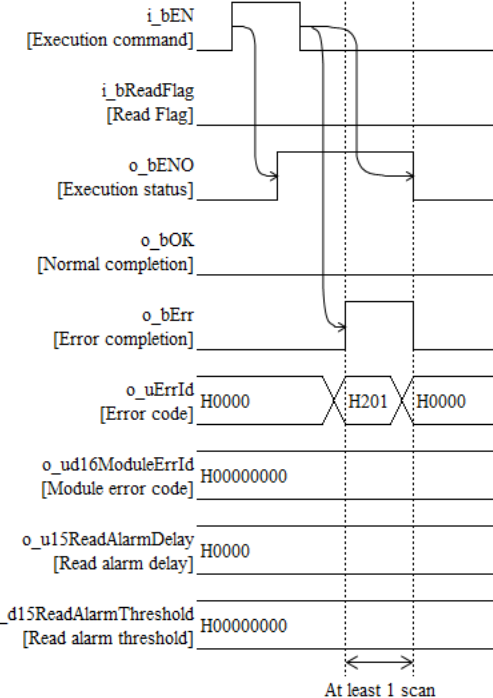


2.13. P+SUNX-SC-HG1_SetAlarm_R (alarm setting)

Name																
P+SUNX-SC-HG1_SetAlarm_R																
Functional contents																
Item	Description															
Functional overview	Alarm setting.															
Symbol	<div><div><div><div>P+SUNX-SC-HG1_SetAlarm_R</div><div><div>Execution command</div><div>B : i_bEN</div><div>o_bENO : B</div><div>Execution status</div></div><div><div>CC-Link IE Field Flag</div><div>B : i_bIeFieldFlag</div><div>o_bOK : B</div><div>Normal completion</div></div><div><div>Start I/O No.</div><div>UW : i_uStartIONo</div><div>o_bErr : B</div><div>Error completion</div></div><div><div>Station No.</div><div>UW : i_uStationNo</div><div>o_uErrId : UW</div><div>Error code</div></div><div><div>Read flag</div><div>B : i_bReadFlag</div><div>o_ud16ModuleErrId : UD</div><div>Module error code</div></div><div><div>Set controller</div><div>UW : i_uSetController</div><div>o_u15ReadAlarmDeley : UW</div><div>Read alarm delay</div></div><div><div>Alarm delay</div><div>UW : i_uAlarmDelay</div><div>o_d15ReadAlarmThreshold : D</div><div>Read alarm threshold</div></div><div><div>Alarm threshold</div><div>D : i_dAlarmThreshold</div><div></div><div></div></div><div><div>Reset flag</div><div>B : i_bReset</div><div></div><div></div></div></div></div></div>															
Target devices	Target module	RJ61BT11 RJ71EN71														
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>	Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
		Series	Model													
		MELSEC iQ-R series	R04CPU	R04ENCPU												
R08CPU			R08ENCPU													
R16CPU			R16ENCPU													
R32CPU	R32ENCPU															
R120CPU	R120ENCPU															
Target engineering tool	GX Works3 Version 1.030G or later															
Program language	Ladder															
Number of basic steps	1352 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.															
FB dependencies	P+SUNX-SC-HG1_SetAlarm_R └P+SUNX-SC-HG1_ExecuteCommand_R															

Item	Description
Description of functions	When Execution Command (i_bEN) is turned ON, this FB executes alarm setting on the controller specified by Set Controller (i_uSetController) in accordance with the values input to Alarm Delay (i_uAlarmDelay) and Alarm Threshold (i_dAlarmThreshold). If Execution Command (i_bEN) is turned ON with the Reset Flag (i_bReset) ON, the alarm setting for the specified controller is reset. When Execution Command (i_bEN) is turned ON with Read Flag (i_bReadFlag) ON, however, the Alarm Delay and Alarm Threshold values for all the connected controllers are output to Read Alarm Delay (o_u15ReadAlarmDelay) and Read Alarm Threshold (o_d15ReadAlarmThreshold). In this case, the various input values are ignored, and no setting takes place.
FB compilation method	Macro type
FB behavior	Pulse execution type (multi-scan execution type)
i_bEN input condition	None



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p> <p>Read Flag (i_bReadFlag) is ON</p> <p>(When it is OFF, only the controller settings are changed.)</p> 	<p>[Error completion]</p> <p>If an FB error occurs:</p> 
	<p>If a module error occurs:</p> 	<p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p> 

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Executing writing with this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute writing on controllers belonging to different groups in the same scan timing. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (11) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
104	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist	Make the value of Set Controller (i_uSetController) greater than 0. Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
116	Alarm Delay (i_uAlarmDelay) is outside the valid range	Specify a value within the valid range.
117	Alarm Threshold (i_dAlarmThreshold) is outside the valid range	Specify a value within the valid range.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIeFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Read Flag	i_bReadFlag	Bit	ON, OFF	Start the FB with label ON to execute it in data read mode. Start the FB with label OFF to execute it in data write mode.
Set Controller	i_uSetController	Word [Unsigned]	16-bit data other than 0	Stores the word information (consisting of 16 pieces of bit information) that corresponds to the controller on which to execute the command. bit 0: Master device bit 1: 1st slave device to bit 13: 13th slave device bit 14: 14th slave device bit 15: OFF (Not used)



Name	Variable name	Data type	Valid range	Description
Alarm Delay	i_uAlarmDelay	Word [Unsigned]	1 to 1000	Set the alarm delay.
Alarm Threshold	i_dAlarmThreshold	Double word [Signed]	-1999999 to 1999999	Set the alarm threshold.
Reset Flag	i_bReset	Bit	ON, OFF	Starting the FB with this flag ON resets the alarm setting.

■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Read Alarm Delay	o_u15ReadAlarmDelay[n]	Word [Unsigned]	0	15 arrays exist and store Read Alarm Delay values. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device
Read Alarm Threshold	o_d15ReadAlarmThreshold[n]	Double word [Signed]	0	15 arrays exist and store Read Alarm Threshold values. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.14. P+SUNX-SC-HG1_CheckMaintenance_R (get maintenance information)

Name

P+SUNX-SC-HG1_CheckMaintenance_R

Functional contents

Item	Description																
Functional overview	Retrieve maintenance information.																
Symbol	<div><div><div>Execution command</div><div>CC-Link IE Field Flag</div><div>Start I/O No.</div><div>Station No.</div></div><div><div>P+SUNX-SC-HG1_CheckMaintenance_R</div><div><div>B : i_bEN</div><div>B : i_bIeFieldFlag</div><div>UW : i_uStartIONo</div><div>UW : i_uStationNo</div></div></div><div><div>o_bENO : B</div><div>o_bOK : B</div><div>o_bErr : B</div><div>o_uErrId : UW</div><div>o_ud16ModuleErrId : UD</div><div>o_ud15TotalStrokeLog : UD</div><div>o_d15MaxPeakValue : D</div><div>o_ud15MaxPeakValueLog : UD</div><div>o_ud15OverStrokeLog : UD</div></div><div><div>Execution status</div><div>Normal completion</div><div>Error completion</div><div>Error code</div><div>Module error code</div><div>Total stroke operation log</div><div>Maximum peak value</div><div>Maximum peak value operation log</div><div>Over stroke log</div></div></div>																
Target devices	Target module	RJ61BT11 RJ71EN71															
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
	Series	Model															
MELSEC iQ-R series	R04CPU	R04ENCPU															
	R08CPU	R08ENCPU															
	R16CPU	R16ENCPU															
	R32CPU	R32ENCPU															
	R120CPU	R120ENCPU															
Target engineering tool	GX Works3 Version 1.030G or later																
Program language	Ladder																
Number of basic steps	1358 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																
FB dependencies	P+SUNX-SC-HG1_CheckMaintenance_R ↳P+SUNX-SC-HG1_ExecuteCommand_R																



Item	Description
Description of functions	When Execution Command (i_bEN) is turned ON, this FB outputs the maintenance information for all the connected controllers to Total Stroke Operation Log (o_ud15TotalStrokeLog), Maximum Peak Value (o_d15MaxPeakValue), Maximum Peak Value Operation Log (o_ud15MaxPeakValueLog), Over Stroke Log (o_ud15OverStrokeLog), respectively.
FB compilation method	Macro type
FB behavior	Pulse execution type (multi-scan execution type)
i_bEN input condition	None



Item	Description	
I/O signal flow movement	<p>[Normal completion]</p>	<p>[Error completion]</p> <p>If an FB error occurs:</p>
	<p>If a module error occurs:</p>	<p>If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:</p>

At least 1 scan

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Configure the global label as instructed in "1.4 Global labels". (7) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (8) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (9) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (10) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIeFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is ON	Specify the station number of the communication unit you want to configure.



■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit
Total Stroke Operation Log	o_ud15TotalStrokeLog[n]	Double word [Unsigned]	0	15 arrays exist and store total stroke operation log entries. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device
Maximum Peak Value	o_d15MaxPeakValue[n]	Double word [Signed]	0	15 arrays exist and store maximum peak values. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device



Name	Variable name	Data type	Default	Description
Maximum Peak Value Operation Log	o_ud15MaxPeakValueLog[n]	Double word [Unsigned]	0	15 arrays exist and store Maximum peak value operation log entries. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device
Over Stroke Log	o_ud15OverStrokeLog[n]	Double word [Unsigned]	0	15 arrays exist and over stroke operation log entries. n=0: Master device n=1: 1st slave device to n=13: 13th slave device n=14: 14th slave device



FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



2.15. P+SUNX-SC-HG1_ExecuteKeyLock_R (turn on or off the keylock)

Name

P+SUNX-SC-HG1_ExecuteKeyLock_R

Functional contents

Item	Description																
Functional overview	Execute or perform reset to keylock and Eco setting.																
Symbol	<div><div><div>P+SUNX-SC-HG1_ExecuteKeyLock_R</div><div><div>Execution command</div><div>B : i_bEN</div><div>CC-Link IE Field Flag</div><div>B : i_bIEFieldFlag</div><div>Start I/O No.</div><div>UW : i_uStartIONo</div><div>Station No.</div><div>UW : i_uStationNo</div><div>Set Eco mode</div><div>B : i_bEcoModeSet</div><div>Reset flag</div><div>B : i_bReset</div></div><div><div>o_bENO : B</div><div>o_bOK : B</div><div>o_bErr : B</div><div>o_uErrId : UW</div><div>o_ud16ModuleErrId : UD</div></div><div><div>Execution status</div><div>Normal completion</div><div>Error completion</div><div>Error code</div><div>Module error code</div></div></div></div>																
Target devices	Target module	RJ61BT11 RJ71EN71															
	Target CPU	<table><tr><th>Series</th><th colspan="2">Model</th></tr><tr><td rowspan="5">MELSEC iQ-R series</td><td>R04CPU</td><td>R04ENCPU</td></tr><tr><td>R08CPU</td><td>R08ENCPU</td></tr><tr><td>R16CPU</td><td>R16ENCPU</td></tr><tr><td>R32CPU</td><td>R32ENCPU</td></tr><tr><td>R120CPU</td><td>R120ENCPU</td></tr></table>		Series	Model		MELSEC iQ-R series	R04CPU	R04ENCPU	R08CPU	R08ENCPU	R16CPU	R16ENCPU	R32CPU	R32ENCPU	R120CPU	R120ENCPU
	Series	Model															
	MELSEC iQ-R series	R04CPU	R04ENCPU														
R08CPU		R08ENCPU															
R16CPU		R16ENCPU															
R32CPU		R32ENCPU															
R120CPU		R120ENCPU															
Target engineering tool	GX Works3 Version 1.030G or later																
Program language	Ladder																
Number of basic steps	1234 Steps (for MELSEC iQ-R series) * The number of FB steps incorporated into a program differs depending on the CPU module in use, the I/O definitions, and the option settings of GX Works3. For information on GX Works3 option settings, refer to GX Works3 Operating Manual.																
FB dependencies	P+SUNX-SC-HG1_ExecuteKeyLock_R └P+SUNX-SC-HG1_ExecuteCommand_R																

Item	Description	
Description of functions	<p>When Execution Command (i_bEN) is turned ON, this FB turns on or off the keylock and Eco setting on all the connected controllers.</p> <p>If you turn ON Set Eco Mode (i_bEcoModeSet) with Reset Flag (i_bReset) OFF and turn ON Execution Command (i_bEN), this FB sets both the keylock and Eco mode. If you turn OFF Set Eco Mode (i_bEcoModeSet) and turn ON Execution Command (i_bEN), it sets only the keylock.</p> <p>When Reset Flag (i_bReset) is ON, this FB ignores Set Eco Mode (i_bEcoModeSet) and turns off the keylock and Eco mode.</p>	
FB compilation method	Macro type	
FB behavior	Pulse execution type (multi-scan execution type)	
i_bEN input condition	None	
I/O signal flow movement	[Normal completion]	[Error completion]
		<p>If an FB error occurs:</p>
	If a module error occurs:	If Execution Command (i_bEN) is turned from ON to OFF before Normal Completion (o_bOK) or Error Completion (o_bErr) turns ON:
		<p style="text-align: right;">At least 1 scan</p>



Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> (1) This FB does not contain error recovery processing. As needed, create an error recovery processing block to suit your system requirements and other needs. (2) With this FB, the communication unit may be communicating with the controller until Execution Status (o_bENO) is turned OFF. While Execution Status (o_bENO) is ON, do not run any FB other than this on the same communication unit. (3) Use this FB as a macro type FB. (4) You cannot use this FB in an interrupt program. (5) If this FB is used in a run-once program (such as a subroutine program or a FOR ... NEXT program), it will fail to operate normally due to the inability to turn OFF Execution Command (i_bEN). For this reason, be sure to use this FB in a program with the ability to turn OFF Execution Command (i_bEN). (6) Executing writing with this FB in CC-Link mode 1 on SC-HG1-C executes the command once for each of the three groups consisting of the master device and slave devices 1 to 6, slave devices 7 to 13, and slave device 14. Carefully note that SC-HG1-C CC-Link mode 1 does not allow you to execute writing on controllers belonging to different groups in the same scan timing. (7) Configure the global label as instructed in "1.4 Global labels". (8) This FB uses the index registers Z8 and Z9. Do not use Z8 and Z9 in an interrupt program. (9) This FB results in an ignorable "double coil" warning because it uses the index register to operate the remote output (RY). (10) Do not run this FB on any device other than SC-HG1-C or SC-HG1-CEF. (11) If you are using two or more CC-Link/CC-Link IE Field master/local modules and want to control the SC-HG1-C or SC-HG1-CEF connected to each module, create the FBs for use with the second and subsequent modules as instructed in "Appendix 5 How to Use FBs across two or more master/local modules".
Related manuals	<p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)</p> <p>MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)</p> <p>MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)</p> <p>GX Works3 Operating Manual</p> <p>CC-Link Communication Unit for Digital Displacement Sensors SC-HG1-C User's Manual</p> <p>CC-Link IE Field Communication Unit for HG series SC-HG1-CEF User's Manual</p> <p>Contact-Type Digital Displacement Sensor HG-S Series User's Manual</p>



■ List of error codes

Error code (hexadecimal)	Description	Meaning
100	The Station No. (i_uStationNo) is outside the valid range	For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
101	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF.	Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
200	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
201	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
202	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
FFFF	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



■ Input labels

Name	Variable name	Data type	Valid range	Description
Execution Command	i_bEN	Bit	ON, OFF	Turn ON this label to start the FB. You can exit from the FB by turning it from ON to OFF.
CC-Link IE Field flag	i_bIeFieldFlag	Bit	ON, OFF	Turn ON Execution Command (i_bEN) with this flag OFF to start the FB on SC-HG1-C or with this flag ON to start the FB on SC-HG1-CEF.
Start I/O No.	i_uStartIONo	Word [Unsigned]	Depends on the range of the number of input/output points of the target CPU module. For more information, refer to the CPU User's Manual.	Specify in hexadecimal the number of the starting I/O where the target CC-Link/CC-Link IE Field master/local module is installed. (For example, specify H0A0 if the starting I/O No. is 00A0.)
Station No.	i_uStationNo	Word [Unsigned]	1 to 64 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is OFF 1 to 120 (in decimal) when CC-Link IE Field Flag (i_bIeFieldFlag) is ON	Specify the station number of the communication unit you want to configure.
Set Eco Mode	i_bEcoModeSet	Bit	ON, OFF	If you turn Reset Flag (i_bReset) from OFF to ON and execute this FB, it sets the Eco mode.
Reset Flag	i_bReset	Bit	ON, OFF	Execute this FB with this label ON to turn off the keylock and Eco mode. Execute this FB with this label OFF to turn on the keylock and set the Eco mode in accordance with the value of Set Eco Mode (i_bEcoModeSet) .



■ Output labels

Name	Variable name	Data type	Default	Description
Execution Status	o_bENO	Bit	OFF	Stays ON while the FB is running.
Normal Completion	o_bOK	Bit	OFF	Turns ON upon normal completion of the FB.
Error Completion	o_bErr	Bit	OFF	Turns ON upon error completion of the FB.
Error Code	o_uErrId	Word [Unsigned]	0	Stores the error code that occurred in the FB.
Module Error Code	o_ud16ModuleErrId[n]	Double word [Unsigned]	0	Stores the error code that occurred in the communication unit. 16 arrays exist and store module error codes. n=0: Master device n=1: 1st slave device to n=14: 14th slave device n=15: Communication unit

FB Version Upgrade History

Version	Date	Description
00A	2018/03/06	Newly created

Precaution

This chapter describes the functions of function blocks (FBs).

Restrictions on the use of modules and sequencer CPUs and on their combinations are not included in the scope of this chapter.

Before use, be sure to read the User's Manuals of the products you are going to use.



Appendix 1. Connection procedure

This appendix describes the steps for constructing the operating environment for FB library use examples introduced in "Appendix 3 FB Library Use Examples".

Appendix 1.1. Safety Precautions

Before you use the products introduced in this reference manual, carefully read the related manuals mentioned in "1.5 Related manuals". To use those products, take sufficient safety care and handle them correctly.

In particular, power supplies and other hazardous parts should be connected and wired by quantified engineers who have expertise in electrical and mechanical engineering.

These "Safety Precautions" use two safety flags to indicate different levels of danger: "Warning" and "Caution".



Failure to correctly handle the product may result in a dangerous situation where death or serious injury may occur.

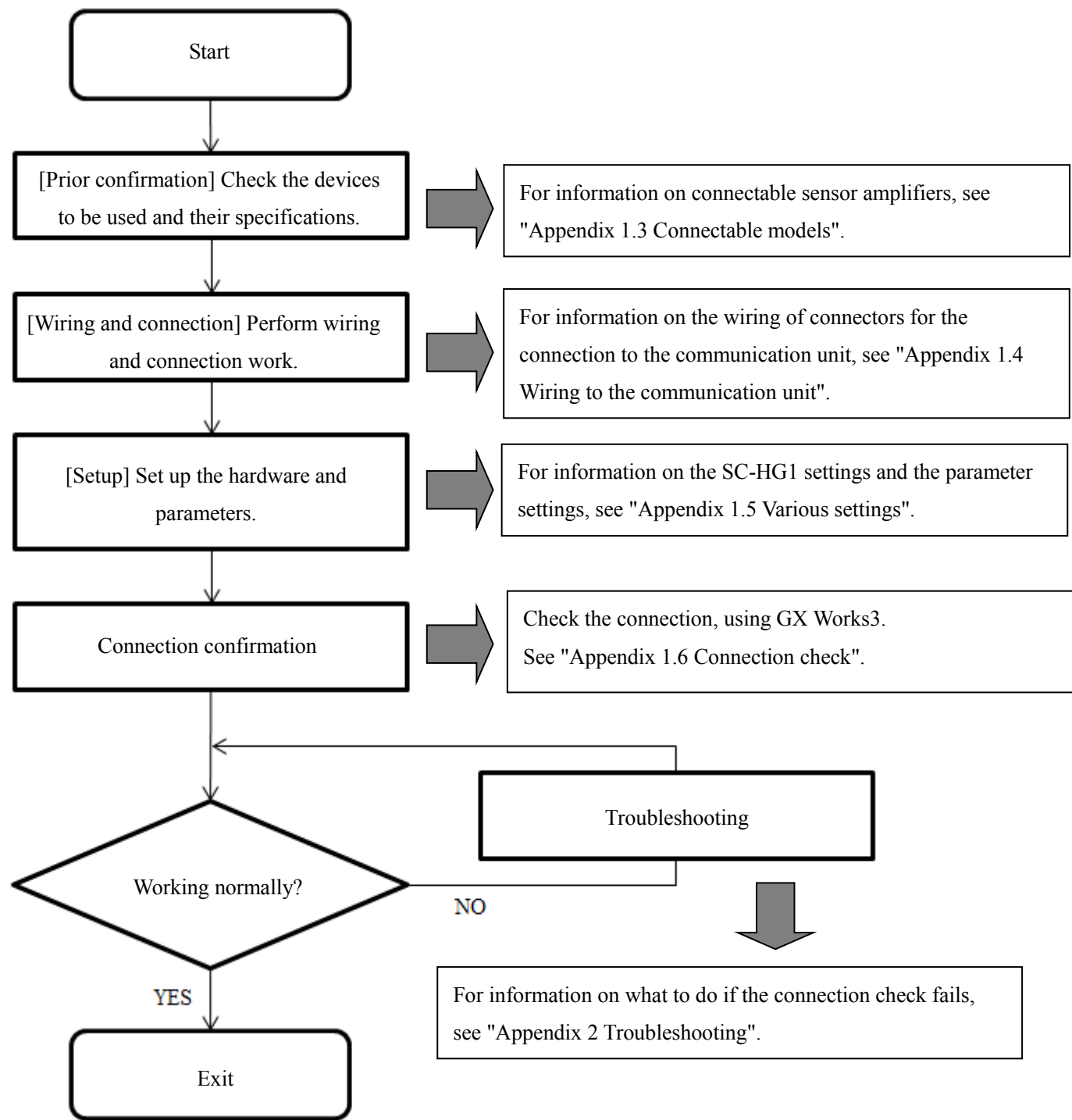


Failure to correctly handle the product may result in a dangerous situation where minor or moderate injury may occur or where only physical damage may occur.



Appendix 1.2. Connection procedure workflow

The following diagram shows the procedure workflow until starting up the system.




Appendix 1.3.
Connectable models

This FB library allows you to check and change the settings of the following models.

You can use the FBs in this FB library without depending on the difference between the master device and slave devices (whether they are cable or wire saving type).

Type		Model name
Master device		HG-SC101
Slave device	Cable type	HG-SC111
		HG-SC112
	Wire saving type	HG-SC113

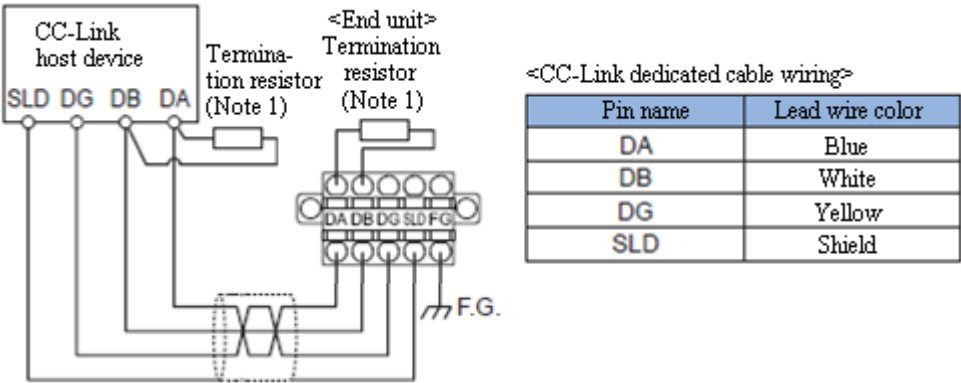
Appendix 1.4.
Wiring to the communication unit


Warning

Before wiring the devices, turn off the power.

The power to SC-HG1-C/SC-HG1-CEF is supplied from the master device via the horizontal coupling connector.

Be sure to connect the horizontal coupling connector.



(Note 1): Select termination resistors suitable for the cables you are using and connect them to the stations on both ends of the line.

Appendix 1.5.
 Various settings

Appendix 1.5.1
 CC-Link communication unit setup

To connect the communication unit to the CC-Link network, set the station number, the baud rate, and the CC-Link operation mode.

Set the baud rate setting switch with reference to the following table.

Baud Rate Setting Switch	Baud Rate
0	156kbps
1	6.25kbps
2	2.5Mbps
3	5Mbps
4	10Mbps

Before turning on the power, set the CC-Link operating mode, using the mode setting switch.

		CC-Link mode 1	CC-Link mode 2	CC-Link mode 3
Mode setting switch				
SW No.	1	ON	OFF	ON
	2	OFF	ON	ON
	3	Not used (Always keep unused switches in the OFF position.)		
	4			
	5			
	6			
	7			
	8			
Remarks		CC-Link Ver.1.10 Number of occupied stations:4	CC-Link Ver.2.00 Number of occupied stations: 2 Expanded cyclic transmission speed: x2	CC-Link Ver.2.00 Number of occupied stations: 4 Expanded cyclic transmission speed: x4

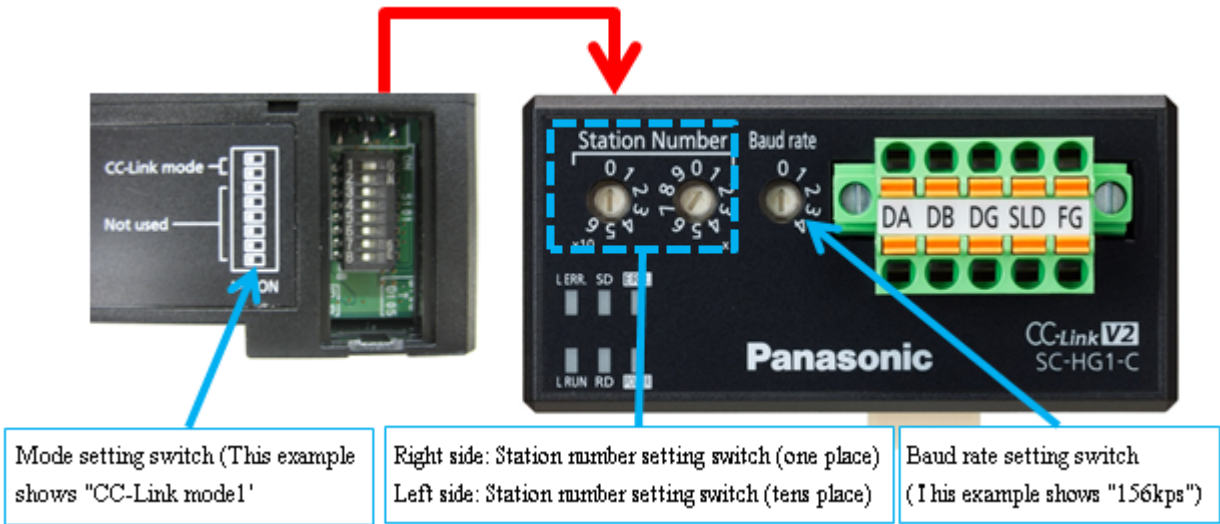



Figure 1.5.1-1: SC-HG1-C hardware setup

Appendix 1.5.2
 CC-Link IE Field communication unit setup


To connect the communication unit to the CC-Link IE Field network, set the station number and the network number.
 Ensure that these numbers are the same as configured on the CC-Link IE Field master/local module.

Mode setting switch
(with cover)



Set the operation mode. [Factory default state: Normal mode]

SW No.	1	2	3	4
Network number setting mode	ON	Not used (keep set to OFF)		
Normal mode	OFF	Not used (keep set to OFF)		



Mode setting switch
(This example shows "normal mode")

When in normal mode (decimal)
 Right side: Station number setting switch (ones place)
 Left side: Station number setting switch (tens place)
 When in network number setting mode (hexadecimal)
 Right side: Station number setting switch (first digit)
 Left side: Station number setting switch (second digit)

Figure 1.5.2-1: SC-HG1- CEF hardware setup

(1) Set the network number

By factory default, the network number of the communication unit is set to '01'. If you want to operate the product with a different network number, use the following steps to change the network number.

With the communication unit powered OFF, turn ON the operating mode setting switch to turn ON the power.
 Once you power ON the communication unit, the STS1 indicator (green) flashes to indicate that you are now in network number setting mode. So operate the rotary switch to set the network number. The network number is configurable within the range of 01 to EF in hexadecimal.
 When you are done setting the network number, turn OFF the mode setting switch (SW1) to save the new network number in the communication unit and check that the STS1 indicator (green) stays ON instead of flashing.
 With the mode setting switch (SW1) OFF, turn OFF and back ON the power to start the CC-Link IE Field network communication with the specified network number.

* Before turning back ON the power supply, set the station number by operating the rotary switch.

(2) Set the station number

The station number is configurable within the range of 1 to 120 in decimal.

The CC-Link IE Field network communication starts using the station number determined by the rotary switch setting as of the time when the power is turned ON with the mode setting switch (SW1) OFF. Carefully note that if you change the rotary switch setting after power-ON, the ERR.indicator (red) flashes.

Appendix 1.5.3 CC-Link parameter setup

Open GX Works3 to configure these settings.

Use the following steps to create PLC configuration data and then configure the CC-Link slaves.

(1) Creating a new project (common)

[Project] → [New]

Enter the series, model, and program language as shown in figure 1.5.3-1.

Change the model name depending on the actual system configuration.

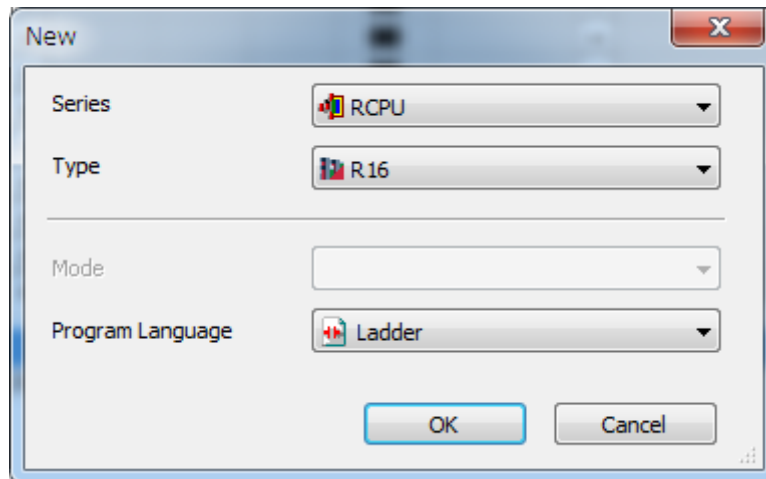


Figure 1.5.3-1: Parameter settings ([New])



(2) Creating module configuration (when using the CC-Link master/local module)

If a Windows® PC where the target CPU module and GX Works3 are already installed is connected via USB, you can load the CPU module configuration.

Once the setup is complete, the Start XY of the CC-Link master/local module becomes the Start I/O No. (i_uStartIONo) of the FB common input for this FB library. In the settings shown below (Figure 1.5.3-3), "H0000" becomes the input value.

Navigation window → [Parameter] → [System Parameter]

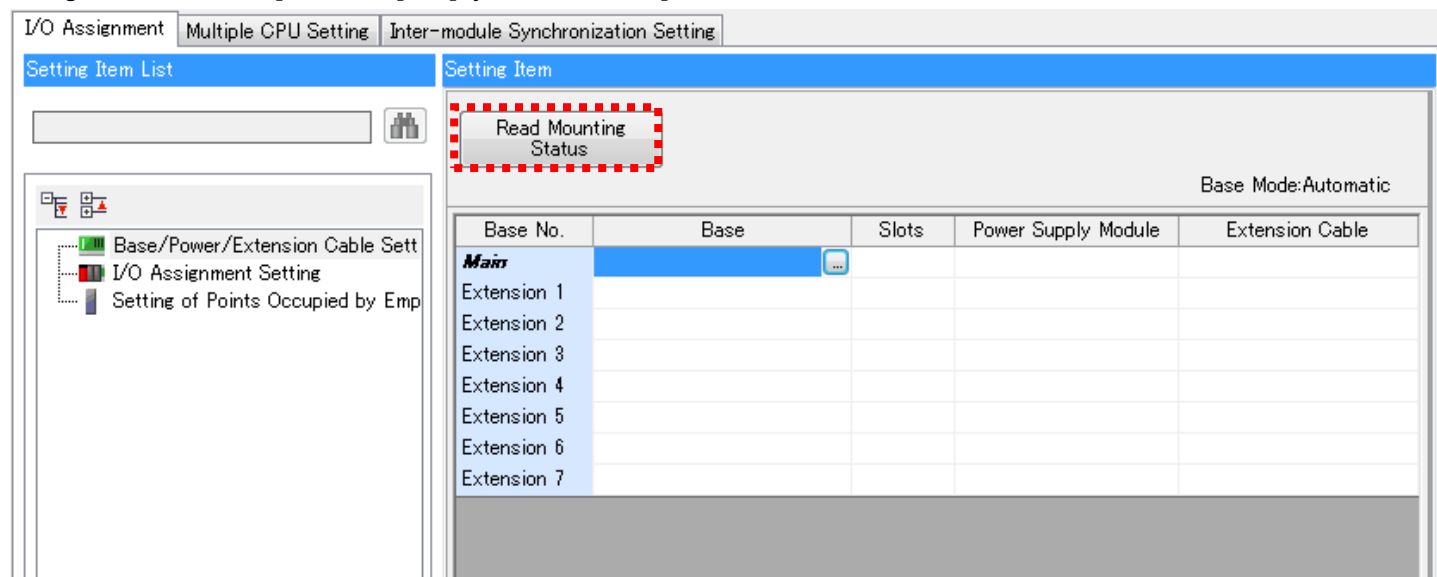


Figure 1.5.3-2: System parameters

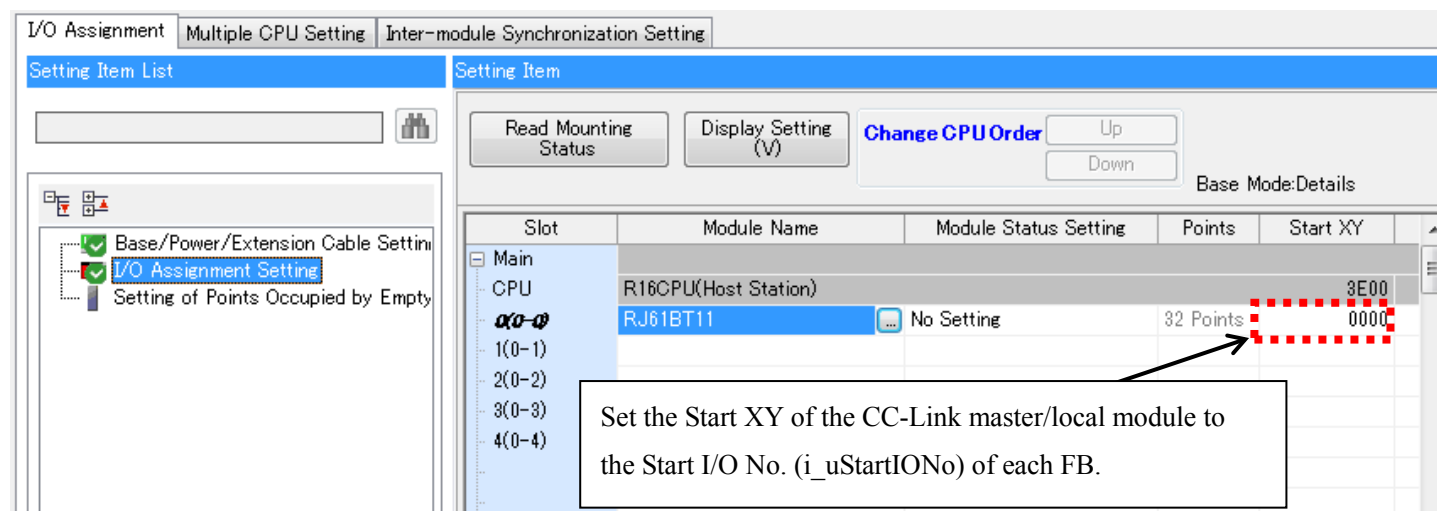


Figure 1.5.3-3: System parameters (after reading the mounting state)

If a Windows® PC where the target CPU module and GX Works3 are already installed is NOT connected via USB, you must select I/O Assignment and set various configuration information.

Carefully note that if the settings you entered here differ from the actual system configuration, an error occurs.

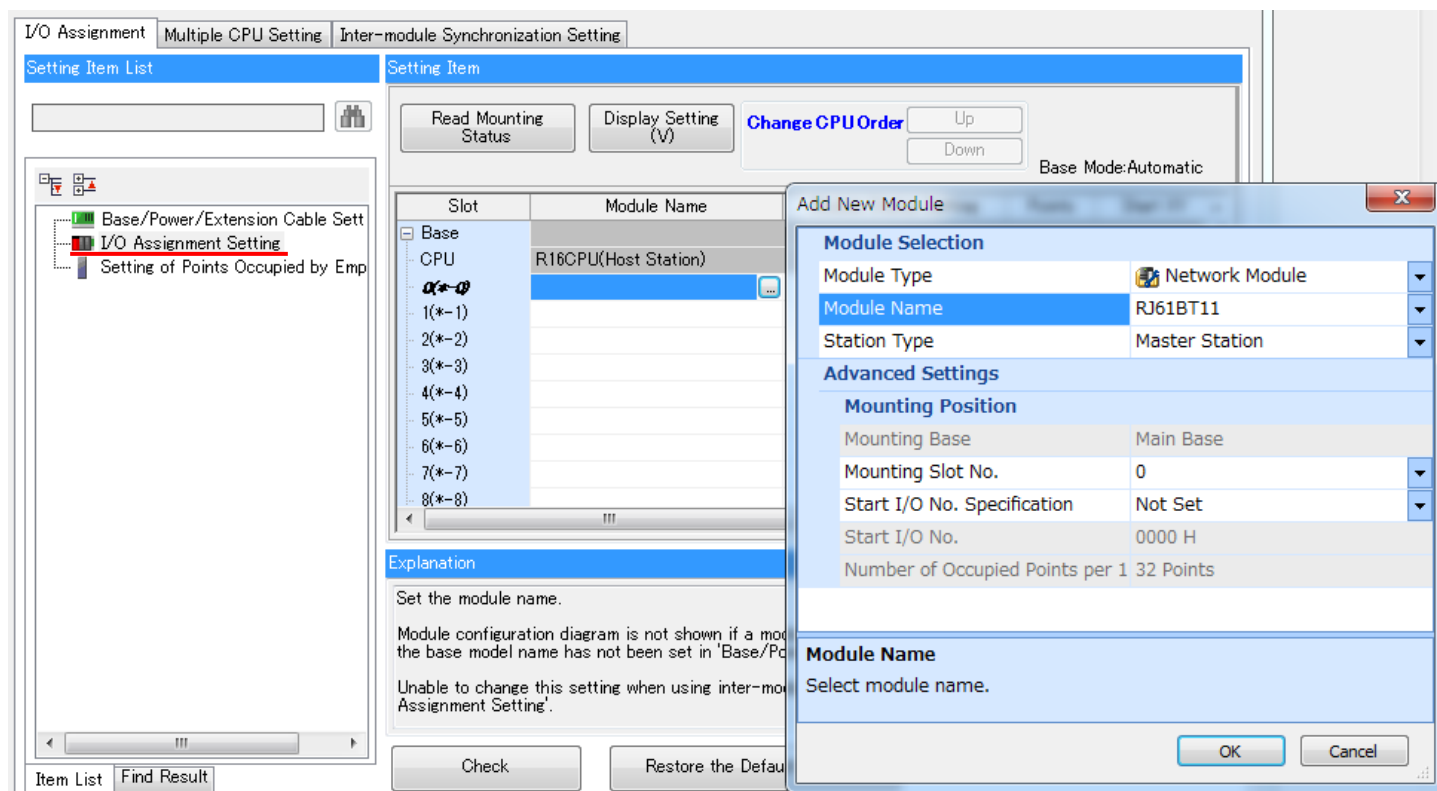


Figure 1.5.3-4: System parameters (manual setting)

(2) Setting module parameters (when using the CC-Link master/local module)

Next, configure the module parameters.

Configure "CC-Link configuration" and "link refresh settings" under "basic settings".

Navigation window → Parameter → Module information → (Start XY): RJ61BT11 → Module parameter

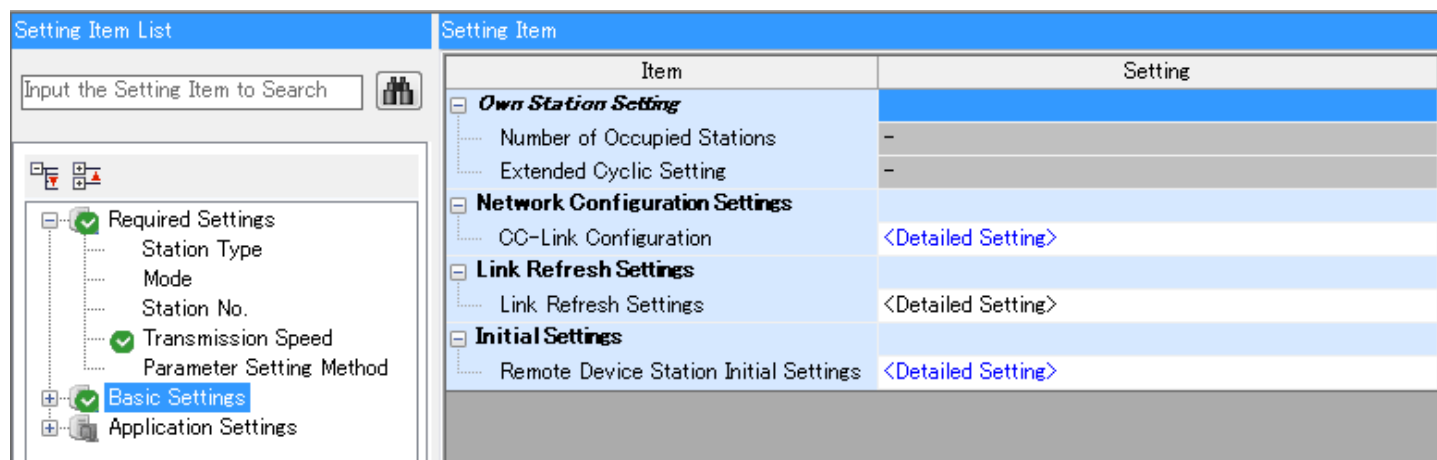


Figure 1.5.3-5: Module parameters (basic settings)

Under "CC-Link configuration", set the communication unit to be connected.

You can also drag a "General Remote Device Station" from the module list at the right and down it onto the configuration below.

At this time, you can restrict the setting items by using CSP+ of SC-HG1-C.

Ensure that the red-framed information you configure or check here is the same as configured on the communication unit.

The mode settings for SC-HG1-C are restricted depending on the operation mode you configure. Refer to the following table to configure the settings.

CC-Link mode2 and CC-Link mode3 uses the extended cyclic function and therefore the mode setting does not work in "Ver.1 mode".

	CC-Link mode1	CC-Link mode2	CC-Link mode3
Ver.1 mode	○	×	×
Ver.2 mode	○	○	○

Configure the values for setup items for each operation mode as instructed in the table below.

	CC-Link mode1	CC-Link mode2	CC-Link mode3
Version	Ver.1	Ver.2	Ver.2
Number of occupied stations	4-station occupied	2-station occupied	4-station occupied
Extended cyclic settings	-	Eightfold setting	Fourfold setting

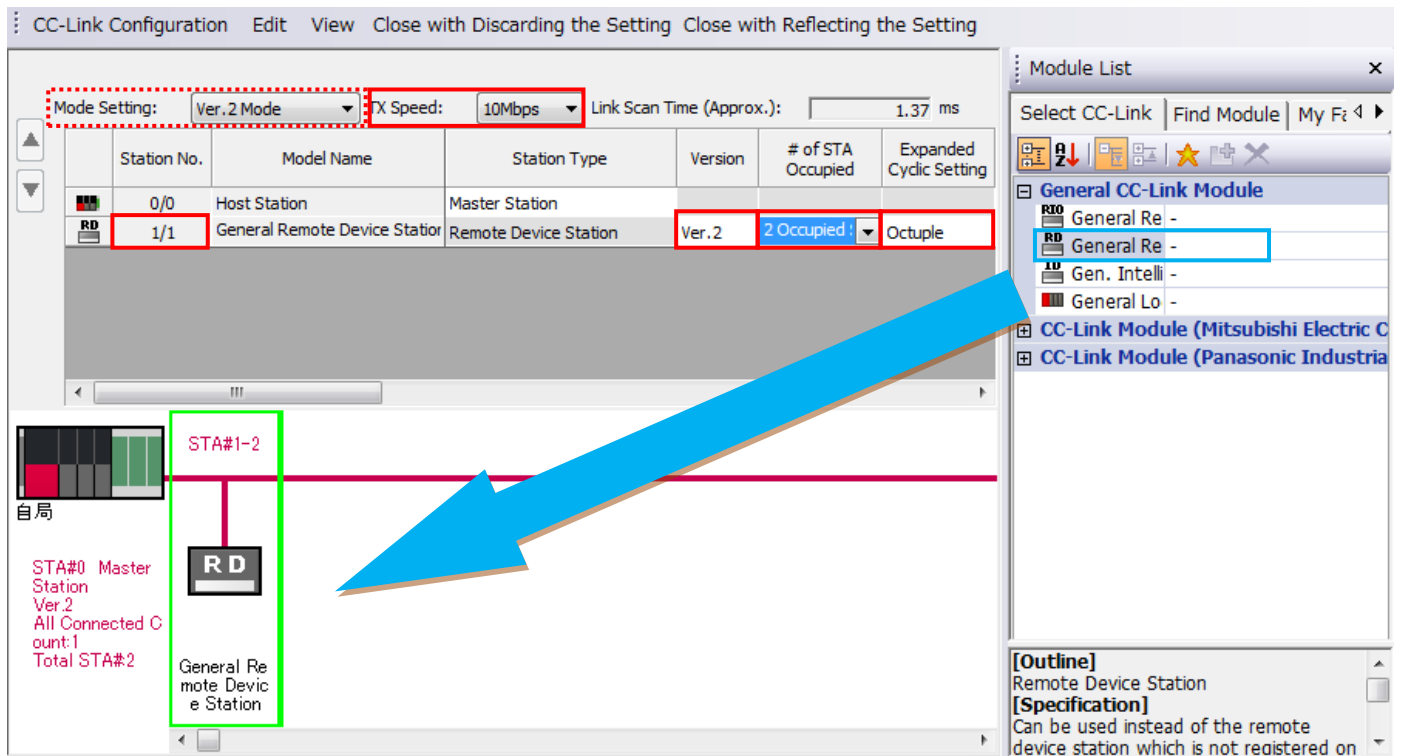


Figure 1.5.3-6: CC-Link configuration settings (for CC-Link mode2)

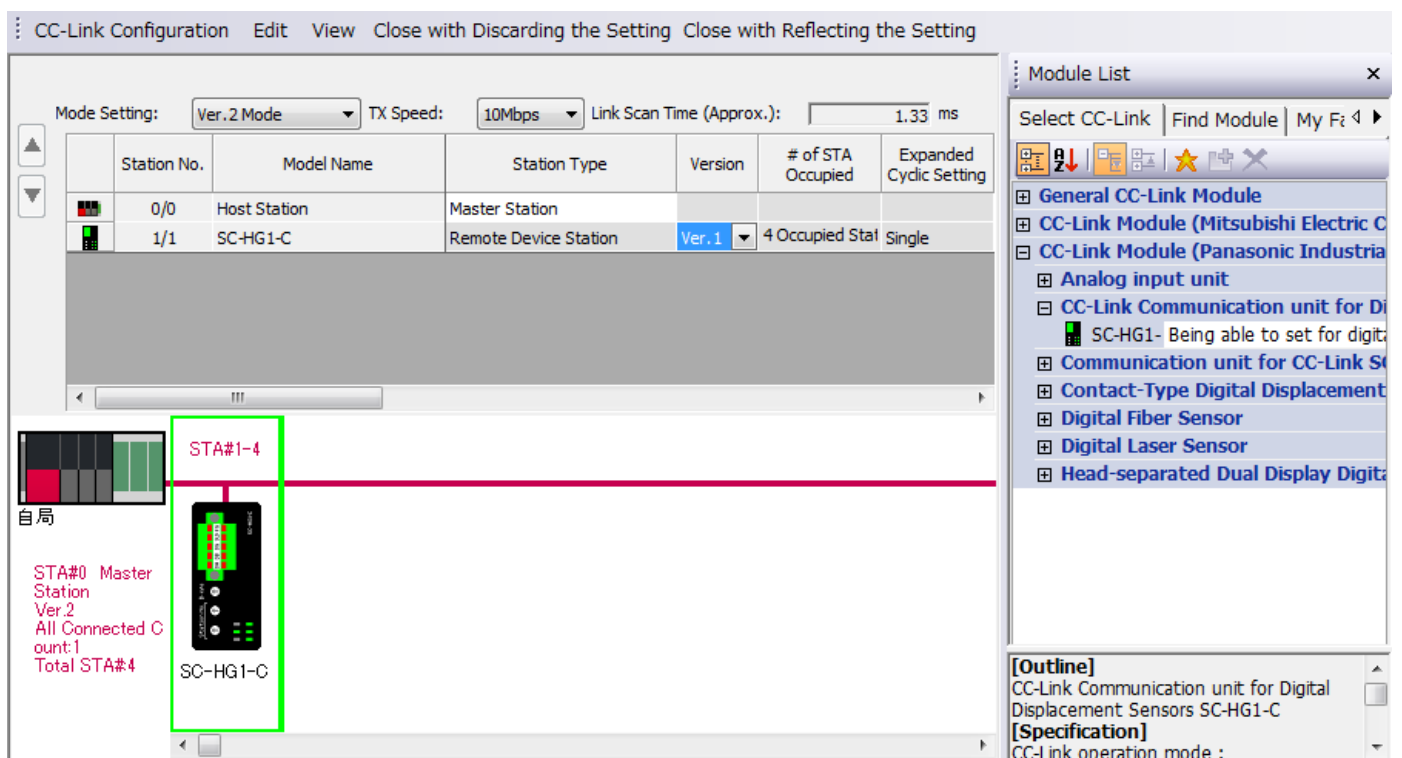


Figure 1.5.3-7: CC-Link configuration settings (when using CSP+)

Under "link refresh settings", you must check and set the information of the final slave station connected to the CC-Link master/local module.

For more information, refer to " MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) ".

In the following example, this is set by changing [Device Assignment Method] to [Points/Start].

Link side settings

The number of link points must be set so that it matches all the slave station information.

The following table show the number of link points for SC-HG1-C. Check the number of link points as needed.

The first character on the link side should be 0.

Figure 1.5.3-8 shows an example where only one unit of SC-HG1-C is connected and used in CC-Link model1.

Operation mode	Number of link points	
	RX / RY	RW _r / RW _w
CC-Link mode1	128	16
CC-Link mode2	384	64
CC-Link mode3	448	64

CPU side settings

Specify the bit and word devices for the refresh target device name.

Also, the start may be arbitrarily set. When specifying the same device, take care to avoid overlapping from the start to end.

The "device names" and "start" you specify here relate to the global label configuration. For more information, see "1.4.3

Identifying the starting device".

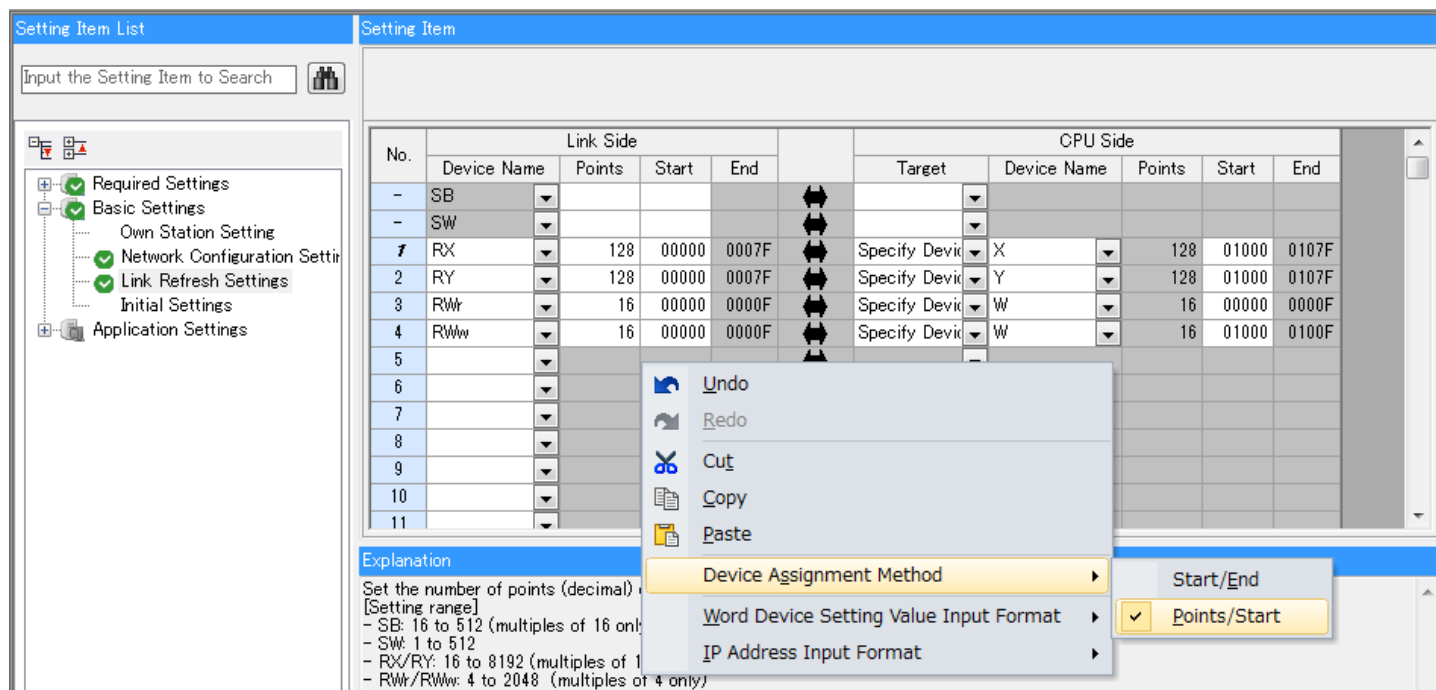


Figure 1.5.3-8: Link refresh settings (for CC-Link mode1)

Appendix 1.5.4 CC-Link IE Field parameter setup

Open GX Works3 to configure these settings.

Use the following steps to create PLC configuration data and then configure the CC-Link IE Field slaves.

(1) Creating a new project (common)

[Project] → [New]

Enter the series, type, and program language as shown in figure 1.5.4-1.

Change the model name depending on the actual system configuration.

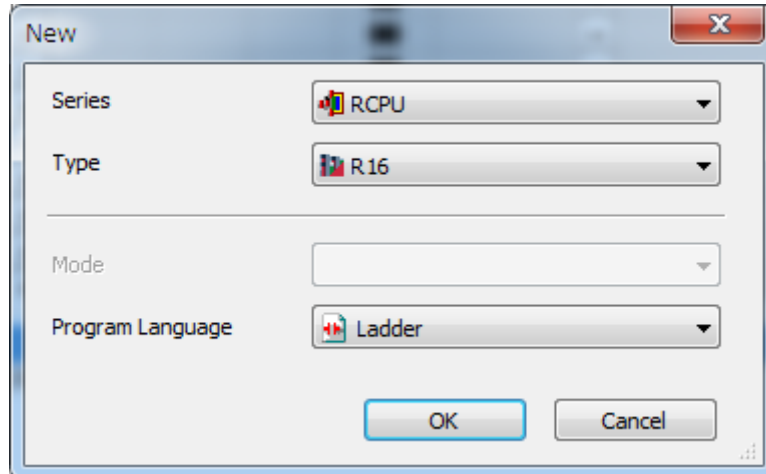


Figure 1.5.4-1: Parameter settings ([New])

(2) Creating module configuration (when using the CC-Link IE Field master/local module)

If a Windows® PC where the target CPU module and GX Works3 are already installed is connected via USB, you can load the CPU module configuration.

Once the setup is complete, the Start XY of the CC-Link IE Field master/local module becomes the Start I/O No. (i_uStartIONo) of the FB common input for this FB library. In the settings shown below (Figure 1.5.4-3), "H0000" becomes the input value.

Navigation window → [Parameter] → [System Parameter]

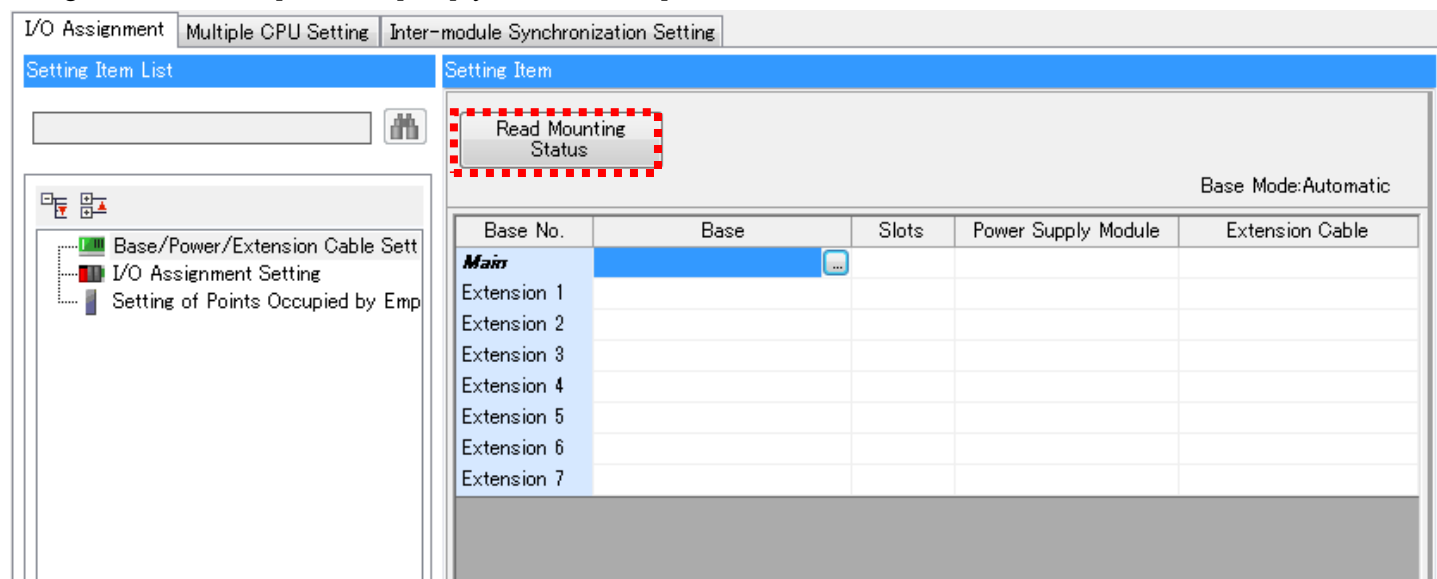


Figure 1.5.4-2: System parameters

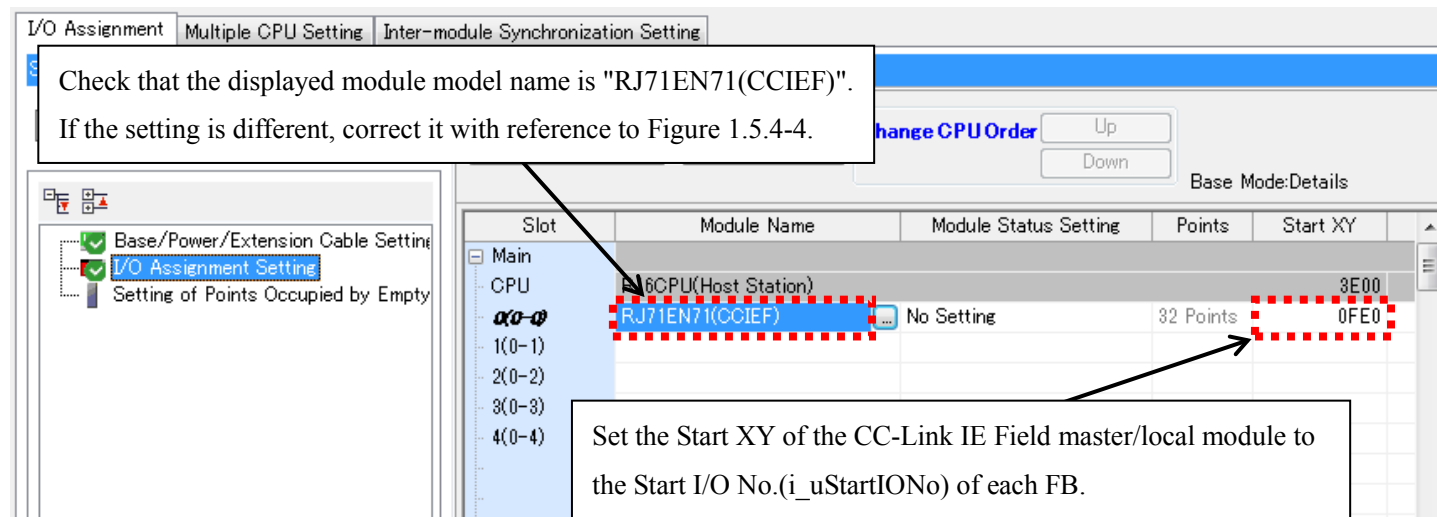


Figure 1.5.4-3: System parameters (after reading the mounting state)

If a Windows® PC where the target CPU module and GX Works3 are already installed is NOT connected via USB, you must select I/O Assignment and set various configuration information.

Carefully note that if the settings you entered here differ from the actual system configuration, an error occurs.

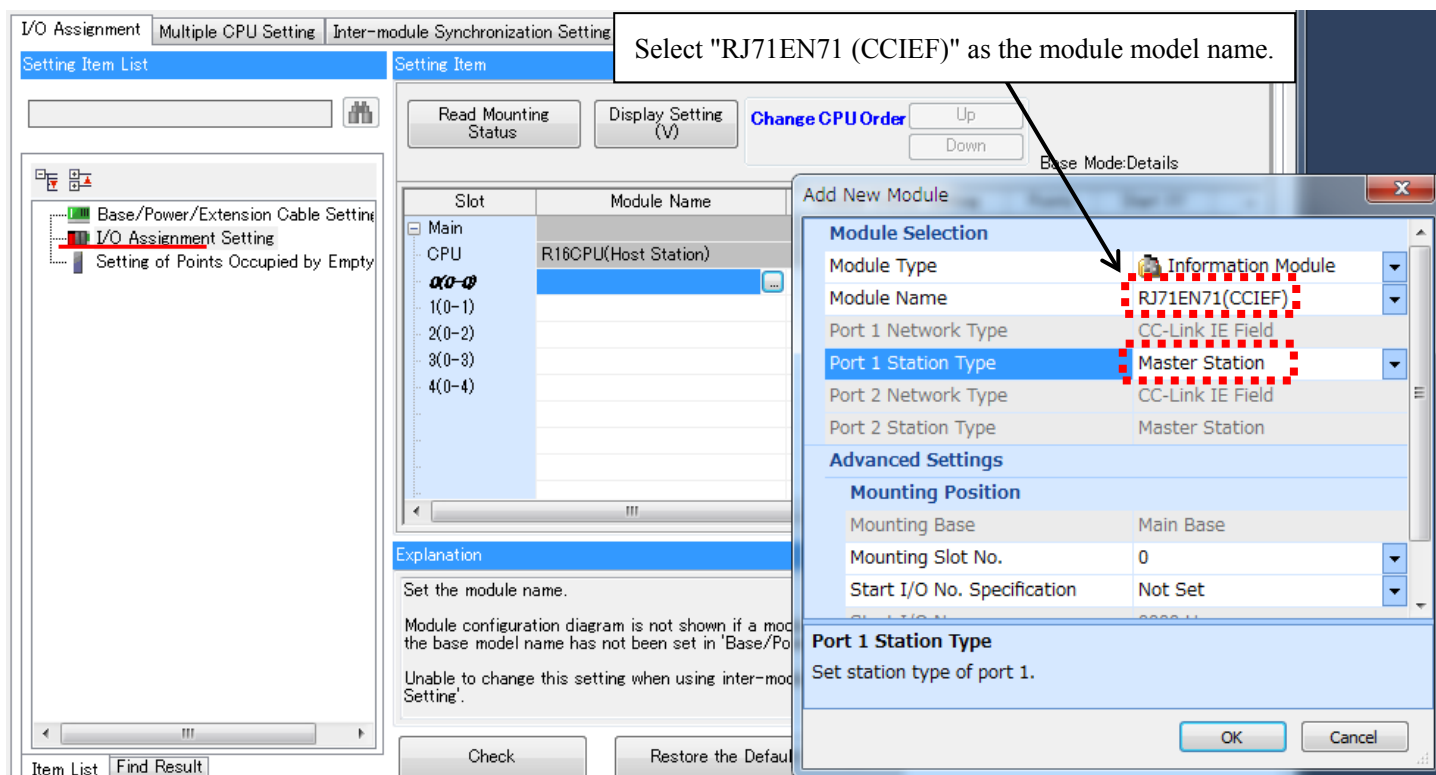


Figure 1.5.4-4: System parameters (manual setting)

(2) Setting module parameters (when using the CC-Link IE Field master/local module)

Next, configure the module parameters.

Under [Required Settings], set [Network Number].

Under [Basic Settings], set [Network Configuration Settings] and [Link Refresh Settings].

Navigation window → Parameter → Module information → (Start XY): RJ71EN71 → Module parameter

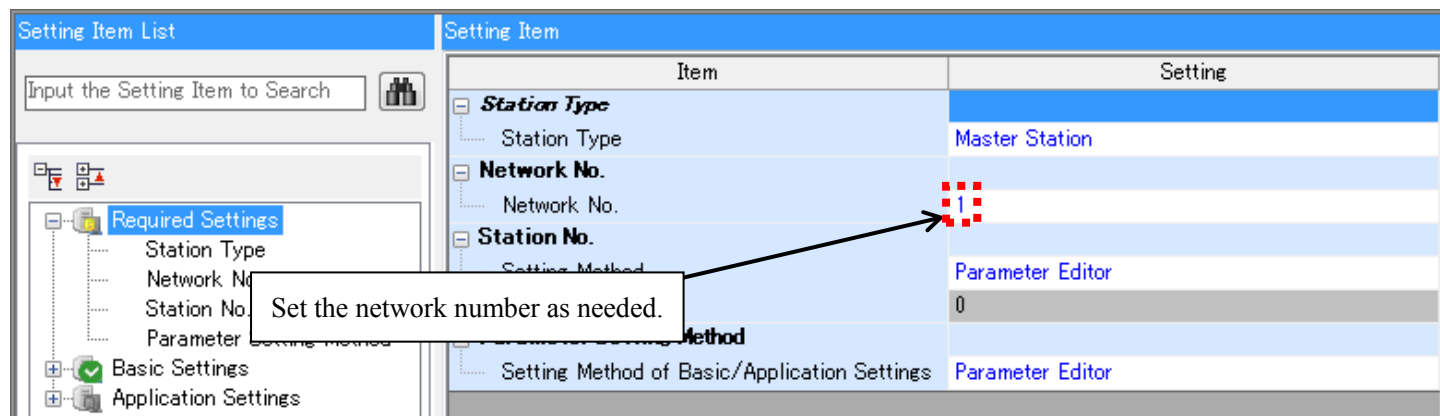


Figure 1.5.4-5: Module parameters (required settings)

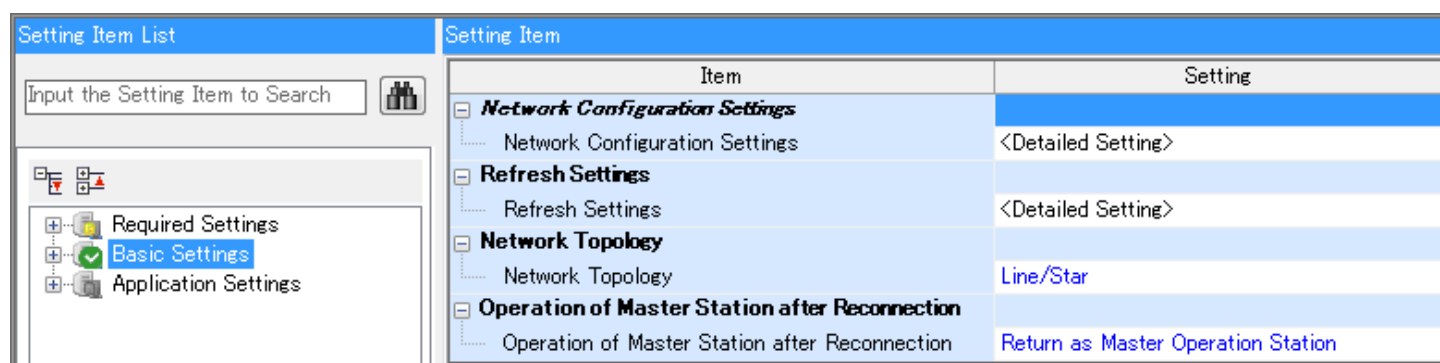


Figure 1.5.4-6: Module parameters (basic settings)

Under [Network Configuration Settings], set the communication unit to be connected.

You can also drag a "general-purpose remote device station" from the module list at the right and down it onto the configuration below.

Next, configure the station number and the RX/RX and RWw/RWr settings.

Set the station number (enclosed in a red frame) to the station number used by the communication unit.

Set the RX/RX and RWw/RWr settings (enclosed in a blue frame) so that the number of points for the RX/RX settings are 128 and the number of points for the RWw/RWr settings 64.

Using SC-HG1-CEF's CSP+ at this time ensures that the number of points for the RX/RX and RWw/RWr settings are entered. If you want to connect to multiple slave stations, configure them so that their ranges from the start to the end do not overlap with each other.

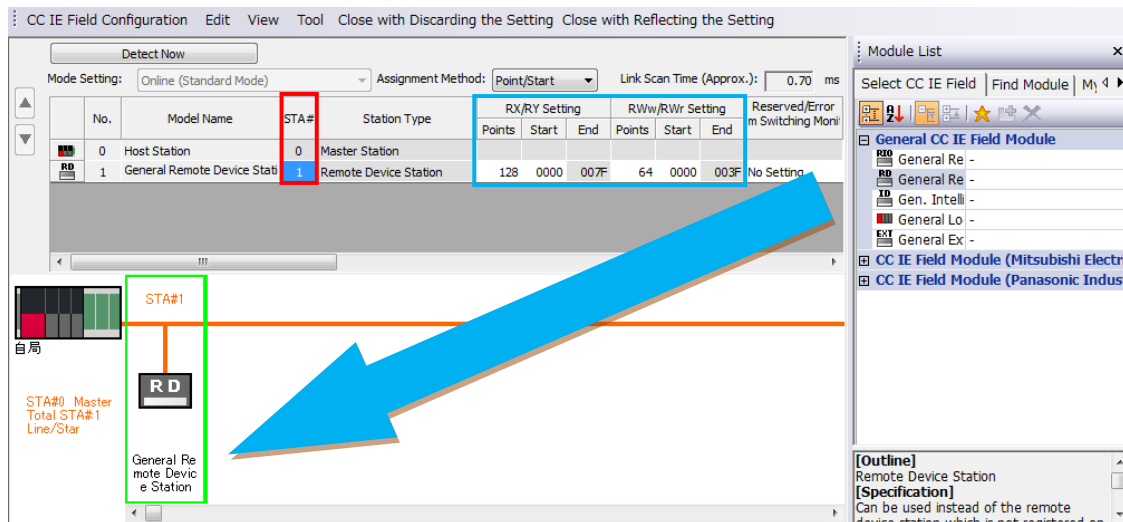


Figure 1.5.4-7: Network configuration settings

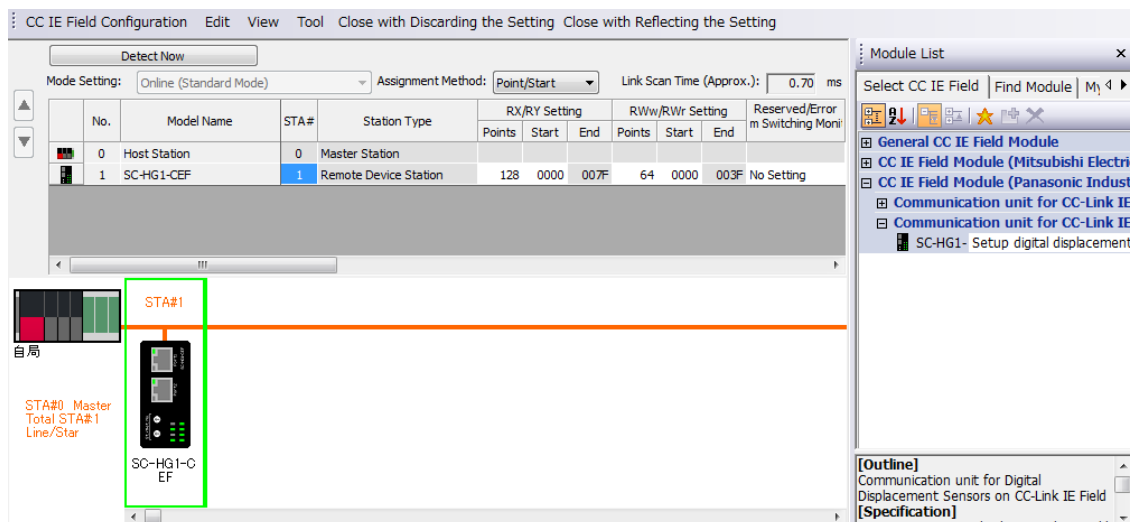


Figure 1.5.4-8: Network configuration settings (when using CSP+)

Under "Link refresh settings", you must check and set the information of all the slave stations connected to the CC-Link IE Field master/local module.

For more information, refer to " MELSEC iQ-R CC-Link IE Field Master/Local Module User's Manual (Application) ".

In the following example, this is set by changing [Device Assignment Method] to [Points/Start].

Link side settings

The number of link points must be set so that it matches all the slave station information.

The following table show the number of link points for SC-HG1-CEF. Check the number of link points as needed.

The first character on the link side should be 0.

Figure 1.5.4-9 shows an example where only one unit of SC-HG1-CEF is connected and used.

	RX / RY	RW _r / RW _w
Number of link points	128	64

CPU side settings

Specify the bit and word devices for the refresh target device name.

Also, the start may be arbitrarily set. When specifying the same device, take care to avoid overlapping from the start to end.

The "device names" and "start" you specify here relate to the global label configuration. For more information, see "1.4.3

Identifying the starting device".

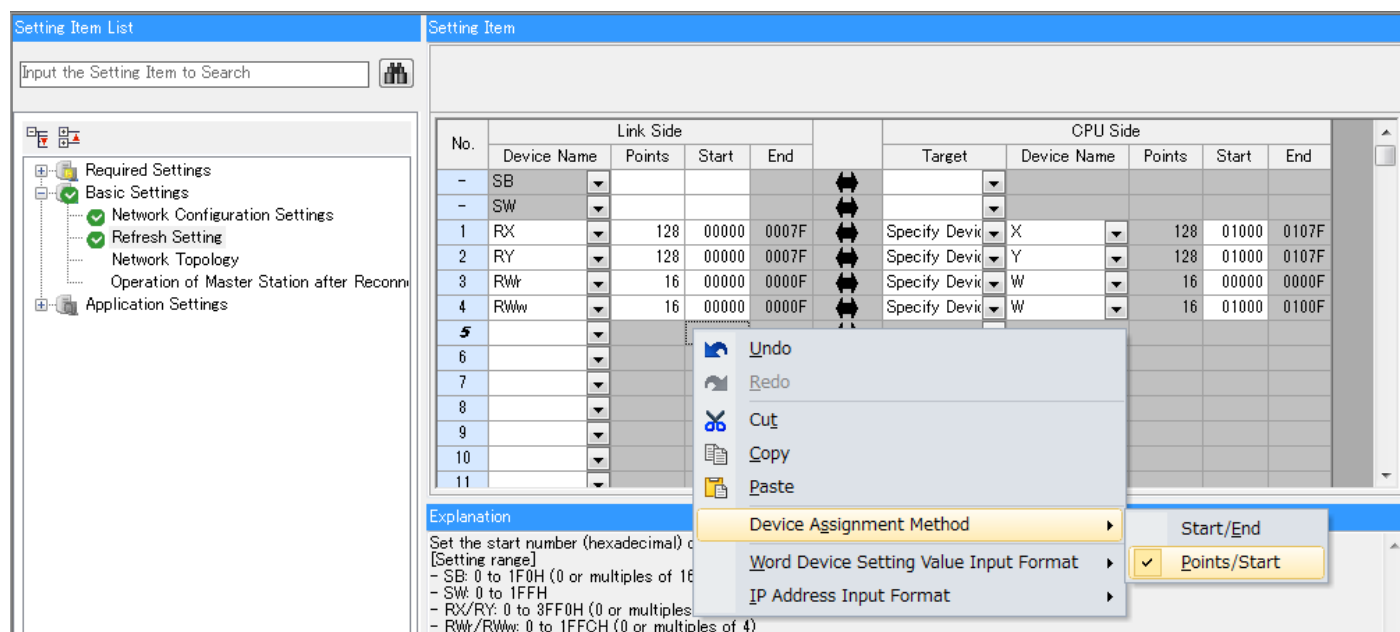


Figure 1.5.4-9: Link refresh settings

Appendix 1.6.
Connection check

Appendix 1.6.1
Checking SC-HG1-C (CC-Link mode1)

Upon completion of various settings, write the parameters to the CPU module and restart the PC to check the communication.

[Online] → [Monitor] → [Device/Buffer Memory Batch Monitor]

Once you enter the starting device in the device name box, all the information from the 1st station becomes visible. In this example, you check the Remote READY flag (X107B) of station number 1 to see whether or not SC-HG1-C (CC-Link mode1) can communicate.

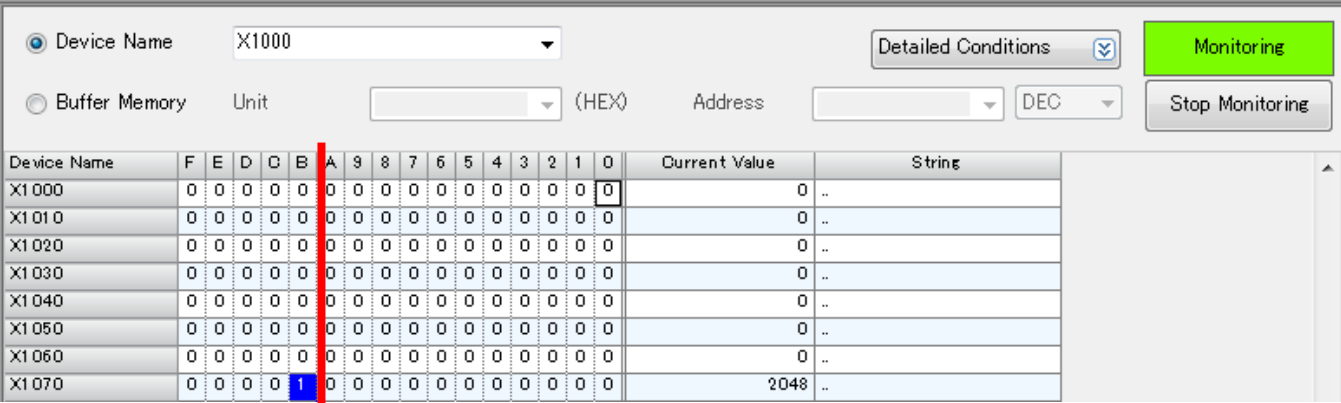


Figure 1.6.1-1: Checking the Remote READY flag

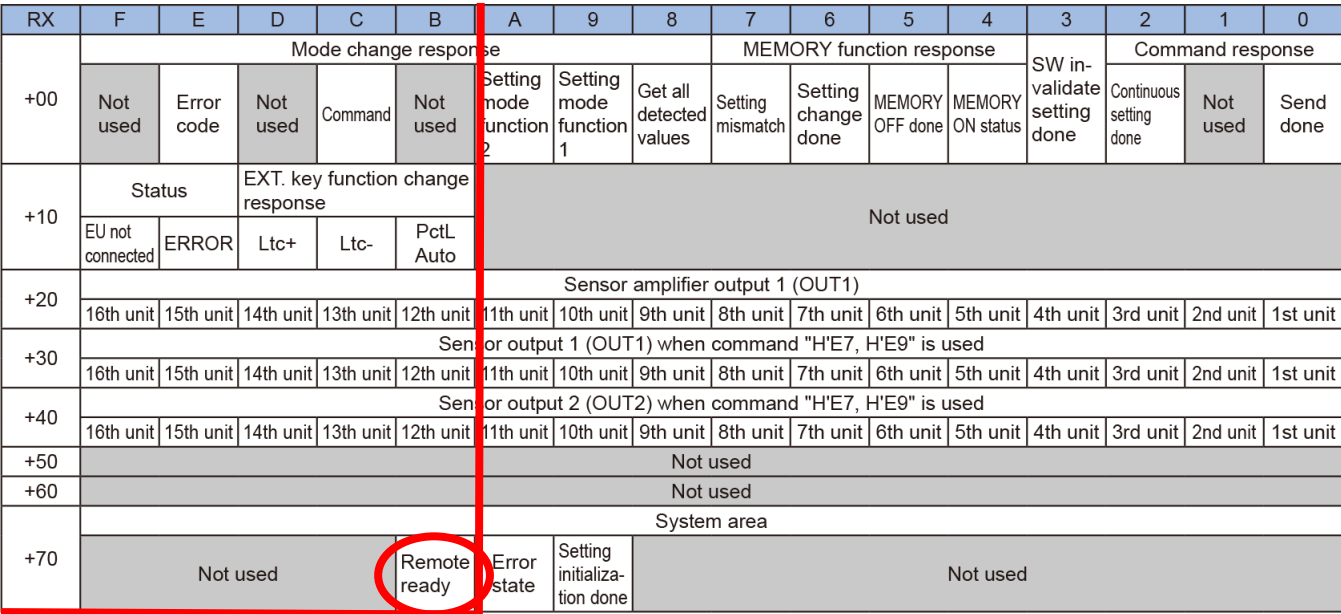


Figure 1.6.1-2: SC-HG1-C (CC-Link mode1) remote input (RX) memory map

Appendix 1.6.2
 Checking SC-HG1-CEF

Upon completion of various settings, write the parameters to the CPU module and restart the PC to check the communication.

[Online] → [Motor] → [Device/Buffer Memory Batch Monitor]

Once you enter the starting device in the device name box, all the information from the 1st station becomes visible.

In this example, you check the Remote READY flag (X107B) of station number 1 to see whether or not SC-HG1- CEF can communicate.

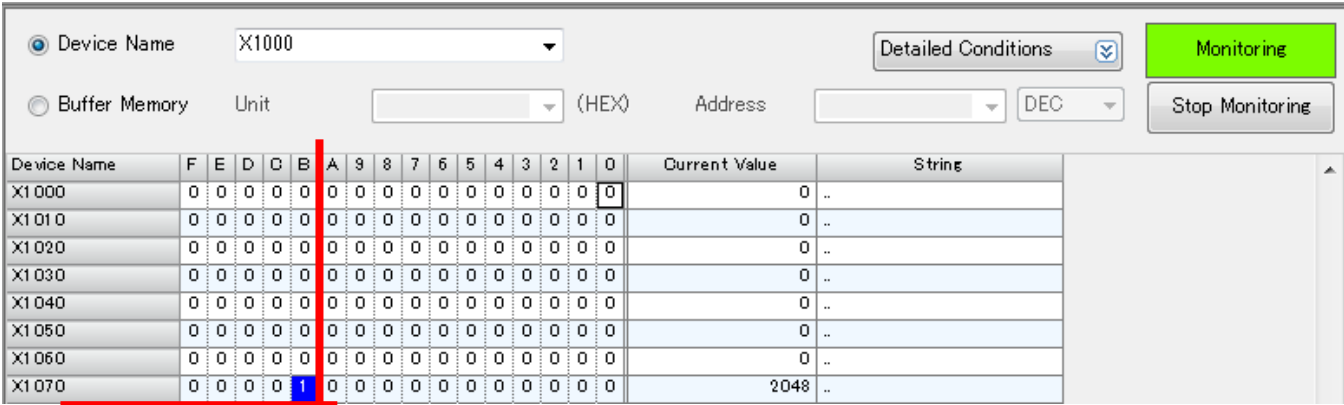


Figure 1.6.2-1: Checking the Remote READY flag

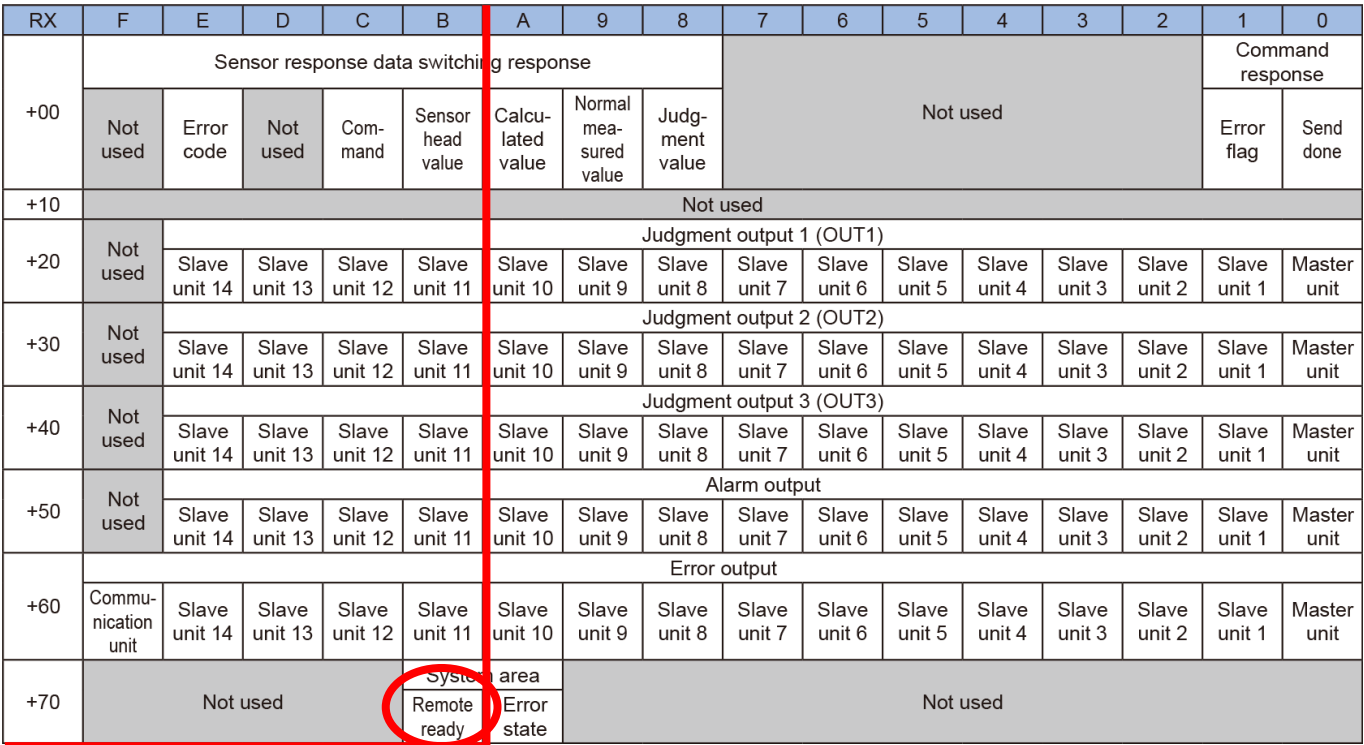
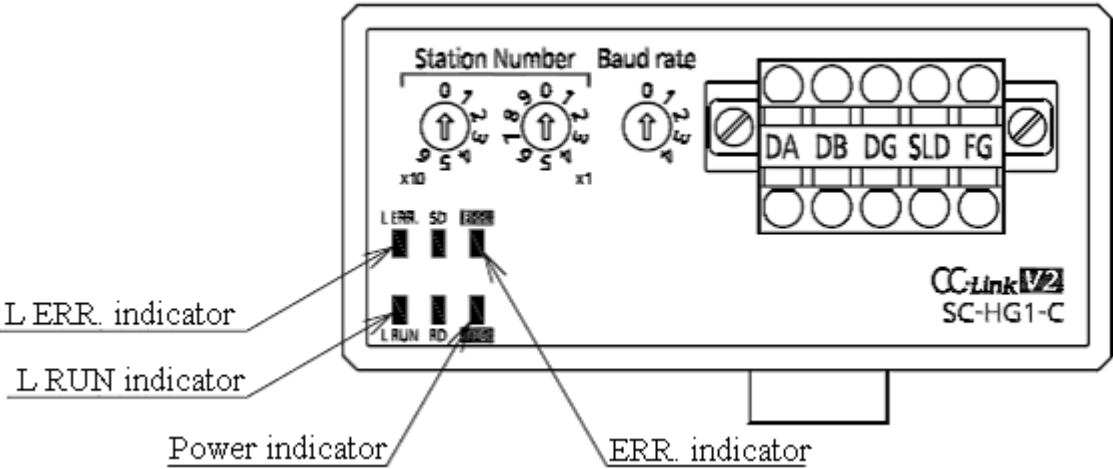


Figure 1.6.2-2: SC-HG1-CEF remote input (RX) memory map

Appendix 2. Troubleshooting

Appendix 2.1. Connection error (SC-HG1-C)

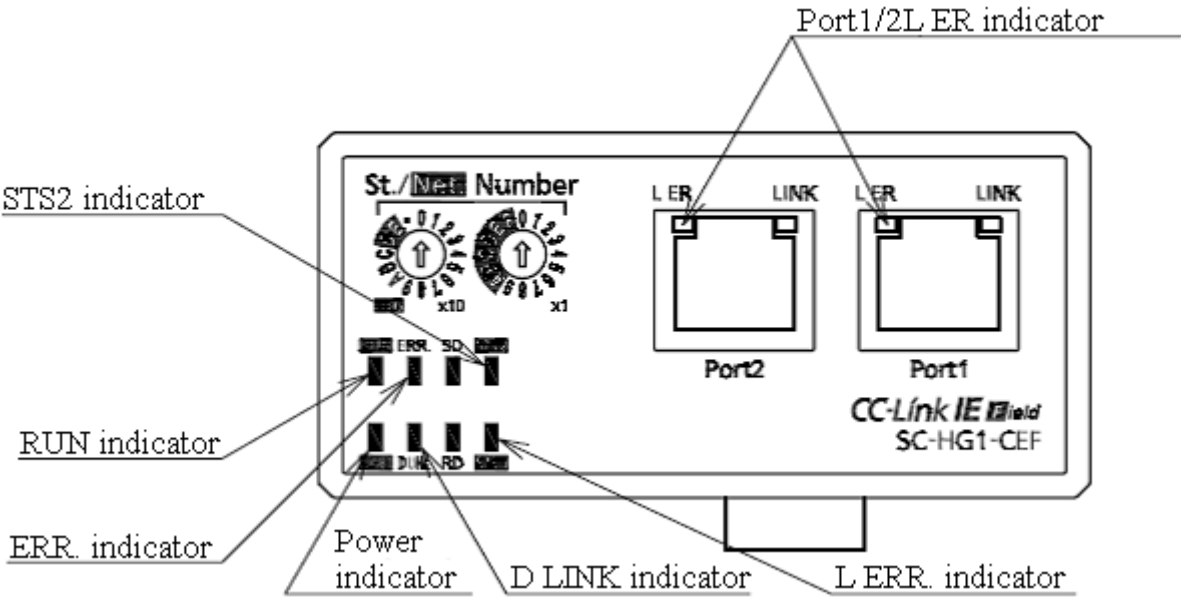
If the communication with the CC-Link master/local module fails or a module error occurs, you can check the error with the indicators of SC-HG1-C.



Indicator	Status	Description of error	Meaning
Power supply Indicator (Green)	OFF	Power supply error	<ul style="list-style-type: none"> • Check the power supply wiring of the master controller. • Check whether or not the power (24V) is supplied to the communication unit. • Check the connection between controllers. • The power supply capacity varies depending on the number of connected controllers. Referring to the specifications of the connected controllers, check if the power supply capacity is sufficient.
L ERR Indicator (Red)	ON	Station number setting error	<ul style="list-style-type: none"> • Check whether or not the station number is outside the valid range.
	Flashes	Settings changed after power ON	<ul style="list-style-type: none"> • Change the switch settings before power ON. • Turn back ON the power for the changes to take effect.
ERR. Indicator (Red)	ON	Communication error	<ul style="list-style-type: none"> • Check that the CC-Link connector is correctly connected. • Check that the parameter settings and switches are correctly configured. • Turn back ON the power.
	Flashes	Controller error	<ul style="list-style-type: none"> • Check if the modules are correctly connected. • Connect the communication unit before power ON. • Turn back ON the power.

Appendix 2.2. Connection error (SC-HG1-CEF)

If the communication with the CC-Link IE Field master/local module fails or a module error occurs, you can check the error with the indicators of SC-HG1-CEF.



■ Common to both normal mode and network number setting mode

Indicator	Status	Description of error	Meaning
Power supply indicator (Green)	OFF	Power supply error	<ul style="list-style-type: none">• Check the power supply wiring.• Check whether or not the power (24V) is supplied to the communication unit.• The power supply capacity varies depending on the controller type and the number of connected controllers. Confirm the specifications of the connected controllers.
STS2 indicator (Red)	ON	Mode selection error	<ul style="list-style-type: none">• Check if the mode setting switch is correctly set.

■ At the time of setting the network number

Indicator	Status	Description of error	Meaning
STS2 indicator (Red)	ON	Network number setting error	<ul style="list-style-type: none">• Check whether or not the network number setting is outside the valid range.

■ When in normal mode

Indicator	Status	Description of error	Meaning
RUN indicator (Green)	OFF	Station number setting error	<ul style="list-style-type: none"> Check whether or not the station number is outside the valid range.
D LINK indicator (Green)	Flashes	Communication setting error	<p>The CC-Link IE Field network may be incorrectly configured. Check the following settings.</p> <p><Network number setting></p> <ul style="list-style-type: none"> Check if the network number of the communication unit is the same as that of the master station. <p><Station number setting></p> <ul style="list-style-type: none"> Check if the station number of the communication unit is set to the station number assigned from the master station. Check if the station number configured on the communication unit is unique among the slave stations. <p><Other></p> <ul style="list-style-type: none"> Set the communication unit station type on the remote device station. The network status of the master station or communication unit is set to "link stopped" and the link stop period is ongoing.
ERR. indicator (Red)	ON	Transmission path error	<p>A failure related to network transmission paths may have occurred.</p> <ul style="list-style-type: none"> Check the communication cable for breaks and imperfect connection. If the communication cable is not an Ethernet cable compliant with the 1000BASE-T standards, communication may fail. Check that the cable length between stations is not in excess of 100 m. Check if the other stations and network devices (such as switching hubs) connected to the communication unit are powered ON. If the loopback function is configured on the master station, check if the ring connection is implemented. Check the noise environment around the communication unit and the communication cable.
	Flashes	Setting change error	<p>This error is displayed as an alarm if the station number is changed during operation after power-ON.</p> <ul style="list-style-type: none"> The alarmed station number does not take effect. Revert to the original station number or turn OFF and back ON the power for the change to take effect.
Port1/2 L ER indicator (Yellow)	ON	Transmission path error	<ul style="list-style-type: none"> If the loopback function is configured on the master station, check if the ring connection is implemented.



Indicator	Status	Description of error	Meaning
STS1 indicator (Green)	OFF	Controller-to-controller communication error	<ul style="list-style-type: none"> • Check if the controllers are correctly connected. • Do not connect the communication unit without turning OFF the master device. • Turn back ON the power.
STS2 indicator (Red)	ON	Communication unit error	<ul style="list-style-type: none"> • Check if the controllers are correctly connected. • Do not connect the communication unit without turning OFF the master device. • Check if the settings for sending commands to the controllers are correctly configured. Sending commands to the controllers requires you to correctly configure the send commands, send data, send destinations, and destination controllers.



Appendix 2.3. FB error code (o_uErrId) list

The following is a list of error codes output by the FBs in this FB library to Error Code (o_uErrId).

Error Code Hexadecimal (Decimal)	Description	Meaning
Input value error related error codes	100 (256)	The Station No. (i_uStationNo) is outside the valid range For CC-Link master/local module Set the Station No. (i_uStationNo) to a value from 1 to 64. For CC-Link IE Field master/local module Set the Station No. (i_uStationNo) to a value from 1 to 120.
	101 (257)	The information derived from the input Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) is not SC-HG1-C or SC-HG1-CEF. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
	102 (258)	CC-Link IE Field Flag (i_bIeFieldFlag) is ON and Execution Command (i_bEN) is ON Turn ON Execution Command (i_bEN) with CC-Link IE Field Flag (i_bIeFieldFlag) OFF.
	103 (259)	Response Data (i_uResponseData) is outside the valid range Specify a value within the valid range.
	104 (260)	Set to a controller where Set Controller (i_uSetController) is set to 0 or does not exist Make the value of Set Controller (i_uSetController) greater than 0 or turn ON All Controller Set (i_bAllSetRequest). Check if the setting is not applied to a controller beyond the maximum number of connected units. Also, check if the 15th bit of Set Controller (i_uSetController) is not ON.
	105 (261)	Input Command (i_uCommand) is outside the valid range Enter the correct command.
	106 (262)	Teaching Steps (i_uTeachStep) is outside the valid range Set Teaching Steps (i_uTeachStep) to a value not greater than 2.
	107 (263)	"1-point teaching" is selected and Shift Amount (i_udShiftAmount) is outside the valid range Selecting "1-point teaching" requires you to set Shift Amount (i_udShiftAmount) to a value within the valid range.
	108 (264)	Input Signal (i_bInputSignal) is ON and Execution Command (i_bEN) is ON Turn OFF Input Signal (i_bInputSignal) and then turn ON Execution Command (i_bEN)
	109 (265)	Hold Setting (i_uHoldSetting) is outside the valid range Specify a value within the valid range.



Error Code Hexadecimal (Decimal)		Description	Meaning
Input value error related error codes	10A (266)	Self Trigger Level (i_dSelfTriggerLevel) is outside the valid range	Specify a value from -1999999 to 1999999.
	10B (267)	Static Span (i_udStaticSpan) is outside the valid range	Specify a value from 0 to 1999999.
	10C (268)	Self Delay Timer (i_uSelfDelayTimer) is outside the valid range	Specify a value from 0 to 9999.
	10D (269)	Speed Mode (i_uResponseSpeed) is outside the valid range	Specify a value within the valid range.
	10E (270)	Write Lever Ratio (i_uLeverRatio) is outside the valid range	Specify a value within the valid range.
	10F (271)	Low Threshold (i_dLowThreshold) value is higher than the High Threshold (i_dHighThreshold) value.	Correct the settings so that the Low Threshold (i_dLowThreshold) value is lower than the High Threshold (i_dHighThreshold) value.
	110 (272)	Low Threshold (i_dLowThreshold) is outside the valid range	Specify a value within the valid range.
	111 (273)	High Threshold (i_dHighThreshold) is outside the valid range	Specify a value within the valid range.
	112 (274)	Hysterisis Value (i_udHysteresis) is outside the valid range	Specify a value within the valid range.
	113 (275)	Hysterisis Value (i_udHysteresis) is larger than the difference between Low Threshold (i_dLowThreshold) and High Threshold (i_dHighThreshold)	Make Hysterisis Value (i_udHysteresis) smaller than the difference between Low Threshold (i_dLowThreshold) and High Threshold (i_dHighThreshold)
	114 (276)	Preset Value (i_dPresetData) is outside the valid range	Specify a value within the valid range.
	115 (277)	Data Bank No. (i_uDataBankNo) is outside the valid range	Specify a value within the valid range.
	116 (278)	Alarm Delay (i_uAlarmDelay) is outside the valid range	Specify a value within the valid range.
	117 (279)	Alarm Threshold (i_dAlarmThreshold) is outside the valid range	Specify a value within the valid range.



Error Code Hexadecimal (Decimal)		Description	Meaning
FB behavior related error codes	200 (512)	Remote READY flag OFF	Check whether or not an error has occurred in the communication unit. Check if the Start I/O No.(i_uStartIONo) and the Station No. (i_uStationNo) settings correctly indicate the target communication unit.
	201 (513)	Execution Command (i_bEN) turned OFF before normal or error completion	Check that Normal Completion (o_bOK) or Error Completion (o_bErr) has turned ON and then turn OFF Execution Command (i_bEN). This error code is output also when Execution Command (i_bEN) is intentionally turned OFF before completion.
	202 (514)	Execution Command (i_bEN) was turned from ON to OFF and then turned from OFF to ON while Execution Status (o_bENO) was ON	Check that Execution Status (o_bENO) turned OFF and then turn ON Execution Command (i_bEN).
	203 (515)	Input Signal (i_bInputSignal) is turned from OFF to ON with Waiting Signal (o_bSignalWait) OFF	Check that Waiting Signal (o_bSignalWait) is ON and then turn ON Input Signal (i_bInputSignal). Teaching is not executed but the teaching operation has been changed. Check for any problem.
	FFFF (65535)	Module error occurrence	Check the Module Error Code (o_ud16ModuleErrId). For information on module error codes, see "Appendix 2.4 Module error code (o_u16ModuleErrId) list".



Appendix 2.4. Module Error Code (o_ud16 ModuleErrId) list

Some FBs in this FB library return an error code to Module Error Code (o_u16ModuleErrId) when a module error occurs (with o_uErrId being a hexadecimal value of "FFFF"). Module error codes that may be output are listed below.

Error Code Hexadecimal (Decimal)	Description	Meaning
Controller operation related error codes	64 (100)	A command not included in the command list was received. Enter the correct command.
	65 (101)	A setting parameter outside the valid range was received. Enter a valid parameter.
	66 (102)	Write was requested with settings not supported by the target controller. Enter a valid parameter.
	190 (400)	Calibration was attempted with no alarm specified or the display range exceeded. The head value is invalid. Check the head status.
	191 (401)	Calibration was not correctly performed. Calibration failed. For information on the calibration procedure, refer to "Contact-Type Digital Displacement Sensor HG-S Series User's Manual ".
	1F4 (500)	Teaching was attempted with no alarm specified or the display range exceeded. The head value is invalid. Check the head status.
	1F5 (501)	Teaching was not performed. Teaching failed. For information on the teaching procedure, refer to "Contact-Type Digital Displacement Sensor HG-S Series User's Manual ".
	258 (600)	Presetting was attempted with no alarm specified or the display range exceeded. The head value is invalid. Check the head status.
	2BC (700)	Bank loading or saving was attempted with the bank number outside the valid range. Enter a valid parameter.
	320 (800)	Failed to write to EEPROM. The controller may be faulty. Check the controller status.
	384 (900)	Controller did not respond within 100 ms of a command request. Check the controller connection status. Check for faulty controllers.



Error Code Hexadecimal (Decimal)		Description	Meaning
Communication unit operation related error codes	44C (1100)	Before receiving a response to a request, the next request was received.	Before receiving the response to a request, do not send the next request. Any request sent before receiving the response is ignored.
	4B0 (1200)	The response to a request timed out.	Check if the communication unit and controllers are correctly connected.
	76C (1900)	A normal command was not sent. The measurement value block contains invalid information. The communication unit processing timed out.	Check the communication unit is correctly connected and correctly operating.
	7D0 (2000)	Communication between the communication unit and controller failed.	Check if the communication unit and controllers are correctly connected and then turn back ON the power. If the communication still fails, the controller may be faulty.
	898 (2200)	A request was sent to a non-connected slave controllers.	This FB library is designed to output '102' to Error Code (o_uErrId) and therefore '898' (hexadecimal) is not output to Module Error Code (o_ud16ModuleErrId). Check if any other ladder program does not send a command request to non-existent slave controllers.
	960 (2400)	A command request was receiving during recovery from a horizontal coupling error.	A command was requested during recovery. Do not request a command until the controller finishes processing.
	9C4 (2500)		
	44C (1100)	Before receiving a response to a request, the next request was received.	Before receiving the response to a request, do not send the next request. Any request sent before receiving the response is ignored.
	A28 (2600)	The controller is busy.	Another command was requested while the controller was busy. Do not request a command until the controller finishes processing.
	AF0 (2800)	A CRC error occurred during controller-to-controller communication.	A CRC error may have occurred due to noise. Check and correct the wiring.



Error Code Hexadecimal (Decimal)		Description	Meaning
Communication unit operation related error codes	B54 (2900)	A timeout error occurred during controller-to-controller communication.	Check the controller connection status. Check for faulty controllers.
	C1C (3100)	The number of connected slave controllers is more than 14.	You can connect up to 14 slave controllers. Check and correct the number of slave controllers connected.
	C80 (3200)	CC-Link communication is down.	Data link was disconnected. Check if the connectors are correctly connected.
	FFF (4095)	Could not accept a request because of processing a command.	A command was requested while the controller was processing another command. Do not request a command until the controller finishes processing.



Appendix 3. FB Library Use Examples

(1) System configuration

For information on the system configuration, see "1.3 System configuration example".

In the following example, SC-HG1-C is connected to the CC-Link master/local module and eight controllers are connected.

(2) List of devices in use

■ Common external input

Device	FB name		Purpose (what occurs when FB is ON)
M0	(a)	P+SUNX-SC-HG1_InitializeUnit_R	Execution Command ON
	(b)	P+SUNX-SC-HG1_ClearError_R	
	(c)	P+SUNX-SC-HG1_CheckOutData_R	
	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	
	(e)	P+SUNX-SC-HG1_ExecuteTeaching_R	
	(f)	P+SUNX-SC-HG1_SetOutHold_R	
	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	
	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	
	(i)	P+SUNX-SC-HG1_SetOutputMode_R	
	(j)	P+SUNX-SC-HG1_SetThreshold_R	
	(k)	P+SUNX-SC-HG1_ExecutePreset_R	
	(l)	P+SUNX-SC-HG1_SetDataBank_R	
	(m)	P+SUNX-SC-HG1_SetAlarm_R	
	(n)	P+SUNX-SC-HG1_CheckMaintenance_R	
M1	(o)	P+SUNX-SC-HG1_ExecuteKeyLock_R	Read Flag ON
	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	
	(f)	P+SUNX-SC-HG1_SetOutHold_R	
	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	
	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	
	(i)	P+SUNX-SC-HG1_SetOutputMode_R	
	(k)	P+SUNX-SC-HG1_ExecutePreset_R	



Device	FB name		Purpose (what occurs when FB is ON)
M5	(k)	P+SUNX-SC-HG1_ExecutePreset_R	Reset Flag ON
	(m)	P+SUNX-SC-HG1_SetAlarm_R	
	(o)	P+SUNX-SC-HG1_ExecuteKeyLock_R	
D1	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	Set Controller
	(e)	P+SUNX-SC-HG1_ExecuteTeaching_R	
	(f)	P+SUNX-SC-HG1_SetOutHold_R	
	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	
	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	
	(i)	P+SUNX-SC-HG1_SetOutputMode_R	
	(j)	P+SUNX-SC-HG1_SetThreshold_R	
	(k)	P+SUNX-SC-HG1_ExecutePreset_R	
	(l)	P+SUNX-SC-HG1_SetDataBank_R	
	(m)	P+SUNX-SC-HG1_SetAlarm_R	



■ External input

Device	FB name		Purpose (what occurs when FB is ON)
D0	(c)	P+SUNX-SC-HG1_CheckOutData_R	Response Data
M2	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	All Controller Set ON
D2			Input Command
D3,D4			Command Data
M3	(e)	P+SUNX-SC-HG1_ExecuteTeaching_R	Input Signal ON
D5			Teaching Steps
D6,D7			Shift Amount
D8	(f)	P+SUNX-SC-HG1_SetOutHold_R	Hold Setting
D9,D10			Self Trigger Level
D11,D12			Static Span
D13			Self Delay Timer
D14	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	Speed Mode
D15	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	Write Lever Ratio
M4	(i)	P+SUNX-SC-HG1_SetOutputMode_R	NC Flag
D16,D17	(j)	P+SUNX-SC-HG1_SetThreshold_R	Low Threshold
D18,D19			High Threshold
D20,D21			HYS Setting
D22,D23	(k)	P+SUNX-SC-HG1_ExecutePreset_R	Preset Value
M6	(l)	P+SUNX-SC-HG1_SetDataBank_R	Load Flag ON
D24			Data Bank No.
D25	(m)	P+SUNX-SC-HG1_SetAlarm_R	Alarm Delay
D26,D27			Alarm Setting Value
M7	(o)	P+SUNX-SC-HG1_ExecuteKeyLock_R	Set Eco Mode



■ Common external output

Device	FB name		Purpose
M100	(a)	P+SUNX-SC-HG1_InitializeUnit_R	FB execution status
	(b)	P+SUNX-SC-HG1_ClearError_R	
	(c)	P+SUNX-SC-HG1_CheckOutData_R	
	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	
	(e)	P+SUNX-SC-HG1_ExecuteTeaching_R	
	(f)	P+SUNX-SC-HG1_SetOutHold_R	
	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	
	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	
	(i)	P+SUNX-SC-HG1_SetOutputMode_R	
	(j)	P+SUNX-SC-HG1_SetThreshold_R	
	(k)	P+SUNX-SC-HG1_ExecutePreset_R	
	(l)	P+SUNX-SC-HG1_SetDataBank_R	
	(m)	P+SUNX-SC-HG1_SetAlarm_R	
	(n)	P+SUNX-SC-HG1_CheckMaintenance_R	
	(o)	P+SUNX-SC-HG1_ExecuteKeyLock_R	
M101	(a)	P+SUNX-SC-HG1_InitializeUnit_R	Normal completion of FB
	(b)	P+SUNX-SC-HG1_ClearError_R	
	(c)	P+SUNX-SC-HG1_CheckOutData_R	
	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	
	(e)	P+SUNX-SC-HG1_ExecuteTeaching_R	
	(f)	P+SUNX-SC-HG1_SetOutHold_R	
	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	
	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	
	(i)	P+SUNX-SC-HG1_SetOutputMode_R	
	(j)	P+SUNX-SC-HG1_SetThreshold_R	
	(k)	P+SUNX-SC-HG1_ExecutePreset_R	
	(l)	P+SUNX-SC-HG1_SetDataBank_R	
	(m)	P+SUNX-SC-HG1_SetAlarm_R	
	(n)	P+SUNX-SC-HG1_CheckMaintenance_R	
	(o)	P+SUNX-SC-HG1_ExecuteKeyLock_R	



Device	FB name		Purpose
M102	(a)	P+SUNX-SC-HG1_InitializeUnit_R	Error completion of FB
	(b)	P+SUNX-SC-HG1_ClearError_R	
	(c)	P+SUNX-SC-HG1_CheckOutData_R	
	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	
	(e)	P+SUNX-SC-HG1_ExecuteTeaching_R	
	(f)	P+SUNX-SC-HG1_SetOutHold_R	
	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	
	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	
	(i)	P+SUNX-SC-HG1_SetOutputMode_R	
	(j)	P+SUNX-SC-HG1_SetThreshold_R	
	(k)	P+SUNX-SC-HG1_ExecutePreset_R	
	(l)	P+SUNX-SC-HG1_SetDataBank_R	
	(m)	P+SUNX-SC-HG1_SetAlarm_R	
	(n)	P+SUNX-SC-HG1_CheckMaintenance_R	
	(o)	P+SUNX-SC-HG1_ExecuteKeyLock_R	
D100	(a)	P+SUNX-SC-HG1_InitializeUnit_R	FB error code
	(b)	P+SUNX-SC-HG1_ClearError_R	
	(c)	P+SUNX-SC-HG1_CheckOutData_R	
	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	
	(e)	P+SUNX-SC-HG1_ExecuteTeaching_R	
	(f)	P+SUNX-SC-HG1_SetOutHold_R	
	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	
	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	
	(i)	P+SUNX-SC-HG1_SetOutputMode_R	
	(j)	P+SUNX-SC-HG1_SetThreshold_R	
	(k)	P+SUNX-SC-HG1_ExecutePreset_R	
	(l)	P+SUNX-SC-HG1_SetDataBank_R	
	(m)	P+SUNX-SC-HG1_SetAlarm_R	
	(n)	P+SUNX-SC-HG1_CheckMaintenance_R	
	(o)	P+SUNX-SC-HG1_ExecuteKeyLock_R	



Device	FB name		Purpose
D101 to D132	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	Module Error Code
	(e)	P+SUNX-SC-HG1_ExecuteTeaching_R	
	(f)	P+SUNX-SC-HG1_SetOutHold_R	
	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	
	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	
	(i)	P+SUNX-SC-HG1_SetOutputMode_R	
	(j)	P+SUNX-SC-HG1_SetThreshold_R	
	(k)	P+SUNX-SC-HG1_ExecutePreset_R	
	(l)	P+SUNX-SC-HG1_SetDataBank_R	
	(m)	P+SUNX-SC-HG1_SetAlarm_R	
	(n)	P+SUNX-SC-HG1_CheckMaintenance_R	
	(o)	P+SUNX-SC-HG1_ExecuteKeyLock_R	

■ External output

Device	FB name		Purpose
D140 to D142	(c)	P+SUNX-SC-HG1_CheckOutData_R	Sensor Output
D143 to D172			Detected Value
D180 to 209	(d)	P+SUNX-SC-HG1_ExecuteCommand_R	Command Response
M103	(e)	P+SUNX-SC-HG1_ExecuteTeaching_R	Waiting Signal
D210 to D224	(f)	P+SUNX-SC-HG1_SetOutHold_R	Read Hold Setting
D225 to D239	(g)	P+SUNX-SC-HG1_SetResponseSpeed_R	Read Speed Mode
D240 to D254	(h)	P+SUNX-SC-HG1_SetLeverRatio_R	Read Lever Ratio
D255	(i)	P+SUNX-SC-HG1_SetOutputMode_R	Read Output Operation
D260 to D289	(j)	P+SUNX-SC-HG1_SetThreshold_R	Read Low Threshold
D290 to D319			Read High Threshold
D320 to D349			Read Hysteresis
D350	(k)	P+SUNX-SC-HG1_ExecutePreset_R	Read Preset Data
D351 to D365	(m)	P+SUNX-SC-HG1_SetAlarm_R	Read Alarm Delay
D370 to D399			Read Alarm Threshold
D400 to D429	(n)	P+SUNX-SC-HG1_CheckMaintenance_R	Total Stroke Operation Log
D430 to D459			Maximum Peak Value
D460 to D489			Maximum Peak Value Operation Log
D490 to D519			Over Stroke Log



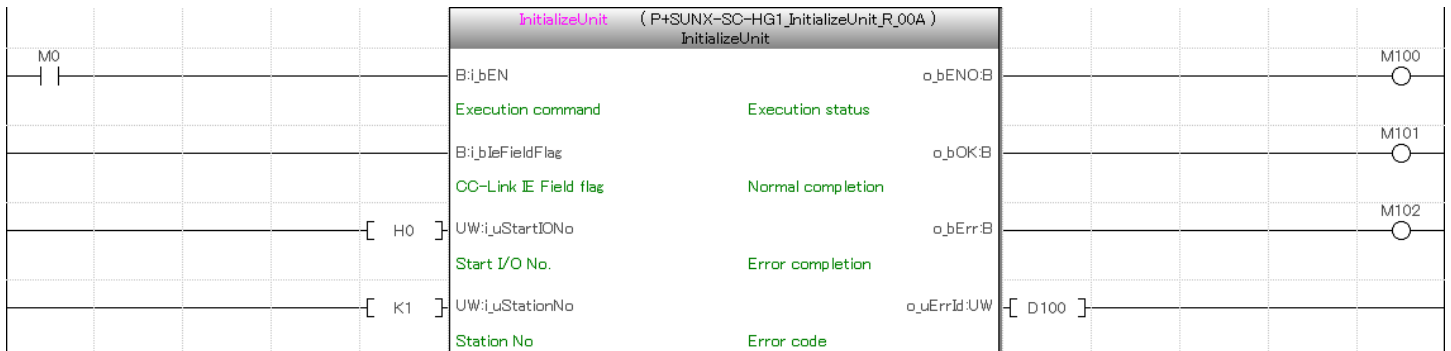
(3) Program

■ Common settings

Label name	Setting values	Description
CC-Link IE Field flag	OFF	Turn OFF this flag when you run this FB on an SC-HG1-C connected to the CC-Link master/local module.
Start I/O No.	H0	Specify the Start XY address of the RJ71EN71 to communicate with.
Station No.	K1	Specify the station number of the communication unit you want to operate.

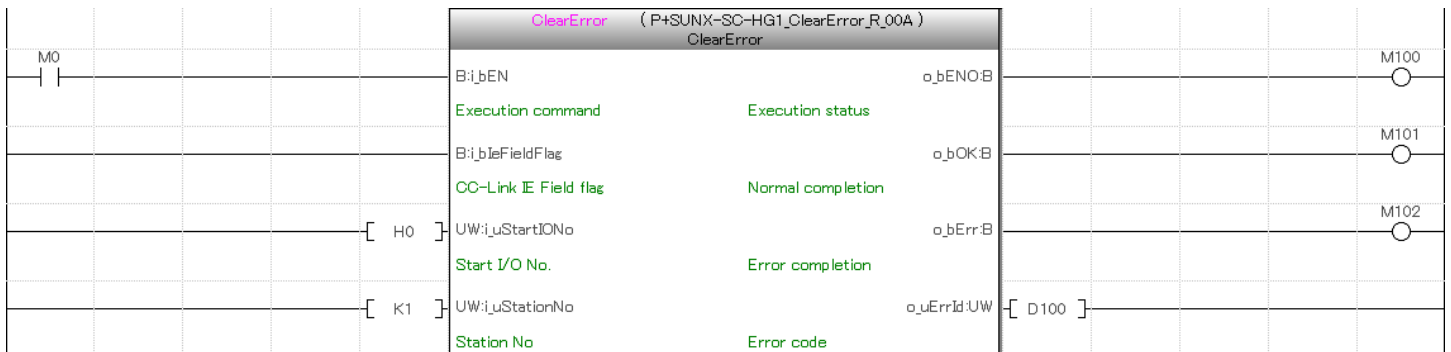
(a) P+SUNX-SC-HG1_InitializeUnit_R (initialization)

When M0 is turned ON, this FB initializes the SC-HG1-C with its station number set to 1.



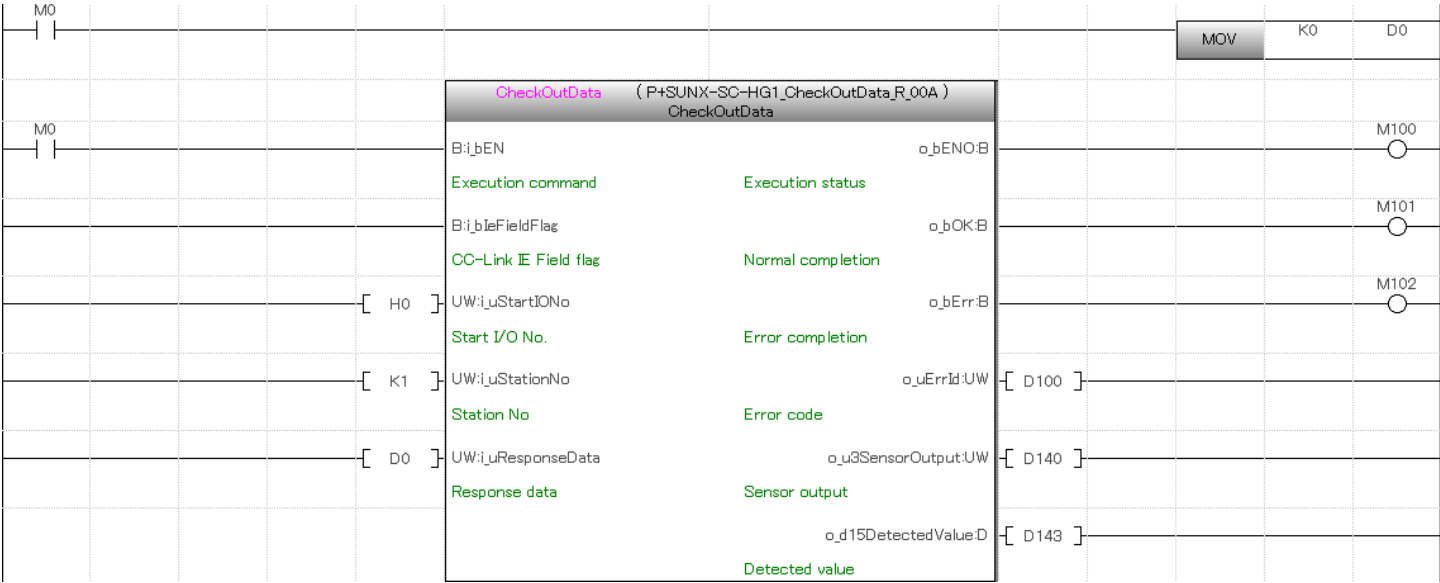
(b) P+SUNX-SC-HG1_ClearError_R (error clear)

When M0 is turned ON, this FB clears the error of the SC-HG1-C with its station number set to 1.



(c) P+SUNX-SC-HG1_CheckOutData_R (controller output read)

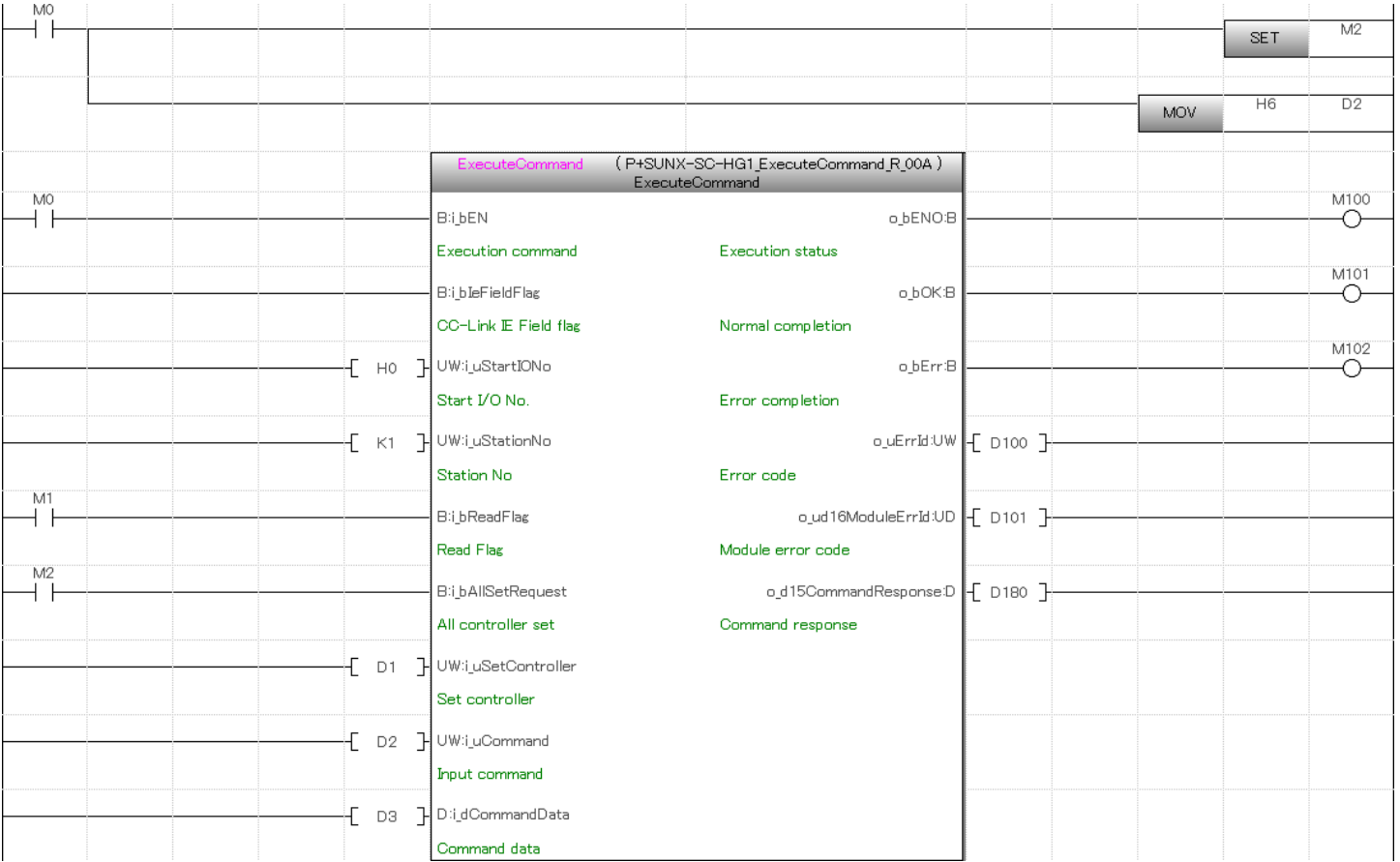
When M0 is turned ON, this FB outputs the output values and judgment values of the controller connected to the SC-HG1-C with its station number set to 1 to the 3 words from D140 to D142 and to the 30 words from D143 to D172, respectively.



(d) P+SUNX-SC-HG1_ExecuteCommand_R (execute specified command)

When M0 is turned ON, this FB executes the "H6" command (initialization) on all the controllers connected to the SC-HG1-C with its station number set to 1.

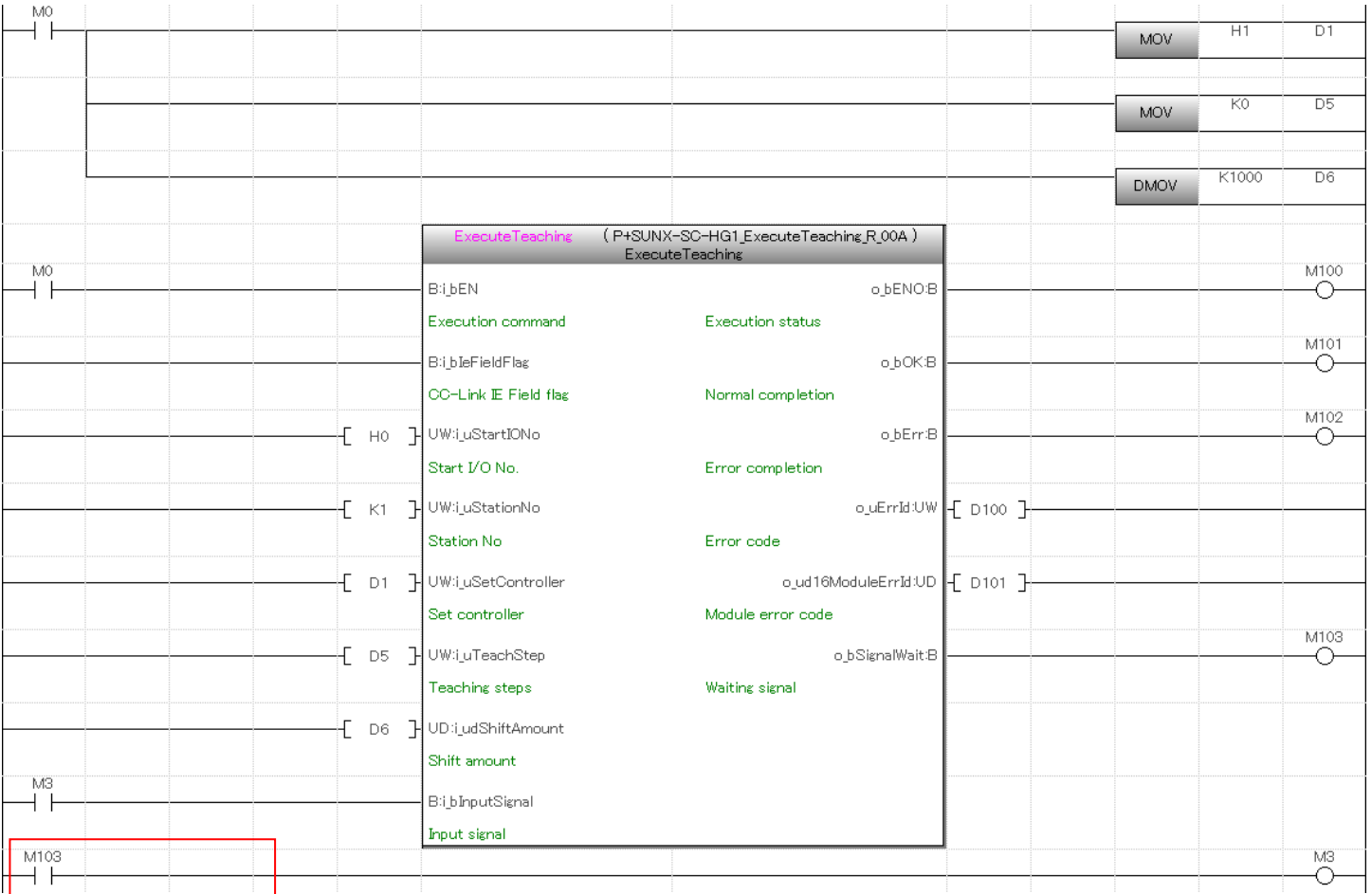
You do not have to enter the value of D1 because it is disabled when M2 is turned ON.



(e) P+SUNX-SC-HG1_ExecuteTeaching_R (execute teaching)

When M0 is turned ON, this FB executes $\pm 0.1\text{mm}$ 1-point teaching on the first controller connected to the SC-HG1-C with its station number set to 1.

In the following example, M3 is turned ON when M103 is turned ON; you can, however, execute teaching at any time by adding an contact for external input or ladder operation behind the M103 contact.

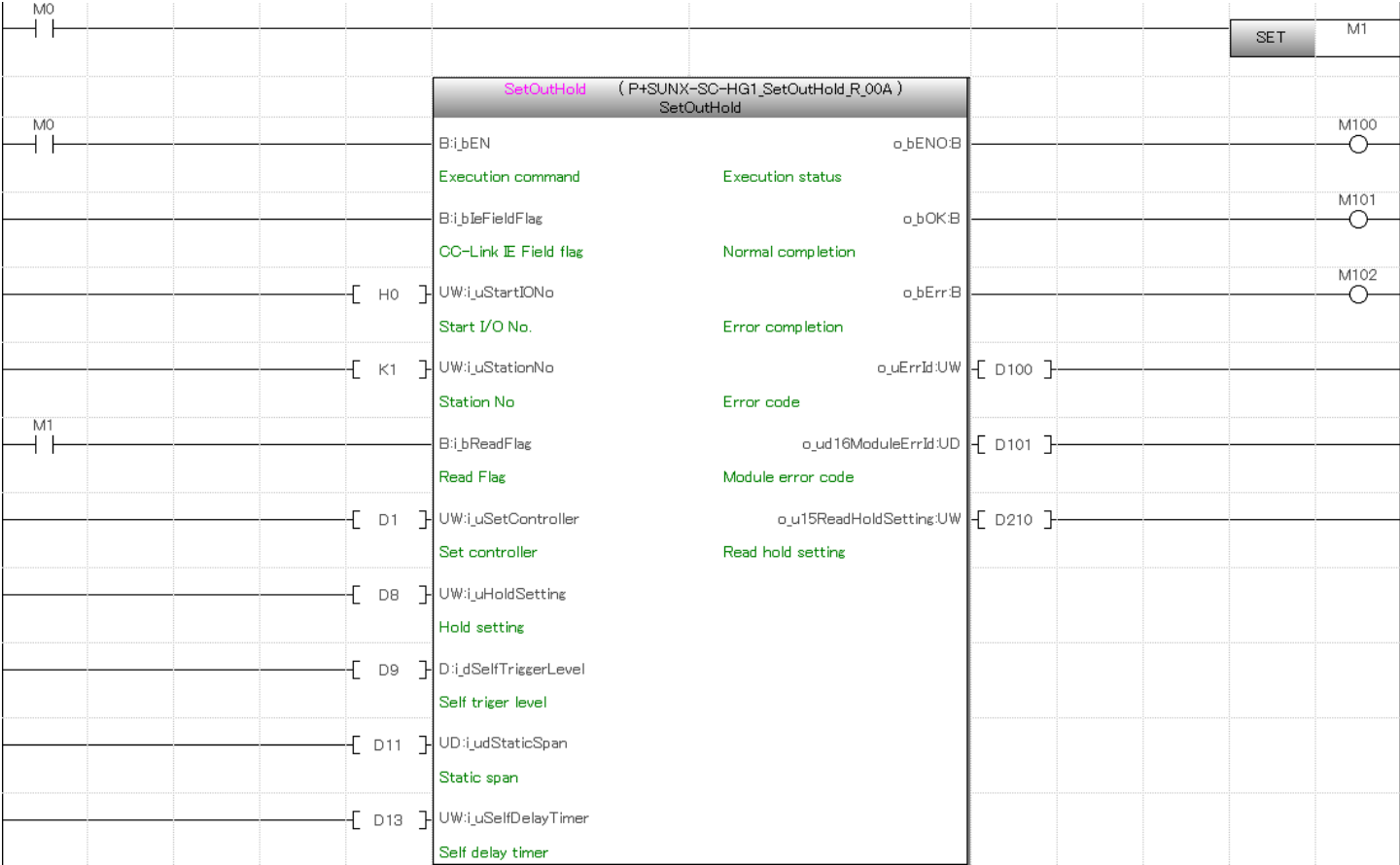


Add a contact for external input or ladder operation, as needed, to turn ON M3 (Input signal) at your desired time.

Be sure to provide the M103 (Teaching Wait Flag) to turn ON M3 (Input signal) because otherwise an FB error may occur.

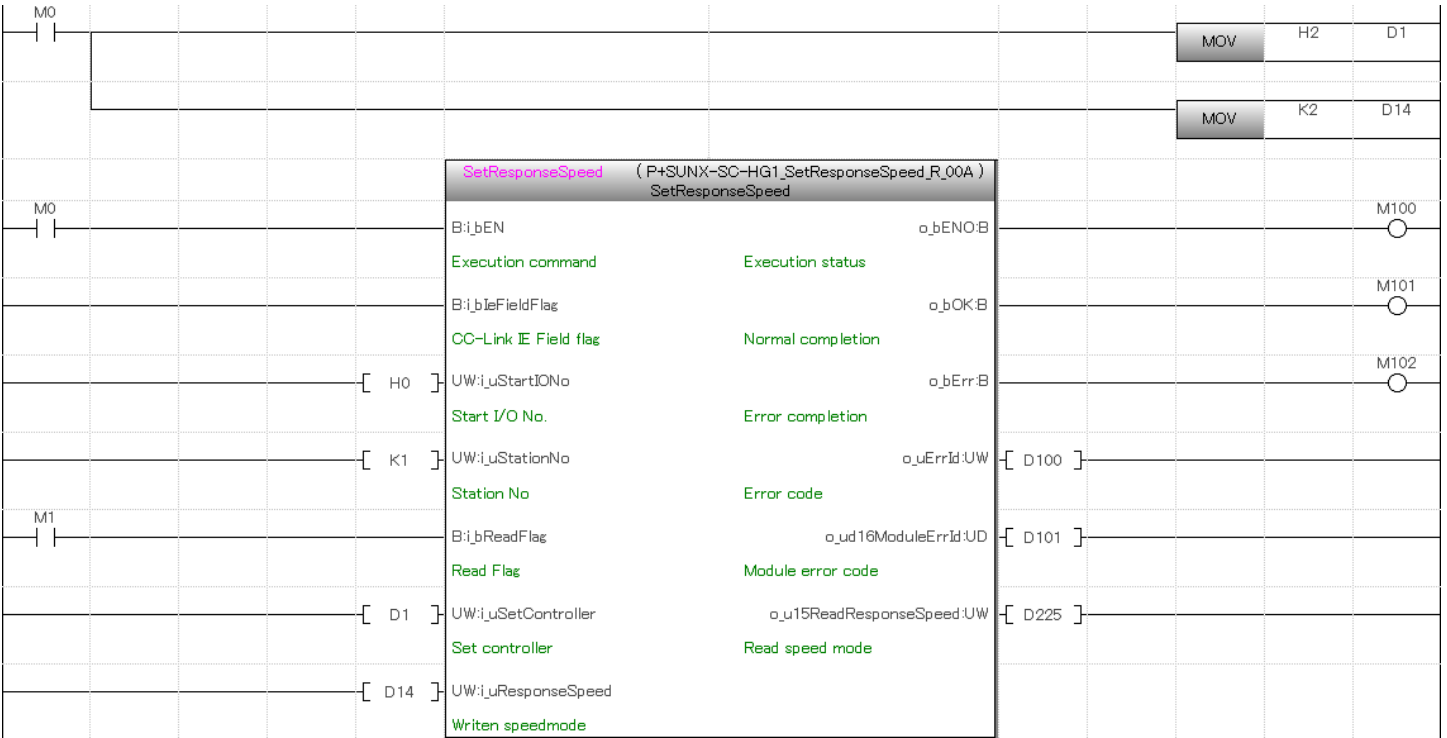
(f) P+SUNX-SC-HG1_SetOutHold_R (output operation setting)

When M0 is turned ON, this FB outputs the hold settings for all the controllers connected to the SC-HG1-C with its station number set to 1 to the 15 words from D210 to D224.



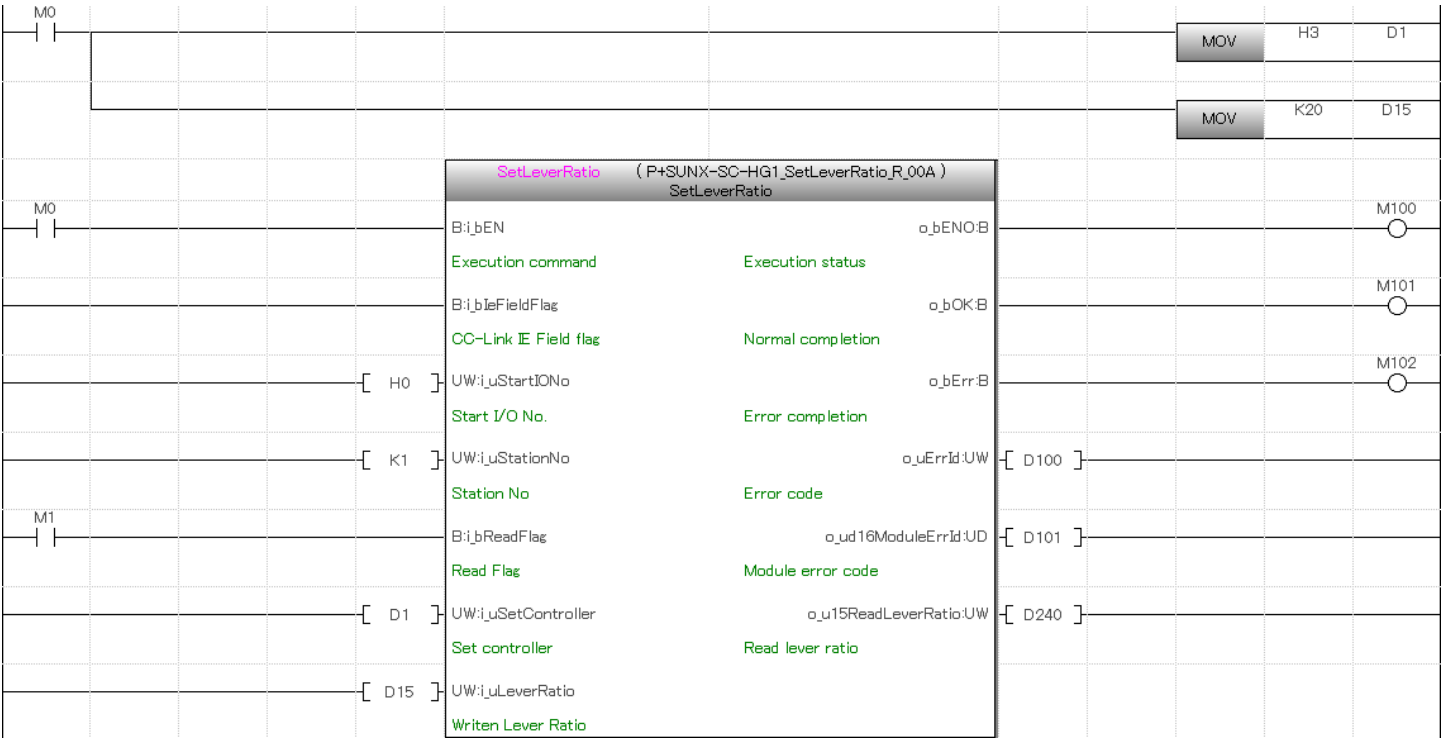
(g) P+SUNX-SC-HG1_SetResponseSpeed_R (write speed mode)

When M0 is turned ON, this FB sets the response speed to 10 ms on the second controller connected to the SC-HG1-C with its station number set to 1.



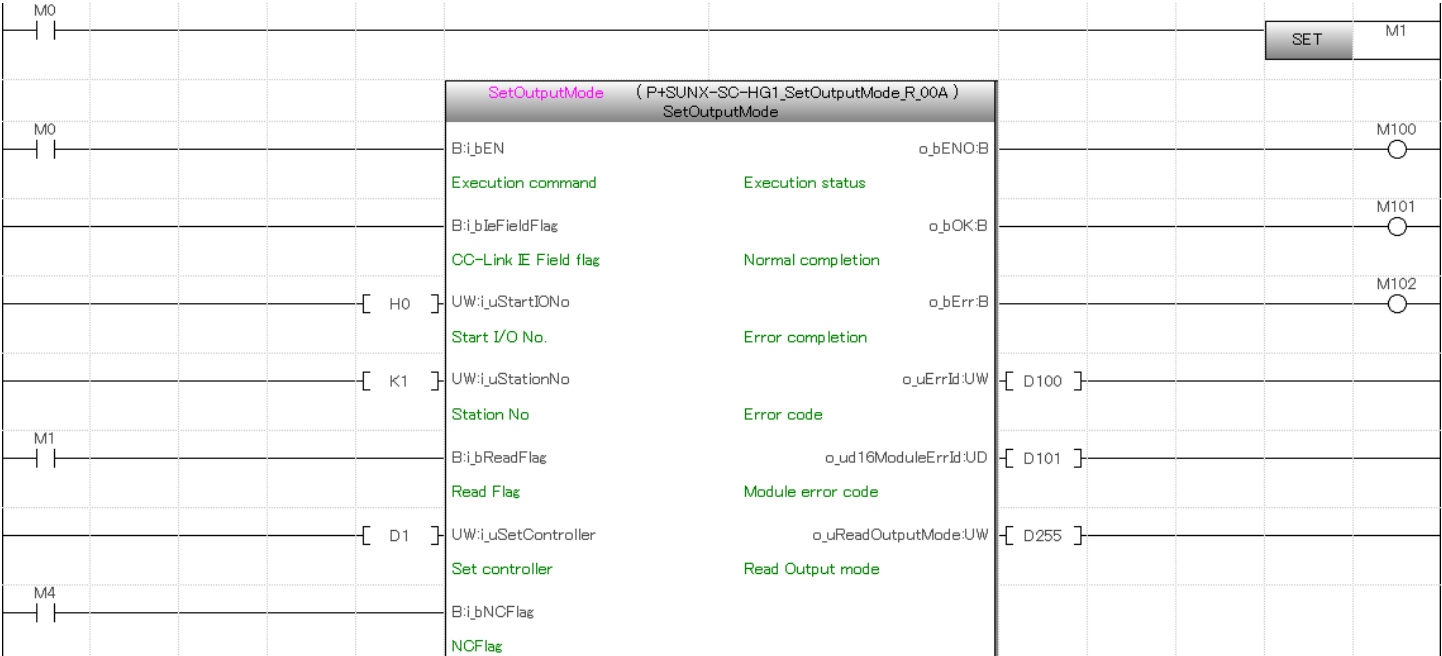
(h) P+SUNX-SC-HG1_SetLeverRatio_R (lever ratio setting)

When M0 is turned ON, this FB sets the lever ratio to 2.0 on the first and second controllers connected to the SC-HG1-C with its station number set to 1.



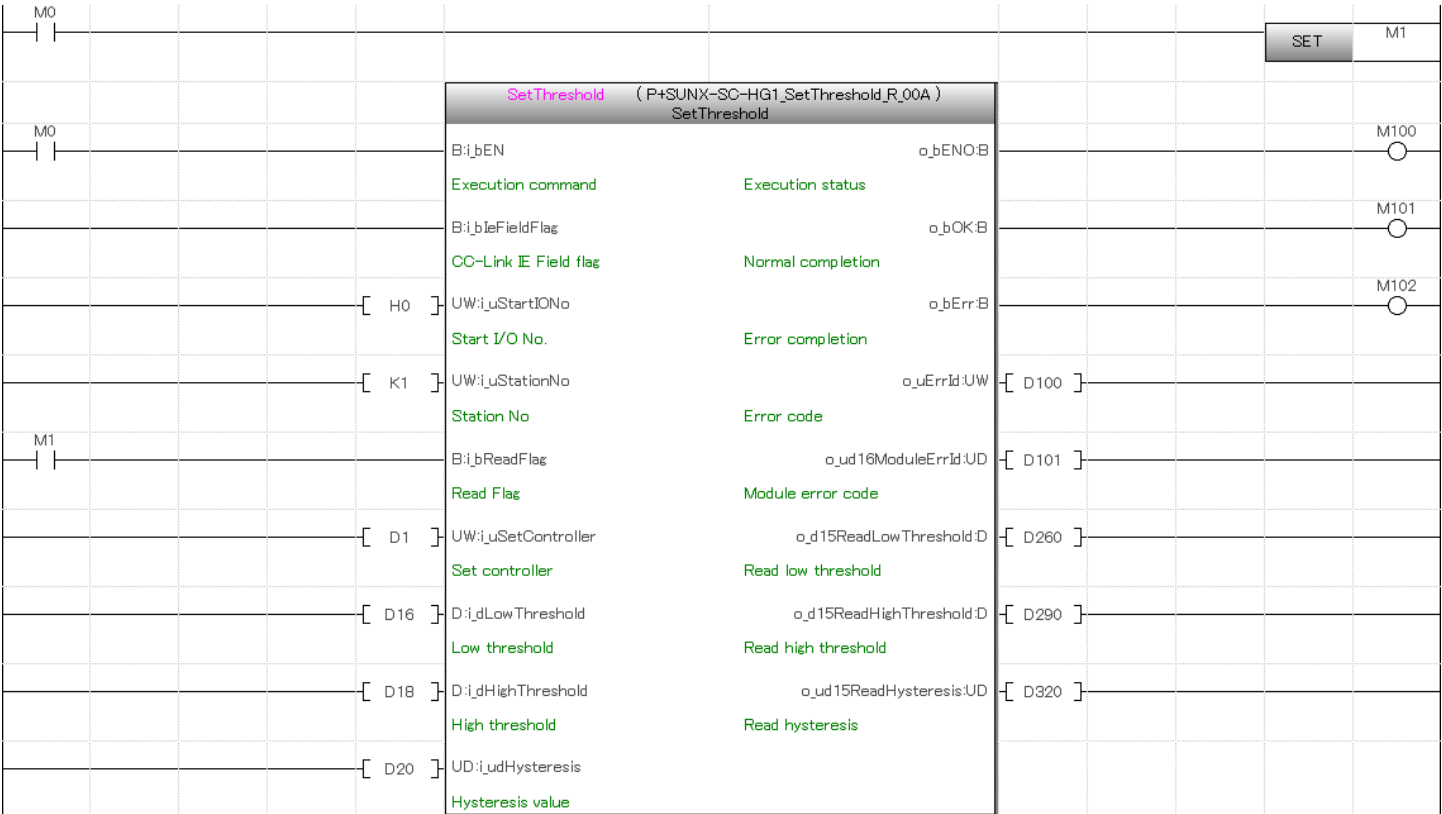
(i) P+SUNX-SC-HG1_SetOutputMode_R (output logic settings)

When M0 is turned ON, this FB outputs the output logic of the controllers connected to the SC-HG1-C with its station number set to 1 to D255.



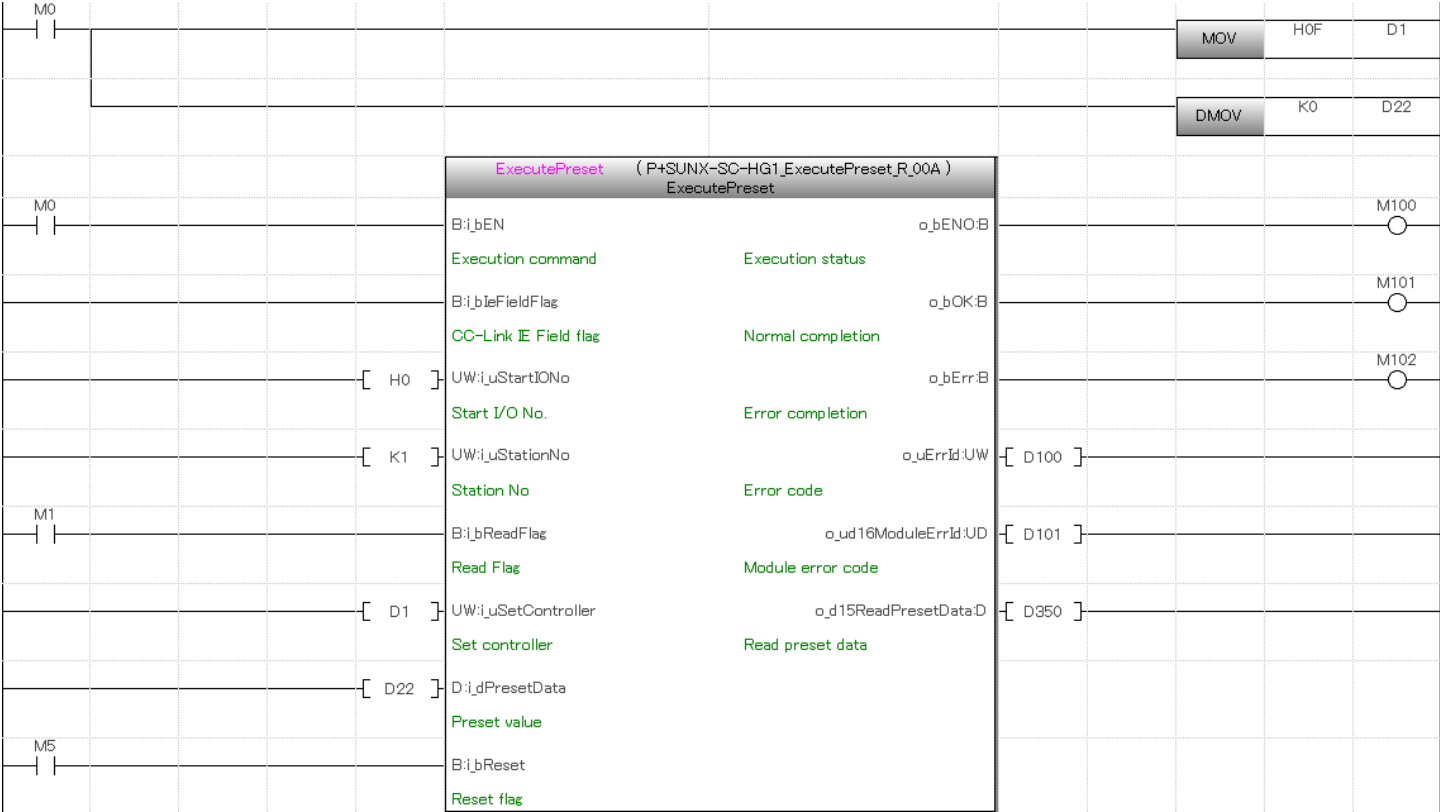
(j) P+SUNX-SC-HG1_SetThreshold_R (threshold settings)

When M0 is turned ON, this FB outputs the low threshold values, high threshold values, and hysteresis values of the controllers connected to the SC-HG1-C with its station number set to 1 to the 30 words from D260 to D289, the 30 words from D290 to D319, and the 30 words from D320 to D349, respectively.



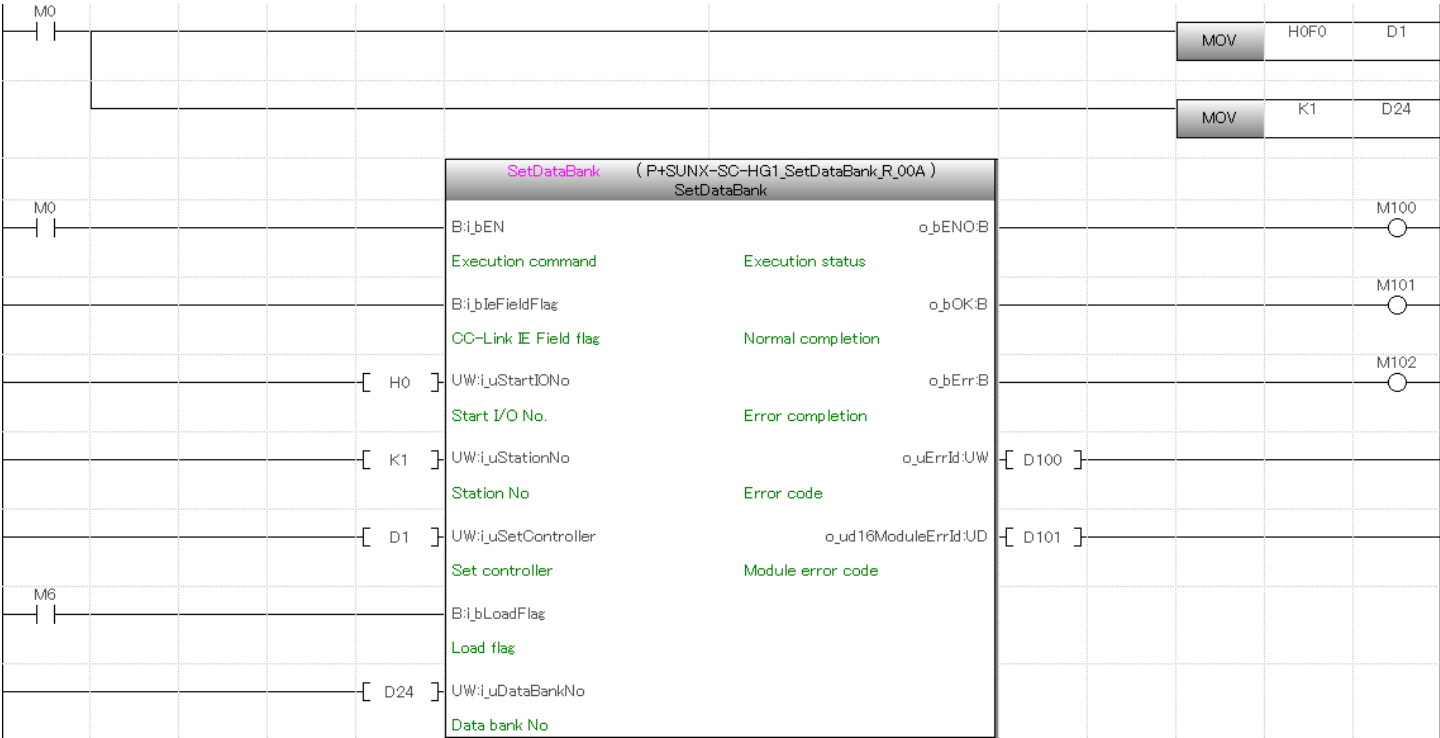
(k) P+SUNX-SC-HG1_ExecutePreset_R (turn on or off the preset)

When M0 is turned ON, this FB presets to 0 the first to fourth controllers connected to the SC-HG1-C with its station number set to 1.



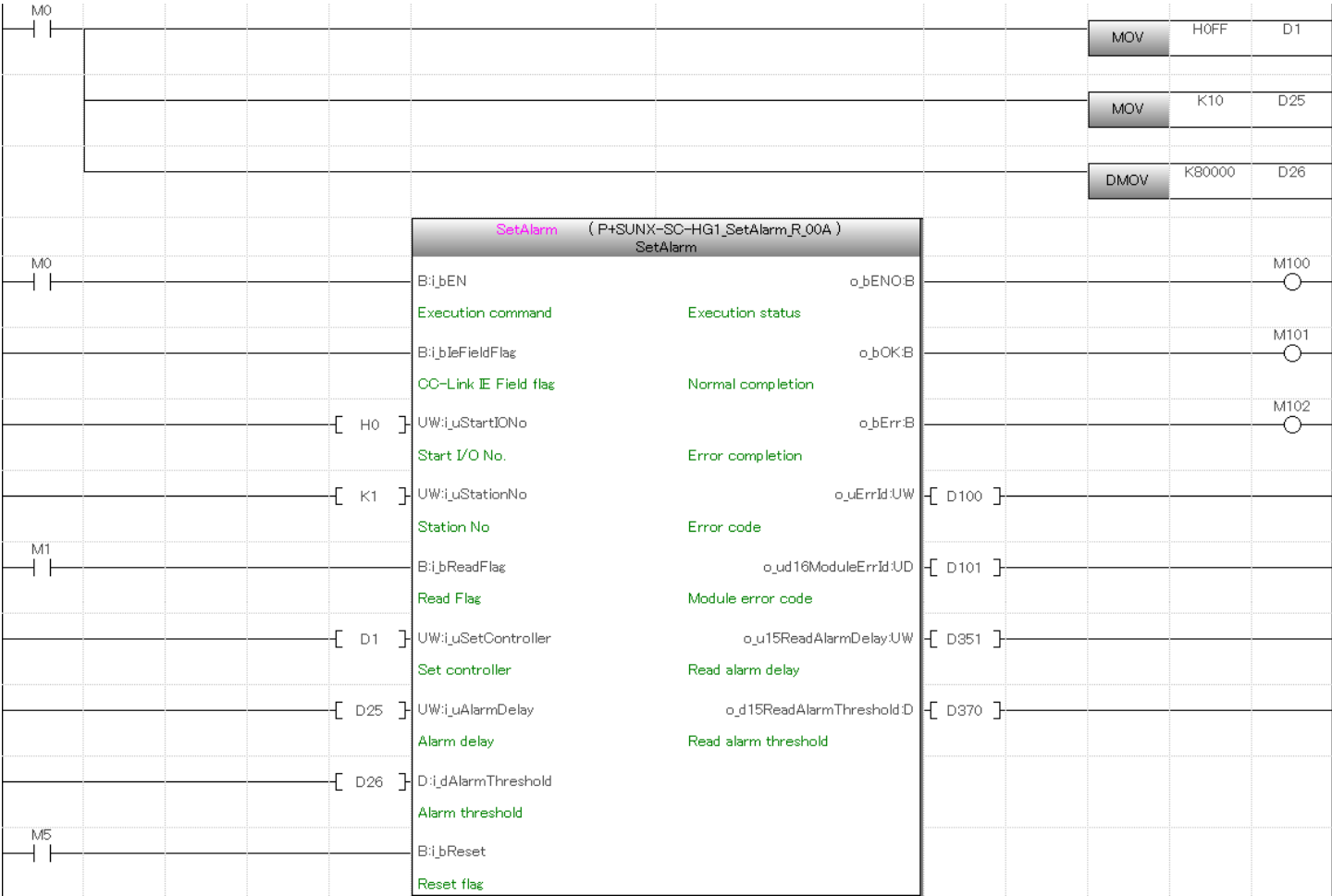
(l) P+SUNX-SC-HG1_SetDataBank_R (save or load data bank)

When M0 is turned ON, this FB save the setting content of the fifth to eighth controllers connected to the SC-HG1-C with its station number set to 1 to the data bank number 1.



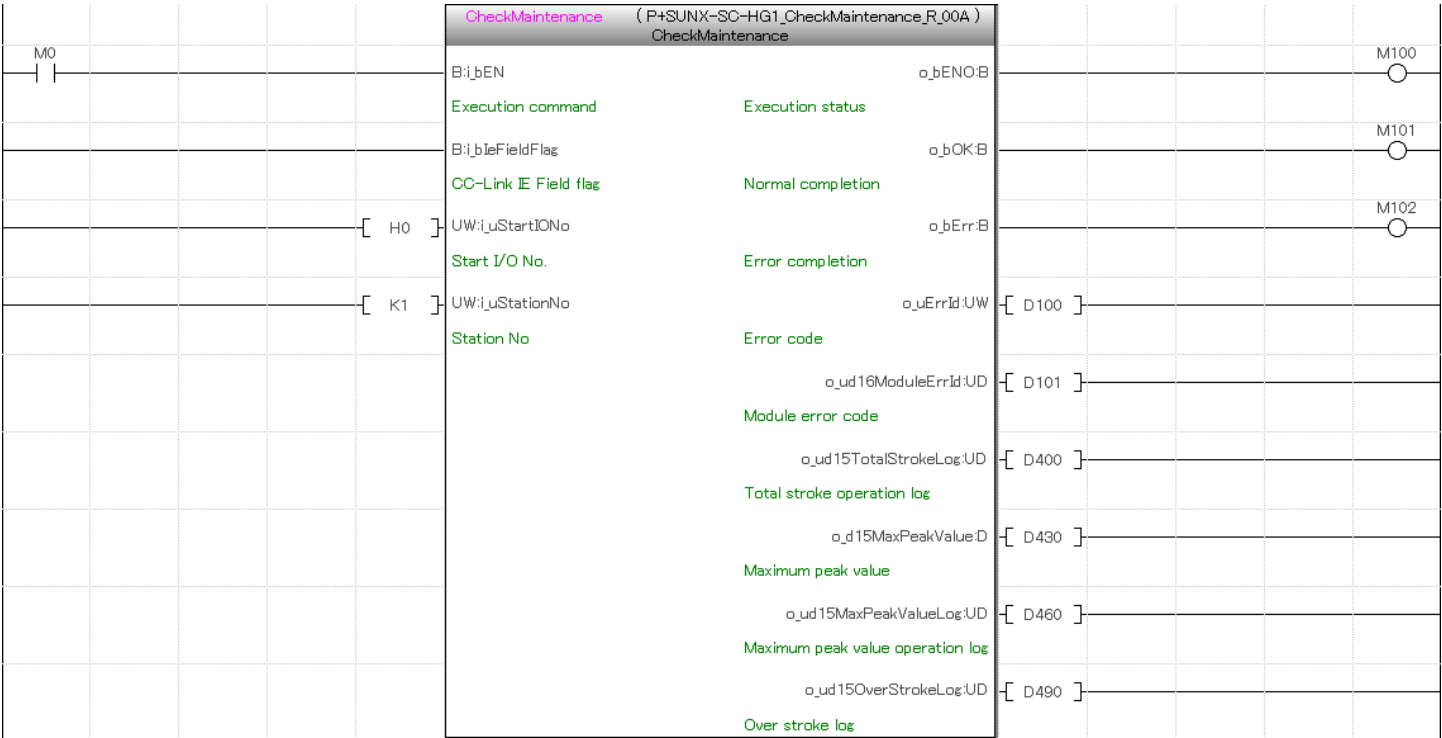
(m) P+SUNX-SC-HG1_SetAlarm_R (alarm setting)

When M0 is turned ON, this FB configures the first to eighth controllers connected to the SC-HG1-C with its station number set to 1 to output an alarm if the measurement value is 8.0000mm or higher for 10 ms.



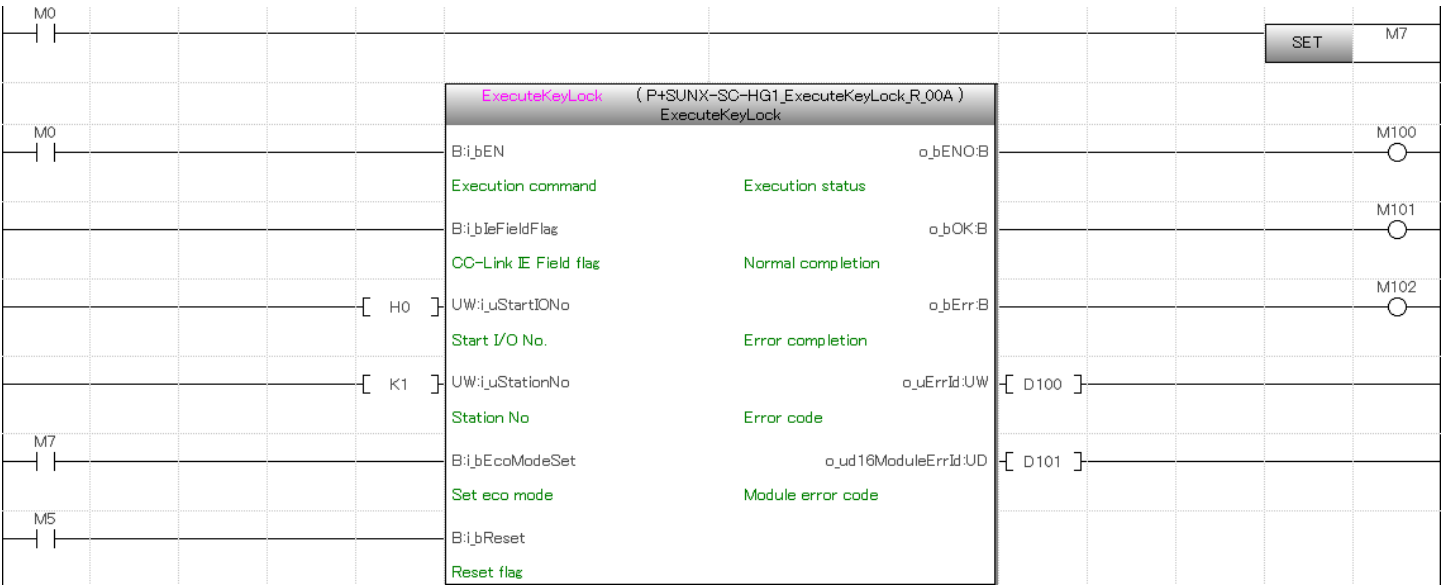
(n) P+SUNX-SC-HG1_CheckMaintenance_R (get maintenance information)

When M0 is turned ON, this FB output the total stroke operation log entries, maximum peak values, maximum peak operation log entries, and over stroke operation log entries of the controllers connected to the SC-HG1-C with its station number set to 1 to the 30 words from D400 to D429, the 30 words from D430 to D459, the 30 words from D460 to D489, and the 30 words from D490 to D519 respectively.



(o) P+SUNX-SC-HG1_ExecuteKeyLock_R (turn on or off the keylock)

When M0 is turned ON, this FB sets the keylock and Eco mode on the controllers connected to the SC-HG1-C with its station number set to 1.



Appendix 4. Password-based read/write protection of a ladder program

You can configure a password for a ladder program for read/write protection.

This feature is useful to prevent the leakage of confidential data contained in a ladder program.

[Project] → [Security] → [File Password Setting]

Select the data to protect with a password and press [Register].

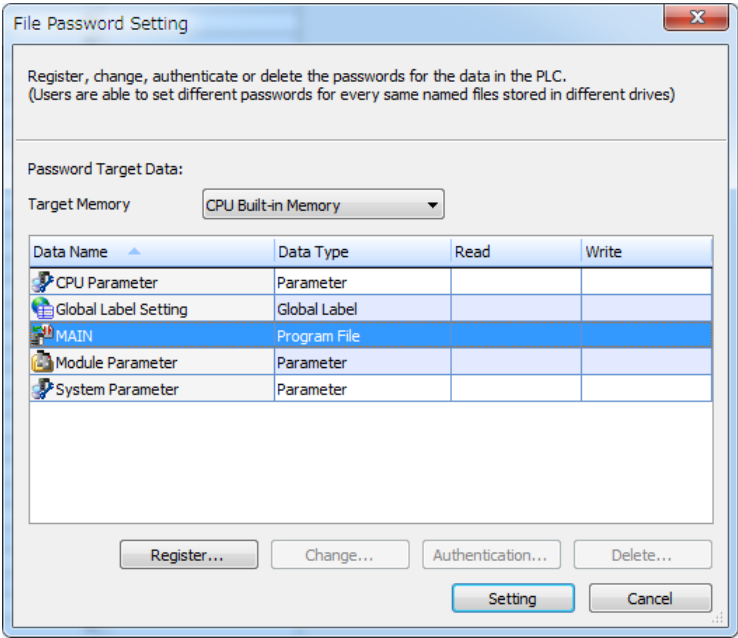


Figure 4-1: Selecting the file to protect with a password

Select [Read/Write Protection] in the [Target Password] box, set the password, then press the [Completed] button.

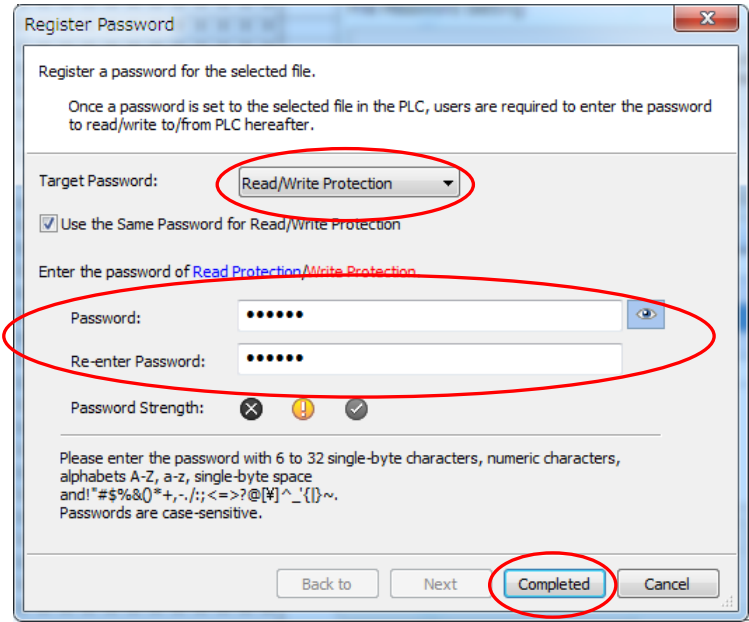


Figure 4-2: Setting the password

Check that [Password Registration] is [Authenticated] and then press the [Setting] button.

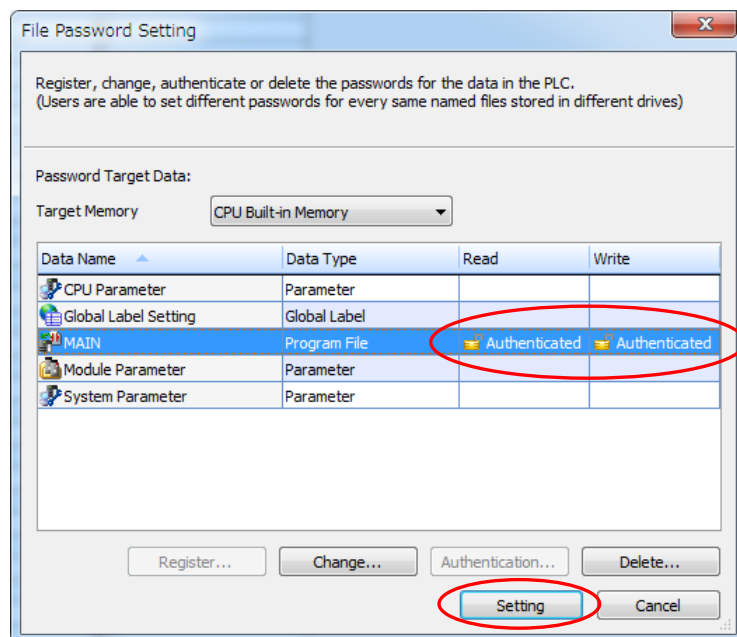


Figure 4-3: Setting the file password

If after password registration, the project data you "load from the PC" is different than that for which you registered a password, the [File Password Setting] dialog prompts you for password authentication, so you can determine whether or not a password has been set.

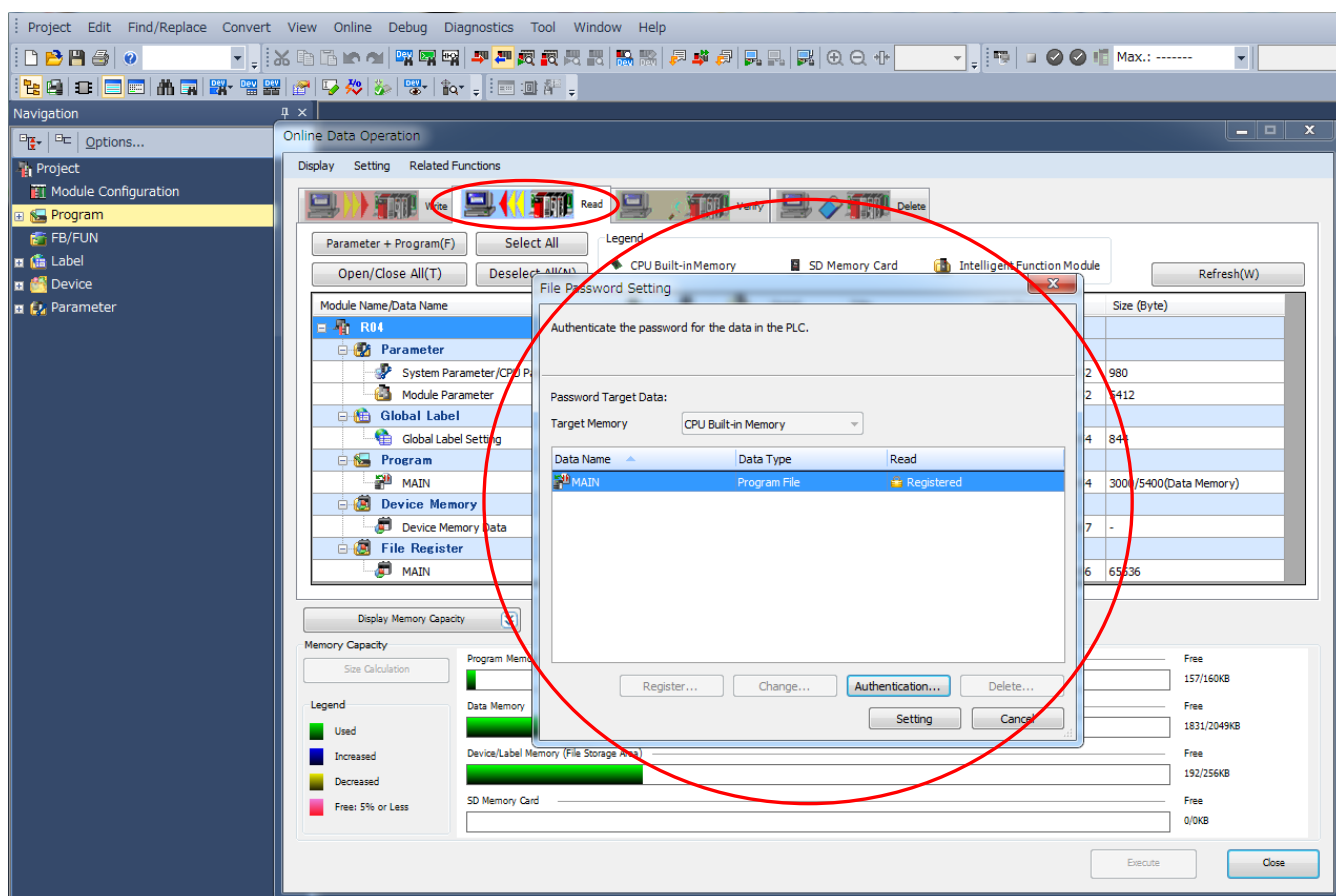


Figure 4-4: Checking the file password settings

Appendix 5. How to Use FBs across two or more master/local modules

When you are using two or more CC-Link or CC-Link IE Field master/local modules and want to use the FBs in this FB library on each CC-Link or CC-Link IE Field master/local module, you have to create the FBs for the second and subsequent CC-Link IE Field master/local module using the steps in "Appendix 5.1" to "Appendix 5.3".

Appendix 5.1. Configuring the global labels for the second and subsequent CC-Link or CC-Link IE Field master/local modules

Assign the "Label Name" and "Assign (Device/Label)" of the global labels so that they are different from those for the 1st master/local module.

The starting device for "assignments (devices/labels)" should be specified by append the starting device specified for each of the second and subsequent CC-Link or CC-Link IE Field master/local modules with an index register. You do not have to separate the index registers "Z8" and "Z9" from those for the first master/local module.

	Label Name	Data Type		Class	Assign (Device/Label)
1	G_bRX	Bit	...	VAR_GLOBAL	X1 000Z9
2	G_bRY	Bit	...	VAR_GLOBAL	Y1 000Z9
3	G_dRWr	Double Word [Signed]	...	VAR_GLOBAL	W0Z8
4	G_dRWw	Double Word [Signed]	...	VAR_GLOBAL	W1 000Z8
5	G_bRX2	Bit	...	VAR_GLOBAL	X2000Z9
6	G_bRY2	Bit	...	VAR_GLOBAL	Y2000Z9
7	G_dRWr2	Double Word [Signed]	...	VAR_GLOBAL	W500Z8
8	G_dRWw2	Double Word [Signed]	...	VAR_GLOBAL	W1 500Z8

Figure 5.1-1: Examples of configuring global labels



Appendix 5.2. Copying and pasting the FBs for the second and subsequent master/local modules

Navigation window → FB/FUN → FBFILE

Right-click the FB you want to use also for the second master/local modules and copy the data. (Figure 5.2-1)

Select and right-click FBFILE and paste the data. (Figure 5.2-2)

Select the pasted FB and press "F2" on the keyboard to rename the FB. (Figure 5.2-3)

When you rename the pasted FB, carefully note that you cannot enter "+" or "-" (hyphen).

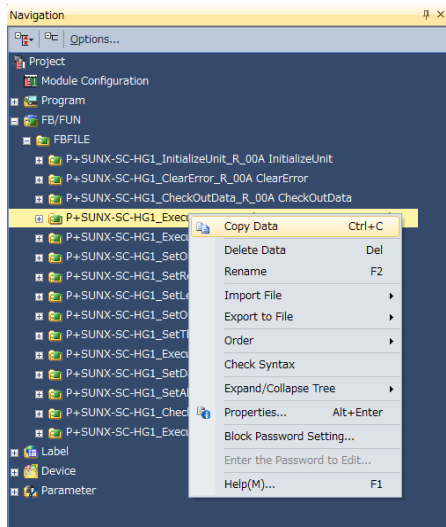


Figure 5.2-1 FB: Copying a FB

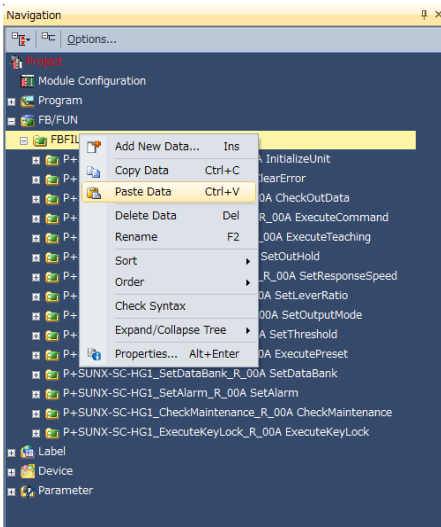


Figure 5.2-2: Pasting the FB

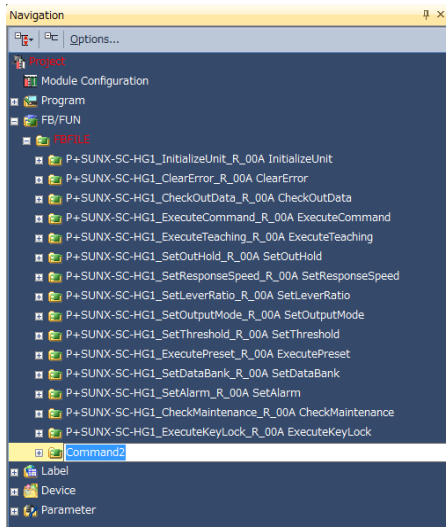


Figure 5.2-3 Renaming the FB

Appendix 5.3. Replacing the global labels of the FBs for the second and subsequent master/local modules

Because the FB global labels you created in "Appendix 5.2 Copying and pasting the FBs for the second and subsequent master/local modules" are identical to the original FB global labels, you have to replace them with the global labels you configured in "Appendix 5.1 Configuring the global labels for the second and subsequent CC-Link or CC-Link IE Field master/local modules".

Open the program body where you pasted the FBs by double-clicking it.

[Find and Replace] → [Replace Device/Label]

Open the [Find and Replace] window, select the current window from the tab list. Enter the original global label in the Find Device/Label, and the global label created in "Appendix 5.1 Configuring the global labels for the second and subsequent CC-Link or CC-Link IE Field master/local modules" in the Replace Device/Label. (Figure 5.3-1)

Complete the replacement by pressing [Replace All]. Similarly, replace the global labels "G_bRY", "G_dRWr", and "G_dRWw" with new global labels.

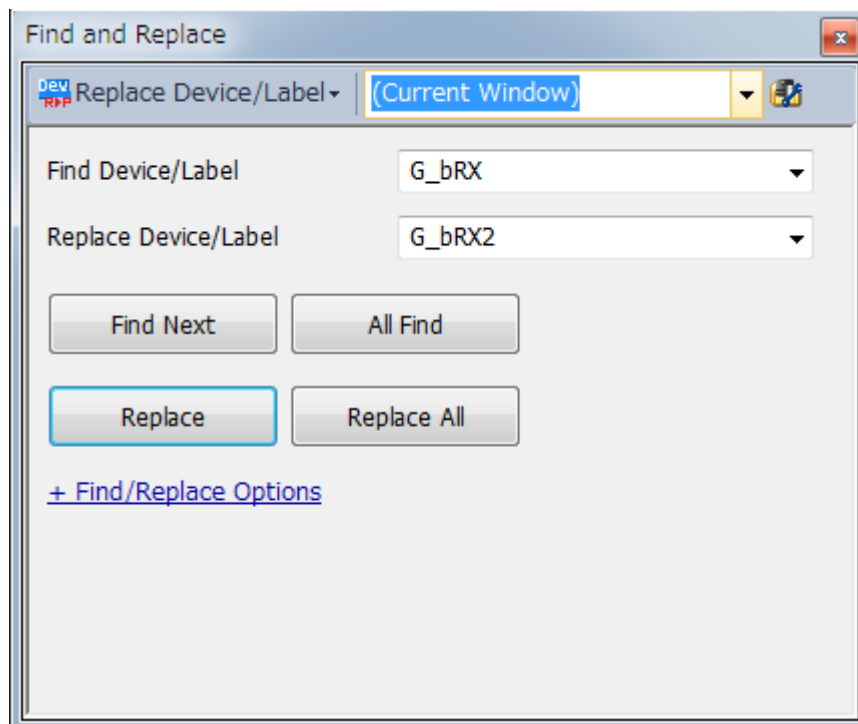


Figure 5.3-1: Replacing "G_bRX"



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WUME-SCHG11QRFB-1