MITSUBISHI ELECTRIC

Programmable Controller

MELSEC iQ-R series

# MELSEC iQ-R CC-Link System Master/Local Module Function Block Reference

# SAFETY PRECAUTIONS

(Read these precautions before using Mitsubishi Electric programmable controllers.)

Before using the products described under "Relevant products", please read this manual and the relevant manuals carefully and pay full attention to safety to handle the products correctly.

The precautions given in this manual are concerned with the products only. For the safety precautions of the programmable controller system, refer to the MELSEC iQ-R Module Configuration Manual.

In this manual, the safety precautions are classified into two levels: "⚠ WARNING" and "⚠ CAUTION".

| | |
|---|---|
| ⚠ **WARNING** | Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury. |
| ⚠ **CAUTION** | Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage. |

Under some circumstances, failure to observe the precautions given under "⚠ CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

# CONDITIONS OF USE FOR THE PRODUCT

(1) MELSEC programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI ELECTRIC SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI ELECTRIC USER'S, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above restrictions, Mitsubishi Electric may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi Electric and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi Electric representative in your region.

(3) Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

# INTRODUCTION

Thank you for purchasing the Mitsubishi Electric MELSEC iQ-R series programmable controllers.
This manual describes the module function blocks for the relevant products listed below.
Before using the products, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the MELSEC iQ-R series programmable controller to handle the products correctly.
When applying the program examples provided in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems.
Please make sure that the end users read this manual.

## Relevant product

RJ61BT11

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# RELEVANT MANUALS

| Manual name [manual number] | Description | Available form |
|---|---|---|
| MELSEC iQ-R CC-Link System Master/Local Module Function Block Reference [BCN-P5999-0380] (this manual) | Function blocks used for modules of CC-Link system master/local module | e-Manual PDF |
| MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup) [SH-081269ENG] | Specifications, procedures before operation, system configuration, wiring, and communication examples of the CC-Link system master/local module | Print book |
| | | e-Manual PDF |
| MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) [SH-081270ENG] | Functions, parameter settings, programming, troubleshooting, I/O signals, and buffer memory of the CC-Link system master/local module | Print book |
| | | e-Manual PDF |

**Point**

e-Manual refers to the Mitsubishi Electric FA electronic book manuals that can be browsed using a dedicated tool.

e-Manual has the following features:

- Required information can be cross-searched in multiple manuals.
- Other manuals can be accessed from the links in the manual.
- The hardware specifications of each part can be found from the product figures.
- Pages that users often browse can be bookmarked.
- Sample programs can be copied to an engineering tool.

# TERMS

Unless otherwise specified, this manual uses the following terms.

| Term | Description |
|---|---|
| Buffer memory | Memory in an intelligent function module to store data such as setting values and monitor values.<br>For CPU modules, it refers to memory to store data such as setting values and monitor values of the Ethernet function, or data used for data communication of the multiple CPU system function. |
| Data link | Communications that performed by cyclic transmission and transient transmission |
| Device | A memory of a CPU module to store data. Devices such as X, Y, M, D, and others are provided depending on the intended use. |
| Device station | A generic term for a remote I/O station, remote device station, local station, intelligent device station, and standby master station |
| Engineering tool | A tool used for setting up programmable controllers, programming, debugging, and maintenance. |
| Intelligent device station | A station that exchanges I/O signals (bit data) and I/O data (word data) with CC-Link IE Field Network by cyclic transmission. This station responds to a transient transmission request from another station and also issues a transient transmission request to another station. |
| Link scan (link scan time) | Time required for all the stations on the network to transmit data.<br>The link scan time depends on data volume and the number of transient transmission requests. |
| Local station | A station that performs cyclic transmission and transient transmission with the master station and other local stations. |
| Master station | A station that controls the entire network. This station can perform cyclic transmission and transient transmission with all stations.<br>Only one master station can be used in a network. |
| Module label | A label that represents one of memory areas (I/O signals and buffer memory areas) specific to each module in a given character string.<br>For the module used, GX Works3 automatically generates this label, which can be used as a global label. |
| Remote device station | A station that exchanges I/O signals (bit data) and I/O data (word data) with another station by cyclic transmission. This station cannot perform transient transmission. |
| Remote I/O station | A station that exchanges I/O signals (bit data) with the master station by cyclic transmission |
| Transient transmission | A function of communication with another station, which is used when requested by a dedicated instruction or a programming tool. |

# GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this manual uses the following generic terms and abbreviations.

| Generic term/abbreviation | Description |
|---|---|
| CPU module | A generic term for the MELSEC iQ-R series CPU modules |
| AJ65BT-R2(N) | An abbreviation for the AJ65BT-R2(N) CC-Link system RS-232 interface module |

# 1 OVERVIEW

The FBs listed in this reference are module FBs (for GX Works3) to use the MELSEC iQ-R CC-Link system master/local module.

## 1.1 Function Block (FB) List

This section lists the module FBs described in this reference. Note that this reference does not describe the FB version information which is displayed such as "_00A" at the end of FB name.

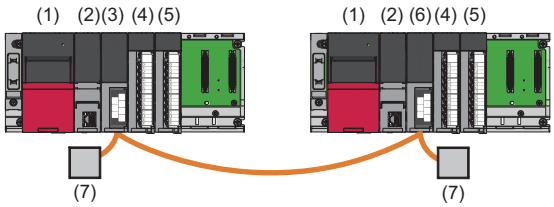
| Name | Description |
|---|---|
| M+RJ61BT11_DeviceRead | Reads the specified number of points of data from the buffer memory or programmable controller device of another station. |
| M+RJ61BT11_DeviceWrite | Writes the specified number of points of data to the buffer memory or programmable controller device of another station. |
| M+RJ61BT11_Recv | Automatically performs handshake with another station and reads the specified number of points of data from the buffer memory of the station. |
| M+RJ61BT11_Send | Automatically performs handshake with another station and writes the specified number of points of data to the buffer memory of the station. |
| M+RJ61BT11_AutomaticUpdateBufferRead | Reads the specified number of points of data from the automatic update buffer of another station. |
| M+RJ61BT11_AutomaticUpdateBufferWrite | Writes the specified number of points of data to the automatic update buffer of another station. |
| M+RJ61BT11_SetParameter | Sets the network parameters in the master station. |

## 1.2 How to Obtain

Module FBs are installed at the same time as installing GX Works3; however, the module FBs in this reference may not be installed with some versions of GX Works3. It is recommended to install the latest version of GX Works3.

## 1.3 System Configuration

The following shows the system configuration for using the module FBs in this reference.




(1) Power supply module
(2) CPU module
(3) RJ61BT11 (master station)
(4) RX10
(5) RY10R2
(6) RJ61BT11 (local station)
(7) Terminating resistor

For the specifications of modules to be used, refer to the user's manual for each module.

# MEMO

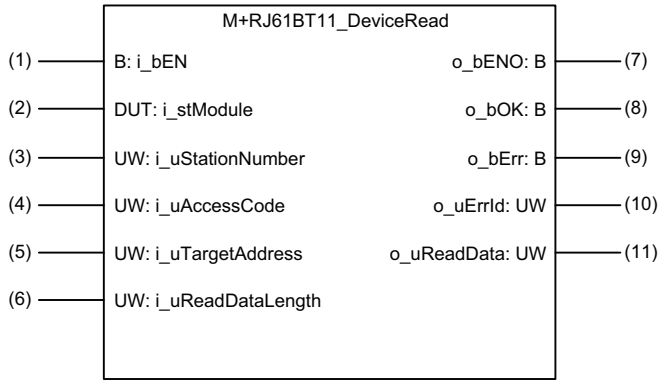
# 2 CC-Link SYSTEM MASTER/LOCAL MODULE FB

## 2.1 M+RJ61BT11_DeviceRead

### Name

M+RJ61BT11_DeviceRead

### Overview

| Item | Description |
|---|---|
| Functional overview | Reads the specified number of points of data from the buffer memory or programmable controller device of another station. |
| Symbol |  |

### Labels

#### ■Input arguments

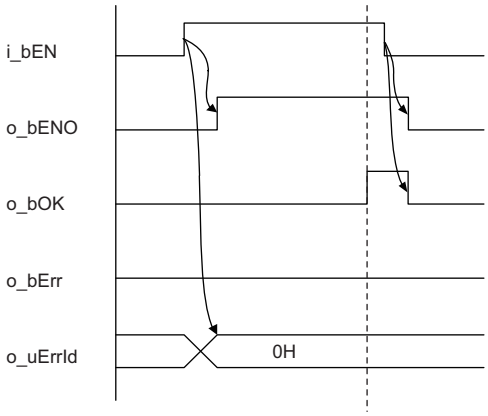
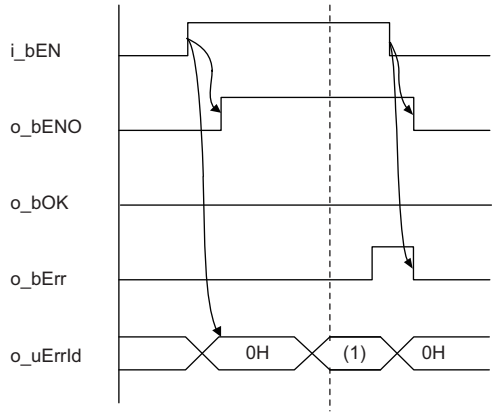
| No. | Variable name | Name | Data type | Range | Description |
|---|---|---|---|---|---|
| (1) | i_bEN | Execution command | Bit | Off, on | On: Start the module FB.<br>Off: Do not start the module FB. |
| (2) | i_stModule | Module label | Structure | — | Specify the module for which the FB is to be executed.<br>Specify the module label of relevant modules.<br>(Example)<br>BT11_1 |
| (3) | i_uStationNumber | Station number | Word [Unsigned]/ Bit String [16-bit] | 0 to 64 | Specify the target station number.<br>0 to 64: Target station number |
| (4) | i_uAccessCode | Access code Attribute code | Word [Unsigned]/ Bit String [16-bit] | — | Specify the read buffer memory type or device type.<br>📖 MELSEC iQ-R Programming Manual (Instructions, Standard Functions/ Function Blocks) |
| (5) | i_uTargetAddress | Buffer memory address or device number | Word [Unsigned]/ Bit String [16-bit] | — | Specify the start address of the read buffer memory or the start number of the read device. |
| (6) | i_uReadDataLength | Number of read points | Word [Unsigned]/ Bit String [16-bit] | 1 to 480 | Specify the number of read points in word. |

### ■Output arguments

| No. | Variable name | Name | Data type | Default value | Description |
|---|---|---|---|---|---|
| (7) | o_bENO | Execution status | Bit | Off | On: In execution<br>Off: Not in execution |
| (8) | o_bOK | Normal completion | Bit | Off | The module FB has been processed normally when this argument is on. |
| (9) | o_bErr | Error completion | Bit | Off | The module FB has been processed abnormally when this argument is on. |
| (10) | o_uErrId | Error code | Word [Unsigned]/ Bit String [16-bit] | 0 | An error code is stored at error completion. |
| (11) | o_uReadData | Read data storage device | Word [Unsigned]/ Bit String [16-bit] | 0 | The read data is stored.<br>The following cannot be specified as an argument. Specifying any of the following may cause a CPU error (2820H: Device/label/buffer memory specification incorrect).<br>• Dynamically specified array elements (Example: wLabel[D0])<br>• Digit-specified labels (Example: K4bLabel)<br>• Indirectly specified devices (Example: @W0)<br>• Local devices (Example: #D0) |

## FB details

| Item | Description | |
|---|---|---|
| Available devices | Target module | RJ61BT11 |
| | CPU modules | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 49 steps<br>The number of steps of the FB embedded in a program depends on the CPU module used, the input/output definitions, and the options setting of GX Works3. For the options setting of GX Works3, refer to the GX Works3 Operating Manual. | |
| Processing | When i_bEN (execution command) is turned on, the function reads the specified number of points of data from the buffer memory or programmable controller device of another station. | |
| FB compilation method | Macro type | |
| FB operation | Pulse type (multiple-scan execution type) | |
| Input condition for FB_EN | None | |

| Item | Description |
|---|---|
| Timing chart of I/O signals | [For normal completion]<br>  <br><br>[For error completion] (same as when a module error occurs)<br>  <br><br>(1): Error code |
| Precautions | • This FB does not include error recovery processing. Please create error recovery processing separately according to the system and required operations.<br>• This FB uses the GP.RIRD instruction.<br>• Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) is turned on. By turning off i_bEN (execution command), o_bOK (normal completion) or o_bErr (error completion) is turned off and o_uErrId (error code) is cleared to 0.<br>• If message "If the program is compiled, the number of device points in the auto device setting is too small." appears, adjust the automatic device setting.<br>• If upgrading module FB versions updates instructions, adds a new instruction, or adds a new device, please consult your local Mitsubishi representative. |

## Error code

| Error code | Description | Action |
|---|---|---|
| 4000H to 4FFFH | An error occurred in a CPU module. | 📖 MELSEC iQ-R CPU Module User's Manual (Application) |
| B000H to BFFFH | An error occurred in a CC-Link System Master/Local Module. | 📖 MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) |

## Operation parameters

No operation parameter is applicable to M+RJ61BT11_DeviceRead.

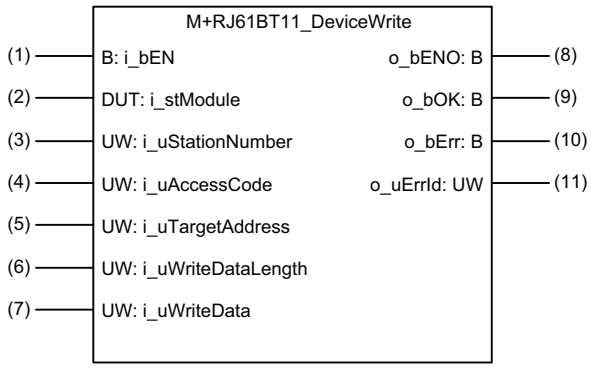
# 2.2 M+RJ61BT11_DeviceWrite

## Name

M+RJ61BT11_DeviceWrite



## Overview

| Item | Description |
|---|---|
| Functional overview | Writes the specified number of points of data to the buffer memory or programmable controller device of another station. |
| Symbol |  |



## Labels

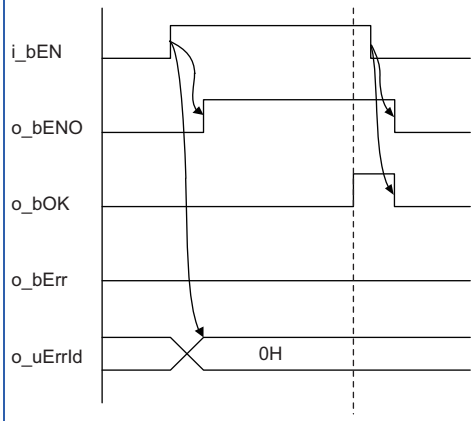
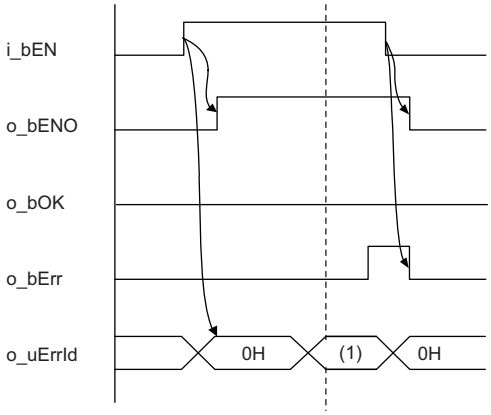
### ■Input arguments

| No. | Variable name | Name | Data type | Range | Description |
|---|---|---|---|---|---|
| (1) | i_bEN | Execution command | Bit | Off, on | On: Start the module FB.<br>Off: Do not start the module FB. |
| (2) | i_stModule | Module label | Structure | — | Specify the module for which the FB is to be executed.<br>Specify the module label of relevant modules.<br>(Example)<br>BT11_1 |
| (3) | i_uStationNumber | Station number | Word [Unsigned]/ Bit String [16-bit] | 0 to 64 | Specify the target station number.<br>0 to 64: Target station number |
| (4) | i_uAccessCode | Access code Attribute code | Word [Unsigned]/ Bit String [16-bit] | — | Specify the write buffer memory type or device type.<br>📖 MELSEC iQ-R Programming Manual (Instructions, Standard Functions/ Function Blocks) |
| (5) | i_uTargetAddress | Buffer memory address or device number | Word [Unsigned]/ Bit String [16-bit] | — | Specify the start address of the write buffer memory or the start number of the write device. |
| (6) | i_uWriteDataLength | Number of write points | Word [Unsigned]/ Bit String [16-bit] | 1 to 480 | Specify the number of write points in word. |
| (7) | i_uWriteData | Write data Storage device | Word [Unsigned]/ Bit String [16-bit] | — | Specify the start address of the device containing the write data.<br>The following cannot be specified as an argument. Specifying any of the following may cause a CPU error (2820H: Device/label/buffer memory specification incorrect).<br>• Dynamically specified array elements (Example: wLabel[D0])<br>• Digit-specified labels (Example: K4bLabel)<br>• Indirectly specified devices (Example: @W0)<br>• Local devices (Example: #D0) |

## ■Output arguments

| No. | Variable name | Name | Data type | Default value | Description |
|---|---|---|---|---|---|
| (8) | o_bENO | Execution status | Bit | Off | On: In execution<br>Off: Not in execution |
| (9) | o_bOK | Normal completion | Bit | Off | The module FB has been processed normally when this argument is on. |
| (10) | o_bErr | Error completion | Bit | Off | The module FB has been processed abnormally when this argument is on. |
| (11) | o_uErrId | Error code | Word | 0 | An error code is stored at error completion. |

## FB details

| Item | Description | |
|---|---|---|
| Available devices | Target module | RJ61BT11 |
| | CPU modules | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 49 steps<br>The number of steps of the FB embedded in a program depends on the CPU module used, the input/output definitions, and the options setting of GX Works3. For the options setting of GX Works3, refer to the GX Works3 Operating Manual. | |
| Processing | When i_bEN (execution command) is turned on, this function writes the specified number of points of data to the buffer memory or programmable controller device of another station. | |
| FB compilation method | Macro type | |
| FB operation | Pulse execution type (multiple-scan execution type) | |
| Input condition for FB_EN | None | |
| Timing chart of I/O signals | [For normal completion]<br>  <br>[For error completion] (same as when a module error occurs)<br>  <br>(1): Error code | |
| Precautions | • This FB does not include error recovery processing. Please create error recovery processing separately according to the system and required operations.<br>• This FB uses the GP.RIWT instruction.<br>• Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) is turned on. By turning off i_bEN (execution command), o_bOK (normal completion) or o_bErr (error completion) is turned off and o_uErrId (error code) is cleared to 0.<br>• If message "If the program is compiled, the number of device points in the auto device setting is too small." appears, adjust the automatic device setting.<br>• If upgrading module FB versions updates instructions, adds a new instruction, or adds a new device, please consult your local Mitsubishi representative. | |

## Error code

| Error code | Description | Action |
|---|---|---|
| 4000H to 4FFFH | An error occurred in a CPU module. | 📖 MELSEC iQ-R CPU Module User's Manual (Application) |
| B000H to BFFFH | An error occurred in a CC-Link System Master/Local Module. | 📖 MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) |

## Operation parameters

No operation parameter is applicable to M+RJ61BT11_DeviceWrite.

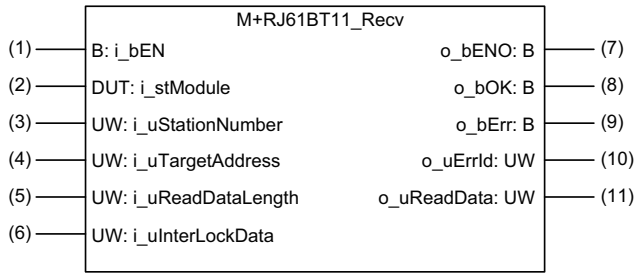
# 2.3 M+RJ61BT11_Recv



## Name

M+RJ61BT11_Recv

## Overview

| Item | Description |
|---|---|
| Functional overview | Automatically performs handshake with another station and reads the specified number of points of data from the buffer memory of the station. This function is available for modules, such as AJ65BT-R2(N), which have interlock signals for handshake. |
| Symbol |  |



## Labels

### ■Input arguments

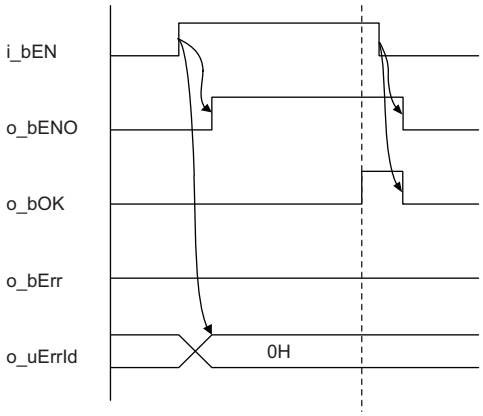
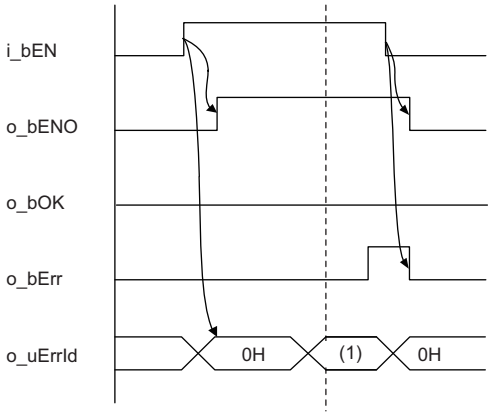
| No. | Variable name | Name | Data type | Range | Description |
|---|---|---|---|---|---|
| (1) | i_bEN | Execution command | Bit | Off, on | On: Start the module FB.<br>Off: Do not start the module FB. |
| (2) | i_stModule | Module label | Structure | — | Specify the module for which the FB is to be executed.<br>Specify the module label of relevant modules.<br>(Example)<br>BT11_1 |
| (3) | i_uStationNumber | Station number | Word [Unsigned]/ Bit String [16-bit] | 1 to 64 | Specify the target station number.<br>1 to 64: Target station number |
| (4) | i_uTargetAddress | Buffer memory address | Word [Unsigned]/ Bit String [16-bit] | — | Specify the start address of the read buffer memory. |
| (5) | i_uReadDataLength | Number of read points | Word [Unsigned]/ Bit String [16-bit] | 1 to 480 | Specify the number of read points in word. |
| (6) | i_uInterLockData | Interlock signal Storage device | Word [Unsigned]/ Bit String [16-bit] (0..2) | — | Specify the start address of the device containing the interlock signal.<br>When the start address is specified using the label, use "ARRAY" for the data type. |

### ■Output arguments

| No. | Variable name | Name | Data type | Default value | Description |
|---|---|---|---|---|---|
| (7) | o_bENO | Execution status | Bit | Off | On: In execution<br>Off: Not in execution |
| (8) | o_bOK | Normal completion | Bit | Off | The module FB has been processed normally when this argument is on. |
| (9) | o_bErr | Error completion | Bit | Off | The module FB has been processed abnormally when this argument is on. |
| (10) | o_uErrId | Error code | Word [Unsigned]/ Bit String [16-bit] | 0 | An error code is stored at error completion. |
| (11) | o_uReadData | Read data storage device | Word [Unsigned]/ Bit String [16-bit] | 0 | The read data is stored.<br>The following cannot be specified as an argument. Specifying any of the following may cause a CPU error (2820H: Device/label/buffer memory specification incorrect).<br>• Dynamically specified array elements (Example: wLabel[D0])<br>• Digit-specified labels (Example: K4bLabel)<br>• Indirectly specified devices (Example: @W0)<br>• Local devices (Example: #D0) |

## FB details

| Item | Description | |
|---|---|---|
| Available devices | Target module | RJ61BT11 |
| | CPU modules | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 51 steps<br>The number of steps of the FB embedded in a program depends on the CPU module used, the input/output definitions, and the options setting of GX Works3. For the options setting of GX Works3, refer to the GX Works3 Operating Manual. | |
| Processing | When i_bEN (execution command) is turned on, this function performs handshake with another station and reads the specified number of points of data from the buffer memory of the station. | |
| FB compilation method | Macro type | |
| FB operation | Pulse execution type (multiple-scan execution type) | |
| Input condition for FB_EN | None | |

| Item | Description |
|---|---|
| Timing chart of I/O signals | [For normal completion]<br>  <br><br>[For error completion] (same as when a module error occurs)<br>  <br><br>(1): Error code |
| Precautions | • This FB does not include error recovery processing. Please create error recovery processing separately according to the system and required operations.<br>• This FB uses the GP.RIRCV instruction.<br>• Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) is turned on. By turning off i_bEN (execution command), o_bOK (normal completion) or o_bErr (error completion) is turned off and o_uErrId (error code) is cleared to 0.<br>• If message "If the program is compiled, the number of device points in the auto device setting is too small." appears, adjust the automatic device setting.<br>• If upgrading module FB versions updates instructions, adds a new instruction, or adds a new device, please consult your local Mitsubishi representative. |

## Error code

| Error code | Description | Action |
|---|---|---|
| 4000H to 4FFFH | An error occurred in a CPU module. | 📖 MELSEC iQ-R CPU Module User's Manual (Application) |
| B000H to BFFFH | An error occurred in a CC-Link System Master/Local Module. | 📖 MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) |

## Operation parameters

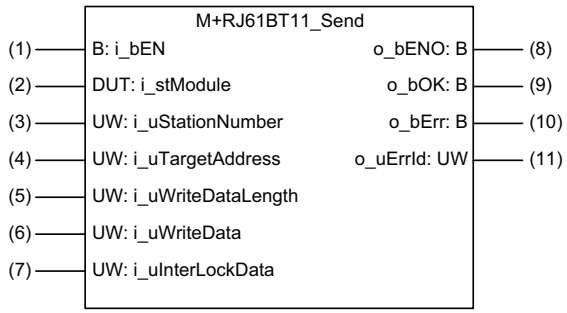
No operation parameter is applicable to M+RJ61BT11_Recv.

# 2.4 M+RJ61BT11_Send

## Name

M+RJ61BT11_Send

## Overview

| Item | Description |
|---|---|
| Functional overview | Automatically performs handshake with another station and writes the specified number of points of data to the buffer memory of the station. This function is available for modules, such as AJ65BT-R2(N), which have interlock signals for handshake. |
| Symbol |  |

## Labels

### ■Input arguments

| No. | Variable name | Name | Data type | Range | Description |
|---|---|---|---|---|---|
| (1) | i_bEN | Execution command | Bit | Off, on | On: Start the module FB.<br>Off: Do not start the module FB. |
| (2) | i_stModule | Module label | Structure | — | Specify the module for which the FB is to be executed.<br>Specify the module label of relevant modules.<br>(Example)<br>BT11_1 |
| (3) | i_uStationNumber | Station number | Word [Unsigned]/ Bit String [16-bit] | 1 to 64 | Specify the target station number.<br>1 to 64: Target station number |
| (4) | i_uTargetAddress | Buffer memory address | Word [Unsigned]/ Bit String [16-bit] | — | Specify the start address of the write buffer memory. |
| (5) | i_uWriteDataLength | Number of write points | Word [Unsigned]/ Bit String [16-bit] | 1 to 480 | Specify the number of write points in word. |
| (6) | i_uWriteData | Write data Storage device | Word [Unsigned]/ Bit String [16-bit] | — | Specify the start address of the device containing the write data.<br>The following cannot be specified as an argument. Specifying any of the following may cause a CPU error (2820H: Device/label/buffer memory specification incorrect).<br>• Dynamically specified array elements (Example: wLabel[D0])<br>• Digit-specified labels (Example: K4bLabel)<br>• Indirectly specified devices (Example: @W0)<br>• Local devices (Example: #D0) |
| (7) | i_uInterLockData | Interlock signal Storage device | Word [Unsigned]/ Bit String [16-bit] (0..2) | — | Specify the start address of the device containing the interlock signal.<br>When the start address is specified using the label, use "ARRAY" for the data type. |

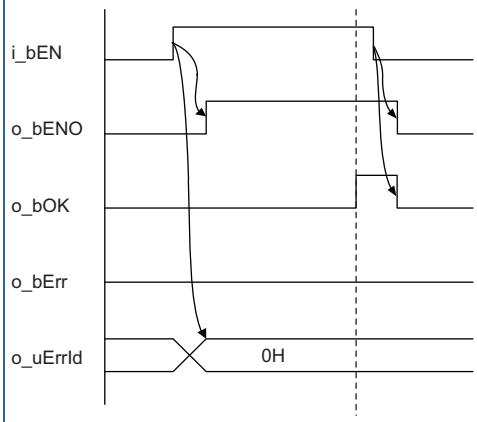
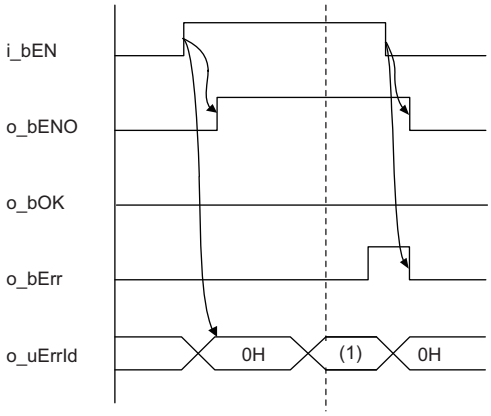
## ■Output arguments

| No. | Variable name | Name | Data type | Default value | Description |
|---|---|---|---|---|---|
| (8) | o_bENO | Execution status | Bit | Off | On: In execution<br>Off: Not in execution |
| (9) | o_bOK | Normal completion | Bit | Off | The module FB has been processed normally when this argument is on. |
| (10) | o_bErr | Error completion | Bit | Off | The module FB has been processed abnormally when this argument is on. |
| (11) | o_uErrId | Error code | Word [Unsigned]/ Bit String [16-bit] | 0 | An error code is stored at error completion. |



# FB details

| Item | Description | |
|---|---|---|
| Available devices | Target module | RJ61BT11 |
| | CPU modules | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 51 steps<br>The number of steps of the FB embedded in a program depends on the CPU module used, the input/output definitions, and the options setting of GX Works3. For the options setting of GX Works3, refer to the GX Works3 Operating Manual. | |
| Processing | When i_bEN (execution command) is turned on, this function performs handshake with another station and writes the specified number of points of data to the buffer memory of the station. | |
| FB compilation method | Macro type | |
| FB operation | Pulse execution type (multiple-scan execution type) | |
| Input condition for FB_EN | None | |

| Item | Description |
|---|---|
| Timing chart of I/O signals | [For normal completion]<br>  <br><br>[For error completion] (same as when a module error occurs)<br>  <br><br>(1): Error code |
| Precautions | • This FB does not include error recovery processing. Please create error recovery processing separately according to the system and required operations.<br>• This FB uses the GP.RISEND instruction.<br>• Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) is turned on. By turning off i_bEN (execution command), o_bOK (normal completion) or o_bErr (error completion) is turned off and o_uErrId (error code) is cleared to 0.<br>• If message "If the program is compiled, the number of device points in the auto device setting is too small." appears, adjust the automatic device setting.<br>• If upgrading module FB versions updates instructions, adds a new instruction, or adds a new device, please consult your local Mitsubishi representative. |

## Error code

| Error code | Description | Action |
|---|---|---|
| 4000H to 4FFFH | An error occurred in a CPU module. | 📖 MELSEC iQ-R CPU Module User's Manual (Application) |
| B000H to BFFFH | An error occurred in a CC-Link System Master/Local Module. | 📖 MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) |

## Operation parameters

No operation parameter is applicable to M+RJ61BT11_Send.

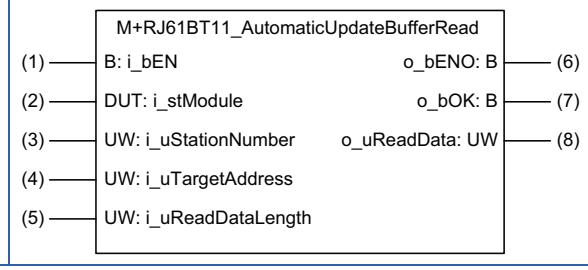
# 2.5 M+RJ61BT11_AutomaticUpdateBufferRead

## Name

M+RJ61BT11_AutomaticUpdateBufferRead



## Overview

| Item | Description |
|---|---|
| Functional overview | Reads the specified number of points of data from the automatic update buffer of another station. This function available for modules, such as AJ65BT-R2(N), which have an automatic update buffer. |
| Symbol |  |



## Labels

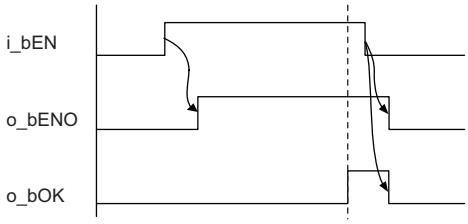
### ■Input arguments

| No. | Variable name | Name | Data type | Range | Description |
|---|---|---|---|---|---|
| (1) | i_bEN | Execution command | Bit | Off, on | On: Start the module FB.<br>Off: Do not start the module FB. |
| (2) | i_stModule | Module label | Structure | — | Specify the module for which the FB is to be executed.<br>Specify the module label of relevant modules.<br>(Example)<br>BT11_1 |
| (3) | i_uStationNumber | Target station number/random access buffer specification | Word [Unsigned]/ Bit String [16-bit] | 1 to 64, FFH | Specify the target station number.<br>1 to 64: Target station number<br>FFH: Random access buffer specification |
| (4) | i_uTargetAddress | Automatic update buffer or random access buffer address | Word [Unsigned]/ Bit String [16-bit] | — | Specify the offset value from the start of the automatic update buffer assigned to the target station or random access buffer. |
| (5) | i_uReadDataLength | Number of read points | Word [Unsigned]/ Bit String [16-bit] | 1 to 4096 | Specify the number of read points. |

### ■Output arguments

| No. | Variable name | Name | Data type | Default value | Description |
|---|---|---|---|---|---|
| (6) | o_bENO | Execution status | Bit | Off | On: In execution<br>Off: Not in execution |
| (7) | o_bOK | Normal completion | Bit | Off | The module FB has been processed normally when this argument is on. |
| (8) | o_uReadData | Read data storage device | Word [Unsigned]/ Bit String [16-bit] | 0 | The read data is stored.<br>The following cannot be specified as an argument. Specifying any of the following may cause a CPU error (2820H: Device/label/buffer memory specification incorrect).<br>• Dynamically specified array elements (Example: wLabel[D0])<br>• Digit-specified labels (Example: K4bLabel)<br>• Indirectly specified devices (Example: @W0)<br>• Local devices (Example: #D0) |

## FB details

| Item | Description | |
|---|---|---|
| Available devices | Target module | RJ61BT11 |
| | CPU modules | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 23 steps<br>The number of steps of the FB embedded in a program depends on the CPU module used, the input/output definitions, and the options setting of GX Works3. For the options setting of GX Works3, refer to the GX Works3 Operating Manual. | |
| Processing | When i_bEN (execution command) is turned on, this function reads the specified number of points of data from the automatic update buffer of another station. | |
| FB compilation method | Macro type | |
| FB operation | Pulse execution type (multiple-scan execution type) | |
| Input condition for FB_EN | None | |
| Timing chart of I/O signals | [For normal completion]<br>  | |
| Precautions | • This FB does not include error recovery processing. Please create error recovery processing separately according to the system and required operations.<br>• This FB uses the GP.RIFR instruction.<br>• Turn off i_bEN (execution command) after o_bOK (normal completion) is turned on. By turning off i_bEN (execution command), o_bOK (normal completion) is turned off.<br>• If message "If the program is compiled, the number of device points in the auto device setting is too small." appears, adjust the automatic device setting.<br>• If upgrading module FB versions updates instructions, adds a new instruction, or adds a new device, please consult your local Mitsubishi representative. | |

## Operation parameters

No operation parameter is applicable to M+RJ61BT11_AutomaticUpdateFBufferRead.

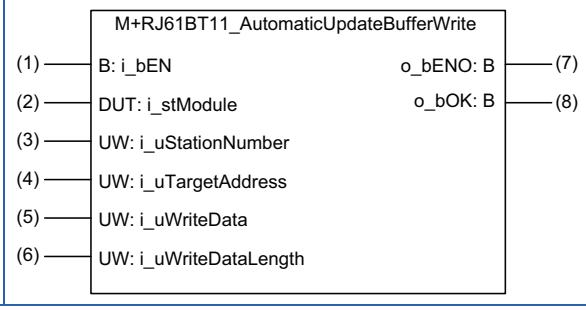
# 2.6 M+RJ61BT11_AutomaticUpdateBufferWrite



## Name

M+RJ61BT11_AutomaticUpdateBufferWrite

## Overview

| Item | Description |
|---|---|
| Functional overview | Writes the specified number of points of data to the automatic update buffer of another station. This function available for modules, such as AJ65BT-R2(N), which have an automatic update buffer. |
| Symbol |  |



## Labels

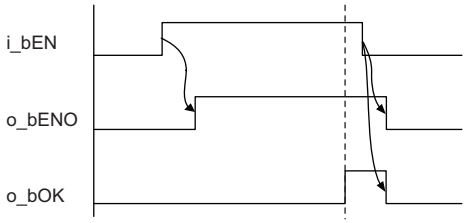
### ■Input arguments

| No. | Variable name | Name | Data type | Range | Description |
|---|---|---|---|---|---|
| (1) | i_bEN | Execution command | Bit | Off, on | On: Start the module FB.<br>Off: Do not start the module FB. |
| (2) | i_stModule | Module label | Structure | — | Specify the module for which the FB is to be executed.<br>Specify the module label of relevant modules.<br>(Example)<br>BT11_1 |
| (3) | i_uStationNumber | Target station number/random access buffer specification | Word [Unsigned]/ Bit String [16-bit] | 1 to 64, FFH | Specify the target station number.<br>1 to 64: Target station number<br>FFH: Random access buffer specification |
| (4) | i_uTargetAddress | Automatic update buffer or random access buffer address | Word [Unsigned]/ Bit String [16-bit] | — | Specify the offset value from the start of the automatic update buffer assigned to the target station or random access buffer. |
| (5) | i_uWriteData | Write data Storage device | Word [Unsigned]/ Bit String [16-bit] | — | Specify the start address of the device containing the write data.<br>The following cannot be specified as an argument. Specifying any of the following may cause a CPU error (2820H: Device/label/buffer memory specification incorrect).<br>• Dynamically specified array elements (Example: wLabel[D0])<br>• Digit-specified labels (Example: K4bLabel)<br>• Indirectly specified devices (Example: @W0)<br>• Local devices (Example: #D0) |
| (6) | i_uWriteDataLength | Number of write points | Word [Unsigned]/ Bit String [16-bit] | 1 to 4096 | Specify the start address of the device containing the write data. |

### ■Output arguments

| No. | Variable name | Name | Data type | Default value | Description |
|---|---|---|---|---|---|
| (7) | o_bENO | Execution status | Bit | Off | On: In execution<br>Off: Not in execution |
| (8) | o_bOK | Normal completion | Bit | Off | The module FB has been processed normally when this argument is on. |

## FB details

| Item | Description | |
|---|---|---|
| Available devices | Target module | RJ61BT11 |
| | CPU modules | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 23 steps<br>The number of steps of the FB embedded in a program depends on the CPU module used, the input/output definitions, and the options setting of GX Works3. For the options setting of GX Works3, refer to the GX Works3 Operating Manual. | |
| Processing | When i_bEN (execution command) is turned on, this function writes the specified number of points of data to the automatic update buffer of another station. | |
| FB compilation method | Macro type | |
| FB operation | Pulse type (multiple-scan execution type) | |
| Input condition for FB_EN | None | |
| Timing chart of I/O signals | [For normal completion]<br>  | |
| Precautions | • This FB does not include error recovery processing. Please create error recovery processing separately according to the system and required operations.<br>• This FB uses the GP.RITO instruction.<br>• Turn off i_bEN (execution command) after o_bOK (normal completion) is turned on. By turning off i_bEN (execution command), o_bOK (normal completion) is turned off.<br>• If message "If the program is compiled, the number of device points in the auto device setting is too small." appears, adjust the automatic device setting.<br>• If upgrading module FB versions updates instructions, adds a new instruction, or adds a new device, please consult your local Mitsubishi representative. | |

## Operation parameters

No operation parameter is applicable to M+RJ61BT11_AutomaticUpdateFBufferWrite.

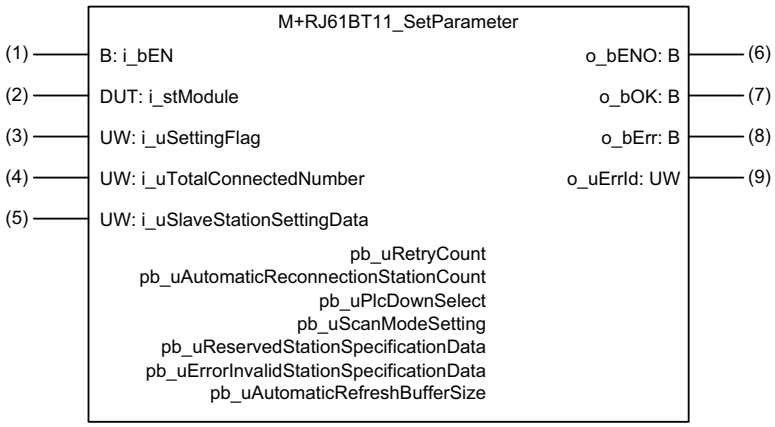
# 2.7 M+RJ61BT11_SetParameter



## Name

M+RJ61BT11_SetParameter

## Overview

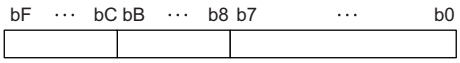
| Item | Description |
|---|---|
| Functional overview | Sets the network parameters in the master station. |
| Symbol |  |



## Labels

### ■Input arguments

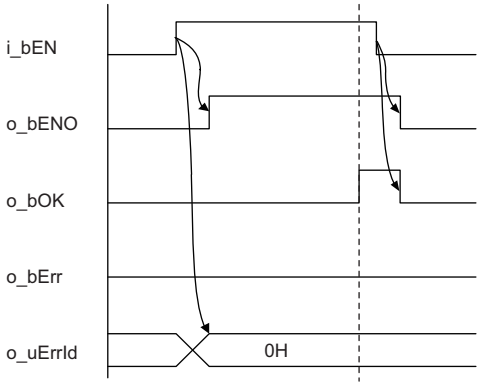
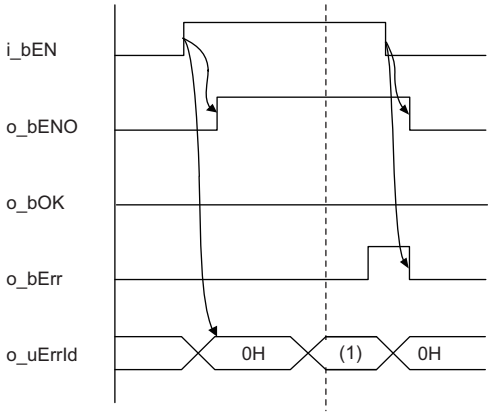
| No. | Variable name | Name | Data type | Range | Description |
|---|---|---|---|---|---|
| (1) | i_bEN | Execution command | Bit | Off, on | On: Start the module FB.<br>Off: Do not start the module FB. |
| (2) | i_stModule | Module label | Structure | — | Specify the module for which the FB is to be executed.<br>Specify the module label of relevant modules.<br>(Example)<br>BT11_1 |
| (3) | i_uSettingFlag | Setting flag | Word [Unsigned]/ Bit String [16-bit] | — | Specify whether each setting data is valid or invalid.<br>• 0: Invalid (The default value is used.)<br>• 1: Valid<br>bF bE bD bC bB bA b9 b8 b7 b6 b5 b4 b3 b2 b1 b0<br>b0: Device station setting data<br>b1: Reserved station specification data<br>b2: Error invalid station specification data<br>b3: Automatic update buffer assignment data<br>b4 to bB: Fixed to 0<br>bC: Setting of the input data from data link faulty<br>bD: Output data setting when CPU STOP<br>bE and bF: Fixed to 0 |
| (4) | i_uTotalConnectedNumber | Total number of connected modules/ stations | Word [Unsigned]/ Bit String [16-bit] | 1 to 64 | Specify the number of device stations connected. |

| No. | Variable name | Name | Data type | Range | Description |
|---|---|---|---|---|---|
| (5) | i_uSlaveStationSettingData | Device station setting data | Word [Unsigned]/ Bit String [16-bit] (0..63) | — | Specify the start number of the device for storing the device station setting data. (Default value: 0)<br>When the start address is specified using the label, use "ARRAY" for the data type.<br>Set the station type, the number of occupied stations, and the station number as follows.<br>  <br><br>b0 to b7: Station number<br>b8 to bB: Number of occupied stations<br>bC to bF: Station type<br>Station number setting: 1 to 64<br>Number of occupied stations setting<br>• 1 station: 1<br>• 2 stations: 2<br>• 3 stations: 3<br>• 4 stations: 4<br>Station type setting<br>• Ver.1-compatible remote I/O station: 0<br>• Ver.1-compatible remote device station: 1<br>• Ver.1-compatible intelligent device station: 2<br>• Ver.2-compatible remote device station (single): 5<br>• Ver.2-compatible intelligent device station (single): 6<br>• Ver.2-compatible remote device station (double): 8<br>• Ver.2-compatible intelligent device station (double): 9<br>• Ver.2-compatible remote device station (quadruple): 11<br>• Ver.2-compatible intelligent device station (quadruple): 12<br>• Ver.2-compatible remote device station (octuple): 14<br>• Ver.2-compatible intelligent device station (octuple): 15 |

## ■Output arguments

| No. | Variable name | Name | Data type | Default value | Description |
|---|---|---|---|---|---|
| (6) | o_bENO | Execution status | Bit | Off | On: In execution<br>Off: Not in execution |
| (7) | o_bOK | Normal completion | Bit | Off | Turned on for one scan at normal completion. |
| (8) | o_bErr | Error completion | Bit | Off | Turned on for one scan at error completion. |
| (9) | o_uErr_Id | Error code | Word | 0 | An error code is stored at error completion. |

## FB details

| Item | Description | |
|---|---|---|
| Available devices | Target module | RJ61BT11 |
| | CPU modules | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 112 steps<br>The number of steps of the FB embedded in a program depends on the CPU module used, the input/output definitions, and the options setting of GX Works3. For the options setting of GX Works3, refer to the GX Works3 Operating Manual. | |
| Processing | When i_bEN (execution command) is turned on, this function, this function sets the network parameters in the master station. | |
| FB compilation method | Macro type | |
| FB operation | Pulse type (multiple-scan execution type) | |
| Input condition for FB_EN | None | |
| Timing chart of I/O signals | [For normal completion]<br>  <br>[For error completion] (same as when a module error occurs)<br>  <br>(1): Error code | |
| Precautions | • This FB does not include error recovery processing. Please create error recovery processing separately according to the system and required operations.<br>• This FB uses the GP.RLPASET instruction.<br>• Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) is turned on. By turning off i_bEN (execution command), o_bOK (normal completion) or o_bErr (error completion) is turned off and o_uErrId (error code) is cleared to 0.<br>• If message "If the program is compiled, the number of device points in the auto device setting is too small." appears, adjust the automatic device setting.<br>• If upgrading module FB versions updates instructions, adds a new instruction, or adds a new device, please consult your local Mitsubishi representative. | |

## Error code

| Error code | Description | Action |
|---|---|---|
| B000H to BFFFH | An error occurred in a CC-Link System Master/Local Module. | MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) |

## Operation parameters

| Name | Variable name | Data type | Range | Default value | Description |
|---|---|---|---|---|---|
| Number of retries | pb_uRetryCount | Word [Unsigned]/ Bit String [16-bit] | 1 to 7 | 3 | Set the number of retries to be performed for a communication error station. |
| Number of automatic return modules | pb_uAutomaticReconnectionStationCount | Word [Unsigned]/ Bit String [16-bit] | 1 to 10 | 1 | Specify the number of device stations that can return by one link scan. |
| Data link setting when CPU is down | pb_uPlcDownSelect | Word [Unsigned]/ Bit String [16-bit] | 0, 1 | 0 | Specify whether to stop or continue the data link if the CPU module is stopped with an error.<br>• 0: Stops the data link.<br>• 1: Continues the data link. |
| Scan mode setting | pb_uScanModeSetting | Word [Unsigned]/ Bit String [16-bit] | 0, 1 | 0 | Set the link scan mode.<br>• 0: Link scan is performed asynchronously with a sequence scan.<br>• 1: Link scan is performed synchronously with a sequence scan. |
| Reserved station specification data | pb_uReservedStationSpecificationData | Word [Unsigned]/ Bit String [16-bit] (0..3) | 0000H to FFFFH | 0 | Specify the reserved station.<br>• 0: Not specified<br>• 1: Specified<br>• 1 to 64 in the table indicate station numbers.<br>bF bE bD bC bB bA b9 b8 b7 b6 b5 b4 b3 b2 b1 b0<br>+0 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1<br>+1 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17<br>+2 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33<br>+3 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49<br>For a device station which occupies two or more stations, specify only the start number. |
| Error invalid station specification data | pb_uErrorInvalidStationSpecificationData | Word [Unsigned]/ Bit String [16-bit] (0..3) | 0000H to FFFFH | 0 | Specify the error invalid station.<br>• 0: Not specified<br>• 1: Specified<br>• 1 to 64 in the table indicate station numbers.<br>bF bE bD bC bB bA b9 b8 b7 b6 b5 b4 b3 b2 b1 b0<br>+0 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1<br>+1 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17<br>+2 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33<br>+3 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49<br>For a device station which occupies two or more stations, specify only the start number.<br>If both the reserved and error invalid stations are specified for the same station, the reserved station specification will take priority. |
| Automatic update buffer assignment data | pb_uAutomaticRefreshBufferSize | Word [Unsigned]/ Bit String [16-bit] (0..25) | 0H, 80H to 1000H | 80H | Specify the assigned buffer memory size (words) that is used for the transient transmission with the automatic update buffer that is performed to the local or intelligent device station.<br>• 0: Not specified<br>• 1: Specified<br>For the device stations that have been set as intelligent device stations in the device station setting data, set them in ascending order of station numbers.<br>+0: Automatic update buffer size (1st)<br>+1: Automatic update buffer size (2nd)<br>+2: Automatic update buffer size (3rd)<br>⋮<br>+23: Automatic update buffer size (24th)<br>+24: Automatic update buffer size (25th)<br>+25: Automatic update buffer size (26th)<br>Assuming that the total size of the automatic update buffer is within 1000H (4096) words, specify the required size for each intelligent device station. |

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# MEMO

# REVISIONS

*The manual number is given on the bottom left of the back cover.

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