MITSUBISHI ELECTRIC

Mitsubishi Programmable Controller

MELSEC iQ-R series

# MELSEC iQ-R CPU Module Function Block Reference

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# 1 FUNCTION BLOCK (FB) LIST

This chapter lists the FBs for the MELSEC iQ-R series CPU module.

## FBs for the Ethernet function

For the Ethernet function FBs of CPU modules, refer to the "Ethernet-EQUIPPED MODULE FB" in the following.

MELSEC iQ-R Ethernet/CC-Link IE Function Block Reference

## FBs for the inter-module synchronization function

| Name*1 | Description |
|---|---|
| M+RCPU_MSynchronization_Delay1OUT<br>M+RCPU_MSynchronization_Delay2OUT | M+RCPU_MSynchronization_Delay1OUT holds the value specified by input data (output request data) in the FB and executes the OUT instruction when the FB is called next.<br>M+RCPU_MSynchronization_Delay2OUT executes the OUT instruction when the FB is called second time. |
| M+RCPU_MSynchronization_Delay1SET<br>M+RCPU_MSynchronization_Delay2SET | M+RCPU_MSynchronization_Delay1SET memorizes that this function has been called by the FB and executes the SET instruction when the FB is called next.<br>M+RCPU_MSynchronization_Delay2SET executes the SET instruction when the FB is called second time. |
| M+RCPU_MSynchronization_Delay1RST<br>M+RCPU_MSynchronization_Delay2RST | M+RCPU_MSynchronization_Delay1RST memorizes that this function has been called by the FB and executes the RST instruction when the FB is called next.<br>M+RCPU_MSynchronization_Delay2RST executes the RST instruction when the FB is called second time. |
| M+RCPU_MSynchronization_Delay1MOV<br>M+RCPU_MSynchronization_Delay2MOV | M+RCPU_MSynchronization_Delay1MOV holds the value specified by input data in the FB and executes the MOV instruction when the FB is called next.<br>M+RCPU_MSynchronization_Delay2MOV executes the MOV instruction when the FB is called second time. |
| M+RCPU_MSynchronization_Delay1DMOV<br>M+RCPU_MSynchronization_Delay2DMOV | M+RCPU_MSynchronization_Delay1DMOV holds the value specified by input data in the FB and executes the DMOV instruction when the FB is called next.<br>M+RCPU_MSynchronization_Delay2DMOV executes the DMOV instruction when the FB is called second time. |

*1 Note that this reference does not describe the FB version information which is displayed such as "_00A" at the end of FB name

# MEMO

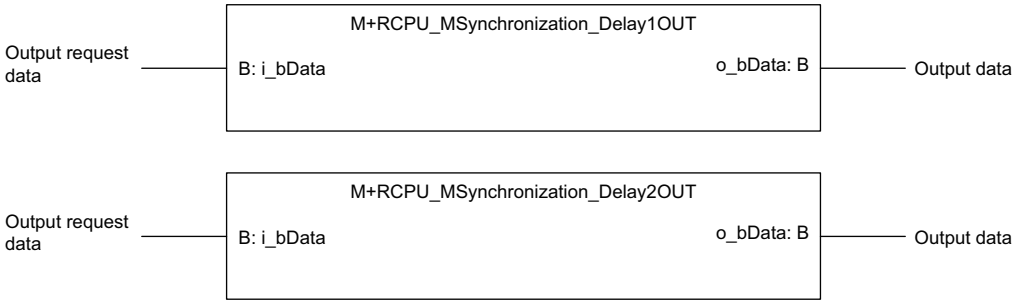
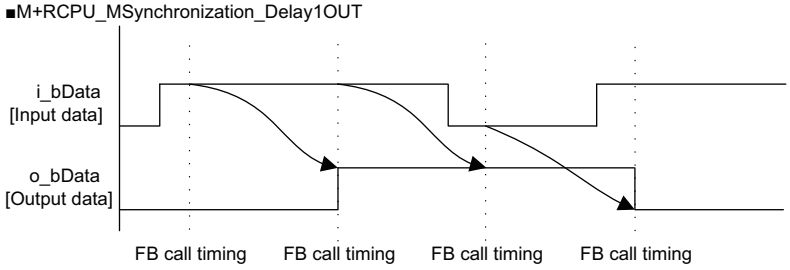
# 2 CPU MODULE FB

## 2.1 M+RCPU_MSynchronization_Delay1OUT, M+RCPU_MSynchronization_Delay2OUT

### Name

M+RCPU_MSynchronization_Delay1OUT, M+RCPU_MSynchronization_Delay2OUT

### FB details

| Item | Description | |
|---|---|---|
| Overview | Holds the value specified by output request data (input data) in the FB and executes the OUT instruction when the FB is called next or the second time. | |
| Symbol |  | |
| Available device | CPU module | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 12 steps | |
| Processing | Holds the output request data (bit) specified by i_bData in the FB and outputs it to o_bData when the FB is called next or the second time.<br>M+RCPU_MSynchronization_Delay1OUT outputs data when the FB is called next.<br>M+RCPU_MSynchronization_Delay2OUT outputs data when the FB is called second time. | |
| FB compilation method | Macro type | |
| FB operation | Always executed | |
| Input condition for FB_EN | None | |
| Timing chart of I/O signals | ■M+RCPU_MSynchronization_Delay1OUT<br>  <br>* M+RCPU_MSynchronization_Delay2OUT outputs data at the second FB call timing after FB is once called. | |
| Restrictions or precautions | • Always outputs OFF by the number of Delays after STOP changes to RUN. | |

## Error code

There is no error code.

## Labels

### ■Input label

| Name | Variable name | Data type | Range | Default value | Description |
|---|---|---|---|---|---|
| Output request data | i_bData | Bit | On or off | None | Specifies output data.<br>On: Requesting output on<br>Off: Requesting output off |

### ■Output label

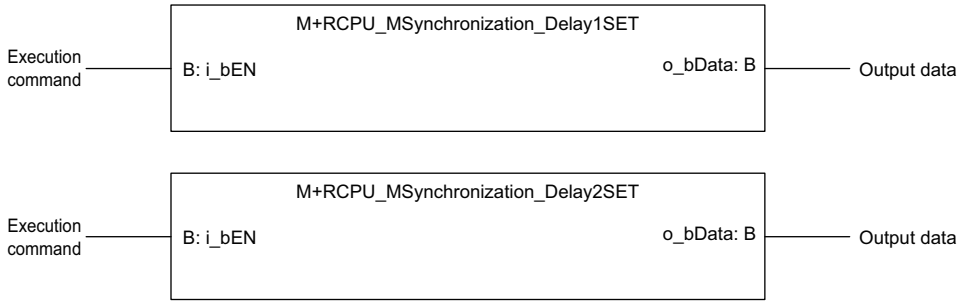
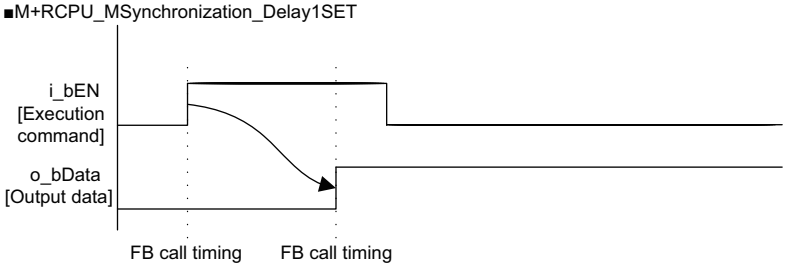
| Name | Variable name | Data type | Range | Description |
|---|---|---|---|---|
| Output data | o_bData | Bit | On or off | Output data are set. |

# 2.2 M+RCPU_MSynchronization_Delay1SET, M+RCPU_MSynchronization_Delay2SET

## Name

M+RCPU_MSynchronization_Delay1SET, M+RCPU_MSynchronization_Delay2SET

## FB details

| Item | Description | |
|---|---|---|
| Overview | Memorizes that this function has been called by the FB and executes the SET instruction when the FB is called next or the second time. | |
| Symbol |  | |
| Available device | CPU module | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 12 steps | |
| Processing | When i_bEN is turned on, the function holds the state in the FB and sets it in o_bData when the FB is called next or the second time.<br>M+RCPU_MSynchronization_Delay1SET is set when the FB is called next.<br>M+RCPU_MSynchronization_Delay2SET is set when the FB is called second time. | |
| FB compilation method | Macro type | |
| FB operation | Always executed | |
| Input condition for FB_EN | None | |
| Timing chart of I/O signals | ■M+RCPU_MSynchronization_Delay1SET<br>  <br>* M+RCPU_MSynchronization_Delay2SET sets the device at the second FB call timing after FB is once called. | |
| Restrictions or precautions | • Holds the output by the number of Delays after STOP changes to RUN. | |

## Error code

There is no error code.

## Labels

### ■Input label

| Name | Variable name | Data type | Range | Default value | Description |
|---|---|---|---|---|---|
| Execution command | i_bEN | Bit | On or off | None | On: FB starts.<br>Off: FB does not start. |

### ■Output label

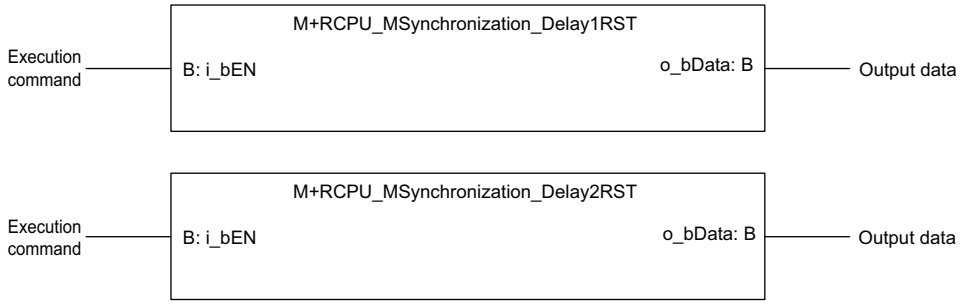
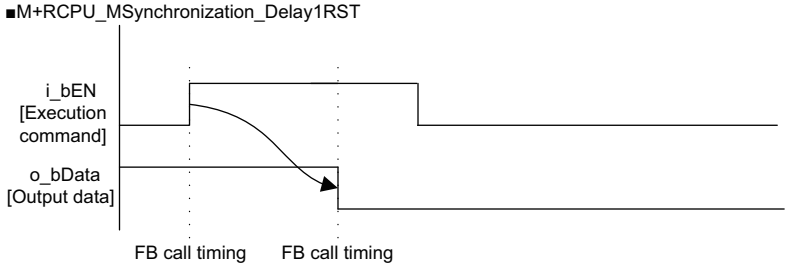
| Name | Variable name | Data type | Range | Description |
|---|---|---|---|---|
| Output data | o_bData | Bit | On or off | Output data are set. |

# 2.3 M+RCPU_MSynchronization_Delay1RST, M+RCPU_MSynchronization_Delay2RST

## Name

M+RCPU_MSynchronization_Delay1RST, M+RCPU_MSynchronization_Delay2RST

## FB details

| Item | Description | |
|---|---|---|
| Overview | Memorizes that this function has been called by the FB and executes the RST instruction when the FB is called next or the second time. | |
| Symbol |  | |
| Available device | CPU module | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | 12 steps | |
| Processing | When i_bEN is turned on, the function holds the state in the FB and resets o_bData when the FB is called next or the second time.<br>M+RCPU_MSynchronization_Delay1RST resets the device when the FB is called next.<br>M+RCPU_MSynchronization_Delay2RST resets the device when the FB is called second time. | |
| FB compilation method | Macro type | |
| FB operation | Always executed | |
| Input condition for FB_EN | None | |
| Timing chart of I/O signals | ■M+RCPU_MSynchronization_Delay1RST<br>  <br>* M+RCPU_MSynchronization_Delay2RST resets the device at the second FB call timing after FB is once called. | |
| Restrictions or precautions | • Holds the output by the number of Delays after STOP changes to RUN. | |

## Error code

There is no error code.

## Labels

### ■Input label

| Name | Variable name | Data type | Range | Default value | Description |
|---|---|---|---|---|---|
| Execution command | i_bEN | Bit | On or off | None | On: FB starts.<br>Off: FB does not start. |

### ■Output label

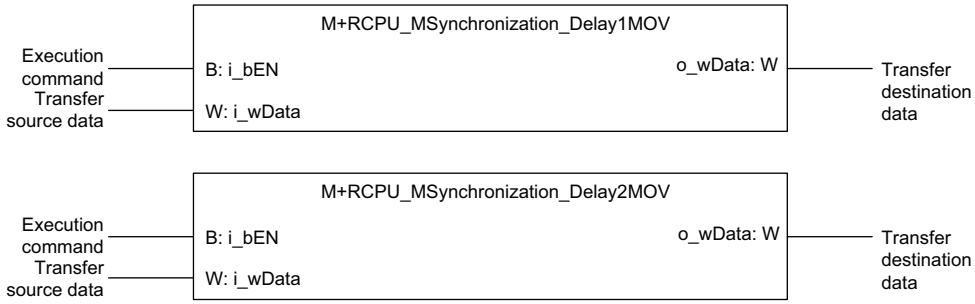
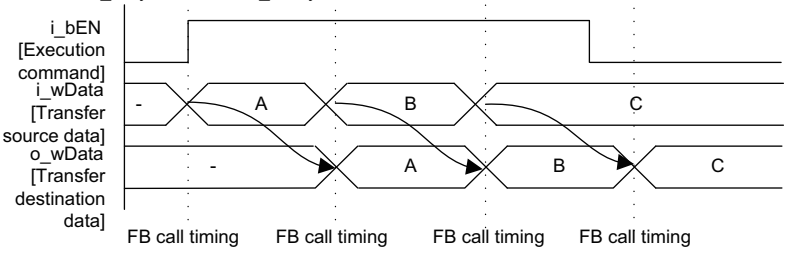
| Name | Variable name | Data type | Range | Description |
|---|---|---|---|---|
| Output data | o_bData | Bit | On or off | Output data are set. |

# 2.4 M+RCPU_MSynchronization_Delay1MOV, M+RCPU_MSynchronization_Delay2MOV

## Name

M+RCPU_MSynchronization_Delay1MOV, M+RCPU_MSynchronization_Delay2MOV

## FB details

| Item | Description | |
|---|---|---|
| Overview | Holds the value specified by transfer source data (input data) in the FB and executes the MOV instruction when the FB is called next or the second time. | |
| Symbol |  | |
| Available device | CPU module | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | • 18 steps (M+RCPU_MSynchronization_Delay1MOV)<br>• 20 steps (M+RCPU_MSynchronization_Delay2MOV) | |
| Processing | When i_bEN is turned on, the function transfers the data specified by i_wData to o_wData in 16-bit data transfer mode when the FB is called next or the second time.<br>M+RCPU_MSynchronization_Delay1MOV transfers data when the FB is called next.<br>M+RCPU_MSynchronization_Delay2MOV transfers data when the FB is called second time. | |
| FB compilation method | Macro type | |
| FB operation | Always executed | |
| Input condition for FB_EN | None | |
| Timing chart of I/O signals | ■M+RCPU_MSynchronization_Delay1MOV<br>  <br>* M+RCPU_MSynchronization_Delay2DMOV transfers data at the second FB calling after FB is once called. | |
| Restrictions or precautions | • Holds the output by the number of Delays after STOP changes to RUN. | |

## Error code

There is no error code.

## Labels

### ■Input label

| Name | Variable name | Data type | Range | Default value | Description |
|---|---|---|---|---|---|
| Execution command | i_bEN | Bit | On or off | None | On: FB starts.<br>Off: FB does not start. |
| Transfer source data | i_wData | Word [signed] | Effective device range | None | Specify the transfer source data or the device containing the transfer source data. |

### ■Output label

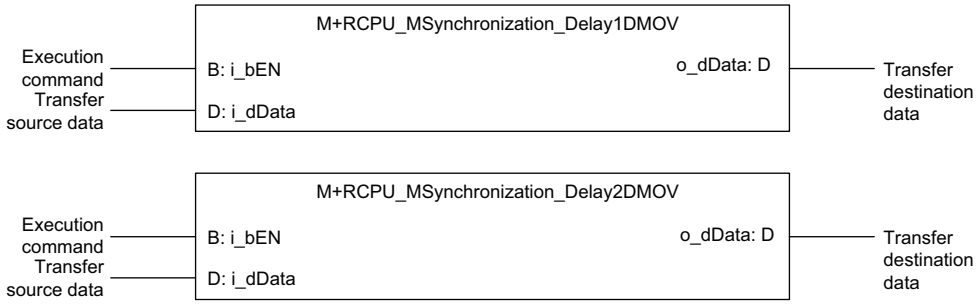
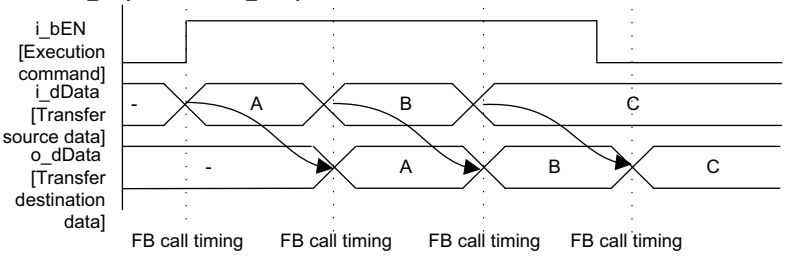
| Name | Variable name | Data type | Range | Description |
|---|---|---|---|---|
| Transfer destination data | o_wData | Word [signed] | Effective device range | Transfer data is stored. |

# 2.5 M+RCPU_MSynchronization_Delay1DMOV, M+RCPU_MSynchronization_Delay2DMOV

## Name

M+RCPU_MSynchronization_Delay1DMOV, M+RCPU_MSynchronization_Delay2DMOV

## FB details

| Item | Description | |
|---|---|---|
| Overview | Holds the value specified by transfer source data (input data) in the FB and executes the DMOV instruction when the FB is called next or the second time. | |
| Symbol |  | |
| Available device | CPU module | RCPU |
| | Engineering tool | GX Works3 |
| Language | Ladder diagram | |
| Number of basic steps | • 18 steps (M+RCPU_MSynchronization_Delay1DMOV)<br>• 20 steps (M+RCPU_MSynchronization_Delay2DMOV) | |
| Processing | When i_bEN is turned on, the function transfers the data specified by i_dData to o_dData in 32-bit data transfer mode when the FB is called next or the second time.<br>M+RCPU_MSynchronization_Delay1DMOV transfers data when the FB is called next.<br>M+RCPU_MSynchronization_Delay2DMOV transfers data when the FB is called second time. | |
| FB compilation method | Macro type | |
| FB operation | Always executed | |
| Input condition for FB_EN | None | |
| Timing chart of I/O signals | ■M+RCPU_MSynchronization_Delay1DMOV<br>  <br>* M+RCPU_MSynchronization_Delay2DMOV transfers data at the second FB calling after FB is once called. | |
| Restrictions or precautions | • Holds the output by the number of Delays after STOP changes to RUN. | |

## Error code

There is no error code.

## Labels

### ■Input label

| Name | Variable name | Data type | Range | Default value | Description |
|---|---|---|---|---|---|
| Execution command | i_bEN | Bit | On or off | None | On: FB starts.<br>Off: FB does not start. |
| Transfer source data | i_dData | Double word [signed] | Effective device range | None | Specify the transfer source data or the device containing the transfer source data. |

### ■Output label

| Name | Variable name | Data type | Range | Description |
|---|---|---|---|---|
| Transfer destination data | o_dData | Double word [signed] | Effective device range | Transfer data is stored. |

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# MEMO

# REVISIONS

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

| Revision date | *Manual number | Description |
|---|---|---|
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