



Mitsubishi Programmable Controller

**MELSEC iQ-R**  
series

## MELSEC iQ-R CPU Module Function Block Reference

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# CONTENTS

<b>CHAPTER 1</b>	<b>FUNCTION BLOCK (FB) LIST</b>	<b>2</b>
<b>CHAPTER 2</b>	<b>CPU MODULE FB</b>	<b>4</b>
2.1	M+RCPU_MSynchroization_Delay1OUT, M+RCPU_MSynchroization_Delay2OUT .....	4
2.2	M+RCPU_MSynchroization_Delay1SET, M+RCPU_MSynchroization_Delay2SET .....	6
2.3	M+RCPU_MSynchroization_Delay1RST, M+RCPU_MSynchroization_Delay2RST .....	8
2.4	M+RCPU_MSynchroization_Delay1MOV, M+RCPU_MSynchroization_Delay2MOV .....	10
2.5	M+RCPU_MSynchroization_Delay1DMOV, M+RCPU_MSynchroization_Delay2DMOV .....	12
	<b>INSTRUCTION INDEX</b>	<b>14</b>
	REVISIONS .....	16

# 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 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. M+RCPU_MSynchronization_Delay2OUT executes the OUT instruction when the FB is called second time.
M+RCPU_MSynchronization_Delay1SET 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. M+RCPU_MSynchronization_Delay2SET executes the SET instruction when the FB is called second time.
M+RCPU_MSynchronization_Delay1RST 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. M+RCPU_MSynchronization_Delay2RST executes the RST instruction when the FB is called second time.
M+RCPU_MSynchronization_Delay1MOV 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. M+RCPU_MSynchronization_Delay2MOV executes the MOV instruction when the FB is called second time.
M+RCPU_MSynchronization_Delay1DMOV 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. 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



# 2 CPU MODULE FB

## 2.1 M+RCPU\_MSynchroization\_Delay1OUT, M+RCPU\_MSynchroization\_Delay2OUT

### Name

M+RCPU\_MSynchroization\_Delay1OUT, M+RCPU\_MSynchroization\_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	<table border="1"> <tr> <td>CPU module</td><td>RCPU</td></tr> <tr> <td>Engineering tool</td><td>GX Works3</td></tr> </table>	CPU module	RCPU	Engineering tool	GX Works3
CPU module	RCPU				
Engineering tool	GX Works3				
Language	Ladder diagram				
Number of basic steps	12 steps				
Processing	<p>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.</p> <p>M+RCPU_MSynchroization_Delay1OUT outputs data when the FB is called next.</p> <p>M+RCPU_MSynchroization_Delay2OUT outputs data when the FB is called second time.</p>				
FB compilation method	Macro type				
FB operation	Always executed				
Input condition for FB_EN	None				
Timing chart of I/O signals	<p>■M+RCPU_MSynchroization_Delay1OUT</p> <p>* M+RCPU_MSynchroization_Delay2OUT outputs data at the second FB call timing after FB is once called.</p>				
Restrictions or precautions	<ul style="list-style-type: none"> <li>Always outputs OFF by the number of Delays after STOP changes to RUN.</li> </ul>				

## 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. On: Requesting output on 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	<div> <div> <div>Execution command</div> <div> <div>M+RCPU_MSynchronization_Delay1SET</div> <div> <div>B: i_bEN</div> <div>o_bData: B</div> </div> <div>Output data</div> </div> </div> <div> <div>Execution command</div> <div> <div>M+RCPU_MSynchronization_Delay2SET</div> <div> <div>B: i_bEN</div> <div>o_bData: B</div> </div> <div>Output data</div> </div> </div> </div>
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. M+RCPU_MSynchronization_Delay1SET is set when the FB is called next. 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	<div> <div> <div>■M+RCPU_MSynchronization_Delay1SET</div> <div> <div> <div>i_bEN</div> <div>[Execution command]</div> </div> <div> <div>o_bData</div> <div>[Output data]</div> </div> <div> <div>FB call timing</div> <div>FB call timing</div> </div> </div> </div> <div>           * M+RCPU_MSynchronization_Delay2SET sets the device at the second FB call timing after FB is once called.         </div> </div>
Restrictions or precautions	<ul style="list-style-type: none"> <li>• Holds the output by the number of Delays after STOP changes to RUN.</li> </ul>



## 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. 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\_MSynchroization\_Delay1RST, M+RCPU\_MSynchroization\_Delay2RST

Name	
M+RCPU_MSynchroization_Delay1RST, M+RCPU_MSynchroization_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	<div> <div> <div>Execution command</div> <div> <div>M+RCPU_MSynchroization_Delay1RST</div> <div> <div>B: i_bEN</div> <div>o_bData: B</div> </div> <div>Output data</div> </div> </div> <div> <div>Execution command</div> <div> <div>M+RCPU_MSynchroization_Delay2RST</div> <div> <div>B: i_bEN</div> <div>o_bData: B</div> </div> <div>Output data</div> </div> </div> </div>
Available device	CPU module
	RCPU
Engineering tool	
	GX Works3
Language	Ladder diagram
Number of basic steps	12 steps
Processing	<p>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.</p> <p>M+RCPU_MSynchroization_Delay1RST resets the device when the FB is called next.</p> <p>M+RCPU_MSynchroization_Delay2RST resets the device when the FB is called second time.</p>
FB compilation method	Macro type
FB operation	Always executed
Input condition for FB_EN	None
Timing chart of I/O signals	<div> <div> <div>■M+RCPU_MSynchroization_Delay1RST</div> <div> <div> <div>i_bEN</div> <div>[Execution command]</div> </div> <div> <div>o_bData</div> <div>[Output data]</div> </div> <div> <div>FB call timing</div> <div>FB call timing</div> </div> </div> </div> <p>* M+RCPU_MSynchroization_Delay2RST resets the device at the second FB call timing after FB is once called.</p> </div>
Restrictions or precautions	<ul style="list-style-type: none"> <li>• Holds the output by the number of Delays after STOP changes to RUN.</li> </ul>

## 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. 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	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Execution command</p> <p>Transfer source data</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>M+RCPU_MSynchronization_Delay1MOV</p> <p>B: i_bEN</p> <p>W: i_wData</p> </div> <div style="text-align: center;"> <p>o_wData: W</p> <p>Transfer destination data</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Execution command</p> <p>Transfer source data</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>M+RCPU_MSynchronization_Delay2MOV</p> <p>B: i_bEN</p> <p>W: i_wData</p> </div> <div style="text-align: center;"> <p>o_wData: W</p> <p>Transfer destination data</p> </div> </div>				
Available device	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">CPU module</td><td style="width: 50%;">RCPU</td></tr> <tr> <td>Engineering tool</td><td>GX Works3</td></tr> </table>	CPU module	RCPU	Engineering tool	GX Works3
CPU module	RCPU				
Engineering tool	GX Works3				
Language	Ladder diagram				
Number of basic steps	<ul style="list-style-type: none"> <li>• 18 steps (M+RCPU_MSynchronization_Delay1MOV)</li> <li>• 20 steps (M+RCPU_MSynchronization_Delay2MOV)</li> </ul>				
Processing	<p>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.</p> <p>M+RCPU_MSynchronization_Delay1MOV transfers data when the FB is called next.</p> <p>M+RCPU_MSynchronization_Delay2MOV transfers data when the FB is called second time.</p>				
FB compilation method	Macro type				
FB operation	Always executed				
Input condition for FB_EN	None				
Timing chart of I/O signals	<p>■ M+RCPU_MSynchronization_Delay1MOV</p> <p style="font-size: small;">* M+RCPU_MSynchronization_Delay2MOV transfers data at the second FB calling after FB is once called.</p>				
Restrictions or precautions	<ul style="list-style-type: none"> <li>• Holds the output by the number of Delays after STOP changes to RUN.</li> </ul>				

## 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. 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	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 20px;"> <div style="text-align: right; margin-right: 10px;">           Execution command Transfer source data         </div> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <b>M+RCPU_MSynchronization_Delay1DMOV</b>            B: i_bEN            D: i_dData            o_dData: D         </div> <div style="text-align: left; margin-left: 10px;">           Transfer destination data         </div> </div> <div style="display: flex; align-items: center;"> <div style="text-align: right; margin-right: 10px;">           Execution command Transfer source data         </div> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <b>M+RCPU_MSynchronization_Delay2DMOV</b>            B: i_bEN            D: i_dData            o_dData: D         </div> <div style="text-align: left; margin-left: 10px;">           Transfer destination data         </div> </div> </div>				
Available device	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">CPU module</td><td style="width: 50%;">RCPU</td></tr> <tr> <td>Engineering tool</td><td>GX Works3</td></tr> </table>	CPU module	RCPU	Engineering tool	GX Works3
CPU module	RCPU				
Engineering tool	GX Works3				
Language	Ladder diagram				
Number of basic steps	<ul style="list-style-type: none"> <li>• 18 steps (M+RCPU_MSynchronization_Delay1DMOV)</li> <li>• 20 steps (M+RCPU_MSynchronization_Delay2DMOV)</li> </ul>				
Processing	<p>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.</p> <p>M+RCPU_MSynchronization_Delay1DMOV transfers data when the FB is called next.</p> <p>M+RCPU_MSynchronization_Delay2DMOV transfers data when the FB is called second time.</p>				
FB compilation method	Macro type				
FB operation	Always executed				
Input condition for FB_EN	None				
Timing chart of I/O signals	<p>■ M+RCPU_MSynchronization_Delay1DMOV</p> <p style="font-size: small;">* M+RCPU_MSynchronization_Delay2DMOV transfers data at the second FB calling after FB is once called.</p>				
Restrictions or precautions	<ul style="list-style-type: none"> <li>• Holds the output by the number of Delays after STOP changes to RUN.</li> </ul>				

## 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. 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.

# INSTRUCTION INDEX

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## M

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M+RCPU_MSynchroization_Delay1DMOV . . . .	12
M+RCPU_MSynchroization_Delay1MOV . . . . .	10
M+RCPU_MSynchroization_Delay1OUT . . . . .	4
M+RCPU_MSynchroization_Delay1RST . . . . .	8
M+RCPU_MSynchroization_Delay1SET . . . . .	6
M+RCPU_MSynchroization_Delay2DMOV . . . .	12
M+RCPU_MSynchroization_Delay2MOV . . . . .	10
M+RCPU_MSynchroization_Delay2OUT . . . . .	4
M+RCPU_MSynchroization_Delay2RST . . . . .	8
M+RCPU_MSynchroization_Delay2SET . . . . .	6



# MEMO

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# REVISIONS

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

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