

Programmable Controller

MELSEC iQ-R
series

MELSEC iQ-R CANopen Module
Function Block Reference

CONTENTS

CHAPTER 1	MODULE FUNCTION BLOCK (FB) LIST	2
------------------	--	----------

CHAPTER 2	CANopen MODULE FUNCTION BLOCK (FB)	4
------------------	---	----------

2.1	M+RJ71CN91_NMTRequestRead.....	4
2.2	M+RJ71CN91_NMTRequestWrite.....	6
2.3	M+RJ71CN91_SDORead.....	8
2.4	M+RJ71CN91_SDOWrite.....	11
2.5	M+RJ71CN91_SDOMultiRead.....	14
2.6	M+RJ71CN91_SDOMultiWrite.....	17

INSTRUCTION INDEX	21
--------------------------	-----------

REVISIONS.....	23
TRADEMARKS.....	24

1 MODULE FUNCTION BLOCK (FB) LIST

The following table lists the module FBs of the CANopen module in the MELSEC iQ-R series.

○: Available, ×: Not available

Name ^{*1}	Description	Availability by function modes	
		CANopen 405 mode	11-bit CAN-ID Layer 2 message mode, 29-bit CAN-ID Layer 2 message mode
M+RJ71CN91_NMTRequestRead	Performs read request of Request NMT (index 1F82H, subindex 01H to 7FH).	○	×
M+RJ71CN91_NMTRequestWrite	Performs write request of Request NMT (index 1F82H, subindex 01H to 80H).	○	×
M+RJ71CN91_SDORead	Executes SDO read.	○	×
M+RJ71CN91_SDOWrite	Executes SDO write.	○	×
M+RJ71CN91_SDOMultiRead	Executes SDO multi read.	○	×
M+RJ71CN91_SDOMultiWrite	Executes SDO multi write.	○	×

*1 An FB name ends in the FB version information such as "_00A"; however, this reference manual leaves out it.

Precautions

- The module FBs of the RJ71CN91 do not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- If upgrading module FB versions updates instructions, adds a new instruction, or adds a new device, please consult your local Mitsubishi representative.

2 CANopen MODULE FUNCTION BLOCK (FB)

2.1 M+RJ71CN91_NMTRequestRead

Name

M+RJ71CN91_NMTRequestRead

Overview

Item	Description
Functional overview	Performs read request of Request NMT (index 1F82H, subindex 01H to 7FH).
Symbol	<pre> graph LR subgraph M+RJ71CN91_NMTRequestRead direction LR B["B: i_bEN"] DUT["DUT: i_stModule"] W1["W: i_wNodeID"] W2["W: i_wRemoteNodeID"] o_bENO["o_bENO: B"] o_bOK["o_bOK: B"] o_bErr["o_bErr: B"] o_uRequestData["o_uRequestData: UW"] end B --- o_bENO DUT --- o_bOK W1 --- o_bErr W2 --- o_uRequestData </pre>

Labels

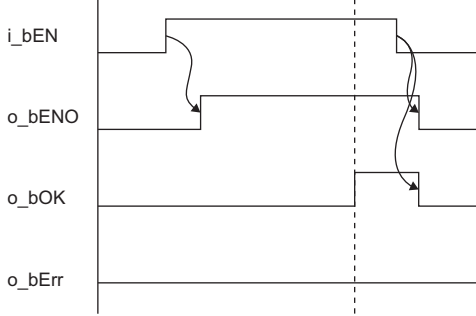
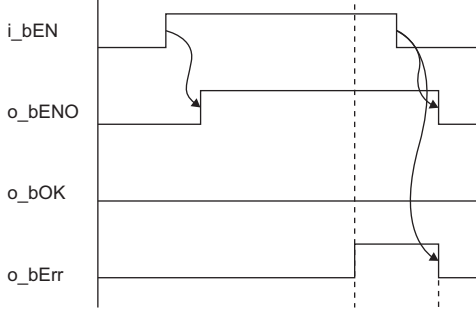
■Input arguments

No.	Variable name	Name	Data type	Scope	Description
(1)	i_bEN	Execution command	Bit	Off or on	On: The module FB is activated. Off: The module FB is not activated.
(2)	i_stModule	Module label	Structure	—	Specifies a module for which the FB is to be executed. Specifies the module label of the module. (Example) CN91_1
(3)	i_wNodeID	Node ID	Word [signed]	1 to 127	Specifies the node ID.
(4)	i_wRemoteNodeID	Node ID to be read	Word [signed]	1 to 127	Specifies the node ID to be read.

■Output arguments

No.	Variable name	Name	Data type	Default value	Description
(5)	o_bENO	Execution status	Bit	Off	On: In execution Off: Not in execution
(6)	o_bOK	Normal completion	Bit	Off	The on state indicates that the module FB processing has been completed successfully.
(7)	o_bErr	Error completion	Bit	Off	The on state indicates that the module FB processing has been completed with an error.
(8)	o_uRequestData	Read data	Word [unsigned]/bit string [16 bits]	—	The value of the read Request NMT (index 1F82H, subindex 01H to 7FH) is stored.

FB details

Item	Description	
Available device	Target module	RJ71CN91
	CPU module	RCPU
	Engineering tool	GX Works3
Language	Ladder diagram	
Number of basic steps	896 steps 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 item performs read request of Request NMT (index 1F82H, subindex 01H to 7FH). The Request NMT (index 1F82H, subindex 01H to 7FH) in the object dictionary of the specified node is read.	
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	<p>■When the operation is completed successfully</p>  <p>■When the operation is completed with an error (same as for the case of a module error)</p> 	
Precautions	<ul style="list-style-type: none"> This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation. Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) turns on. By turning off i_bEN (execution command), o_bOK (normal completion) and o_bErr (error completion) are turned off. 	

Operation parameters

There is no operation parameter applicable to M+RJ71CN91_NMTRequestRead.

2.2 M+RJ71CN91_NMTRRequestWrite

Name

M+RJ71CN91_NMTRRequestWrite

Overview

Item	Description																									
Functional overview	Performs write request of Request NMT (index 1F82H, subindex 01H to 80H).																									
Symbol	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">M+RJ71CN91_NMTRRequestWrite</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: right;">(1) —</td> <td style="width: 45%;">B: i_bEN</td> <td style="width: 5%;"></td> <td style="width: 45%;">o_bENO: B</td> <td style="width: 5%; text-align: left;">(6) —</td> </tr> <tr> <td style="text-align: right;">(2) —</td> <td>DUT: i_stModule</td> <td></td> <td>o_bOK: B</td> <td style="text-align: left;">(7) —</td> </tr> <tr> <td style="text-align: right;">(3) —</td> <td>W: i_wNodeID</td> <td></td> <td>o_bErr: B</td> <td style="text-align: left;">(8) —</td> </tr> <tr> <td style="text-align: right;">(4) —</td> <td>W: i_wRemoteNodeID</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">(5) —</td> <td>UW: i_uRequestCode</td> <td></td> <td></td> <td></td> </tr> </table> </div>	(1) —	B: i_bEN		o_bENO: B	(6) —	(2) —	DUT: i_stModule		o_bOK: B	(7) —	(3) —	W: i_wNodeID		o_bErr: B	(8) —	(4) —	W: i_wRemoteNodeID				(5) —	UW: i_uRequestCode			
(1) —	B: i_bEN		o_bENO: B	(6) —																						
(2) —	DUT: i_stModule		o_bOK: B	(7) —																						
(3) —	W: i_wNodeID		o_bErr: B	(8) —																						
(4) —	W: i_wRemoteNodeID																									
(5) —	UW: i_uRequestCode																									

Labels

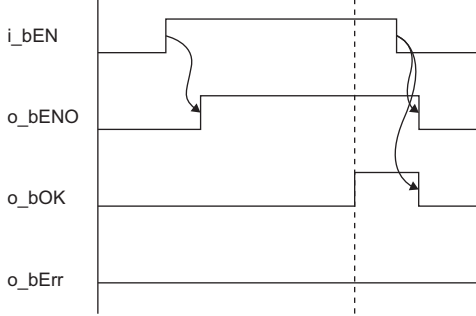
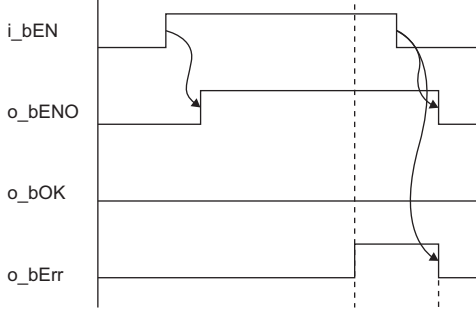
■ Input arguments

No.	Variable name	Name	Data type	Scope	Description
(1)	i_bEN	Execution command	Bit	Off or on	On: The module FB is activated. Off: The module FB is not activated.
(2)	i_stModule	Module label	Structure	—	Specifies a module for which the FB is to be executed. Specifies the module label of the module. (Example) CN91_1
(3)	i_wNodeID	Node ID	Word [signed]	1 to 127	Specifies the node ID.
(4)	i_wRemoteNodeID	Node ID to be written	Word [signed]	1 to 128	Specifies the node ID where data is to be written. When 128 is specified, all the CANopen nodes on the network are targeted.
(5)	i_uRequestCode	Write data	Word [unsigned]/bit string [16 bits]	—	Specifies the value to be set to Request NMT (index 1F82H, subindex 01H to 80H) in the object dictionary.

■ Output arguments

No.	Variable name	Name	Data type	Default value	Description
(6)	o_bENO	Execution status	Bit	Off	On: In execution Off: Not in execution
(7)	o_bOK	Normal completion	Bit	Off	The on state indicates that the module FB processing has been completed successfully.
(8)	o_bErr	Error completion	Bit	Off	The on state indicates that the module FB processing has been completed with an error.

FB details

Item	Description	
Available device	Target module	RJ71CN91
	CPU module	RCPU
	Engineering tool	GX Works3
Language	Ladder diagram	
Number of basic steps	835 steps 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 item performs write request of Request NMT (index 1F82H, subindex 01H to 80H). Data is written to the Request NMT (index 1F82H, subindex 01H to 80H) in the object dictionary of the specified node.	
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	<p>■When the operation is completed successfully</p>  <p>■When the operation is completed with an error (same as for the case of a module error)</p> 	
Precautions	<ul style="list-style-type: none"> This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation. Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) turns on. By turning off i_bEN (execution command), o_bOK (normal completion) and o_bErr (error completion) are turned off. 	

Operation parameters

There is no operation parameter applicable to M+RJ71CN91_NMTRequestWrite.

2.3 M+RJ71CN91_SDORead

Name

M+RJ71CN91_SDORead

Overview

Item	Description
Functional overview	Executes SDO read.
Symbol	<p>The diagram shows a central box labeled 'M+RJ71CN91_SDORead'. It has five input variables on the left and five output variables on the right, each with a numbered line connecting it to the box:</p> <ul style="list-style-type: none"> (1) B: i_bEN (2) DUT: i_stModule (3) W: i_wNodeID (4) UW: i_uIndex (5) UW: i_uSubIndex o_bENO: B (6) o_bOK: B (7) o_bErr: B (8) o_wReadDataLength: W (9) o_uReadData: UW (10) o_dReadErrorCode: UD (11)

Labels

Input arguments

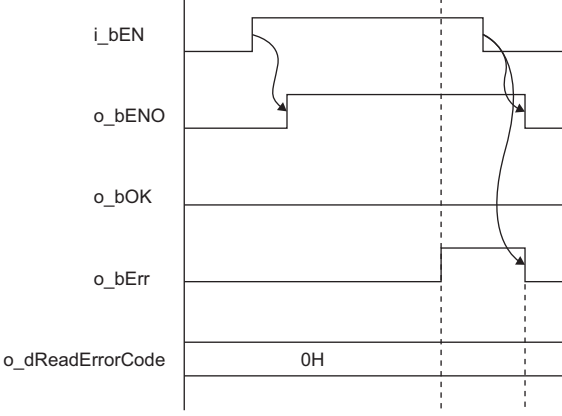
No.	Variable name	Name	Data type	Scope	Description
(1)	i_bEN	Execution command	Bit	Off or on	On: The module FB is activated. Off: The module FB is not activated.
(2)	i_stModule	Module label	Structure	—	Specifies a module for which the FB is to be executed. Specifies the module label of the module. (Example) CN91_1
(3)	i_wNodeID	Node ID	Word [signed]	0 to 127	Specifies the node ID to which SDO read is to be executed.
(4)	i_uIndex	Index	Word [unsigned]/bit string [16 bits]	0001H to FFFFH	Specifies the index in the object dictionary to which SDO read is to be executed.
(5)	i_uSubIndex	Subindex	Word [unsigned]/bit string [16 bits]	0000H to 00FFH	Specifies the subindex in the object dictionary to which SDO read is to be executed.

Output arguments

No.	Variable name	Name	Data type	Default value	Description
(6)	o_bENO	Execution status	Bit	Off	On: In execution Off: Not in execution
(7)	o_bOK	Normal completion	Bit	Off	The on state indicates that the module FB processing has been completed successfully.
(8)	o_bErr	Error completion	Bit	Off	The on state indicates that the module FB processing has been completed with an error.
(9)	o_wReadDataLength	Read data length	Word [signed]	—	The data length (byte) of the read data is stored.
(10)	o_uReadData	Read data	Word [unsigned]/bit string [16 bits] (0..61)	—	The read data is stored.
(11)	o_dReadErrorCode	Read error code	Double word [unsigned]/bit string [32 bits]	—	The SDO abort code is stored at error completion. (MELSEC iQ-R CANopen Module User's Manual (Application))


FB details

Item	Description	
Available device	Target module	RJ71CN91
	CPU module	RCPU
	Engineering tool	GX Works3
Language	Ladder diagram	
Number of basic steps	1136 steps 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 item executes SDO read.	
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	<p>■When the operation is completed successfully</p> <p>■When the operation is completed with an error (SDO error)</p> <p>(1) Error code</p> <ul style="list-style-type: none"> When SDO error occurs, o_bErr (error completion) turns on and the error code is stored in o_dReadErrorCode (read error code). For the error code, refer to the following. <p> MELSEC iQ-R CANopen Module User's Manual (Application)</p>	

Item	Description
Timing chart of I/O signals	<p data-bbox="320 181 911 203">■When the operation is completed with an error (other than SDO error)</p>  <p data-bbox="320 667 1453 712">• When an error other than SDO error occurs, o_bErr (error completion) turns on, and o_bErr (error completion) is turned off by turning off i_bEN (execution command).</p>
Precautions	<ul data-bbox="320 725 1437 855" style="list-style-type: none"> • This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation. • Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) turns on. By turning off i_bEN (execution command), o_bOK (normal completion) and o_bErr (error completion) are turned off, and o_dReadErrorCode (read error code) is cleared.

Error code

For additional information on the SDO abort code and SDO error, refer to the following.

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

Operation parameters

There is no operation parameter applicable to M+RJ71CN91_SDORed.

2.4 M+RJ71CN91_SDOWrite

Name

M+RJ71CN91_SDOWrite

Overview

Item	Description
Functional overview	Executes SDO write.
Symbol	<p>The diagram shows a rectangular block labeled 'M+RJ71CN91_SDOWrite'. On the left side, there are seven input variables: (1) B: i_bEN, (2) DUT: i_stModule, (3) W: i_wNodeID, (4) UW: i_ulIndex, (5) UW: i_uSubIndex, (6) W: i_wWriteDataLength, and (7) UW: i_uWriteData. On the right side, there are four output variables: (8) o_bENO: B, (9) o_bOK: B, (10) o_bErr: B, and (11) o_dWriteErrorCode: UD.</p>

Labels

Input arguments

No.	Variable name	Name	Data type	Scope	Description
(1)	i_bEN	Execution command	Bit	Off or on	On: The module FB is activated. Off: The module FB is not activated.
(2)	i_stModule	Module label	Structure	—	Specifies a module for which the FB is to be executed. Specifies the module label of the module. (Example) CN91_1
(3)	i_wNodeID	Node ID	Word [signed]	0 to 127	Specifies the node ID to which SDO write is to be executed.
(4)	i_ulIndex	Index	Word [unsigned]/bit string [16 bits]	0001H to FFFFH	Specifies the index in the object dictionary to which SDO write is to be executed.
(5)	i_uSubIndex	Subindex	Word [unsigned]/bit string [16 bits]	0000H to 00FFH	Specifies the subindex in the object dictionary to which SDO write is to be executed.
(6)	i_wWriteDataLength	Write data length	Word [signed]	1 to 124	Specifies the data length (byte) of the write data.
(7)	i_uWriteData	Write data	Word [unsigned]/bit string [16 bits] (0..61)	—	Specifies the write data.

Output arguments

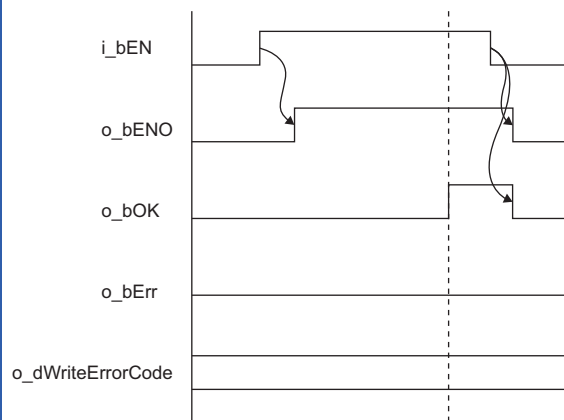
No.	Variable name	Name	Data type	Default value	Description
(8)	o_bENO	Execution status	Bit	Off	On: In execution Off: Not in execution
(9)	o_bOK	Normal completion	Bit	Off	The on state indicates that the module FB processing has been completed successfully.
(10)	o_bErr	Error completion	Bit	Off	The on state indicates that the module FB processing has been completed with an error.
(11)	o_dWriteErrorCode	Write error code	Double word [unsigned]/bit string [32 bits]	—	The SDO abort code is stored at error completion. (MELSEC iQ-R CANopen Module User's Manual (Application))

FB details

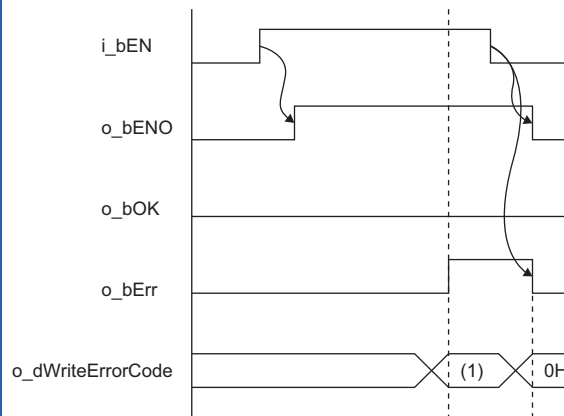
Item	Description	
Available device	Target module	RJ71CN91
	CPU module	RCPU
	Engineering tool	GX Works3
Language	Ladder diagram	
Number of basic steps	1044 steps The number of steps of the FB embedded in a program depends on the CPU module used, the input/output definitions, and the options setting of 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 item executes SDO write.	
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

■When the operation is completed successfully



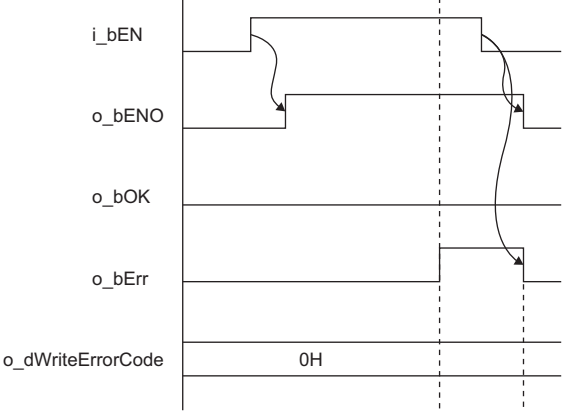
■When the operation is completed with an error (SDO error)



(1) Error code

- When SDO error occurs, o_bErr (error completion) turns on and the error code is stored in o_dWriteErrorCode (write error code). For the error code, refer to the following.

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

Item	Description
Timing chart of I/O signals	<p data-bbox="320 181 914 203">■When the operation is completed with an error (other than SDO error)</p>  <ul data-bbox="320 656 1457 705" style="list-style-type: none"> • When an error other than SDO error occurs, o_bErr (error completion) turns on, and o_bErr (error completion) is turned off by turning off i_bEN (execution command).
Precautions	<ul data-bbox="320 719 1437 842" style="list-style-type: none"> • This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation. • Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) turns on. By turning off i_bEN (execution command), o_bOK (normal completion) and o_bErr (error completion) are turned off, and o_dWriteErrorCode (write error code) is cleared.

Error code

For additional information on the SDO abort code and SDO error, refer to the following.

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

Operation parameters

There is no operation parameter applicable to M+RJ71CN91_SDOWrite.

2.5 M+RJ71CN91_SDOMultiRead

Name

M+RJ71CN91_SDOMultiRead

Overview


Item	Description																																
Functional overview	Executes SDO multi read.																																
Symbol	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">M+RJ71CN91_SDOMultiRead</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: right;">(1) —</td> <td style="width: 40%;">B: i_bEN</td> <td style="width: 40%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td style="text-align: right;">(2) —</td> <td>DUT: i_stModule</td> <td style="text-align: right;">o_bENO: B</td> <td style="text-align: right;">(7)</td> </tr> <tr> <td style="text-align: right;">(3) —</td> <td>W: i_wNodeID</td> <td style="text-align: right;">o_bOK: B</td> <td style="text-align: right;">(8)</td> </tr> <tr> <td style="text-align: right;">(4) —</td> <td>UW: i_ulIndex</td> <td style="text-align: right;">o_bErr: B</td> <td style="text-align: right;">(9)</td> </tr> <tr> <td style="text-align: right;">(5) —</td> <td>UW: i_uSubIndex</td> <td style="text-align: right;">o_wReadDataLength: W</td> <td style="text-align: right;">(10)</td> </tr> <tr> <td style="text-align: right;">(6) —</td> <td>W: i_wNumberOfNodes</td> <td style="text-align: right;">o_uReadData: UW</td> <td style="text-align: right;">(11)</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">o_bReadErr: B</td> <td style="text-align: right;">(12)</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">o_dReadErrorCode: UD</td> <td style="text-align: right;">(13)</td> </tr> </table> </div>	(1) —	B: i_bEN			(2) —	DUT: i_stModule	o_bENO: B	(7)	(3) —	W: i_wNodeID	o_bOK: B	(8)	(4) —	UW: i_ulIndex	o_bErr: B	(9)	(5) —	UW: i_uSubIndex	o_wReadDataLength: W	(10)	(6) —	W: i_wNumberOfNodes	o_uReadData: UW	(11)			o_bReadErr: B	(12)			o_dReadErrorCode: UD	(13)
(1) —	B: i_bEN																																
(2) —	DUT: i_stModule	o_bENO: B	(7)																														
(3) —	W: i_wNodeID	o_bOK: B	(8)																														
(4) —	UW: i_ulIndex	o_bErr: B	(9)																														
(5) —	UW: i_uSubIndex	o_wReadDataLength: W	(10)																														
(6) —	W: i_wNumberOfNodes	o_uReadData: UW	(11)																														
		o_bReadErr: B	(12)																														
		o_dReadErrorCode: UD	(13)																														

Labels

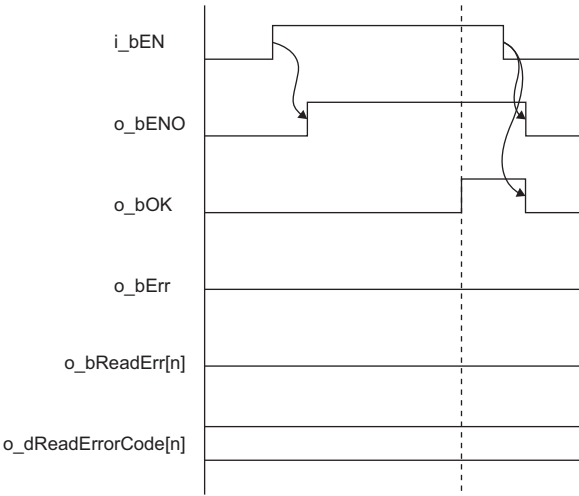
Input arguments

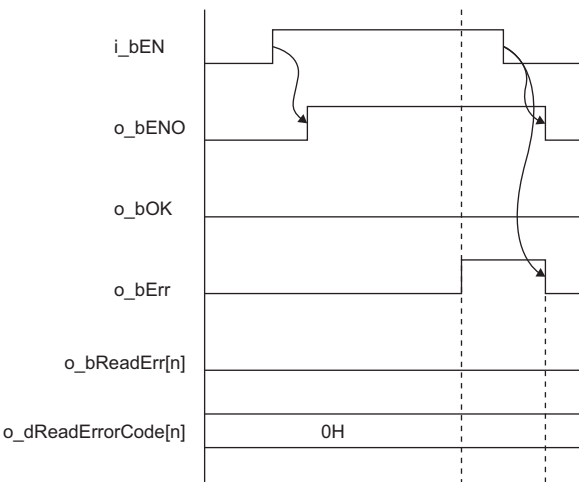
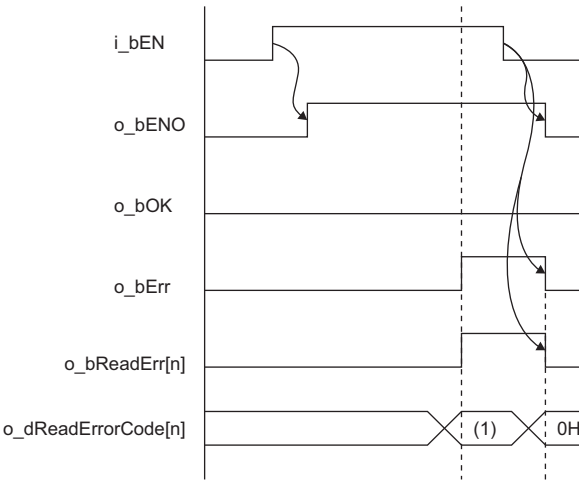
No.	Variable name	Name	Data type	Scope	Description
(1)	i_bEN	Execution command	Bit	Off or on	On: The module FB is activated. Off: The module FB is not activated.
(2)	i_stModule	Module label	Structure	—	Specifies a module for which the FB is to be executed. Specifies the module label of the module. (Example) CN91_1
(3)	i_wNodeID	Node ID	Word [signed] (0..7)	0 to 127	Specifies the node ID to which SDO multi read is to be executed.
(4)	i_ulIndex	Index	Word [unsigned]/bit string [16 bits] (0..7)	0001H to FFFFH	Specifies the index in the object dictionary to which SDO multi read is to be executed.
(5)	i_uSubIndex	Subindex	Word [unsigned]/bit string [16 bits] (0..7)	0000H to 00FFH	Specifies the subindex in the object dictionary to which SDO multi read is to be executed.
(6)	i_wNumberOfNodes	Number of nodes	Word [signed]	1 to 8	Specifies the number of nodes to which SDO multi read is to be executed. If a value outside the scope is set, the value is regarded as 1 (minimum value) or 8 (maximum value). For instance, if 9 is set, the number of nodes becomes 8.

Output arguments

No.	Variable name	Name	Data type	Default value	Description
(7)	o_bENO	Execution status	Bit	Off	On: In execution Off: Not in execution
(8)	o_bOK	Normal completion	Bit	Off	The on state indicates that the module FB processing has been completed successfully.
(9)	o_bErr	Error completion	Bit	Off	The on state indicates that the module FB processing has been completed with an error.
(10)	o_wReadDataLength	Read data length	Word [signed] (0..7)	—	The data length (maximum 8 bytes) of the read data on each node is stored.
(11)	o_uReadData	Read data	Word [unsigned]/bit string [16 bits] (0..7, 0..3)	—	The read data on each node is stored.
(12)	o_bReadErr	Read error	Bit (0..7)	—	The presence/absence of error at read on each node is stored.
(13)	o_dReadErrorCode	Read error code	Double word [unsigned]/bit string [32 bits]	—	The SDO abort code is stored at error completion. ( MELSEC iQ-R CANopen Module User's Manual (Application))

FB details

Item	Description	
Available device	Target module	RJ71CN91
	CPU module	RCPUCPU
	Engineering tool	GX Works3
Language	Ladder diagram	
Number of basic steps	1950 steps 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 item executes SDO multi read command.	
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	<p>■When the operation is completed successfully (SDO multi read success)</p> 	

Item	Description
Timing chart of I/O signals	<p>■When the operation is completed with an error (error)</p>  <p>• When an error occurs, o_bErr (error completion) turns on, and o_bErr (error completion) is turned off by turning off i_bEN (execution command).</p> <p>■When the operation is completed with an error (SDO read failure and error)</p>  <p>(1) Error code</p> <p>• When SDO read failure and an error occur, o_bErr (error completion) turns on and the error code is stored in o_dReadErrorCode (read error code). For the error code, refer to the following.</p> <p>📖 MELSEC iQ-R CANopen Module User's Manual (Application)</p>
Precautions	<ul style="list-style-type: none"> • This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation. • Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) turns on. By turning off i_bEN (execution command), o_bOK (normal completion) and o_bErr (error completion) are turned off, and o_dReadErrorCode (read error code) is cleared. • Maximum of 8 SDO read accesses can be executed with this FB.

Error code

For additional information on the SDO abort code and SDO error, refer to the following.

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

Operation parameters

There is no operation parameter applicable to M+RJ71CN91_SDOMultiRead.

2.6 M+RJ71CN91_SDOMultiWrite

Name

M+RJ71CN91_SDOMultiWrite

Overview

Item	Description																																								
Functional overview	Executes SDO multi write.																																								
Symbol	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">M+RJ71CN91_SDOMultiWrite</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: right;">(1)</td> <td style="width: 45%;">B: i_bEN</td> <td style="width: 5%;"></td> <td style="width: 45%;">o_bENO: B</td> <td style="width: 5%; text-align: left;">(9)</td> </tr> <tr> <td style="text-align: right;">(2)</td> <td>DUT: i_stModule</td> <td></td> <td>o_bOK: B</td> <td style="text-align: left;">(10)</td> </tr> <tr> <td style="text-align: right;">(3)</td> <td>W: i_wNodeID</td> <td></td> <td>o_bErr: B</td> <td style="text-align: left;">(11)</td> </tr> <tr> <td style="text-align: right;">(4)</td> <td>UW: i_ulIndex</td> <td></td> <td>o_bWriteErr: B</td> <td style="text-align: left;">(12)</td> </tr> <tr> <td style="text-align: right;">(5)</td> <td>UW: i_uSubIndex</td> <td></td> <td>o_dWriteErrorCode: UD</td> <td style="text-align: left;">(13)</td> </tr> <tr> <td style="text-align: right;">(6)</td> <td>W: i_wWriteDataLength</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">(7)</td> <td>UW: i_uWriteData</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">(8)</td> <td>W: i_wNumberOfNodes</td> <td></td> <td></td> <td></td> </tr> </table> </div>	(1)	B: i_bEN		o_bENO: B	(9)	(2)	DUT: i_stModule		o_bOK: B	(10)	(3)	W: i_wNodeID		o_bErr: B	(11)	(4)	UW: i_ulIndex		o_bWriteErr: B	(12)	(5)	UW: i_uSubIndex		o_dWriteErrorCode: UD	(13)	(6)	W: i_wWriteDataLength				(7)	UW: i_uWriteData				(8)	W: i_wNumberOfNodes			
(1)	B: i_bEN		o_bENO: B	(9)																																					
(2)	DUT: i_stModule		o_bOK: B	(10)																																					
(3)	W: i_wNodeID		o_bErr: B	(11)																																					
(4)	UW: i_ulIndex		o_bWriteErr: B	(12)																																					
(5)	UW: i_uSubIndex		o_dWriteErrorCode: UD	(13)																																					
(6)	W: i_wWriteDataLength																																								
(7)	UW: i_uWriteData																																								
(8)	W: i_wNumberOfNodes																																								

Labels

Input arguments

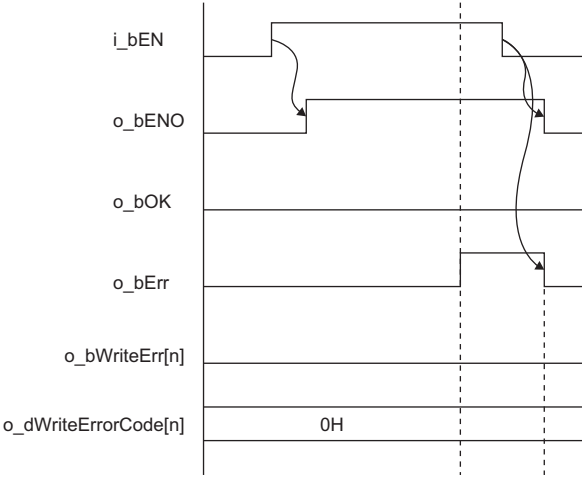
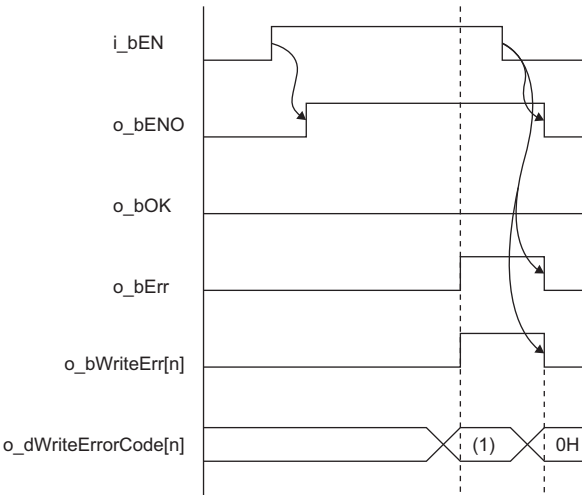
No.	Variable name	Name	Data type	Scope	Description
(1)	i_bEN	Execution command	Bit	Off or on	On: The module FB is activated. Off: The module FB is not activated.
(2)	i_stModule	Module label	Structure	—	Specifies a module for which the FB is to be executed. Specifies the module label of the module. (Example) CN91_1
(3)	i_wNodeID	Node ID	Word [signed] (0..7)	0 to 127	Specifies the node ID to which SDO multi write is to be executed.
(4)	i_ulIndex	Index	Word [unsigned]/bit string [16 bits] (0..7)	0001H to FFFFH	Specifies the index in the object dictionary to which SDO multi write is to be executed.
(5)	i_uSubIndex	Subindex	Word [unsigned]/bit string [16 bits] (0..7)	0000H to 00FFH	Specifies the subindex in the object dictionary to which SDO multi write is to be executed.
(6)	i_wWriteDataLength	Write data length	Word [signed] (0..7)	1 to 8	Specifies the data length (byte) of the write data.
(7)	i_uWriteData	Write data	Word [unsigned]/bit string [16 bits] (0..7, 0..3)	—	Specifies the write data.
(8)	i_wNumberOfNodes	Number of nodes	Word [signed]	1 to 8	Specifies the number of nodes to which SDO multi write is to be executed. If a value outside the scope is set, the value is regarded as 1 (minimum value) or 8 (maximum value). For instance, if 9 is set, the number of nodes becomes 8.

Output arguments

No.	Variable name	Name	Data type	Default value	Description
(9)	o_bENO	Execution status	Bit	Off	On: In execution Off: Not in execution
(10)	o_bOK	Normal completion	Bit	Off	The on state indicates that the module FB processing has been completed successfully.
(11)	o_bErr	Error completion	Bit	Off	The on state indicates that the module FB processing has been completed with an error.
(12)	o_bWriteErr	Write error	Bit (0..7)	—	The presence/absence of error at write on each node is stored.
(13)	o_dWriteErrorCode	Write error code	Double word [unsigned]/bit string [32 bits] (0..7)	—	The SDO abort code is stored at error completion. (MELSEC iQ-R CANopen Module User's Manual (Application))

FB details

Item	Description	
Available device	Target module	RJ71CN91
	CPU module	RCPU
	Engineering tool	GX Works3
Language	Ladder diagram	
Number of basic steps	1863 steps 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 item executes SDO multi write command.	
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	<p>■When the operation is completed successfully (SDO multi write success)</p> <p>The timing chart displays the following signals:</p> <ul style="list-style-type: none"> i_bEN: Input execution command, shown as a pulse. o_bENO: Execution status output, which becomes active (high) when i_bEN is active. o_bOK: Normal completion output, which becomes active (high) after the execution period. o_bErr: Error completion output, which remains inactive (low). o_bWriteErr[n]: Write error output, which remains inactive (low). o_dWriteErrorCode[n]: Write error code output, which remains inactive (low). 	

Item	Description
Timing chart of I/O signals	<p>■When the operation is completed with an error (error)</p>  <p>• When an error occurs, o_bErr (error completion) turns on, and o_bErr (error completion) is turned off by turning off i_bEN (execution command).</p> <p>■When the operation is completed with an error (SDO write failure and error)</p>  <p>(1) Error code</p> <ul style="list-style-type: none"> • When SDO write failure and an error occur, o_bErr (error completion) turns on and the error code is stored in o_dWriteErrorCode (write error code). For the error code, refer to the following. <p>📖 MELSEC iQ-R CANopen Module User's Manual (Application)</p>
Precautions	<ul style="list-style-type: none"> • This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation. • Turn off i_bEN (execution command) after o_bOK (normal completion) or o_bErr (error completion) turns on. By turning off i_bEN (execution command), o_bOK (normal completion) and o_bErr (error completion) are turned off, and o_dWriteErrorCode (write error code) is cleared. • Maximum of 8 SDO write accesses can be executed with this FB.

Error code

For additional information on the SDO abort code and SDO error, refer to the following.

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

Operation parameters

There is no operation parameter applicable to M+RJ71CN91_SDOMultiWrite.

INSTRUCTION INDEX

M

M+RJ71CN91_NMTRequestRead	4
M+RJ71CN91_NMTRequestWrite	6
M+RJ71CN91_SDOMultiRead	14
M+RJ71CN91_SDOMultiWrite	17
M+RJ71CN91_SDORead	8
M+RJ71CN91_SDOWrite	11

MEMO

REVISIONS

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

Revision date	*Manual number	Description
July 2017	BCN-P5999-0812-A	First edition

Japanese manual number: BCN-P5999-0811-A

This manual confers no industrial property rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.

© 2017 MITSUBISHI ELECTRIC CORPORATION

TRADEMARKS

CiA® and CANopen® are registered Community Trademarks of CAN in Automation e.V.

The company names, system names and product names mentioned in this manual are either registered trademarks or trademarks of their respective companies.

In some cases, trademark symbols such as [™] or [®] are not specified in this manual.

BCN-P5999-0812-A(1707)

MODEL: RJ71CN91-FBR-E

mitsubishi electric corporation

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA, JAPAN

When exported from Japan, this manual does not require application to the
Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.