

CC-Link Remote I/O Module with Diagnostic Functions FB Library

Reference Manual

Applicable modules:

AJ65ABTP3-16D, AJ65ABTP3-16DE

< CONTENTS >

Reference Manual Revision History	2
1. Overview	3
1.1. Overview of the FB Library	3
1.2. Function of the FB Library	3
1.3. System Configuration Example	4
1.4. Setting the QJ61BT11N CC-Link System Master/Local Module	5
1.4.1. Operation Setting of the QJ61BT11N CC-Link System Master/Local Module	5
1.4.2. Station Information Setting of the QJ61BT11N CC-Link System Master/Local Module	6
1.5. Setting Global Labels	7
1.6. Creating Interlock Programs	8
1.7. Relevant Manuals	8
1.8. Note	8
2. Details of the FB Library	9
2.1. M+ABTP316D-CC_SetInitData (Initial data setting)	9
2.2. M+ABTP316D-CC_CntOpenDetection (No. of disconnection detections count)	14
2.3. M+ABTP316D-CC_ControlLED (Disconnection/short-circuit LED indication control)	19
Appendix 1. When Using the FB for 2 or More Master/Local Modules	24
Appendix 1.1. Entering Network Parameters	25
Appendix 1.2. Entering Global Labels	27
Appendix 1.3. Copying MELSOFT Library to create an FB for the second module	28
Appendix 1.4. Replacing Devices to Create the FB for the Second Module	30
Appendix 2. FB Library Application Examples	32

Reference Manual Revision History

Reference Manual Number	Date	Description
FBM-M063-A	2011/9/30	First edition
FBM-M063-B	2011/12/30	Add description about AJ65ABTP3-16D

1. Overview

1.1. Overview of the FB Library

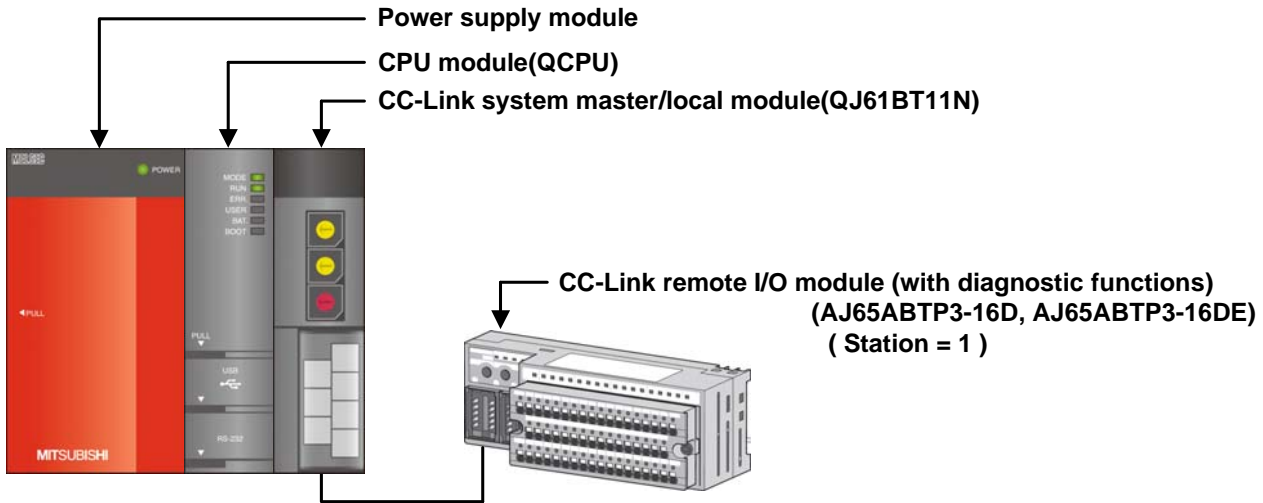
This FB library is for using the CC-Link remote I/O module with diagnostic functions through the MELSEC CC-Link remote I/O function.

1.2. Function of the FB Library

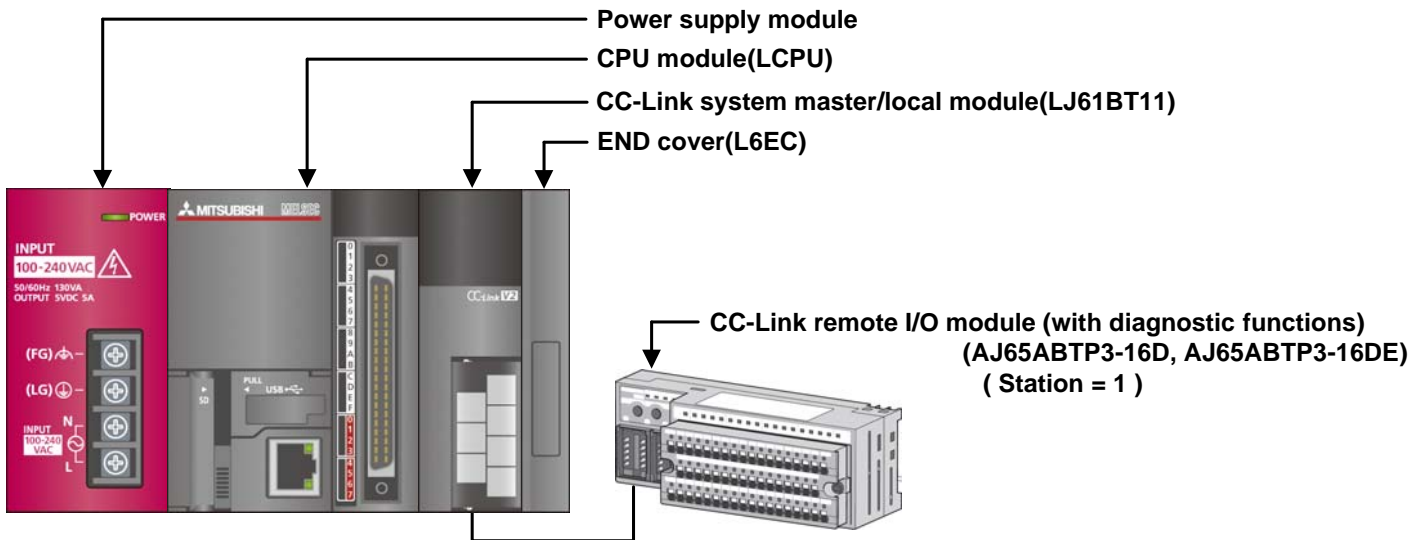
Item	Description
M+ABTP316D-CC_SetInitData	Makes the input function and disconnection/short-circuit detection function ready to be used.
M+ABTP316D-CC_CntOpenDetection	Counts the number of disconnection detections.
M+ABTP316D-CC_ControlLED	Controls the LED indication of the disconnection/short-circuit detection.

1.3. System Configuration Example

(1) Q series system configuration Example



(2) L series system configuration Example

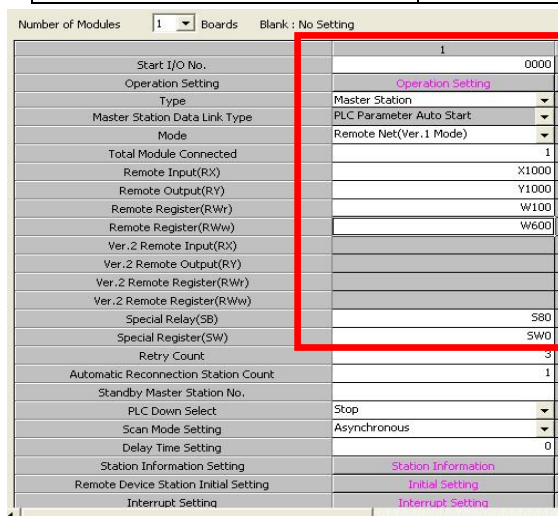


1.4. Setting the QJ61BT11N CC-Link System Master/Local Module

This section explains the settings of QJ61BT11N based on Section 1.3 "System Configuration Example". Set the following items using GX Works2.

1.4.1. Operation Setting of the QJ61BT11N CC-Link System Master/Local Module

Item	Description
Start I/O No.	Set the start I/O number of the master/local module in increments of 16 points. Set "0000".
Type	Select the Master Station
Mode	Select the Remote Net (Ver.1 Mode).
Total Module Connected	Set the number of remote I/O modules connected to the master station. Include the number of reserved stations. Set "1".
Remote Input (RX)	Set the remote input (RX) device number allocated to the remote I/O module. Set "X1000".
Remote Output (RY)	Set the remote output (RY) device number allocated to the remote I/O module. Set "Y1000".
Remote Register (RWr)	Set the remote register (RWr) device number allocated to the remote I/O module. Set "W100".
Remote Register (RWw)	Set the remote register (RWw) device number allocated to the remote I/O module. Set "W600".
Special Relay (SB)	Set the special relay (SB) device number allocated to the remote I/O module. Set "SB0".
Special Register (SW)	Set the special register (SW) device number allocated to the remote I/O module. Set "SW0".



1.4.2. Station Information Setting of the QJ61BT11N CC-Link System Master/Local Module

Item	Description
Station Type	Set the station type of the remote I/O module connected to the master station. Set "Remote Device Station".
Exclusive Count	Set the number of stations that are exclusive to the remote I/O module. Select "Exclusive Station 1".
Reserve/Invalid Station Select	Set the reserve/invalid station of the remote I/O module. Select "No Setting".

Station No.	Station Type	Expanded Cyclic Setting	Exclusive Count	Remote Station Points	Reserve/Invalid Station Select	Intelligent Buffer Select(Word)		
						Send	Receive	Automatic
1/1	Remote Device Station	Single	Exclusive Station 1	32 Points	No Setting			

1.5. Setting Global Labels

Global labels must be set before using this FB. This section explains global label settings.

(1) M_RY Set remote output (RY).

Item	Description
Class	Select "VAR_GLOBAL".
Label Name	Enter " M_RY ".
Data Type	Select "Bit".
Device	Enter the refresh device set for the network parameter with a "Z9" prefix.

(2) M_RWw Set remote register (RWw).

Item	Description
Class	Select "VAR_GLOBAL".
Label Name	Enter "M_RWw".
Data Type	Select "Word [Signed]".
Device	Enter the refresh device set for the network parameter with a "Z8" prefix.

	Class	Label Name	Data Type	Constant	Device	Comment
1	VAR_GLOBAL	M_RY	Bit	...	Y100Z9	RY refresh device
2	VAR_GLOBAL	M_RWw	Word[Signed]	...	W600Z8	RWw refresh device
3				...		
4				...		
5				...		

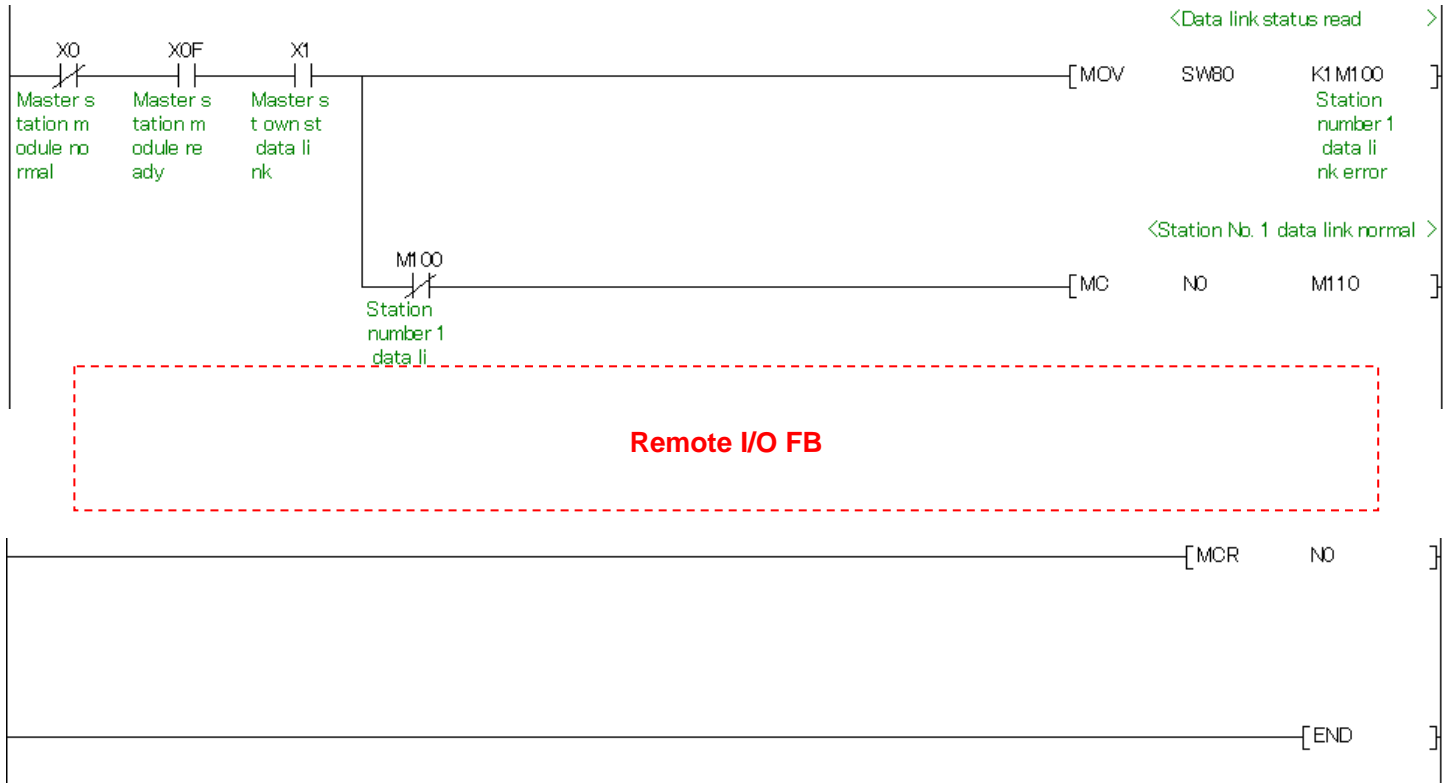
1.6. Creating Interlock Programs

Interlock programs must be created for the FBs. The following are examples of interlock programs.
(Set a corresponding FB between MC and MCR instructions.)

Obtain the status by using the following input devices for the interlock programs.

- Own station data link status (X1)
- Each station data link status (SW80)

Example: Interlock (CC-Link station number 1)



1.7. Relevant Manuals

CC-Link Remote I/O Module (With Diagnostic Functions) User's Manual

Q series CC-Link System Master/Local Module User's Manual

QCPU User's Manual(Hardware Design, Maintenance and Inspection)

MELSEC-L CC-Link System Master/Local Module User's Manual

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

GX Works2 Version 1 Operating Manual (Common)

1.8. Note

Please make sure to read user's manuals for the corresponding products before using the products.

2. Details of the FB Library

2.1. M+ABTP316D-CC_SetInitData (Initial data setting)

FB Name

M+ABTP316D-CC_SetInitData

Function Overview

Item	Description								
Function overview	Sets the initial data of the target module, and makes the input function and disconnection/short-circuit detection function ready to be used.								
Symbol	<div style="display: flex; align-items: center; justify-content: space-between;"> <div style="width: 30%;"> <p>Execution command — B : FB_EN</p> <p>Module start XY address — W : i_Start_IO_No</p> <p>CC-Link station number — W : i_Station_No</p> <p>Disconnection detection enable/disable setting — W : i_OpenDetect</p> <p>Detection status hold command — W : i_HoldResult</p> </div> <div style="width: 35%; border: 1px solid black; padding: 5px; text-align: center;"> <p>M+ABTP316D-CC_SetInitData</p> </div> <div style="width: 30%;"> <p>FB_ENO : B — Execution status</p> <p>FB_OK : B — Completed without error</p> <p>FB_ERROR : B — Error flag</p> <p>ERROR_ID : W — Error code</p> </div> </div>								
Applicable hardware and software	CC-Link remote I/O module	AJ65ABTP3-16D, AJ65ABTP3-16DE							
	CC-Link system master/local module	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td>MELSEC-Q series</td> <td>QJ61BT11N</td> </tr> <tr> <td>MELSEC-L series</td> <td>LJ61BT11, L26CPU-BT, L26CPU-PBT</td> </tr> </tbody> </table>	Series	Model	MELSEC-Q series	QJ61BT11N	MELSEC-L series	LJ61BT11, L26CPU-BT, L26CPU-PBT	
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CPU module	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> <tr> <td>MELSEC-L series</td> <td>LCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU (A mode)</p>	Series	Model	MELSEC-Q series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU	MELSEC-L series	LCPU
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MELSEC-L series	LCPU								
Compatible software	<p>GX Works2 *1</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Language</th> <th>Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later		
Language	Software version								
English version	Version1.24A or later								
Chinese version	Version1.49B or later								

Item	Description
Programming language	Ladder
Number of steps	853 steps (for MELSEC-Q series universal model CPU) *The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.
Function description	<p>1) By turning ON FB_EN (Execution command), the initial data setting is made for the target module.</p> <p>2) The disconnection detection enable/disable setting (RWwm+0_H) is set.</p> <p>3) The detection status hold command (RWwm+1_H) is set.</p> <p>4) By operating Initial data processing completion flag (RY(n+1)₈), the input function of the module is ready to be used.</p> <p>5) After FB_EN (Execution command) is turned ON, the FB is completed in multiple scans.</p> <p>6) When the CC-Link station number is out of range, the FB_ERROR (Error flag) output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</p> <p>m, n: Address allocated to the master module by setting the station number.</p>
Compiling method	Macro type
Restrictions and precautions	<p>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</p> <p>2) The FB cannot be used in an interrupt program.</p> <p>3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF.</p> <p>4) This FB uses index registers Z9, Z8, Z7 and Z6. Please do not use these index registers in an interrupt program.</p> <p>5) Every input must be provided with a value for proper FB operation.</p> <p>6) If the initial data setting is directly performed with a sequence program or if the data initialization function of GX Works2 is used, using this FB is unnecessary.</p> <p>7) This FB can be used only once after the module is started. (When the initial data processing request flag (RX(n+1)₈) is OFF, the initial data setting is not performed and FB_OK (Completed without error) is not turned ON, either.</p> <p>8) Set the refresh device of the CC-Link parameter setting according to Section 1.4.</p> <p>9) Set the global label setting according to Section 1.5.</p> <p>10) Only one master/local module can be controlled by the CC-Link system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1 When Using the FB for 2 or More Master/Local Modules".</p>

Item	Description
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 2 - FB Library Application Examples".
Timing chart	<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>[When operation completes without error]</p> </div> <div style="width: 45%;"> <p>[When an error occurs]</p> </div> </div> <p>m, n : Address allocated to the master module by setting the station number → : FB processing → : Module processing</p>
Relevant manuals	<ul style="list-style-type: none"> ●CC-Link Remote I/O Module (With Diagnostic Functions) User's Manual ●Q series CC-Link System Master/Local Module User's Manual ●QCPU User's Manual(Hardware Design, Maintenance and Inspection) ●MELSEC-L CC-Link System Master/Local Module User's Manual ●MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection) ●GX Works2 Version 1 Operating Manual (Common)

Error Codes

●Error code list

Error code	Description	Action
10 (Decimal)	The specified CC-Link station number is not valid. The CC-Link station number is not within the range of 1 to 64.	Please try again after confirming the setting.

Labels

●Input labels

Name(Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range of the CPU module. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the CC-Link system master/local module is mounted.
CC-Link station number	i_Station_No	Word	1~64 (Decimal)	Specify the CC-Link station number of the target remote module.
Disconnection detection enable/disable setting	i_OpenDetect	Word	0000h~FFFFh	Specify a value to be set in the disconnection detection enable/disable setting (RWwm+0H).
Detection status hold command	i_HoldResult	Word	0000h~FFFFh	Specify a value to be set in the detection status hold command (RWwm+1H).

m, n: Address allocated to the master module by setting the station number.

●Output labels

Name(Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	ON: FB is completed without error. OFF: FB is not completed.
Error flag	FB_ERROR	Bit	OFF	ON: FB is completed abnormally. OFF: FB is not completed.
Error code	ERROR_ID	Word	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/9/30	First edition

Note

This chapter includes information related to the M+ABTP316D-CC_SetInitData function block.

It does not include information on restrictions of use such as combination with modules or programmable controller CPU module.

Before using any Mitsubishi products, please read all the relevant manuals.

2.2. M+ABTP316D-CC_CntOpenDetection (No. of disconnection detections count)

FB Name

M+ABTP316D-CC_CntOpenDetection

Function Overview

Item	Description								
Function overview	Counts the number of disconnection detections of the target module.								
Symbol	<div style="display: flex; align-items: center; justify-content: space-between;"> <div style="width: 30%;"> <p>Execution command — B : FB_EN</p> <p>Module start XY address — W : i_Start_IO_No</p> <p>CC-Link station number — W : i_Station_No</p> </div> <div style="width: 35%; border: 1px solid black; padding: 5px; text-align: center;"> <p>M+ABTP316D-CC_CntOpenDetection</p> </div> <div style="width: 30%;"> <p>FB_ENO : B — Execution status</p> <p>FB_OK : B — Completed without error</p> <p>FB_ERROR : B — Error flag</p> <p>ERROR_ID : W — Error code</p> <p>o_Counter : W — Count value</p> </div> </div>								
Applicable hardware and software	CC-Link remote I/O module	AJ65ABTP3-16D, AJ65ABTP3-16DE							
	CC-Link system master/local module	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td>MELSEC-Q series</td> <td>QJ61BT11N</td> </tr> <tr> <td>MELSEC-L series</td> <td>LJ61BT11, L26CPU-BT, L26CPU-PBT</td> </tr> </tbody> </table>	Series	Model	MELSEC-Q series	QJ61BT11N	MELSEC-L series	LJ61BT11, L26CPU-BT, L26CPU-PBT	
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Language	Software version								
English version	Version1.24A or later								
Chinese version	Version1.49B or later								
Programming language	Ladder								

Item	Description
Number of steps	1190 steps (for MELSEC-Q series universal model CPU) *The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.
Function description	<ol style="list-style-type: none"> 1) While FB_EN (Execution command) is ON, the number of disconnection detections is counted. 2) The number of disconnection detections is stored in the 16 consecutive words starting from the device that was specified with o_Counter. The order of storing is X0, X1, X2... (If D100 is specified with o_Counter, the number of disconnection detections of X0 is stored in D100 and XF in D115.) 3) When the CC-Link station number is out of range, the FB_ERROR (Error flag) output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> 1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) This FB uses index registers Z9, Z8, Z7 and Z6. Please do not use these index registers in an interrupt program. 5) Every input must be provided with a value for proper FB operation. 6) Set 0 as an initial value in 16 consecutive words starting from the device that was specified with o_Counter, and do not change these values after that. If the values are changed, counting is not performed normally. 7) With this FB, the disconnection detection status is cleared using the detection status hold command (RWwm+1_H). To use this FB, do not use the detection status hold command (RWwm+1_H) in the sequence program. 8) Set the refresh device of the CC-Link parameter setting according to Section 1.4. 9) Set the global label setting according to Section 1.5. 10) Only one master/local module can be controlled by the CC-Link system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1 When Using the FB for 2 or More Master/Local Modules".
FB operation type	Real-time execution
Application example	Refer to "Appendix 2 - FB Library Application Examples".

Item	Description	
Timing chart	<p>[When operation completes without error]</p> <p>(The following figure explains X0. Processing for X1 to XF is performed in the same way.)</p> <p>m, n : Address allocated to the master module by setting the station number → : FB processing → : Module processing</p>	<p>[When an error occurs]</p> <p>(The following figure explains X0. Processing for X1 to XF is performed in the same way.)</p> <p>m, n : Address allocated to the master module by setting the station number → : FB processing</p>
Relevant manual	<ul style="list-style-type: none"> ●CC-Link Remote I/O Module (With Diagnostic Functions) User's Manual ●Q series CC-Link System Master/Local Module User's Manual ●QCPU User's Manual(Hardware Design, Maintenance and Inspection) ●MELSEC-L CC-Link System Master/Local Module User's Manual ●MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection) ●GX Works2 Version 1 Operating Manual (Common) 	

Error Codes

●Error code list

Error code	Description	Action
10 (Decimal)	The specified CC-Link station number is not valid. The CC-Link station number is not within the range of 1 to 64.	Please try again after confirming the setting.

Labels

● Input labels

Name(Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range of the CPU module. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the CC-Link system master/local module is mounted.
CC-Link station number	i_Station_No	Word	1~64 (Decimal)	Specify the CC-Link station number of the target remote module.

● Output labels

Name(Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the number of disconnection detections is being counted.
Error flag	FB_ERROR	Bit	OFF	ON: FB is completed abnormally. OFF: FB is not completed.
Error code	ERROR_ID	Word	0	FB error code output.
Count value	o_Counter	Word	-	The counted number of disconnection detections of X0 to XF is stored in the 16 consecutive words starting from the device that is specified with o_Counter.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/9/30	First edition

Note

This chapter includes information related to the M+ABTP316D-CC_CntOpenDetection function block.

It does not include information on restrictions of use such as combination with modules or programmable controller CPU module.

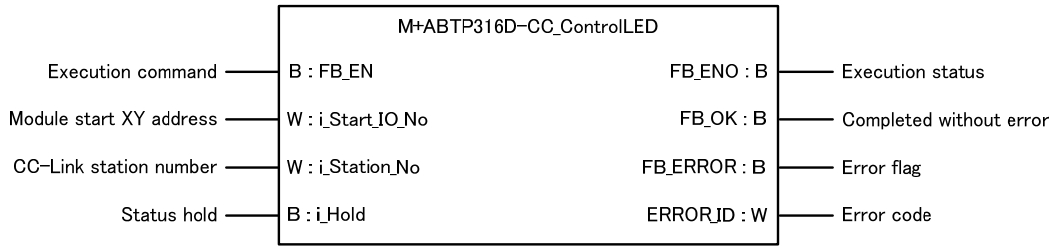
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2.3. M+ABTP316D-CC_ControlLED (Disconnection/short-circuit LED indication control)

FB Name

M+ABTP316D-CC_ControlLED

Function Overview

Item	Description								
Function overview	Controls the LED indication of the disconnection/short-circuit detection of the target module.								
Symbol									
Applicable hardware and software	CC-Link remote I/O module	AJ65ABTP3-16D, AJ65ABTP3-16DE							
	CC-Link system master/local module	<table border="1"> <thead> <tr> <th>Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td>MELSEC-Q series</td> <td>QJ61BT11N</td> </tr> <tr> <td>MELSEC-L series</td> <td>LJ61BT11, L26CPU-BT, L26CPU-PBT</td> </tr> </tbody> </table>	Series	Model	MELSEC-Q series	QJ61BT11N	MELSEC-L series	LJ61BT11, L26CPU-BT, L26CPU-PBT	
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Language	Software version								
English version	Version1.24A or later								
Chinese version	Version1.49B or later								
Programming language	Ladder								

Item	Description
Number of steps	673 steps (for MELSEC-Q series universal model CPU) *The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.
Function description	<ol style="list-style-type: none"> 1) While FB_EN (Execution command) is ON, the following processes are performed. 2) When i_Hold (Status hold) is ON, the red Xn LED keeps flashing /turning on even if the wiring returns to the normal state after a disconnection/short-circuit is detected. 3) When i_Hold (Status hold) is OFF, the red Xn LED flashes /turns on only during the occurrence of the disconnection/short-circuit. 4) When the target axis setting value is out of range, the FB_ERROR (Error flag) output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> 1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) This FB uses index registers Z9, Z8, Z7 and Z6. Please do not use these index registers in an interrupt program. 5) Every input must be provided with a value for proper FB operation. 6) Set the refresh device of the CC-Link parameter setting according to Section 1.4. 7) Set the global labels according to Section 1.5. 8) Only one master/local module can be controlled by the CC-Link system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1 When Using the FB for 2 or More Master/Local Modules".
FB operation type	Real-time execution
Application example	Refer to "Appendix 2 - FB Library Application Examples".

Item	Description	
Timing chart	<p>[When operation completes without error]</p> <p>m, n : Address allocated to the master module by setting the station number → : FB processing → : Module processing</p>	<p>[When an error occurs]</p> <p>m, n : Address allocated to the master module by setting the station number → : FB processing → : Module processing</p>
Relevant manuals	<ul style="list-style-type: none"> ●CC-Link Remote I/O Module (With Diagnostic Functions) User's Manual ●Q series CC-Link System Master/Local Module User's Manual ●QCPU User's Manual(Hardware Design, Maintenance and Inspection) ●MELSEC-L CC-Link System Master/Local Module User's Manual ●MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection) ●GX Works2 Version 1 Operating Manual (Common) 	

Error Codes

●Error code list

Error code	Description	Action
10 (Decimal)	The specified CC-Link station number is not valid. The CC-Link station number is not within the range of 1 to 64.	Please try again after confirming the setting.

Labels

● Input labels

Name(Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range of the CPU module. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the CC-Link system master/local module is mounted.
CC-Link station number	i_Station_No	Word	1~64 (Decimal)	Specify the CC-Link station number of the target remote module.
Status hold	i_Hold	Bit	ON,OFF	ON: Keep the disconnection/short-circuit indication. OFF: Do not keep the disconnection/short-circuit indication.

● Output labels

Name(Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the process to keep the disconnection/short-circuit LED indication is being performed.
Error flag	FB_ERROR	Bit	OFF	ON: FB is completed abnormally. OFF: FB is not completed.
Error code	ERROR_ID	Word	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/9/30	First edition

Note

This chapter includes information related to the M+ABTP316D-CC_ControlLED function block.

It does not include information on restrictions of use such as combination with modules or programmable controller CPU module.

Before using any Mitsubishi products, please read all the relevant manuals.

Appendix 1. When Using the FB for 2 or More Master/Local Modules

To use 2 or more CC-Link system master/local modules and to use an FB for the second and subsequent CC-Link system master/local modules, it is necessary to create an FB for the second and subsequent modules from the MELSOFT Library CC-Link system master/local module FB using the following procedure.

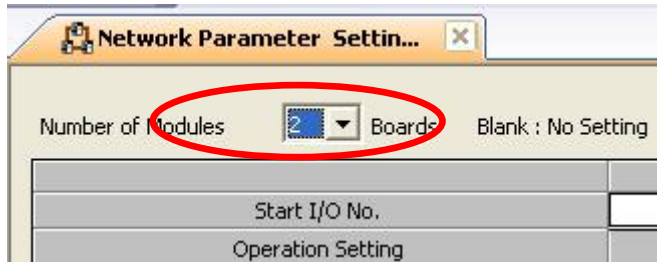
Four steps are required to create the FB for the second and subsequent modules, and the brief description is given as follows.

- 1) Enter network parameters
- 2) Set global labels
- 3) Copy MELSOFT Library to create the FB for the second module
- 4) Replace devices to create the FB for the second module

Appendix 1.1. Entering Network Parameters

1) Enter the network parameters for the second module.

Enter 2 in the "Number of Modules" shown on the left top of the Network Parameter setting window.



Item	Description
Start I/O No.	Set the start I/O number of the master/local module in increments of 16 points. Set "0020".
Type	Select Master Station.
Mode	Select Remote Net(Ver.1 Mode).
Total Module Connected	Set the number of remote I/O modules connected to the master station. Include the number of reserved stations. Set "1".
Remote Input (RX)	Set the remote input (RX) device number allocated to the remote I/O module. Set "X1200".
Remote Output (RY)	Set the remote output (RY) device number allocated to the remote I/O module. Set "Y1200".
Remote Register (RWr)	Set the remote register (RWr) device number allocated to the remote I/O module. Set "W200".
Remote Register (RWw)	Set the remote register (RWw) device number allocated to the remote I/O module. Set "W700".
Special Relay (SB)	Set the special relay (SB) device number allocated to the remote I/O module. Set "SB200".
Special Register (SW)	Set the special register (SW) device number allocated to the remote I/O module. Set "SW200".

Number of Modules: Boards Blank : No Setting

	1	2
Start I/O No.	0000	0020
Operation Setting	Operation Setting	Operation Setting
Type	Master Station	Master Station
Master Station Data Link Type	PLC Parameter Auto Start	PLC Parameter Auto Start
Mode	Remote Net(Ver.1 Mode)	Remote Net(Ver.1 Mode)
Total Module Connected	1	1
Remote Input(RX)	X1000	X1200
Remote Output(RY)	Y1000	Y1200
Remote Register(RWr)	W100	W200
Remote Register(RWw)	W600	W700
Ver.2 Remote Input(RX)		
Ver.2 Remote Output(RY)		
Ver.2 Remote Register(RWr)		
Ver.2 Remote Register(RWw)		
Special Relay(SB)	S80	SB200
Special Register(SW)	SW0	SW200
Retry Count	6	6
Automatic Reconnection Station Count	1	1
Standby Master Station No.		
PLC Down Select	Stop	Stop
Scan Mode Setting	Asynchronous	Asynchronous
Delay Time Setting	0	0
Station Information Setting	Station Information	Station Information
Remote Device Station Initial Setting	Initial Setting	Initial Setting
Interrupt Settings	Interrupt Settings	Interrupt Settings

2) Enter the network configuration setting for the second module.

Item	Description
Station Type	Set the station type of the remote I/O module connected to the master station. Set "Remote Device Station".
Exclusive Count	Set the number of stations that are exclusive to the remote I/O module. Select "Exclusive Station 2".
Reserve/Invalid Station Select	Set the reserve/invalid station of the remote I/O module. Select "No Setting".

Station No.	Station Type	Expanded Cyclic Setting	Exclusive Count	Remote Station Points	Reserve/Invalid Station Select	Intelligent Buffer Select(Word)		
						Send	Receive	Automatic
1/ 1	Remote Device Station	Single	Exclusive Station 2	64 Points	No Setting			

Appendix 1.2. Entering Global Labels

Enter the global labels for the second module.

Specify label names for the second module. The names must be different from the label names for the first module.

The following explains how to set the global label for the second module.

1) M_RY2 Set for remote output (RY).

Item	Description
Class	Select "VAR_GLOBAL".
Label Name	Enter "M_RY2".
Data type	Select "Bit".
Device	Enter the refresh device set for the network parameter with a prefix "Z9".

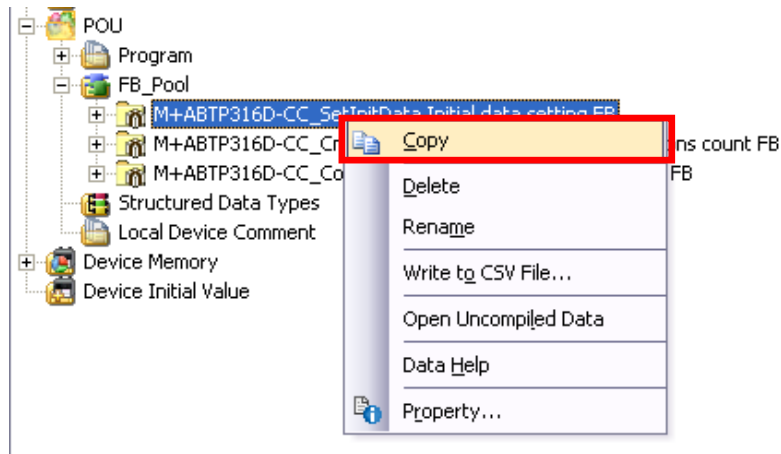
2) M_RWw2 Set for remote register (RWw).

Item	Description
Class	Select "VAR_GLOBAL".
Label Name	Enter "M_RWw2".
Data type	Select "Word [Signed]".
Device	Enter the refresh device set for the network parameter with a prefix "Z8".

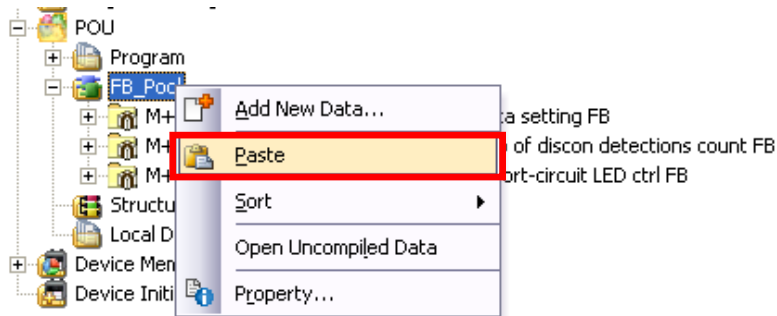
	Class	Label Name	Data Type	Constant	Device	Comment
1	VAR_GLOBAL	M_RY	Bit	...	Y100Z9	RY refresh device
2	VAR_GLOBAL	M_RWw	Word[Signed]	...	W60Z8	RWw refresh device
3	VAR_GLOBAL	M_RY2	Bit	...	Y120Z9	RY refresh device2
4	VAR_GLOBAL	M_RWw2	Word[Signed]	...	W70Z8	RWw refresh device2
5				...		

Appendix 1.3. Copying MELSOFT Library to create an FB for the second module

- 1) Select an FB necessary for the second module from the Project tab of the Navigation window. Execute the Copy command.

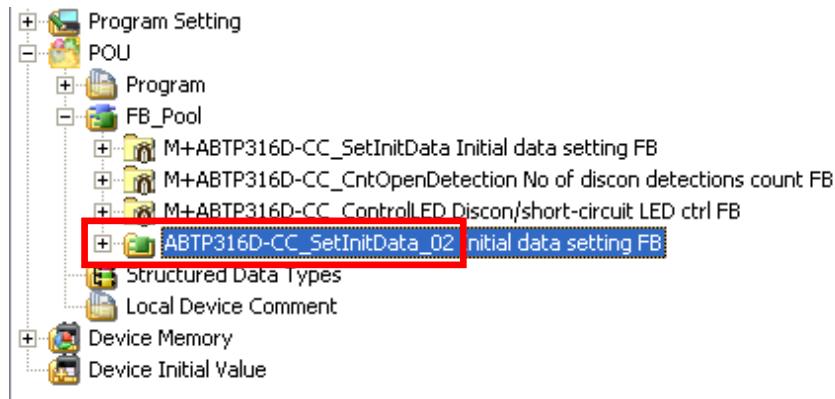
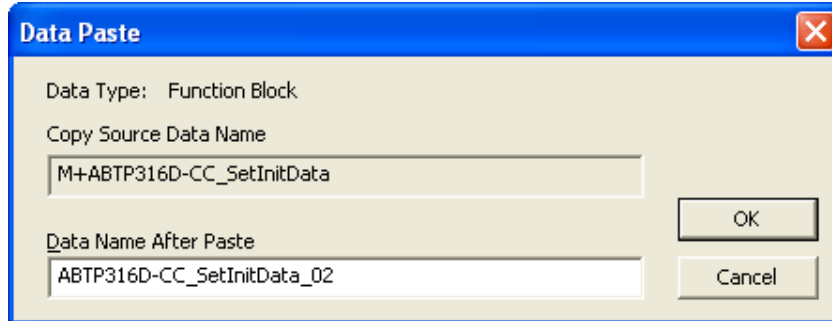


- 2) Paste the copied FB to "FB_Pool" on the Project tab of the Navigation window.



3) After selecting the paste command, a window appears to enter an FB name. Enter an FB name after paste.
(Example: ABTP316D-CC_SetInitData_02)

[Note] The character string "+" of M+... cannot be entered.

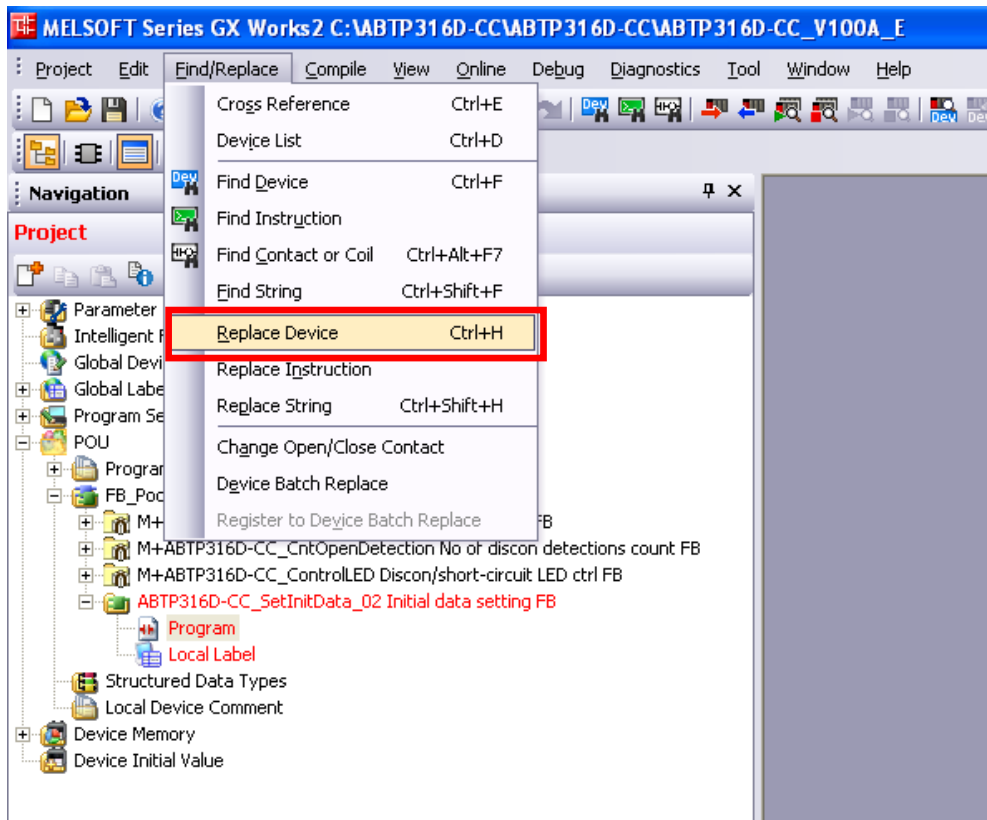


Appendix 1.4. Replacing Devices to Create the FB for the Second Module

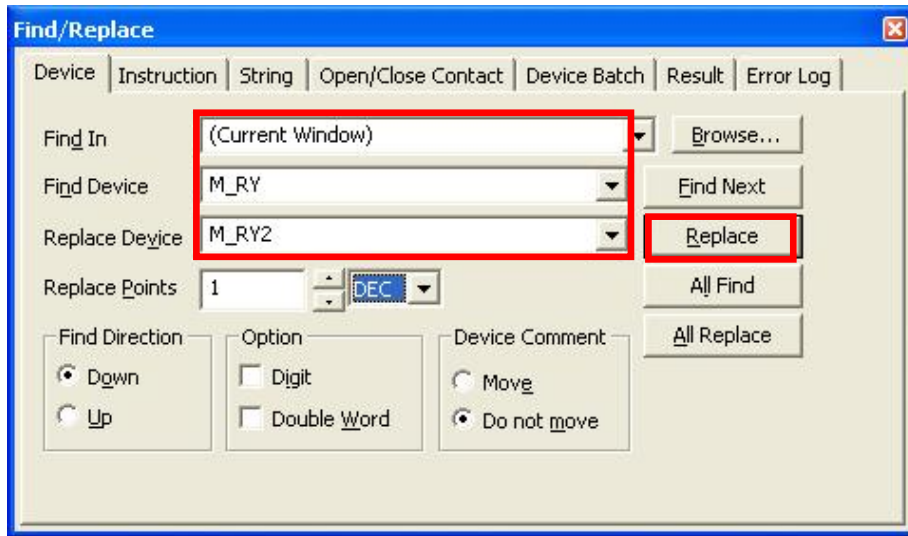
1) Open "Program" of the added FB.



2) Select "Find/Replace" menu and then select "Replace Device". "Find/Replace" window appears.



3) Select "Current Window" from Find In, " M_RY " from Find Device, and " M_RY2" from Replace Device. Then replace all devices. In the same way, replace " M_RWw " by " M_RWw2" all at once.



By performing the steps above, the CC-Link System Master/Local FB can be used for the second module.

[Point]

- 1) To use multiple FBs for the second CC-Link system master/local module, repeat the step in Appendix 1.4.
- 2) To use an FB for third or subsequent CC-Link system master/local modules, make sure that the preset "Global label name", "Data Name After Paste" that was set when pasting FB data and "Replace Device" that was set when replacing devices are not duplicated for the first and second modules.

[Note]

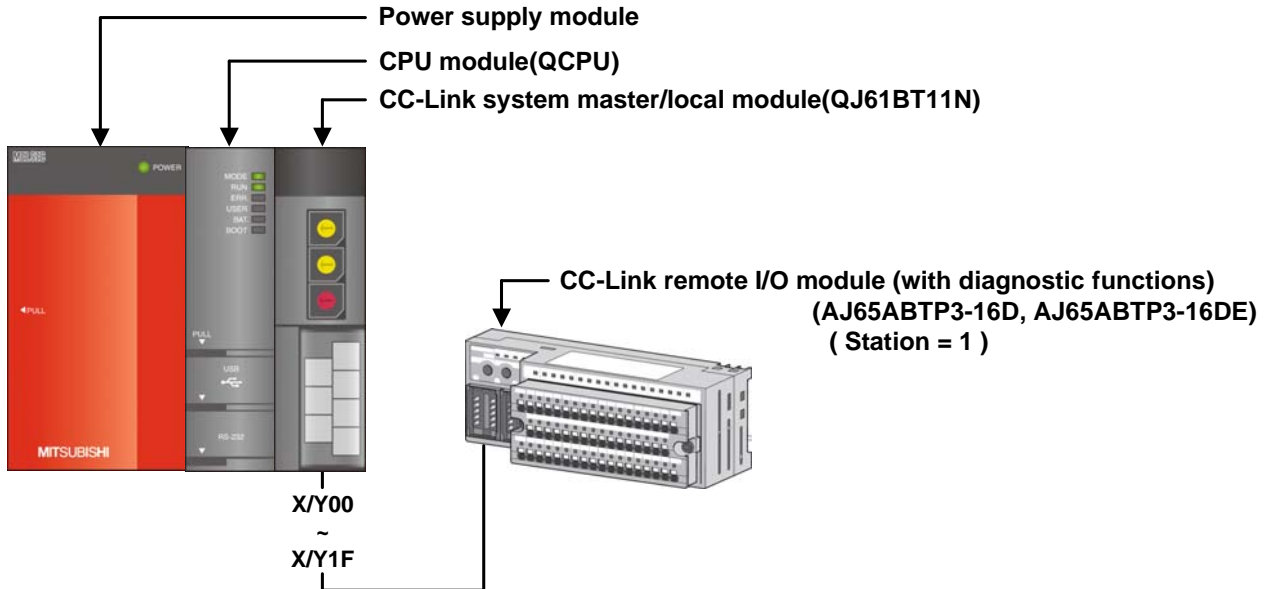
If MELSOFT Library is upgraded, MELSOFT Library FBs can be upgraded by importing them again. However, the FBs that were created by following these procedures for the second and subsequent modules are not upgraded even if the FBs are imported again.

Therefore, to upgrade FBs that were created by following these procedures, after upgrading MELSOFT Library, follow these procedures again.

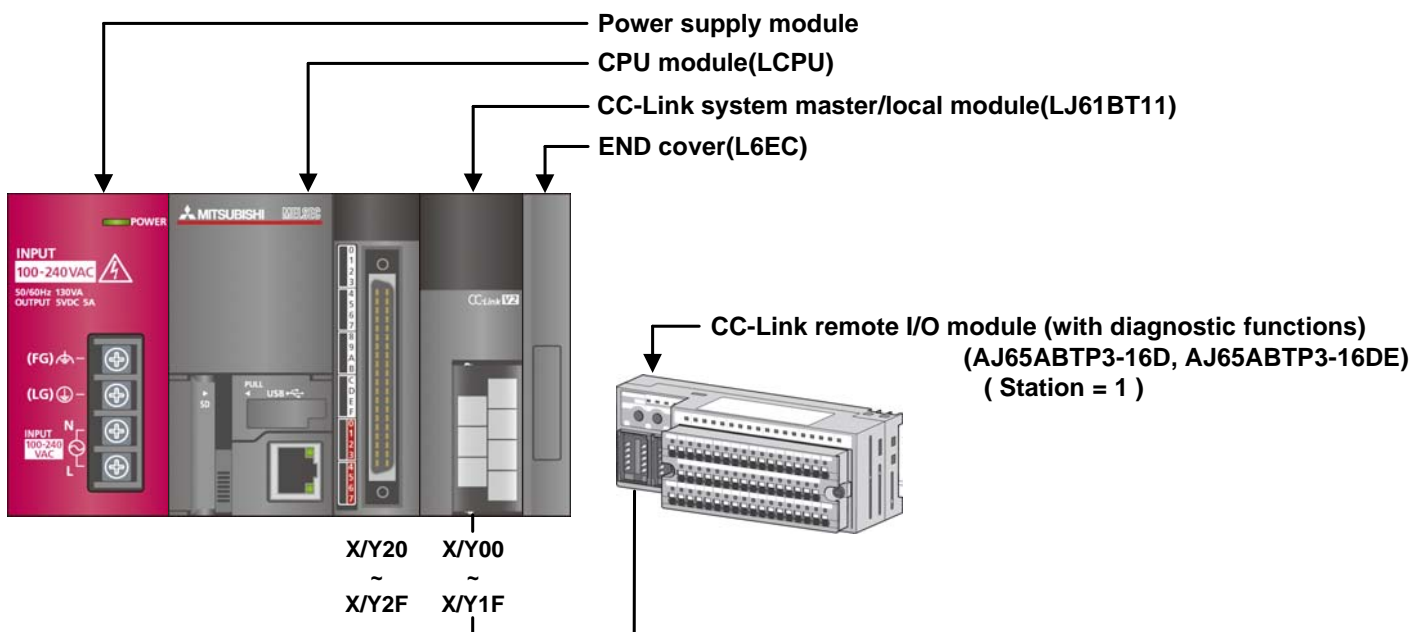
Appendix 2. FB Library Application Examples
 ABTP316D-CC FB application examples are as follows.

(1) System Configuration

a) Q series system configuration Example



b) L series system configuration Example



Reminder

- Every input must be provided with a value for proper FB operation.
 If not set, the values will be unspecified.
- Abbreviations may be used in the label comments due to the limitation on the number of the characters to display in GX Works2.

(2) Device List

a) External input (commands)

Device	FB name	Application (ON details)
M0	M+ABTP316D-CC_SetInitData	Execution command
M10	M+ABTP316D-CC_CntOpenDetection	Execution command
M20	M+ABTP316D-CC_ControlLED	Execution command
M21		Status hold

b) External output (checks)

Device	FB name	Application (ON details)
M1	M+ABTP316D-CC_SetInitData	Initial data setting complete
F0		Initial data setting FB error
D0		Initial data setting FB error code
M11	M+ABTP316D-CC_CntOpenDetection	No. of disconnections count in progress
F10		No. of disconnections count FB error
D10		No. of disconnections count FB error code
D100~D115		Count values of X0 to XF
M22	M+ABTP316D-CC_ControlLED	LED indication control in progress
F20		LED indication control FB error
D20		LED indication control FB error code
M100	-	Station number 1 data link error
M110		Station number 1 data link normal

(3) Global Label Settings

a) Common settings

Class	Label name	Data type	Device
VAR_GLOBAL	M_RY	Bit	Y1000Z9
VAR_GLOBAL	M_RWw	Word[Signed]	W600Z8

(4) Application Example Settings

a) Common settings

Input/output	Value	Description
Module start XY address	0	Specify the starting XY address where the CC-Link system master/local module to be communicated is mounted.
CC-Link station number	1	Specify the station number of the CC-Link remote I/O module to be connected.

b) Network parameters

Item	Setting value
Start I/O No.	0000
Type	Master Station
Mode	Remote Net (Ver.1 Mode).
Total Module Connected	1
Remote Input (RX)	X1000
Remote Output (RY)	Y1000
Remote Register (RW _r)	W100
Remote Register (RW _w)	W600

c) Station information

Setting item	Setting value
Station Number	1
Station Type	Remote Device Station
Exclusive Count	Exclusive Station 1

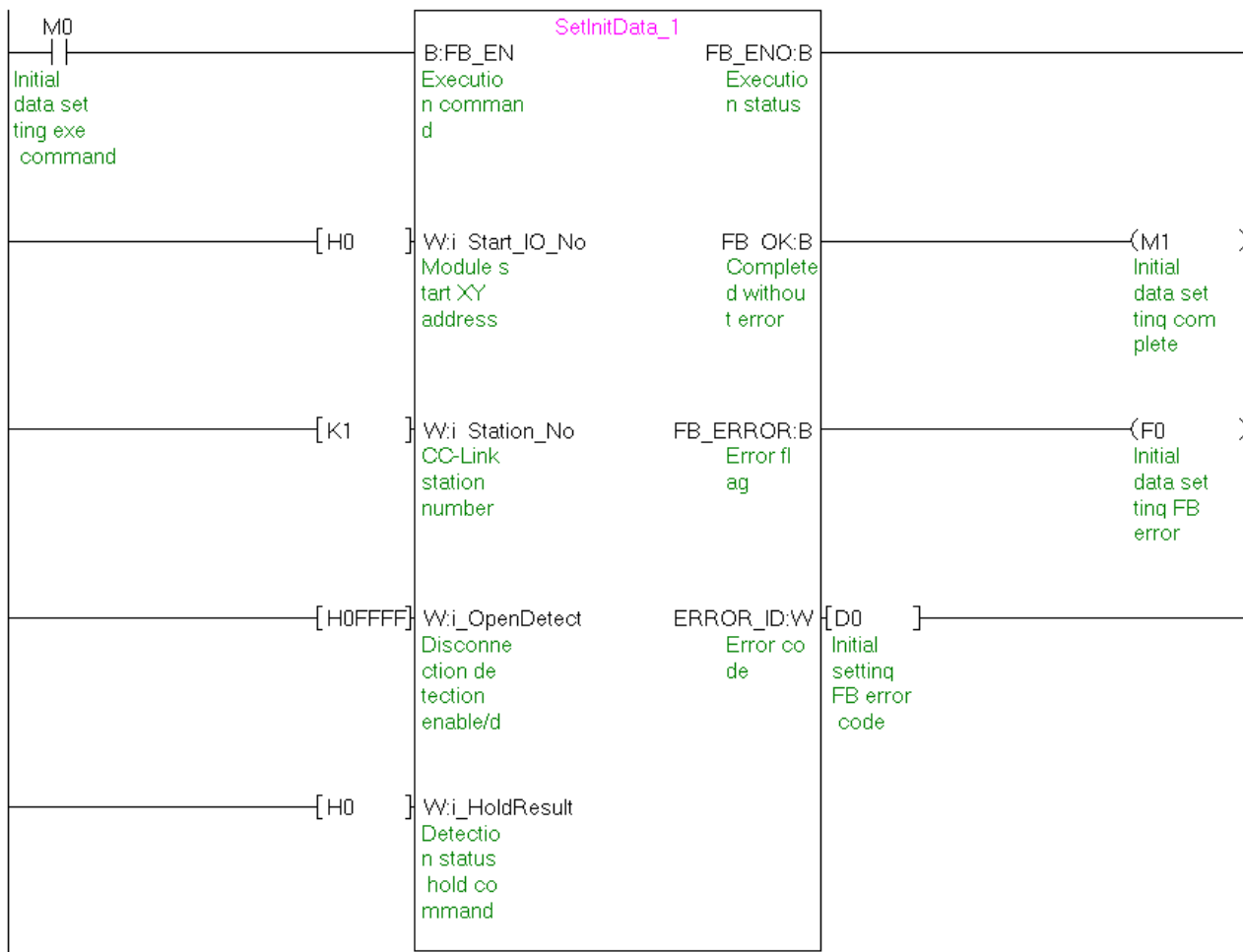
(5) Program

M+ABTP316D-CC_SetInitData (Initial data setting)

The program example below uses the following conditions.

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the target CC-Link system master/local module is mounted to 0H.
i_Station_No	K1	Set the CC-Link station number of the target remote module to 1.
i_OpenDetect	H0FFFF	Enable the disconnection detection enable/disable setting.
i_HoldResult	H0	Set the detection status hold command to hold.

By turning ON M0, the initial data setting is performed for the target module, the disconnection detection of each input terminal is enabled, and the disconnection detection status is set to hold.

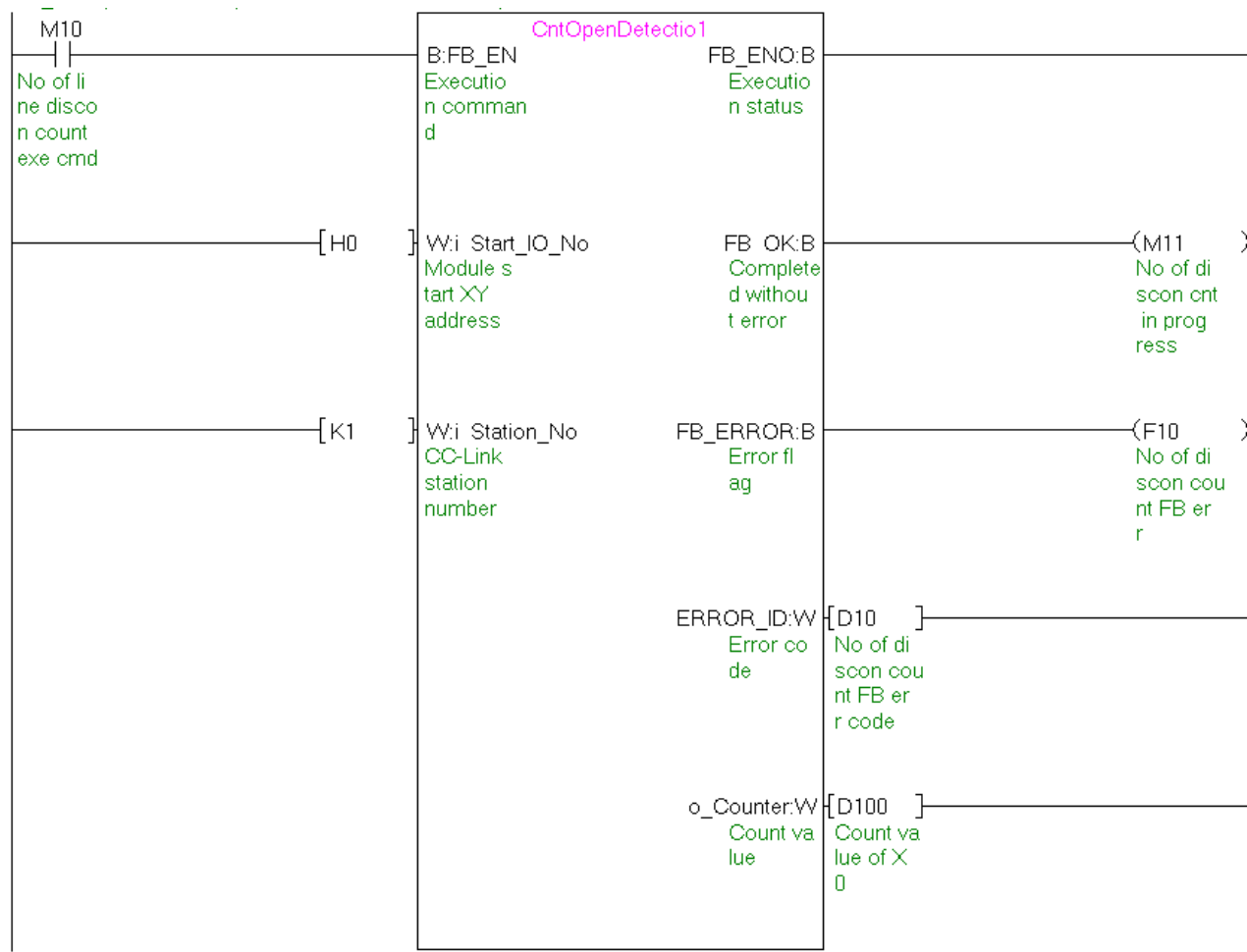


M+ABTP316D-CC_CntOpenDetection (No. of disconnection detections count)

The program example below uses the following conditions.

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the target CC-Link system master/local module is mounted to 0H.
i_Station_No	K1	Set the CC-Link station number of the target remote module to 1.

While M10 is ON, the number of disconnection detections is output to the count value.



M+ABTP316D-CC_ControlLED (Disconnection/short-circuit LED indication control)

The program example below uses the following conditions.

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the target CC-Link system master/local module is mounted to 0H.
i_Station_No	K1	Set the CC-Link station number of the target remote module to 1.

By turning ON M20 when M21 is OFF, a setting is made so that an error indication LED flashes/turns ON only during the occurrence of a disconnection/short-circuit.

By turning ON M20 when M21 is ON, a setting is made so that an error indication LED keeps flashing/turning ON even if an error is cleared.

