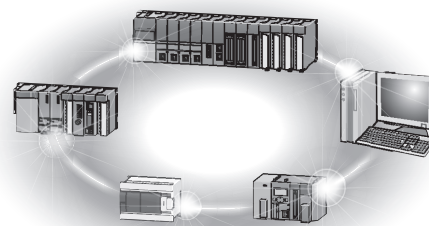




Mitsubishi Programmable Controller

CC-Link—AnyWireASLINK Bridge Module User's Manual

-NZ2AW1C2AL



Powered by

Anywire

This product was jointly developed and manufactured by Mitsubishi and Anywire Corporation.

*Note that the warranty on this product differs from that on other programmable controller products.
(Refer to "WARRANTY" in this manual.)

AnyWireASLINK

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PRECAUTIONS REGARDING WARRANTY AND SPECIFICATIONS

The NZ2AW1C2AL was jointly developed and manufactured by Mitsubishi and Anywire Corporation. Note that there are some precautions regarding warranty and specifications of this product.

- Warranty

Item	NZ2AW1C2AL	Other programmable controller products (e.g. MELSEC-Q series)
Repair term after discontinuation of production	1 year	7 years

- Application of the EMC Directive

Item	NZ2AW1C2AL	Other programmable controller products (e.g. MELSEC-Q series)
Applicable EMC standard	EN61131-2 ^{*1}	EN61131-2

^{*1} The module with a serial number where the sixth digit is "2" or later complies with this standard.

- Application of the UL/cUL standards

Item	NZ2AW1C2AL	Other programmable controller products (e.g. MELSEC-Q series)
Applicable UL standard/cUL standard	UL508 ^{*2} CSA22.2 ^{*2}	UL508 CSA22.2

^{*2} The module with a serial number where the sixth digit is "3" or later complies with this standard.

SAFETY PRECAUTIONS

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with this product only. For the safety precautions of the programmable controller system, refer to the user's manual for the CPU module used.

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



WARNING

Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.



CAUTION

Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

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

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

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

[Design Precautions]



WARNING

- An AnyWireASLINK system has no control function for ensuring safety.
 - When a communication failure occurs in the network, data in the master module are held.
Check the communication status information and configure an interlock circuit in the sequence program to ensure that the entire system will operate safely.
-

[Design Precautions]



CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables.
Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
 - Configure safety circuits, such as an emergency stop circuit and interlock circuit, external to the AnyWireASLINK system.
-

[Installation Precautions]

CAUTION

- Use the module in an environment that meets the general specifications in this manual. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
 - Securely fix the module with a DIN rail.
 - Shut off the external power supply (all phases) used in the system before mounting or removing the module.
Failure to do so may result in damage to the product.
 - Do not directly touch any conductive parts and electronic components of the module.
Doing so can cause malfunction or failure of the module.
-

[Wiring Precautions]

WARNING

- Shut off the external power supply (all phases) used in the system before installation and wiring.
Failure to do so may result in electric shock or damage to the product.
-

[Wiring Precautions]

CAUTION

- Individually ground the FG and LG terminals of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.
 - Tighten the terminal block screws within the specified torque range.
Undertightening can cause short circuit, fire, or malfunction.
Overtightening can damage the screw and/or module, resulting in drop, short circuit, fire, or malfunction.
 - Prevent foreign matter such as dust or wire chips from entering the module.
Such foreign matter can cause a fire, failure, or malfunction.
 - Incorrect wiring may damage modules and external devices. Adjust a cable length and a module position to prevent disconnection of a connector type terminal block or a cable.
 - Do not solder stranded wires of a cable when connecting them to the terminal block. Doing so may cause poor contact.
 - The power supply voltage of remote slave modules may be insufficient due to a voltage drop in the power supply line. Connect an external power supply so that the voltage of remote slave modules is ensured.
 - Do not apply the 24VDC power before wiring the entire AnyWireASLINK system.
 - Connect a 24VDC external power supply to the device in an AnyWireASLINK system.
 - Do not install the control lines or communication cables together with the main circuit lines or power cables.
Failure to do so may result in malfunction due to noise.
 - Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact.
 - When disconnecting the cable from the module, do not pull the cable by the cable part. For the cable connected to the terminal block, loosen the terminal screw. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
-

[Startup and Maintenance Precautions]

WARNING

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
 - Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal block screws. Failure to do so may result in electric shock.
-

[Startup and Maintenance Precautions]

CAUTION

- Do not disassemble or modify the modules.
Doing so may cause failure, malfunction, injury, or a fire.
 - Shut off the external power supply (all phases) used in the system before mounting or removing the module.
Failure to do so may cause the module to fail or malfunction.
 - Tighten the terminal block screws within the specified torque range.
Undertightening can cause drop of the component or wire, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
 - After the first use of the product, do not mount/remove the terminal block to/from the module more than 50 times (IEC 61131-2 compliant).
Exceeding the limit of 50 times may cause malfunction.
 - Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body.
Failure to do so may cause the module to fail or malfunction.
-

[Disposal Precautions]

CAUTION

- When disposing of this product, treat it as industrial waste.
-

CONDITIONS OF USE FOR THE PRODUCT

(1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;

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

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.

MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.

("Prohibited Application")

Prohibited Applications include, but not limited to, the use of the PRODUCT in;

- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

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

COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

Method of ensuring compliance

To ensure that Mitsubishi programmable controllers maintain EMC and Low Voltage Directives when incorporated into other machinery or equipment, certain measures may be necessary. Please refer to one of the following manuals.

- User's manual for the CPU module or head module used
- Safety Guidelines (This manual is included with the CPU module, base unit, or head module.)

The CE mark on the side of the programmable controller indicates compliance with EMC and Low Voltage Directives.

Additional measures

To ensure that this product maintains EMC and Low Voltage Directives, please refer to the following.

➡ Page 98 EMC and Low Voltage Directives

INTRODUCTION

Thank you for purchasing the CC-Link-AnyWireASLINK bridge module (hereafter abbreviated as bridge module).

This manual describes the procedures, system configuration, parameter settings, functions, and troubleshooting of a bridge module.


Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the bridge module to handle the product correctly.

When applying the program examples introduced in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems.



Unless otherwise specified, this manual describes the program example in which the station number of the bridge module is set to 1.

For details on station numbers, refer to the following.

 User's manual for the master module used

RELEVANT MANUALS

CC-Link

Manual name (manual number)	Description
MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup) (SH-081269ENG)	Specifications, procedures before operation, system configuration, wiring, and communication examples of the CC-Link system master/local module
MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application) (SH-081270ENG)	Functions, parameter settings, programming, troubleshooting, I/O signals, and buffer memory of the CC-Link system master/local module
MELSEC-Q CC-Link System Master/Local Module User's Manual (SH-080394E)	System configuration, performance specifications, functions, handling, wiring, and troubleshooting of the QJ61BT11N
MELSEC-L CC-Link System Master/Local Module User's Manual (SH-080895ENG)	Settings, specifications, handling, data communication methods, and troubleshooting of the built-in CC-Link function of the CPU module or the CC-Link system master/local module
CC-Link System Master/Local Module Type AJ61QBT11/A1SJ61QBT11 User's Manual (IB-66722)	System configuration, performance specifications, functions, handling, wiring, and troubleshooting of the AJ61QBT11/A1SJ61QBT11
CC-Link System Master/Local Module Type AJ61BT11/A1SJ61BT11 User's Manual (IB-66721)	System configuration, performance specifications, functions, handling, wiring, and troubleshooting of the AJ61BT11, A1SJ61BT11

AnyWireASLINK

Manual name (manual number)	Description
MELSEC-Q/L AnyWireASLINK Master Module User's Manual (SH-081094ENG)	Specifications, procedures before operation, system configuration, installation, wiring, settings, functions, programming, and troubleshooting of the AnyWireASLINK master module

Others

Manual name (manual number)	Description
iQ Sensor Solution Reference Manual (SH-081133ENG)	Operating methods of iQ Sensor Solution, such as programming and monitoring

CONTENTS

COPYRIGHT	1
PRECAUTIONS REGARDING WARRANTY AND SPECIFICATIONS	1
SAFETY PRECAUTIONS	2
CONDITIONS OF USE FOR THE PRODUCT	5
COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES	6
INTRODUCTION	7
RELEVANT MANUALS	8
TERMS	12
PACKING LIST	13
CHAPTER 1 OVERVIEW	14
1.1 Features	15
1.2 System Configuration of AnyWireASLINK	15
CHAPTER 2 SPECIFICATIONS	16
2.1 General Specifications	16
2.2 Performance Specifications	17
2.3 Applicable Systems	19
Applicable master modules	19
Parameter setting items according to CC-Link version	19
2.4 Part Names	20
CHAPTER 3 MOUNTING MODULE	22
CHAPTER 4 CONNECTIONS	24
4.1 CC-Link Side Terminal Block	24
Connecting a CC-Link dedicated cable	25
Cable processing	25
CC-Link terminating resistor	25
Wiring precautions	25
4.2 AnyWireASLINK Side Terminal Block	26
Transmission cable terminal block	26
Cable processing	27
Wiring precautions	27
4.3 Connecting Slave Modules	28
4.4 Supplying Power to a Bridge Module	29
4.5 Checking System Before Power-on	33
4.6 Powering on the System	34
4.7 Terminating Unit	35
CHAPTER 5 SWITCH SETTING	36
5.1 CC-Link Side	36
5.2 AnyWireASLINK Side	37
CHAPTER 6 MEMORY MAP	38
6.1 Lists of Remote I/O Signals	38
When the CC-Link operation mode is Ver.1.10	38
When the CC-Link operation mode is Ver.2.00	40

6.2	Lists of Remote Register Areas	41
	When the CC-Link operation mode is Ver.1.10	41
	When the CC-Link operation mode is Ver.2.00	43
6.3	Details of Remote Register Areas	44
6.4	Error Reset	47
CHAPTER 7 SETTINGS BEFORE OPERATION		48
7.1	Settings of Slave Module	48
7.2	Automatic Address Detection	50
	Automatic address detection operation	50
	Automatic address detection execution timing	52
7.3	Sample Program	53
CHAPTER 8 FUNCTIONS		57
8.1	Function List	57
8.2	Function Details	58
	Bit transmission function	58
	Parameter reading/writing function	58
	Transmission cable short detection function	74
	Disconnected transmission cable location detection function	75
	Transmission cable voltage drop detection function	76
	Parameter access error detection function	77
	Same ID number used detection function	80
	Module with no ID number setting detection function	81
	AnyWireASLINK test mode	82
	iQ Sensor Solution functions	83
CHAPTER 9 TRANSMISSION TIME		84
9.1	CC-Link Transmission Time	84
9.2	AnyWireASLINK Transmission Time	84
	Transmission delay time	85
CHAPTER 10 TROUBLESHOOTING		87
10.1	Before Troubleshooting	87
10.2	Visual Inspection	87
10.3	Checking with Error Status Flag	88
10.4	Troubleshooting of Bridge Module	89
10.5	Troubleshooting of Slave Module	91
10.6	List of Error Codes	92
APPENDICES		94
Appendix 1 Details of I/O Signals		94
	Input signals	94
	Output signals	96
Appendix 2 Checking Serial Number and Function Version		97
Appendix 3 EMC and Low Voltage Directives		98
	Measures to comply with the EMC Directive	98
	Requirements for Low Voltage Directive compliance	100
Appendix 4 Functions Added and Modified with Version Upgrade		101
Appendix 5 External Dimensions		102

INDEX

104

REVISIONS.106

WARRANTY107

TRADEMARKS108

TERMS

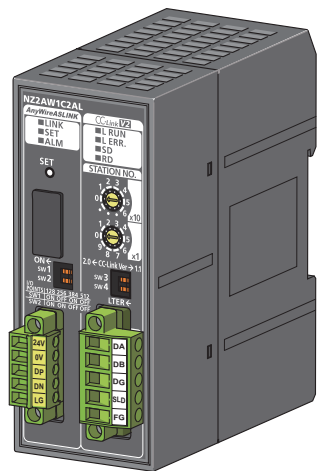
Unless otherwise specified, this manual used the following terms.

Term	Description
Address	Device information set to a slave module to identify each node on the AnyWireASLINK network
Address writer	A hand-held device to read/write parameters (including addresses) from/to a slave module
AnyWireASLINK	A system where sensors at the end of a control system are connected to a programmable controller in the most suitable way. With this system, a bridge module can detect sensor disconnection and a user can set the I/O operations of a slave module on a bridge module without using I/O areas of the CPU module.
ASLINKAMP	A generic term for sensor amplifiers that have an AnyWireASLINK interface
ASLINKER	A generic term for I/O devices that have an AnyWireASLINK interface
Bridge module	The abbreviation for the NZ2AW1C2AL CC-Link-AnyWireASLINK bridge module
Buffer memory	A memory in a master module, where data (such as setting values and monitoring values) exchanged with a CPU module are stored
CC-Link	A field network system where data processing for control and information can be simultaneously performed at high speed.
CC-Link dedicated cable	A generic term for a Ver.1.10-compatible CC-Link dedicated cable, CC-Link dedicated cable (Ver.1.00-compatible), and CC-Link dedicated high-performance cable (Ver.1.00-compatible)
ID	Information assigned to a module based on its address to identify whether it is an input module or output module Output module ID: Address Input module ID: Address+200H
Master module	The abbreviation for the CC-Link master module
Power cable (24V, 0V)	A cable that connects a 24VDC external power supply to a bridge module
RWr	Remote register (read area for CC-Link). Word data input from a slave station to the master station
RWw	Remote register (write area for CC-Link). Word data output from the master station to a slave station
RX	Remote input (for CC-Link). Bit data input from a slave station to the master station
RY	Remote output (for CC-Link). Bit data output from the master station to a slave station
Slave module	A generic term for modules that communicate data with a bridge module
Terminating unit	A waveform shaper
Transmission cable (DP, DN)	A signal cable that connects between a slave module and a bridge module
Transmission cycle time	A data sampling interval

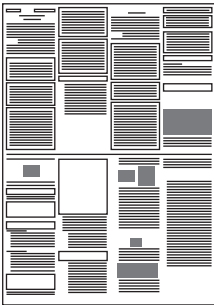
PACKING LIST

The following items are included in the package of this product. Before use, check that all the items are included.

NZ2AW1C2AL



NZ2AW1C2AL




Before Using the Product

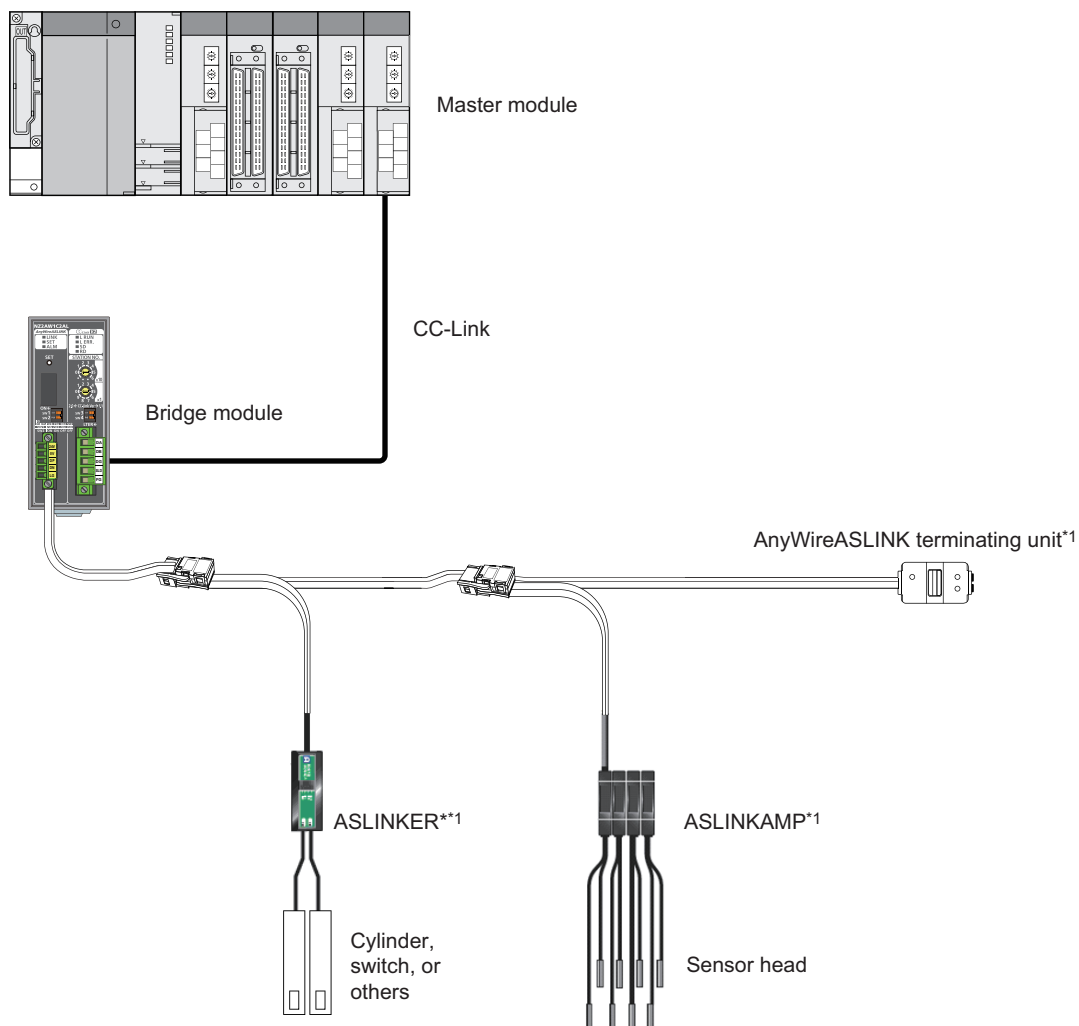
1 OVERVIEW

The bridge module, a product of the joint development project with Anywire Corporation, allows the AnyWireASLINK system to be connected with CC-Link.

The AnyWireASLINK system provides a high-speed and highly-reliable sensor system.

For the CC-Link, refer to the following.

 User's manual for the master module used



*1 Manufactured by Anywire Corporation

1.1 Features

Seamless connection between two systems

CC-Link and AnyWireASLINK can be seamlessly connected.

CC-Link transmission speed auto-tracking

The transmission speed of the bridge module need not be set by the user since it is automatically determined according to the transmission speed set in a master station.

Man-hour reduction by built-in terminating resistor

Since the bridge module has a built-in terminating resistor (110Ω) of CC-Link, a terminating resistor is not necessary even when the module is used at the end of the CC-Link network. One operation with a switch can make the built-in terminating resistor (110Ω) invalid or valid.

iQ Sensor Solution functions

iQ Sensor Solution provides automatic detection of the bridge module connected via CC-Link. It also allows the parameter setting and monitoring of the slave modules connected to AnyWireASLINK.

1.2 System Configuration of AnyWireASLINK

The following table lists the maximum number of modules that can be connected in one AnyWireASLINK system side.

Module	Maximum number of connections
Bridge module	1
Slave module	128
AnyWireASLINK terminating unit	1

2 SPECIFICATIONS

2.1 General Specifications

The following table lists the general specifications.

Item	Specifications					
Operating ambient temperature	0 to 55°C					
Storage ambient temperature	-25 to 75°C					
Operating ambient humidity	10 to 95%RH, non-condensing					
Storage ambient humidity						
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2		Frequency	Constant acceleration	Half amplitude	The number of sweeps
		Under intermittent vibration	5 to 8.4Hz	—	3.5mm	10 times each in X, Y, and Z directions
			8.4 to 150Hz	9.8m/s ²	—	
		Under continuous vibration	5 to 8.4Hz	—	1.75mm	—
			8.4 to 150Hz	4.9m/s ²	—	
Shock resistance	Compliant with JIS B 3502 and IEC 61131-2 (147m/s ² , 3 times each in X, Y, and Z directions)					
Operating atmosphere	No corrosive gas					
Operating altitude*1	0 to 2000m					
Installation location	Inside a control panel*4					
Overvoltage category*2	II or less					
Pollution degree*3	2 or less					
Equipment class	Class I					

*1 Do not use or store the programmable controller under pressure higher than the atmospheric pressure of altitude 0m. Doing so may cause malfunction.

When using the programmable controller under pressure, please consult your local Mitsubishi representative.

*2 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises.

Category II applies to equipment for which electrical power is supplied from fixed facilities.

The surge voltage withstand level for up to the rated voltage of 300V is 2500V.

*3 This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used. In pollution degree 2, only non-conductive pollution occurs. A temporary conductivity caused by an accidental condensation may also occur occasionally.

*4 The equipment can also be used outside the control panel, provided that environmental conditions such as operating ambient temperature and operating ambient humidity are met.

2.2 Performance Specifications

The following table lists the performance specifications.

Classification	Item	Specifications	
CC-Link side	Station type	Remote device station	
	CC-Link version	Ver.1.10	Ver.2.00
	Extended cyclic setting	—	2 times setting
	Communication speed	10M/5M/2.5M/625K/156Kbps (automatic setting)	
	Number of occupied stations ^{*1}	Remote device stations 1 to 4 are occupied according to the setting of the specification selection switch. 1 station (RX/Ry number of occupied points: 32 points) (RWr/RWw 4/4) 2 stations (RX/Ry number of occupied points: 64 points) (RWr/RWw 8/8) 3 stations (RX/Ry number of occupied points: 96 points) (RWr/RWw 12/12) 4 stations (RX/Ry number of occupied points: 128 points) (RWr/RWw 16/16)	4 stations occupied (RX/Ry number of occupied points: 224 points) (RWr/RWw 32/32)
	Number of connectable modules	64 max.	16 max.
	Connection cable ^{*2}	CC-Link dedicated cable (Ver.1.00-compatible)/High-performance CC-Link dedicated cable (Ver.1.00-compatible)/Ver.1.10-compatible CC-Link dedicated cable	
	Built-in terminating resistor	Provided (110Ω)	
AnyWireASLINK side	Transmission clock	27.0kHz	
	Maximum transmission distance (total length)	200m ^{*3}	
	Transmission system	DC power supply transmission total frame cyclic system	
	Connection type	Bus topology (multidrop system, T-branch system, tree branch system)	
	Transmission protocol	Dedicated protocol (AnyWireASLINK)	
	Error control	Checksum, double-check system	
	Number of connected I/O points	512 points max. (input: 256 points, output: 256 points)	
	Number of connectable modules	128 max. (varies depending on the current consumption of each slave module)	
	RAS function	Disconnected transmission cable location detection function, transmission cable short detection function, transmission cable voltage drop detection function	
	AnyWireASLINK transmission cable	<ul style="list-style-type: none"> UL-listed general-purpose 2-wire cable (VCTF, VCT 1.25mm², 0.75mm², rated temperature 70°C or higher) UL-listed general-purpose wire (1.25mm², 0.75mm², rated temperature 70°C or higher) Dedicated flat cable (1.25mm², 0.75mm², rated temperature 90°C) 	
	24VDC power cable	<ul style="list-style-type: none"> UL-listed general-purpose 2-wire cable (VCTF, VCT 0.75mm² to 2.0mm², rated temperature 70°C or higher) UL-listed general-purpose wire (0.75mm² to 2.0mm², rated temperature 70°C or higher) Dedicated flat cable (1.25mm², 0.75mm², rated temperature 90°C) 	
	Transmission cable supply current ^{*4}	When using a 1.25mm ² cable: 2A max. When using a 0.75mm ² cable: 1A max.	
	Maximum number of writes to EEPROM	100000 times max.	
Common	Power supply	Voltage: 21.6 to 27.6VDC (24VDC -10 to +15%), ripple 0.5Vp-p or lower Recommended voltage: 26.4VDC (24VDC +10%) Module current consumption: 0.2A	
	External dimensions	102mm(H)×43mm(W)×96mm(D)	
	Weight	0.2kg	

- *1 When the CC-Link operation mode is set to Ver.1.10 by the operation mode setting switch, the number of occupied stations is changed by the number of transmission points setting switch.
- *2 Ver.1.10-compatible CC-Link dedicated cable, CC-Link dedicated cable (Ver.1.00-compatible), and CC-Link dedicated high-performance cable (Ver.1.00-compatible) cannot be used at the same time. If those cables are used at the same time, normal transmission is not guaranteed.
In addition, use the terminating resistor according to the type of cable used.
- *3 For wiring of 50m or more with 4 wires (DP, DN, 24V, 0V), insert the noise filter for power supply cables between the power supply and cables. For details, refer to the manual for the AnyWireFILTER (ANF-01) manufactured by Anywire Corporation.
- *4 For the relationship among the total length, the wire diameter of connection cable, and the transmission cable supply current, refer to the following. On some slave modules with cables, the diameter of module-integrated cables may be less than 0.75mm^2 . However, they can be used without any problem, provided that the diameter of connection cables meets the requirement below.

Diameter of connection cable	Transmission cable supply current		
	Total length of 50m or less	Total length of 50m to 100m	Total length of 100m to 200m
1.25mm^2	2A max.	1A max.	0.5A max.
0.75mm^2	1.2A max.	0.6A max.	0.3A max.

2.3 Applicable Systems

Applicable master modules

Master modules that can be used are listed on the website of CC-Link Partner Association (CLPA).

For the website of CC-Link Partner Association (CLPA), refer to the following.

www.cc-link.org

2

Parameter setting items according to CC-Link version

For a mode setting of the master module connected with the bridge module or a station information (station type), set them in the following combinations.

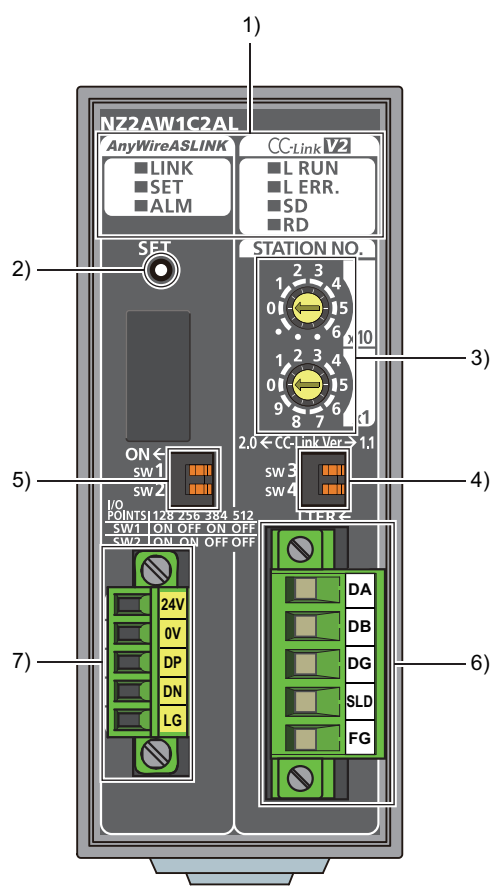
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



Master module	Parameter setting item		Bridge module	CC-Link operation mode		iQ Sensor Solution-compatible function
	Mode setting ^{*1}	Station information (station type)		Ver.1.10	Ver.2.00	
A1SJ61BT11, A1SJ61QBT11	Remote Net Ver.1 Mode	Remote device station	○	○	×	×
	Remote I/O Net Mode	—	×	—	—	×
QJ61BT11N, LJ61BT11, L26CPU-BT, L26CPU-PBT, Q80BD-J61BT11N, Q81BD-J61BT11	Remote Net Ver.1 Mode	Remote device station	○	○	×	×
	Remote Net Ver.2 Mode	Ver.1 remote device station	○	○	×	×
		Ver.2 remote device station	○	×	○	○
	Remote Net Additional Mode	Ver.1 remote device station	○ ^{*2}	○	×	×
		Ver.2 remote device station	○	×	○	○
	Remote I/O Net Mode	—	×	—	—	×
RJ61BT11	Remote Net Ver.1 Mode	Remote device station	○	○	×	×
	Remote Net Ver.2 Mode	Ver.1 remote device station	○	○	×	×
		Ver.2 remote device station	○	×	○	×
	Remote Device Net Ver.1 Mode	Remote device station	○	○	×	×
	Remote Device Net Ver.2 Mode	Ver.1 remote device station	○	×	○	×
		Ver.2 remote device station				
	Remote I/O Net Mode	—	×	—	—	×

*1 For the mode setting, refer to the user's manual for the master module used.

*2 If a station number is used as a Ver.2 remote device station in the existing system, set a lower station number to the Ver.1 remote device station added.

2.4 Part Names



No.	Name	Description
1)	LED indicator (CC-Link side)	The module status is indicated by the LEDs.
		LED name Description
		L RUN LED (green) Indicates the CC-Link communication status. On: Operating normally Off: Disconnecting (timeout error)
		L ERR. LED (red)*1 Indicates the CC-Link error status. On: When station number setting is out of the range Flashing regularly (0.4-second-intervals): When the station number setting was changed from power-on*2 Flashing irregularly: When the bridge module or CC-Link dedicated cable has been affected by noise When on/off of the operation mode setting switch (SW4) and the combinations of mounting terminating resistor are incorrect Off: Operating normally
		SD LED (green) Indicates the sending status of CC-Link data. On: Sending data Flashing: Terminating resistor is not connected in the master module and final station module. Off: Disconnection or incorrect wiring of CC-Link dedicated cable
		RD LED (green) Indicates the CC-Link data receiving status. On: Receiving data Flashing: Terminating resistor is not connected in the master module and final station module. Off: Disconnection or incorrect wiring of CC-Link dedicated cable
	LED indicator (AnyWireASLINK side)	LINK LED (green) Indicates whether data link can be performed in the bridge module. On: During initializing the module or occurring a hardware error. Data link cannot be performed. Off: 24VDC power supply is disconnected. Data link cannot be performed. Flashing: Operating normally. Data link can be performed.
		SET LED (green) Indicates the address detection status of the bridge module. On: Automatic address detection in progress Off: Operating normally Flashing: Writing in the EEPROM
		ALM LED (red) Indicates the error status of the bridge module. On: DP/DN disconnection, no response from the slave module Slow flashing (one-second intervals): DP/DN short-circuit Fast flashing (0.2-second intervals): 24VDC is not being supplied or the voltage is low. Off: Operating normally
2)	SET switch (Automatic address setting switch)	Switch for automatic detection of the AnyWireASLINK slave module ID (address) ( Page 50 Automatic address detection operation)
3)	CC-Link station number setting switch	Set the head station number of the bridge module. ( Page 36 Station number setting switch)
4)	Operation mode setting switch	Set the operation mode of the bridge module. ( Page 36 Operation mode setting switch)
5)	Number of transmission points setting switch	Set the number of transmission points of the AnyWireASLINK. ( Page 37 AnyWireASLINK Side)
6)	CC-Link side terminal block	A terminal block of the CC-Link dedicated cable ( Page 24 CC-Link Side Terminal Block)
7)	AnyWireASLINK side terminal block	A transmission cable terminal block of the AnyWireASLINK ( Page 26 AnyWireASLINK Side Terminal Block)

*1 The LED may turn on for a moment when the module is powered on, however it does not affect the operation of the bridge module.

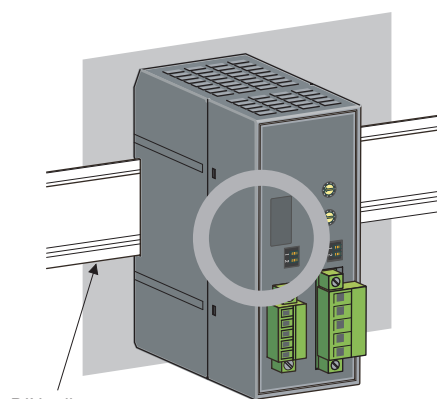
*2 When station number setting switch is changed while communication is disconnected, the LED will start flashing irregularly.

3 MOUNTING MODULE

Mount the module on a DIN rail before use.

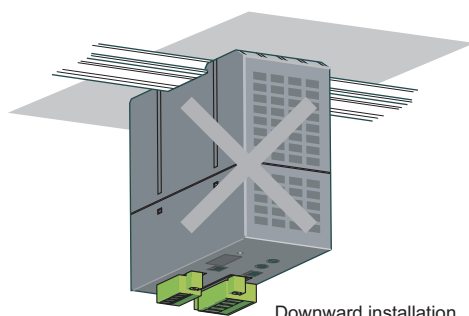
Direction of mounting a module

Since the bridge module radiates heat, place it in airy place in the direction shown below.

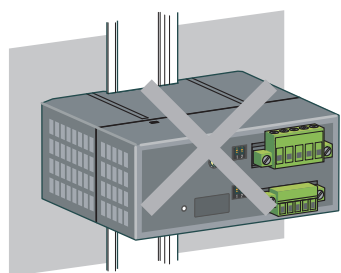


Vertical installation (basic)

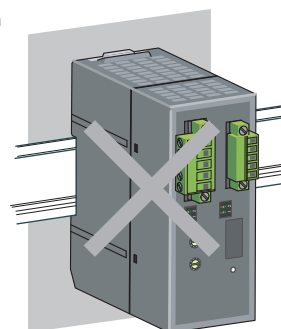
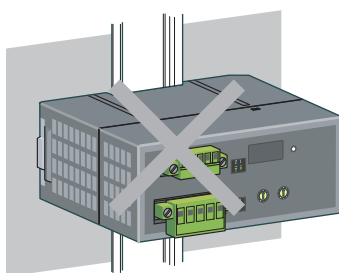
Do not place the module in the directions shown below.



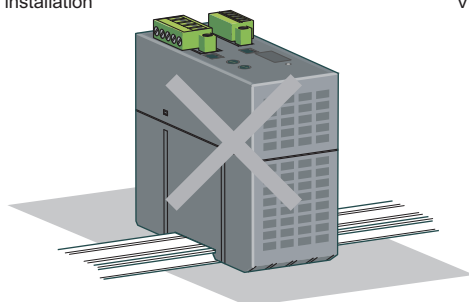
Downward installation



Horizontal installation

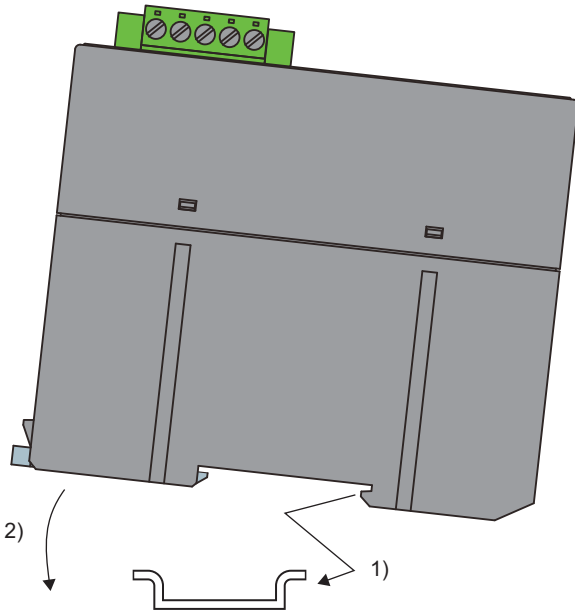


Vertical installation (upside down)



Upward installation

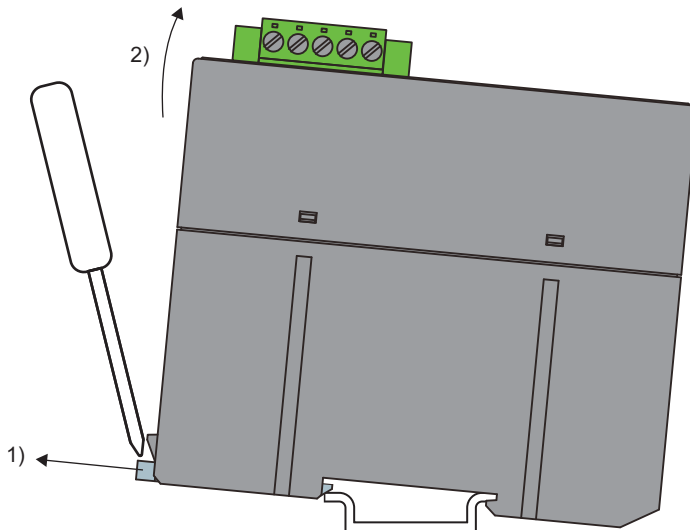
Mounting a module on a DIN rail



1. Hook the upper fixing tab on the bottom of the module to the DIN rail.
2. Push and engage the bridge module on the DIN rail.

3

Removing a module from a DIN rail



1. Insert a flathead screwdriver into the hook and pull the hook to remove from the DIN rail.
2. Lift the module on the hook side and remove it using the fixing tab as the supporting point.

4 CONNECTIONS

4.1 CC-Link Side Terminal Block

The bridge module is handled as a remote device station of CC-Link. The CC-Link side terminal block is the connection terminal which is easy to mount or remove.

Manufacture: Phoenix Contact Co., Ltd. (Contact: www.phoenixcotact.com)

Model: MSTB2,5/5-STF-5,08AU

Tightening torque: 0.2 to 0.3N·m

To tighten the terminal block, a flathead screwdriver having a tipped size of 0.6×3.5mm is required.

Before removing the CC-Link side terminal block, check that the fixing screws on both sides are completely loosened (removed from the socket).

Pulling with excessive force while the fixing screws on both ends are still tightened may damage the devices.

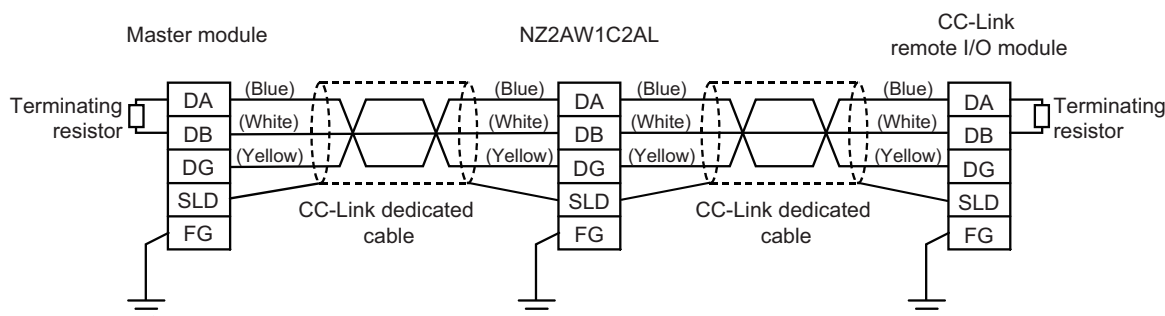
Before tightening the terminal block, check that there are no short-circuits due to the disconnected or frayed wires and tighten the screws at both ends securely. (Tightening torque: 0.2 to 0.3N·m)

Point

The fixing screws are not tightened when shipped. Securely tighten the screws on both ends when tightening the terminal block.

Connecting a CC-Link dedicated cable

The connection example of the CC-Link dedicated cable is shown below.



Cable processing

Bare cables can be connected to the CC-Link side terminal block; however, for safety reasons, it is recommended to connect the crimped bar terminals.

For wiring, use the connection cables as listed in the performance specifications and tighten them with the applicable tightening torque. (☞ Page 17 Performance Specifications)

Use UL-listed solderless terminals and, for processing, use a tool recommended by their manufacturer.

For processing and cable wiring of CC-Link dedicated cable, refer to the CC-Link Cable Wiring Manual published by CC-Link Partner Association.

Type	Model	Application*2	Contact
Bar terminal*1	AI 0,75-8 GY	When processing a 0.75mm ² cable	Phoenix Contact Co., Ltd. (www.phoenixcontact.com)
	AI 1,5-8 BK	When processing a 1.25mm ² cable	
	AI-TWIN 2×0,75-8 GY	When processing two 0.75mm ² cables	
	AI-TWIN 2×1,5-8 BK	When processing two 1.25mm ² cables	

*1 When connecting two cables to one terminal, connect the two cables together to the TWIN bar terminal.

*2 When TWIN bar terminals are used, the maximum diameter is 1.25mm².

CC-Link terminating resistor

It is not necessary to mount the external terminal register due to built-in terminating resistor (110Ω) in the bridge module.

When using the bridge module in network, turn on the operation mode setting switch SW4.

The operation mode setting switch is set to off when the product is shipped.

Point

Built-in terminating resistor in the bridge module cannot be used in the following cases.

- When there is a possibility that the bridge module is exchanged into the CC-Link data link
- When the CC-Link system is configured with the CC-Link dedicated cable (130Ω)

Wiring precautions

One of the requirements to achieve full function of the bridge module and make a reliable system is external wiring which is not affected by noise.

Precautions of external wiring are as follows.

- Do not lay close or bundle the CC-Link wiring together with the load cable other than the main circuit line, high voltage, or programmable controller. If not, the wiring is more likely to be affected by noise, surges, and induction.
- Ground the shield wire of the CC-Link dedicated cable. However, external grounding may do well depending on the external noise conditions.

4.2 AnyWireASLINK Side Terminal Block

Transmission cable terminal block

Model	Applicable tightening torque
MC 1,5/5-STF-3,81 ^{*1}	0.2 to 0.3N·m

^{*1} Use the one manufactured by Phoenix Contact Co., Ltd. (For contact, visit www.phoenixcontact.com.)

To connect the terminal block, a flathead screwdriver having a tipped size of 0.4×2.5mm is required.

Before removing the transmission cable terminal block, check that the fixing screws on both ends are completely loosened (removed from the socket).

Pulling with excessive force while the fixing screws on both ends are still tightened may damage the devices.

Before connecting the terminal block, check that there are no short-circuits due to the disconnected or frayed wires and tighten the screws at both ends securely. (Tightening torque: 0.2 to 0.3N·m)

Descriptions of terminals

Terminal	Description
24V	Power supply terminal for driving the transmission circuit for the AnyWireASLINK system. Connect to a 24VDC external power supply.
0V	
DP	AnyWireASLINK transmission signal terminals DP: Transmission cable (+), DN: Transmission cable (-) Connect to the DP and DN terminals on the slave module or terminating unit.
DN	
LG	Connected to the neutral point of the noise filter inserted between the 24V and 0V terminals. Ground the LG terminal with the functional ground terminal (FG terminal) on the programmable controller at a single point.

Applicable cables

Classification	Name	Wire diameter	Type	Material	Temperature rating	
Transmission cable (DP, DN)	UL-listed general-purpose 2-wire cable (VCTF, VCT)	1.25mm ²	Stranded wire	Copper wire	70℃ or higher	
		0.75mm ²				
	UL-listed general-purpose wire	1.25mm ²				90℃
		0.75mm ²				
	Dedicated flat cable	1.25mm ²				
		0.75mm ²				
Power supply cable (24V, 0V)	UL-listed general-purpose 2-wire cable (VCTF, VCT)	0.75mm ² to 2.0mm ²	Stranded wire		70℃ or higher	
	UL-listed general-purpose wire	0.75mm ² to 2.0mm ²	Stranded wire/ single wire		90℃	
	Dedicated flat cable	1.25mm ²	Stranded wire			
		0.75mm ²				

Cable processing

Bare cables can be connected to the transmission cable terminal block; however, for safety reasons, it is recommended to connect the crimped bar terminals.

Use UL-listed solderless terminals and, for processing, use a tool recommended by their manufacturer.

Type	Model	Application ^{*2}	Contact
Bar terminal ^{*1}	AI 0,75-8 GY	When processing a 0.75mm ² cable	Phoenix Contact Co., Ltd. (www.phoenixcontact.com)
	AI 1,5-8 BK	When processing a 1.25mm ² cable	
	AI-TWIN 2×0,75-8 GY	When processing two 0.75mm ² cables	
	AI-TWIN 2×1,5-8 BK	When processing two 1.25mm ² cables	

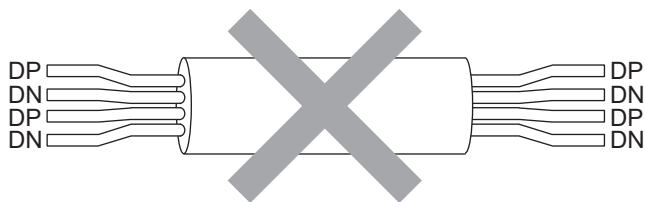
^{*1} When connecting two cables to one terminal, connect the two cables together to the TWIN bar terminal.

^{*2} When TWIN bar terminals are used, the maximum diameter is 1.25mm².

Wiring precautions

Precautions of wiring in the AnyWireASLINK system are as follows.

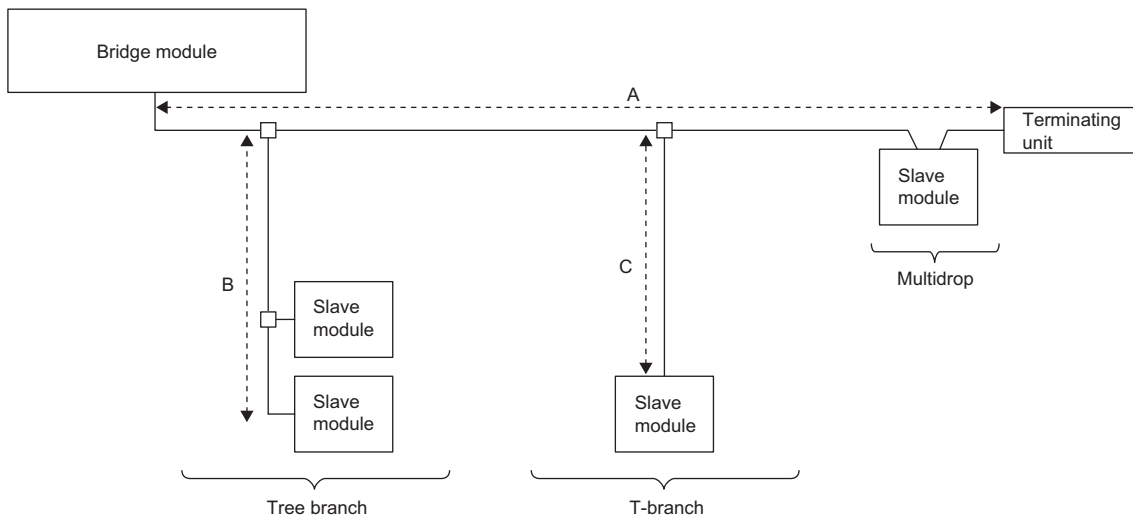
- In the AnyWireASLINK system, signals and power are supplied to a slave module with two types of transmission cables; DP and DN. Therefore, it is recommended to use a stranded wire of 1.25mm² or larger for the main cable.
- Wires such as general-purpose wires, cabtyre cables, and flat cables can be used.
- Do not run multiple transmission cables (DP, DN) using a multicore cable.



- The voltage should not fall below the lower limit of the allowable voltage range due to the voltage drop caused by the cable. If the voltage falls below the lower limit, malfunctions may occur.
- Do not connect soldered cables directly to the terminals. Doing so may loosen the screws, resulting in a poor contact.
- The transmission cable terminal block needs to be removed from the bridge module when wiring to the block.

4.3 Connecting Slave Modules

Connection type



- The maximum transmission distance in the AnyWireASLINK stand-alone system is 200m, which is the total cable length including the main line and branch line. (It varies depending on the wire diameter of the transmission cables (DP, DN) or the transmission cable supply current.)
- Tree branch, T-branch, and multidrop connections are usable in the AnyWireASLINK system.
- Maximum 128 slave modules can be connected.
- Connect one terminating unit for each system at the far end from the bridge module.

Point

The total length of the transmission distance for the AnyWireASLINK system can be calculated from $A + B + C$.

Note that the total length should not exceed the maximum transmission distance or the total length set for the system to branch lines.

4.4 Supplying Power to a Bridge Module

Method of supplying the power to the bridge module

Connect a 24VDC external power supply to the bridge module.



The power consumed in the internal control circuits of all the slave modules of AnyWireASLINK and the external load power connected to non-isolated slave modules are supplied collectively from the 24VDC external power supply connected to the bridge module.

For transmission cable supply current, refer to the following.

 Page 17 Performance Specifications

Scope of the power supply with transmission cables (DP and DN)

The current consumption of the system must satisfy all the conditions specified by the following calculation formulas 1) to 3) for each bridge module.

Condition	Calculation formula	Description
1)	$I(A) = (I_{hin} \times m) + (I_{ho} \times n) + (I_{zdin} \times p) + (I_{zdo} \times q) \leq \text{The maximum value of transmission cable supply current}$	<p>I_{hin}: Current consumption of the non-isolated input module I_{ho}: Current consumption of the non-isolated output module I_{zdin}: Current consumption of the isolated input module I_{zdo}: Current consumption of the isolated output module m: Number of connected non-isolated input modules n: Number of connected non-isolated output modules p: Number of connected isolated input modules q: Number of connected isolated output modules For details, refer to the following.  Page 30 Description of the condition 1)</p>
2)	$V_m(V) - \Delta V(V) \geq 20V$	<p>V_m: Supply voltage for the bridge module ΔV: Cable-to-cable voltage drop For details, refer to the following.  Page 32 Description of the conditions 2) and 3)</p>
3)	$V_m(V) - \Delta V(V) \geq \text{The lowest allowable voltage of the connected load}$	

■Description of the condition 1)

- Constants related to the non-isolated slave module (I_{hin} , I_{ho})

In the non-isolated slave module, the current required for the internal control circuit and the connected load is supplied with transmission cables (DP, DN).

$I_{hin}(A)$

= Current consumption of the non-isolated input module

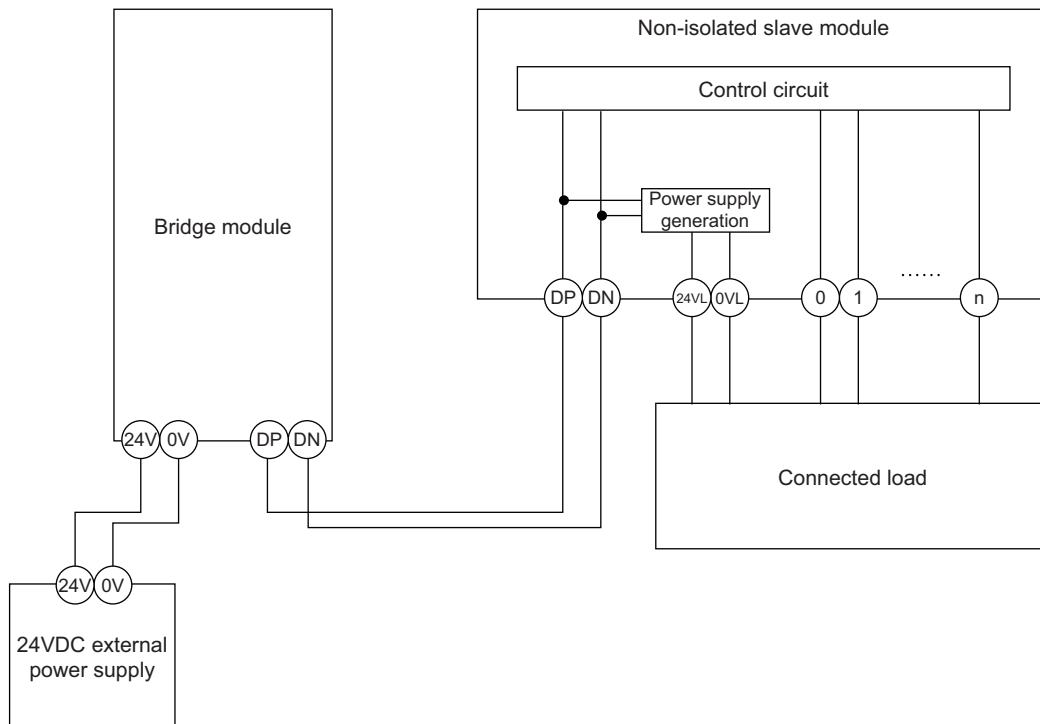
= Internal current consumption of the non-isolated input module + Current consumption of connected load (three-wire sensor)

× Number of points

$I_{ho}(A)$

= Current consumption of the non-isolated output module

= Internal current consumption of the non-isolated output module + Current consumption of connected load × Number of points



Point

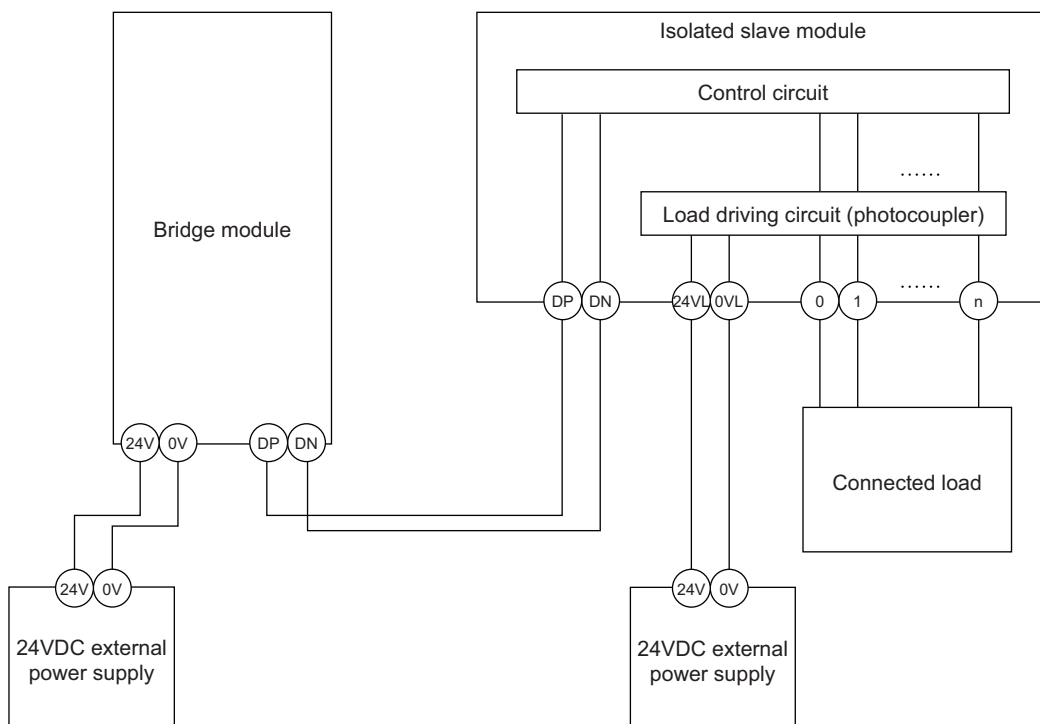
- The 24VL and 0VL terminals of a slave module are used to supply the power to the connected load.
- For the current consumption of a non-isolated slave module, refer to the manual for the slave module used.

- Constants related to the isolated slave module (I_{zdin} , I_{zdo})

In the isolated slave module, only the current required for the internal control circuit is supplied with the transmission cables (DP, DN), whereas that for the connected load is supplied from the 24VDC external power supply.

$I_{zdin}(A)$ = Internal current consumption of the isolated input module

$I_{zdo}(A)$ = Internal current consumption of the isolated output module



Point

- In isolated type slave modules, the current consumption of the connected load is not subject to the current restriction condition for the AnyWireASLINK system.
- For the current consumption of isolated slave modules, refer to the manual for the slave module used.

- Transmission cable supply current (I (A))

The transmission cable supply current in the AnyWireASLINK system is determined by the following formula.

$$I(A) = (I_{hin} \times m) + (I_{ho} \times n) + (I_{zdin} \times p) + (I_{zdo} \times q)$$

Number of connectable modules: m , n , p , q

- Maximum transmission cable supply current

For the maximum transmission cable supply current, refer to the following.

☞ Page 17 Performance Specifications

■Description of the conditions 2) and 3)

- V_m : Supply voltage for the bridge module

Voltage: 21.6 to 27.6VDC (24VDC - 10 to + 15%), ripple voltage 0.5Vp-p or lower

Recommended voltage: 26.4VDC (24VDC + 10%)

- $\Delta V(V)$: Cable-to-cable voltage drop

$\Delta V(V) = \text{Transmission cable supply current } I(A) \times \text{Cable resistance } R(\Omega)$

Cable resistance $R(\Omega) = \text{Cable length (m)} \times \text{Conductor resistance } (\Omega/m) \times 2$

• Wire diameter $1.25\text{mm}^2 \rightarrow \text{Conductor resistance } 0.015\Omega/m$

• Wire diameter $0.75\text{mm}^2 \rightarrow \text{Conductor resistance } 0.025\Omega/m$

■Calculation example

The example shows how to check whether the total length of 100m is sufficient to configure a system in the following conditions.

[Condition]

- Non-isolated slave module (Input ASLINKER)

Number of I/O points: 2 points

Module current consumption: 15mA

Number of modules: 24

- Connected load (three-wire sensor)

Three-wire sensor current consumption: 13mA

Number of sensors: 2 per module

Power supply voltage: 24VDC $\pm 10\%$

- Wire diameter of transmission cables (DP, DN)

Wire diameter: 1.25mm^2

- Power supply for the bridge module

Power supply voltage: 24VDC

[Calculation result]

Condition 1)

$(I_{hin}(A) \times m) = I(A) \leq \text{The maximum transmission cable supply current}$

$(0.015 + (0.013 \times 2)) \times 24 = 0.984A \leq 1A \rightarrow \text{Satisfied}$

Condition 2)

$V_m(V) - \Delta V(V) \geq 20V$

$24 - (0.984 \times 100 \times 0.015 \times 2) = 24 - 2.95 = 21.05V \geq 20V \rightarrow \text{Satisfied}$

Condition 3)

$V_m(V) - \Delta V(V) \geq \text{The lowest allowable voltage of the connected load}$

The lowest limit of the allowable voltage range for connected load = $24 - 24 \times 0.1 = 21.6V$

$21.05V < 21.6V \rightarrow \text{Not satisfied}$

The calculation results 1) to 3) above show that no system can be configured.

However, a system can be configured by changing the power supply for the bridge module to 24.55VDC or higher.

4.5 Checking System Before Power-on

This section describes the items to be checked before power-on.

- 1.** Check that the module is mounted or connected correctly. (📖 Page 22 MOUNTING MODULE)
- 2.** Check that the total length of the CC-Link is within the specified range. (📖 User's manual for the master module used)
- 3.** Check that the total length of the AnyWireASLINK system is within the specified range. (📖 Page 17 Performance Specifications)
- 4.** Check that the power supplied to the bridge module is within the specified range. (📖 Page 29 Supplying Power to a Bridge Module)
- 5.** Check that the bridge module, slave module, terminating unit, and 24VDC external power supply are properly connected and wired.

4.6 Powering on the System

After checking the items described above, power on and start the system.

How to power on the AnyWireASLINK system is as follows.

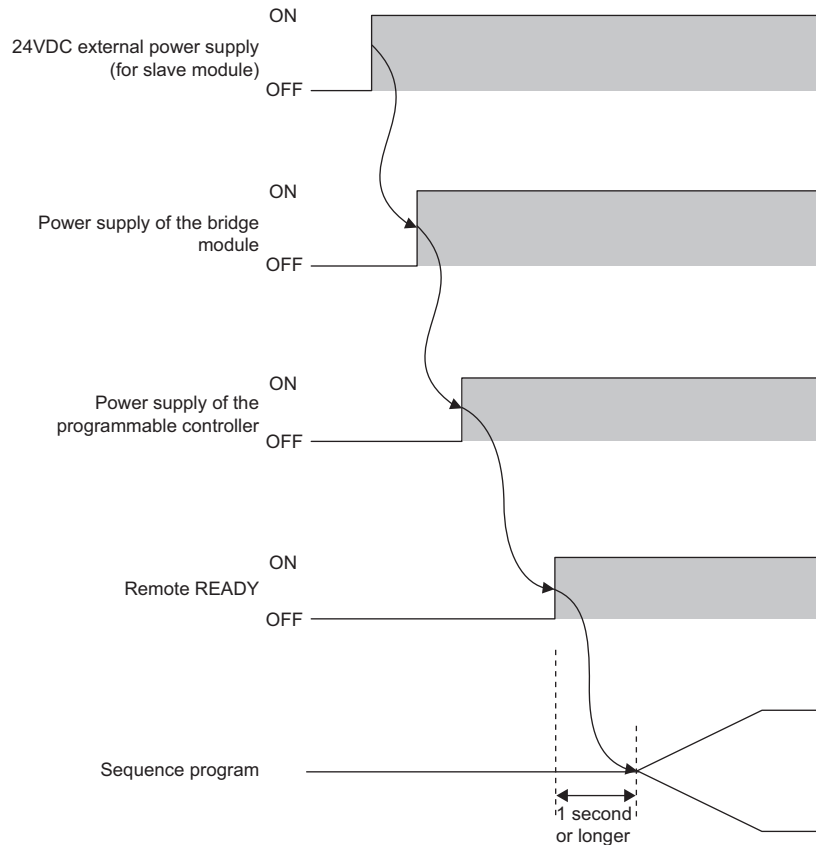
The order is inverted when the system is powered off.

1. 24VDC external power supply for the AnyWireASLINK system

(This step is required only when the supply power of slave module is different from power supply of the bridge module. When the supply power is same as the bridge module, this step is not required.)

2. Power supply of the bridge module

3. Power supply of the programmable controller



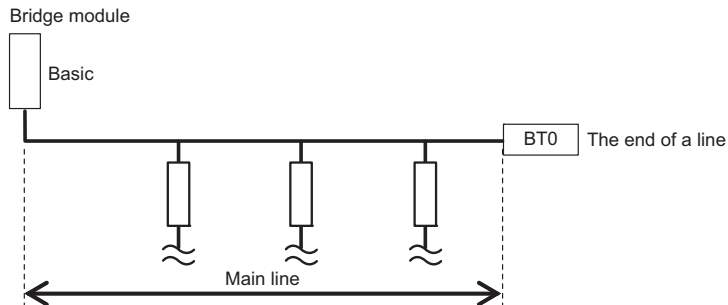
Point

- Supply the power according to the steps; 1) 24VDC external power supply of AnyWireASLINK system, 2) the bridge module, 3) the programmable controller, or turn on them at the same time.
- If the bridge module is powered on before the 24VDC external power supply in the AnyWireASLINK system, a transmission cable voltage drop detection error may occur.
- After Remote READY (RX(n+1)B, RX(n+3)B, RX(n+5)B, RX(n+7)B, RX(n+D)B) turns on, wait at least one second to start the program.

4.7 Terminating Unit

To ensure more stable transmission quality, connect the terminating unit (BT0 manufactured by Anywire Corporation) at the end of the transmission line.

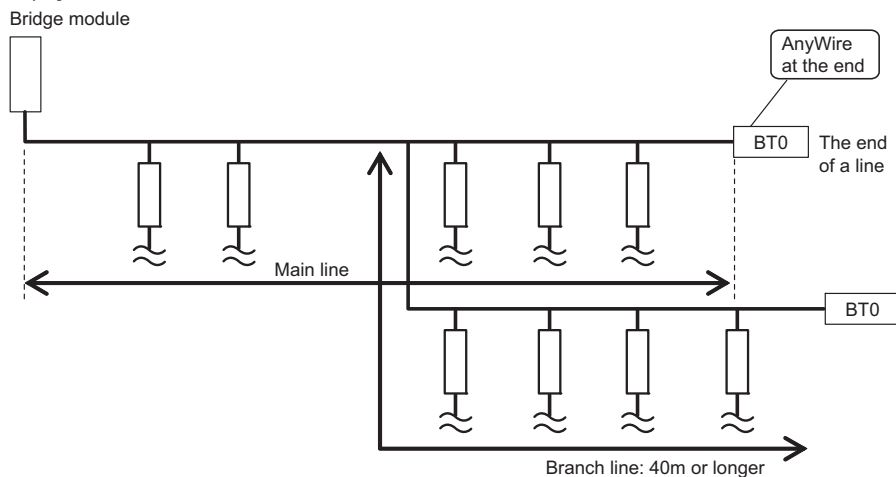
Terminating resistor connection



Important Connect a terminating resistor at the end of a line for one bridge module.

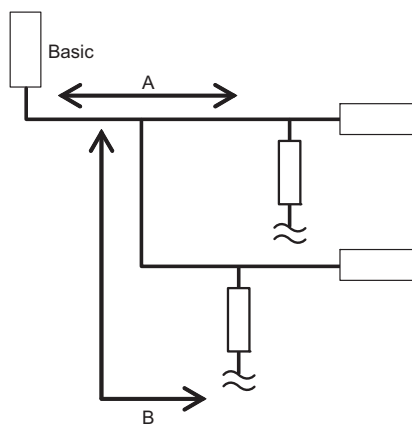
Branch of transmission lines

[Example]



Important Connect one terminating resistor at the end of a branch line that exceeds 40m. Three terminating resistors can be connected in total in the AnyWireASLINK system.

Total length



The total length of the transmission distance for the AnyWireASLINK system can be calculated from $A + B$. Note that the total length should not exceed the maximum transmission distance set for the system to branch lines.

5 SWITCH SETTING


5.1 CC-Link Side

Station number setting switch

■Setting method

Set the station number of CC-Link using the rotary switch in the front of the module. Set the station number with power-off because setting value becomes effective when powered on.

- Set the tens place of the station number to "×10".
- Set the ones place of the station number to "×1".

The number of occupied stations is set by using the number of transmission points setting switch. ( Page 37 AnyWireASLINK Side)

■Setting range

All switch positions are set to zero (0) when the product is shipped.


Set the station number from 1 to 64. The L ERR. LED turns on when the switch is set to other than 1 to 64.

The station number cannot be set when it is duplicated.

Station number	Station number setting switch	
	×10	×1
1	0	1
2	0	2
3	0	3
⋮	⋮	⋮
61 (The largest station number when 4 stations are occupied.)	6	1
62 (The largest station number when 3 stations are occupied.)	6	2
63 (The largest station number when 2 stations are occupied.)	6	3
64 (The largest station number when 1 station is occupied.)	6	4

Operation mode setting switch

SW3 is used to set the CC-Link operation mode of the bridge module.

SW4 is used to set the enable/disable status of the built-in CC-Link terminating resistor of the bridge module. ( Page 25 CC-Link terminating resistor)

All switch positions are set to off when the product is shipped.

Power off and on the bridge module and reset CC-Link side system after changing the setting value.

Switch No.	Description	On	Off
SW3	CC-Link operation mode	Ver.2.00	Ver.1.10
SW4	CC-Link terminating resistor	Effective	Not effective

5.2 AnyWireASLINK Side

Number of transmission points setting switch

Set required number of occupied stations and transmission points of CC-Link when CC-Link operation mode is performed. All switch positions are set to off when the product is shipped.

CC-Link operation mode	SW1	SW2	Number of occupied stations of CC-Link	Number of transmission points of AnyWireASLINK	
				Input	Output
Ver.1.10	Off	Off	4	256	256
	On	Off	3	192	192
	Off	On	2	128	128
	On	On	1	64	64
Ver.2.00	Off	Off	4	256	256
	On	Off	N/A		
	Off	On			
	On	On			

5

Point

- When the CC-Link operation mode is Ver.1.10, the number of occupied stations of CC-Link is automatically determined by setting the number of transmission points of AnyWireASLINK. The transmission cycle time of CC-Link side and AnyWireASLINK side can be shortened by setting small number of transmission points of AnyWireASLINK.
- When the CC-Link operation mode is Ver.2.00, the number of occupied stations of CC-Link is fixed at 4. Set SW1 and SW2 to off. When SW1 and SW2 are not set to off, the setting is ignored and the number of occupied stations is set to 4.

6 MEMORY MAP

The bridge module occupies 1 to 4 stations starting the station number specified in the CC-Link system.
For details on buffer memory areas of the master module, refer to the user's manual for the master module used.

6.1 Lists of Remote I/O Signals

When the CC-Link operation mode is Ver.1.10

The following table lists remote I/O signals when the CC-Link operation mode is Ver.1.10.

Remote I/O signals when 1 station is occupied

Both remote input (RX) and remote output (RY) of the bridge module use 32 points.

Signal direction: Bridge module → master module		Signal direction: Master module → bridge module	
Remote input (RX)	Name	Remote output (RY)	Name
RXn0	Use prohibited	RYn0	Use prohibited
RXn1	DP/DN short error	RYn1	Automatic address detection command
RXn2	Use prohibited	RYn2 to RYnF	Use prohibited
RXn3	Transmission cable voltage drop error		
RXn4	DP/DN disconnection error		
RXn5	Use prohibited		
RXn6 to RXnF	Latest error ID simple information		
RX(n+1)0	Slave module alarm signal	RY(n+1)0 to RY(n+1)9	
RX(n+1)1 to RX(n+1)3	Use prohibited		
RX(n+1)4	Automatic address detection flag		
RX(n+1)5 to RX(n+1)9	Use prohibited		
RX(n+1)A	Error status flag	RY(n+1)A	Error reset request flag
RX(n+1)B	Remote READY	RY(n+1)B to RY(n+1)F	Use prohibited
RX(n+1)C to RX(n+1)F	Use prohibited		

n: Address assigned to the master station in the station number setting

Remote I/O signals when 2 stations are occupied

Both remote input (RX) and remote output (RY) of the bridge module use 64 points.

Signal direction: Bridge module → master module		Signal direction: Master module → bridge module	
Remote input (RX)	Name	Remote output (RY)	Name
RXn0	Use prohibited	RYn0	Use prohibited
RXn1	DP/DN short error	RYn1	Automatic address detection command
RXn2	Use prohibited	RYn2 to RYnF	Use prohibited
RXn3	Transmission cable voltage drop error		
RXn4	DP/DN disconnection error		
RXn5	Use prohibited		
RXn6 to RXnF	Latest error ID simple information		
RX(n+1)0	Slave module alarm signal	RY(n+1)0 to RY(n+3)9	
RX(n+1)1 to RX(n+1)3	Use prohibited		
RX(n+1)4	Automatic address detection flag		
RX(n+1)5 to RX(n+3)9	Use prohibited		
RX(n+3)A	Error status flag	RY(n+3)A	Error reset request flag
RX(n+3)B	Remote READY	RY(n+3)B to RY(n+3)F	Use prohibited
RX(n+3)C to RX(n+3)F	Use prohibited		

n: Address assigned to the master station in the station number setting

Remote I/O signals when 3 stations are occupied

Both remote input (RX) and remote output (RY) of the bridge module use 96 points.

Signal direction: Bridge module → master module		Signal direction: Master module → bridge module	
Remote input (RX)	Name	Remote output (RY)	Name
RXn0	Use prohibited	RYn0	Use prohibited
RXn1	DP/DN short error	RYn1	Automatic address detection command
RXn2	Use prohibited	RYn2 to RYnF	Use prohibited
RXn3	Transmission cable voltage drop error		
RXn4	DP/DN disconnection error		
RXn5	Use prohibited		
RXn6 to RXnF	Latest error ID simple information		
RX(n+1)0	Slave module alarm signal	RY(n+1)0 to RY(n+5)9	
RX(n+1)1 to RX(n+1)3	Use prohibited		
RX(n+1)4	Automatic address detection flag		
RX(n+1)5 to RX(n+5)9	Use prohibited		
RX(n+5)A	Error status flag	RY(n+5)A	Error reset request flag
RX(n+5)B	Remote READY	RY(n+5)B to RY(n+5)F	Use prohibited
RX(n+5)C to RX(n+5)F	Use prohibited		

n: Address assigned to the master station in the station number setting

Remote I/O signals when 4 stations are occupied

Both remote input (RX) and remote output (RY) of the bridge module use 128 points.

Signal direction: Bridge module → master module		Signal direction: Master module → bridge module	
Remote input (RX)	Name	Remote output (RY)	Name
RXn0	Use prohibited	RYn0	Use prohibited
RXn1	DP/DN short error	RYn1	Automatic address detection command
RXn2	Use prohibited	RYn2 to RYnF	Use prohibited
RXn3	Transmission cable voltage drop error		
RXn4	DP/DN disconnection error		
RXn5	Use prohibited		
RXn6 to RXnF	Latest error ID simple information		
RX(n+1)0	Slave module alarm signal	RY(n+1)0 to RY(n+7)9	
RX(n+1)1 to RX(n+1)3	Use prohibited		
RX(n+1)4	Automatic address detection flag		
RX(n+1)5 to RX(n+7)9	Use prohibited		
RX(n+7)A	Error status flag	RY(n+7)A	Error reset request flag
RX(n+7)B	Remote READY	RY(n+7)B to RY(n+7)F	Use prohibited
RX(n+7)C to RX(n+7)F	Use prohibited		

n: Address assigned to the master station in the station number setting

When the CC-Link operation mode is Ver.2.00

The following table lists remote I/O signals when the CC-Link operation mode is Ver.2.00.

Remote I/O signals when 4 stations are occupied

Both remote input (RX) and remote output (RY) of the bridge module use 224 points.

Signal direction: Bridge module → master module		Signal direction: Master module → bridge module	
Remote input (RX)	Name	Remote output (RY)	Name
RXn0	Use prohibited	RYn0	Use prohibited
RXn1	DP/DN short error	RYn1	Automatic address detection command
RXn2	Use prohibited	RYn2 to RYnF	Use prohibited
RXn3	Transmission cable voltage drop error		
RXn4	DP/DN disconnection error		
RXn5	Use prohibited		
RXn6 to RXnF	Latest error ID simple information		
RX(n+1)0	Slave module alarm signal	RY(n+1)0	Parameter access request command for the slave module
RX(n+1)1	Parameter access completion flag	RY(n+1)1 to RY(n+D)9	Use prohibited
RX(n+1)2	Parameter access error		
RX(n+1)3	Use prohibited		
RX(n+1)4	Automatic address detection flag		
RX(n+1)5 to RX(n+D)9	Use prohibited		
RX(n+D)A	Error status flag	RY(n+D)A	Error reset request flag
RX(n+D)B	Remote READY	RY(n+D)B to RY(n+D)F	Use prohibited
RX(n+D)C to RX(n+D)F	Use prohibited		

n: Address assigned to the master station in the station number setting

6.2 Lists of Remote Register Areas

Input or output of AnyWireASLINK uses remote register areas of CC-Link.

When the CC-Link operation mode is Ver.1.10

The following table lists remote register areas when the CC-Link operation mode is Ver.1.10.

Remote registers when 1 station is occupied

Both input and output of AnyWireASLINK use 4 words.

Set the address for slave modules within the range of 0 to 63 for both input and output module.

CC-Link side remote register input		AnyWireASLINK side input signal	CC-Link side remote register output		AnyWireASLINK side output signal
Decimal	Hexadecimal		Decimal	Hexadecimal	
RWr _n +0	RWr _n +0H	0 to 15	RWw _n +0	RWw _n +0H	0 to 15
RWr _n +1	RWr _n +1H	16 to 31	RWw _n +1	RWw _n +1H	16 to 31
RWr _n +2	RWr _n +2H	32 to 47	RWw _n +2	RWw _n +2H	32 to 47
RWr _n +3	RWr _n +3H	48 to 63	RWw _n +3	RWw _n +3H	48 to 63

n: Address assigned to the master station in the station number setting

Remote registers when 2 stations are occupied

Both input and output of AnyWireASLINK use 8 words.

Set the address for slave modules within the range of 0 to 127 for both input and output module.

CC-Link side remote register input		AnyWireASLINK side input signal	CC-Link side remote register output		AnyWireASLINK side output signal
Decimal	Hexadecimal		Decimal	Hexadecimal	
RWr _n +0	RWr _n +0H	0 to 15	RWw _n +0	RWw _n +0H	0 to 15
RWr _n +1	RWr _n +1H	16 to 31	RWw _n +1	RWw _n +1H	16 to 31
⋮	⋮	⋮	⋮	⋮	⋮
RWr _n +6	RWr _n +6H	96 to 111	RWw _n +6	RWw _n +6H	96 to 111
RWr _n +7	RWr _n +7H	112 to 127	RWw _n +7	RWw _n +7H	112 to 127

n: Address assigned to the master station in the station number setting

Remote registers when 3 stations are occupied

Both input and output of AnyWireASLINK use 12 words.

Set the address for slave modules within the range of 0 to 191 for both input and output module.

CC-Link side remote register input		AnyWireASLINK side input signal	CC-Link side remote register output		AnyWireASLINK side output signal
Decimal	Hexadecimal		Decimal	Hexadecimal	
RWr _n +0	RWr _n +0H	0 to 15	RWw _n +0	RWw _n +0H	0 to 15
RWr _n +1	RWr _n +1H	16 to 31	RWw _n +1	RWw _n +1H	16 to 31
⋮	⋮	⋮	⋮	⋮	⋮
RWr _n +10	RWr _n +AH	161 to 176	RWw _n +10	RWw _n +AH	161 to 176
RWr _n +11	RWr _n +BH	177 to 191	RWw _n +11	RWw _n +BH	177 to 191

n: Address assigned to the master station in the station number setting

Remote registers when 4 stations are occupied

Both input and output of AnyWireASLINK use 16 words.

Set the address for slave modules within the range of 0 to 255 for both input and output module.

CC-Link side remote register input		AnyWireASLINK side input signal	CC-Link side remote register output		AnyWireASLINK side output signal
Decimal	Hexadecimal		Decimal	Hexadecimal	
RWrn+0	RWrn+0H	0 to 15	RWwn+0	RWwn+0H	0 to 15
RWrn+1	RWrn+1H	16 to 31	RWwn+1	RWwn+1H	16 to 31
⋮	⋮	⋮	⋮	⋮	⋮
RWrn+14	RWrn+EH	224 to 239	RWwn+14	RWwn+EH	224 to 239
RWrn+15	RWrn+FH	240 to 255	RWwn+15	RWwn+FH	240 to 255

n: Address assigned to the master station in the station number setting

When the CC-Link operation mode is Ver.2.00

The following table lists remote register areas when the CC-Link operation mode is Ver.2.00.

Remote registers when 4 stations are occupied

Both input and output of AnyWireASLINK use 32 words. Set the address for slave modules within the range of 0 to 255 for both input and output module.

CC-Link side remote register input		AnyWireASLINK side input signal	CC-Link side remote register output		AnyWireASLINK side output signal
Decimal	Hexadecimal		Decimal	Hexadecimal	
RWr _n +0	RWr _n +0H	0 to 15	RWw _n +0	RWw _n +0H	0 to 15
RWr _n +1	RWr _n +1H	16 to 31	RWw _n +1	RWw _n +1H	16 to 31
⋮	⋮	⋮	⋮	⋮	⋮
RWr _n +14	RWr _n +EH	224 to 239	RWw _n +14	RWw _n +EH	224 to 239
RWr _n +15	RWr _n +FH	240 to 255	RWw _n +15	RWw _n +FH	240 to 255
RWr _n +16	RWr _(n+1) 0H	Latest error code storage area	RWw _n +16	RWw _(n+1) 0H	Parameter access setting
RWr _n +17	RWr _(n+1) 1H	Latest error ID storage area	RWw _n +17	RWw _(n+1) 1H	Parameter access target module ID specification
RWr _n +18	RWr _(n+1) 2H	Number of the IDs of the connected modules	RWw _n +18 to RWw _n +23	RWw _(n+1) 2H to RWw _(n+1) 7H	Use prohibited
RWr _n +19	RWr _(n+1) 3H	Number of the error IDs			
RWr _n +20	RWr _(n+1) 4H	Number of the alarm IDs			
RWr _n +21 to RWw _n +23	RWr _(n+1) 5H to RWr _(n+1) 7H	Use prohibited			
RWr _n +24	RWr _(n+1) 8H		RWw _n +24	RWw _(n+1) 8H	Monitor command specification area
RWr _n +25 to RWw _n +31	RWr _(n+1) 9H to RWr _(n+1) FH		RWw _n +25 to RWw _n +31	RWw _(n+1) 9H to RWw _(n+1) FH	Use prohibited

n: Address assigned to the master station in the station number setting

6.3 Details of Remote Register Areas

Input signal (RWrn+0 to RWrn+15)

The on/off status (on: 1, off: 0) of the input signal of the slave module is automatically stored.

Ex.

For a 2-point input slave module (address: 10)

The two bits (A and B) of RWrn+0 are occupied for the input signal because the setting address is 10.

Area with the setting address of 10

Remote register input signal	Input data bit No.															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWrn+0	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn+1	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RWrn+2	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RWrn+3	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RWrn+4	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
RWrn+5	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
RWrn+6	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96
RWrn+7	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
RWrn+8	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128
RWrn+9	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144
RWrn+10	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160
RWrn+11	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176
RWrn+12	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192
RWrn+13	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208
RWrn+14	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224
RWrn+15	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240

}

Input area
(256 points)

Latest error code storage area (RWrn+16)

Hardware errors detected in the bridge module and the latest error code of the AnyWireASLINK system are stored. For error codes stored, refer to the following.

📖 Page 87 Before Troubleshooting

Latest error ID storage area (RW_{rn}+17)

The error ID of the module targeted for the latest error code is stored. The following table lists error codes stored.

Error code	Error description	Remote input signal turned on when the error occurs
00CAH	DP/DN disconnection error	Error status flag (RX(n+D)A) DP/DN disconnection error (RXn4)
012CH 012DH	Slave module hardware error	Error status flag (RX(n+D)A) Slave module alarm signal (RX(n+1)0)
012FH	Parameter value error	
0130H	Parameter access error	
0131H	Slave module status error	
0190H	Same ID used error	
0191H	No ID setting error	
01F4H	Backup data error	Error status flag (RX(n+D)A)

For the following error codes, the value 0FFFH is stored in Latest error ID storage area (RW_{rn}+17).

Error code	Error description	Remote input signal turned on when the error occurs
0064H 0065H 0066H 0067H	Hardware failure	Error status flag (RX(n+D)A)
00C8H	Transmission cable voltage drop error	Error status flag (RX(n+D)A) Transmission cable voltage drop error (RXn3)
00C9H	DP/DN short error	Error status flag (RX(n+D)A) DP/DN short error (RXn1)
012EH	Parameter access target module ID error	Error status flag (RX(n+D)A) Slave module alarm signal (RX(n+1)0)

Number of the IDs of the connected modules (RW_{rn}+18)

When the automatic address detection function is performed, the number of IDs of the slave modules detected is stored. (Up to 128)

The number of IDs stored is maintained even after power-off.

Number of the error IDs (RW_{rn}+19)

Among the IDs of the slave modules connected, the number of IDs with a response error is stored at power-on or after the automatic address detection function is executed. (Up to 128)

The stored value is maintained until the bridge module is reset or Error reset request flag (RY(n+D)A) is turned on after the error is removed.

Number of the alarm IDs (RW_{rn}+20)

Among the IDs of the slave modules connected, the number of IDs on which an alarm is raised is stored at power-on or after the automatic address detection function is executed. (Up to 128)

The stored value is maintained until the bridge module is reset or Error reset request flag (RY(n+D)A) is turned on after the error is removed.

Output signal (RWwn+0 to RWwn+15)

When the on/off status data (on: 1, off: 0) of the output signal of the slave module is written from the CPU module, the slave module automatically outputs the signal.

Ex.

For a 2-point output slave module (address: 30)

The two bits (E and F) of RWwn+1 are occupied for the output signal because the setting address is 30.

Area with the setting
address of 30

Remote register output signal	Output data bit No.															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWwn+0	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWwn+1	31	30	29	28	27	26	25	24	22	22	21	20	19	18	17	16
RWwn+2	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RWwn+3	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RWwn+4	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
RWwn+5	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
RWwn+6	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96
RWwn+7	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
RWwn+8	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128
RWwn+9	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144
RWwn+10	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160
RWwn+11	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176
RWwn+12	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192
RWwn+13	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208
RWwn+14	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224
RWwn+15	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240

Output area
(256 points)

Parameter access setting (RWwn+16)

Specify the method of parameter access. When any value other than the following is stored, the parameter access method is set to reading.

- 0000H: read (slave module → bridge module → master module → CPU module)
- 0001H: write (CPU module → master module → bridge module → slave module)

Parameter access target module ID specification (RWwn+17)

Specify the ID targeted for parameter access. Write any of the following as the target ID.

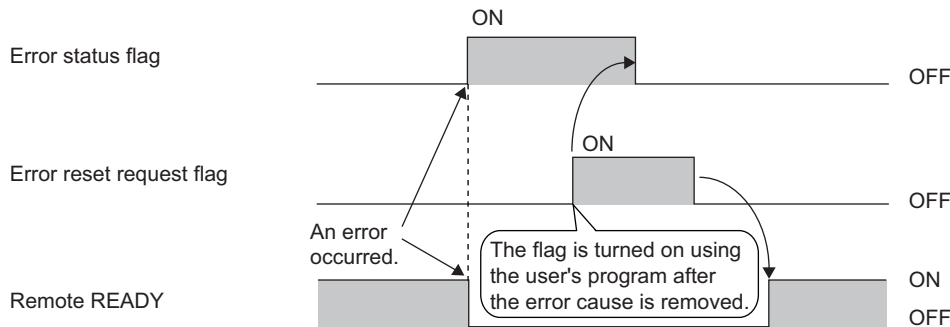
- 0000H to 00FFH: ID of the output slave module
- 0200H to 02FFH: ID of the input slave module or I/O combined slave module

6.4 Error Reset

Remote READY turns on after power-on.

Error status flag turns on when an error occurs. Error status flag is reset (on to off) by turning on error reset request flag, provided that the error cause has been removed.

Remote READY is reset (on to off) when an error occurs. Remote READY remains reset (off) unless error reset request flag is turned off.



The remote device values for Remote READY, Error status flag, and Error reset request flag at each occupied stations setting are shown below according to the CC-Link operation mode.

CC-Link operation mode	Name	Number of occupied stations			
		1 station occupied	2 stations occupied	3 stations occupied	4 stations occupied
Ver.1.10	Remote READY	RX(n+1)B	RX(n+3)B	RX(n+5)B	RX(n+7)B
	Error status flag	RX(n+1)A	RX(n+3)A	RX(n+5)A	RX(n+7)A
	Error reset request flag	RY(n+1)A	RY(n+3)A	RY(n+5)A	RY(n+7)A
Ver.2.00	Remote READY	—			RX(n+D)B
	Error status flag				RX(n+D)A
	Error reset request flag				RY(n+D)A

7 SETTINGS BEFORE OPERATION

7.1 Settings of Slave Module

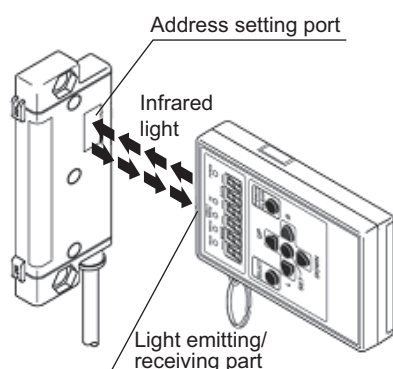
Slave module address setting

Setting the start number of the address assigned in the transmission frame is required for slave modules.

An address can be written to a slave module or the address assigned to a slave module can be read through infrared communications using an address writer (manufactured by Anywire Corporation).

For details, refer to the manual of the address writer used (provided by Anywire Corporation).

■ Image of address reading/writing



In the slave module, an address between 0 and 254 can be written. (This number is not an ID value.) Do not set 255 to the address. Doing so will cause a No ID setting error.

Model	Address (decimal)	ID (hexadecimal)	ID (decimal)
Output slave module	0 to 254	0000 to 00FE	0 to 254
Input slave module	0 to 254	0200 to 02FE	512 to 766

■Address setting example

Bits are occupied as follows when 0 is assigned to the address of a 2-point input slave module and 0 and 2 are assigned to the respective addresses of two 2-point output slave modules.

● Remote register input signal of the input slave module

Remote register input signal	Input data bit															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWm+0	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0


Occupied area by the address 0

● Remote register output signal of the output slave module

Remote register output signal	Output data bit															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWn+0	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Occupied area by the address 2 Occupied area by the address 0

Point

- A slave module address is not deleted even when the power supply of a programmable controller or a 24VDC external power supply is turned off. The address is retained until a new address is set.
- For the address setting, ensure that the address occupied by the slave module does not exceed the number of transmission points set in the bridge module. For details on the number of transmission points specified for the bridge module, refer to the explanation of the switch setting. ( Page 37 Number of transmission points setting switch)

Slave module parameter setting

Set the parameter of the slave module by using the address writer.

For details, refer to the manual for the slave module used.

Restriction

The parameter setting of slave modules cannot be performed in the following cases.

- In the event of an error in the AnyWireASLINK system, such as a short-circuit and 24VDC external power supply voltage drop
- Within less than five seconds after the AnyWireASLINK system is powered on or system reset
- When the automatic address detection function is being executed or parameter access by Parameter access request command for the slave module (RY(n+1)0) is being executed

7.2 Automatic Address Detection

Automatic address detection is a function to store the IDs (addresses) of the connected slave modules in the EEPROM of the bridge module.

The parameters of the connected devices are automatically updated after the IDs are stored in the EEPROM of the bridge module and unset IDs (addresses) and the same IDs (addresses) are detected.

The ID (address) information stored in the EEPROM is held even when the module is powered off. However, information about unset IDs, the same IDs, and the parameter information of each slave module are not held.

Whenever starting the system or changing the system configuration, set the correct addresses to all the slave modules and perform the automatic address detection.

Automatic address detection operation

To perform the automatic address detection, use the SET switch or Automatic address detection command (RYn1).

Using the SET switch

1. Check that all of the slave modules are operating normally.
2. Keep pressing the SET switch on the bridge module until the SET LED (green) turns on.
(At this time, Automatic address detection flag (RX(n+1)4) also turns on.)
3. When the SET LED stays on for a while and turns off, the ID (address) has been stored.
4. When Automatic address detection flag (RX(n+1)4) turns off, automatic address detection is completed.

Using Automatic address detection command (RYn1)

1. Check that all of the slave modules are operating normally.
2. Turn on and off Automatic address detection command (RYn1).
(At this time, Automatic address detection flag (RX(n+1)4) also turns on.)
3. When the SET LED stays on for a while and turns off, the ID (address) has been stored.
4. When Automatic address detection flag (RX(n+1)4) turns off, automatic address detection is completed.

Precautions

■The automatic address detection cannot be performed in the following cases.

- When an error occurs in the AnyWireASLINK system (Example: Short-circuit, 24VDC external power supply voltage drop)
- Within approximately five seconds after the AnyWireASLINK system is powered on or system reset recovery
- When the automatic address detection is in progress
- When an error occurs

■Perform the automatic address detection in the following situations.

- When starting the system operation (when all of the slave modules are connected and operating normally)
- When adding a slave module after starting the system operation
- When removing a slave module after starting the system operation
- When changing the address of a slave module after starting the system operation

■Do not perform the following operation during the automatic address detection.

- Automatic address detection operation
- Parameter access operation

■After performing the automatic address detection, check the following.

- Check the on/off status of Latest error ID simple information (RXn6 to RXnF) and Slave module alarm signal (RX(n+1)0). Implement necessary actions when an error occurs. (☞ Page 87 Before Troubleshooting)
- Check the information (Number of the IDs of the connected modules (RWrn+18)) in the memory that stores the AnyWireASLINK system information to ensure that there is no difference between the system configuration and the IDs registered in the bridge module.*1

*1 Only for the Ver.2.00 CC-Link operation mode

■Perform the following for a slave module that has the same ID (address) as other slave modules or where an ID (address) is not set.

- Use an address writer to set the ID (address) in the slave module. Then execute the automatic address detection function again.

■When performing the automatic address detection, set the CPU module to STOP status.

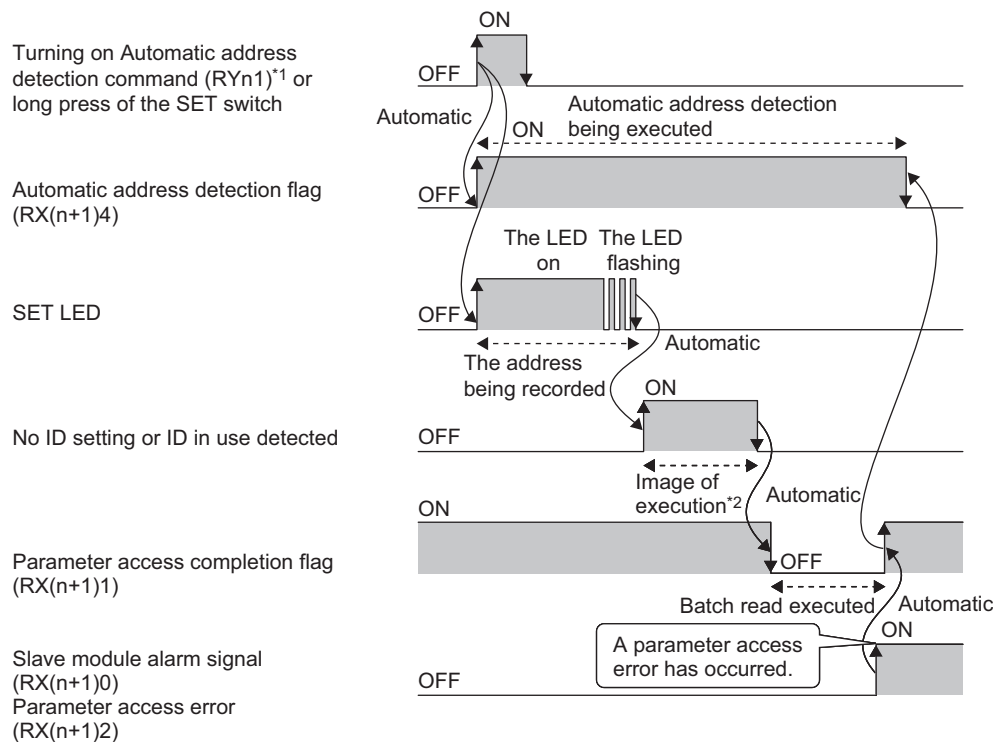
- Data transfer of I/O signal stops when automatic address detection is performed. When performing the automatic address detection, set the CPU module to STOP status to ensure the safety of device operation.

■The automatic address detection function cannot be performed when the following error codes occur.*1

- 0064H
- 0065H
- 0066H
- 00C8H
- 00C9H

*1 Only for the Ver.2.00 CC-Link operation mode

Automatic address detection execution timing



*1 When turning on Automatic address detection command (RYn1), Automatic address detection command (RYn1) must be turned off after checking that Automatic address detection flag (RX(n+1)4) turns on and the SET LED is on.

*2 The automatic address detection function is executed for approximately 0.5 seconds after the SET LED turns off.

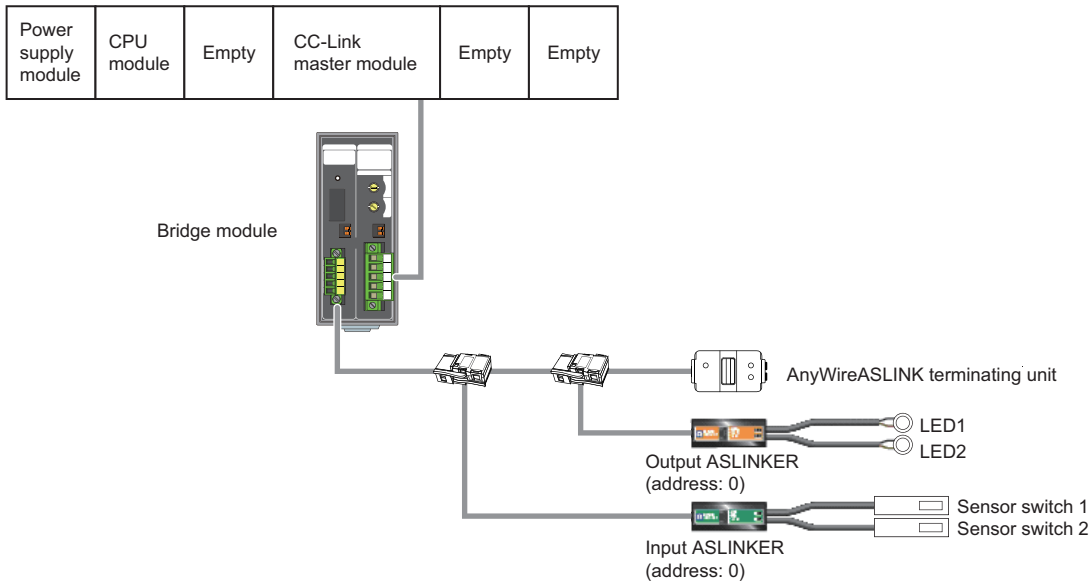
Point

Slave module alarm signal (RX(n+1)0) and Parameter access error (RX(n+1)2) are maintained until Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A) is turned on. Errors are stored in the appropriate memory areas.

7.3 Sample Program

System configuration

The example of system configuration is shown below.



Operation setting

Input/output of AnyWireASLINK system can be set to any device in the network parameter setting of the CC-Link master module.

Example of setting

 Project window ⇒ [Parameter] ⇒ [Network Parameter] ⇒ [CC-Link]

Number of Modules

1

Boards
Blank : No Setting
☐ Set the station information in the CC-Link configuration window

	1	2	3
Start I/O No.	0000		
Operation Setting	Operation Setting		
Type	Master Station		
Master Station Data Link Type	PLC Parameter Auto Start		
Mode	Remote Net(Ver.1 Mode)		
Total Module Connected	1		
Remote input(RX)	D1000		
Remote output(RY)	D2000		
Remote register(RWw)	W0		
Remote register(RWw)	W100		
Ver.2 Remote input(RX)			
Ver.2 Remote output(RY)			
Ver.2 Remote register(RWw)			
Ver.2 Remote register(RWw)			
Special relay(SB)	SB0		
Special register(SW)	SW0		
Retry Count	3		
Automatic Reconnection Station Count	1		
Standby Master Station No.			
PLC Down Select	Stop		
Scan Mode Setting	Asynchronous		
Delay Time Setting	0		
Station Information Setting	Station Information		
Remote Device Station Initial Setting	Initial Setting		
Interrupt Settings	Interrupt Settings		

Necessary Setting(No Setting / Already Set)
Set if it is needed(No Setting / Already Set)

Setting Item Details:

Print Window...

Print Window Preview

Acknowledge XY Assignment

Clear

Check

End

Cancel

Click "Station Information" and open the following window.

Station No.	Station Type	Expanded Cyclic Setting	Number of Occupied Stations	Remote Station Points	Reserve/Invalid Station Select	Intelligent Buffer Select(Word)		
						Send	Receive	Automatic
1/1	Remote Device Station	Single	Occupied Stations 4	128Points	No Setting			

The following table lists the correspondence between the signal and device in this example.

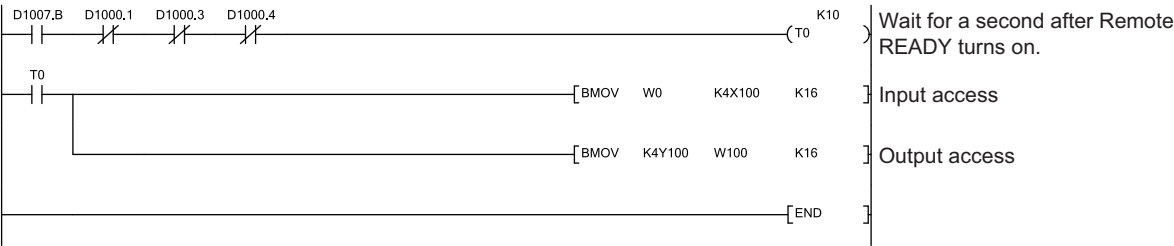
Signal	Name	Device corresponding to station 1
RX	Use prohibited	D1000.0
	DP/DN short error	D1000.1
	Use prohibited	D1000.2
	Transmission cable voltage drop error	D1000.3
	DP/DN disconnection error	D1000.4
	Use prohibited	D1000.5
	Latest error ID simple information	D1000.6 to D1000.F
	Slave module alarm signal	D1001.0
	Use prohibited	D1001.1 to D1001.3
	Automatic address detection flag	D1001.4
	Use prohibited	D1001.5 to D1001.9
	Error status flag	D1007.A
	Remote READY	D1007.B
	Use prohibited	D1007.C to D1007.F
RY	Use prohibited	D2000.0
	Automatic address detection command	D2000.1
	Use prohibited	D2000.2 to D2007.9
	Error reset request flag	D2007.A
	Use prohibited	D2007.B to D2007.F
RW _r	AnyWireASLINK input address 0	W0.0
	AnyWireASLINK input address 1	W0.1
	:	:
	AnyWireASLINK input address 14	W0.E
	AnyWireASLINK input address 15	W0.F
RW _w	AnyWireASLINK output address 0	W100.0
	AnyWireASLINK output address 1	W100.1
	:	:
	AnyWireASLINK output address 14	W100.E
	AnyWireASLINK output address 15	W100.F

Devices used by users

Device	Description
D1007.B	Remote READY
D1000.1	DP/DN short error
D1000.3	Transmission cable voltage drop error
D1000.4	DP/DN disconnection error
X100 to X110	Input data
Y100 to Y110	Output data
T0	Timer contact after Remote READY
W0	AnyWireASLINK input address
W100	AnyWireASLINK output address

Program example

The following program stores input data of 16 points in X100 to X110 from the input slave module whose address is 0 and outputs the data of 16 points stored in Y100 to Y110 from the output slave module whose address is 0.



8 FUNCTIONS

8.1 Function List

The following table lists the functions of the bridge module.

Classification	Function	Description	Reference
CC-Link functions	Transmission speed auto-tracking function	CC-Link transmission speed is automatically set to meet the setting of CC-Link master module when bridge module is powered on.	—
AnyWireASLINK functions	Bit transmission function	Exchanges I/O data of up to 512 points (input 256 points, output 256 points) between the bridge module and a slave module.	☞ Page 58 Bit transmission function
	Parameter reading/writing function	Reads and writes the parameters of a slave module connected to the AnyWireASLINK network without causing a delay in bit transmission.	☞ Page 58 Parameter reading/writing function
	Automatic address detection function	Enables the bridge module to detect and store the ID (address) of the connected slave module when the SET switch on the front of the bridge module is pressed or Automatic address detection command (RYn1) is turned on.	☞ Page 50 Automatic Address Detection
	Transmission cable short detection function	Detects a short-circuit in DP-DN cables. Protects the system by detecting an overcurrent out of the specifications and stopping the transmission.	☞ Page 74 Transmission cable short detection function
	Disconnected transmission cable location detection function	Detects the location of DP, DN cable disconnection. Notifies the ID of the slave module that has been disconnected from the bridge module to locate the disconnection in the transmission cables (DP, DN).	☞ Page 75 Disconnected transmission cable location detection function
	Transmission cable voltage drop detection function	Monitors a voltage drop in the 24VDC external power supply. This enables the bridge module to detect a failure in the 24VDC external power supply or a wiring error.	☞ Page 76 Transmission cable voltage drop detection function
	Parameter access error detection function	Detects errors that occur during reading or writing of the parameters of a slave module.	☞ Page 77 Parameter access error detection function
	Same ID number used detection function	Detects ID duplication in the slave modules. When ID duplication is detected, the LEDs of the corresponding slave modules are forced to turn on.	☞ Page 80 Same ID number used detection function
	Module with no ID number setting detection function	Detects slave modules whose ID is not set (ID is set to factory default).	☞ Page 81 Module with no ID number setting detection function
	AnyWireASLINK test mode	Operates AnyWireASLINK system connected to the bridge module separately from CC-Link to check the system start-up or operation.	☞ Page 82 AnyWireASLINK test mode
	iQ Sensor Solution-compatible functions	Establish data communication with AnyWireASLINK-compatible slave modules via CC-Link and AnyWireASLINK.	☞ Page 83 iQ Sensor Solution functions

8.2 Function Details

Bit transmission function

This function exchanges I/O data for up to 512 points (input 256 points, output 256 points) between the bridge module and a slave module.

Parameter reading/writing function

In the AnyWireASLINK system, in addition to I/O information, the parameter information (device parameter^{*1} and AnyWireASLINK parameter) of the slave modules is sent and received between the bridge module and slave modules. Parameter information to read and write is stored in the user-specified device of the CPU module.

There are following two methods of reading and writing parameter information.

Parameter reading/writing method	Description	CC-Link operation mode
AnyWireASLINK parameter monitor	Reads the AnyWireASLINK parameter (status details and sensing level) of all slave modules regularly.	Ver.1.10 Ver.2.00
Slave module parameter access	Reads or writes all the parameter information of a slave module by specifying "read or write" and the "target slave module".	Ver.2.00

The following table lists readable/writable parameter information and access range of the processings.

Parameter information		Read/Write	Parameter reading/writing method		
			AnyWireASLINK parameter monitor	Slave module parameter access	
				Read	Write
Device parameter ^{*1}		Read/Write	×	○	○
AnyWireASLINK parameter	Module ID	Read	×	○	—
	Status details	Read	○	○	—
	Sensing level	Read	○	○	—

^{*1} Device parameter names vary depending on the slave module. (☞ Page 68 List of device parameters)

The details of AnyWireASLINK parameters are as follows.

Name	Read/Write	Details
Module ID	Read	Indicates the ID of the slave module. <ul style="list-style-type: none">• 0000H to 00FFH: ID of the output slave module• 0200H to 02FFH: ID of the input slave module or I/O combined slave module
Status details	Read	<div>Indicates the status of the slave module.</div> <div>The status of the slave module varies from 1) to 6) as shown below, depending on the on/off status of each bit.</div> <div><div><div>b15to</div><div>b6b5b3b2b1b0</div><div></div><div>6)5)4)3)2)1)</div></div><div>1) Power status of the module On: Drop in the voltage of the slave module Off: No error</div><div>2) Sensing level status On: Drop in the sensing level Off: No error</div><div>3) I/O disconnection (ASLINKER) On: I/O disconnection Off: No error</div><div>4) I/O short-circuit (ASLINKER) On: I/O short-circuit Off: No error</div><div>5) I/O voltage drop (insulated slave module) On: No ID set Off: No error</div><div>6) System reserved</div></div>
Sensing level	Read	The analog value of the on/off sensor connected is displayed in decimal format (0 to 100).

AnyWireASLINK parameter monitor

No special operation is required for AnyWireASLINK parameter monitor.

Slave module parameter access

The procedures for executing slave module parameter access are as follows.

■Reading parameters

1. Specify the access method.

Store 0000H: read in Parameter access setting (RWwn+16).

2. Specify the access target ID.

Store the access target ID in Parameter access target module ID specification (RWwn+17).

ID	Description
0000H to 00FFH	ID of the output slave module
0200H to 02FFH	ID of the input slave module or I/O combined slave module

3. Turn on Parameter access request command for the slave module (RY(n+1)0).

At this time, Parameter access completion flag (RX(n+1)1) also turns on to complete the access.

4. Parameters that have been read are transferred from the bridge module to the device of the CPU module.

■Writing parameters

1. Specify the access method.

Store 0001H: write in Parameter access setting (RWwn+16).

2. Specify the access target ID.

Store the access target ID in Parameter access target module ID specification (RWwn+17).

ID	Description
0000H to 00FFH	ID of the output slave module
0200H to 02FFH	ID of the input slave module or I/O combined slave module

3. Parameters to be written are transferred from the device of the CPU module to the bridge module.

4. Turn on Parameter access request command for the slave module (RY(n+1)0).

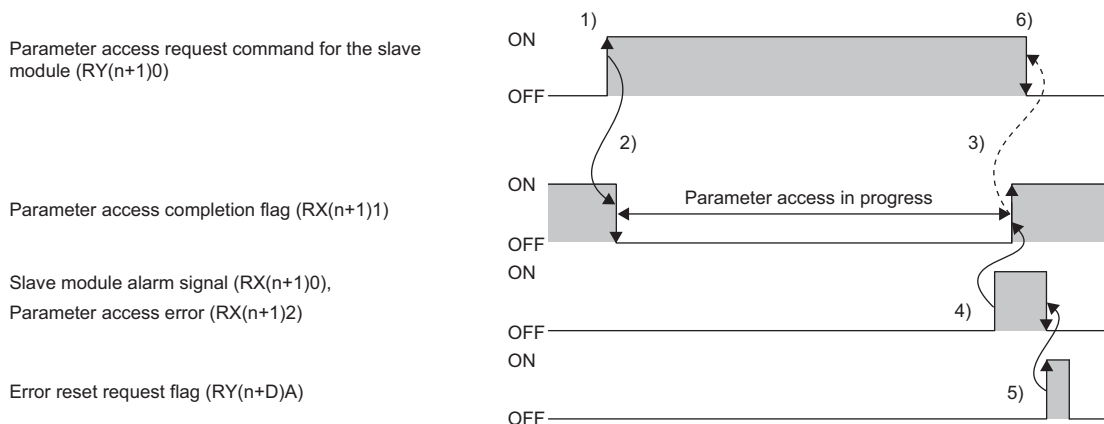
At this time, Parameter access completion flag (RX(n+1)1) also turns on to complete the access.

5. Read the parameters to check that the setting has taken effect in the slave module.

Parameter access timing

The parameter access timing is as follows.

- ▶ Executed in the program
 —————▶ Executed by the bridge module



No.	Description
1)	Parameter access starts when the following signal is turned on by programs.*1 <ul style="list-style-type: none"> • Parameter access request command for the slave module (RY(n+1)0)
2)	The operation in 1) turns off Parameter access completion flag (RX(n+1)1).
3)	When the parameter access (read/write) is complete, Parameter access completion flag (RX(n+1)1) turns on automatically.
4)	If there is an error in the parameter access, one of the following signals turns on and Parameter access completion flag (RX(n+1)1) turns on automatically.*2 <ul style="list-style-type: none"> • Slave module alarm signal (RX(n+1)0) • Parameter access error (RX(n+1)2)
5)	When Error reset request flag (RY(n+D)A) is turned on by programs, one of the following signals turns off. <ul style="list-style-type: none"> • Slave module alarm signal (RX(n+1)0) • Parameter access error (RX(n+1)2)
6)	Turn off the signal turned on in 1) by programs.

*1 Before executing parameter access from the bridge module to the slave module, store the access method, access target ID, and parameter data in the appropriate memory areas.

*2 Slave module alarm signal (RX(n+1)0) and Parameter access error (RX(n+1)2) are maintained until Error reset request flag (RY(n+D)A) is turned on. Errors are stored in the appropriate memory areas.

Sample program

■CC-Link network parameter assignment

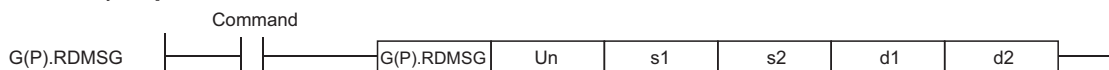
The CC-Link network parameter assignment in the sample program is as follows.

Signal	Device setting in the sample program
RX	D1000
RY	D2000
RWr	W0
RWw	W100
SB	SB0
SW	SW0

■G(P).RDMSG instruction

The G(P).RDMSG instruction is used for the program of slave module parameter access.

[Instruction symbol]



The setting data of the G(P).RDMSG instruction is as follows.

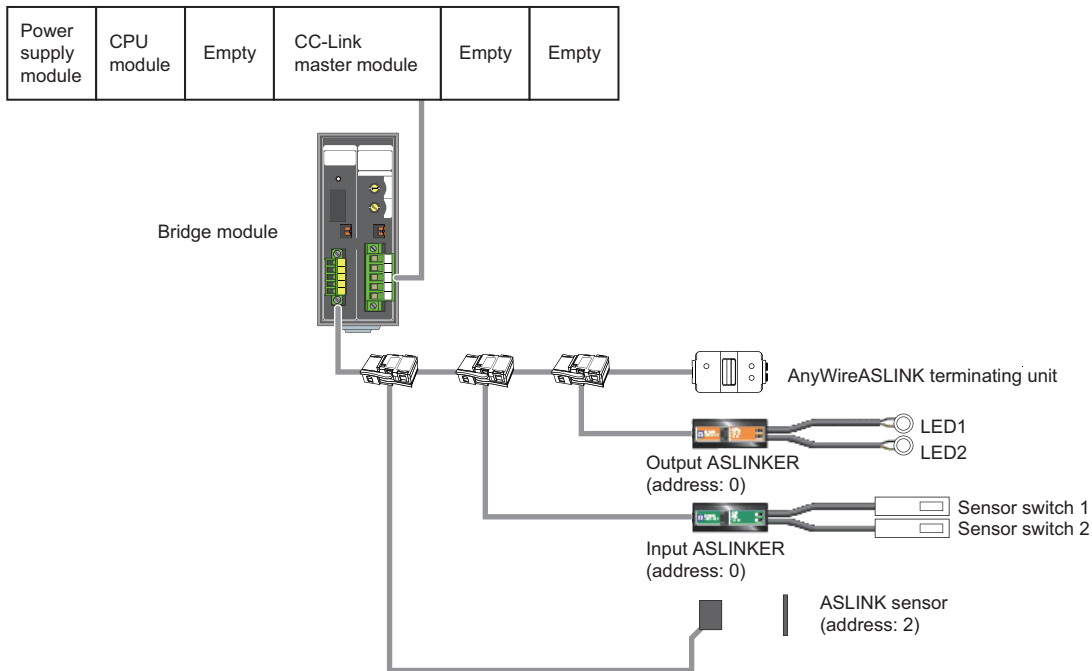
Device	Device setting in the sample program	Setting description	Setting range
Un	U1	The start I/O number of the module (The first 2 digits in a 3-digit I/O number)	0 to FEH
s1+0	D100	Completion status	0: No error (Normal completion) Other than 0: Error code
s1+1	D101	CC-Link station start number	1 to 60
s1+2	D102	Number of send byte	1 to 255
s1+3	D103	Maximum number of receive byte	0 to 255
s1+4	D104	Number of receive byte	—
s2	D110	Start number of send data storage device	—
d1	D200	Start number of receive data storage device	
d2	M0	Read completion flag	

The precautions of the G(P).RDMSG instruction are as follows.

- The instruction can be simultaneously executed up to four modules to multiple remote device stations.
- Concurrent execution of the instruction is not allowed to the same station. If the instruction is executed before the completion of the former instruction, the instruction is completed with an error.
- Since several scans are required to complete the processing of the instruction, create a program so that the next instruction is executed after the completion device turns on.

■System configuration

The example of system configuration is shown below.




■Devices used by users

Device	Description
D1001.1	Parameter access completion flag
D1001.4	Automatic address detection flag
D2001.0	Parameter access request command for the slave module
W110	Parameter access setting
W111	Parameter access target module ID specification
T20	Timer contact
M40	Dedicated instruction starting contact
M50	Program starting contact
M51	Communication starting contact

■Slave module parameter access (module ID, status details, sensing level)

This program reads the parameters (module ID, status details, sensing level) of all slave modules connected to the bridge module. The device setting of the dedicated command and G(P).RDMMSG instruction in the sample program is as follows.

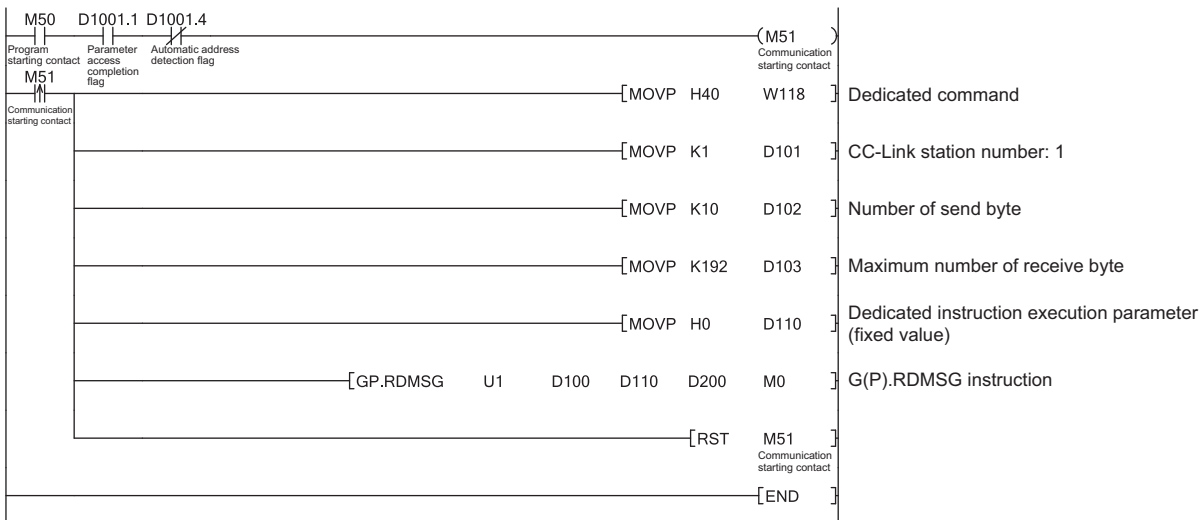
Device setting in the sample program	Setting description	Setting value in the sample program
W118 ^{*1}	Dedicated command	40H
D101	CC-Link station start number	1
D102	Number of send byte	10
D103	Maximum number of receive byte	192
D110	Dedicated instruction execution parameter (fixed value)	0H

*1 Device of the address RWwn+24 (remote register output) assigned to the master station in the station number setting. ( Page 43 Remote registers when 4 stations are occupied)

The dedicated command specifies the number of slave modules whose parameters are targeted for reading as shown below.

Slave module	Dedicated command
1st to 32nd module	40H
33rd to 64th module	41H
65th to 95th module	42H
96th to 128th module	43H

The following shows a program example.

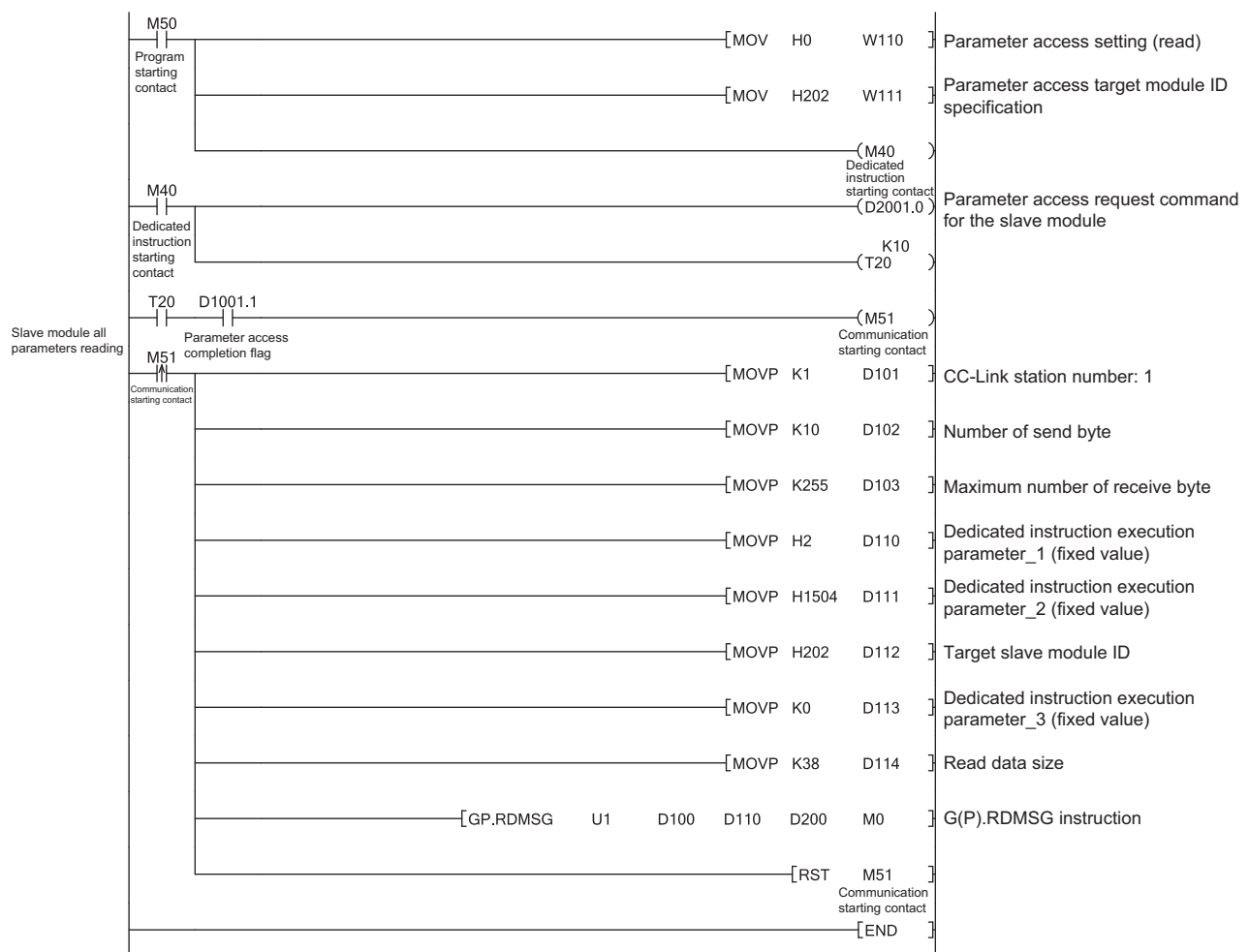


■Slave module parameter access (To read parameters)

This program reads all parameters of the target slave module by specifying the ID. The device settings of the G(P).RDMSG instruction in the sample program are as follows.

Device setting in the sample program	Setting description	Setting value in the sample program
D101	CC-Link station start number	1
D102	Number of send byte	10
D103	Maximum number of receive byte	255
D110	Dedicated instruction execution parameter_1 (fixed value)	2H
D111	Dedicated instruction execution parameter_2 (fixed value)	1504H
D112	Target slave module ID	202H
D113	Dedicated instruction execution parameter_3 (fixed value)	0
D114	Read data size	38

The following shows a program example.

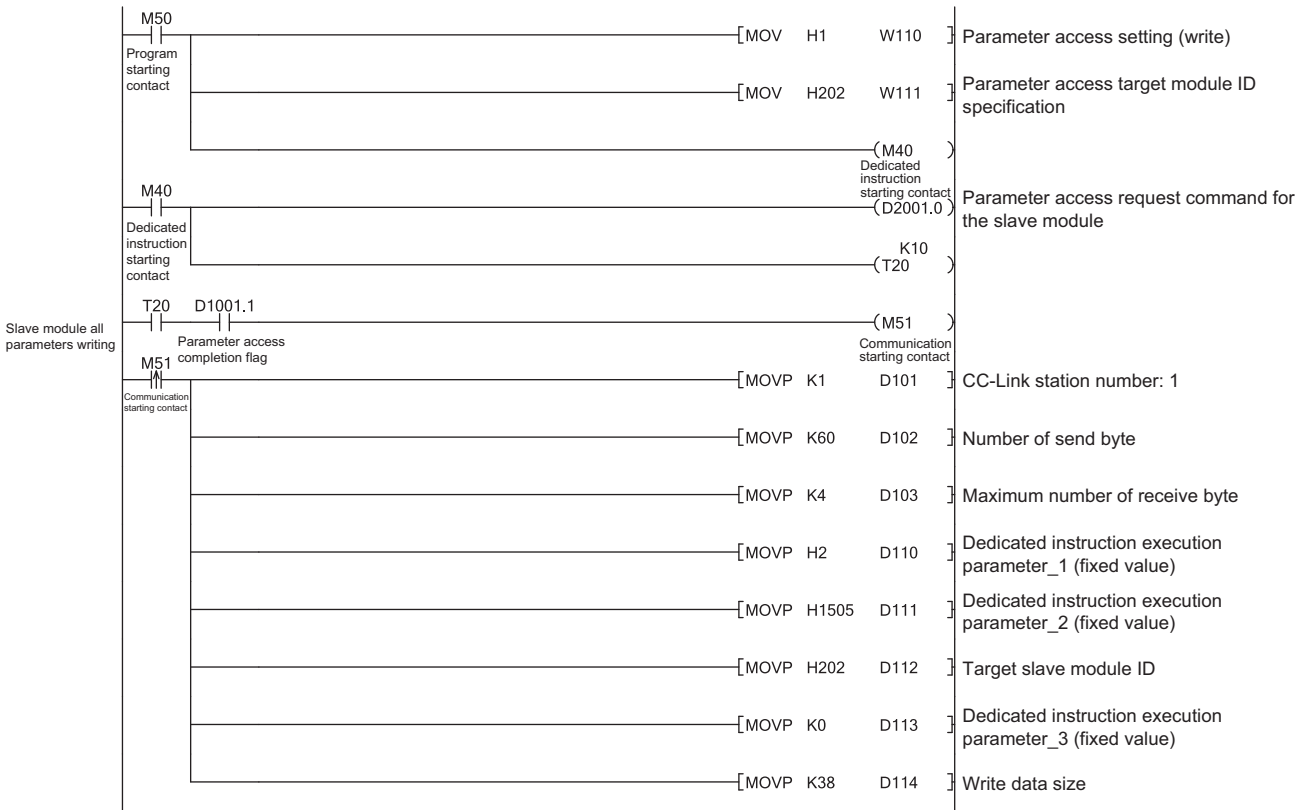


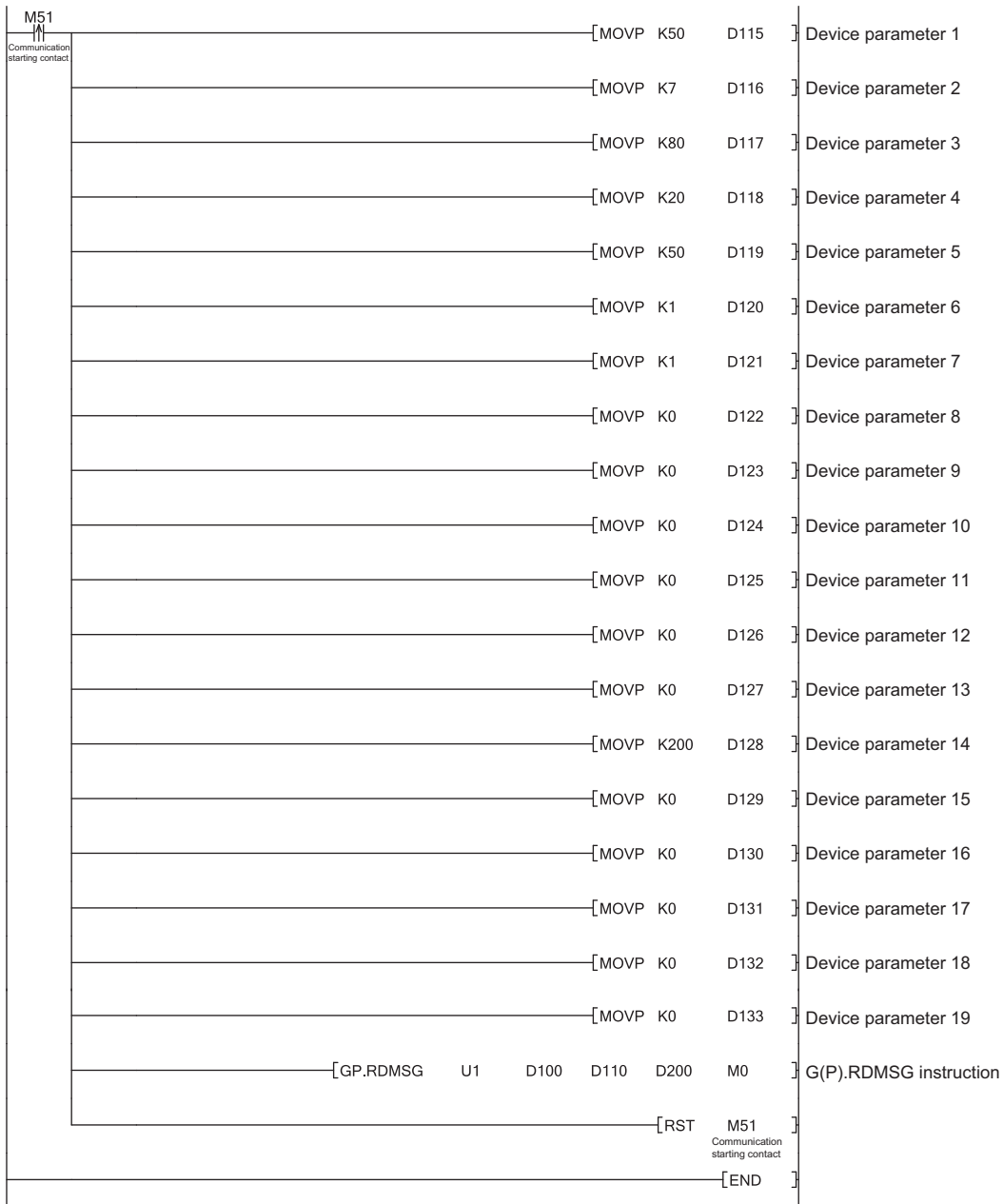
■Slave module parameter access (To write parameters)

This program writes all parameters to the target slave module by specifying the ID. The device settings of the G(P).RDMSG instruction in the sample program are as follows.

Device setting in the sample program	Setting description	Setting value in the sample program
D101	CC-Link station start number	1
D102	Number of send byte	60
D103	Maximum number of receive byte	4
D110	Dedicated instruction execution parameter_1 (fixed value)	2H
D111	Dedicated instruction execution parameter_2 (fixed value)	1505H
D112	Target slave module ID	202H
D113	Dedicated instruction execution parameter_3 (fixed value)	0
D114	Write data size	38
D115	Device parameter 1	50
D116	Device parameter 2	7
D117	Device parameter 3	80
D118	Device parameter 4	20
D119	Device parameter 5	50
D120	Device parameter 6	1
D121	Device parameter 7	1
D122	Device parameter 8	0
D123	Device parameter 9	0
D124	Device parameter 10	0
D125	Device parameter 11	0
D126	Device parameter 12	0
D127	Device parameter 13	0
D128	Device parameter 14	200
D129	Device parameter 15	0
D130	Device parameter 16	0
D131	Device parameter 17	0
D132	Device parameter 18	0
D133	Device parameter 19	0

The following shows a program example.





List of device parameters

The following table lists device parameters of slave modules.

■ASLINKER

Product name	Model	Device parameter	Description of device parameters	Read/Write
Cable/waterproof	Input/output type (No function for the compatible type)	Device parameter 1	Disconnection/short-circuit detection setting Enable/disable the disconnection/short-circuit detection function. Default value: 0 Setting value: 0 (disconnection/short-circuit detection disabled), 1 (disconnection/short-circuit detection enabled)	Read/Write
		Device parameter 2	—	—
		Device parameter 3		
		Device parameter 4		
		Device parameter 5		
		Device parameter 6		
		Device parameter 7		
		Device parameter 8		
		Device parameter 9		
		Device parameter 10		
		Device parameter 11		
		Device parameter 12		
		Device parameter 13		

Product name	Model	Device parameter	Description of device parameters	Read/Write
Photoelectric fiber type (transmission type)	B289SB-01AP-CAM20 B289SB-01AP-CAS B289SB-01AF-CAM20 B289SB-01AF-CAS	Device parameter 1	Threshold value Specify a threshold value which determines on/off of the sensor. Default value: 50 Setting range: 0 to 100	Read/Write
		Device parameter 2	Hysteresis value Specify a hysteresis value for the threshold value. Default value: 5 Setting range: 0 to 100	
		Device parameter 3	Alarm determination upper limit value Specify an alarm determination upper limit value. Default value: 80 Setting range: 0 to 100	
		Device parameter 4	Alarm determination lower limit value Specify an alarm determination lower limit value. Default value: 20 Setting range: 0 to 100	
		Device parameter 5	Alarm determination monitoring time Specify the monitoring time for the alarm determination value. Default value: 50 (Unit: 100ms) Setting range: 3 to 255	
		Device parameter 6	Light ON / Dark ON setting Specify the light ON or dark ON setting for the sensor on/off. Default value: 0 Setting value: 0 (Dark ON), 1 (Light ON)	
		Device parameter 7	Operation mode setting Specify the use of the alarm diagnostics function. Default value: 0 Setting value: 0 (Diagnostics function not used), 1 (Diagnostics function used)	
		Device parameter 8	Sensor type setting Specify a value according to the sensor of the manufacturer used. Default value: 0 For setting values, refer to the manual for the slave module used.	
		Device parameter 9	—	—
		Device parameter 10		
		Device parameter 11		
		Device parameter 12		
		Device parameter 13		

Product name	Model	Device parameter	Description of device parameters	Read/Write
Proximal type	B289SB-01AK-CAM20 B289SB-01AK-CAS	Device parameter 1	Threshold value Specify a threshold value which determines on/off of the sensor. Default value: 50 Setting range: 0 to 100	Read/Write
		Device parameter 2	Hysteresis value Specify a hysteresis value for the threshold value. Default value: 5 Setting range: 0 to 100	
		Device parameter 3	Alarm determination upper limit value Specify an alarm determination upper limit value. Default value: 80 Setting range: 0 to 100	
		Device parameter 4	Alarm determination lower limit value Specify an alarm determination lower limit value. Default value: 20 Setting range: 0 to 100	
		Device parameter 5	Alarm determination monitoring time Specify the monitoring time for the alarm determination value. Default value: 50 (Unit: 100ms) Setting range: 3 to 255	
		Device parameter 6	Normally open setting/ normally close setting Default value: 0 Setting value: 0 (Normally-open contact), 1 (Normally-close contact)	
		Device parameter 7	Operation mode setting Specify the use of the alarm diagnostics function. Default value: 0 Setting value: 0 (Diagnostics function not used), 1 (Diagnostics function used)	
		Device parameter 8	Sensor type setting Specify a value according to the sensor of the manufacturer used. Default value: 0 For setting values, refer to the manual for the slave module used.	
		Device parameter 9	Specify whether to perform interference prevention for the sensor. (The detection distance is reduced by half.) Default value: 0 Setting value: 0 (Normal mode (no interference prevention)), 1 (Interference prevention mode)	
		Device parameter 10	—	—
		Device parameter 11		
		Device parameter 12		
		Device parameter 13		

■ASLINK sensors

Product name	Model	Device parameter	Description of device parameters	Read/Write
Photoelectric sensor	B283SB-01-1KC (Transmission type: light receiving) B283SB-01-1KR (Limited reflection type) B283SB-01-1KS (Diffused reflection type)	Device parameter 1	Threshold value Specify a threshold value which determines on/off of the sensor. Default value: 50 Setting range: 0 to 100	Read/Write
		Device parameter 2	Hysteresis value Specify a hysteresis value for the threshold value. Default value: 5 Setting range: 0 to 100	
		Device parameter 3	Alarm determination upper limit value Specify an alarm determination upper limit value. Default value: 80 Setting range: 0 to 100	
		Device parameter 4	Alarm determination lower limit value Specify an alarm determination lower limit value. Default value: 20 Setting range: 0 to 100	
		Device parameter 5	Alarm determination monitoring time Specify the monitoring time for the alarm determination value. Default value: 50 (Unit: 100ms) Setting range: 3 to 255	
		Device parameter 6	Normally open setting/ normally close setting Default value: 0 Setting value: 0 (Normally-open contact), 1 (Normally-close contact)	
		Device parameter 7	Operation mode setting Specify the use of the alarm diagnostics function. Default value: 0 Setting value: 0 (Diagnostics function not used), 1 (Diagnostics function used)	
		Device parameter 8	Light receiving mode switching Specify the light receiving mode. Default value: 0 Normal mode: 0 Fine mode: 1	
		Device parameter 9	—	—
		Device parameter 10	—	
		Device parameter 11	—	
		Device parameter 12	—	
		Device parameter 13	—	
Photoelectric sensor	B283SB-01-1KP (Transmission type: light emitting)	Device parameter 1	—	—
		Device parameter 2	—	
		Device parameter 3	—	
		Device parameter 4	—	
		Device parameter 5	—	
		Device parameter 6	—	
		Device parameter 7	—	
		Device parameter 8	—	
		Device parameter 9	Light emitting mode switching Specify the light emitting operation mode. Default: 0 Normal mode: 0 Power mode: 1	Read/Write
		Device parameter 10	—	
		Device parameter 11	—	—
		Device parameter 12	—	
		Device parameter 13	—	

Product name	Model	Device parameter	Description of device parameters	Read/Write
Proximal sensor	B297SB-01-1K40	Device parameter 1	—	—
		Device parameter 2		
		Device parameter 3	Alarm determination upper limit value Specify an alarm determination upper limit value. Default value: 80 Setting range: 0 to 100	Read/Write
		Device parameter 4	Alarm determination lower limit value Specify an alarm determination lower limit value. Default value: 20 Setting range: 0 to 100	
		Device parameter 5	Alarm determination monitoring time Specify the monitoring time for the alarm determination value. Default value: 50 (Unit: 100ms) Setting range: 3 to 255	
		Device parameter 6	Normally open setting/ normally close setting Default value: 0 Setting value: 0 (Normally-open contact), 1 (Normally-close contact)	
		Device parameter 7	Operation mode setting Specify the use of the alarm diagnostics function. Default value: 0 Setting value: 0 (Diagnostics function not used), 1 (Diagnostics function used)	
		Device parameter 8	—	—
		Device parameter 9		
		Device parameter 10		
		Device parameter 11		
		Device parameter 12		
		Device parameter 13		

Product name	Model	Device parameter	Description of device parameters	Read/Write
Photo interrupter	B295SB-01-1K26 B295SB-01-1K25	Device parameter 1	Threshold value Specify a threshold value which determines on/off of the sensor. Default value: 50 Setting range: 0 to 100	Read/Write
		Device parameter 2	Hysteresis value Specify a hysteresis value for the threshold value. Default value: 5 Setting range: 0 to 100	
		Device parameter 3	Alarm determination upper limit value Specify an alarm determination upper limit value. Default value: 80 Setting range: 0 to 100	
		Device parameter 4	Alarm determination lower limit value Specify an alarm determination lower limit value. Default value: 20 Setting range: 0 to 100	
		Device parameter 5	Alarm determination monitoring time Specify the monitoring time for the alarm determination value. Default value: 50 (Unit: 100ms) Setting range: 3 to 255	
		Device parameter 6	Normally open setting/ normally close setting Default value: 0 Setting value: 0 (Normally-open contact), 1 (Normally-close contact)	
		Device parameter 7	Operation mode setting Specify the use of the alarm diagnostics function. Default value: 0 Setting value: 0 (Diagnostics function not used), 1 (Diagnostics function used)	
		Device parameter 8	Light receiving mode switching Specify the light receiving mode. Default value: 0 Normal mode: 0 Fine mode: 1	
		Device parameter 9	—	—
		Device parameter 10		
		Device parameter 11		
		Device parameter 12		
		Device parameter 13		

Transmission cable short detection function

This function protects the system by detecting an overcurrent out of the specifications of the AnyWireASLINK and stopping the transmission.

Transmission cable short status

When the following occurs, AnyWireASLINK system is in the transmission cable short state.

- The LINK LED turns off and the ALM LED flashes repeatedly at 1 second intervals. ^{*1}
- DP/DN short error (RXn1) turns on.
- 00C9H is stored in Latest error code storage area (RWrn+16). ^{*1*2}
- 0FFFH is stored in Latest error ID storage area (RWrn+17). ^{*1*2}
- The bit transmission stops.

^{*1} If multiple errors occur simultaneously, the latest error is displayed.

^{*2} This applies only when the CC-Link operation mode is Ver.2.00.

How to recover from the transmission cable short status

How to recover from the transmission cable short status is as follows.

1. Eliminate the short-circuit in the AnyWireASLINK system.

When the short-circuit is eliminated, bit transmission is resumed automatically.

If the status does not change, the short-circuit has not been eliminated. Therefore, check the system again.

The following status is maintained:

- ON state of DP/DN short error (RXn1)
- Flashing of the ALM LED
- Latest error information ^{*1}

^{*1} If multiple errors occur simultaneously, the latest error is displayed.

2. Reset the bridge module or turn on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A).


The following status is resulted:

- DP/DN short error (RXn1) turns off.
- The ALM LED turns off.
- The value of latest error information is cleared.

Disconnected transmission cable location detection function

This function notifies the ID of the slave module that has been disconnected from the bridge module because of disconnection in the transmission cable (DP, DN) between the bridge module and the slave module, to locate the disconnection in the transmission cables (DP, DN).

Point

- To enable the disconnected transmission cable location detection function, perform the automatic address detection when configuring, modifying, or adding the system. ( Page 50 Automatic address detection operation)
- After the system configuration, the disconnection detection may work when the slave module is disconnected from the system. Perform the automatic address detection after modifying the system.
- Even if disconnection in the transmission cables (DP, DN) is detected, the bit transmission is not stopped.

Transmission cable disconnection status

When the system is in the following status, the transmission cables (DP, DN) or a slave module have been disconnected.

- The ALM LED turns on.*¹
- DP/DN disconnection error (RXn4) turns on.
- The number of error IDs is stored in Number of the error IDs (RWrn+19).*²
- The ID of the disconnected slave module is notified from the bridge module to the device of the CPU module.*²
- 00CAH is stored in Latest error code storage area (RWrn+16).*^{1*2}
- The ID of the disconnected slave move is stored in Latest error ID storage area (RWrn+17).*^{1*2}
- The ID of the disconnected slave module is stored in Latest error ID simple information (RXn6 to RXnF).*¹

*¹ If multiple errors occur simultaneously, the latest error is displayed.

*² This applies only when the CC-Link operation mode is Ver.2.00.

How to recover from the transmission cable disconnection status

How to recover from the transmission cable disconnection status is as follows.

1. Eliminate the disconnection in the AnyWireASLINK system.

When the disconnection is eliminated, bit transmission is resumed automatically.

If the status does not change, the disconnection has not been eliminated. Therefore, check the system again.

The following status is maintained:

- ON state of DP/DN disconnection error (RXn4)
- Flashing of the ALM LED
- Latest error information*¹

*¹ If multiple errors occur simultaneously, the latest error is displayed.

2. Reset the bridge module or turn on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A), RY(n+D)A).

The following status is resulted:

- DP/DN disconnection error (RXn4) turns off.
- The ALM LED turns off.
- The value of latest error information is cleared.

Transmission cable voltage drop detection function

This function detects a voltage drop in the 24VDC external power supply, enabling the bridge module to detect a failure in the 24VDC external power supply or a wiring error.

Transmission cable voltage drop status

When the system is in the following status, a voltage drop in the 24VDC external power supply has been detected.

- The ALM LED flashes at 0.2 second intervals. ^{*1}
- Transmission cable voltage drop error (RXn3) turns on.
- 00C8H is stored in Latest error code storage area (RWrn+16). ^{*1*2}
- 0FFFH is stored in Latest error ID storage area (RWrn+17). ^{*1*2}
- The bit transmission stops.

^{*1} If multiple errors occur simultaneously, the latest error is displayed.

^{*2} This applies only when the CC-Link operation mode is Ver.2.00.

How to recover from the transmission cable voltage drop status

How to recover from the transmission cable voltage drop is as follows.

1. Check the voltage of the 24VDC external power supply and replace the power supply or check the wiring, as necessary.

When the transmission cable voltage drop status is cleared, bit transmission is resumed automatically.

If the status does not change, the transmission cable voltage drop has not been eliminated. Therefore, check the system again.

The following status is maintained:

- ON state of transmission cable voltage drop error (RXn3)
- Flashing of the ALM LED
- Latest error information ^{*1}

^{*1} If multiple errors occur simultaneously, the latest error is displayed.

2. Reset the bridge module or turn on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A), RY(n+D)A).

The following status is resulted:

- Transmission cable voltage drop error (Xn3) turns off.
- The ALM LED turns off.
- The value of latest error information is cleared.

Point

For the specifications of the 24VDC external power supply to the bridge module, refer to the following.

➞ Page 17 Performance Specifications

Parameter access error detection function

Detects errors that occur during reading or writing of the parameters of a slave module. The following parameter access errors are detected.

- Slave module hardware error (Error code: 012CH, 012DH)
- Parameter access target module ID error (Error code: 012EH)
- Parameter value error (Error code: 012FH)
- Parameter access error (Error code: 0130H)
- Slave module status error (Error code: 0131H)
- Same ID used error (Error code: 0190H)
- No ID setting error (Error code: 0191H)

Parameter access error status

The following table lists parameter access error statuses.

Error code	Error	Status when the error occurs			
		I/O signal	Bridge module LED	Latest error code storage area (RWrn+16)	Latest error ID storage area (RWrn+17)
012CH	Slave module hardware error	Slave module alarm signal (RX(n+1)0) turns on.	No indication.	The error code is stored.	The error ID is stored.
012DH					
012EH	Parameter access target module ID error				
012FH	Parameter value error				
0130H	Parameter access error	Parameter access error (RX(n+1)2) turns on.			
0131H	Slave module status error	Slave module alarm signal (RX(n+1)0) turns on.			
0190H	Same ID used error				
0191H	No ID setting error				

How to recover from the parameter access error status

How to recover from the parameter access error status is as follows.

■ Slave module hardware error

1. Eliminate the error cause by taking measures such as noise prevention.

Even when slave module hardware error is cleared, the following status is maintained.

- ON state of Slave module alarm signal (RX(n+1)0)
- The error code stored in Latest error code storage area (RWrn+16)^{*1*2}
- The error ID stored in Latest error ID storage area (RWrn+17)^{*1*2}
- The unset ID (02FFH or 00FFH) stored in Latest error ID simple information (RXn6 to RXnF)^{*1}
- The alarm information is notified from the bridge module to the device of the CPU module.^{*2}

^{*1} If multiple errors occur simultaneously, the latest error is displayed.

^{*2} This applies only when the CC-Link operation mode is Ver.2.00.

2. Reset the AnyWireASLINK system or turn on and off Error reset request flag (RY(n+D)A).

The following status is resulted:

- Slave module alarm signal (RX(n+1)0) turns off.
- The value in Latest error code storage area (RWrn+16) is cleared.
- The value in Latest error ID storage area (RWrn+17) is cleared.
- The value in Latest error ID simple information (RXn6 to RXnF) is cleared.
- The alarm information that was notified to the device of the CPU module is cleared.

■How to recover from parameter access target module ID error

1. Eliminate the error cause such as a parameter access program.

Even when parameter access target module ID error is cleared, the following status is maintained.

- ON state of Slave module alarm signal (RX(n+1)0)
- The value 012EH stored in Latest error code storage area (RWrn+16)^{*1*2}
- The value 0FFFH stored in Latest error ID storage area (RWrn+17)^{*1*2}

*1 If multiple errors occur simultaneously, the latest error is displayed.

*2 This applies only when the CC-Link operation mode is Ver.2.00.

2. Reset the AnyWireASLINK system or turn on and off Error reset request flag (RY(n+D)A).

The following status is resulted:

- Slave module alarm signal (RX(n+1)0) turns off.
- The value in Latest error code storage area (RWrn+16) is cleared.
- The value in Latest error ID storage area (RWrn+17) is cleared.

■How to recover from parameter value error

How to recover from parameter value error is as follows.

1. Eliminate the error cause such as a parameter access program.

Even when parameter value error is cleared, the following status is maintained.

- ON state of Slave module alarm signal (RX(n+1)0)
- The value 012FH stored in Latest error code storage area (RWrn+16)^{*1*2}
- The error ID stored in Latest error ID storage area (RWrn+17)^{*1*2}
- The error ID stored in Latest error ID simple information (RXn6 to RXnF)^{*1}
- The alarm information is notified from the bridge module to the device of the CPU module.^{*2}

*1 If multiple errors occur simultaneously, the latest error is displayed.

*2 This applies only when the CC-Link operation mode is Ver.2.00.

2. Reset the AnyWireASLINK system or turn on and off Error reset request flag (RY(n+D)A).

The following status is resulted:

- Slave module alarm signal (RX(n+1)0) turns off.
- The value in Latest error code storage area (RWrn+16) is cleared.
- The value in Latest error ID storage area (RWrn+17) is cleared.
- The value stored in Latest error ID simple information (RXn6 to RXnF) is cleared.
- The alarm information that was notified to the device of the CPU module is cleared.

■How to recover from parameter access error

1. Clear the parameter access error.

Check that the following errors have not occurred. When an error occurs, eliminate the error cause.

- Slave module hardware error
- Slave module status error
- Same ID used error

When the parameter access error occurs without the above errors, the possible cause is noise. Eliminate the error cause by taking measures such as noise prevention.

Even when parameter access error is cleared, the following status is maintained.

- ON state of Parameter access error (RX(n+1)2)
- The value 0130H stored in Latest error code storage area (RWrn+16)^{*1*2}
- The error ID stored in Latest error ID storage area (RWrn+17)^{*1*2}
- The error ID stored in Latest error ID simple information (RXn6 to RXnF)^{*1}
- The error ID information is notified from the bridge module to the device of the CPU module.^{*2}

^{*1} If multiple errors occur simultaneously, the latest error is displayed.

^{*2} This applies only when the CC-Link operation mode is Ver.2.00.

2. Reset the AnyWireASLINK system or turn on and off Error reset request flag (RY(n+D)A).

The following status is resulted:

- Parameter access error (RX(n+1)2) turns off.
- The value in Latest error code storage area (RWrn+16) is cleared.
- The value in Latest error ID storage area (RWrn+17) is cleared.
- The value in Latest error ID simple information (RXn6 to RXnF) is cleared.
- The error ID information that was notified to the device of the CPU module is cleared.

■How to recover from same ID used error

For details, refer to the following.

☞ Page 80 Same ID number used detection function

■How to recover from no ID setting error

For details, refer to the following.

☞ Page 81 Module with no ID number setting detection function

Same ID number used detection function

ID duplication in all the connected slave modules is detected by executing the automatic address detection function.

Point

- If the AnyWireASLINK system is powered off after ID duplication is detected, the ID duplication status is not displayed until the automatic address detection function is executed again.
- Only one ID is stored in the alarm information that is notified to the device of the CPU module due to ID duplication. For example, if "000AH" is set to multiple IDs, the number of alarm IDs stored in the ID information is "1" and "000AH" is displayed as the alarm ID.

Same ID number used status

When the system is in the following status, the same ID is used for multiple modules.

- ON state of Slave module alarm signal (RX(n+1)0)
- 0190H is stored in Latest error code storage area (RWrn+16).^{*1*2}
- The duplicated ID is stored in Latest error ID storage area (RWrn+17).^{*1*2}
- The duplicated ID is stored in Latest error ID simple information (RXn6 to RXnF).^{*1}
- The duplicated ID is stored in the alarm information notified from the bridge module.^{*1*2}
- The duplicated ID is notified from the bridge module to the device of the CPU module.^{*2}
- The bit transmission is in progress.

^{*1} If multiple errors occur simultaneously, the latest error is displayed.

^{*2} This applies only when the CC-Link operation mode is Ver.2.00.

How to recover from same ID number used status

How to recover from same ID number used status is as follows.

1. Locate the error ID by checking the alarm information that was notified to the device of the CPU module.
2. Check the ID (address) setting of the slave module and set a unique address in the slave module.
3. Execute the automatic address detection function of the bridge module.

Point

The same ID number used status can be cleared by resetting the AnyWireASLINK system or turning on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A), but the IDs remain duplicated.

Module with no ID number setting detection function

The factory default IDs (input modules: 02FFH, output modules: 00FFH) are detected on slave modules whose ID is not set by executing the automatic address detection function.

Point

- If the AnyWireASLINK system is powered off after the no ID number setting status is detected, the no ID number setting status is not displayed until the automatic address detection function is executed again.
- Only one ID is stored in the alarm information that is notified to the device of the CPU module because an ID is not set. For example, if "00FFH" is set to multiple IDs, the number of alarm IDs stored in the ID information is "1" and "00FFH" is displayed as the alarm ID value.

ID number unset status

When the system is in the following status, a module with no ID setting has been detected.

- ON state of Slave module alarm signal (RX(n+1)0)
- 0191H is stored in Latest error code storage area (RWrn+16).^{*1*2}
- The unset ID (input modules: 02FFH, output modules: 00FFH) is stored in Latest error ID storage area (RWrn+17).^{*1*2}
- The unset ID (input modules: 02FFH, output modules: 00FFH) is stored in Latest error ID simple information (RXn6 to RXnF).^{*1}
- The unset ID (input modules: 02FFH, output modules: 00FFH) is stored in the alarm information notified from the bridge module.^{*1*2}
- The unset ID (input modules: 02FFH, output modules: 00FFH) is notified from the bridge module to the device of the CPU module.^{*2}
- The bit transmission is in progress.

^{*1} If multiple errors occur simultaneously, the latest error is displayed.

^{*2} This applies only when the CC-Link operation mode is Ver.2.00.

How to recover from ID number unset status

1. Set an address of the slave module.
2. Check that "255" is not set to the address of the slave module.
3. After setting the address of the slave module, execute the automatic address detection function.


Point

The ID number unset status can be cleared by resetting the AnyWireASLINK system or turning on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A), but the address of the slave module remains unset.

AnyWireASLINK test mode

This function operates AnyWireASLINK system connected to the bridge module separately from CC-Link to check the system start-up or operation.*1*2


Following items can be checked when the system is not connected to CC-Link*3.

- Wiring check on AnyWireASLINK side
- Address and parameter setting of the slave module*4
- Automatic address detection operation ( Page 50 Automatic address detection operation)

*1 Communication with CC-Link is not available during the AnyWireASLINK test mode.

*2 Do not start the AnyWireASLINK test mode when a LED of CC-Link side is on.

*3 AnyWireASLINK test mode cannot be started when system is connected to CC-Link because it automatically starts to communicate with CC-Link.

*4 The address writer is required for settings of the slave module. ( Page 48 Settings of Slave Module)

Starting AnyWireASLINK test mode

1. Power on the bridge module without connecting to CC-Link.

2. Press the SET switch (first time)

Check that only the LINK LED is on and press the SET switch until the SET LED turns on.

3. Press the SET switch (second time)

Check that the LINK LED and SET LED are on and press the SET switch again until the ALM LED turns on.

4. Press the SET switch (third time)

Check that the LINK LED, SET LED, and ALM LED are on and press the SET switch again until the LINK LED flashes.

5. AnyWireASLINK test mode is successfully started if the LINK LED is flashing and the SET LED and ALM LED are off.

Exiting AnyWireASLINK test mode

Exit the AnyWireASLINK test mode by resetting the bridge module.

iQ Sensor Solution functions

iQ Sensor Solution functions establish data communication with AnyWireASLINK-compatible slave modules via CC-Link and AnyWireASLINK.

The following iQ Sensor Solution functions can be used.

- Automatic detection of connected devices
- Sensor/device monitor
- Sensor parameter read/write
- Data backup/restoration

For details on each function, refer to the following.

 iQ Sensor Solution Reference Manual



The iQ Sensor Solution functions are effective only when the CC-Link operation mode is Ver.2.00.

9 TRANSMISSION TIME

9.1 CC-Link Transmission Time

For transmission time of the CC-Link side, refer to the user's manual for the master module used.

9.2 AnyWireASLINK Transmission Time

Transmission cycle time of the bridge module

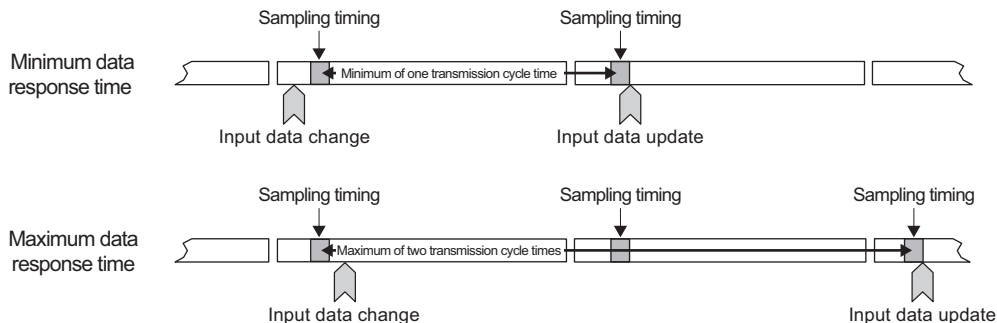
The transmission cycle time is the time required for the bridge module and all the slave modules to update I/O data. Transmission cycle time of the bridge module is as follows.

Transmission I/O points setting	One transmission cycle time
128 points (input: 64 points, output: 64 points)	3.5ms
256 points (input: 128 points, output: 128 points)	5.9ms
384 points (input: 192 points, output: 192 points)	8.3ms
512 points (input: 256 points, output: 256 points)	10.6ms

Effects of the double check system

■Input

Unless the same data is received twice successively on the bridge module side, the input area data is not updated. A minimum of one-transmission cycle time and a maximum of two-transmission cycle time are required for the data response. Therefore, signals of two-transmission cycle time or less may not be captured depending on the timing. To ensure the response to the input signal, provide an input signal that is longer than two-transmission cycle time.



■Output

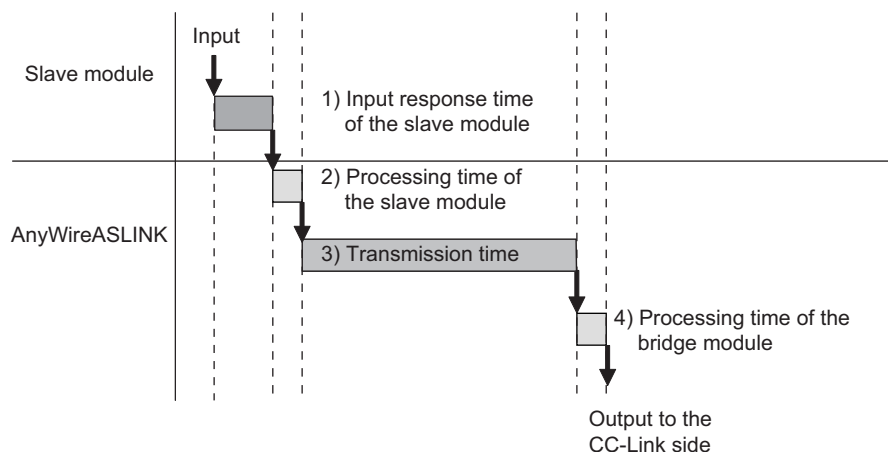
As the double check is performed on the slave module side, the time required is the same as that for input, namely a minimum of one-transmission cycle time and a maximum of two-transmission cycle time.

Transmission delay time

Transmission delay time is a value between one- and two-transmission cycle time.

Slave module (input) → AnyWireASLINK

The figure below shows the time between a signal input to the slave module and the bridge module device turning on/off.



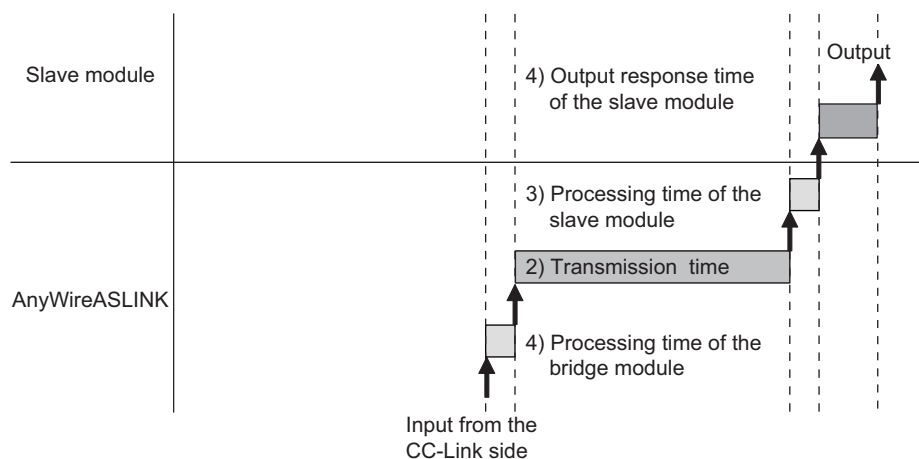
Calculation formula

1) Input response time of the slave module + 2) Processing time of the slave module + 3) Transmission time + 4) Processing time of the bridge module

No.	Description	Required time
1)	Input response time of the slave module	Refer to the manual for the slave module connected to the system or the device connected to the slave module.
2)	Processing time of the slave module	0.2ms (common to the slave modules)
3)	Transmission time	Transmission cycle time×2 The transmission cycle time differs depending on the transmission I/O points setting. (☞ Page 84 Transmission cycle time of the bridge module)
4)	Processing time of the bridge module	0.6ms

AnyWireASLINK → slave module (output)

The figure below shows the time between the CPU module device turning on/off and a signal output of the bridge module turning on/off.



Calculation formula


1) processing time of the bridge module + 2) transmission time + 3) processing time of the slave module + 4) output response time of the slave module

No.	Description	Required time
1)	Processing time of the bridge module	0.6ms
2)	Transmission time	Transmission cycle time×2 The transmission cycle time differs depending on the transmission I/O points setting. (☞ Page 84 Transmission cycle time of the bridge module)
3)	Processing time of the slave module	0.2ms (common to the slave modules)
4)	Output response time on the slave module	Refer to the manual for the slave module connected to the system or the device connected to the slave module.

10 TROUBLESHOOTING

10.1 Before Troubleshooting

Check that the POWER LED of the power supply module and the MODE LED of the CPU module are on. If they are off, perform the troubleshooting of the CPU module.

 User's Manual (Hardware Design, Maintenance and Inspection) for the CPU module used

10.2 Visual Inspection

Check that the communication cables and wires are not disconnected and check the following items.

Checking the LED status of the bridge module

Errors regarding the operating status and communications of the bridge module can be checked with the following LEDs. When the LEDs are in the following status, settings and wiring need to be corrected.


1. Check all LEDs of the bridge module.

If all LEDs of the bridge module are off even after power-on, perform the following troubleshooting.


 Page 89 When all LEDs of the bridge module are off even after power-on

2. Check the LINK LED of the bridge module.

If the LINK LED does not turn on or flash even after power-on, perform the following troubleshooting.

 Page 89 When the LINK LED does not turn on or flash after power-on

If the LINK LED does not flash, perform the following troubleshooting.

 Page 89 When the LINK LED of the bridge module does not flash

3. Check the ALM LED of the bridge module.


If the ALM LED is flashing at 0.2 second intervals, perform the following troubleshooting.

 Page 89 When the ALM LED of the bridge module is flashing at 0.2 second intervals

If the ALM LED is flashing at 1 second intervals, perform the following troubleshooting.


 Page 89 When the ALM LED of the bridge module is flashing at 1 second intervals

If the ALM LED is on, perform the following troubleshooting.

 Page 90 When the ALM LED of the bridge module is turned on


4. Check the L RUN LED of the bridge module.

If the L RUN LED does not turn on, perform the following troubleshooting.


 Page 90 When the L RUN LED of the bridge module is not turned on

5. Check the L ERR. LED of the bridge module.

If the L ERR. LED is flashing regularly, perform the following troubleshooting.

 Page 90 When the L ERR. LED of the bridge module is flashing regularly

If the L ERR. LED is flashing irregularly, perform the following troubleshooting.


 Page 90 When the L ERR. LED of the bridge module is flashing irregularly

If the L ERR. LED is on, perform the following troubleshooting.

 Page 90 When the L ERR. LED of the bridge module is turned on

Checking the operating status of the slave module


Check that there is no error in the slave module. For the troubleshooting of the slave module, refer to the following.

 Page 91 Troubleshooting of Slave Module

- When the data (I/O data and parameter data) of the slave module cannot be checked
- When the data (I/O data and parameter data) of the slave module data is unstable


10.3 Checking with Error Status Flag

When the error status flag is on

The value for Error status flag (RX(n+1)A, RX(n+3)A, RX(n+5)A, RX(n+7)A, RX(n+D)A) is determined by the number of occupied stations of CC-Link that corresponds to the CC-Link operation mode.  Page 47 Error Reset
Error cause can be investigated by checking the on/off status of remote input signal.

■When DP/DN short error is on

If DP/DN short error (RXn1) is on, perform the following troubleshooting.

 Page 89 When the ALM LED of the bridge module is flashing at 1 second intervals

■When Transmission cable voltage drop error is on

If Transmission cable voltage drop error (RXn3) is on, perform the following troubleshooting.

 Page 89 When the ALM LED of the bridge module is flashing at 0.2 second intervals

■When DP/DN disconnection error is on

If DP/DN disconnection error (RXn4) is on, perform the following troubleshooting.

 Page 90 When the ALM LED of the bridge module is turned on

■When Slave module alarm signal is on

When Slave module alarm signal (RX(n+1)0) is on, an error is occurring in the communication status with the specific slave module or in the slave module status.

Check the contents of Latest error ID simple information (RXn6 to RXnF), and perform the following troubleshooting for the slave module with corresponding ID. For details, refer to the manual for the slave module used.

Item	Action
Check that the LINK LED of the slave module is flashing.	If the LINK LED of the slave module does not flash, check that there is no disconnection, short-circuit, incorrect wiring, or poor contact in the transmission cables around the module.
Check that the LINK LED and ALM LED of the slave module are flashing alternately.	ID is duplicated or not assigned. Set the address correctly.
Check that the ALM LED of the slave module is flashing at 1.2 second intervals (0.2 second on, 1.0 second off).	Signal level of transmission cables may be lacking. Review the system configuration (total length, transmission cable wire diameter, and transmission cable supply current) of AnyWireASLINK.
Check that the ALM LED of the slave module is on.	Slave module status error has occurred. Disconnection or short-circuit of I/O wiring, lack of I/O power supply, or sensing level drop may occurs. Check the wiring, installation method, and power supply voltage of the slave module. For details, refer to the manual for the slave module used.

10.4 Troubleshooting of Bridge Module

This section describes the troubleshooting of the bridge module.

When all LEDs of the bridge module are off even after power-on

Item	Action
Check the power supply for correct wiring.	If the power supply is wired correctly, hardware failure may be occurring. Please consult your local Mitsubishi representative.

When the LINK LED does not turn on or flash after power-on

Item	Action
Check the power supply voltage.	Check that the power supply voltage of the 24VDC external power supply is within the rated value.
Check the wiring of terminal blocks.	Check that the 24VDC external power supply is properly connected to the terminal block of the bridge module. Check that there is no short-circuit or incorrect wiring and screws are tightened within the specified torque range.
Check the power cables (24V, 0V).	Check that the power cables (24V, 0V) are not disconnected or short-circuited. When crimping the link connector, check that the pin assignment is correct.
Check the total internal current consumption of the entire system.	Review the system configuration so that the total internal current consumption does not exceed the rated output current of the power supply module.

When the LINK LED of the bridge module does not flash

Item	Action
Check that the LINK LED is turned on.	A malfunction has been detected in the bridge module hardware. Reset the bridge module. If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.

When the ALM LED of the bridge module is flashing at 0.2 second intervals

Item	Action
Check the power supply voltage of the 24VDC external power supply.	Adjust the power supply voltage of the 24VDC external power supply which is connected to the bridge module to be within the rated value (21.6 to 27.6VDC). The recommended voltage is 26.4VDC.
Check the power cables (24V, 0V).	Check that the power cables (24V, 0V) are not disconnected or short-circuited. When crimping the link connector, check that the pin assignment is correct.
Check the wiring of terminal blocks.	Check that the 24VDC external power supply is properly connected to the terminal block of the CC-Link master module or the slave module. Check that there is no short-circuit or incorrect wiring and screws are tightened within the specified torque range.

When the ALM LED of the bridge module is flashing at 1 second intervals

Item	Action
Check the signal wire of the transmission cables (DP, DN).	Check that the transmission cables are not short-circuited. When crimping the link connector, check that the pin assignment is correct.
Check the wiring of terminal blocks.	Check that the transmission cables are not in contact with each other and that there is no incorrect wiring in the terminal block wiring of the bridge module and the slave module.
Check that the current consumption of the AnyWireASLINK system is within the specified range.	Correct the cables (wire diameter, total length) and modules (type, the number of connected modules) so that the total current consumption of all the slave modules does not exceed the transmission cable supply current of the bridge module.

When the ALM LED of the bridge module is turned on

Item	Action
Check the signal wire of the transmission cables (DP, DN).	Check that the transmission cables (entire cables) are free from disconnection. Check that the cables have been crimped with proper pin assignment using link connectors appropriate to the wire diameter.
Check the wiring of terminal blocks.	Check that the signal cables are properly connected to the terminal block of the bridge module. Check that there is no incorrect wiring and screws are tightened within the specified torque range.
Perform the automatic address detection function.	When creating a new system, adding or removing a slave module, or changing the address of the slave module, perform the automatic address detection function. After the operation ends, check that the number of slave modules and the address are consistent with those of the actual system.
Check the existence of the slave module.	If the LINK LED of the slave module does not flash, check that there is no disconnection, short-circuit, incorrect wiring, or poor contact in the transmission cables around the module.


When the L RUN LED of the bridge module is not turned on

Item	Action
Check that the L RUN LED is off.	Communications are interrupted. For details, refer to the user's manual for the master module used.

When the L ERR. LED of the bridge module is flashing regularly

Item	Action
Check that the station number setting switch is changed during normal operation.	Correct the setting of station number setting switch after powering off the bridge module, and power on the module again.
Check that the station number setting switch is not in failure.	Hardware failure may occurs when the L ERR. LED is flashing although station number setting switch has not been modified. Please consult your local Mitsubishi representative.

When the L ERR. LED of the bridge module is flashing irregularly

Item		Action
Check that the bridge module or CC-Link dedicated cable has been affected by noise.		Ground both ends of the shield wire of the CC-Link dedicated cable with a ground resistance of 100 ohms or less via the SLD and FG of the bridge modules. Ground the FG terminal of the bridge module properly. When conducting piping and wiring, ground the pipes properly.
Check that communication is not disconnected.		The station number setting switch may have been changed while communication is disconnected. In this case, refer to all the check items in "When the L ERR. LED of the bridge module is flashing regularly" and take appropriate actions.  Page 90 When the L ERR. LED of the bridge module is flashing regularly
The bridge module is not connected at the end of CC-Link system.	Check that SW4 is on.	Set SW4 to off.
	Check that terminating resistor is installed.	Remove the terminating resistor.
The bridge module is connected at the end of CC-Link system.	Check that SW4 is on and terminating resistor is installed.	<ul style="list-style-type: none">• Remove the terminating resistor.• Set SW4 to off.
	Check that SW4 is off and terminating resistor is installed.	Power off and on the bridge module after performing one of the following actions. <ul style="list-style-type: none">• Set SW4 to on.• Install the terminating resistor.

When the L ERR. LED of the bridge module is turned on

Item	Action
Check that the station number setting of CC-Link is correct.	Set the correct station number.

10.5 Troubleshooting of Slave Module

This section describes the troubleshooting of the slave module.

When I/O data and parameter data cannot be checked

Item	Action
Check the CC-Link network parameter setting in GX Works2.	Check that the data areas which RX/RV and RW are assigned are correct. Check that the station information of CC-Link is correctly set in the bridge module setting. Check that the CPU module is set to STOP status. Slave module cannot output when the CPU module is set to STOP.
Check the I/O LED status of the slave module.	Check the I/O LED status of the slave module and check that there is no disconnection, short-circuit, or poor contact in the wiring on the load side.

When the I/O data and parameter data of the slave module is unstable

Item	Action
Check the connection of the terminating unit.	Pay attention to the polarities of the terminating unit (BT0) and connect it correctly.
Check the total length of the transmission cables.	Adjust the total length of the AnyWireASLINK system to be within the specification range.
Check the type of the transmission cables.	Check that the transmission cables have the specified type, wire diameter, and tightening torque to the terminal block. Do not run multiple transmission cables (DP, DN) using a multicore cable.
Check the power supply voltage of the 24VDC external power supply.	Adjust the power supply voltage of the 24VDC external power supply to be within the rated value (21.6 to 27.6VDC). The recommended voltage is 26.4VDC.
Check that the slave module does not have the same address as the addresses of other slave modules.	Set a unique address in the slave module.

10.6 List of Error Codes

The latest error code is stored in Latest error code storage area (RWrn+16).

This section lists error descriptions, causes, and corrective actions.

Error code	Error description	Cause and action
0064H 0065H 0066H 0067H	Bridge module hardware error	<p>A malfunction has been detected in the bridge module hardware.</p> <ul style="list-style-type: none"> Reset the bridge module. If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
00C8H	Transmission cable voltage drop error	<p>The voltage of the 24VDC external power supply may be lacking.</p> <ul style="list-style-type: none"> Adjust the power supply voltage of the 24VDC external power supply to be within the rated value (21.6 to 27.6VDC). The recommended voltage is 26.4VDC. Check that the power cables (24V, 0V) are not disconnected or short-circuited. When crimping the link connector, check that the pin assignment is correct. Check that the 24VDC external power supply is properly connected to the terminal block of the bridge module or the slave module. Check that there is no short-circuit or incorrect wiring and screws are tightened within the specified torque range.
00C9H	DP/DN short error	<p>A short-circuit may be occurring in the transmission cables (DP, DN) or the maximum supply current of the transmission cables may be exceeded.</p> <ul style="list-style-type: none"> Check that the transmission cables are not short-circuited. When crimping the link connector, check that the pin assignment is correct. Check that the transmission cables are not in contact with each other and that there is no incorrect wiring in the terminal block wiring of the bridge module and the slave module. Correct the cables (wire diameter, total length) and modules (type, the number of connected modules) so that the total current consumption of all the slave modules does not exceed the transmission cable supply current of the bridge module.
00CAH	DP/DN disconnection error	<p>Disconnection may be occurring in the signal cables (DP, DN) or there may be no response from the slave module. The slave module may be malfunctioning or the system configuration may have been changed after the automatic address detection function is executed. Locate the disconnection by checking error ID information or other appropriate information and perform the following actions.</p> <ul style="list-style-type: none"> Check that the transmission cables (entire cables) are free from disconnection. Check that the cables have been crimped with proper pin assignment using link connectors appropriate to the wire diameter. Check that the signal cables are properly connected to the terminal block of the bridge module. Check that there is no incorrect wiring and screws are tightened within the specified torque range. When creating a new system, adding or removing a slave module, or changing the address of the slave module, perform the automatic address detection function. After executing the automatic address detection function, check that the number of slave modules and the address are consistent with those of the actual system. If the LINK LED of the slave module does not flash, check that there is no disconnection, short-circuit, incorrect wiring, or poor contact in the transmission cables around the module.
012CH 012DH	Slave module hardware error	<p>A malfunction has been detected in the slave module hardware.</p> <ul style="list-style-type: none"> Reset the slave module. Check that the module is not affected by noise.
012EH	Parameter access target module ID error	<p>Parameter access has been executed on the ID that has not been detected by the bridge module through the automatic address detection function. Check the alarm ID information in the specified device of the CPU module to locate the error ID and perform the following action.</p> <ul style="list-style-type: none"> Check that the ID of the slave module that has been targeted for parameter access is consistent between the actual system and program. Make sure that the ID of the input slave module and I/O combined slave module is set to the address + 200H. When creating a new system, adding or removing a slave module, or changing the address of the slave module, perform the automatic address detection function. After executing the automatic address detection function, check that the number of slave modules and the address are consistent with those of the actual system.
012FH	Parameter value error	<p>A write signal of a parameter that cannot be set has been detected in the slave module. Check the alarm ID information in the specified device of the CPU module to locate the error ID and perform the following action.</p> <ul style="list-style-type: none"> Check that the value that is set to the parameter of the slave module is within the settable range.
0130H	Parameter access error	<p>The parameter access signal transferred from the bridge module is corrupt. Check that none of the following errors have occurred. (☞ Page 79 How to recover from parameter access error)</p> <ul style="list-style-type: none"> Slave module hardware error Slave module status error Same ID used error <p>When none of the above have occurred, check that the module is not affected by noise.</p>

Error code	Error description	Cause and action
0131H	Slave module status error	The slave module has provided notification of the error status. • Check the status details of the target module and remove the error.
0190H	Same ID used error	IDs (addresses) are duplicated in the connected slave modules. Check the alarm ID information in the specified device of the CPU module to locate the error ID and perform the following action. • Check the ID (address) setting of the slave module and set a unique address in the slave module.
0191H	No ID setting error	There is a slave module whose ID is not set (set to factory default). • Set an address of the slave module. • Check that 255 is not set to the address of the slave module.
01F4H	Backup data error	The data backed up in the SD memory card of the CPU module is broken. Check that the module is not affected by noise and perform the following actions. • Reset the CPU module and set it to RUN status again. • Restore with a normal backup data. • Set the write protect switch of the SD memory card to off (writable). • If the error occurs again, the bridge module may be in failure. Please consult your local Mitsubishi representative.

APPENDICES

Appendix 1 Details of I/O Signals

This section describes the details of the I/O signals of the bridge module for the CPU module.

Input signals

DP/DN short error

DP/DN short error (RXn1) turns on when a short-circuit occurs in the transmission cables (DP, DN) or the maximum supply current is exceeded.

■Turning off DP/DN short error

To turn off DP/DN short error (RXn1), after removing the short-circuit in the transmission cables (DP, DN) or adjusting the current to be within the specification range, reset the bridge module or turn on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A).

Until then, this signal remains on.

Transmission cable voltage drop error

Transmission cable voltage drop error (RXn3) turns on when the 24VDC external power supply voltage drops.

■Turning off Transmission cable voltage drop error

To turn off Transmission cable voltage drop error (RXn3), after removing the drop of the 24VDC external power supply voltage, reset the bridge module or turn on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A).

Until then, this signal remains on.

DP/DN disconnection error

DP/DN disconnection error (RXn4) turns on when disconnection occurs in the transmission cables (DP, DN) or the slave module is disconnected.

■Turning off DP/DN disconnection error

To turn off DP/DN disconnection error (RXn4), after dealing with the disconnection in the transmission cables (DP, DN) or that of the slave module, reset the bridge module or turn on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A).

Until then, this signal remains on.

Latest error ID simple information

When DP/DN disconnection error (RXn4) or Slave module alarm signal (RX(n+1)0) turns on, following latest error ID is stored in Latest error ID simple information (RXn6 to RXnF).

- 0000H to 00FFH: ID of the output slave module
- 0200H to 02FFH: ID of the input slave module or I/O combined slave module

When DP/DN short error (RXn1), Transmission cable voltage drop error (RXn3), or bridge module hardware failure is occurred, latest error ID is not stored in Latest error ID simple information (RXn6 to RXnF).

Slave module alarm signal

Slave module alarm signal (RX(n+1)0) turns on when a status error (including I/O disconnection and short-circuit) occurs in the slave module or an error occurs in the address setting of the slave module.

■Turning off Slave module alarm signal

To turn off Slave module alarm signal (RX(n+1)0), after removing the status error (including I/O disconnection and short-circuit) in the slave module or re-setting the address of the slave module, reset the bridge module or turn on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A).

Until then, this signal remains on.

Parameter access completion flag

Parameter access completion flag (RX(n+1)1) turns on when parameter access is complete.

Parameter access error

Parameter access error (RX(n+1)2) turns on when an error occurs during parameter access.

■Turning off Parameter access error

To turn off Parameter access error (RX(n+1)2), after removing the error, reset the bridge module or turn on and off Error reset request flag (RY(n+D)A).

Until then, this signal remains on.

Automatic address detection flag

Automatic address detection flag (RX(n+1)4) remains on after the start of automatic address detection operation until the end of the operation.

Error status flag

The value for Error status flag (RX(n+1)A, RX(n+3)A, RX(n+5)A, RX(n+7)A, RX(n+D)A) is determined by the number of occupied stations of CC-Link that corresponds to the CC-Link operation mode. (☞ Page 47 Error Reset)

Error status flag (RX(n+1)A, RX(n+3)A, RX(n+5)A, RX(n+7)A, RX(n+D)A) turns on in the following situations.

- DP/DN short error
- Transmission cable voltage drop error
- DP/DN disconnection error
- Bridge module hardware error

■Turning off Error status flag

To turn off Error status flag (RX(n+1)A, RX(n+3)A, RX(n+5)A, RX(n+7)A, RX(n+D)A), after removing the error, reset the bridge module or turn on and off Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A).

Until then, this signal and Slave module alarm signal (RX(n+1)0) remains on.

Remote READY

The value for Remote READY (RX(n+1)B, RX(n+3)B, RX(n+5)B, RX(n+7)B, RX(n+D)B) is determined by the number of occupied stations of CC-Link that corresponds to the CC-Link operation mode. (☞ Page 47 Error Reset)

Remote READY (RX(n+1)B, RX(n+3)B, RX(n+5)B, RX(n+7)B, RX(n+D)B) turns on when the bridge module is powered on and test mode is finished.

■Turning off Remote READY

Remote READY (RX(n+1)B, RX(n+3)B, RX(n+5)B, RX(n+7)B, RX(n+D)B) turns off in the following situations.

- Bridge module hardware error
- AnyWireASLINK transmission error

Output signals

Automatic address detection command


Automatic address detection command (RYn1) is turned on and off to perform the automatic address detection function.

Parameter access request command for the slave module

Parameter access request command for the slave module (RY(n+1)0) is turned on to read or write parameters to the slave module from the bridge module.

When this signal is turned on, Parameter access completion flag (RX(n+1)1) turns off.

Error reset request flag

The value for Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A) is determined by the number of occupied stations of CC-Link that corresponds to the CC-Link operation mode. ( Page 47 Error Reset)

Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A) is turned on and off to turn off the following input signals or clear each type of error information.

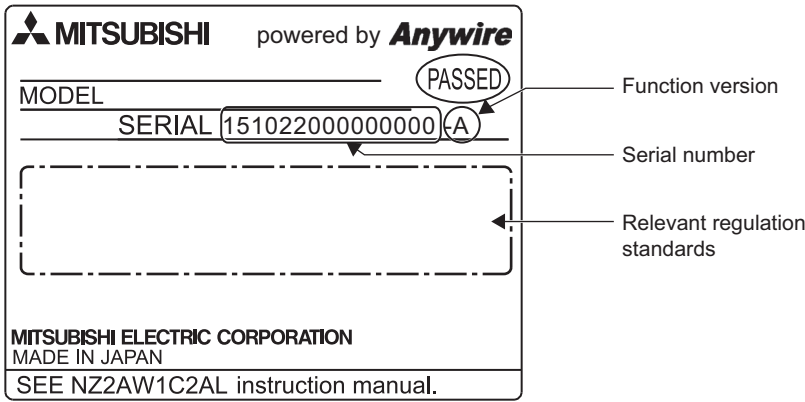
- DP/DN short error (RXn1)
- Transmission cable voltage drop error (RXn3)
- DP/DN disconnection error (RXn4)
- Latest error ID simple information (RXn6 to RXnF)
- Slave module alarm signal (RX(n+1)0)
- Parameter access error (RX(n+1)2)
- Latest error code storage area (RWrn+16)
- Latest error ID storage area (RWrn+17)
- Number of the error IDs (RWrn+19)
- Number of the alarm IDs (RWrn+20)

Point

Resetting the bridge module also turns off the input signals and clears each error status.

Appendix 2 Checking Serial Number and Function Version

The serial number and function version of the bridge module can be checked on the rated plate.
The rated plate is located on the right side of the bridge module.



Appendix 3 EMC and Low Voltage Directives

Compliance with the EMC Directive, which is one of the EU directives, has been mandatory for the products sold within EU member states since 1996 as well as compliance with the Low Voltage Directive since 1997.

To prove the compliance, manufactures must issue an EC Declaration of Conformity and the products must bear a CE marking.

Sales representative in EU member states

The authorized representative in EU member states will be:

Company name: Mitsubishi Electric Europe BV

Address: Gothaer Strasse 8, 40880 Ratingen, Germany

Measures to comply with the EMC Directive

The EMC Directive sets two requirements for compliance: emission (conducted and radiated electromagnetic energy emitted by a product) and immunity (the ability of a product to not be influenced by externally generated electromagnetic energy).

This section summarizes the precautions for machinery constructed with this product to comply with the EMC Directive.

These precautions are based on the requirements of the EMC Directive and the harmonized standards. However, they do not guarantee that the entire machinery constructed according to the descriptions complies with the EMC Directive.

The manufacturer of the machinery must determine the testing method for compliance and declare conformity to the EMC Directive.

Installation in a control panel

This open-type device is intended to be placed in an industrial control panel or similar type of enclosure.*1

This ensures safety as well as effective shielding of programmable controller-emitted electromagnetic noise.

*1 Modules on the remote station in each network must be also installed inside the control panel. However, the waterproof type remote station can be installed outside the control panel.

■Control panel

- Use a conductive control panel.
- Mask off the area used for grounding when securing the top or bottom plate to the control panel using bolts.
- To ensure electrical contact between the inner plate and the control panel, mask off the bolt installation areas of an inner plate so that conductivity can be ensured in the largest possible area.
- Ground the control panel with a thick ground cable so that low impedance can be ensured even at high frequencies.
- Keep the diameter of the holes on the control panel to 10cm or less. If the diameter is larger than 10cm, electromagnetic wave may be emitted. In addition, because electromagnetic wave leaks through a clearance between the control panel and its door, reduce the clearance as much as possible. Use of EMI gaskets (sealing the clearance) can suppress undesired radiated emissions. The tests by Mitsubishi were conducted using a control panel having the damping characteristics of 37dB (maximum) and 30dB (average) (measured at 3m distance, 30 to 300MHz).

■Installing ground wiring

Run the cable of this product as instructed below

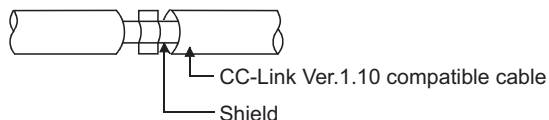
- Provide a ground point to the control panel near the product. Ground the LG terminal of the product to the ground point with the thickest and shortest ground cable possible (30cm or shorter).

Cables

■CC-Link dedicated cable

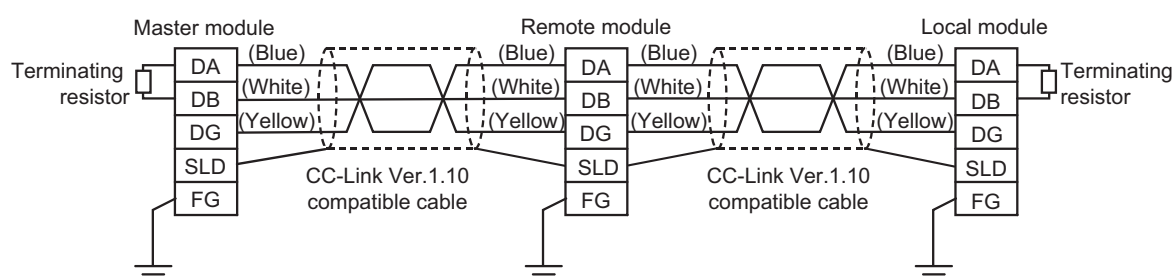
Use the AD75CK cable clamp (Mitsubishi) to shield the cable connected to the CC-Link module located close to the exit of the control panel or each CC-Link station, and ground the shielded part of the CC-Link dedicated cable to the control panel within 30cm from the module or station.

Ver.1.10-compatible CC-Link dedicated cable is a shielded cable. Strip a part of the jacket of the cable as shown below and ground the exposed shield to the ground as much as possible.

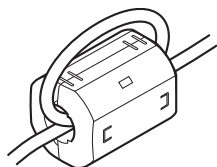


Use the specified Ver.1.10-compatible CC-Link dedicated cable.

Use the FG terminals of the CC-Link module and CC-Link stations as shown below to connect to the FG line inside the control panel.

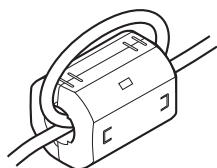


For the CC-Link cable, install a ferrite core with attenuation characteristic equivalent to that of the ZCAT3035-1330 from TDK Corporation at a point as close to the CC-Link side terminal block of this product as possible. Twist the cable around the ferrite core by one as shown below.



■AnyWireASLINK cable

For the AnyWireASLINK cable, install a ferrite core with attenuation characteristic equivalent to that of the ZCAT3035-1330 from TDK Corporation at a point as close to the AnyWireASLINK side terminal block of this product as possible. Twist the cable around the ferrite core by one as shown below.



■Power cable for the 24VDC power supply terminal

Use a CE-marked DC power supply. The DC power supply must be placed together with the module in the same control panel, and the power cable connected to the power terminal of this product should be 30cm or shorter.

Power supply module

Use a CE-marked external power supply and ground the FG terminal. (External power supply used for the tests conducted by Mitsubishi: PS5R-SF24 made by IDEC Corporation)

Installation environment

Use the module under the installation environment of Zone B^{*1}.

^{*1} Zone defines categories according to industrial environment, specified in the EMC and Low Voltage Directives, EN61131-2.

Zone C: Factory mains (isolated from public mains by dedicated transformer)

Zone B: Dedicated power distribution, secondary surge protection (rated voltage: 300V or less)

Zone A: Local power distribution, protected from dedicated power distribution by AC/DC converter and insulation transformer (rated voltage: 120V or less)








Requirements for Low Voltage Directive compliance

The Low Voltage Directive does not apply to this product as it operates on 24VDC power supply. For making the programmable controller system used comply with the Low Voltage Directive, refer to the section about EMC and Low Voltage Directives in the user's manual for the CPU module used.

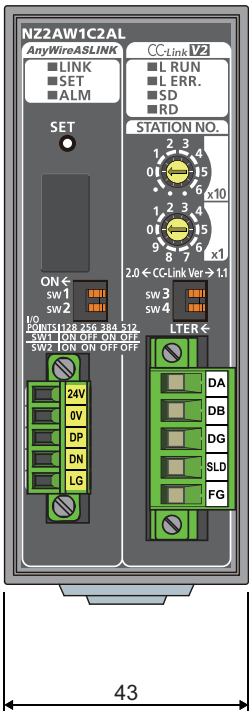
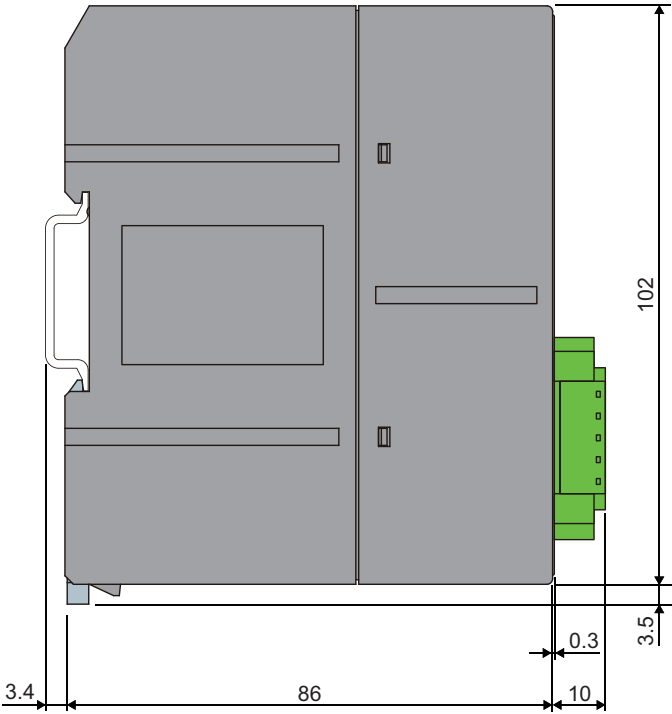
Appendix 4 Functions Added and Modified with Version Upgrade

The bridge module has some new functions added and specifications modified as a result of a version upgrade.

Available functions and specifications vary depending on the function version and the serial number.

Added function	Function version	Serial number
<ul style="list-style-type: none"> • CC-Link operation mode Ver.2.00 ( Page 36 Operation mode setting switch) • Parameter reading/writing function ( Page 58 Parameter reading/writing function) • Parameter access error detection function ( Page 77 Parameter access error detection function) • Same ID number used detection function ( Page 80 Same ID number used detection function) • Module with no ID number setting detection function ( Page 81 Module with no ID number setting detection function) 	A	A serial number where the sixth digit is "2" or later
iQ Sensor Solution functions ( Page 83 iQ Sensor Solution functions)	A	Refer to the following.  iQ Sensor Solution Reference Manual

Appendix 5 External Dimensions



(Unit: mm)

INDEX

A

Address	12
Address writer	12,48
AnyWireASLINK	12
ASLINKAMP	12
ASLINKER	12
Automatic address detection	50
Automatic address detection command (RYn1)	96
Automatic address detection flag (RX(n+1)4)	95

B

Buffer memory	12
---------------	----

C

CC-Link	12
CC-Link dedicated cable	12,25
CC-Link side terminal block	24
CC-Link terminating resistor	25

D

DN	26
Double check system	84
DP	26
DP/DN disconnection error (RXn4)	94
DP/DN short error (RXn1)	94

E

EEPROM	50
Error reset request flag (RY(n+1)A, RY(n+3)A, RY(n+5)A, RY(n+7)A, RY(n+D)A)	96
Error status flag (RX(n+1)A, RX(n+3)A, RX(n+5)A, RX(n+7)A, RX(n+D)A)	95

I

ID	12
----	----

L

Latest error ID simple information (RXn6 to RXnF)	94
LG	26

M

Master module	12
Multidrop connection	28

N

Number of transmission points setting switch	37
--	----

O

Operation mode setting switch	36
-------------------------------	----

P

Parameter access completion flag (RX(n+1)1)	95
Parameter access error (RX(n+1)2)	95
Parameter access request command for the slave module (RY(n+1)0)	96
Program example	56

R

Remote I/O signals	38
Remote READY (RX(n+1)B, RX(n+3)B, RX(n+5)B, RX(n+7)B, RX(n+D)B)	95
Remote register	41
RWr	12,44
RWw	12,46
RX	12,38
RY	12,38

S

Slave module	12
Slave module alarm signal (RX(n+1)0)	95
Station number setting switch	36

T

T-branch connection	28
Terminating unit	12,35
Terms	12
Transmission cable voltage drop error (RXn3)	94
Transmission cycle time	12
Transmission delay time	85
Transmission speed auto-tracking function	57
Tree branch connection	28
Troubleshooting	87

MEMO

REVISIONS

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

Print date	*Manual number	Revision
January 2014	SH(NA)-081179ENG-A	First edition
May 2014	SH(NA)-081179ENG-B	Revision due to compliance with UL/cUL
December 2014	SH(NA)-081179ENG-C	Error correction
March 2015	SH(NA)-081179ENG-D	Revision due to the addition of the functions ■Added or modified parts RELEVANT MANUALS, TERMS, Section 2.3, 6.1, 6.3, 7.1, 8.2, Appendix 1, 4

Japanese manual version SH-081178-F

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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
 1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 2. Failure caused by unapproved modifications, etc., to the product by the user.
 3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
 7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

- (1) Mitsubishi shall accept onerous product repairs for one year after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

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MODEL: NZ2AW1C2AL-U-E

MODEL CODE: 13JZ88

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