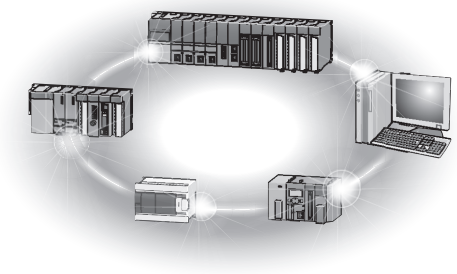
MITSUBISHI ELECTRIC

Mitsubishi Programmable Controller

CC-Link IE Field Network—AnyWireASLINK Bridge Module User's Manual

-NZ2AW1GFAL



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 NZ2AW1GFAL 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	NZ2AW1GFAL	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	NZ2AW1GFAL	Other programmable controller products (e.g. MELSEC-Q series)
Applicable EMC standard	EN61131-2	EN61131-2

• Application of the UL/cUL standards

Item	NZ2AW1GFAL	Other programmable controller products (e.g. MELSEC-Q series)
Applicable UL standard/cUL standard	UL508 CSA22.2	UL508 CSA22.2

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.

[Wiring Precautions]

⚠CAUTION

- Use 1000BASE-T-compliant Ethernet cables for Ethernet connection. For the maximum station-to-station distance and the overall cable distance, follow the specifications in this manual. Under discussion

[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 module.
  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 connect/disconnect the terminal block more than 50 times (in accordance with IEC 61131-2).
  Exceeding the limit 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 89 EMC and Low Voltage Directives

INTRODUCTION

Thank you for purchasing the CC-Link IE Field Network-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 provided in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems.

Point

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/local module used

RELEVANT MANUALS

CC-Link IE Field Network

Manual name (manual number, model code)	Description
MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup) (SH-081256ENG, 13JX09)	Specifications, procedures before operation, system configuration, wiring, and communication examples of Ethernet, CC-Link IE Controller Network, and CC-Link IE Field Network
MELSEC iQ-R CC-Link IE Field Network User's Manual (Application) (SH-081259ENG, 13JX18)	Functions, parameter settings, programming, troubleshooting, I/O signals, and buffer memory of CC-Link IE Field Network
MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual (SH-080917ENG, 13JZ47)	Overview of the CC-Link IE Field Network, and specifications, procedures before operation, system configuration, installation, wiring, settings, functions, programming, and troubleshooting of the MELSEC-Q series master/local module
MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual (SH-080972ENG, 13JZ54)	Overview of the CC-Link IE Field Network, and specifications, procedures before operation, system configuration, installation, wiring, settings, functions, programming, and troubleshooting of the MELSEC-L series master/local module

AnyWireASLINK

Manual name (manual number, model code)	Description
MELSEC-Q/L AnyWireASLINK Master Module User's Manual (SH-081094ENG, 13JZ70)	Specifications, procedures before operation, system configuration, installation, wiring, settings, functions, programming, and troubleshooting of the AnyWireASLINK master module

Others

Manual name (manual number, model code)	Description
iQ Sensor Solution Reference Manual (SH-081133ENG, 13JV28)	Operating methods of iQ Sensor Solution, such as programming and monitoring

MEMO

CONTENTS

TERMS

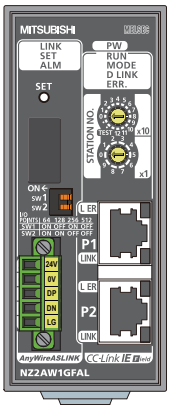
Unless otherwise specified, this manual uses the following terms.

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 NZ2AW1GFAL CC-Link IE Field Network-AnyWireASLINK bridge module
Buffer memory	A memory in a master/local module, where data (such as setting values and monitoring values) exchanged with a CPU module are stored
CC-Link IE Field Network	A high-speed and large-capacity open field network that is based on Ethernet (1000BASE-T)
Dedicated instruction	An instruction that simplifies programming for using functions of intelligent function modules
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 station	A station that controls the entire network. This station can perform cyclic transmission and transient transmission with all stations. Only one master station can be used in a network.
Master/local module	The abbreviation for the CC-Link IE Field Network master/local module
Power cable (24V, 0V)	A cable that connects a 24VDC external power supply to a bridge module
Remote input (RX)	Bit data input from a slave station to the master station (For some areas in a local station, data are input in the opposite direction.)
Remote output (RY)	Bit data output from the master station to a slave station (For some areas in a local station, data are output in the opposite direction.)
Remote register (RWr)	Word data input from a slave station to the master station (For some areas in a local station, data are input in the opposite direction.)
Remote register (RWw)	Word data output from the master station to a slave station (For some areas in a local station, data are output in the opposite direction.)
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.

NZ2AW1GFAL



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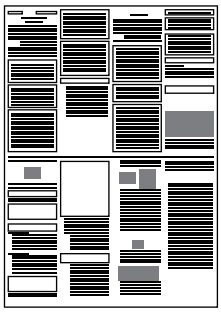
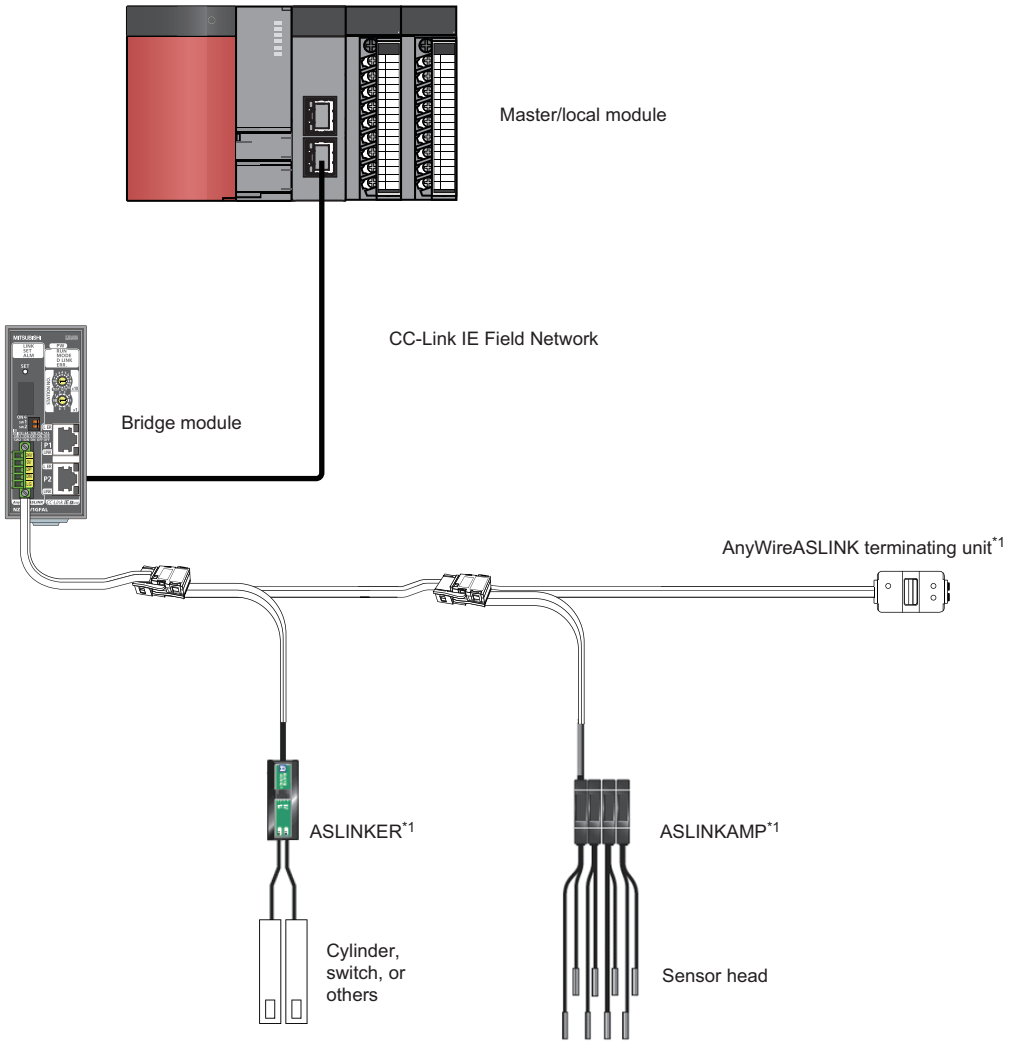


Before Using the Product

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 IE Field Network.
The AnyWireASLINK system provides a high-speed and highly-reliable sensor system.
For the CC-Link IE Field Network, refer to the following.
User's manual for the master/local module used



*1 Manufactured by Anywire Corporation

1.1 Features

Seamless connection between two systems

CC-Link IE Field Network and AnyWireASLINK can be seamlessly connected.

Improvement of wiring flexibility

The AnyWireASLINK allows flexible branches and connections if the overall cable distance is within 200m.
The network can be configured by using existing cable with less restrictive use of cables.
The wiring cost can be reduced by using 2-wire cable.

Space saving

The system needs much less space because of small-type slave modules of the AnyWireASLINK.
With ASLINKAMP, the sensor head of any manufacturer can be used.

Improvement of RAS function

The system start-up time can be reduced by checking whether a slave module is connected or by detecting an ID setting error of each slave module.
The place where any problem, fault, or failure occurring can be early detected from the upper system by notifying the disconnection of the sensor or actuator connected.
The failure such as disconnection can be predicted and temporary stop of production lines can be prevented by notifying the input level reduction of the sensor.
The product life can be checked in advance by monitoring the power-on time of the slave module, light reduction of the sensor, or on/off counts of the actuator.

iQ Sensor Solution functions

iQ Sensor Solution provides automatic detection of the bridge module connected via CC-Link IE Field Network. 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℃					
Storage ambient temperature	-25 to 75℃					
Operating ambient humidity	5 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/s²	—	
		Under continuous vibration	5 to 8.4Hz	—	1.75mm	—
			8.4 to 150Hz	4.9m/s²	—	
Shock resistance	Compliant with JIS B 3502 and IEC 61131-2 (147m/s², 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 IE Field Network side	Station type	Intelligent device station	
	Maximum number of link points	Remote input (RX)	2K points (2048 points, 256 bytes)*1
		Remote output (RY)	2K points (2048 points, 256 bytes)*1
		Remote register (RWw)	1K points (1024 words, 2K bytes)*1
		Remote register (RWr)	1K points (1024 words, 2K bytes)*1
	Communication speed	1Gbps	
	Connection cable	Ethernet cable (category 5e or higher, STP double shielded)	
	Overall cable distance (total cable length)	Line topology: 12000m (when connecting 121 stations) Star topology: Undefined (depends on the system configuration)	
	Station-to-station distance	100m max.	
	Network topology	Line topology, star topology	
	Communication method	Token passing	
AnyWireASLINK side	Transmission clock	27.0kHz	
	Maximum transmission distance (total length)	200m*2	
	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-listed general-purpose 2-wire cable (VCTF, VCT 1.25mm^2, 0.75mm^2, rated temperature 70℃ or higher) • UL-listed general-purpose wire (1.25mm^2, 0.75mm^2, rated temperature 70℃ or higher) • Dedicated flat cable (1.25mm^2, 0.75mm^2, rated temperature 90℃)	
	24VDC power cable	• UL-listed general-purpose 2-wire cable (VCTF, VCT 0.75mm^2 to 2.0mm^2, rated temperature 70℃ or higher) • UL-listed general-purpose wire (0.75mm^2 to 2.0mm^2, rated temperature 70℃ or higher) • Dedicated flat cable (1.25mm^2, 0.75mm^2, rated temperature 90℃)	
	Transmission cable supply current*3	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: 0.3A	
	External dimensions	102mm(H)×43mm(W)×96mm(D)	
	Weight	0.2kg	

*1 For the number of points used in the bridge module, refer to the following.
☞ Page 34 MEMORY MAP

*2 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.

*3 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

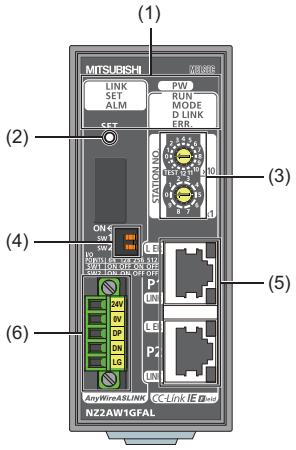
Applicable master/local modules

Master/local 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

Dedicated instructions

In the bridge module, dedicated instructions accessing the bridge module from a master/local module cannot be used.

2.4 Part Names



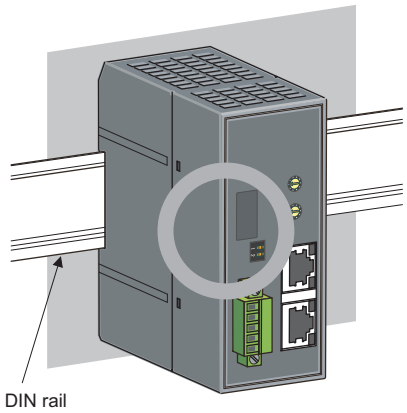
No.	Name	Description	
(1)	LED indicator (CC-Link IE Field Network side)	The module status is indicated by the LEDs.	
		LED name	Description
		RUN LED (green)	Indicates the operating status of the bridge module. On: Normal operation Off: A hardware failure or a watchdog timer error
		MODE LED (green)	Indicates the module mode. On: Online mode Flashing: Unit test mode Off: Unit test mode end
		D LINK LED (green)	Indicates the status of the data link. On: Data link (cyclic transmission being performed) Flashing: Data link (cyclic transmission stopped) Off: Data link not in operation (disconnected)
		ERR. LED (red)	Indicates the error status of the CC-Link IE Field Network of the bridge module. On: Any of the following errors has occurred in the module. • Modules with same station number exist on CC-Link IE Field Network. • A network parameter on CC-Link IE Field Network is corrupted or inconsistent has occurred. Off: Normal operation
	LED indicator (AnyWireASLINK side)	LINK LED (green)	Indicates whether data link can be performed in the bridge module. On: During initializing the module or 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 51 Automatic address detection operation)	
(3)	CC-Link IE Field Network station number setting switch	Set the station number of the bridge module. (☞ Page 33 Station number setting switch)	
(4)	Number of transmission points setting switch	Set the number of transmission points of the AnyWireASLINK. (☞ Page 33 AnyWireASLINK Side)	
(5)	CC-Link IE Field Network side RJ45 connector	Connector for CC-Link IE Field Network cable (☞ Page 23 CC-Link IE Field Network Side Connector)	
		LED name	Description
		L ER LED (red)	Indicates the frame loss status of the target port. On: Frame loss Off: No frame loss
		LINK LED (green)	Indicates the link status. On: Link-up Off: Link-down
(6)	AnyWireASLINK side terminal block	A transmission cable terminal block of the AnyWireASLINK (☞ Page 23 AnyWireASLINK Side Terminal Block)	

3 MOUNTING MODULE

Mount the module on a DIN rail before use.

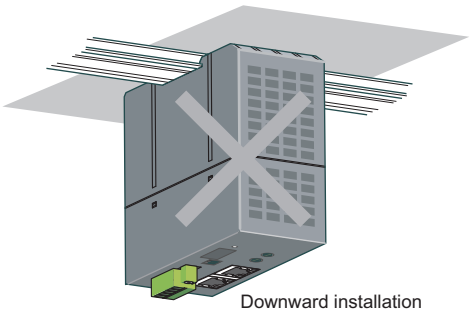
Direction of mounting a module

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

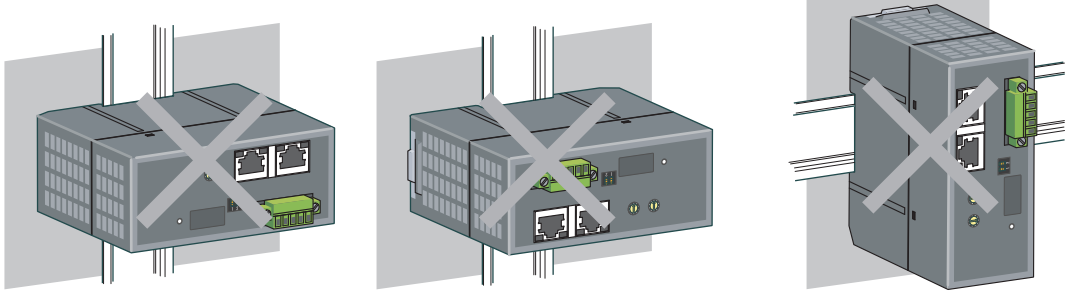


Vertical installation (basic)

Do not place the module in the directions shown below.

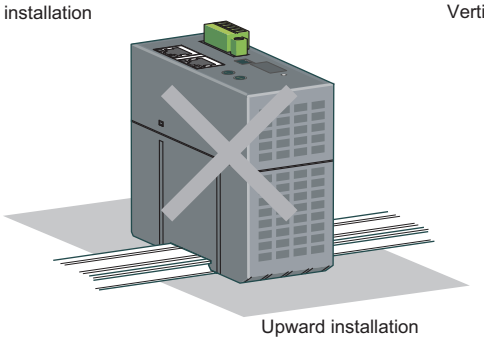


Downward installation



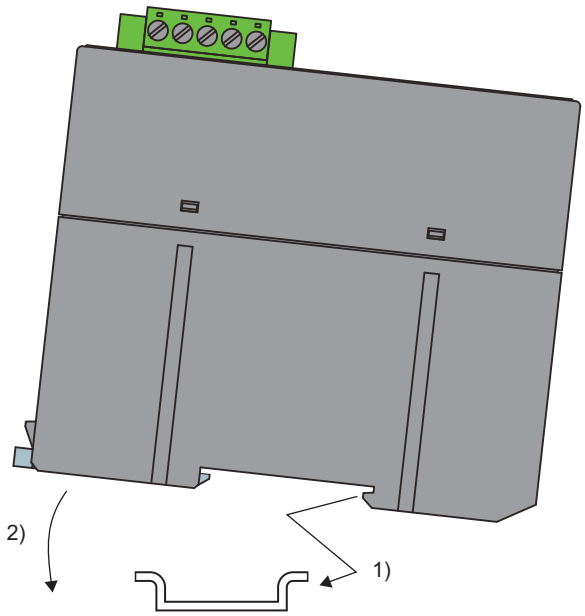
Horizontal installation

Vertical installation (upside down)



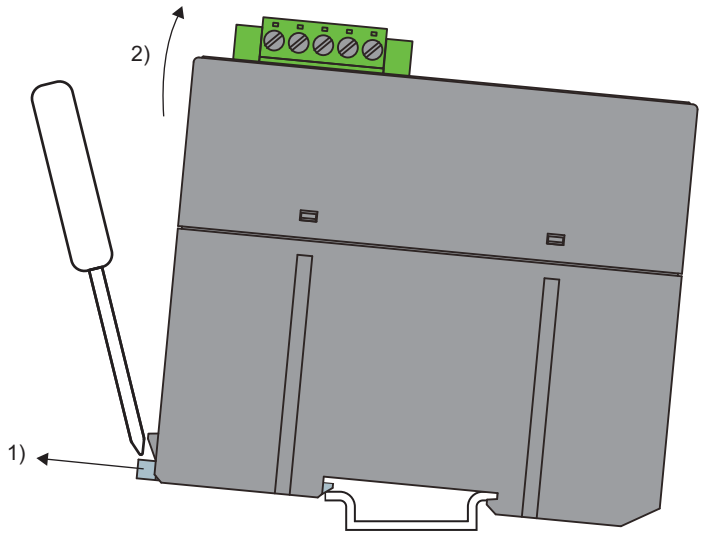
Upward installation

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.

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 IE Field Network Side Connector

For the connection of CC-Link IE Field Network side connector, refer to the following.

User's manual for the master/local module used

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			
		0.75mm^2			
	Dedicated flat cable	1.25mm^2			90℃
		0.75mm^2			
Power 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		
	Dedicated flat cable	1.25mm^2	Stranded wire		90℃
		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	

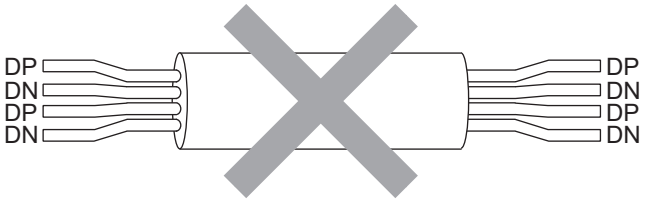
*1 When connecting two cables to one terminal, connect the two cables together to the TWIN bar terminal.

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

Wiring precautions

Precautions of wiring in the AnyWireASLINK system are as follows.

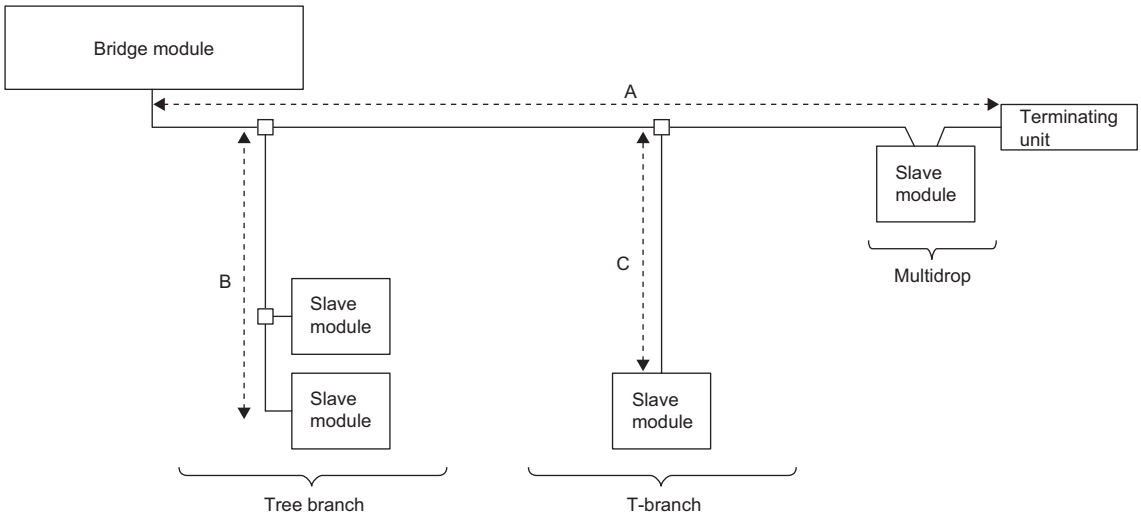
- In the AnyWireASLINK system, signals and power are supplied to a slave module with two types of transmission cables; DP and DN. Therefore, it is recommended to use a stranded wire of 1.25mm^2 or larger for the main cable.
- Wires such as general-purpose wires, cabtyre cables, and flat cables can be 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) = (Ihin × m) + (Iho × n) + (Izdin × p) + (Izdo × q) ≤ The maximum value of transmission cable supply current	Ihin: Current consumption of the non-isolated input module Iho: Current consumption of the non-isolated output module Izdin: Current consumption of the isolated input module Izdo: 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 27 Description of the condition (1)
(2)	Vm(V) = ΔV(V) ≥ 20V	Vm: Supply voltage for the bridge module ΔV: Cable-to-cable voltage drop For details, refer to the following. ☞ Page 29 Description of the conditions (2) and (3)
(3)	Vm(V) - ΔV(V) ≥ The lowest limit of the allowable voltage range for connected load	

■Description of the condition (1)

• Constants related to the non-isolated slave module (Ihin, Iho)

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).

Ihin(A)

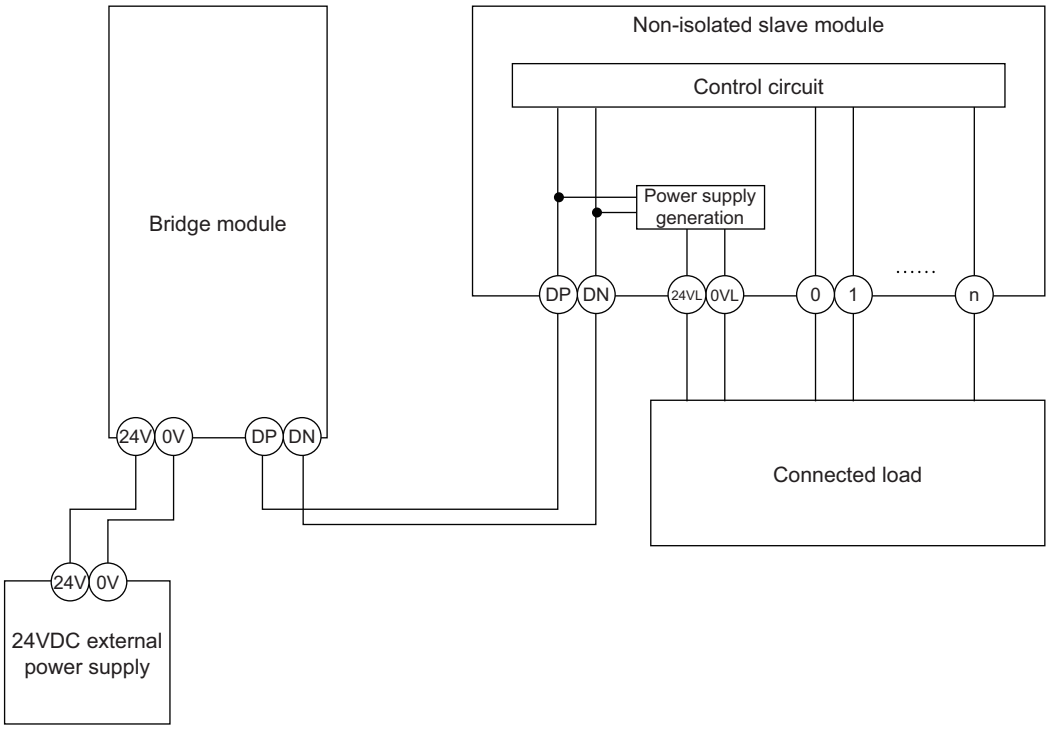
= Current consumption of the non-isolated input module

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

Iho(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.

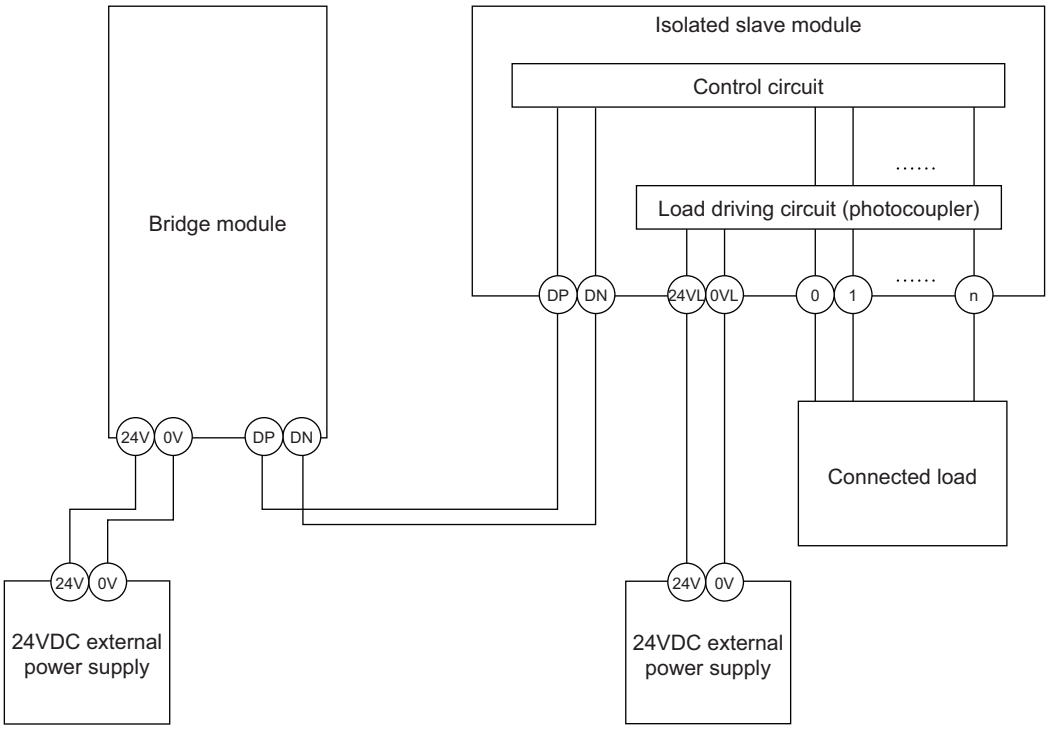
• For the current consumption of a non-isolated slave module, refer to the manual for the slave module used.

• Constants related to the isolated slave module (Izdin, Izdo)

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.

Izdin(A) = Internal current consumption of the isolated input module

Izdo(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.

$I(A) = (Ihin \times m) + (Iho \times n) + (Izdin \times p) + (Izdo \times q)$

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)

• Vm: 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%)

• ΔV(V): Cable-to-cable voltage drop

ΔV(V) = Transmission cable supply current I(A) × Cable resistance R(Ω)

Cable resistance R(Ω) = Cable length (m) × Conductor resistance (Ω/m) × 2

· Wire diameter 1.25mm^2 → Conductor resistance 0.015Ω/m

· Wire diameter 0.75mm^2 → Conductor resistance 0.025Ω/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 ± 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)

(Ihin(A) × m) = I(A) ≤ The maximum transmission cable supply current

(0.015 + (0.013 × 2)) × 24 = 0.984A ≤ 1A → Satisfied

Condition (2)

Vm(V) - ΔV(V) ≥ 20V

24 - (0.984 × 100 × 0.015 × 2) = 24 - 2.95 = 21.05V ≥ 20V → Satisfied

Condition (3)

Vm(V) - ΔV(V) ≥The lowest limit of the allowable voltage range for connected load

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

21.05V < 21.6V → 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 21 MOUNTING MODULE)
2. Check that the station-to-station distance of CC-Link IE Field Network is within the specified range. (☞ Page 17 Performance Specifications)
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 26 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.

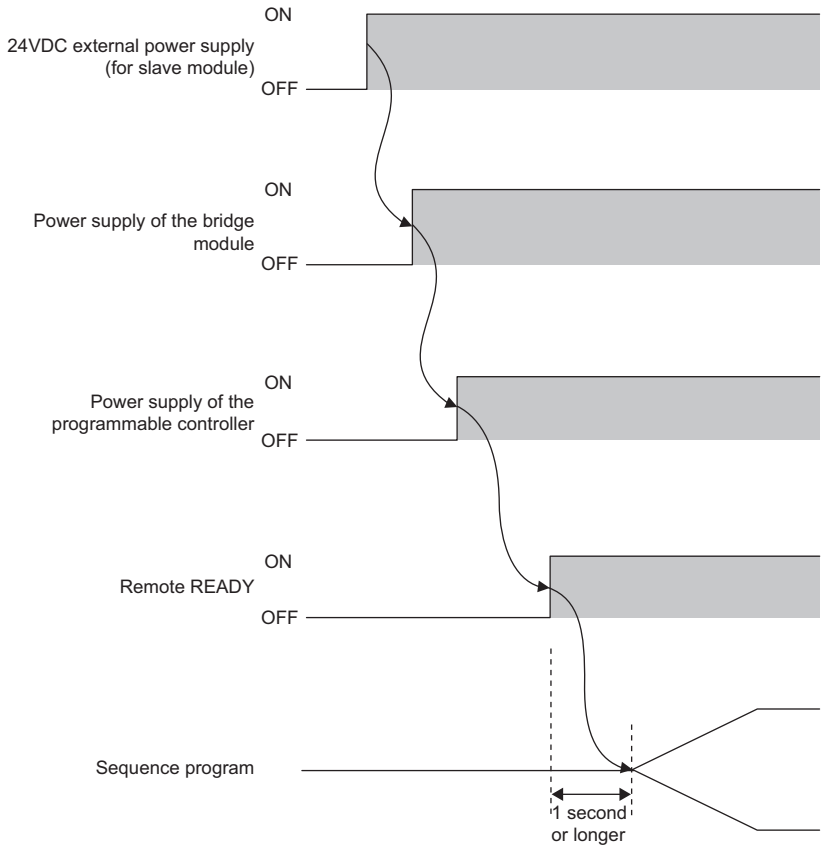
4.6 Powering on the System

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



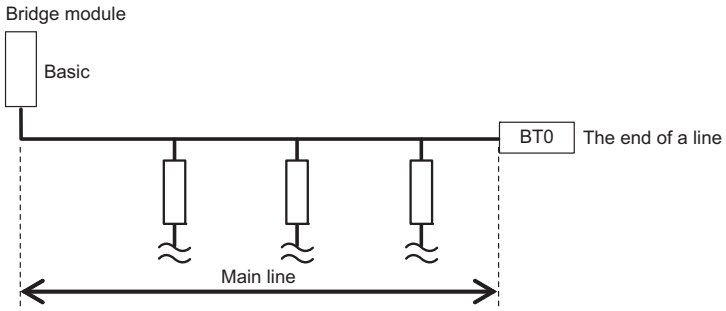
Point

- 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 (RXn0) 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.

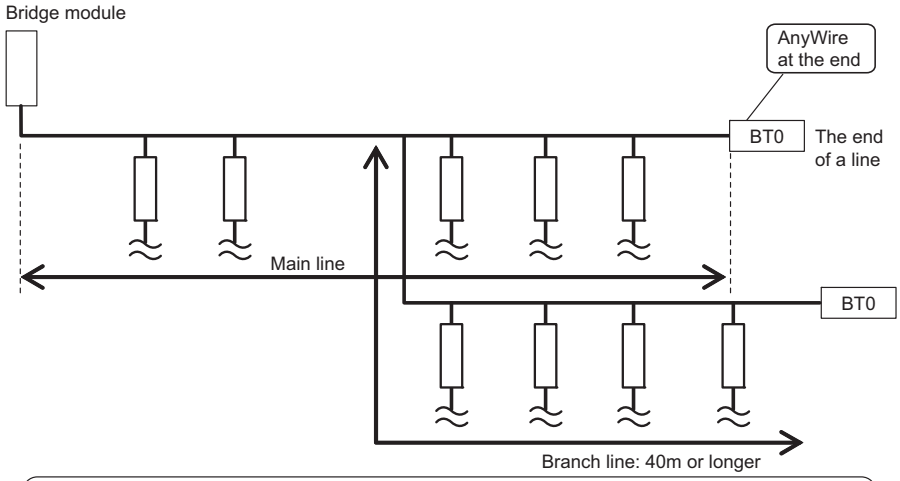
■ Terminating resistor connection



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

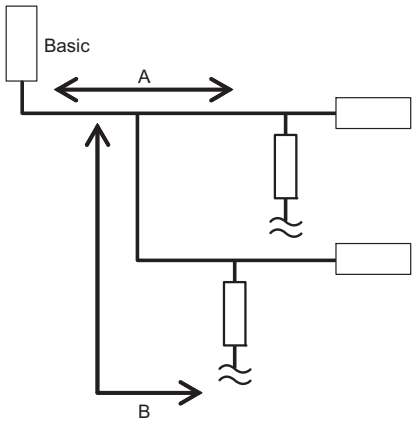
■ Branch of transmission lines

[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 IE Field Network Side

Station number setting switch

■Setting method

Set the station number of CC-Link IE Field Network 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 33 AnyWireASLINK Side)

■Setting range

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

Set the station number from 1 to 120. The ERR. LED turns on when the switch is set to the value other than 1 to 120.

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
⋮	⋮	⋮
120	12	0

5.2 AnyWireASLINK Side

Number of transmission points setting switch

Set the number of transmission points of the AnyWireASLINK.

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

SW1	SW2	Number of transmission points of AnyWireASLINK	
		Input	Output
Off	Off	256	256
On	Off	128	128
Off	On	64	64
On	On	32	32

Point

- The transmission cycle time of AnyWireASLINK can be shortened by setting small number of transmission points of AnyWireASLINK.

6 MEMORY MAP

This section describes the memory map of the bridge module.

6.1 Lists of Remote I/O Signals

The following table lists remote I/O signals of the bridge module.

Signal direction: Bridge module → Master/local module		Signal direction: Master/local module → Bridge module	
Remote input (RX)	**Name**	**Remote output (RY)**	**Name**
RXn0	Remote READY	RYn0	Error reset request flag
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 to RXnF	Use prohibited		
RX(n+1)0	Slave module alarm signal	RY(n+1)0	Parameter access request command for the slave module*1
RX(n+1)1	Parameter access completion flag*1	RY(n+1)1	Parameter batch read command for the slave module*1
RX(n+1)2	Parameter access error	RY(n+1)2	Parameter batch write command for the slave module*1
RX(n+1)3	Use prohibited	RY(n+1)3 to RY(n+3)F	Use prohibited
RX(n+1)4	Automatic address detection flag		
RX(n+1)5 to RX(n+3)F	Use prohibited		
RX(n+4)0 to RX(n+4)F	AnyWireASLINK input signal 0 to 15	RY(n+4)0 to RY(n+4)F	AnyWireASLINK output signal 0 to 15
RX(n+5)0 to RX(n+5)F	AnyWireASLINK input signal 16 to 31	RY(n+5)0 to RY(n+5)F	AnyWireASLINK output signal 16 to 31
⋮	⋮	⋮	⋮
RX(n+18)0 to RX(n+18)F	AnyWireASLINK input signal 224 to 239	RY(n+18)0 to RY(n+18)F	AnyWireASLINK output signal 224 to 239
RX(n+19)0 to RX(n+19)F	AnyWireASLINK input signal 240 to 255	RY(n+19)0 to RY(n+19)F	AnyWireASLINK output signal 240 to 255
RX(n+20)0 to RX(n+127)F	Use prohibited	RY(n+20)0 to RY(n+127)F	Use prohibited

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

*1 This signal can be used in the bridge module with a serial number (first six digits) of "160722" or later.

6.2 Details of Remote I/O Signals

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

Input signals

Remote READY

Remote READY (RXn0) turns on when the bridge module is powered on and test mode is finished.

■Turning off Remote READY

Remote READY (RXn0) turns off when bridge module hardware failure occurs.

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 (RYn0).
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 (RYn0).
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 (RYn0).
Until then, this signal remains on.

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 (RYn0).

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 due to noise or other causes 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 (RYn0).

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.

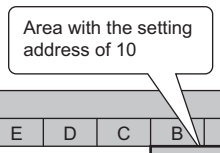
AnyWireASLINK input signal

The on/off status (on: 1, off: 0) of the input signal of the slave module is automatically stored in AnyWireASLINK input signal (RX(n+4)0 to RX(n+19)F).

Ex.

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

The two bits (A and B) of RX(n+4) are occupied for the input signal because the setting address is 10.



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

Input area (256 points)

Output signals

Error reset request flag

Turn on and off Error reset request flag (RYn0) to turn off the following input signals or clear each error information.

- DP/DN short error (RXn1)
- Transmission cable voltage drop error (RXn3)
- DP/DN disconnection error (RXn4)
- Slave module alarm signal (RX(n+1)0)
- Parameter access error (RX(n+1)2)
- Latest error code storage area (RWrn+0)
- Latest error ID storage area (RWrn+1)
- Number of the error IDs (RWrn+131)
- Error ID information storage area (RWrn+132 to RWrn+259)
- Number of the alarm IDs (RWrn+260)
- Alarm ID information storage area (RWrn+261 to RWrn+388)
- Error ID information area input 0 to 255, output 0 to 255 (RWrn+837 to RWrn+900)
- Alarm ID information area input 0 to 255, output 0 to 255 (RWrn+901 to RWrn+964)

Point

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

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.

Parameter batch read command for the slave module

Parameter batch read command for the slave module (RY(n+1)1) is turned on to read the parameters of all the slave modules detected by the bridge module.

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

Parameter batch write command for the slave module

Parameter batch write command for the slave module (RY(n+1)2) is turned on to write parameters to all the slave modules detected by the bridge module.

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

AnyWireASLINK output signal

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 AnyWireASLINK output signal (RY(n+4)0 to RY(n+19)F).

Ex.

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

The two bits (E and F) of RY(n+5) are occupied for the output signal because the setting address is 30.

Area with the setting address of 30

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

Output area (256 points)

6.3 Lists of Remote Register Areas

Input or output of AnyWireASLINK uses remote register areas of CC-Link IE Field Network.
The following table lists remote register areas of the bridge module.

CC-Link IE Field Network side remote register input		AnyWireASLINK side input signal	CC-Link IE Field Network side remote register output		AnyWireASLINK side output signal
Decimal	Hexadecimal		Decimal	Hexadecimal	
RWrn+0	RWrn+0H	Latest error code storage area	RWwn+0	RWwn+0H	Parameter access setting
RWrn+1	RWrn+1H	Latest error ID storage area	RWwn+1	RWwn+1H	Parameter access target module ID specification
RWrn+2	RWrn+2H	Number of the IDs of the connected modules	RWwn+2 to RWwn+1023	RWwn+2H to RWwn+3FFH	Use prohibited
RWrn+3 to RWrn+130	RWrn+3H to RWrn+82H	Connected module ID information storage area			
RWrn+131	RWrn+83H	Number of the error IDs			
RWrn+132 to RWrn+259	RWrn+84H to RWrn+103H	Error ID information storage area			
RWrn+260	RWrn+104H	Number of the alarm IDs			
RWrn+261 to RWrn+388	RWrn+105H to RWrn+184H	Alarm ID information storage area			
RWrn+389 to RWrn+391	RWrn+185H to RWrn+187H	Parameter area (1) module ID status details sensing level			
RWrn+392 to RWrn+394	RWrn+188H to RWrn+18AH	Parameter area (2) module ID status details sensing level			
⋮	⋮	⋮			
RWrn+767 to RWrn+769	RWrn+2FFH to RWrn+301H	Parameter area (127) module ID status details sensing level			
RWrn+770 to RWrn+772	RWrn+302H to RWrn+304H	Parameter area (128) module ID status details sensing level			
RWrn+773 to RWrn+804	RWrn+305H to RWrn+324H	Connected module ID information area output 0 to 255 (315H to 324H: use prohibited)			
RWrn+805 to RWrn+836	RWrn+325H to RWrn+344H	Connected module ID information area input 0 to 255 (335H to 344H: use prohibited)			
RWrn+837 to RWrn+868	RWrn+345H to RWrn+364H	Error ID information area output 0 to 255 (355H to 364H: use prohibited)			
RWrn+869 to RWrn+900	RWrn+365H to RWrn+384H	Error ID information area input 0 to 255 (375H to 384H: use prohibited)			
RWrn+901 to RWrn+932	RWrn+385H to RWrn+3A4H	Alarm ID information area output 0 to 255 (395H to 3A4H: use prohibited)			
RWrn+933 to RWrn+964	RWrn+3A5H to RWrn+3C4H	Alarm ID information area input 0 to 255 (3B5H to 3C4H: use prohibited)			
RWrn+965 to RWrn+1023	RWrn+3C5H to RWrn+3FFH	Use prohibited			

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

6.4 Details of Remote Register Areas

Latest error code storage area

Hardware errors detected in the bridge module and the latest error code of the AnyWireASLINK system are stored in Latest error code storage area (RWrn+0). For error codes stored, refer to the following.

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Latest error ID storage area

The error ID of the module targeted for the latest error code is stored in Latest error ID storage area (RWrn+1). The following table lists error codes stored.

Error code	Description	Remote input signal turned on when the error occurs
00CAH	DP/DN disconnection error	DP/DN disconnection error (RXn4)
012CH 012DH	Slave module hardware error	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	—

For the following error codes, the value 0FFFH is stored in Latest error ID storage area (RWrn+1).

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

Number of the IDs of the connected modules

When the automatic address detection function is executed, the number of IDs of the slave modules detected is stored in Number of the IDs of the connected modules (RWrn+2). (Up to 128)

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

Connected module ID information storage area

The ID information of all the slave modules connected to the master/local module is stored in Connected module ID information storage area in ascending order when the automatic address detection function is executed.

Any of the following is stored.

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

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

Number of the error IDs

Among the IDs of the slave modules connected, the number of IDs with a response error is stored in Number of the error IDs (RWrn+131) 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 (RYn0) is turned on after the error is cleared.

Error ID information storage area

The response error ID information is stored in Error ID information storage area (RWrn+132 to RWrn+259) in ascending order. (Up to 128)

Any of the following is stored.

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

The stored value is maintained until the bridge module is reset or Error reset request flag (RYn0) is turned on after the error is cleared.

Number of the alarm IDs

Among the IDs of the slave modules connected, the number of IDs on which an alarm is raised is stored in Number of the alarm IDs (RWrn+260) 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 (RYn0) is turned on after the error is cleared.

Alarm ID information storage area

The ID information of all the slave modules in which an alarm is raised is stored in Alarm ID information storage area (RWrn+261 to RWrn+388) in ascending order.

Any of the following is stored.

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

The stored value is maintained until the bridge module is reset or Error reset request flag (RYn0) is turned on after the error is cleared.

Parameter (module ID)

Parameter (module ID) (RWrn+389, RWrn+392, ···, RWrn+767, RWrn+770) indicates the ID of the slave module.

Any of the following is stored.

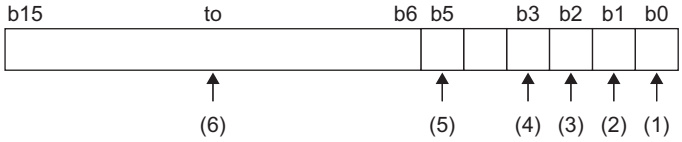
- 0000H to 00FFH: ID of the output slave module
- 0200H to 02FFH: ID of the input slave module or I/O combined slave module

Parameter (status details)

Parameter (status details) (RWrn+390, RWrn+393, ···, RWrn+768, RWrn+771) indicates the status details of the ASLINK parameters.

The status of the slave module varies from (1) to (6) as shown below, depending on the on/off status of each bit.

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



(1) Module status

On: Drop in the voltage of the slave module

Off: No error

(2) Sensing level status

On: Drop in the sensing level

Off: No error

(3) I/O disconnection (ASLINKER)

On: I/O disconnection

Off: No error

(4) I/O short-circuit (ASLINKER)

On: I/O short-circuit

Off: No error

5) I/O voltage drop (insulated slave module)

On: No ID set

Off: No error

(6) System reserved

Parameter (sensing level)

Parameter (sensing level) (RWrn+391, RWrn+394, ···, RWrn+769, RWrn+772) indicates the sensing level of the ASLINK parameters.

Connected module ID information area

The same information as the one stored in Connected module ID information storage area is stored in Connected module ID information area input 0 to 255, output 0 to 255 (RWrn+773 to RWrn+836).

When a module is connected, the connected module ID information (connected: 1, not connected: 0) of a slave module is stored in the remote register input signal bit corresponding to the ID.

Ex.

The value in RWrn+805 is 0020H when only the module with an ID of 5 is connected among the modules with an ID of 0 to 15.

Remote register input signal		Input data bit (output slave module)															
Decimal	Hexadecimal	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWrn+773	RWrn+305H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn+774	RWrn+306H	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RWrn+775	RWrn+307H	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RWrn+776	RWrn+308H	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RWrn+777	RWrn+309H	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
RWrn+778	RWrn+30AH	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
RWrn+779	RWrn+30BH	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96
RWrn+780	RWrn+30CH	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
RWrn+781	RWrn+30DH	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128
RWrn+782	RWrn+30EH	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144
RWrn+783	RWrn+30FH	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160
RWrn+784	RWrn+310H	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176
RWrn+785	RWrn+311H	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192
RWrn+786	RWrn+312H	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208
RWrn+787	RWrn+313H	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224
RWrn+788	RWrn+314H	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240
Remote register input signal		Input data bit (input slave module, I/O combined slave module)															
Decimal	Hexadecimal	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWrn+805	RWrn+325H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn+806	RWrn+326H	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RWrn+807	RWrn+327H	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RWrn+808	RWrn+328H	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RWrn+809	RWrn+329H	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
RWrn+810	RWrn+32AH	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
RWrn+811	RWrn+32BH	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96
RWrn+812	RWrn+32CH	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
RWrn+813	RWrn+32DH	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128
RWrn+814	RWrn+32EH	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144
RWrn+815	RWrn+32FH	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160
RWrn+816	RWrn+330H	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176
RWrn+817	RWrn+331H	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192
RWrn+818	RWrn+332H	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208
RWrn+819	RWrn+333H	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224
RWrn+820	RWrn+334H	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240

The input slave module with the ID of 5 is connected.

Error ID information area

The same information as the one stored in Error ID information storage area is stored in Error ID information area input 0 to 255, output 0 to 255 (RWrn+837 to RWrn+900).

When an error occurs, the error ID information (error: 1, no error: 0) of a slave module is stored in the remote register input signal bit corresponding to the ID.

Ex.

The value in RWrn+869 is 0020H when an error occurs in only the input slave module with an ID of 5 among the modules with an ID of 0 to 15.

Remote register input signal		Input data bit (output slave module)															
Decimal	Hexadecimal	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWrn+837	RWrn+345H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn+838	RWrn+346H	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RWrn+839	RWrn+347H	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RWrn+840	RWrn+348H	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RWrn+841	RWrn+349H	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
RWrn+842	RWrn+34AH	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
RWrn+843	RWrn+34BH	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96
RWrn+844	RWrn+34CH	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
RWrn+845	RWrn+34DH	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128
RWrn+846	RWrn+34EH	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144
RWrn+847	RWrn+34FH	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160
RWrn+848	RWrn+350H	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176
RWrn+849	RWrn+351H	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192
RWrn+850	RWrn+352H	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208
RWrn+851	RWrn+353H	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224
RWrn+852	RWrn+354H	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240
Remote register input signal		Input data bit (input slave module, I/O combined slave module)															
Decimal	Hexadecimal	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWrn+869	RWrn+365H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn+870	RWrn+366H	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RWrn+871	RWrn+367H	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RWrn+872	RWrn+368H	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RWrn+873	RWrn+369H	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
RWrn+874	RWrn+36AH	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
RWrn+875	RWrn+36BH	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96
RWrn+876	RWrn+36CH	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
RWrn+877	RWrn+36DH	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128
RWrn+878	RWrn+36EH	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144
RWrn+879	RWrn+36FH	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160
RWrn+880	RWrn+370H	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176
RWrn+881	RWrn+371H	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192
RWrn+882	RWrn+372H	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208
RWrn+883	RWrn+373H	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224
RWrn+884	RWrn+374H	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240

An error occurs in the input slave module with the ID of 5.

Alarm ID information area

The same information as the one stored in Alarm ID information storage area is stored in Alarm ID information area input 0 to 255, output 0 to 255 (RWrn+901 to RWrn+964).

When an alarm occurs, the alarm ID information (alarm: 1, no alarm: 0) of a slave module is stored in the remote register input signal bit corresponding to the ID.

Ex.

The value in RWrn+933 is 0020H when an alarm occurs in only the input slave module with an ID of 5 among the modules with an ID of 0 to 15.

Remote register input signal		Input data bit (output slave module)															
Decimal	Hexadecimal	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWrn+901	RWrn+385H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn+902	RWrn+386H	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RWrn+903	RWrn+387H	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RWrn+904	RWrn+388H	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RWrn+905	RWrn+389H	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
RWrn+906	RWrn+38AH	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
RWrn+907	RWrn+38BH	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96
RWrn+908	RWrn+38CH	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
RWrn+909	RWrn+38DH	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128
RWrn+910	RWrn+38EH	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144
RWrn+911	RWrn+38FH	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160
RWrn+912	RWrn+390H	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176
RWrn+913	RWrn+391H	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192
RWrn+914	RWrn+392H	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208
RWrn+915	RWrn+393H	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224
RWrn+916	RWrn+394H	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240
Remote register input signal		Input data bit (input slave module, I/O combined slave module)															
Decimal	Hexadecimal	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RWrn+933	RWrn+3A5H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn+934	RWrn+3A6H	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RWrn+935	RWrn+3A7H	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RWrn+936	RWrn+3A8H	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RWrn+937	RWrn+3A9H	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
RWrn+938	RWrn+3AAH	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
RWrn+939	RWrn+3ABH	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96
RWrn+940	RWrn+3ACH	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
RWrn+941	RWrn+3ADH	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128
RWrn+942	RWrn+3AEH	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144
RWrn+943	RWrn+3AFH	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160
RWrn+944	RWrn+3B0H	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176
RWrn+945	RWrn+3B1H	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192
RWrn+946	RWrn+3B2H	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208
RWrn+947	RWrn+3B3H	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224
RWrn+948	RWrn+3B4H	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240

An alarm occurs in the input slave module with the ID of 5.

Parameter access setting

Specify the method of parameter access with Parameter access setting (RWwn+0). When any value other than the following is stored, the parameter access method is set to reading.

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

Parameter access target module ID specification

Specify the ID targeted for parameter access with Parameter access target module ID specification (RWwn+1). 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

6.5 Buffer Memory

Data can be read/written from/to the buffer memory areas by the REMFR/REMTO instruction in a sequence program.
The following table lists buffer memory address of the bridge module.

Buffer memory address		Item	Description
Decimal	Hexadecimal		
0	0H	Remote RESET command (one word)	Requests the remote RESET to the bridge module. 1 = RESET command

Point

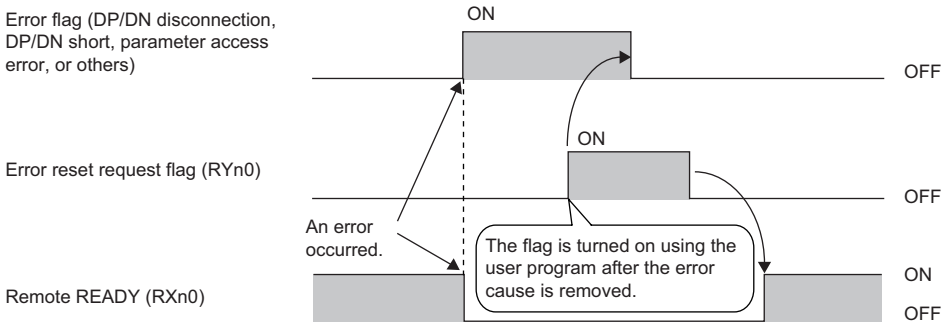
For details on buffer memory areas of the master/local module, refer to the user's manual for the master/local module used.

6.6 Error Reset

Remote READY (RXn0) turns on after power-on.

Error flags turn on when an error occurs. Error flags are reset by turning on Error reset request flag (RYn0), provided that the error cause has been eliminated.

Remote READY (RXn0) is reset (on to off) when an error occurs. Remote READY (RXn0) remains reset (off) unless Error reset request flag (RYn0) is turned off.



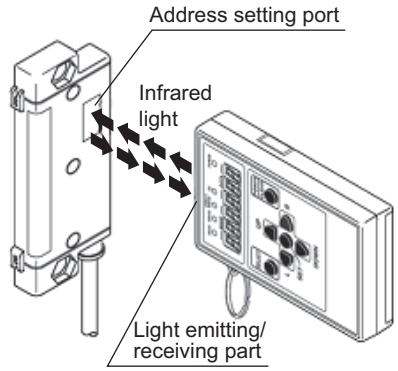
7 SETTINGS BEFORE OPERATION

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 input signal of the input slave module

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

Occupied area by the address 0

● Remote output signal of the output slave module

Remote output signal	Output data bit															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RY(n+4)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 33 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 is in progress

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 storage area (RWrn+1) and Slave module alarm signal (RX(n+1)0). Implement necessary actions when an error occurs. (☞ Page 79 Before Troubleshooting)
- Check the information (Number of the IDs of the connected modules (RWrn+2), Connected module ID information storage area (RWrn+3 to RWrn+130)) 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.

■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.

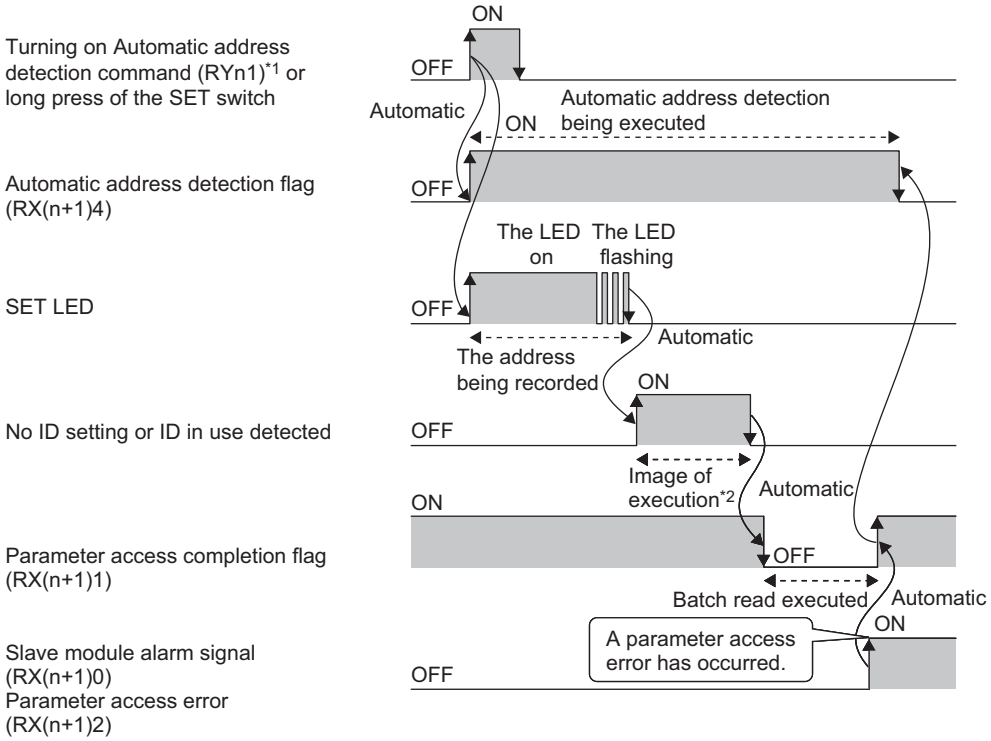
■When performing the automatic address detection, execute the operation after setting the CPU module to STOP status and pressing the SET switch of the bridge module.

- Data transfer of I/O signal stops when automatic address detection is performed. When performing the automatic address detection, execute the operation after setting the CPU module to STOP status and pressing the SET switch of the bridge module to ensure the safety of device operation.

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

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

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 approximately 0.5 seconds after the SET LED turns off.

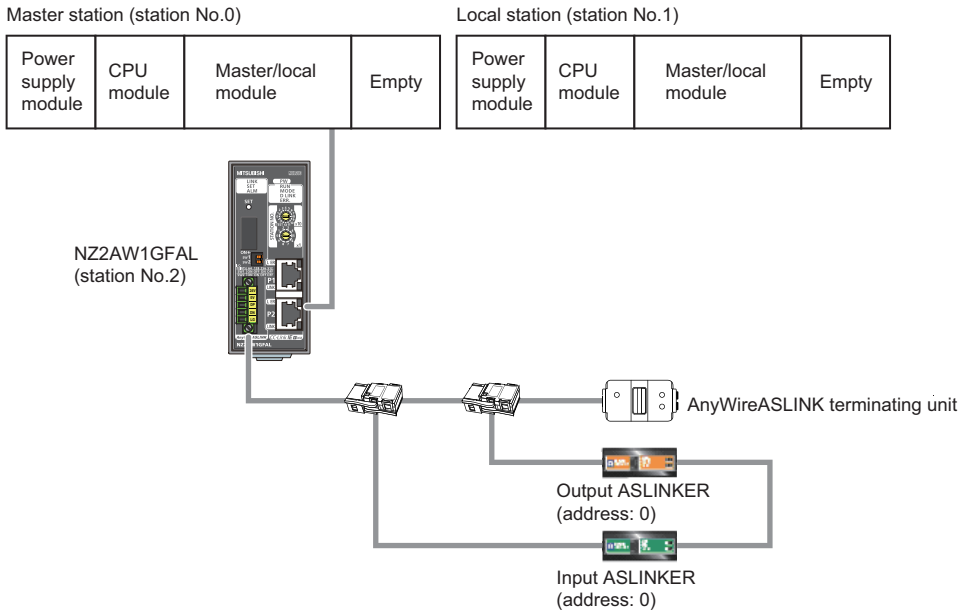
Point

Slave module alarm signal (RX(n+1)0) and Parameter access error (RX(n+1)2) are maintained until Error reset request flag (RYn0) 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

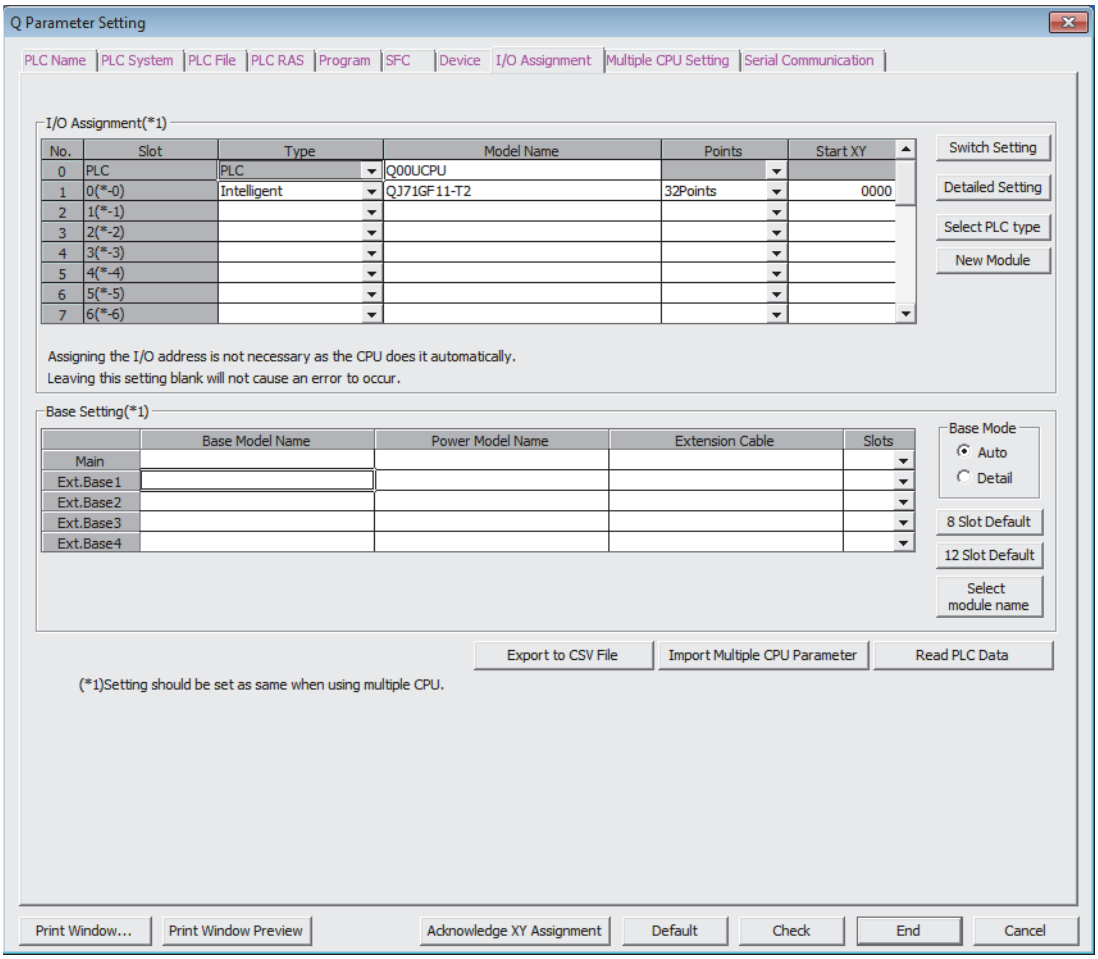
Input/output of AnyWireASLINK system can be set to any device in the network parameter setting of the master/local module.

Example of setting

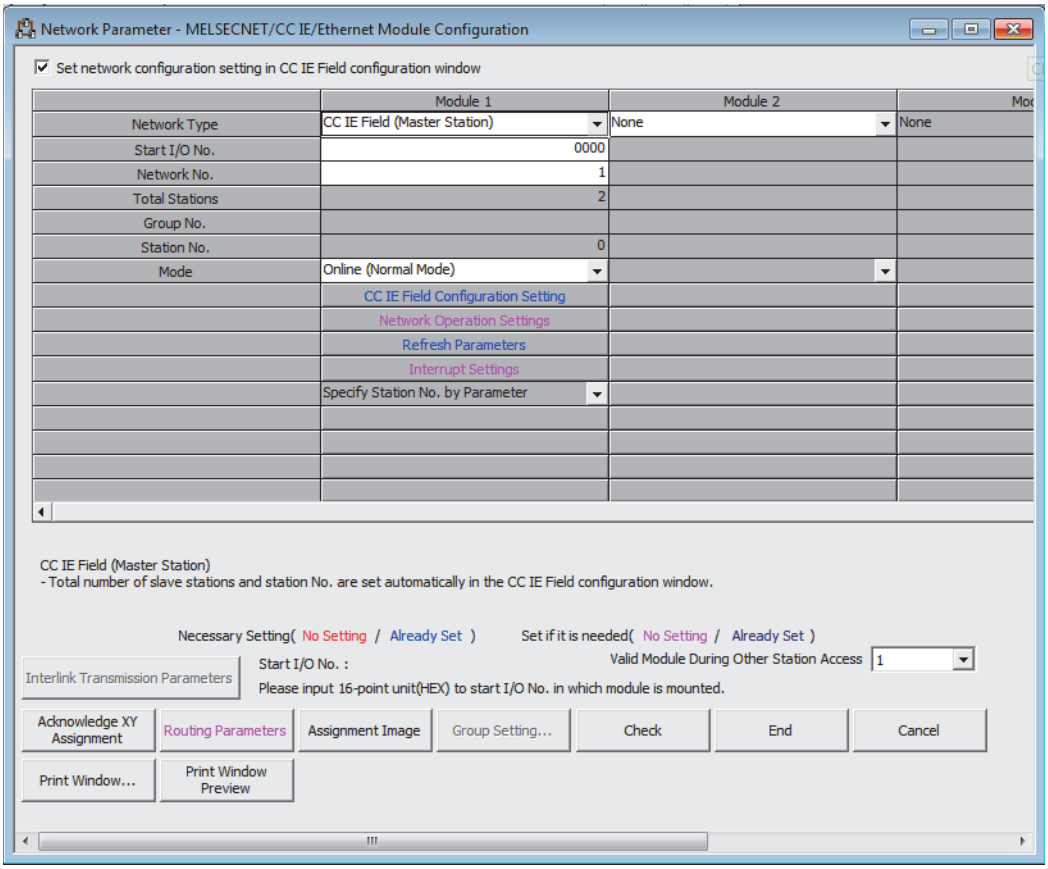
- Master module

Set the master module.

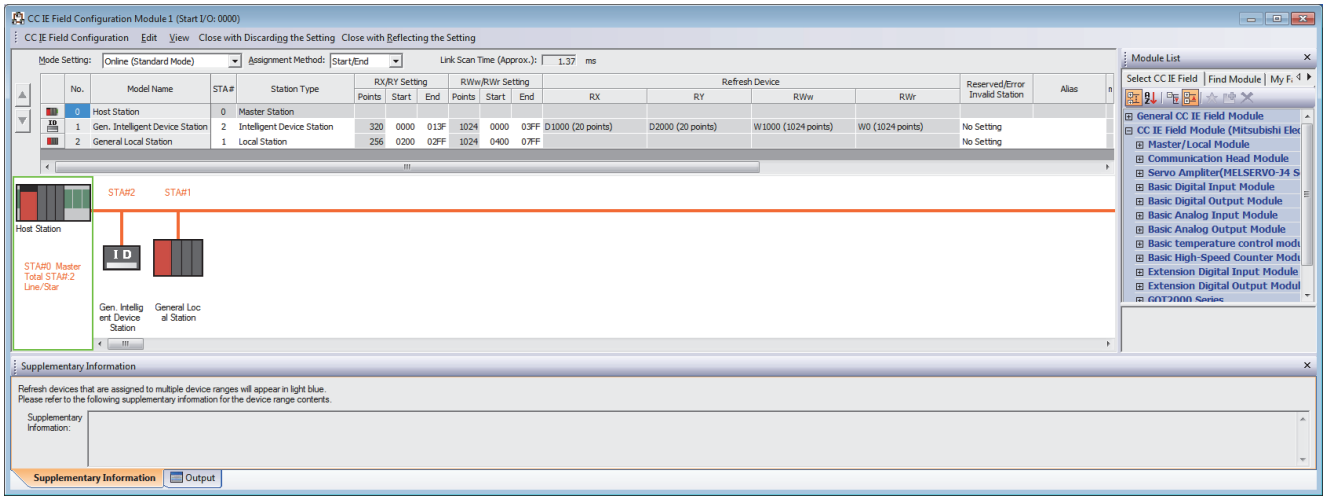
Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "I/O Assignment"



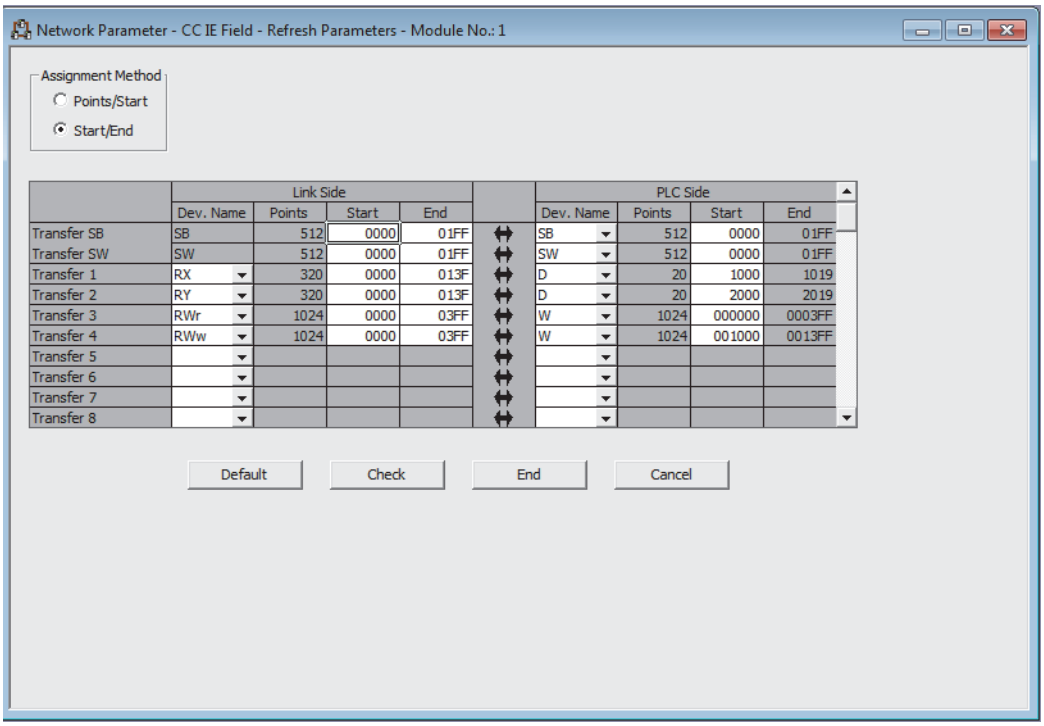
Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE/MELSECNET]



Click "CC IE Field Configuration Setting". Set the bridge module in the following window.



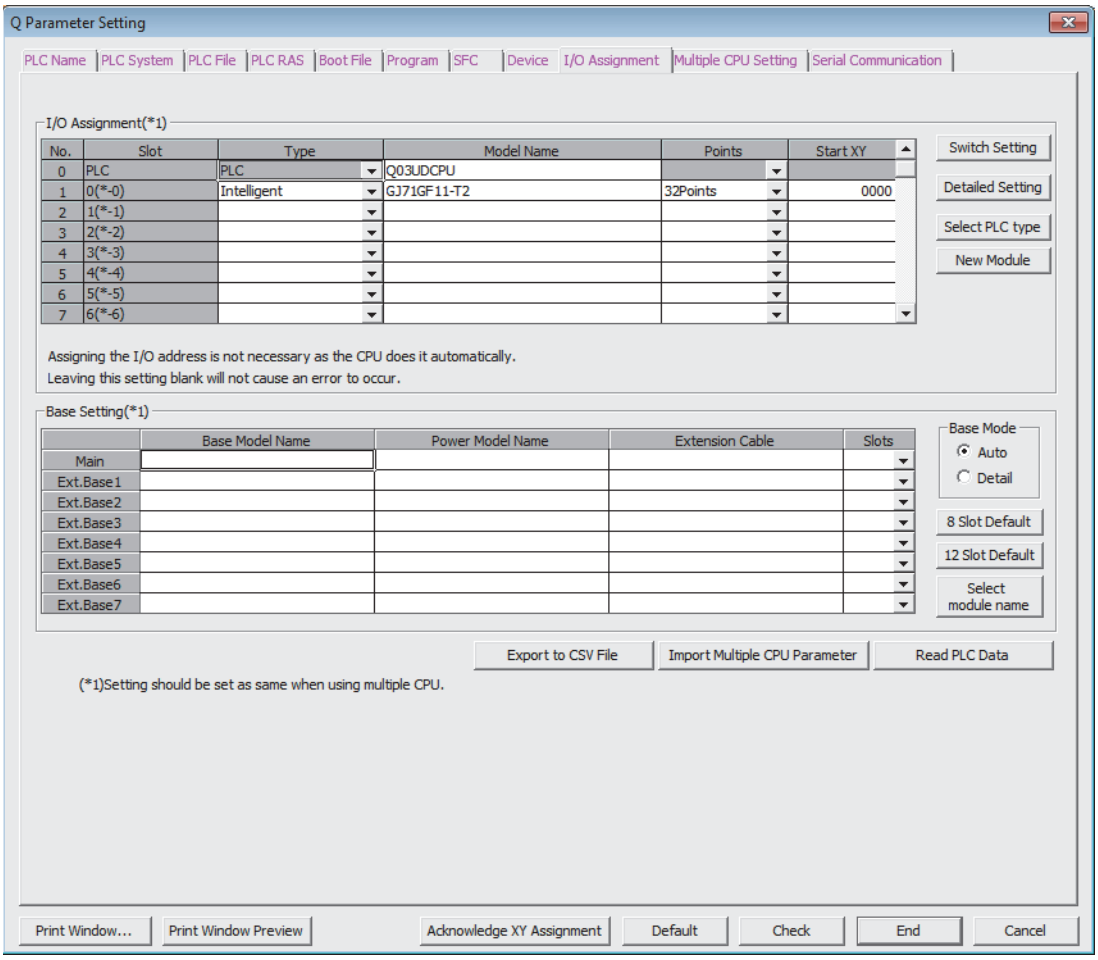
Click "Refresh Parameters" in the "Network Parameter" window. Set parameters in the following window.



• Local module

Set the local module.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "I/O Assignment"



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

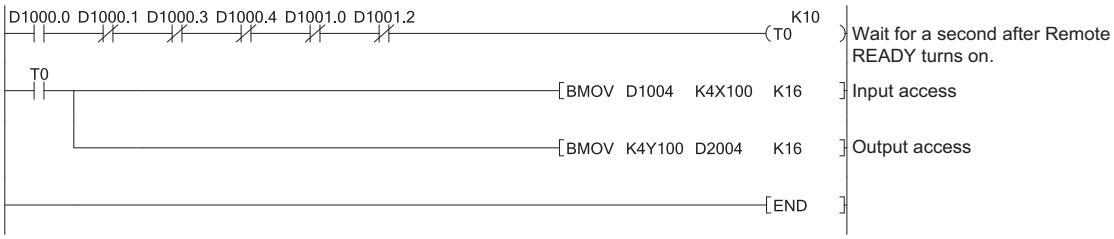
Signal	Name	Device corresponding to station No.1
RX	Remote READY	D1000.0
	DP/DN short error	D1000.1
	Use prohibited	D1000.2
	Transmission cable voltage drop error	D1000.3
	DP/DN disconnection error	D1000.4
	Use prohibited	D1000.5 to D1000.F
	Slave module alarm signal	D1001.0
	Parameter access completion flag	D1001.1
	Parameter access error	D1001.2
	Use prohibited	D1001.3
	Automatic address detection flag	D1001.4
	Use prohibited	D1001.5 to D1003.F
	AnyWireASLINK input signal 0 to 15	D1004.0 to D1004.F
	AnyWireASLINK input signal 16 to 31	D1005.0 to D1005.F
	⋮	⋮
	AnyWireASLINK input signal 224 to 239	D1012.0 to D1012.F
	AnyWireASLINK input signal 240 to 255	D1013.0 to D1013.F
RY	Error reset request flag	D2000.0
	Automatic address detection command	D2000.1
	Use prohibited	D2000.2 to D2000.F
	Parameter access request command for the slave module	D2001.0
	Parameter batch read command for the slave module	D2001.1
	Parameter batch write command for the slave module	D2001.2
	Use prohibited	D2001.3 to D2003.F
	AnyWireASLINK output signal 0 to 15	D2004.0 to D2004.F
	AnyWireASLINK output signal 16 to 31	D2005.0 to D2005.F
	⋮	⋮
	AnyWireASLINK output signal 224 to 239	D2012.0 to D2012.F
	AnyWireASLINK output signal 240 to 255	D2013.0 to D2013.F

Devices used by users

Device	Description
D1000.0	Remote READY
D1000.1	DP/DN short error
D1000.3	Transmission cable voltage drop error
D1000.4	DP/DN disconnection error
D1001.0	Slave module alarm signal
D1001.2	Parameter access error
X100 to X10F	Input data
Y100 to Y10F	Output data
T0	Timer contact after Remote READY
D1004	AnyWireASLINK input signal start address
D2004	AnyWireASLINK output signal start address

Program example

The following program stores input data of 16 points in X100 to X10F from the input slave module whose address is 0 and outputs the data of 16 points stored in Y100 to Y10F 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	Item	Description	Reference
CC-Link IE Field Network functions	CC-Link IE Field Network diagnostics	Checks whether a network error occurs or not using GX Works2 connected to the master station.	☞ Page 63 CC-Link IE Field Network diagnostics
	Unit test function	Checks the hardware status of the bridge module.	☞ Page 64 Unit test
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 65 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 65 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 51 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 68 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 69 Disconnected transmission cable location detection function
	Transmission cable voltage drop detection function	Monitors a voltage drop in the 24VDC external power supply. This function enables the bridge module to detect a failure in the 24VDC external power supply or a wiring error.	☞ Page 70 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 71 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 73 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 74 Module with no ID number setting detection function
	iQ Sensor Solution-compatible functions	Establish data communication with AnyWireASLINK-compatible slave modules via CC-Link and AnyWireASLINK.	☞ Page 75 iQ Sensor Solution functions

8.2 Function Details

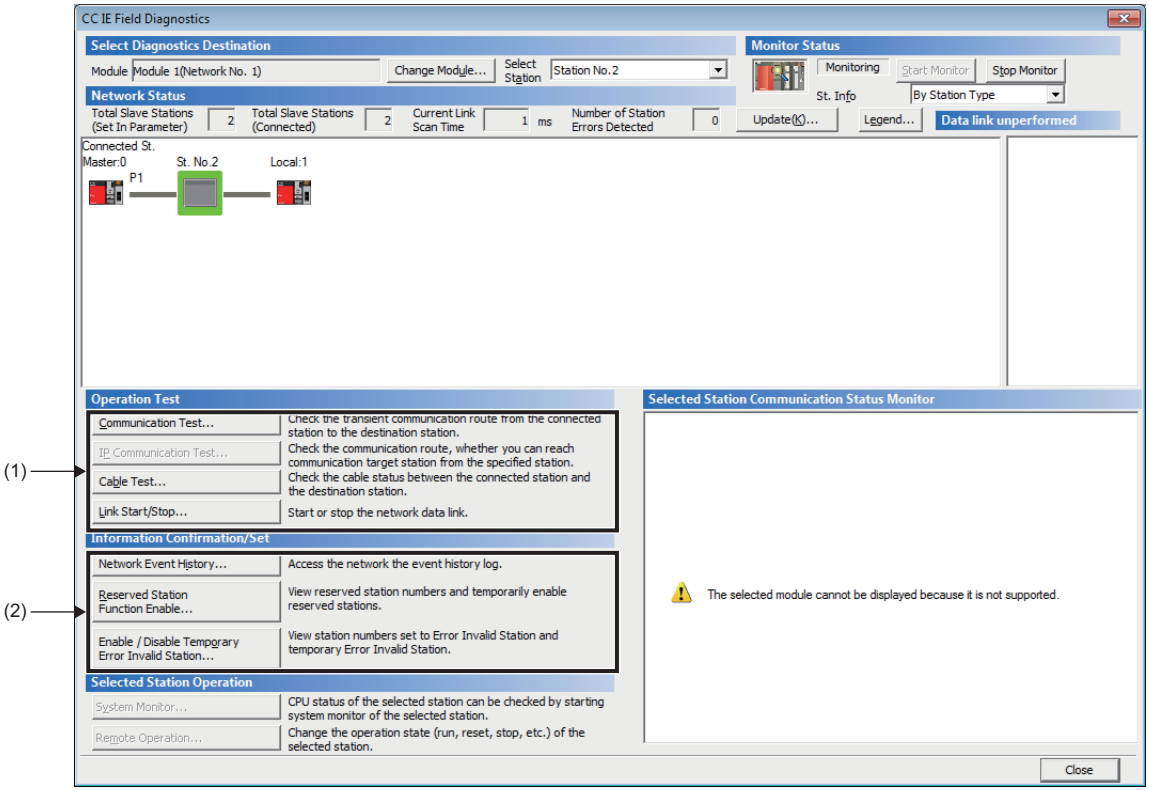
CC-Link IE Field Network diagnostics

This function checks whether a network error occurs or not using GX Works2 connected to the master station.

Starting diagnostics

1. Connect GX Works2 to the master station.
2. Start the CC-Link IE Field Network diagnostics from the menu in GX Works2.

[Diagnostics] ⇨ [CC IE Field Diagnostics]



The following table lists items that can be diagnosed for the bridge module.

Item		Description
(1)	Communication Test	Checks if transient transmission data can be properly routed from the connected station to the communication target station.
	Cable Test	Checks the connection status of cables between the test target station and the devices connected to the port of the station.
	Link Start/Stop	Starts or stops data link.
(2)	Network Event History	Displays the history of events occurred in the network.
	Reserved Station Function Enable	Enables/disables temporary cancellation of the reserved station setting. The station numbers set as a reserved station can also be checked in list form.
	Enable/Disable Ignore Station Errors	Sets/cancels the temporary error invalid station setting. The station numbers set as a (temporary) error invalid station can also be checked in list form.

Point

For details on each items, refer to the following.

User's manual for the master/local module used

Unit test

This test checks the hardware status of the bridge module.

Starting test

1. Connect the P1 and P2 of the bridge module with an Ethernet cable.
2. Set the station number setting switch as follows and power on the module to start the unit test.

Station number setting switch	
×10	×1
TEST	0

3. The LEDs indicate the test status as follows.

Test status		LED status (CC-Link IE Field Network side)			
		RUN	MODE	D LINK	ERR.
During testing		On	Flashing	Off	Off
After testing	Normal completion	Off	Off	On	Off
	Abnormal end	Off	Off	On	On

Point

If the test fails, check the following.

- Is any Ethernet cable disconnected?
- Are all the Ethernet cables properly connected to the connector?

If there is no error in Ethernet cables nor connection, the bridge module may be in failure.

Please consult your local Mitsubishi representative.

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 of the slave modules and AnyWireASLINK network 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 four methods of reading and writing parameter information from slave modules.

Parameter reading/writing method	Description
Automatic update	Reads the status of all slave modules and the sensor current value regularly. (Setting values are excluded.)
Parameter access	Reads or writes all the parameter values of a slave module by specifying "read or write" and the "target slave module".
Parameter access batch read	Reads all the parameter values of all slave modules to the specified device of the CPU module.
Parameter access batch write	Writes all the parameter values of all slave modules according to the setting of the specified device of the CPU module.

The following table lists readable/writable parameters.

Parameter name		Read/Write	Parameter reading/writing method				
			Automatic update	Parameter access		Parameter access batch read	Parameter access batch write
				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.

Point

Executing parameter access, parameter access batch read, or parameter access batch write does not lower the bit transmission speed.

Automatic update

No special operation is required for automatic update.

Parameter access

The procedures for executing parameter access are as follows.

■Reading parameters

1. Specify the access method.

Store 0000H: read in Parameter access setting (RWwn+0).

2. Specify the access target ID.

Store the access target ID in Parameter access target module ID specification (RWwn+1).

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+0).

2. Specify the access target ID.

Store the access target ID in Parameter access target module ID specification (RWwn+1).

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 batch read

The procedure for executing parameter access batch read is as follows.

1. Turn on Parameter batch read command for the slave module (RY(n+1)1).

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

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

Parameter access batch write

The procedure for executing parameter access batch write is as follows.

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

2. Turn on Parameter batch write command for the slave module (RY(n+1)2).

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

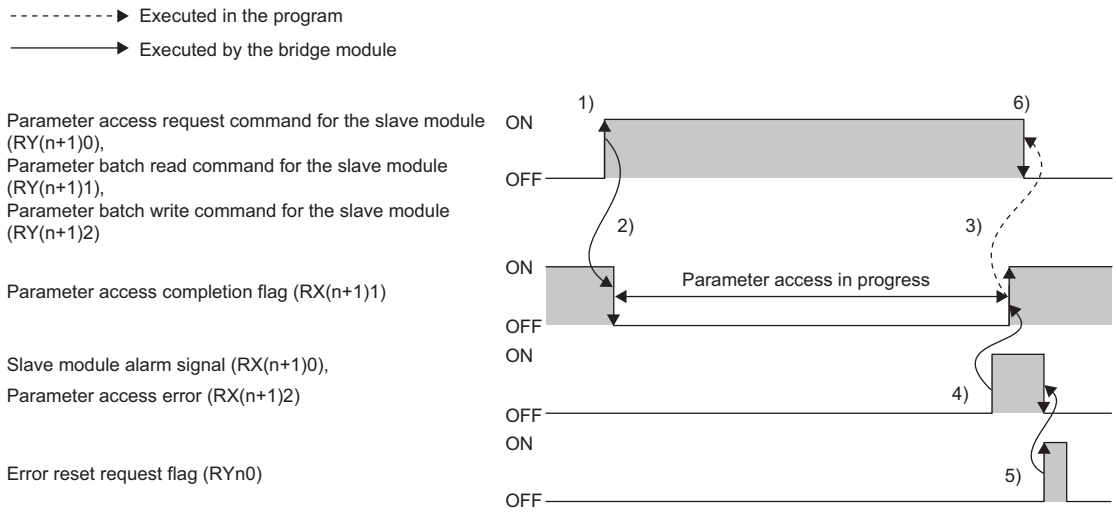
3. Read the parameters to check that the setting has taken effect in the slave module.

Precautions

- Parameter access, parameter access batch read, and parameter access batch write cannot be executed on slave modules not registered by the automatic address detection function.
- Clear ID duplication and unset IDs of the slave modules after executing parameter access, parameter access batch read, or parameter access batch write.
- Parameter batch read is executed when the automatic address detection function is performed.
- Do not access the parameters or execute the automatic address detection function while parameter access, parameter access batch read, or parameter access batch write is being executed. Doing so can cause a malfunction of the module.
- Parameter access completion flag (RX(n+1)1) turns off while parameter access, parameter access batch read, or parameter access batch write is being executed. Refer to the section describing the parameter access timing, and adjust the access timing. (☞ Page 67 Parameter access timing)
- Parameter access, parameter access batch read, and parameter access batch write cannot be executed while Parameter access completion flag (RX(n+1)1) is off.
- When parameter access batch read or parameter access batch write is executed, the values set to Parameter access setting (RWwn+0) and Parameter access target module ID specification (RWwn+1) are ignored.

Parameter access timing

The parameter access timing is as follows.



No.	Description
1)	Parameter access starts when one of the following signals is turned on by programs.*1 • Parameter access request command for the slave module (RY(n+1)0) • Parameter batch read command for the slave module (RY(n+1)1) • Parameter batch write command for the slave module (RY(n+1)2)
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 • 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. • 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 (RYn0) is turned on. Errors are stored in the appropriate memory areas.

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 one-second intervals.*1
- DP/DN short error (RXn1) turns on.
- 00C9H is stored in Latest error code storage area (RWrn+0).*1
- 0FFFH is stored in Latest error ID storage area (RWrn+1).*1
- The bit transmission stops.

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

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 (RYn0).

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 51 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+131).
- The ID of the disconnected slave module is stored in Error ID information storage area (RWrn+132 to RWrn+259).*1
- 00CAH is stored in Latest error code storage area (RWrn+0).*1
- The ID of the disconnected slave module is stored in Latest error ID storage area (RWrn+1).*1

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

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 (RYn0).

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+0).*1
- 0FFFH is stored in Latest error ID storage area (RWrn+1).*1
- The bit transmission stops.

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

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 (RYn0).

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

This 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 signals	Bridge module LED	Latest error code storage area (RWrn+0)	Latest error ID storage area (RWrn+1)
012CH 012DH	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.
012EH	Parameter access target module ID error	Slave module alarm signal (RX(n+1)0) turns on.	No indication	The error code is stored.	0FFFH is stored.
012FH	Parameter value error	Slave module alarm signal (RX(n+1)0) turns on.	No indication	The error code is stored.	The error ID is stored.
0130H	Parameter access error	Parameter access error (RX(n+1)2) turns on.	No indication	The error code is stored.	The error ID is stored.
0131H	Slave module status error	Slave module alarm signal (RX(n+1)0) turns on.	No indication	The error code is stored.	The error ID is stored.
0190H	Same ID used error	Slave module alarm signal (RX(n+1)0) turns on.	No indication	The error code is stored.	The error ID is stored.
0191H	No ID setting error	Slave module alarm signal (RX(n+1)0) turns on.	No indication	The error code is stored.	The error ID is stored.

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+0)*1
- The error ID stored in Latest error ID storage area (RWrn+1)*1

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

2. Reset the AnyWireASLINK system or turn on and off Error reset request flag (RYn0).

The following status is resulted:

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

■How to recover from the parameter access target module ID error status

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+0)*1
- The value 0FFFH stored in Latest error ID storage area (RWrn+1)*1

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

2. Reset the AnyWireASLINK system or turn on and off Error reset request flag (RYn0).

The following status is resulted:

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

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

2. Reset the AnyWireASLINK system or turn on and off Error reset request flag (RYn0).

The following status is resulted:

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

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

2. Reset the AnyWireASLINK system or turn on and off Error reset request flag (RYn0).

The following status is resulted:

- Parameter access error (RX(n+1)2) turns off.
- The value in Latest error code storage area (RWrn+0) is cleared.
- The value in Latest error ID storage area (RWrn+1) is cleared.

■How to recover from same ID used error

For details, refer to the following.

☞ Page 73 Same ID number used detection function

■How to recover from no ID setting error

For details, refer to the following.

☞ Page 74 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.

- Slave module alarm signal (RX(n+1)0) is on.
- 0190H is stored in Latest error code storage area (RWrn+0).*1
- The duplicated ID is stored in Latest error ID storage area (RWrn+1).*1
- The bit transmission is in progress.

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

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 ID 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 (RYn0), 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.

- Slave module alarm signal (RX(n+1)0) is on.
- 0191H is stored in Latest error code storage area (RWrn+0).*1
- The unset ID (input modules: 02FFH, output modules: 00FFH) is stored in Latest error ID storage area (RWrn+1).*1
- The bit transmission is in progress.

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

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 (RYn0), but the address of the slave module remains unset.

iQ Sensor Solution functions

iQ Sensor Solution functions establish data communication with AnyWireASLINK-compatible slave modules via CC-Link IE Field Network 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

9 TRANSMISSION TIME

9.1 CC-Link IE Field Network Transmission Time

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

9.2 AnyWireASLINK Transmission Time

Transmission cycle time of the bridge module

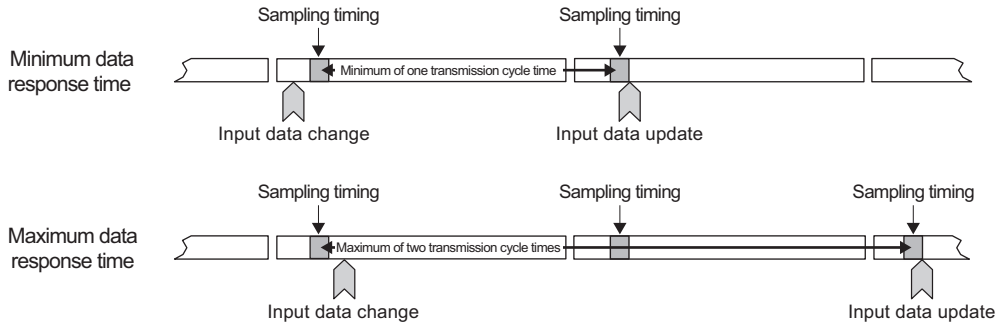
The transmission cycle time is the time required for the bridge module and all the slave modules to update I/O data. The following table lists the transmission cycle time of the bridge module.

Transmission I/O points setting	One transmission cycle time
64 points (input: 32 points, output: 32 points)	2.3ms
128 points (input: 64 points, output: 64 points)	3.5ms
256 points (input: 128 points, output: 128 points)	5.9ms
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

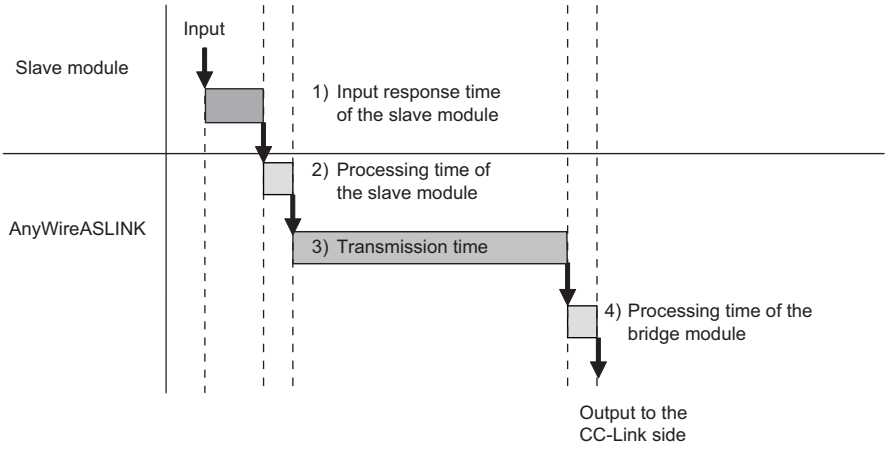
As the double check is performed on the slave module side, the time required is the same as that for input, namely a minimum of one-transmission cycle time and a maximum of two-transmission cycle time.

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.



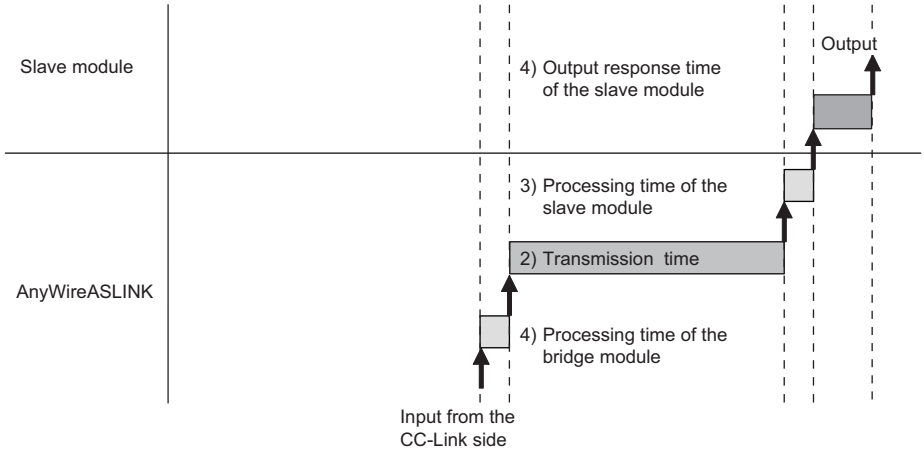
[Calculation formula]

(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 76 Transmission cycle time of the bridge module)
(4)	Processing time of the bridge module	1.5ms

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	1.5ms
(2)	Transmission time	Transmission cycle time × 2 The transmission cycle time differs depending on the transmission I/O points setting. (☞ Page 76 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 82 When all the 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 82 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 82 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 82 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 82 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 83 When the ALM LED of the bridge module is turned on

4. Check the RUN LED of the bridge module.

If the RUN LED does not turn on, perform the following troubleshooting.
☞ Page 83 When the RUN LED of the bridge module is not turned on

5. Check the MODE LED of the bridge module.

If the MODE LED is off, perform the following troubleshooting.
☞ Page 83 When the MODE LED of the bridge module is off
If the MODE LED is flashing, perform the following troubleshooting.
☞ Page 83 When the MODE LED of the bridge module is flashing

6. Check the D LINK LED of the bridge module.

If the D LINK LED is off, perform the following troubleshooting.
☞ Page 83 When the D LINK LED of the bridge module is off
If the D LINK LED is flashing, perform the following troubleshooting.
☞ Page 84 When the D LINK LED of the bridge module is flashing

7. Check the ERR. LED of the bridge module.

If the ERR. LED is on or flashing, perform the following troubleshooting.
☞ Page 84 When the ERR. LED of the bridge module is on or flashing

8. Check the L ER LED of the bridge module.

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

☞ Page 84 When the L ER LED of the bridge module is on

9. Check the LINK LED of the bridge module.

If the LINK LED is off, perform the following troubleshooting.

☞ Page 84 When the LINK LED of the bridge module is off

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 85 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 Remote I/O Signals

When remote I/O signals are on

Error cause can be investigated by checking the on/off status of remote I/O signals.

■When DP/DN short error is on

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

☞ Page 82 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 82 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 83 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 code storage area (RWrn+0) and Latest error ID storage area (RWrn+1), 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 the 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 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.

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 RUN LED of the bridge module is not turned on

Item	Action
Check that the voltage of the bridge module power supply supplied from the external power supply reaches that of the performance specifications.	If the RUN LED does not turn on after powering on the bridge module, hardware failure may occur. Please consult your local Mitsubishi representative.
Check that a hardware failure or a watchdog timer error has not occurred.	
Check that the startup mode switch is set to the SET side.	Do not keep the switch on the SET side.

When the MODE LED of the bridge module is off

Item	Action
Check that a hardware failure has not occurred.	If the RUN LED does not turn on after powering on the bridge module, hardware failure may occur. Please consult your local Mitsubishi representative.

When the MODE LED of the bridge module is flashing

Item	Action
Check that the bridge module is performing the unit test.	If the bridge module is performing the unit test, the D LINK LED of the CC-Link IE Field Network side turns on when the unit test is finished. Take action depending on the result of the unit test.

When the D LINK LED of the bridge module is off

Item	Action
Check the own station on the network is operating normally.	Connect GX Works2 to the master station and check if the master station is performing data link using the CC-Link IE Field Network diagnostics. (📖 User's manual for the master/local module used)
Check that 1000BASE-T-compliant Ethernet cable are used.	Replace the cables with 1000BASE-T-compliant Ethernet cable. (📖 User's manual for the master/local module used)
Check that the station-to-station distance of the Ethernet cable is within 100m.	Change the station-to-station distance of the Ethernet cable to 100m or less.
Check that the cabling condition (bending radius) is within the specified range.	Refer to the manual for the Ethernet cable, and correct the bending radius.
Check that the Ethernet cables are not disconnected.	Replace the Ethernet cable.
Check other stations connected to the bridge modules are operating normally.	Check that the systems on other stations are powered on.
Check that the switching hub used is operating normally.	• Check that a 1000BASE-T-compliant switching hub is used. (📖 User's manual for the master/local module used) • Check that the switching hub is powered on.
Check that the bridge module does not have the same station number as the that of other stations.	The bridge module has two or more station numbers. Change the settings of all the station numbers to different settings.

When the D LINK LED of the bridge module is flashing

Item	Action
Check that the station number of the bridge module specified in the network configuration setting of the master station is the same as the station number setting of the bridge module.	Match the station number specified in the network configuration setting of the master station with that of the bridge module.
Check that the station type is set to the intelligent device station.	In the network configuration setting of the master station, change the station type of the module to the intelligent device station.
Check that reserved station is not selected.	In the network configuration setting of the master station, change the setting of the reserved/error invalid station to the setting other than the reserved station.
Check that the link is not stopped using the CC-Link IE Field Network diagnostics.	Check the link status using the CC-Link IE Field Network diagnostics, and start the link when the link has stopped.
Check that the number of the station number setting switch is within 1 to 120.	The settable range of the station number setting switch is 1 to 120. Change the number to any of 1 to 120.

When the ERR. LED of the bridge module is on or flashing

Item	Action
Check that the station number setting switch is not changed during power-on.	Change the station number setting switch to the previous setting.
Check that no error has occurred.	Identify the error factor of the bridge module using GX Works2, and take action.

When the L ER LED of the bridge module is on

Item	Action
Check that the Ethernet cable is operating normally.	• Check that 1000BASE-T-compliant Ethernet cable are used. (📖 User's manual for the master/local module used) • Check that the station-to-station distance is 100m or less. • Check that the Ethernet cables are not disconnected.
Check that the switching hub used in the system is operating normally.	• Check that a 1000BASE-T-compliant switching hub is used. (📖 User's manual for the master/local module used) • Check that the switching hub is powered on.
Check other stations connected to the bridge modules are operating normally.	Check that the systems on other stations are powered on.
Check that the master station is set to the mode other than online.	Change the mode of the master station to online.
Check that the module is not affected by noise.	Check the wiring condition of the Ethernet cable.
Check that the loopback function is enabled for the master station.	When the loopback function is enabled, check that the ring topology is correctly configured for the port where the L ER LED is on. (📖 User's manual for the master/local module used)

When the LINK LED of the bridge module is off

Item	Action
Check that the Ethernet cable is operating normally.	• Check that 1000BASE-T-compliant Ethernet cable are used. (📖 User's manual for the master/local module used) • Check that the station-to-station distance is 100m or less. • Check that the Ethernet cables are not disconnected.
Check that the switching hub used in the system and other stations are operating normally.	• Check that a 1000BASE-T-compliant switching hub is used. • Check that the switching hub and other stations are powered on.

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 network parameter setting of CC-Link IE Field Network in GX Works2.	Check that the data areas which RX/RY and RWw/RWr are assigned are correct. Check that the station information of CC-Link IE Field Network is correctly set in the bridge module setting. (Such as station number, station type) 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+0).

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

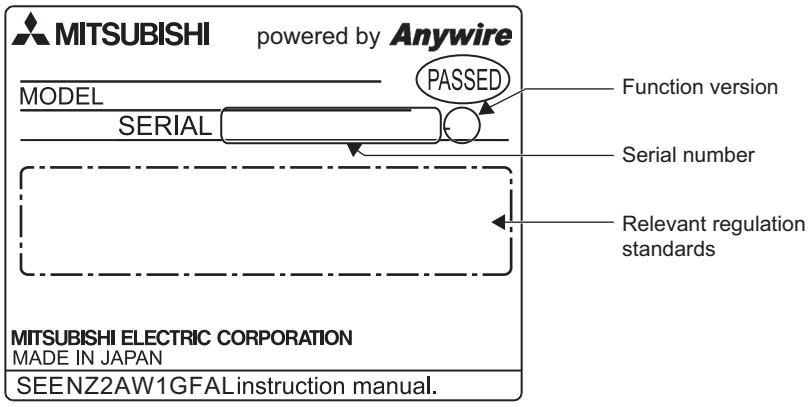
Error code	Error description	Cause and action
0064H, 0065H, 0066H, 0067H	Bridge module hardware error	A malfunction has been detected in the bridge module hardware. • Reset the bridge module. • If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
00C8H	Transmission cable voltage drop error	The voltage of the 24VDC external power supply may be lacking. • 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	A short-circuit may be occurring in the transmission cables (DP, DN) or the maximum supply current of the transmission cables may be exceeded. • 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	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. • 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	A malfunction has been detected in the slave module hardware. • Reset the slave module. • Check that the module is not affected by noise.
012EH	Parameter access target module ID error	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. • 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	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. • Check that the value that is set to the parameter of the slave module is within the settable range.
0130H	Parameter access error	The parameter access signal transferred from the bridge module is corrupt. Check that the following errors have not occurred. (☞ Page 72 How to recover from parameter access error) • Slave module hardware error • Slave module status error • Same ID used error If the above errors have not occurred, check that the module is not affected by noise.

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 eliminate the error cause.
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 where 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 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 side of the bridge module.



Appendix 2 EMC and Low Voltage Directives

Compliance with the EMC Directive, which is one of the EU directives, has been mandatory for products sold within EU member states since 1996 as well as compliance with the Low Voltage Directive since 1997.
For products compliant to the EMC and Low Voltage Directives, their manufacturers are required to declare compliance and affix the CE marking.

Sales representative in EU member states

The sales representative in EU member states is:
Company: Mitsubishi Electric Europe BV
Address: Gothaer Strasse 8, 40880 Ratingen, Germany

Measures to comply with the EMC Directive

The EMC Directive sets requirements for emission (conducted and radiated electromagnetic interference emitted by a product) and immunity (the ability of a product not to be influenced by externally generated electromagnetic interference).
This section describes the precautions for machinery constructed with this products 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

Programmable controller is an open-type device intended to be placed in a conductive control panel or similar type of enclosure.*1
This ensures safety as well as effective shielding of programmable controller-emitted electromagnetic noise.

*1 Remote modules on each network must be also installed inside the control panel. Waterproof type remote modules can be installed outside the control panel.

■Control panel

- Use a conductive control panel.
- Mask off an area used for grounding in advance.
- To ensure electrical contact between inner plates and the control panel, mask off the bolt installation areas of each inner plate so that conductivity can be ensured in the largest 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. Keep the diameter of the holes on the control panel to 10cm or less. 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 were conducted by Mitsubishi Electric Corporation using a control panel having damping characteristics of 37dB (maximum) and 30dB (average) (measured at 3m distance, 30 to 300MHz).

■Power cable and ground cable

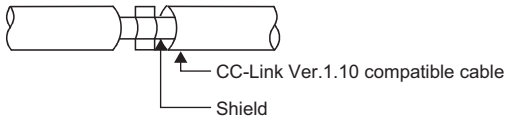
- Provide a ground point to the control panel near the power supply module. Ground the LG terminal of this products to the ground point with the thickest and shortest ground cable possible (30cm or shorter).

Cables

When a cable connected to a module is extended out of the control panel, use a shielded cable. If a shielded cable is not used or not grounded properly, the noise immunity will not meet the requirement.

■CC-Link IE Field Network cable

CC-Link IE Field Network cable is a shielded cable. Strip a part of the jacket of the shielded twisted pair cable as shown below and ground the exposed shield to the largest area.



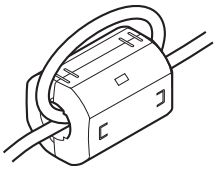
External power supply

- Use a CE-marked external power supply and ground the FG terminal. (External power supply used for the tests conducted by Mitsubishi: DLP-120-24-1 manufactured by TDK-Lambda Corporation, PS5R-SF24 and PS5R-F24 manufactured by IDEC Corporation)
- Keep the length of the power cables connected to the external power supply to 30m or less.

Others

■Ferrite core

A ferrite core is effective for reducing radiated noise in the 30MHz to 100MHz frequency band. It is recommended to install a ferrite core if a shield cable extended out of the control panel does not provide sufficient shielding effects.
Install a ferrite core to the cable in the position just before the cable is extended out of the control panel. If the installation position is not appropriate, the ferrite core will not produce any effect.
For the external power supply and CC-Link IE Field Network cable, install the ferrite core 4cm away from the module. For the AnyWireASLINK cable, install a ferrite core at a point as close to the AnyWireASLINK side terminal block of this product as possible.
Wrap the cable around the ferrite core by one as shown below.
(Ferrite core used for the tests conducted by Mitsubishi: ESD-SR-250 manufactured by NEC TOKIN Corporation, ZCAT3035-1330 manufactured by TDK Corporation)



Installation environment

Use the module under the installation environment of Zone B[*1].

*1 Zone is determined according to industrial environment, specified in 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)

Measures to comply with the Low Voltage Directive

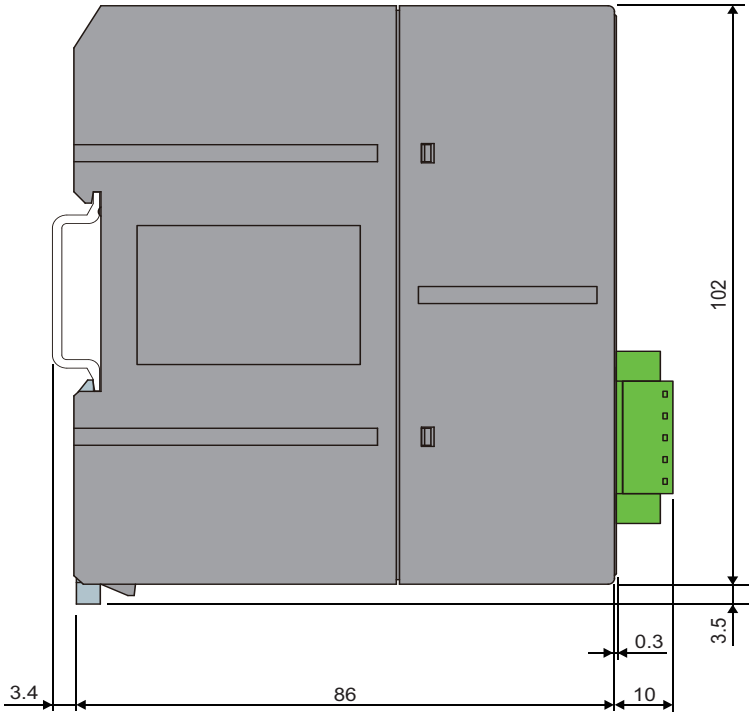
This product is not subject to the Low Voltage Directive as it operates on 24VDC power supply. For making the programmable controller system used comply with the Low Voltage Directive, refer to the section about EMC and Low Voltage Directives in the user's manual for the CPU module used.

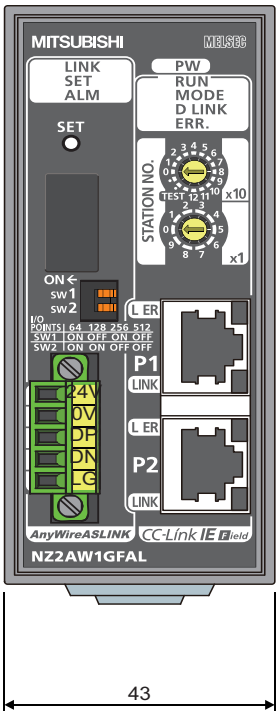
Appendix 3 Functions Added and Modified with Version Upgrade

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
Parameter reading/writing function (☞ Page 65 Parameter reading/writing function)	A	A serial number where the first six digits are "160722" or later
iQ Sensor Solution functions (☞ Page 75 iQ Sensor Solution functions)	A	Refer to the following. 📖 iQ Sensor Solution Reference Manual

Appendix 4 External Dimensions





(Unit: mm)

MEMO

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MEMO

REVISIONS

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

Print date	*Manual number	Revision
August 2014	SH(NA)-081380ENG-A	First edition
December 2014	SH(NA)-081380ENG-B	Error correction
March 2015	SH(NA)-081380ENG-C	Revision due to the addition of the functions

Japanese manual number: SH-081379-C

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.

TRADEMARKS

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Anywire Anywire Corporation http://www.anywire.jp

SH(NA)-081380ENG-C(1503)MEE
MODEL: NZ2AW1GFAL-U-E
MODEL CODE: 13JZ97

MITSUBISHI ELECTRIC CORPORATION

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NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN