MITSUBISHI ELECTRIC

Programmable Controller

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

-NZ2AW1GNAL

AnyWireASLINK

PRECAUTIONS REGARDING WARRANTY AND SPECIFICATIONS

The NZ2AW1GNAL was jointly developed and manufactured by Mitsubishi Electric and Anywire Corporation. Note that there are some precautions regarding warranty of this product.

Item	NZ2AW1GNAL	Other programmable controller products (e.g. MELSEC iQ-R series)
Gratis warranty term	12 months after delivery or 18 months after manufacturing	36 months after delivery or 42 months after manufacturing
Repair term after discontinuation of production	1 year	7 years

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 CC-Link IE TSN, data in the master station are held.
  Check Data link status of each station (SW00B0 to SW00B7) and configure an interlock circuit in the sequence program to ensure that the entire system will operate safely.
- Do not use any "use prohibited" signals as a remote I/O signal since they are used by the system. Do not write any data to the "use prohibited" areas in the remote register. If these operations are performed, an accident may occur due to an incorrect output or malfunction.
- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
  (1) The output status of AnyWireASLINK communications depends on the setting of the function that control the output. Set the function carefully. For details on the setting, refer to the manual described in "Input/Output Hold/Clear Setting Function" in this manual.
  (2) Due to failure of the output element or internal circuit, normal output may not be obtained correctly. Configure an external circuit for monitoring output signals that could cause a serious accident.

[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.

[Security Precautions]

⚠ WARNING

● To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices via the network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

[Installation Precautions]

⚠ WARNING

● Shut off the external power supply (all phases) used in the system before mounting or removing a module. Failure to do so may result in electric shock or cause the module to fail or malfunction.

[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.
● Do not directly touch any conductive parts and electronic components of the module. Doing so can cause malfunction or failure of the module.
● Securely connect the cable connectors. Poor contact may cause malfunction.
● After the first use of the product, do not connect/remove the connector more than 50 times (IEC 61131-2/JIS B 3502 compliant). Exceeding the limit may cause malfunction.

[Wiring Precautions]

⚠ WARNING

● Shut off the external power supply (all phases) used in the system before wiring. Failure to do so may result in electric shock or cause the module to fail or malfunction.

[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.
- Check the rated voltage and terminal layout before wiring to the module, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- 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. If the power is applied before wiring, normal data transmission is not guaranteed.
- Connect a 24VDC external power supply to the device(s) in an AnyWireASLINK system.
- Place the cables in a duct or clamp them. If not, dangling cables may swing or inadvertently be pulled, resulting in malfunction or damage to modules or cables.
  In addition, the weight of the cables may put stress on modules in an environment of strong vibrations and shocks.
- 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.
- When disconnecting the cable from the module, do not pull the cable by the cable part. For the cable with connector, hold the connector part of the cable. 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.
- Use 1000BASE-T-compliant Ethernet cables for Ethernet connection. For the station-to-station cable length and the maximum overall cable length, follow the specifications in this manual. If not, normal data transmission is not guaranteed.
- When an overcurrent caused by an error of an external device or a failure of the programmable controller flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- Mitsubishi Electric programmable controllers must be installed in control panels. Wiring and replacement of a module must be performed by qualified maintenance personnel with knowledge of protection against electric shock. For wiring methods, refer to "INSTALLATION AND WIRING" in this manual.

[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, retightening the terminal block screws or connector screws, or operating the IP address/station number setting switches. Failure to do so may cause the module to fail or malfunction.

[Startup and Maintenance Precautions]

⚠ CAUTION

- Do not disassemble or modify the module. Doing so may cause failure, malfunction, injury, or a fire.
- Do not drop or apply strong shock to the module. Doing so may damage the module.
- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25cm away from wiring as well as away in all directions from the programmable controller. Failure to do so may cause malfunction.
- Shut off the external power supply (all phases) used in the system before mounting or removing a module. Failure to do so may cause the module to fail or malfunction.
- After the first use of the product, do not connect/remove the terminal block more than 50 times (IEC 61131-2/JIS B 3502 compliant). Exceeding the limit may cause malfunction.
- After the first use of the product, do not connect/remove the connector more than 50 times (IEC 61131-2/JIS B 3502 compliant). Exceeding the limit may cause malfunction.
- Before handling the module or connection cables, 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.
- Startup and maintenance of a control panel must be performed by qualified maintenance personnel with knowledge of protection against electric shock. Lock the control panel so that only qualified maintenance personnel can operate it.
- Use a clean and dry cloth to wipe off dirt on the module.

[Disposal Precautions]

⚠ CAUTION

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

CONDITIONS OF USE FOR THE PRODUCT

(1) MELSEC 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 ELECTRIC 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 ELECTRIC USER'S, 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 Electric 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 Electric 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 Electric representative in your region.

(3) Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

Method of ensuring compliance

To ensure that Mitsubishi Electric programmable controllers maintain the EMC and Low Voltage Directives or other regulations 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.)

Certification marks on the side of the programmable controller indicate compliance with the relevant regulations.

Additional measures

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

☞ Page 194 EMC and Low Voltage Directives

INTRODUCTION

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

This manual describes the procedures, system configuration, parameter settings, functions, and troubleshooting of the relevant product listed below.

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

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

Note that the menu names and operating procedures may differ depending on an operating system in use and its version. When reading this manual, replace the names and procedures with the applicable ones as necessary.

Relevant product

NZ2AW1GNAL

> **Point**
>
> Unless otherwise specified, this manual describes the program examples in which the remote I/O signals and remote registers are assigned for the NZ2AW1GNAL as follows.
> - Remote input signal: RX0 to RX21F
> - Remote output signal: RY0 to RY21F
> - Remote register: RWr0 to RWr21F
> - Remote register: RWw0 to RWw21F
>
> For the assignment of remote I/O signals and remote registers, refer to the following.
> ☞ Page 93 Program Example

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RELEVANT MANUALS

Manual name [manual number]	Description	Available form
CC-Link IE TSN—AnyWireASLINK Bridge Module User's Manual [SH-082405ENG] (this manual)	Specifications, procedures before operation, system configuration, wiring, parameter settings, functions, communication examples, troubleshooting, remote I/O signals, remote register, and remote buffer memory of the NZ2AW1GNAL	Print book
		e-Manual PDF
MELSEC iQ-R CC-Link IE TSN User's Manual (Startup) [SH-082127ENG]	Specifications, procedures before operation, system configuration, wiring, and communication examples of CC-Link IE TSN	Print book
		e-Manual PDF
MELSEC iQ-R CC-Link IE TSN User's Manual (Application) [SH-082129ENG]	Functions, parameter settings, troubleshooting, I/O signals, and buffer memory of CC-Link IE TSN	Print book
		e-Manual PDF
GX Works3 Operating Manual [SH-081215ENG]	System configuration, parameter settings, and online operations of GX Works3	e-Manual PDF
iQ Sensor Solution Reference Manual [SH-081133ENG]	Operating methods of iQ Sensor Solution, such as programming and monitoring	Print book
		e-Manual PDF

Point

e-Manual refers to the Mitsubishi Electric FA electronic book manuals that can be browsed using a dedicated tool.

e-Manual has the following features:

• Required information can be cross-searched in multiple manuals.

• Other manuals can be accessed from the links in the manual.

• The hardware specifications of each part can be found from the product figures.

• Pages that users often browse can be bookmarked.

• Sample programs can be copied to an engineering tool.

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
Alarm ID	An ID of a connected slave module where an alarm other than disconnection error has occurred. Note that if the alarm is for a bridge module or the entire network, the alarm ID will be 0FFFH.
Alarm occurrence ID	An ID of a slave module where an alarm has occurred
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.
CC-Link IE TSN Class[1]	A group of devices and switching hubs compatible with CC-Link IE TSN, ranked according to the functions and performance by the CC-Link Partner Association. For CC-Link IE TSN Class, refer to the CC-Link IE TSN Installation Manual (BAP-C3007ENG-001) published by the CC-Link Partner Association.
CC-Link IE TSN Protocol version 1.0	This protocol is used to perform communications by using the time sharing method defined by IEEE 802.1AS or IEEE 1588 for time synchronization.
CC-Link IE TSN Protocol version 2.0	This protocol is used to perform communications by using the time sharing method defined by IEEE 802.1AS and time-managed polling method for time synchronization.
Connected module ID	An ID of a slave module connected to a bridge module
Disconnected module ID	An ID of a connected slave module where a disconnection error has occurred
Engineering tool	A tool used for setting up programmable controllers, programming, debugging, and maintenance
ID	Information assigned to a module based on its address to identify whether it is an input module or output module
Link device	A device (RX, RY, RWr, RWw, LB, or LW) in a module on CC-Link IE TSN
Master station	A station that controls the entire network on CC-Link IE TSN. This station can perform cyclic transmission and transient transmission with all stations. Only one master station can be used in a network.
Power cable (24V, 0V)	A cable that connects a 24VDC external power supply and a bridge module
Remote buffer memory	Buffer memory in a remote station on CC-Link IE TSN
Remote station	A station that exchanges I/O signals (bit data) and I/O data (word data) with the master station of CC-Link IE TSN by cyclic transmission. This station can perform transient transmission.
Slave station	A station other than a master station on CC-Link IE TSN: a local station, a remote station
Terminating unit	A waveform shaper
Transmission cable (DP, DN)	A signal cable that connects a slave module and a bridge module
Transmission cycle time	A data sampling interval

*1 The term has been changed for standardization among manuals and software applications related to CC-Link IE TSN. However, the term used in some CC-Link IE TSN related software windows may remain unchanged and may be different from the term used in this manual.
In case of inconsistency, refer to the following.

Term used in software window	Term after change
Authentication Class	CC-Link IE TSN Class

GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this manual uses the following generic terms and abbreviations.

Generic term/abbreviation	Description
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
ASLINKSENSOR	A generic term for sensor modules that have an AnyWireASLINK interface
RWr	An abbreviation for a remote register of a link device. 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.)
RWw	An abbreviation for a remote register of a link device. 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.)
RX	An abbreviation for remote input of a link device. 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.)
RY	An abbreviation for remote output of a link device. 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.)
Slave module	A generic term for modules that communicate data with the NZ2AW1GNAL via AnyWireASLINK communication

1 PART NAMES

This chapter describes the part names of the NZ2AW1GNAL.

No.	Name	Description		
(1)	LED indicator (CC-Link IE TSN)	The NZ2AW1GNAL status is indicated by the LEDs.		
		LED name	Description	
		PW LED	Indicates the power supply status of the NZ2AW1GNAL. On: Power-on Off: Power-off	
		RUN LED	Indicates the operating status of the NZ2AW1GNAL. On: Normal operation Flashing: Unit test mode Off: Hardware error	
		D LINK LED	Indicates the cyclic transmission status of the NZ2AW1GNAL. On: Cyclic transmission being performed Off: Cyclic transmission stopped Off: Disconnected	
		ERR. LED	Indicates the error status of the NZ2AW1GNAL. On: Moderate error or major error Flashing: Minor error Off: Normal operation	
(2)	LED indicator (AnyWireASLINK)	LINK LED	Indicates the link status of AnyWireASLINK. On: Data link not available, AnyWireASLINK version compatibility inspection in progress Flashing: Data link being performed Off: Data link not available	
		SET LED	Indicates the address detection status of AnyWireASLINK. On: Automatic address detection in progress, non-volatile memory data error occurred Flashing: Address write to a non-volatile memory in progress Off: Normal operation	
		ALM LED	Indicates the alarm status of AnyWireASLINK. On: Alarm occurred Flashing: DP-DN short circuit, 24V-DP short circuit Off: Normal operation	
(3)	SET switch	Used for the automatic detection of IDs (addresses) of the slave modules connected to AnyWireASLINK and the AnyWireASLINK version compatibility inspection. ☞ Page 57 Performing the automatic address detection ☞ Page 81 AnyWireASLINK Version Compatibility Inspection Function		
(4)	IP address setting switch	Sets the IP address (fourth octet) of CC-Link IE TSN. (☞ Page 25 IP address setting switch setting)		
(5)	MODE switch	Sets the transmission points setting and operation mode of AnyWireASLINK using MODE switch at the front of the NZ2AW1GNAL. (☞ Page 27 MODE switch setting)		

No.	Name	Description		
(6)	P1 P2	Ports for CC-Link IE TSN connection. (RJ45 connector) Connect an Ethernet cable. (☞ Page 32 CC-Link IE TSN Connector Wiring) There is no restrictions on the connection order of P1 and P2.		
		LED name	Description	
		L ER LED	Indicates the frame loss status. On: Frame loss Off: No frame loss	
		LINK LED	Indicates the link status. On: Link-up Off: Link-down	
(7)	AnyWireASLINK transmission cable terminal block	A terminal block connected to the transmission cable and module power supply of AnyWireASLINK (☞ Page 33 Wiring to a Transmission Cable Terminal Block of the AnyWireASLINK, ☞ Page 39 Supplying Power to the NZ2AW1GNAL)		

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 IEC 61131-2 and JIS B 3502	—	Frequency	Constant acceleration	Half amplitude	Number of sweeps
		Under intermittent vibration	5 to 8.4Hz	—	3.5mm	10 times each in X, Y, and Z directions
			8.4 to 150Hz	9.8m/s^2	—	
		Under continuous vibration	5 to 8.4Hz	—	1.75mm	—
			8.4 to 150Hz	4.9m/s^2	—	
Shock resistance	Compliant with IEC 61131-2 and JIS B 3502 (147m/s^2, 3 times each in X, Y, and Z directions)					
Operating atmosphere	No corrosive gas					
Operating altitude[*1]	0 to 2000m					
Installation location	Inside a control panel[*4]					
Overvoltage category[*2]	Ⅱ or less					
Pollution degree[*3]	2 or less					
Equipment class	Class Ⅰ					

[*1] Do not use or store the programmable controller under pressure higher than the atmospheric pressure of altitude 0m.
Doing so may cause malfunction.
When using the programmable controller under pressure, please consult your local Mitsubishi representative.

[*2] This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises.
Category Ⅱ applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for the equipment with the rated voltage of 300V or less 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 TSN	Station type	Remote station		
	Communication speed	• 1Gbps • 100Mbps[6]		
	CC-Link IE TSN Class	• CC-Link IE TSN Class B (factory default) • CC-Link IE TSN Class A[6]		
	CC-Link IE TSN Protocol version	CC-Link IE TSN Class B	• CC-Link IE TSN Protocol version 2.0[6] • CC-Link IE TSN Protocol version 1.0	
		CC-Link IE TSN Class A[6]	CC-Link IE TSN Protocol version 2.0	
	Maximum response time for time-managed polling (for CC-Link IE TSN Class A)[6]	512μs		
	Maximum number of link points	Remote input (RX)	544 points[1]	
		Remote output (RY)	544 points[1]	
		Remote register (RWw)	544 words[1]	
		Remote register (RWr)	544 words[1]	
	Network topology	Line topology, star topology, coexistence of line and star topologies, ring topology[2]		
AnyWireASLINK	Transmission clock	27.0kHz		
	Maximum transmission distance (total length)	200m[3]		
	Transmission method	DC power supply superimposed total frame/cyclic method		
	Connection type	Bus topology (multidrop system, T-branch system, tree branch system, star branch system)		
	Transmission protocol	Dedicated protocol (AnyWireASLINK)		
	Error control	Checksum, double-verification system		
	Number of bit data points	1024 points maximum (input: 512 points, output: 512 points)		
	Number of word data points	1024 points maximum (input: 512 points, output: 512 points)		
	Number of connected slave modules	256 maximum (varies depending on the current consumption of each slave module)[4]		
	RAS function	Disconnected transmission cable location detection function, transmission cable short detection function, module power supply drop detection function		
	AnyWireASLINK transmission cable 24VDC power cable	• UL-listed general-purpose 2-wire cable (VCTF, VCT 1.25㎟, 0.75㎟, temperature rating 70℃ or higher) • UL-listed general-purpose wire (1.25㎟, 0.75㎟, temperature rating 70℃ or higher) • Dedicated flat cable (1.25㎟, 0.75㎟, temperature rating 90℃)		
	Transmission cable supply current[4][5]	2A maximum		
Common	Power supply	Voltage: 21.6 to 27.6VDC (24VDC -10 to +15%), ripple 0.5Vp-p or lower Recommended voltage: 26.4VDC (24VDC + 10%) Module current consumption: 0.2A		
	External dimensions	102mm (H) × 43mm (W) × 102.8mm (D)		
	Weight	0.2kg		

*1 For the number of points used in the NZ2AW1GNAL, refer to the following.
☞ Page 137 Remote I/O Signals
☞ Page 151 Remote Register
*2 For the network topology, follow the specifications of the master station used.
*3 For wiring of 50m or more with 4 wires (DP, DN, 24V, 0V), insert the noise filter for power supply cables between the power supply and cables. For details, refer to the manual for the AnyWireFILTER (ANF-01) manufactured by Anywire Corporation.
*4 For the relationship between the total length, the wire diameter of transmission cables (DP, DN), and the transmission cable supply current, refer to the following. On some slave modules with cables, the wire diameter of module-integrated transmission cables (DP, DN) may be 0.75㎟ or less. However, they can be used without any problem, provided that the diameter of the transmission cables (DP, DN) meets the requirement below.

Wire diameter of transmission cables (DP, DN)	Transmission cable supply current		
	Total length of 50m or less	Total length of 50m to 100m	Total length of 100m to 200m
1.25mm²	2A maximum	1A maximum	0.5A maximum
0.75mm²	1.2A maximum	0.6A maximum	0.3A maximum

*5 When the 24VDC power is supplied from the NZ2AW1GNAL to slave modules, ensure that the total amount of the transmission cable supply current and the current supplied to slave modules does not exceed 2A.

*6 Supported for modules with the firmware version "03" or later.

2.3 Performance Specifications of Ethernet

The following table lists the Ethernet performance specifications of the NZ2AW1GNAL.

Item			Description
Transmission specifications	Data transmission speed		• 1Gbps (factory default) • 100Mbps[*1]
	Communication mode	1000BASE-T	Full-duplex
		100BASE-TX	
	Interface		RJ45 connector (AUTO MDI/MDI-X)
	Maximum frame size		1518 bytes
	Maximum segment length		100m[*2]
	Number of cascade connections	1000BASE-T	Check with the manufacturer of the switching hub to be used.
		100BASE-TX	
	IP version		Compatible with IPv4

*1 Supported for modules with the firmware version "03" or later.
*2 For the maximum segment length (length between switching hubs), check with the manufacturer of the switching hub to be used.

2

2.4 Function List

This section lists the functions of the NZ2AW1GNAL.

Item		Description	Reference
AnyWireASLINK transmission	Bit transmission	Exchanges I/O data of up to 1024 points (input 512 points, output 512 points) between the NZ2AW1GNAL and a slave module.	☞ Page 61 Bit transmission
	Word transmission	Exchanges I/O data of up to 1024 words (input 512 words, output 512 words) between the NZ2AW1GNAL and a slave module.	☞ Page 61 Word transmission
Remote address change function		Changes the ID (address) of a slave module remotely without an address writer.	☞ Page 62 Remote Address Change Function
Address inspection function		Executes an address inspection to detect a slave module having no ID or a slave module having a duplicate ID.	☞ Page 64 Address Inspection Function
Transmission cable short detection function		Protects the system by detecting the current out of the specifications of the AnyWireASLINK system across DP-DN or 24V-DP and stopping the transmission.	☞ Page 66 Transmission Cable Short Detection Function
Disconnected transmission cable location detection function		Notifies the NZ2AW1GNAL of the ID of a slave module that has been separated from the NZ2AW1GNAL because of disconnection in the transmission cables (DP, DN) between the NZ2AW1GNAL and the slave module, to locate the disconnection in the transmission cables (DP, DN) from the upper system.	☞ Page 67 Disconnected Transmission Cable Location Detection Function
Module power supply drop detection function		Detects a voltage drop in the module power supply, and detects a module power supply failure or wiring error from the upper system.	☞ Page 68 Module Power Supply Voltage Drop Detection Function
Disconnection error automatic recovery function		For DP/DN disconnection errors, automatically clears the error flag when the disconnection error status is cleared.	☞ Page 69 Disconnection Error Automatic Recovery Function
Input/output Hold/Clear setting function		Sets to hold or clear the last input or output values when the NZ2AW1GNAL is disconnected from a data link, when the operating status of the CPU module is in STOP state, or when the operating status of the CPU module is in error stop status.	☞ Page 70 Input/Output Hold/Clear Setting Function
Slave module information acquisition function at start-up		Automatically acquires a slave module information when the NZ2AW1GNAL is powered off and on or is reset remotely.	☞ Page 71 Slave Module Information Acquisition Function at Start-Up
Slave module parameter read/write		Reads/Writes individual or all parameter information of a slave module or the AnyWireASLINK by using the program.	☞ Page 72 Slave Module Parameter Read/Write
Easy replacement function for one slave module		Automatically sets the address and the device parameters without an address writer when the slave module is replaced with the one of the same type.	☞ Page 77 Easy Replacement Function for One Slave Module
Word data start address setting function		Shortens the word transmission cycle time by setting the start address of word data transmission.	☞ Page 80 Word Data Start Address Setting Function
AnyWireASLINK version compatibility inspection function		Detects a slave module that does not support word transmission.	☞ Page 81 AnyWireASLINK Version Compatibility Inspection Function
iQ Sensor Solution function		Establishes data communications with AnyWireASLINK-compatible slave modules via CC-Link IE TSN and AnyWireASLINK.	☞ Page 85 iQ Sensor Solution Function
Communication speed setting function		Sets the communication speed.	☞ Page 86 Communication Speed Setting Function
CC-Link IE TSN Class setting function		Sets the CC-Link IE TSN Class for the NZ2AW1GNAL.	☞ Page 87 CC-Link IE TSN Class Setting Function
Firmware update function		This function updates the firmware of the NZ2AW1GNAL via CC-Link IE TSN.	☞ Page 89 Firmware Update Function

3 PROCEDURES BEFORE OPERATION

This chapter describes the procedures before operation.

1. Setting switches

Set the following switches.
 • IP address setting switch (☞ Page 25 IP address setting switch setting)
 • MODE switch (☞ Page 27 MODE switch setting)

2. Mounting the module

Mount the NZ2AW1GNAL on the DIN rail.

☞ Page 32 Mounting a module on a DIN rail

3. Wiring

Wire the power supply, Ethernet cables, slave modules, and a terminating unit to the NZ2AW1GNAL.

☞ Page 39 Supplying Power to the NZ2AW1GNAL

☞ Page 32 CC-Link IE TSN Connector Wiring

☞ Page 37 Connecting Slave Module or Terminating Unit

4. Checking system before power-on

Check the system before power-on.

☞ Page 40 Checking System Before Power-on

5. Powering on the system

Power on and start the system in the order shown below. (☞ Page 41 Powering on the System)
 • Power on the 24VDC external power supply for the AnyWireASLINK system.
 • Power on the NZ2AW1GNAL.
 • Power on the CPU module.

6. Setting parameters

Set the parameters.
 • Parameter setting (☞ Page 44 Settings of NZ2AW1GNAL Parameters)
 • AnyWireASLINK slave module setting (☞ Page 51 Settings of Slave Module)
 • Automatic address detection (☞ Page 56 Automatic Address Detection Function)

7. Programming

Create a program.

☞ Page 92 PROGRAMMING

MEMO

4 SYSTEM CONFIGURATION

4.1 System Configuration of AnyWireASLINK

An AnyWireASLINK system consists of the NZ2AW1GNAL, slave modules, and a terminating unit.

Products manufactured by Anywire Corporation are used for the slave modules and a terminating unit.

The following figure shows an example system configuration.
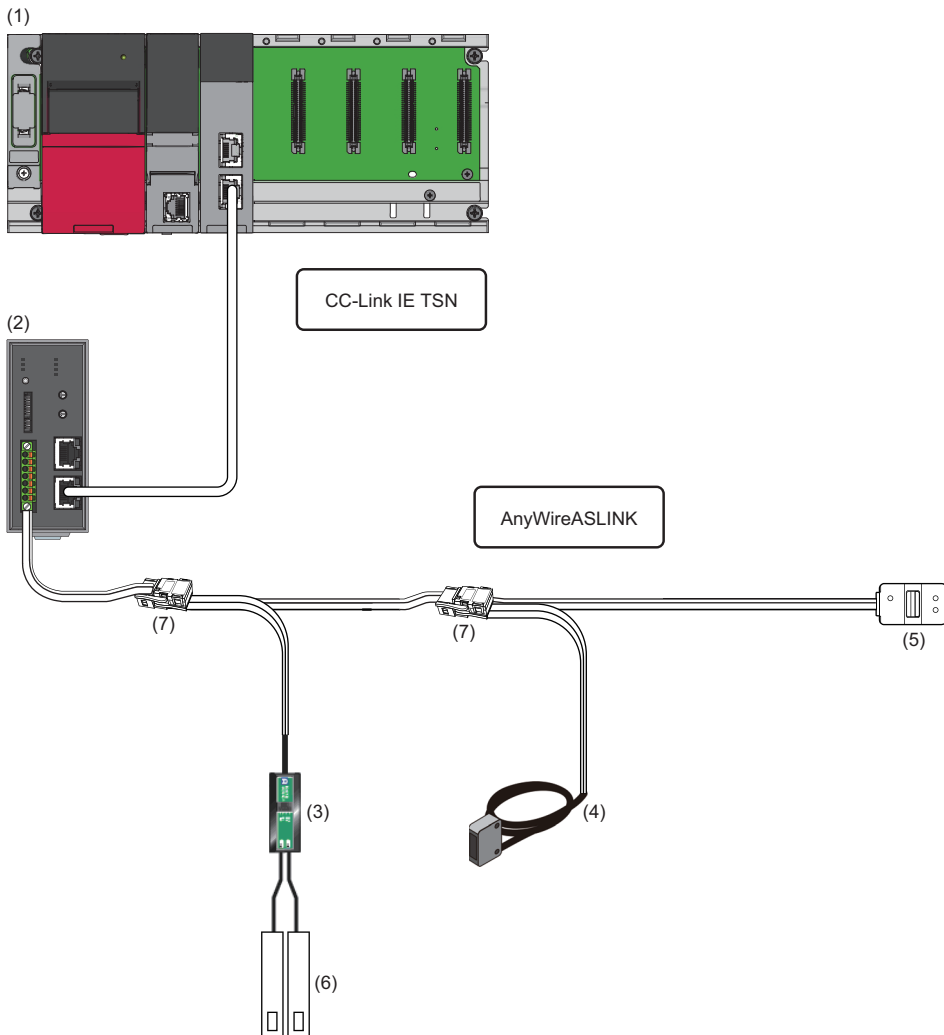
(1) Power supply module, CPU module, CC-Link IE TSN master/local module

(2) NZ2AW1GNAL

(3) Slave module (ASLINKER)

(4) Slave module (ASLINKSENSOR)

(5) Terminating unit

(6) General sensor, switch, or other external devices

(7) Link connector

For the number of connectable slave modules, refer to the following.

☞ Page 17 Performance Specifications

4.2　Applicable Systems

Applicable master station

Stations include a module that can be used as the master station on the CC-Link IE TSN are listed on the website of CC-Link Partner Association (CLPA).

For the latest information, refer to the CC-Link Partner Association website.

www.cc-link.org

Compatible software version

For the compatible software version, always keep the engineering tool of the master station up to date.

Only GX Works3 is a compatible engineering tool.

When the latest software is necessary, please consult your local Mitsubishi representative.

Applicable software package

Install the engineering tool with the following version to diagnose the NZ2AW1GNAL and set the parameters for slave modules.

Software	Software version
GX Works3	Version 1.075D or later

Applicable profile

A profile is required to use the NZ2AW1GNAL in the CC-Link IE TSN configuration setting.

The following table shows the applicable profile versions.

Module name	Firmware version	Profile version
NZ2AW1GNAL	"01" or later	"00" or later
	"03" or later	"01" or later

When the latest profile of the NZ2AW1GNAL is necessary, please consult your local Mitsubishi representative.

The profile is a setting file that stores information required for the start-up, operation, and maintenance of devices supporting the CC-Link family.

A module is added to "Module List" of the "CC-Link IE TSN Configuration" window by profile registration to the engineering tool of the master station.

For the profile registration, refer to the following.

📖 GX Works3 Operating Manual

Ethernet cable

For the Ethernet cable specifications, refer to the following.

📖 User's manual for the master module used

Switching hub

For compatible switching hubs (the models and how to use them), check on the CC-Link Partner Association website (www.cc-link.org).

5 INSTALLATION AND WIRING

This chapter describes the installation and wiring of the NZ2AW1GNAL.

5.1 Setting Switch

IP address setting switch setting

Use the IP address setting switch located on the front of the NZ2AW1GNAL to set the fourth octet of the CC-Link IE TSN IP address.

The IP address setting switch setting is enabled when the NZ2AW1GNAL is in the power-on state, so set it while the power is off.

> **Point**
>
> When operating the IP address setting switch, use a flathead screwdriver with a tip width of 2.5mm or less.

Setting method

The fourth octet (decimal) of the IP address is set by x1 and x16 (hexadecimal) of the IP address setting switch.

A list of x1 and x16 combinations is as follows.

		x1														
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

x16 (row labels on the left side)

Ex.
If set to 30
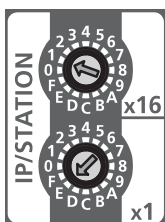
Setting range

Set the value from 1 to 254.

When the value from 1 to 254 is set, the result is as follows.
 • IP address: The first to third octet operate in the first to third octet of the IP address of the master station.
 • Subnet mask: Operates with the subnet mask of the master station.

If a value other than 1 to 254 is set, the following will occur.
 • If 0 is set, the IP address saved in the non-volatile memory and the subnet mask of the master station will be used in operation.
 • If 255 is set, IP address setting switch range error (error code: 2400H) occurs. At this time, the IP address is 192.168.3.250 and the subnet mask is 255.255.2555.0 (fixed).

Point

 • Do not change the IP address setting switch while the NZ2AW1GNAL is in the power-on state. If the IP address setting switch is changed while the NZ2AW1GNAL is powered on, the IP address setting switch changed error (error code: 1030H) occurs and the ERR. LED flashes. After returning the IP address setting switch to the original position, turned off and on Error reset request flag (RY0) to recover from the error status, and the ERR. LED turns off.
 • If the power is turned on while the IP address setting switch is 1 to 254, the IP address is saved in the non-volatile memory when data link is performed with the master station. As the factory default, 192.168.3.250 is set for the non-volatile memory.
 • Set the IP address in a way that the fourth octet is not duplicated in the access range of CC-Link IE TSN. If duplicated, the IP address will be duplicated due to the automatic setting of the first to third octet of the IP address, and data link will not be established.

Restriction

The following IP addresses and subnet masks cannot be used for the NZ2AW1GNAL.
 • IP address whose host address is all 0 or all 255
 • IP address whose third octet and fourth octet are all 255
 • IP address whose range is outside 0.0.0.1 to 223.255.255.254
 • Subnet mask of 0.0.0.0
 • Subnet mask in which 1 is not arranged consecutively on the upper side and 0 is not arranged consecutively on the lower side when expressed in binary

Precautions

When operating the switch, use a static eliminating product or antistatic driver or 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.

MODE switch setting

Use the MODE switch located on the front of the NZ2AW1GNAL to set the number of transmission points and the operation mode of AnyWireASLINK.

The MODE switch setting is enabled when the NZ2AW1GNAL is in the power-on state, so set it while the power is off.

Point

When operating the MODE switch, use a flathead screwdriver with a tip width of 0.8mm or less.

Setting method

Use MODE switch 1 to MODE switch 12 to set each function.

All switch positions are set to off when the product is shipped.
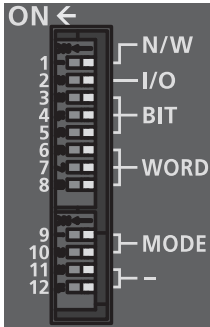
Switch name		Setting item	Setting
MODE switch 1	N/W	Network setting function	Turn it off during normal operation. Turn it on when performing unit tests. (☞ Page 123 Unit Test)
MODE switch 2	I/O	Number of AnyWireASLINK transmission points setting	Turn it on when using MODE switch 3 to MODE switch 8 to set the number of points. Turn it off when setting the number of points using an engineering tool.
MODE switch 3	BIT	Number of AnyWireASLINK bit points	Set the number of AnyWireASLINK bit points. (☞ Page 28 Number of AnyWireASLINK bit points setting)
MODE switch 4			
MODE switch 5			
MODE switch 6	WORD	Number of AnyWireASLINK word points	Set the number of AnyWireASLINK word points. (☞ Page 28 Number of AnyWireASLINK word points setting)
MODE switch 7			
MODE switch 8			
MODE switch 9	MODE	Communication speed setting[*1]	Set the CC-Link IE TSN communication speed. (Common to P1/P2)[*3] • On: 100Mbps • Off: 1Gbps
MODE switch 10		CC-Link IE TSN Class setting[*2]	Set the CC-Link IE TSN Class.[*4] • On: CC-Link IE TSN Class A • Off: CC-Link IE TSN Class B
MODE switch 11	—	Use prohibited	Fix them to off.
MODE switch 12	—	Use prohibited	Fix them to off.

*1 Fixed to 1Gbps for modules with the firmware version "02" or earlier.
*2 Fixed to CC-Link IE TSN Class B for modules with the firmware version "02" or earlier.
*3 Which value is set as the communication speed can be checked by using 'Communication speed setting status' (RX1F). (☞ Page 145 Communication speed setting status)
*4 The setting status of the CC-Link IE TSN Class can be checked by using the 'CC-Link IE TSN Class setting status' (RX1E). (☞ Page 145 CC-Link IE TSN Class setting status)

■Number of AnyWireASLINK bit points setting

Set the number of AnyWireASLINK bit points.

MODE switch 3	MODE switch 4	MODE switch 5	Number of AnyWireASLINK bit points
Off	Off	Off	0 points (0 input points/0 output points)
On	Off	Off	64 points (32 input points/32 output points)
Off	On	Off	128 points (64 input points/64 output points)
On	On	Off	256 points (128 input points/128 output points)
Off	Off	On	512 points (256 input points/256 output points)
On	Off	On	1024 points (512 input points/512 output points)
Off	On	On	Setting prohibited
On	On	On	Setting prohibited

■Number of AnyWireASLINK word points setting

Set the number of AnyWireASLINK word points.

MODE switch 6	MODE switch 7	MODE switch 8	Number of word points per frame	Number of AnyWireASLINK word points
Off	Off	Off	0	0 words (0 input words/0 output words)
On	Off	Off	4	16 words (8 input words/8 output words)
Off	On	Off	4	64 words (32 input words/32 output words)
On	On	Off	16	128 words (64 input words/64 output words)
Off	Off	On	16	256 words (128 input words/128 output words)
On	Off	On	32	512 words (256 input words/256 output words)
Off	On	On	32	1024 words (512 input words/512 output words)
On	On	On	—	Setting prohibited

Point

- Do not change the MODE switch while the NZ2AW1GNAL is in the power-on state. If the MODE switch is changed while the NZ2AW1GNAL is in the power-on state, MODE switch 1 change error (error code: 1041H) to MODE switch 12 change error (error code: 104CH) will occur, and the MODE switch change will not be reflected. After returning the MODE switch to its original state, turn off and on Error reset request flag (RY0) to recover from the error.
- When the number of points is set using the MODE switch, the information set by the switch (number of bit points, number of word points, number of word points per frame) is not reflected in the non-volatile memory, and only the parameter area (0000H to 01FFH) and the monitor area (0200H to 03FFH) are reflected.
- When the number of transmission points of AnyWireASLINK setting is on, if the CC-Link IE TSN parameter processing of a slave station is performed using the engineering tool or if the number of AnyWireASLINK points is set with the program, Number of transmission points of AnyWireASLINK setting error (error code: 1021H) occurs. However, writing can be performed to the parameter area of the remote buffer memory (0000H to 01FFH). The operation of the NZ2AW1GNAL follows the setting value of MODE switch 2.
- When the number of transmission points of AnyWireASLINK setting is on but the number of AnyWireASLINK bit points is set to 0 or the number of AnyWireASLINK word points is set to 0, Transmission points setting error (error code: 180CH) occurs.
- If the number of AnyWireASLINK word points is set to 0, 0000H (no word data) is stored in Word data use setting (0101H) of the remote buffer memory. If set to anything other than 0, 0001H (use) is stored.

Precautions

- When operating the switch, use a static eliminating product or antistatic driver or 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.
- Slide the MODE switches one by one with a flathead screwdriver maintained in a horizontal position. Sliding with the flathead screwdriver positioned at an angle or leaned against the corner of the case as the supporting point may damage or deform the MODE switch.
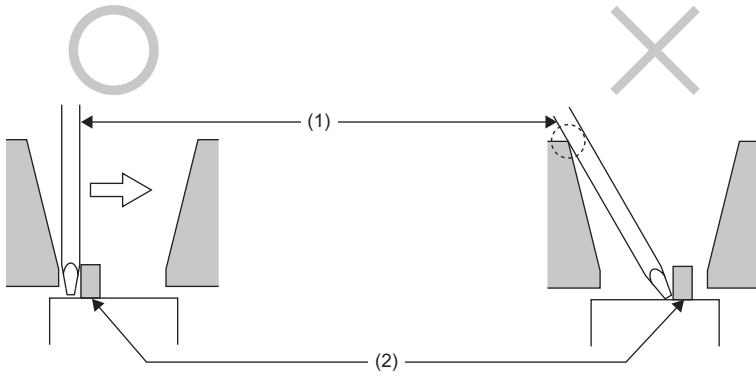
(1) Flathead screwdriver
(2) MODE switch

5.2 Installation Environment and Installation Position

Installation environment

Installation location

Install the module according to the installation environment specified in the general specifications.

☞ Page 17 Performance Specifications

Installation surface

Mount the NZ2AW1GNAL on a flat surface. If the mounting surface is uneven, excessive force will be applied to the printed-circuit board, possibly causing failure.

Installation position

When installing the NZ2AW1GNAL in the control panel, provide a distance of 60mm or longer away from the surrounding structures, modules, and parts to ensure good ventilation and to allow an easy module replacement.

When installing two or more CC-Link IE TSN remote modules or NZ2AW1GNAL next to each other, provide a distance of 5mm or more.
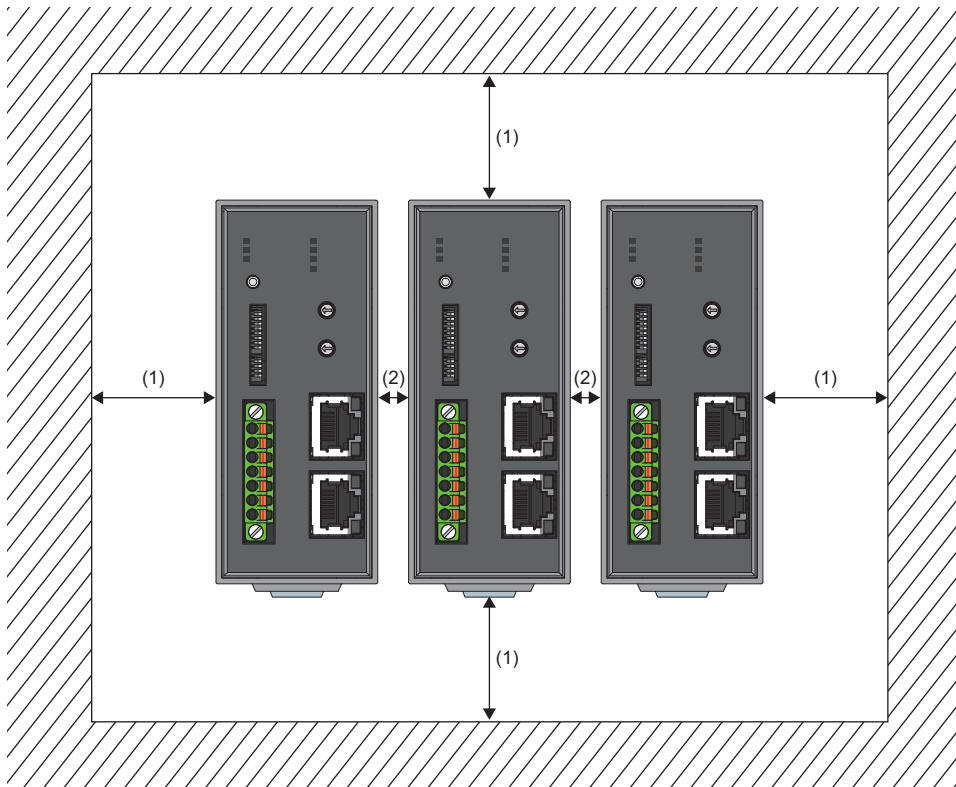
(1) 60mm or more
(2) 5mm or more

Mounting direction

Use the DIN rail to install the NZ2AW1GNAL.

Place the NZ2AW1GNAL in the following direction for use.

DIN rail

Horizontal installation
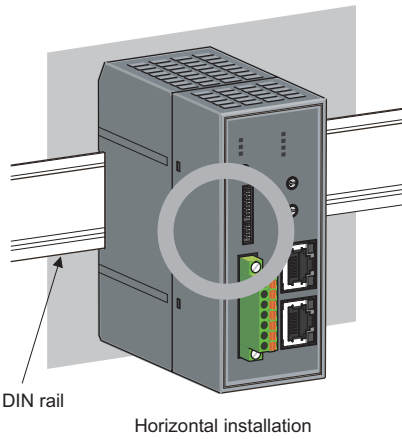
Do not place the module in the directions shown below.

Downward installation

Vertical installation

Horizontal installation
(upside down)

Upward installation
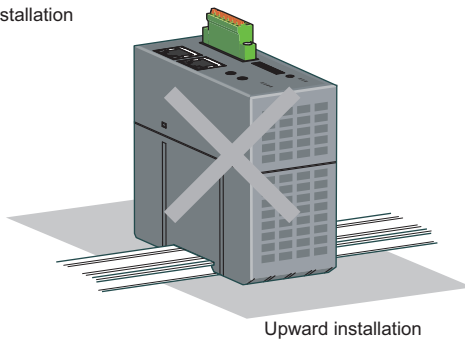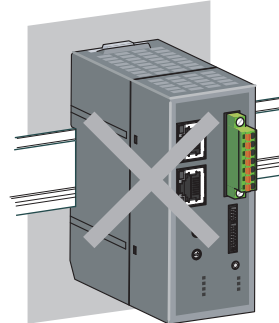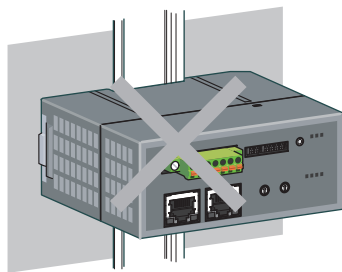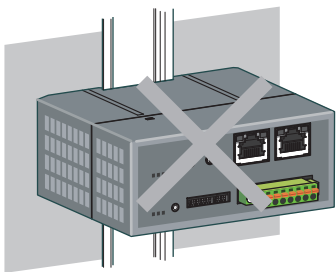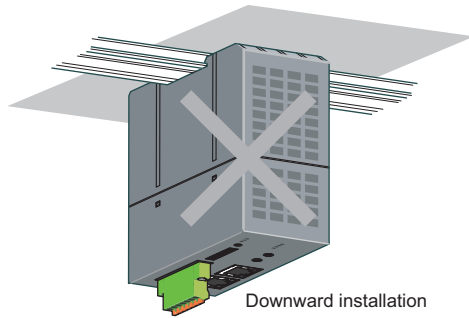
5.3 Installation

Mounting a module on a DIN rail

Mounting a module on a DIN rail
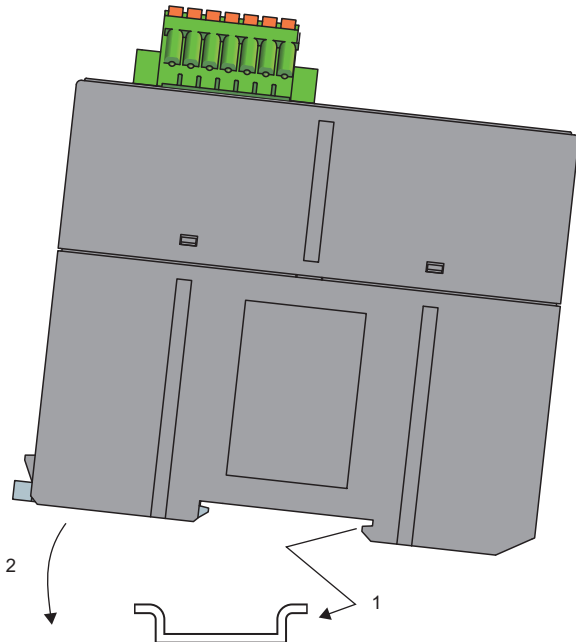
1. Hook the upper fixing tab on the bottom of the module to the DIN rail.
2. Push and engage the NZ2AW1GNAL on the DIN rail.

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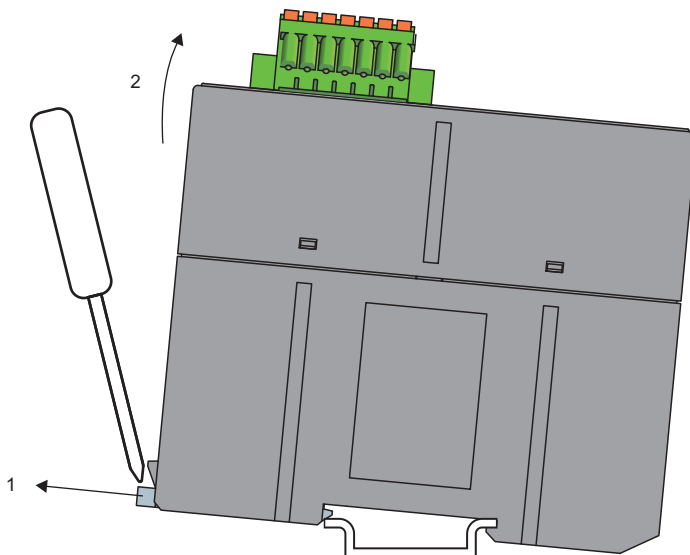
1. Insert a flathead screwdriver into the hook and pull the hook to remove from the DIN rail.
2. Lift the module on the hook side and remove it using the fixing tab as the supporting point.

5.4 CC-Link IE TSN Connector Wiring

For the connection of CC-Link IE TSN connector, refer to the following.

📖 User's manual for the master station used

5.5 Wiring to a Transmission Cable Terminal Block of the AnyWireASLINK

Transmission cable terminal block

Type of the terminal block

The following terminal block is used in the NZ2AW1GNAL.

Name	Model	Contact
Transmission cable terminal block	FMC1,5/7-STF-3,81	PHOENIX CONTACT GmbH & Co. KG

Tightening torque

Tighten terminal block screws within the following tightening torque range.

Screws tightened	Tightening torque range
Terminal block mounting screw	0.2 to 0.3N·m

To connect the terminal block, a flathead screwdriver having a tipped size of 0.4×2.5mm is required.
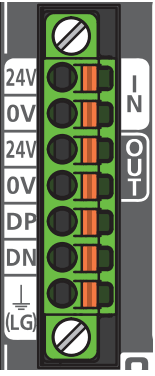
Before removing the transmission cable terminal block, check that the terminal block mounting screws on both ends are completely loosened (removed from the socket).

Pulling the terminal block with excessive force while the terminal block mounting 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 terminal block mounting screws at both ends securely.

Signal name of the terminal block

The following shows the signal names of the terminal block.

Terminal block	Signal name		Description
	IN	24V	Terminals connected to the module power supply (24VDC). These terminals are used for the module power supply and transmission cable power supply.
		0V	
	OUT	24V	Terminals that output 24VDC. These terminals are used for when the 24VDC power is supplied from the NZ2AW1GNAL to the slave module of the 4-wire (insulation) type.
		0V	
	DP		AnyWireASLINK transmission signal terminals
	DN		
	LG		A terminal connected to the LG. Ground the LG terminal with the functional ground terminal (FG terminal) of the programmable controller at a single point.

Wiring product

Applicable wires and cables

Use the following wires or cables connected to the transmission cable terminal block.

Classification	Name	Wire diameter	Type	Material	Temperature rating
Transmission cable (DP, DN) Power cable (24V, 0V)	UL-listed general-purpose 2-wire cable (VCTF, VCT)	1.25mm²	Stranded wire	Copper wire	70℃ or higher
		0.75mm²			
	UL-listed general-purpose wire	1.25mm²			
		0.75mm²			
	Dedicated flat cable	1.25mm²			90℃
		0.75mm²			

Solderless terminal

Connect to a transmission cable terminal block by crimping a bar solderless terminal.

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

Type	Model	Application	Contact
Bar solderless terminal	AI 0,75-10 GY	Processing of a 0.75mm² wire	PHOENIX CONTACT GmbH & Co. KG
	AI 1,5-10	Processing of a 1.25mm² wire	

Wiring method

This section describes the wiring to the transmission cable terminal block of the NZ2AW1GNAL.

Wiring to the transmission cable terminal block

■Connecting a cable
Insert a cable with a bar solderless terminal into a wire insertion opening and fully push the cable. Then, pull the cable slightly to check that it is clamped securely.

■Disconnecting a cable
Hold down the open/close button of a cable to disconnect with a flathead screwdriver. Pull out the cable with the open/close button held down.
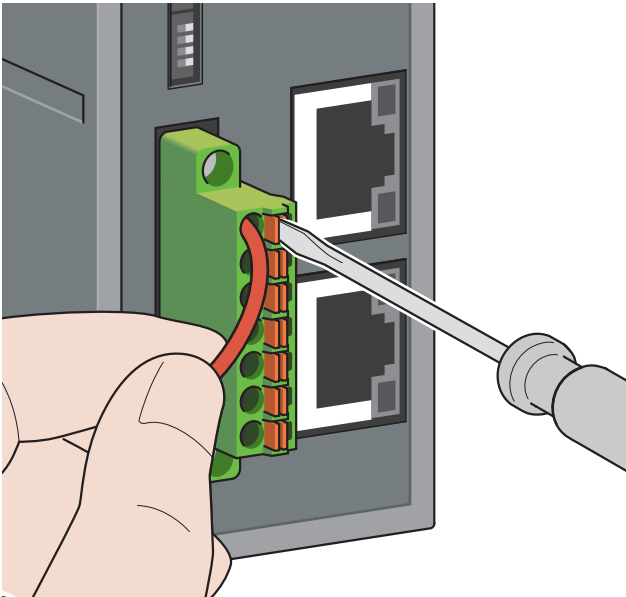
Precautions

- In the AnyWireASLINK system, signals and power are supplied to a slave module with two transmission cables: DP and DN. Therefore, use a stranded wire of 0.75㎟ or larger as the main line.
- 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. Run multiple transmission cables (DP, DN) are affected by noise, causing a malfunction.
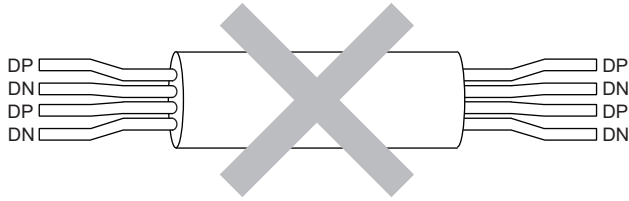
- The voltage should not fall below the lower limit of the allowable voltage range due to a voltage drop caused by the cable. If the voltage falls below the lower limit, malfunctions may occur.
- Do not connect soldered cables directly to the terminals.
- Use bar solderless terminals for the wiring to the terminal block. If inserted as is, a stripped cable cannot be clamped properly in a wire insertion opening.
- Use a crimping tool to connect a cable to a bar solderless terminal.
- Before inserting a bar solderless terminal, check the shapes of the wire insertion opening and bar solderless terminal. Then, insert the terminal in the correct orientation. Inserting a bar solderless terminal wider than the wire insertion opening may damage the terminal block. (☞ Page 34 Solderless terminal)
- Signal names are not printed on the transmission cable terminal block. To avoid incorrect wiring, wire cables to the terminal block attached to the NZ2AW1GNAL.
- Do not insert multiple bar solderless terminals into one wire insertion opening. Doing so may cause damage on the terminal block or cable, or malfunction.

5.6 Connecting Slave Module or Terminating Unit

Connection type
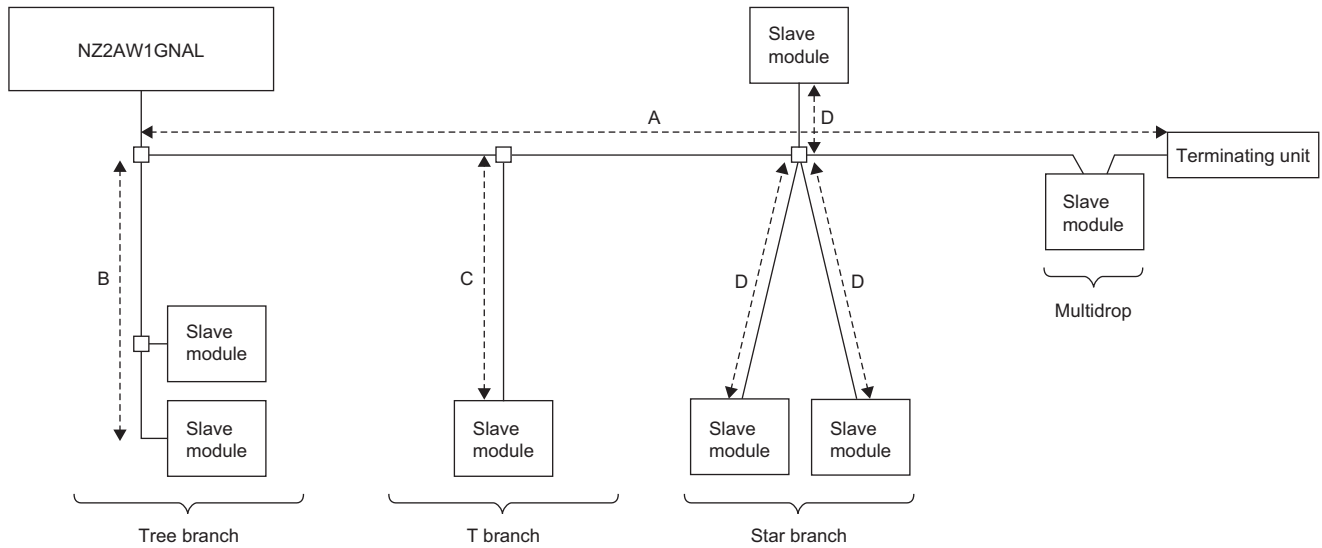
- The maximum transmission distance in the AnyWireASLINK stand-alone system is 200m, which is the total cable length including the main line and branch line. (It varies depending on the wire diameter of the transmission cables (DP, DN) or the transmission cable supply current.)
- For the AnyWireASLINK system, tree branch, T-branch, star branch, and multidrop connections are possible.
- Up to 256 slave modules can be connected to the NZ2AW1GNAL.

> **Point**
>
> The total length of the transmission distance for the AnyWireASLINK system can be calculated as A+B+C+D. Note that the total length should not exceed the maximum transmission distance (total length).

Terminating unit

To ensure more stable transmission quality, connect a terminating unit to the end of a transmission cable (DP, DN).

Connection of terminating unit

Connect one terminating unit for each NZ2AW1GNAL at the far end from the NZ2AW1GNAL.
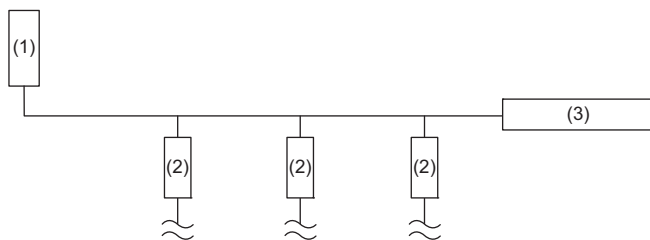
(1) NZ2AW1GNAL
(2) Slave module
(3) Terminating unit

The number of connectable slave modules depends on the terminating unit used.

For details, refer to the following.

📖 Manual of the terminating unit used (manufactured by Anywire Corporation)

Branch of transmission cables (DP, DN)

Connect one terminating unit at the terminal of the branch line of 40m or longer.
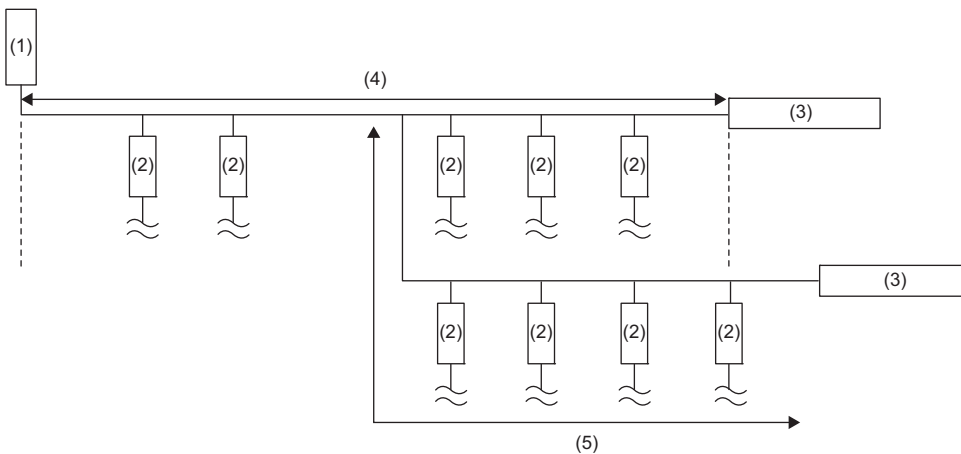
(1) NZ2AW1GNAL
(2) Slave module
(3) Terminating unit
(4) Main line length
(5) Branch line of 40m or longer

The maximum number of connectable slave modules differs depending on the terminating unit used.

For details, refer to the following.

📖 Manual of the terminating unit used (manufactured by Anywire Corporation)

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 (total length).
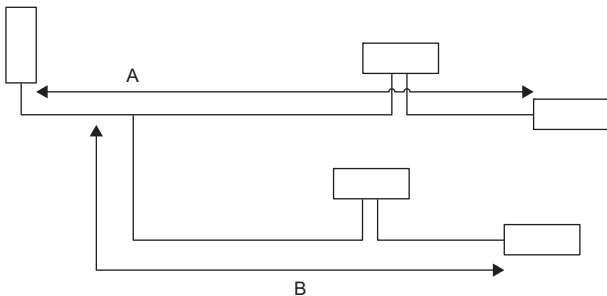
5.7 Supplying Power to the NZ2AW1GNAL

The 24VDC power which is supplied to the NZ2AW1GNAL is used not only for the current consumption for the NZ2AW1GNAL itself, but also for the supply current to slave modules and the transmission cable supply current. Use the 24VDC power which can supply the total current value to be used.

Method of supplying the power to the slave module

For details on how to supply power to the slave module, refer to the following.
📖 Manual of the slave module used (manufactured by Anywire Corporation)

> **Point**
>
> Ensure that the total amount of the transmission cable supply current and the current supplied to slave modules does not exceed 2A.

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

The total value of the current consumption on the transmission side of all slave modules (☞ Page 17 Performance Specifications) must be less than the maximum value of the transmission cable supply current.
For details on the current consumption on the transmission side of each slave module, refer to the following.
📖 Manual of the slave module used (manufactured by Anywire Corporation)

5

5.8 Checking System Before Power-on

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

1. Check that the NZ2AW1GNAL is mounted correctly. (☞ Page 30 Installation Environment and Installation Position)

2. Check that the station-to-station distance of CC-Link IE TSN is within the specified range. (📖 User's manual for the master station used)

3. Check that the maximum transmission distance (total length) of the AnyWireASLINK system is within the specified range. (☞ Page 17 Performance Specifications)

4. Check that the power supplied to the NZ2AW1GNAL is within the specified range. (☞ Page 39 Supplying Power to the NZ2AW1GNAL)

5. Check that the NZ2AW1GNAL, slave module, terminating unit, and 24VDC external power supply are properly connected and wired.

5.9 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 NZ2AW1GNAL. When the supply power is same as the NZ2AW1GNAL, this step is not required.)

2. Module power supply of the NZ2AW1GNAL

3. Power supply of the programmable controller
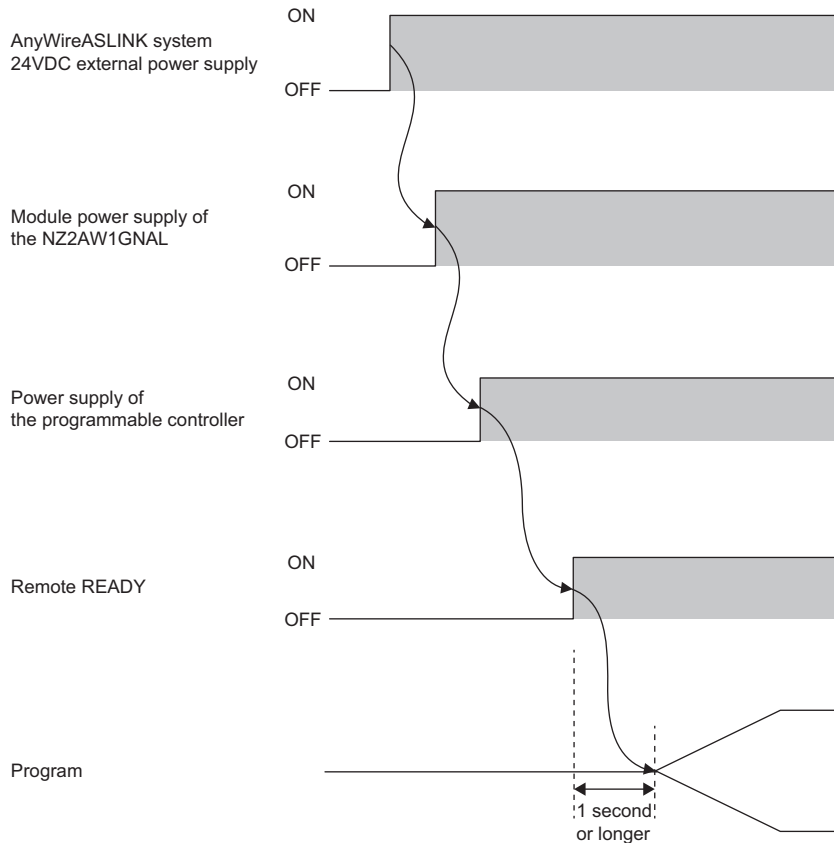
> **Point**
>
> - Supply the power according to the steps: (1) 24VDC external power supply of AnyWireASLINK system, (2) the NZ2AW1GNAL, (3) the programmable controller, or turn them on at the same time.
> - If the NZ2AW1GNAL is powered on before the 24VDC external power supply in the AnyWireASLINK system, a DP/DN disconnection error may occur.
> - After Remote READY (RX0) turns on, wait at least one second to start the program.

6 CONFIGURATION

6.1 Settings of CC-Link IE TSN Parameter

Before setting the NZ2AW1GNAL parameters, write the network parameters to the CPU module of the master station.
Also when changing the network configuration, change the network parameters and write them to the CPU module.
For details on how to set the master station, refer to the following.
📖User's manual for the master station used

Communication Period Interval Setting

When using the NZ2AW1GNAL in CC-Link IE TSN, perform the communication period interval setting as follows.

■When the CC-Link IE TSN Class of the NZ2AW1GNAL is CC-Link IE TSN Class B

Firmware version	Communication speed		Value that can be set
	Master station	NZ2AW1GNAL	
"03" or later	1Gbps	1Gbps	• When the value is set in increments of 1μs: 125.00μs or more and 10000.00μs or less • When the value is not set in increments of 1μs: 31.25μs, 62.50μs, 125.00μs, 250.00μs, 500.00μs, 1000.00μs, 2000.00μs, 4000.00μs, or 8000.00μs
		100Mbps[*1]	• When the value is set in increments of 1μs: 125.00μs or more and 625.00μs or less • When the value is not set in increments of 1μs: 125.00μs, 250.00μs, or 500.00μs
	100Mbps	1Gbps	• When the value is set in increments of 1μs: 125.00μs or more and 10000.00μs or less • When the value is not set in increments of 1μs: 31.25μs, 62.50μs, 125.00μs, 250.00μs, 500.00μs, 1000.00μs, 2000.00μs, 4000.00μs, or 8000.00μs
		100Mbps[*2]	• When the value is set in increments of 1μs: 500.00μs or more, 10000.00μs or less, and divisible by 2μs • When the value is not set in increments of 1μs: 500.00μs, 1000.00μs, 2000.00μs, 4000.00μs, or 8000.00μs
"02" or earlier	1Gbps	1Gbps	125.00μs or more and 10000.00μs or less

*1   When using the NZ2AW1GNAL with this combination of conditions, set "Communication Period Setting" of the NZ2AW1GNAL to "Low-Speed".
*2   When using the NZ2AW1GNAL with this combination of conditions, set "Communication Period Setting" of the NZ2AW1GNAL to "Basic Period" or "Normal-Speed".

■When the CC-Link IE TSN Class of the NZ2AW1GNAL is CC-Link IE TSN Class A

Set a value so that Basic period (Communication period interval setting) × Magnification becomes 1ms or more.

Item	Description
Basic period (Communication period interval setting)	Setting values of the communication period interval setting of master station parameters (📖 User's manual for the master station used)
Magnification	Magnification that is determined by the following master station parameters • Setting values of the communication period setting for network configuration setting • Setting values of the multiple period setting for master station parameters

When the communication speed of the master station is 1Gbps and the communication speed of the NZ2AW1GNAL is 100Mbps, set the communication period setting of the NZ2AW1GNAL to "Low-Speed".

Network Topology

"Line/Star" or "Ring" can be set.
However, when setting "Ring", check that the CC-Link IE TSN Class of every NZ2AW1GNAL on the network is CC-Link IE TSN Class B. If the NZ2AW1GNAL compatible with CC-Link IE TSN Class A exists, change its class to CC-Link IE TSN Class B. If the NZ2AW1GNAL compatible with CC-Link IE TSN Class A is connected, a data link is not established.

Communication Mode

"Unicast" or "Multicast" can be set.

However, if an Ethernet device (or a CC-Link IE TSN Class A remote station) is connected to the NZ2AW1GNAL in multicast mode, cyclic frames of multicast are not relayed.

Network Configuration Settings

This section shows the items set for the NZ2AW1GNAL in the network configuration settings.

Item	Setting		Setting range
STA#	Set the station number of the NZ2AW1GNAL.		1 to 120 (Default: Serial number of the added station)
Station Type	Set the station type.		Fixed to "Remote Station".
RX Setting, RY Setting	Points	Set the assignment of RX, RY points. For the NZ2AW1GNAL, set (Bit data points÷2) + 32. Bit data points are set by the following. ☞ Page 44 Settings of NZ2AW1GNAL Parameters	0 to 544 (Default: 32)
	Start	Set the start number of RX, RY.	0000 to 3FE0 (Default: 0000)
	End	The RX, RY end number is displayed.	—
RWw Setting, RWr Setting	Points	Set the assignment of RWw, RWr points. For the NZ2AW1GNAL, set (Word data points÷2) + 32. Word data points are set by the following. ☞ Page 44 Settings of NZ2AW1GNAL Parameters	0 to 544 (Default: 32)
	Start	Set the start number of RWw, RWr.	0000 to 3FE0 (Default: 0000)
	End	The RWw, RWr end number is displayed.	—
Network Synchronous Communication	Set this item to "Asynchronous", because the CC-Link IE TSN Network synchronous communication function is not supported.		—
Communication Period Setting	Set the communication period for the NZ2AW1GNAL when setting multiple communication periods. If the communication speed of the master station is different from the communication speed of the NZ2AW1GNAL, the setting range is restricted. (☞ Page 42 Communication Period Interval Setting)		• Basic Period • Normal-Speed • Low-Speed (Default: Basic Period)
CC-Link IE TSN Class	Set the type of CC-Link IE TSN Class device for the NZ2AW1GNAL. Set the same CC-Link IE TSN Class as the one set with the MODE switch. (☞ Page 27 MODE switch setting)		• CC-Link IE TSN Class B • CC-Link IE TSN Class A (Default: CC-Link IE TSN Class B)

Point

If the number of remote I/O signal points and remote register points are set to be less than that in the NZ2AW1GNAL, no error will occur and the data for the number of points set from the beginning will be transmitted by cyclic transmission.
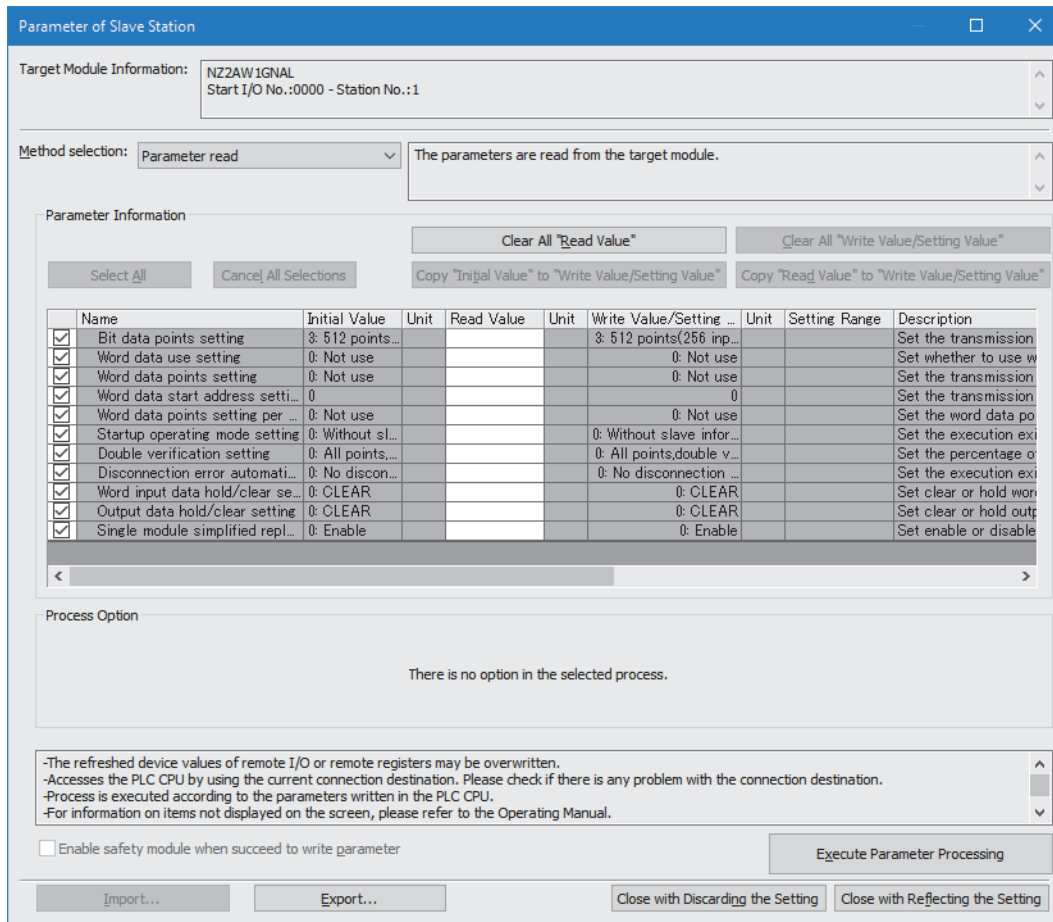
6.2 Settings of NZ2AW1GNAL Parameters

There are the following methods for setting the parameters of the NZ2AW1GNAL.

- Parameter processing of a slave station (☞ Page 47 Parameter processing of a slave station)
- Setting using program (☞ Page 105 Module parameter setting)

For the procedure for displaying the window below, refer to parameter processing of a slave station (☞ Page 47 Parameter processing of a slave station).

Window

Parameter of Slave Station	— □ ×

Target Module Information: NZ2AW1GNAL
Start I/O No.:0000 - Station No.:1

Method selection: Parameter read | The parameters are read from the target module.

Parameter Information

Clear All "Read Value"   Clear All "Write Value/Setting Value"

Select All   Cancel All Selections   Copy "Initial Value" to "Write Value/Setting Value"   Copy "Read Value" to "Write Value/Setting Value"

	Name	Initial Value	Unit	Read Value	Unit	Write Value/Setting ...	Unit	Setting Range	Description
☑	Bit data points setting	3: 512 points...				3: 512 points(256 inp...			Set the transmission
☑	Word data use setting	0: Not use				0: Not use			Set whether to use w
☑	Word data points setting	0: Not use				0: Not use			Set the transmission
☑	Word data start address setti...	0				0			Set the transmission
☑	Word data points setting per ...	0: Not use				0: Not use			Set the word data po
☑	Startup operating mode setting	0: Without sl...				0: Without slave infor...			Set the execution exi
☑	Double verification setting	0: All points,...				0: All points,double v...			Set the percentage o
☑	Disconnection error automati...	0: No discon...				0: No disconnection ...			Set the execution exi
☑	Word input data hold/clear se...	0: CLEAR				0: CLEAR			Set clear or hold wor
☑	Output data hold/clear setting	0: CLEAR				0: CLEAR			Set clear or hold outp
☑	Single module simplified repl...	0: Enable				0: Enable			Set enable or disable

Process Option

There is no option in the selected process.

-The refreshed device values of remote I/O or remote registers may be overwritten.
-Accesses the PLC CPU by using the current connection destination. Please check if there is any problem with the connection destination.
-Process is executed according to the parameters written in the PLC CPU.
-For information on items not displayed on the screen, please refer to the Operating Manual.

☐ Enable safety module when succeed to write parameter   Execute Parameter Processing

Import...   Export...   Close with Discarding the Setting   Close with Reflecting the Setting

Displayed items

Item	Setting	Setting range
Bit data points setting	Set the number of bit data points. The transmission cycle time is determined based on the specified number of bit data points. (☞ Page 181 Transmission cycle time)	• 0: 64 points (32 input points/32 output points) • 1: 128 points (64 input points/64 output points) • 2: 256 points (128 input points/128 output points) • 3: 512 points (256 input points/256 output points) • 4: 1024 points (512 input points/512 output points) • 10: 0 points (0 input points/0 output points) (Default: 3: 512 points (256 input points/256 output points))
Word data use setting	Set whether to use the word data.	• 0: Not use • 1: Use (Default: 0: Not use)
Word data points setting	Set the number of word data points to be used.[1] Because the number of word data points should be the same between input and output, set the number of word data points to that of input or output, whichever is larger.	• 0: Not use • 1: 2 words (input 1 word, output 1 word) • 2: 4 words (input 2 words, output 2 words) • 3: 8 words (input 4 words, output 4 words) • 4: 16 words (input 8 words, output 8 words) • 5: 32 words (input 16 words, output 16 words) • 6: 64 words (input 32 words, output 32 words) • 7: 128 words (input 64 words, output 64 words) • 8: 256 words (input 128 words, output 128 words) • 9: 512 words (input 256 words, output 256 words) • 10: 1024 words (input 512 words, output 512 words) (Default: 0: Not use)
Word data start address setting	Set the word data transmission start address.[1]	0 to 511 (Default: 0)
Word data points setting per frame	Set the number of points to be stored in one frame of word transmission of AnyWireASLINK.[1]	• 0: Not use • 1: 2 words (input 1 word, output 1 word) • 2: 4 words (input 2 words, output 2 words)[2] • 3: 8 words (input 4 words, output 4 words)[3] • 4: 16 words (input 8 words, output 8 words)[4] • 5: 32 words (input 16 words, output 16 words)[5] (Default: 0: Not use)[1]
Startup operating mode setting	Set whether to acquire slave module information at start-up.	• 0: Without slave information acquisition • 1: With slave Information acquisition (Default: 0: Without slave information acquisition)

6

Item	Setting	Setting range
Double verification setting	Set the bit data double verification mode. (☞ Page 177 Bit data double verification)	• 0: All points, double verification of a bit • 1: Double verification of the 16 bit (word) until the 1st word • 2: Double verification of the 16 bit (word) until the 2nd word • 3: Double verification of the 16 bit (word) until the 3rd word • 4: Double verification of the 16 bit (word) until the 4th word • 5: Double verification of the 16 bit (word) until the 5th word • 6: Double verification of the 16 bit (word) until the 6th word • 7: Double verification of the 16 bit (word) until the 7th word • 8: Double verification of the 16 bit (word) until the 8th word • 9: Double verification of the 16 bit (word) until the 9th word • 10: Double verification of the 16 bit (word) until the 10th word • 11: Double verification of the 16 bit (word) until the 11th word • 12: Double verification of the 16 bit (word) until the 12th word • 13: Double verification of the 16 bit (word) until the 13th word • 14: Double verification of the 16 bit (word) until the 14th word • 15: Double verification of the 16 bit (word) until the 15th word • 16: Double verification of the 16 bit (word) until the 16th word • 17: Double verification of the 16 bit (word) until the 17th word • 18: Double verification of the 16 bit (word) until the 18th word • 19: Double verification of the 16 bit (word) until the 19th word • 20: Double verification of the 16 bit (word) until the 20th word • 21: Double verification of the 16 bit (word) until the 21st word • 22: Double verification of the 16 bit (word) until the 22nd word • 23: Double verification of the 16 bit (word) until the 23rd word • 24: Double verification of the 16 bit (word) until the 24th word • 25: Double verification of the 16 bit (word) until the 25th word • 26: Double verification of the 16 bit (word) until the 26th word • 27: Double verification of the 16 bit (word) until the 27th word • 28: Double verification of the 16 bit (word) until the 28th word • 29: Double verification of the 16 bit (word) until the 29th word • 30: Double verification of the 16 bit (word) until the 30th word • 31: Double verification of the 16 bit (word) until the 31st word • 32: All points, double verification of the 16 bit (word) (Default: 0: All points, double verification of a bit)
Disconnection error automatic recovery mode setting	Set the disconnection error automatic recovery mode. (☞ Page 69 Disconnection Error Automatic Recovery Function)	• 0: No disconnection error automatic recovery • 1: Disconnection error automatic recovery (Default: 0: No disconnection error automatic recovery)
Word input data hold/clear setting when disconnected	Set whether to hold or clear the word input data when a disconnection occurs.	• 0: CLEAR • 1: HOLD (Default: 0: CLEAR)
Output data hold/clear setting	Set whether to hold or clear the output data when an error occurs.	• 0: CLEAR • 1: HOLD (Default: 0: CLEAR)
Single module simplified replacement	Enable or disable easy replacement setting for one slave module.	• 0: Enable • 1: Disable (Default: 0: Enable)

*1 This item can be set when "Word data use setting" is set to "1: Use".

*2 This item can be set when "Word data points setting" is set within the range from "2: 4 words (input 2 words, output 2 words)" to "10: 1024 words (input 512 words, output 512 words)".

*3 This item can be set when "Word data points setting" is set within the range from "3: 8 words (input 4 words, output 4 words)" to "10: 1024 words (input 512 words, output 512 words)".

*4 This item can be set when "Word data points setting" is set within the range from "4: 16 words (input 8 words, output 8 words)" to "10: 1024 words (input 512 words, output 512 words)".

*5 This item can be set when "Word data points setting" is set within the range from "5: 32 words (input 16 words, output 16 words)" to "10: 1024 words (input 512 words, output 512 words)".

Point

If a value outside the set range is written to the module parameter area (0000H to 01FFH) of the remote buffer memory, when parameter reading is executed on the "Parameter of Slave Station" window, the value displayed will be as follows.

• Word data start address setting (0103H): Set value
• Other than Word data start address setting (0103H): Invalid value

Parameter processing of a slave station

Parameter setting

Operating procedure

1. Display the "CC-Link IE TSN Configuration" window.

🖱 [Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Master module model name ⇨ [Basic Settings] ⇨ [Network Configuration Settings]

2. Select the NZ2AW1GNAL from [Module List] and drag and drop it onto the station list or network map.
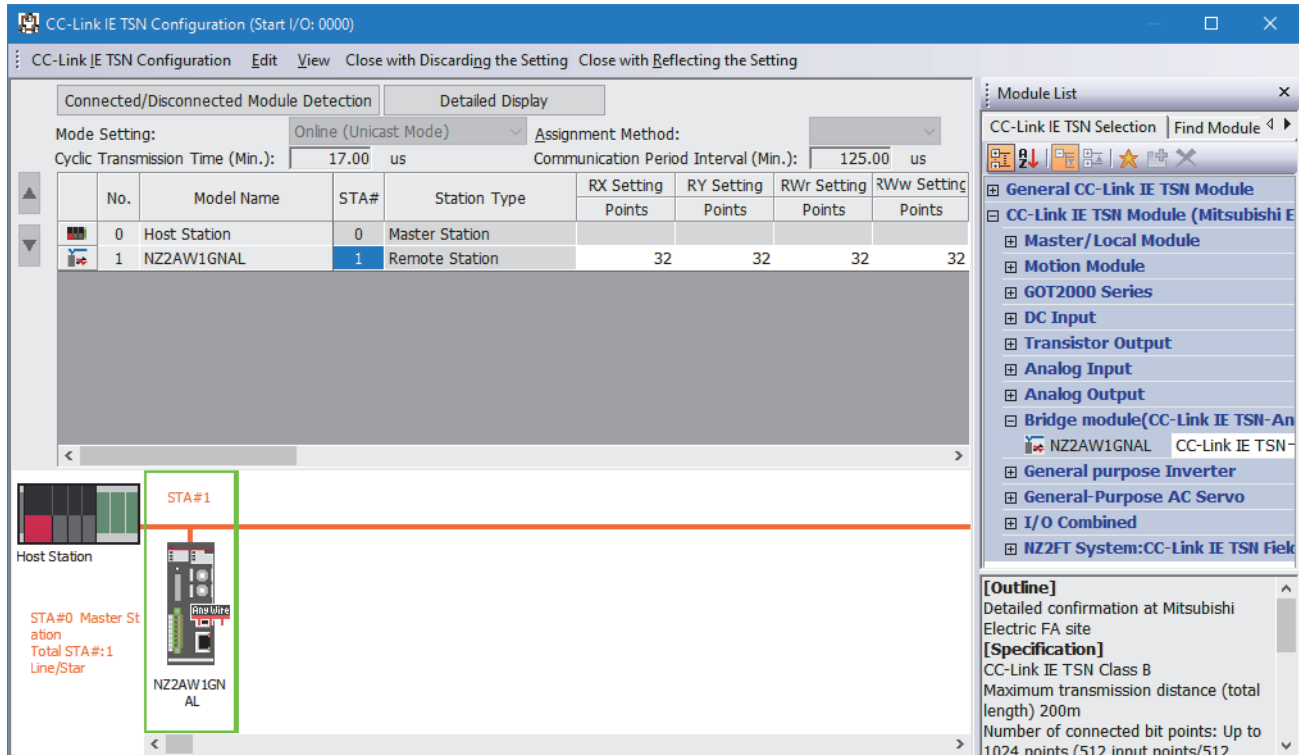
3. Open the "Parameter of Slave Station" window.

🖱 Select the NZ2AW1GNAL from the station list ⇨ Right click ⇨ [Parameter of Slave Station]

4. Set "Parameter write" for "Method Selection".
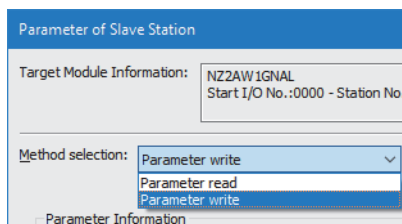
5. Double-click the item to set and enter a setting value.

To save the parameter setting values in a CSV file, click the [Export] button.

To read the parameter setting values from a CSV file, click the [Export] button.
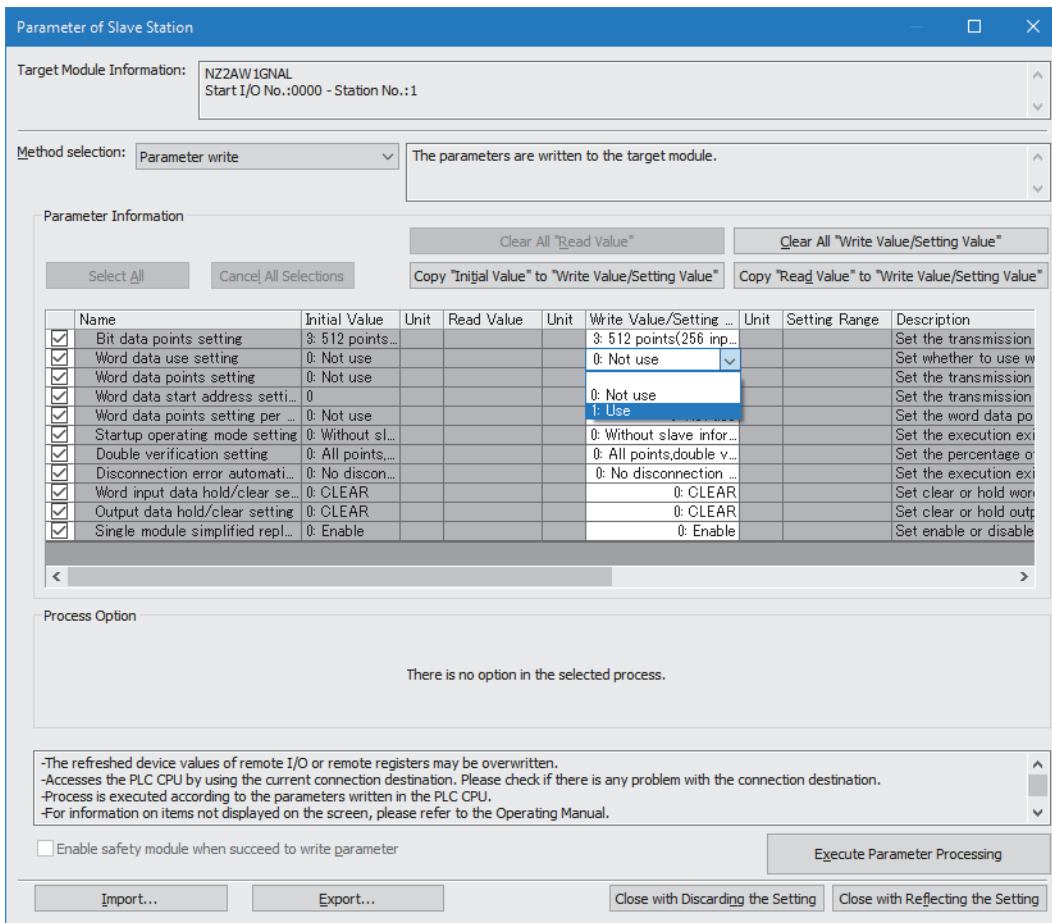
6. Click the [Execute Parameter Processing] button.

7. Follow the instructions on the window and click the [Yes] button.

8. The parameters are written to the NZ2AW1GNAL.

9. Click the [Close with Reflecting the Setting] button to close the "Parameter of Slave Station" window.

10. Select [Close with Reflecting the Setting] to close the "CC-Link IE TSN Configuration" window.

Precautions

Set all parameters. If any field is left blank, parameters cannot be written to the NZ2AW1GNAL.

When changing parameters

Operating procedure

1. Display the "CC-Link IE TSN Configuration" window.

🖰 [Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Master module model name ⇨ [Basic Settings] ⇨ [Network Configuration Settings]

2. Open the "Parameter of Slave Station" window.

🖰 Select the NZ2AW1GNAL from the station list ⇨ Right click ⇨ [Parameter of Slave Station]

3. Set "Parameter read" for "Method Selection".
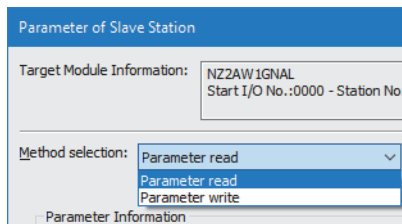
4. Click the [Execute Parameter Processing] button.

5. Click the [Yes] button.

6. The parameters are read from the NZ2AW1GNAL.
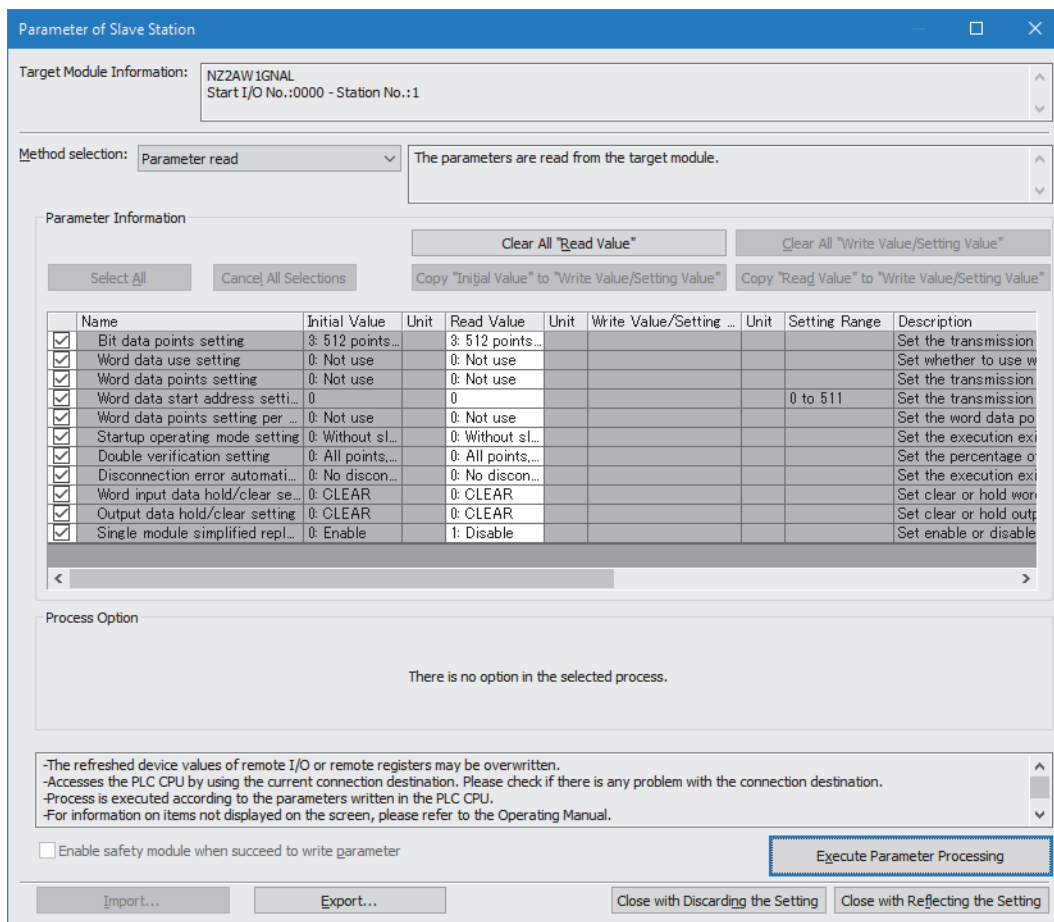
7. Set "Parameter write" for "Method Selection".
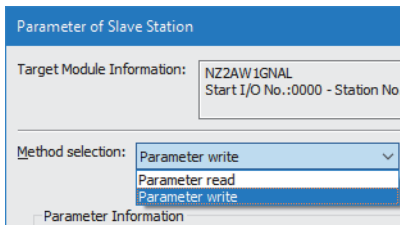
8. Select the item to be changed and set a new setting value.

• Click the [Copy "Read Value" to "Write Value/Setting Value"] button to paste the value.

• Select the item to be changed and set a new setting value.
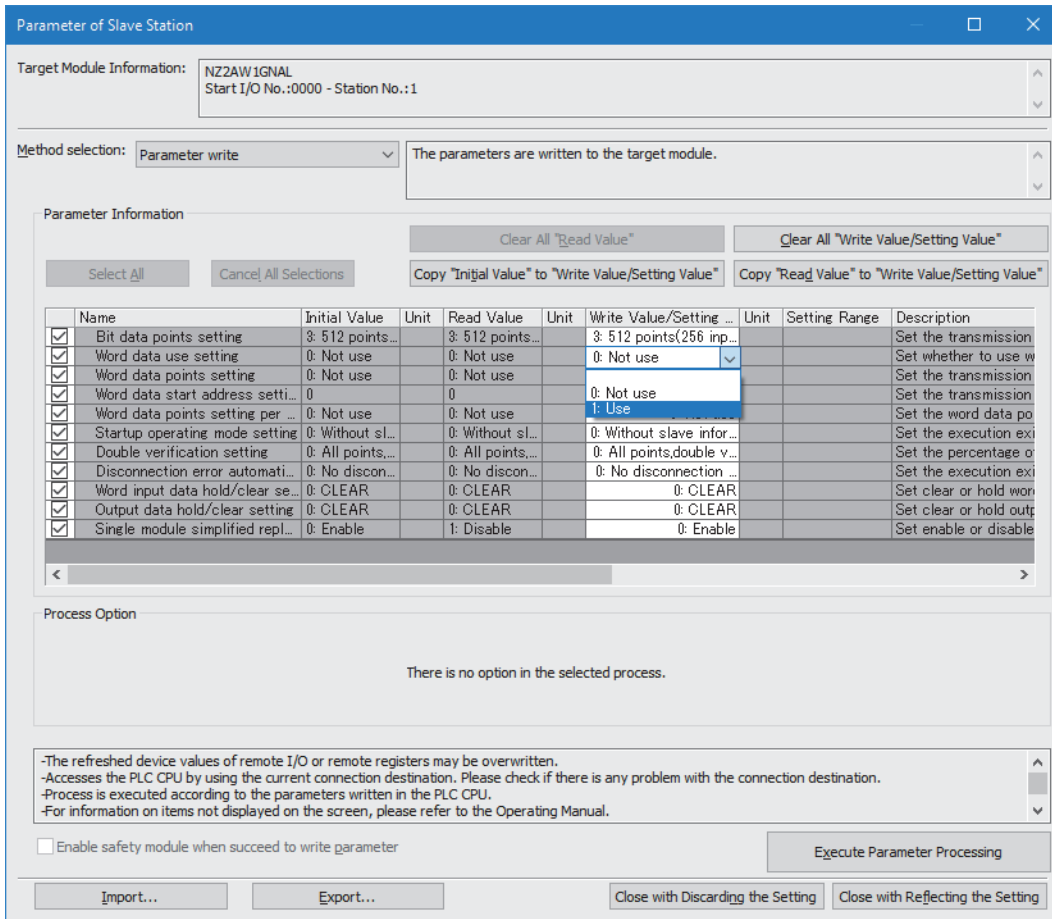
9. Click the [Execute Parameter Processing] button.

10. Follow the instructions on the window and click the [Yes] button.

11. The parameters are written to the NZ2AW1GNAL.

6.3 Settings of Slave Module

Setting the start number of the addresses assigned for data communications 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.

■ Image of address read/write
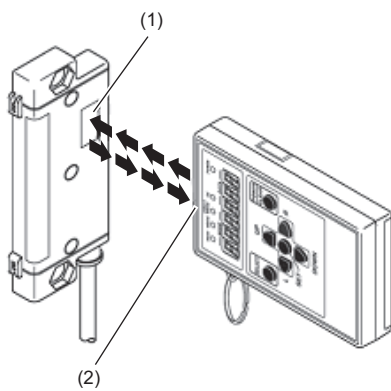
(1) Address setting port
(2) Light projecting/receiving part

> **Point**
>
> • Addresses cannot be read or written using the address writer unless the power is supplied to the slave module.
> • When making the settings related to the word transmission function using the address writer, check the supported models or versions.

Address setting

Set the address of each slave module to assign the slave module to the memory area.

Address means the start bit or word of the memory area occupied by the slave module, which is set using a decimal number.

The memory area corresponding to the number of slave module points is occupied from the specified address.

The number of occupied points differs depending on the slave module. Also, check that the occupied memory area is not duplicated.

For details, refer to the following.

📖 Manual of the slave module used (manufactured by Anywire Corporation)

Address and ID

The following table shows the relationship between address and ID.

Model		Address	ID
Bit type	Output slave module	0 to 510	0000H to 01FEH
	Input slave module		0200H to 03FEH
	I/O combined slave module		
Word type	Output slave module	0 to 510	0400H to 05FEH
	Input slave module		0600H to 07FEH
	I/O combined slave module		
Word/bit type	Output slave module	0 to 510	0400H to 05FEH
	Input slave module		0600H to 07FEH
	I/O combined slave module		

When data is written to the slave module, the data is written in the range of the above address (not in the range of the ID).

■Word/bit-type slave module

The following table shows the address and ID of the slave module that uses both bit transmission and word transmission.

Item	Description
Address	Use word address on slave modules that use both bit transmission and word transmission. When a word address is set, the same address will be applied to the bit address.[1] For example, when the word address is set to 120, the bit address is set to 120.
ID	ID is assigned as a word address. For example, when address 120 (0078H) is set on the word input slave module, the ID is set to 0678H.

[1] Slave modules for which bit address is selected do not perform word transmission. For the operation of slave modules for which bit address is selected, refer to the following.
📖 Manual of the slave module used (manufactured by Anywire Corporation)

Address setting example

■Assignment by 2-point bit slave module only

The following shows the areas occupied by each address setting when using the slave module as shown below.

- One 2-point bit input slave module: Address setting "0"
- Two 2-point bit output slave modules: Address setting "0" "2"
- Remote input signal of input slave module

Remote input signal	Bit No. (0 to F)/Address (0 to 15)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RX2□	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1[*1]	0[*1]

The value from 0 to F of the input data bit goes into □.

*1   Areas occupied by address 0 of the 2-point slave module: RX20, RX21

- Remote output signal of output slave module

Remote output signal	Bit No. (0 to F)/Address (0 to 15)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RY2□	15	14	13	12	11	10	9	8	7	6	5	4	3[*3]	2[*3]	1[*2]	0[*2]

The value from 0 to F of the output data bit goes into □.

*2   Areas occupied by address 0 of the 2-point slave module: RY20, RY21
*3   Areas occupied by address 2 of the 2-point slave module: RY22, RY23

■Mixed assignment by 2-point bit slave module and 1-point bit slave module

The following shows the areas occupied by each address setting when using the slave module as shown below.

- Two 2-point bit input slave modules: Address setting "0" "3"
- One 1-point bit input slave module: Address setting "2"
- Two 2-point bit output slave modules: Address setting "0" "3"
- Two 1-point bit output slave modules: Address setting "2"
- Remote input signal of input slave module

Remote input signal	Bit No. (0 to F)/Address (0 to 15)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RX2□	15	14	13	12	11	10	9	8	7	6	5	4[*3]	3[*3]	2[*2]	1[*1]	0[*1]

The value from 0 to F of the input data bit goes into □.

*1   Areas occupied by address 0 of the 2-point slave module: RX20, RX21
*2   Area occupied by address 2 of the 1-point slave module: RX22
*3   Areas occupied by address 3 of the 2-point slave module: RX23, RX24

- Remote output signal of output slave module

Remote output signal	Bit No. (0 to F)/Address (0 to 15)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RY2□	15	14	13	12	11	10	9	8	7	6	5	4[*6]	3[*6]	2[*5]	1[*4]	0[*4]

The value from 0 to F of the output data bit goes into □.

*4   Areas occupied by address 0 of the 2-point slave module: RY20, RY21
*5   Area occupied by address 2 of the 1-point slave module: RY22
*6   Areas occupied by address 3 of the 2-point slave module: RY23, RY24

6

■Assignment by 2-word word slave module only

The following shows the areas occupied by each address setting when using the slave module as shown below.

- One 2-word word input slave module: Address setting "0"
- Two 2-word word output slave modules: Address setting "0" "2"
- Remote register of input slave module

Remote register	Address
RWr32	0[*1]
RWr33	1[*1]
RWr34	2
RWr35	3
RWr36	4

*1 Areas occupied by address 0 of the 2-word slave module: RWr32, RWr33

- Remote register of output slave module

Remote register	Address
RWw32	0[*2]
RWw33	1[*2]
RWw34	2[*3]
RWw35	3[*3]
RWw36	4

*2 Areas occupied by address 0 of the 2-word slave module: RWw32, RWw33
*3 Areas occupied by address 2 of the 2-word slave module: RWw34, RWw35

Values are correctly stored in the remote register only when the number of points is set to 8 words (4 input words/4 output words) or larger.

Precautions

- A setting address to a slave module is not deleted even when the system is powered off. The address is retained in the slave module until a new address is set.
- In the address setting, ensure that the address occupied by the slave module does not exceed the number of transmission points set in the NZ2AW1GNAL. For the operation mode setting of the NZ2AW1GNAL, refer to the following.

☞ Page 27 MODE switch setting

☞ Page 44 Settings of NZ2AW1GNAL Parameters

- Do not use the following values when writing the address of the slave module. Otherwise, No ID setting error (alarm code: 0D91H) occurs.

Model		Number of NZ2AW1GNAL bit data points setting			
		When it is 512 points or less		When it is 1024 points	
		Address	ID	Address	ID
Bit type	Output slave module	255, 511	00FFH	511	01FFH
	Input slave module	255, 511	02FFH	511	03FFH
	I/O combined slave module	255, 511	02FFH	511	03FFH
Word type	Output slave module	511	00FFH	511	01FFH
	Input slave module	511	02FFH	511	03FFH
	I/O combined slave module	511	02FFH	511	03FFH
Word/bit type	Output slave module	511	00FFH	511	01FFH
	Input slave module	511	02FFH	511	03FFH
	I/O combined slave module	511	02FFH	511	03FFH

Slave module parameter setting

There are the following methods for setting the parameters of the slave module.

- Settings using iQ Sensor Solution functions (🕮 iQ Sensor Solution Reference Manual)
- Setting using program (☞ Page 113 Parameter individual write)
- Settings using the address writer (🕮 Manual of the slave module used (manufactured by Anywire Corporation))

6

6.4 Automatic Address Detection Function

Automatic address detection refers to a function that stores the IDs (addresses) of the connected slave modules in the non-volatile memory of the NZ2AW1GNAL.

When Automatic address detection command (RY1) is operated or the SET switch on the NZ2AW1GNAL is pressed, the NZ2AW1GNAL detects and stores the ID (address) of the connected slave module.

The ID (address) information stored in the non-volatile memory is held even when the module is powered off. However, the parameter information of the same ID information is 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.

Performing the automatic address detection mode

Automatic address detection has two modes of operation: normal mode and high-speed mode.

The operation mode is automatically selected by the NZ2AW1GNAL.

To see which operation mode the automatic address detection is in, check Automatic address detection operation mode (RX18).

Normal mode

In this mode, automatic address detection is executed without stopping AnyWireASLINK bit data transmission and word data transmission. Automatic address detection can be executed even while the system is running, but the process takes longer to complete.

High-speed mode

In this mode, AnyWireASLINK bit data transmission and word data transmission are stopped before automatic address detection is executed. There is a need to stop the system at the time execution, but automatic address detection is executed at high speed.

■High-speed mode execution conditions

The system will automatically change to high-speed mode when all of the following conditions are met.

- If either the CPU is in the STOP state, CC-Link IE TSN is disconnected, or cyclic transmission is stopped for CC-Link IE TSN
- If the "Output data hold/clear setting" setting in "Network Configuration Settings" of "Basic Settings" of the master station is set to "0: CLEAR"

Once the automatic address detection function starts in high-speed mode, that state will be maintained even when one of the conditions above becomes invalid during execution. AnyWireASLINK bit data transmission and word data transmission will also remain stopped. After the automatic address detection is completed, bit data transmission and word data transmission will restart.

Performing the automatic address detection

To execute the automatic address detection, use the SET switch or Automatic address detection command (RY1).

Using the SET switch

1. Check that all of the slave modules are operating normally.

2. Keep pressing the SET switch on the NZ2AW1GNAL until the SET LED turns on.
At this time, Automatic address detection flag (RX14) turns on.

3. When the SET LED flashes for a while and turns off, the ID (address) has been stored.

4. When Automatic address detection flag (RX14) turns off, the automatic address detection is completed.

Using Automatic address detection command (RY1)

1. Check that all of the slave modules are operating normally.

2. Turn on Automatic address detection command (RY1) and check that Automatic address detection flag (RX14) is on before turning off Automatic address detection command (RY1).

3. When the SET LED flashes for a while and turns off, the ID (address) has been stored.

4. When Automatic address detection flag (RX14) turns off, the automatic address detection is completed.

> **Point**
>
> For creating the program of automatic address detection, refer to the following.
> ☞ Page 98 Automatic address detection

Precautions

■Situations in which automatic address detection cannot be executed

The automatic address detection cannot be performed in the following cases.
- Remote READY (RX0) is off.
- Adjustment mode flag (RXF) is on.
- Parameter access completion flag (RX11) is off.
- Automatic address detection is in progress. (Automatic address detection flag (RX14) is on.)
- Address inspection is in progress. (Address inspection flag (RX15) is on.)
- When any of the following errors or alarms has occurred

Error code, alarm code	Description
0CC9H	DP/DN short error
0CCBH	24V/DP short error
2010H	Non-volatile memory data error (parameter)
2011H	Non-volatile memory data error (IP address)
2400H	IP address setting switch range error
2500H	Module power supply voltage drop error
3000H	Non-volatile memory access error (slave module information)
3C00H	Hardware error

■Situations in which automatic address detection is required

Execute automatic address detection in the following cases.
- 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
- When the device parameters of the slave module are changed

■Check after execution of automatic address detection

After executing automatic address detection, check that there is no inconsistency between the actual system configuration and the IDs registered in the NZ2AW1GNAL, referring to the value stored in Number of the IDs of the connected modules (RWr7) and values stored in Connected module ID information storage area (5300H to 53FFH).

The following remote buffer memory areas are also updated after the automatic address detection is executed.
 • Slave parameter storage area (1000H to 3FFFH)
 • Parameter storage location memory number (4000H to 47FFH)

■Executing automatic address detection again

Use an address writer to set the ID (address) in a slave module that has the same ID as other slave modules or where an ID is not set. Then execute automatic address detection again.

■Word slave modules

When the automatic address detection function is executed with a word slave module connected, set the module parameter setting so that word transmission is used. When word transmission is not used, the address is not recognized by the automatic address detection function.

■Bit slave modules

The bit slave module is recognized by the automatic address detection function even if the number of AnyWireASLINK bit points is set to 0 (0 input points/0 output points).

■Word data transmission

When word data transmission is used, check that the slave module supports word data. If word data transmission is not supported, the address is not recognized by the automatic address detection function. For details on whether each slave module supports word data transmission, refer to the following.

📖 Manual of the slave module used (manufactured by Anywire Corporation)

■Clearing error information and alarm information

When automatic address detection is executed, the error information and alarm information are cleared. The error information and alarm information to be cleared is the same as when the Error reset request flag (RY0) is turned on.

> **Point**
>
> The following functions cannot be used when the automatic address detection is in progress.
> • Automatic update of the slave module parameter read/write function
> • Disconnected transmission cable location detection function

Automatic address detection execution timing

The following shows automatic address detection execution timing.

Automatic address detection command (RY1)[1]
(or press and hold the SET switch)

Automatic address detection flag (RX14)

SET LED

Address inspection flag (RX15)

Parameter access completion flag (RX11)

Parameter access error (RX12)

ON / OFF

Automatic address detection in progress

LED flashing (recording)

LED on

ID search

Address inspection + Parameter read

In progress

Batch read execution

When a parameter access error occurs

[1] After turning on Automatic address detection command (RY1), check that Automatic address detection flag (RX14) is on or check the SET LED status. Then, turn off Automatic address detection command (RY1) with a program.

6

7 FUNCTIONS

7.1 AnyWireASLINK Transmission

The AnyWireASLINK is a high-speed and highly reliable system which releases the work site from complicated and incorrect wiring.

In AnyWireASLINK, the NZ2AW1GNAL communicates with slave modules using IDs (addresses) of the slave modules.
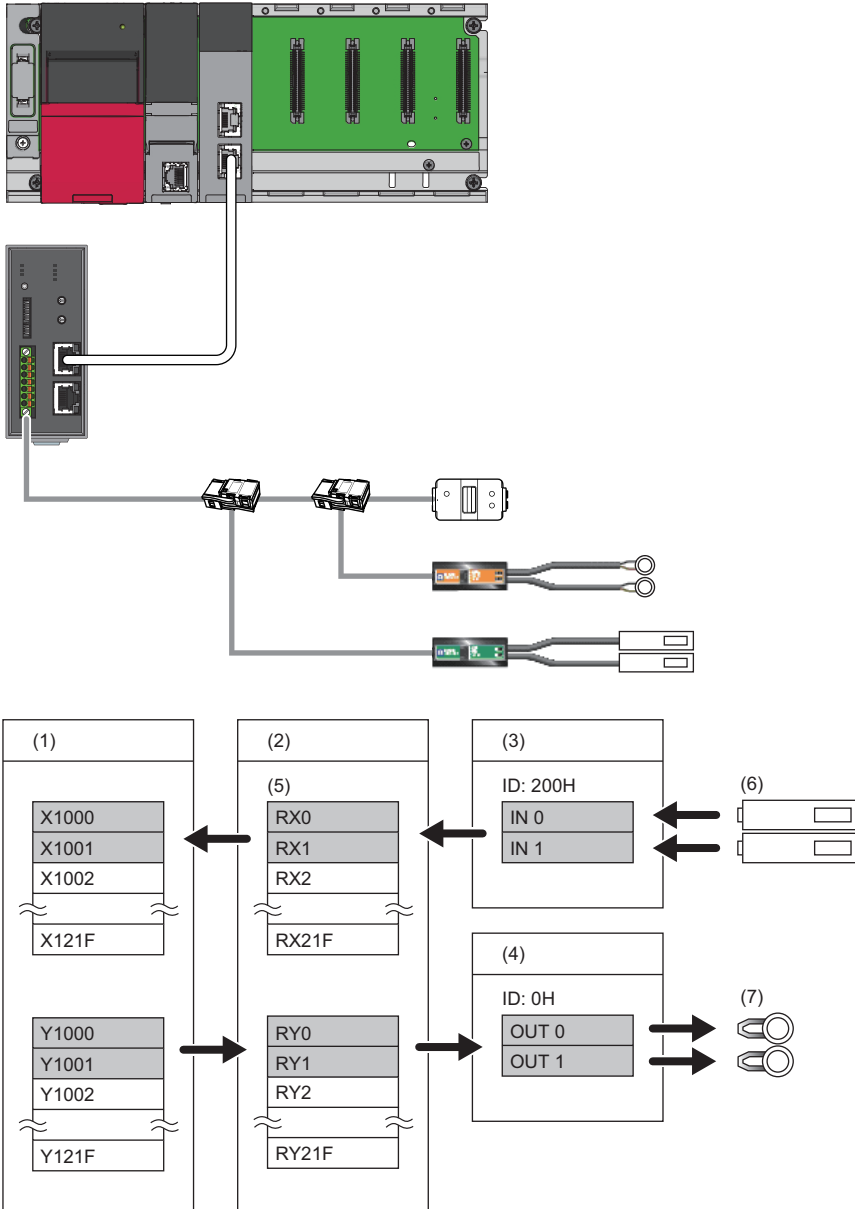
(1) CPU module
(2) NZ2AW1GNAL
(3) Input slave module (ASLINKER): Address 0
(4) Output slave module (ASLINKER): Address 0
(5) Remote I/O signals, remote register
(6) Sensor switch
(7) LED

Bit transmission

This function exchanges I/O data of up to 1024 points (input 512 points, output 512 points) between the NZ2AW1GNAL and a slave module.

Point

- If the number of bit points is set to 1024 (input 512 points, output 512 points), configure a system only with slave modules that support 1024 points of bit data. Communications cannot be established between the slave module that does not support 1024 points of bit data points and the NZ2AW1GNAL that is set to use 1024 points of bit data (input 512 points, output 512 points).
- To see whether the slave modules support 1024 points of bit data, refer to their manual (manufactured by Anywire Corporation).

Transmission setting

The number of bit data points to be transmitted can be set by any of the following.
- "Bit data points setting" in the "Parameter of Slave Station" window
☞ Page 44 Settings of NZ2AW1GNAL Parameters
- SLMPSND instruction
For details on the SLMPSND instruction, refer to the following.
📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)
- MODE switch
☞ Page 27 MODE switch setting

Word transmission

This function exchanges I/O data of maximum 1024 words (input 512 words, output 512 words) between the NZ2AW1GNAL and a slave module.

Point

- To execute word transmission, configure a system only with slave modules that support word data. Communications cannot be established between the slave module that does not support word data and the NZ2AW1GNAL that is performing word transmission.
- To see whether the slave modules support word transmission, refer to their manual (manufactured by Anywire Corporation).
- The AnyWireASLINK version compatibility inspection function can be used to detect slave modules that do not support word transmission in the AnyWireASLINK system. (☞ Page 81 AnyWireASLINK Version Compatibility Inspection Function)

Transmission setting

Word data points to be transmitted can be set by one of the following.
- "Word data points setting" in the "Parameter of Slave Station" window
☞ Page 44 Settings of NZ2AW1GNAL Parameters
- SLMPSND instruction
For details on the SLMPSND instruction, refer to the following.
📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)
- MODE switch
☞ Page 27 MODE switch setting

7.2 Remote Address Change Function

This function changes the ID (address) of a slave module remotely without an address writer.
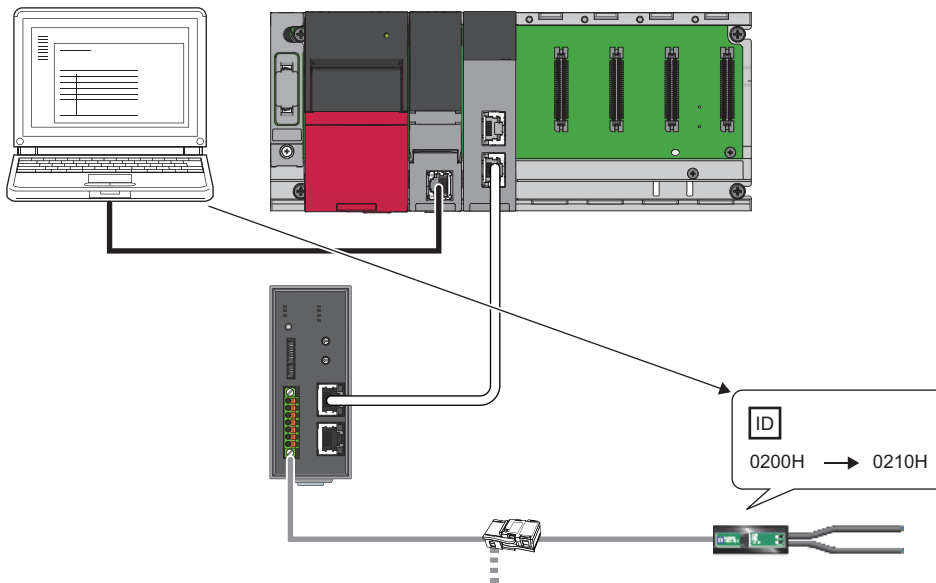
Applicable slave modules

For the slave modules that support the remote address change function, refer to the manual for each slave module used.

Operating procedure

1. Specify an access method to a slave module.

Store 0002H (remote address change) in Parameter access setting (RWw0).

2. Specify an ID of the slave module to be accessed.

Store the ID to be changed (old ID) in Parameter access target module ID specification (RWw1).

ID	Description
0000H to 01FFH	ID of a bit output slave module
0200H to 03FFH	ID of a bit input slave module or bit I/O combined slave module
0400H to 05FFH	ID of a word output slave module
0600H to 07FFH	ID of a word input slave module or word I/O combined slave module

3. Specify a new ID of the slave module.

Store the new ID in Change ID specification (RWw2).

4. Turn on Slave module parameter access request command (RY10).

At this time, Parameter access completion flag (RX11) turns off.

5. Turn off Slave module parameter access request command (RY10).

6. When the parameter access is completed, Parameter access completion flag (RX11) automatically turns on.

If the ID being changed to has already been registered or it is out of the settable range, a New ID error (alarm code: 0D92H) will occur.

7. After changing the IDs of all the target slave modules, execute automatic address detection. (☞ Page 56 Automatic Address Detection Function)

> **Point**
>
> To create a remote address change program, refer to the following.
> ☞ Page 100 Remote address change

Precautions

- Before changing the remote address, perform automatic address detection and check that it completes without any errors.
- After changing the remote address, perform automatic address detection. However, when changing multiple IDs, perform automatic address detection after completing all of them.
- This function cannot be executed for slave modules separated from the NZ2AW1GNAL because of disconnection or slave modules having the same ID. For slave modules that have the same IDs, use an address writer to change the IDs of the slave modules.
- This function can be executed if only one slave module having no ID exists within one AnyWireASLINK line. If IDs of multiple slave modules are not set, the ID would be duplicated, so the IDs cannot be changed.
- If a slave module cannot be set to a word address, do not change to the ID of a word output, word input, or word I/O combined slave module. By doing so, a New ID error (alarm code: 0D92H) will occur in NZ2AW1GNAL.
- Do not set addresses 256 to 510 for slave modules that do not support 1024 points of bit data. If set, a New ID error (alarm code: 0D92H) will occur in NZ2AW1GNAL.
- The conditions where the remote address change function cannot be executed are the same as for slave module parameter read/write. For details, refer to the following.

7.3 Address Inspection Function

This function executes an address inspection to detect a slave module having no ID or a slave module having a duplicate ID.

Point
- If the NZ2AW1GNAL is reset or the power supply is turned off after the no ID setting status and ID duplication are detected, the no ID number setting status and ID duplication status cannot be checked until automatic address detection and address inspection are performed again. Execute the address automatic detection and the address inspection command operations again.
- If the same ID is set for multiple slave modules, a single ID is stored in Number of the alarm IDs (RWr8) and Alarm ID information storage area (5500H to 55FFH). For example, even when multiple modules have an ID 000AH, "1" is stored in Number of the alarm IDs (RWr8) and "000AH" is stored in Alarm ID information storage area (5500H to 55FFH).
- Even if no ID number is set or the ID is duplicated, bit transmission and word transmission do not stop. However, the operation of the NZ2AW1GNAL and slave modules is not guaranteed in the ID duplication state.

How to execute the address inspection

1. Turn on Address inspection command (RY2). Address inspection will start.

2. Confirm that Address inspection flag (RX15) turns on, and turn off Address inspection command (RY2).

3. When Address inspection flag (RX15) turns off, the address inspection is completed.

Precautions

An Address inspection cannot be performed in the following cases.
- Remote READY (RX0) is off.
- Adjustment mode flag (RXF) is on.
- Parameter access completion flag (RX11) is off.
- Automatic address detection is in progress. (Automatic address detection flag (RX14) is on.)
- Address inspection is in progress. (Address inspection flag (RX15) is on.)
- When any of the following errors or alarms has occurred

Error code, alarm code	Description
0CC9H	DP/DN short error
0CCBH	24V/DP short error
2010H	Non-volatile memory data error (parameter)
2011H	Non-volatile memory data error (IP address)
2400H	IP address setting switch range error
2500H	Module power supply voltage drop error
3000H	Non-volatile memory access error (slave module information)
3C00H	Hardware error

When address inspection is executed, the error information and alarm information are cleared. The error information and alarm information to be cleared is the same as when the Error reset request flag (RY0) is turned on.
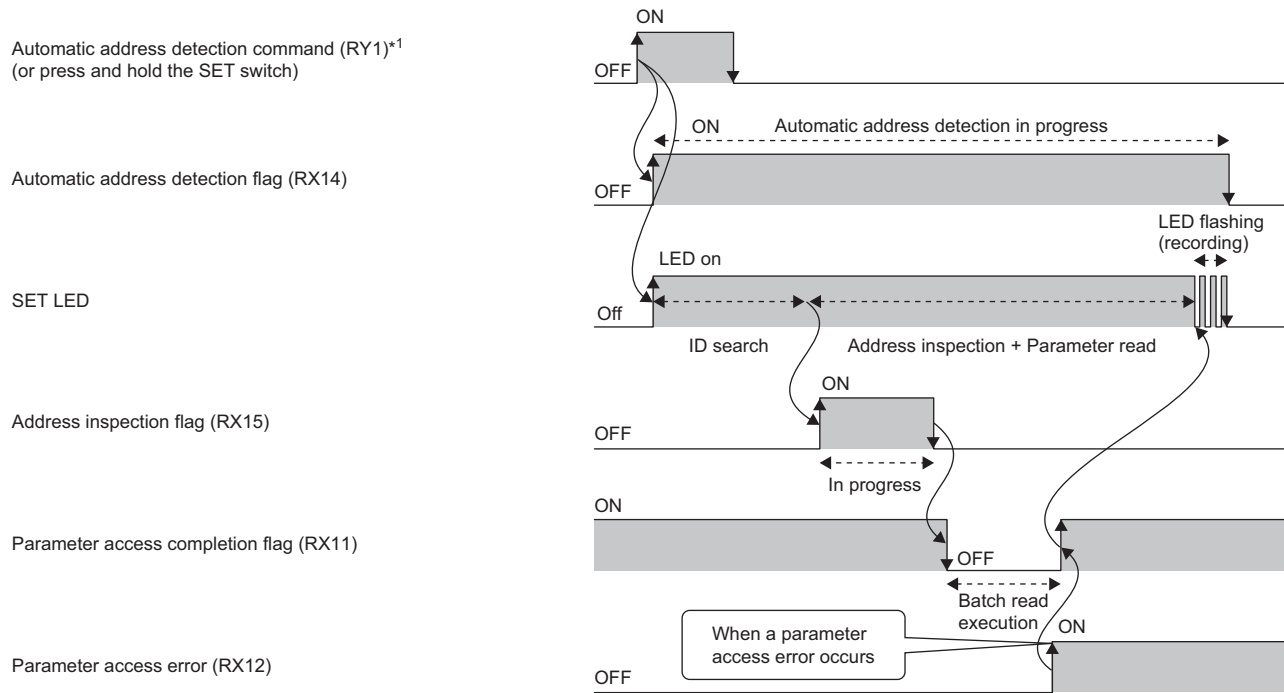
How to check the no ID number setting status

If the NZ2AW1GNAL is in the following state, the no ID number setting status is detected.
- Slave module alarm signal (RX10) turns on.
- The No ID setting error (alarm code: 0D91H) is stored in Latest alarm code storage area (RWr2), and unset IDs are stored in Latest alarm ID storage area (RWr3).[1]

*1   If multiple alarms occur simultaneously, the latest alarm is displayed.

How to recover from the no ID number setting status

Check Number of the alarm IDs (RWr8) and Alarm ID information storage area (5500H to 55FFH). Then set a unique ID (address) in all the slave modules. (☞ Page 154 Number of the alarm IDs, ☞ Page 176 Alarm ID information storage area)

Check that the default address is not set to the slave module.

After setting the slave module ID (address), execute the automatic address detection of the NZ2AW1GNAL. The slave module ID is registered in the NZ2AW1GNAL, and the error is cleared. (☞ Page 56 Automatic Address Detection Function)

> **Point**
>
> For the operation slave modules with no ID assigned, refer to the following.
> 📖 Manual of the slave module used (manufactured by Anywire Corporation)

How to check the ID duplication status

If the NZ2AW1GNAL is in the following state, ID duplication status is detected.
- Slave module alarm signal (RX10) turns on.
- Same ID used error (alarm code: 0D90H) is stored in Latest alarm code storage area (RWr2), and duplicate IDs are stored in Latest alarm ID storage area (RWr3).[1]

*1   If multiple alarms occur simultaneously, the latest alarm is displayed.

How to recover from the ID duplication state

Check Number of the alarm IDs (RWr8) and Alarm ID information storage area (5500H to 55FFH). Then set a unique ID (address) in all the slave modules. (☞ Page 154 Number of the alarm IDs, ☞ Page 176 Alarm ID information storage area)

After setting the slave module ID (address), execute the automatic address detection of the NZ2AW1GNAL. The slave module ID is registered in the NZ2AW1GNAL, and the error is cleared. (☞ Page 56 Automatic Address Detection Function)

Address inspection timing

The following figure shows the address inspection timing.
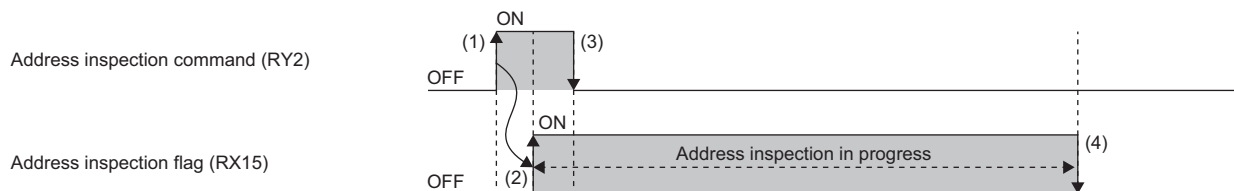
No.	Description
(1)	Turn on Address inspection command (RY2) to start address inspection.
(2)	For the IDs stored in non-volatile memory, no ID setting status detection and ID duplication detection are executed. At this time, Address inspection flag (RX15) turns on.
(3)	After checking that Address inspection flag (RX15) is on, turn off Address inspection command (RY2).
(4)	When the address inspection is completed, Address inspection flag (RX15) turns off.

7.4 Transmission Cable Short Detection Function

This function protects the system by detecting the current out of the specifications of the AnyWireASLINK system across DP-DN or 24V-DP and stopping the transmission.

How to check the transmission cable short status

If the NZ2AW1GNAL is in the following state, a transmission cable short has occurred.
- The ALM LED flashes at 2-second intervals.
- When any of the transmission cables (DP, DN) is short-circuited, DP/DN short error (RX1) turns on.
- When any of the transmission cables (24V, DP) is short-circuited, 24V/DP short error (RX2) turns on.
- DP/DN short error (alarm code: 0CC9H) or 24V/DP short error (alarm code: 0CCBH) is stored in Latest alarm code storage area (RWr2), and "0FFFH" is stored in Latest alarm ID storage area (RWr3).[1]
- The AnyWireASLINK transmission stops.

[1] If multiple alarms occur simultaneously, the latest alarm 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 status is cleared, the AnyWireASLINK transmission restarts automatically.

If AnyWireASLINK transmission does not restart, the short-circuit has not been eliminated. Therefore, check the wiring again.

2. Power off and on the AnyWireASLINK system or turn off and on Error reset request flag (RY0).

The following status is resulted.
- DP/DN short error (RX1) and 24V/DP short error (RX2) turn off.
- The ALM LED turns off.
- The contents of Latest alarm code storage area (RWr2) and Latest alarm ID storage area (RWr3) are cleared.

7.5 Disconnected Transmission Cable Location Detection Function

This function notifies the NZ2AW1GNAL of the ID of a slave module that has been separated from the NZ2AW1GNAL because of disconnection in the transmission cables (DP, DN) between the NZ2AW1GNAL and the slave module, to locate the disconnection in the transmission cables (DP, DN) from the upper system.

> **Point**
>
> - To enable the disconnected transmission cable location detection function, perform the automatic address detection when configuring, modifying, or expanding the system. (☞ Page 56 Automatic Address Detection Function)
> - After the system configuration, the disconnection detection works when the slave module is disconnected from the system. Perform the automatic address detection after modifying the system.
> - Even if disconnection in the transmission cable (DP, DN) is detected, the AnyWireASLINK transmission does not stop.
> - Disconnection is not detected for slave modules where Same ID used error (alarm code: 0D90H) has occurred.

How to check the transmission cable disconnection status

If the NZ2AW1GNAL is in the following state, the transmission cable (DP, DN) has been disconnected or a slave module error has occurred.

- The ALM LED flashes.[1]
- DP/DN disconnection error (RX4) turns on.
- The number of disconnected module IDs is stored in Number of the IDs of the disconnected modules (RWr6).
- The disconnected ID (address) is stored in Disconnected ID information storage area (5100H to 51FFH).
- The bits in the Disconnected ID information bit area (5200H to 527FH) that correspond to the IDs of the disconnected slave are modules turned on.
- The DP/DN disconnection error (alarm code: 0D00H) is stored in Latest alarm code storage area (RWr2), and disconnected IDs are stored in Latest alarm ID storage area (RWr3).[1]

[1] If multiple alarms occur simultaneously, the latest alarm is displayed.

How to recover from the transmission cable disconnection status

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

1. Clear the disconnection status in the AnyWireASLINK system.

When the disconnection status is cleared, the AnyWireASLINK transmission restarts automatically.

When the slave module has been disconnected from the system, execute automatic address detection. (☞ Page 56 Automatic Address Detection Function)

2. Power off and on the AnyWireASLINK system or turn on Error reset request flag (RY0).

For operation when the Error reset request flag (RY0) turns on, refer to the following.

☞ Page 147 Error reset request flag

> **Point**
>
> - When the automatic address detection is executed in step 1, the operation in step 2 is not necessary.
> - If "Disconnection error automatic recovery mode setting" in the "Parameter of Slave Station" window is set to disconnection error automatic recovery mode, the error status is automatically cleared after the disconnection status is cleared. However, the Latest alarm code storage area (RWr2) and the Latest alarm ID storage area (RWr3) are not cleared by the disconnection error automatic recovery function. (☞ Page 69 Disconnection Error Automatic Recovery Function)

7.6 Module Power Supply Voltage Drop Detection Function

This function detects a voltage drop in the module power supply, and detects a module power supply failure or wiring error from the upper system.

> **Point**
>
> For the specifications of the module power supply to NZ2AW1GNAL, refer to the following.
> ☞ Page 17 Performance Specifications

How to check the module power supply voltage drop status

If the module power supply voltage drops, the NZ2AW1GNAL will be in the following status.
- When a voltage drop is detected, the ERR. LED turns on.
- Module power supply voltage drop error (RX3) turns on.
- Module power supply voltage drop error (error code: 2500H) is stored in the Latest error code storage area (RWr0), and "0FFFH" is stored in the Latest error ID storage area (RWr1).[*1]
- The AnyWireASLINK transmission stops.

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

How to recover from the module power supply voltage drop state

How to recover from the module power supply voltage drop state is as follows.

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

2. After clearing the module power supply voltage drop state, power off and on the module power supply or perform a remote reset.

The following status is resulted.
- Module power supply voltage drop error (RX3) turns off.
- The ERR. LED turns off.
- The data in Latest error code storage area (RWr0) and Latest error ID storage area (RWr1) are cleared.

7.7 Disconnection Error Automatic Recovery Function

For DP/DN disconnection errors, this function automatically clears the error flag when the disconnection error status is cleared.

Normally, if a disconnection error has occurred, the cause of the disconnection error must be eliminated, and either the AnyWireASLINK system needs to be powered off and on or Error reset request flag (RY0) needs to be turned on and off.

Alarm that can be automatically recovered

The following table lists the alarm that can be automatically recovered.

Alarm code	Alarm description
0D00H	DP/DN disconnection error

Setting method

For the disconnection error automatic recovery function, set "Disconnection error automatic recovery mode setting" in the "Parameter of Slave Station" window. (☞ Page 44 Settings of NZ2AW1GNAL Parameters)

Status of each signal when alarm is generated and cleared

The following table lists the status of each signal when the alarm is generated and when it is cleared.

Signal name	When alarm occurs	When alarm is cleared
DP/DN disconnection error (RX4)	On	Off
Alarm status flag (RX6)	On	Off
Number of the IDs of the disconnected modules (RWr6)	Number of slave modules IDs that are disconnected	0
Disconnected ID information storage area (5100H to 51FFH)	All the IDs of the slave modules that are disconnected are stored.	All 0
Disconnected ID information bit area (5200H to 527FH)	The bits corresponding to the IDs of disconnected slave modules are turned on.	All 0
ALM LED	On	Off

Precautions

- If DP/DN disconnection errors occur in multiple slave modules, the DP/DN disconnection error (RX4) and Alarm status flag (RX6) will not turn off until all slave module disconnections are resolved.
- If alarms other than the DP/DN disconnection error (alarm code: 0D00H) are occurring at the same time, clearing the alarm for disconnection error automatic recovery will not clear the Slave module alarm signal.
- The Latest alarm code storage area (RWr2) and the Latest alarm ID storage area (RWr3) are not cleared by the disconnection error automatic recovery function.

7.8 Input/Output Hold/Clear Setting Function

This function sets to hold or clear the last input or output values when the NZ2AW1GNAL is disconnected from a data link, when the operating status of the CPU module is in STOP state, or when the operating status of the CPU module is in error stop status.

> **Point**
>
> If a moderate or major error occurs in the NZ2AW1GNAL, I/O will be turned off regardless of the input/output hold/clear settings.

Input/output hold/clear settings and operation

The following table lists the setting items.

Item	Description
Output data hold/clear setting	Sets whether to clear or hold the output to the slave module when the NZ2AW1GNAL is disconnected from the CC-Link IE TSN data link or a CPU module stop error occurs.
Word input data hold/clear setting when disconnected	Sets whether to clear or hold the word input data when the word slave module is disconnected.

■Output data hold/clear setting

The output of the NZ2AW1GNAL operates as follows depending on the setting value of "Output data hold/clear setting".

Operating status		Output status of bit output		Output status of word output	
NZ2AW1GNAL	CPU module	Output data hold/clear setting: CLEAR	Output data hold/clear setting: HOLD	Output data hold/clear setting: CLEAR	Output data hold/clear setting: HOLD
During data link	RUN	Outputs bit output value (RY value)	Outputs bit output value (RY value)	Outputs word output value (RWw value)	Outputs word output value (RWw value)
	STOP	Off	Hold	0	Hold
	PAUSE	Outputs bit output value (RY value)	Outputs bit output value (RY value)	Outputs word output value (RWw value)	Outputs word output value (RWw value)
	RESET	Off	Hold	0	Hold
	Error stop	Off	Hold	0	Hold
Disconnected/cyclic transmission stopped	—	Off	Hold	0	Hold

■Word input data hold/clear setting when disconnected

The value of the link device (RX, RWr) operates as follows depending on the setting value of "Word input data hold/clear setting when disconnected".

Operating status		Link device input value	
		Word input data hold/clear setting when disconnected: CLEAR	Word input data hold/clear setting when disconnected: HOLD
Normal operation	Bit slave module	Input value stored in RX	Input value stored in RX
	Word slave module	Input value is stored in RWr	Input value is stored in RWr
Slave module disconnection	Bit slave module	0	0
	Word slave module	0	Hold

Setting method

For the input/output hold/clear setting function, set "Output data hold/clear setting" and "Word input data hold/clear setting when disconnected" in the "Parameter of Slave Station" window. (☞ Page 44 Settings of NZ2AW1GNAL Parameters)

7.9 Slave Module Information Acquisition Function at Start-Up

This function automatically acquires a slave module information when the NZ2AW1GNAL is powered off and on or is reset remotely.

For the parameters of the slave module stored, refer to the following.

☞ Page 72 Slave Module Parameter Read/Write

Setting method

For the slave module information acquisition function at start-up, set "Startup operating mode setting" in the "Parameter of Slave Station" window. (☞ Page 44 Settings of NZ2AW1GNAL Parameters)

Operation at start-up

After the NZ2AW1GNAL is remote reset or the power is turned off and on, if the NZ2AW1GNAL is communicating normally, parameter batch read is automatically executed for the slave modules with addresses that are registered by automatic address detection. Parameters that have been read are stored in the remote buffer memory.

7.10 Slave Module Parameter Read/Write

This function reads/writes individual or all parameter information of a slave module or the AnyWireASLINK by using the program.

Use this function to check or change parameter information of a slave module.

For details on the parameter information to be read/written, refer to the following.

☞ Page 155 Parameter access setting

☞ Page 156 Parameter access target module ID specification

Parameter reading and writing methods

The following table lists the parameter read/write methods.

Type			Description
Automatic update			The status details and the sensing level of all slave modules are read at regular intervals. (Setting values are excluded.)
Parameter access	Parameter individual access	Parameter individual read	Read the parameters of any slave module.
		Parameter individual write	Write the parameters of any slave module.
	Parameter batch access	Parameter batch read	Read the parameters of all slave modules.
		Parameter batch write	Write the parameters of all slave modules.

The following shows the readable/writable parameters.

○: Possible, ×: Impossible

Parameter name		Parameter reading/writing method				
		Automatic update	Parameter access			
			Parameter individual read	Parameter individual write	Parameter batch read	Parameter batch write
Device parameter[1]		×	○	○	○	○
AnyWireASLINK parameter	Module ID	×	○	×	○	×
	Status details	○	○	×	○	×
	Sensing level	○	○	×	○	×
	Word point pattern	×	○	×	○	×
	Bit point pattern	×	○	×	○	×
	Model number	×	○	×	○	×
	Device version	×	○	×	○	×

[1] The parameters that can be set differ depending on the slave module. For details, check the manual of the slave module used (manufactured by Anywire Corporation).

> **Point**
>
> Parameter access does not affect the AnyWireASLINK transmission cycle time.

Automatic update

The status details and sensing level of the AnyWireASLINK parameters are automatically updated, so no special operation is required. To check the parameter information, refer to the corresponding remote buffer memory.

Parameter access

The operating procedure for parameter access is as follows.

> **Point**
>
> - Clear the unset IDs and ID duplication of the slave module before performing parameter access.
> - Because parameter individual write and parameter batch write update all parameters of the target slave module, read the parameters before writing and ensure that all of the parameters, including the unchanged parts, are set correctly when writing.
> - Parameter access does not affect the AnyWireASLINK transmission cycle time.
> - Parameter batch read is automatically executed after the automatic address detection function is performed.
> - Parameter access completion flag (RX11) is off when Slave module parameter access request command (RY10), Slave module parameter batch read command (RY11), or Slave module parameter batch write command (RY12) have turned on. When Parameter access completion flag (RX11), Slave module parameter access request command (RY10), Slave module parameter batch read command (RY11), and Slave module parameter batch write command (RY12) are all turned off, the flag turns on.
>
>   For details on adjusting the access timing, refer to the following.
>
>   ☞ Page 75 Parameter access timing
> - Upon parameter batch read or parameter batch write, the values stored in Parameter access setting (RWw0) and Parameter access target module ID specification (RWw1) are ignored.

■Parameter individual read

A sample program for reading individual parameters is as follows.

☞ Page 110 Parameter individual read

1. Specify the access method.

Store 0000H (read) in Parameter access setting (RWw0).

2. Specify the access target ID.

Store the access target ID in Parameter access target module ID specification (RWw1).

3. Turn on Slave module parameter access request command (RY10).

At this time, Parameter access completion flag (RX11) turns off.

4. Turn off Slave module parameter access request command (RY10).

5. When the parameter access is completed, Parameter access completion flag (RX11) automatically turns on.

6. After the Parameter access completion flag (RX11) turns on, use the SLMPSND instruction to acquire the start address where the parameters of the access target ID are stored from the parameter storage location memory address.

For details on the SLMPSND instruction, refer to the following.

📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

7. Read 48 words of data from the start address acquired using the SLMPSND instruction.

*1 For details on the 48 words of data that were read, refer to the following.
☞ Page 173 Slave parameter storage area

■Parameter individual write

A sample program for writing individual parameters is as follows.

☞ Page 113 Parameter individual write

1. Read the parameters referring to the procedure in "Parameter individual read" or "Parameter batch read".

2. Use the SLMPSND instruction to write the desired value in the buffer memory for the device parameter.

For details on the SLMPSND instruction, refer to the following.

📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

3. Specify the access method.

Store 0001H (write) in Parameter access setting (RWw0).

4. Specify the access target ID.

Store the access target ID in Parameter access target module ID specification (RWw1).

5. Turn on Slave module parameter access request command (RY10).

At this time, Parameter access completion flag (RX11) turns off.

6. Turn off Slave module parameter access request command (RY10).

7. When the parameter access is completed, Parameter access completion flag (RX11) automatically turns on.

■Parameter batch read

The operating procedure for parameter batch read is as follows.

1. Turn on Slave module parameter batch read command (RY11).

At this time, Parameter access completion flag (RX11) turns off.

2. Turn off Slave module parameter batch read command (RY11).

3. When the parameter access is completed, Parameter access completion flag (RX11) automatically turns on.

4. After the Parameter access completion flag (RX11) turns on, execute the following for all connected slave modules.

Use the SLMPSND instruction to acquire the start address where the parameters of the access target ID are stored from the parameter storage location memory address.

For details on the SLMPSND instruction, refer to the following.

📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

5. Execute the following for all connected slave modules.

Read 48 words of data from the start address acquired using the SLMPSND instruction.[1]

*1 For details on the 48 words of data that were read, refer to the following.
☞ Page 173 Slave parameter storage area

■Parameter batch write

The operating procedure for parameter batch write is as follows.

1. Read the parameters referring to the procedure in "Parameter batch read".[1]

*1 Because parameter batch write updates all parameters of target slave modules, all parameters to which no changes are made need to be set correctly.
Executing parameter batch write without executing parameter batch read will result in a malfunction.

2. Use the SLMPSND instruction for all connected slave modules to write the desired value in the buffer memory corresponding to the device parameter.

For details on the SLMPSND instruction, refer to the following.

📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

3. Turn on Slave module parameter batch write command (RY12).

At this time, Parameter access completion flag (RX11) turns off.

4. Turn off Slave module parameter batch write command (RY12).

5. When the parameter access is completed, Parameter access completion flag (RX11) automatically turns on.

Parameter access timing

The parameter access timing is as follows.

```
- - - - - - -▶   Executed by the program
──────────▶   Executed by the NZ2AW1GNAL
```

Slave module parameter access request command (RY10),
Slave module parameter batch read command (RY11),
Slave module parameter batch write command (RY12)

Parameter access completion flag (RX11)

Slave module alarm signal (RX10),
Parameter access error (RX12)

Error reset request flag (RY0)

No.	Description
(1)	Parameter access starts when one of the following signals is turned on by programs.[1] • Slave module parameter access request command (RY10) • Slave module parameter batch read command (RY11) • Slave module parameter batch write command (RY12)
(2)	The operation in (1) turns off Parameter access completion flag (RX11).
(3)	The parameter access is in progress.
(4)	After checking that Parameter access completion flag (RX11) is off, the signal that was turned on in (1) is turned off by using the program.
(5)	When the signal of (1) is off and the parameter access is completed, Parameter access completion flag (RX11) automatically turns on. To read the parameters, perform the following. After the Parameter access completion flag (RX11) turns on, use the SLMPSND instruction to acquire the start address where the parameters of the access target ID are stored from the parameter storage location memory address. For details on the SLMPSND instruction, refer to the following. 📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions) Read 48 words of data from the acquired start address by the SLMPSND instruction.[1]
(6)	If parameter access has an error, Parameter access error (RX12) turns off and on and Parameter access completion flag (RX11) automatically turns off and on.[2]
(7)	When Error reset request flag (RY0) is turned on by programs, Slave module alarm signal (RX10) and Parameter access error (RX12) turn off.

*1 For details on the 48 words of data that were read, refer to the following.
   ☞ Page 173 Slave parameter storage area
*2 The slave module alarm signal and parameter access error are maintained until Error reset request flag (RY0) is turned on. Errors are stored in the appropriate memory areas.

Precautions

■Parameter setting

Parameter access cannot be executed in the following cases.

- Remote READY (RX0) is off.
- Parameter access completion flag (RX11) is off.
- Automatic address detection flag (RX14) is on.
- Address inspection flag (RX15) is on.
- Adjustment mode flag (RXF) is on.
- Some slave modules are not registered by automatic address detection.
- When any of the following errors or alarms has occurred

Error code, alarm code	Description
0CC9H	DP/DN short error
0CCBH	24V/DP short error
0D00H	DP/DN disconnection error
0D90H	Same ID used error
2010H	Non-volatile memory data error (parameter)
2011H	Non-volatile memory data error (IP address)
2400H	IP address setting switch range error
2500H	Module power supply voltage drop error
3000H	Non-volatile memory access error (slave module information)
3C00H	Hardware error

■Parameter access

- If an ID that is not registered by automatic address detection is set in the Parameter access target module ID specification (RWw1), a Parameter access target module ID error (alarm code: 0D2EH) will occur.
- If an error or alarm occurs during parameter access, parameter read/write may not be completed successfully. In that case, re-execute the parameter access.
- When a DP/DN disconnection error (alarm code: 0D00H) or Same ID used error (alarm code: 0D90H) occurs, parameter individual read and parameter individual write cannot be executed for the slave modules that are disconnected or duplicated. When parameter batch reading and parameter batch writing are executed, the information of the slave modules that are disconnected or duplicated cannot be read/written.
- To use parameter access, a master module that supports SLMPSND instruction must be used. For whether a master module supports SLMPSND instruction, refer to the manual for the master module used.

7.11 Easy Replacement Function for One Slave Module

This function automatically sets the address and the device parameters without an address writer when the slave module is replaced with the one of the same type.
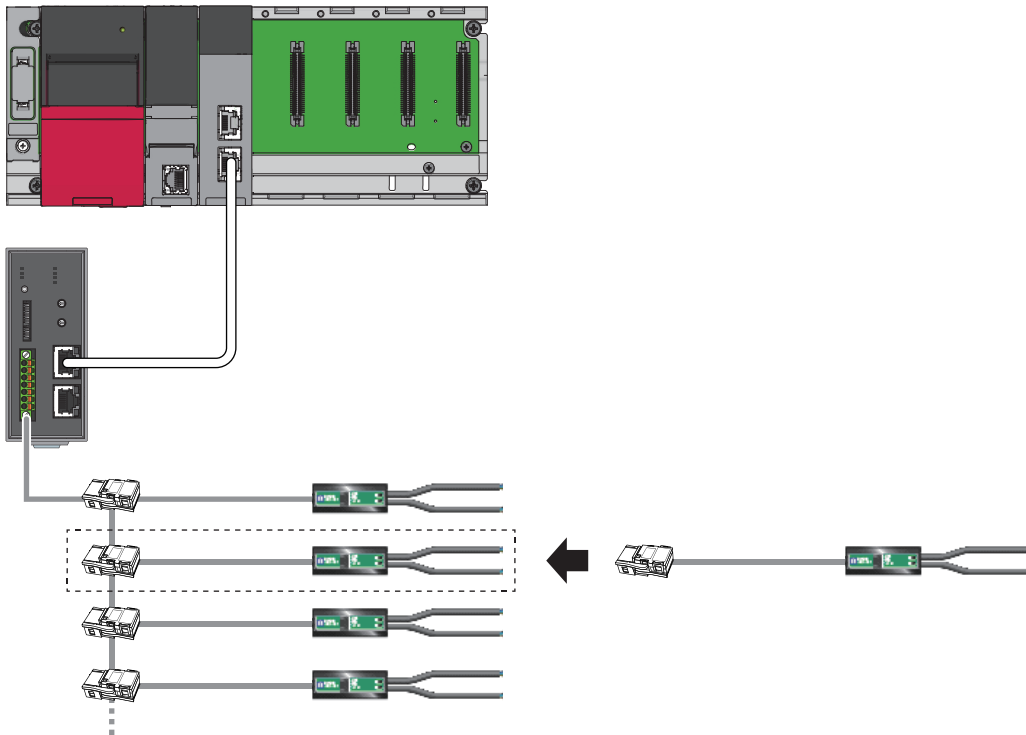
After the slave module replacement, the NZ2AW1GNAL checks that the new slave module has the same type as the old one. When the models match, the following backup data is restored to the new slave module, so it is ready for use.[1]

- Module ID
- Device parameters 1 to 19 (parameter value detected by the automatic address detection)

[1] Parameter information that is acquired through parameter access cannot be restored.

Precautions

For the slave modules that support this function, refer to the manual for each slave module used.

Prepare a slave module that meets the following conditions.

- Supports the easy replacement function for one slave module
- Same as the old slave module or a newer device version
- Address not set

If teaching was performed on the slave module before replacement, perform teaching again after replacement.

Use conditions

The following conditions must be met to use this function.
- The automatic address detection is functioning properly.
- In the "Parameter of Slave Station" window, "Single module simplified replacement" is set to "0: Enable".
- Other slave modules than the one to be replaced have no errors.
- Slave modules having no ID except for a slave module to be replaced are not connected.
- Adjustment mode flag (RXF) is off.

Operating procedure

1. Turn off the module power supply that is connected to the NZ2AW1GNAL.

2. Disconnect the slave module to be replaced. (Two or more slave modules cannot be replaced at the same time.)

3. Connect an unused slave module of the same type. (☞ Page 77 Precautions)

4. Turn on the module power supply that is connected to the NZ2AW1GNAL.
A DP/DN disconnection error occurs, and DP/DN disconnection error (RX4) turns on.

5. One slave module easy replacement in progress flag (RX16) turns on, and the backup data is restored from the NZ2AW1GNAL.

6. After the restoration is completed, One slave module easy replacement in progress flag (RX16) turns off, and One slave module easy replacement completion flag (RX17) turns on.
Simultaneously, the error status of the NZ2AW1GNAL is cleared. (Same operation as Error reset request flag (RY0) turning off and on (☞ Page 147 Error reset request flag))

7. Approximately five seconds later, the One slave module easy replacement completion flag (RX17) turns off, and the replacement of the slave module is completed.

Point
- Unless the automatic address detection is executed, the replacement of the slave module will not be completed successfully, and a malfunction may be caused.
- The easy replacement function for one slave module stops if an error or alarm occurs in the middle of operation. Eliminate the cause, and follow the procedures from step 1 again.

Timing of slave module replacement

The following shows the timing up until the completion of the slave module replacement.
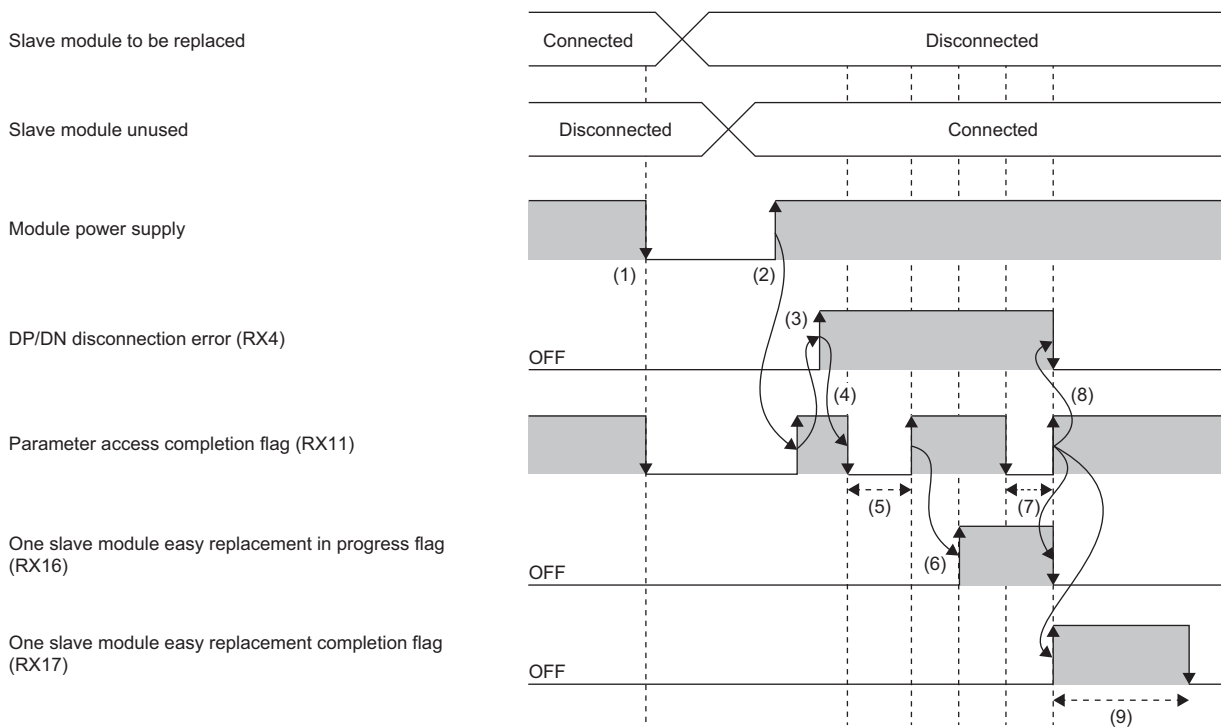
(1) The module power supply that is connected to the NZ2AW1GNAL is turned off.

(2) When an unused slave module is mounted and the module power supply is turned on, Parameter access completion flag (RX11) turns on.

(3) The NZ2AW1GNAL checks the connection status of the slave modules whose IDs have been registered. In addition, DP/DN disconnection error (RX4) turns on.

(4) The NZ2AW1GNAL checks the connection status to see that an unused slave module is connected. In addition, Parameter access completion flag (RX11) turns off.

(5) Parameter access is executed, and the NZ2AW1GNAL verifies the model name of the new slave module against that of the old one.

(6) When parameter access processing is completed, Parameter access completion flag (RX11) and One slave module easy replacement in progress flag (RX16) turn on.

(7) Parameter access completion flag (RX11) turns off, and the backup data is restored to the new slave module from the NZ2AW1GNAL.

(8) The statuses of the following input signals change when the backup data is restored. In addition, the error status of the NZ2AW1GNAL is cleared. (Same operation as Error reset request flag (RY0) turning off and on)
 • Parameter access completion flag (RX11) turns on.
 • One slave module easy replacement in progress flag (RX16) turns off.
 • One slave module easy replacement completion flag (RX17) turns on.

(9) Approximately five seconds later, One slave module easy replacement completion flag (RX17) turns off.

7.12 Word Data Start Address Setting Function

This function shortens the word transmission cycle time by setting the start address of word data transmission. Unregistered addresses between address 0 and the registered address are accessed during word transmission. Although this access takes extra time for word transmission cycle, setting the number of word data points and transmission start address enhances the efficiency of transmission.
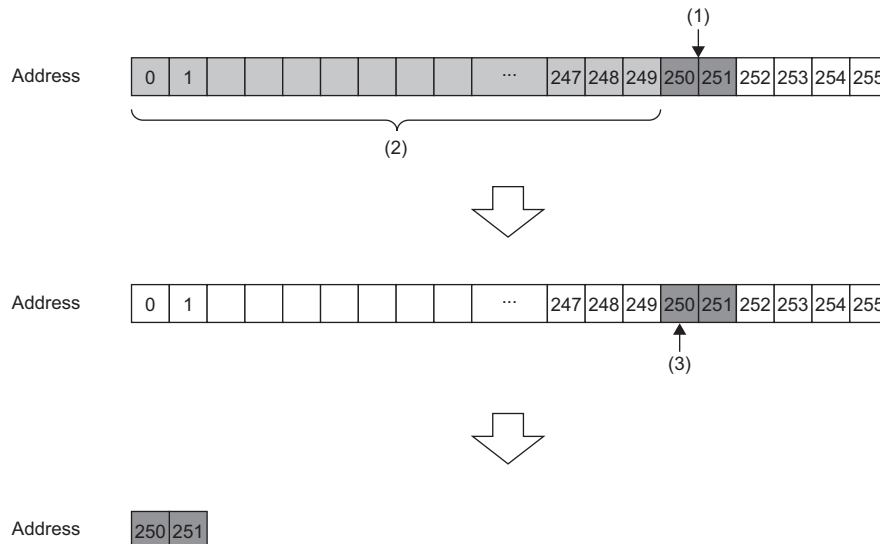
(1) Registered address (word slave module)
(2) Access to unregistered addresses existing before the registered address causes extra time for word transmission cycle. (Word data points setting: 512 words (256 input words/256 output words))
(3) By setting the word data points setting to 4 words (2 input words, 2 output words) and the word data start address setting to 250, the access target addresses are limited to 250 and 251.

> **Point**
>
> This function can be used for word data only. This function does not affect the target input and output addresses of bit data.

Setting method

For this function, set "Word data start address setting" in the "Parameter of Slave Station" window. (☞ Page 44 Settings of NZ2AW1GNAL Parameters)

Precautions

- The I/O signals on and after the word data start address are stored in AnyWireASLINK word input signal (RWr20 to RWr21F) and AnyWireASLINK word output signal (RWw20 to RWw21F) of the remote register.
- If the word data start address setting function is used, the transmission cycle time may be different than normal. When using the word data start address function, refer to the following remote buffer memory for the transmission cycle time.

Name	Address	Unit
Bit transmission cycle time	020AH to 020BH	0.1ms
Word transmission cycle time	020CH to 020DH	0.1ms

7.13 AnyWireASLINK Version Compatibility Inspection Function

This function detects a slave module that does not support word transmission.

Use conditions

The following conditions must be met to use this function.
- The number of word data points is set to 2 words (1 input word/1 output word) or more.
- No errors or alarms exist on the NZ2AW1GNAL.
- Adjustment mode flag (RXF) is off.
- Parameter access completion flag (RX11) is on.
- Automatic address detection flag (RX14), Address inspection flag (RX15), and One slave module easy replacement in progress flag (RX16) are off.

Operating procedure

1. Perform either of the following operations.
- While holding down the SET switch on the NZ2AW1GNAL, reset the NZ2AW1GNAL remotely or turn the power off and on.
- Turn AnyWireASLINK version compatibility inspection command (RYD) on and off.[1]

[1] Before performing the AnyWireASLINK version compatibility inspection, successfully complete the automatic address detection.

2. The status will be changed as follows, and the AnyWireASLINK version compatibility inspection will start.
- AnyWireASLINK version compatibility inspection in-execution flag (RXD) turns on.
- Parameter access completion flag (RX11) turns off.
- The LINK LED stops flashing and stays on.
- Bit transmission and word transmission stop.
- Error flags are cleared.

3. When the AnyWireASLINK version compatibility inspection is completed, the LINK LED changes from on to flashing. (The inspection takes approximately 15 seconds.)

7

How to check the error status

If an AnyWireASLINK version compatibility inspection error exists after the inspection, the status will be as follows.

Item	Description
AnyWireASLINK version compatibility inspection error flag (RX8)	Turns on.
Latest alarm code storage area (RWr2)	The relevant alarm code is stored. The alarm codes that may occur are listed below. • Non-compatible slave module connection error (alarm code: 0D83H) • Compatibility inspection error (Parameter access error) (alarm code: 0D84H) • Compatibility inspection error (Excess number of connected slave modules error) (Alarm code: 0D85H) • Compatibility inspection error (Word data usage setting) (alarm code: 0D86H)
Latest alarm ID storage area (RWr3)	The ID of the slave module where the following alarm has occurred is stored. • Compatibility inspection error (Parameter access error) (alarm code: 0D84H) For the following alarms 0FFFH is stored. • Non-compatible slave module connection error (alarm code: 0D83H) • Compatibility inspection error (Excess number of connected slave modules error) (Alarm code: 0D85H) • Compatibility inspection error (Word data usage setting) (alarm code: 0D86H)
Version compatibility inspection error ID area (5700H to 577FH)	ID information is registered.
ALM LED	Turns on.

The following are the probable causes of the AnyWireASLINK version compatibility inspection error. Identify the error cause and take appropriate actions.
- A slave module not supporting word data is connected to the NZ2AW1GNAL.
- The number of connected slave modules exceeds the maximum number of connectable modules.
- Parameter access failed on one or more slave modules.

Clear the AnyWireASLINK version compatibility inspection error, and start the inspection again.

Precautions

- Even when the AnyWireASLINK version compatibility inspection is executed, the configuration information of the slave modules that is saved in the NZ2AW1GNAL is not updated.
- When an ASLINK version compatibility check is executed, the error information and alarm information are cleared. The signal to be cleared is the same as below.

☞ Page 147 Error reset request flag

Timing of the AnyWireASLINK version compatibility inspection

The following shows the timing of each step in the AnyWireASLINK version compatibility inspection.

■When the inspection is executed by AnyWireASLINK version compatibility inspection command (RYD)
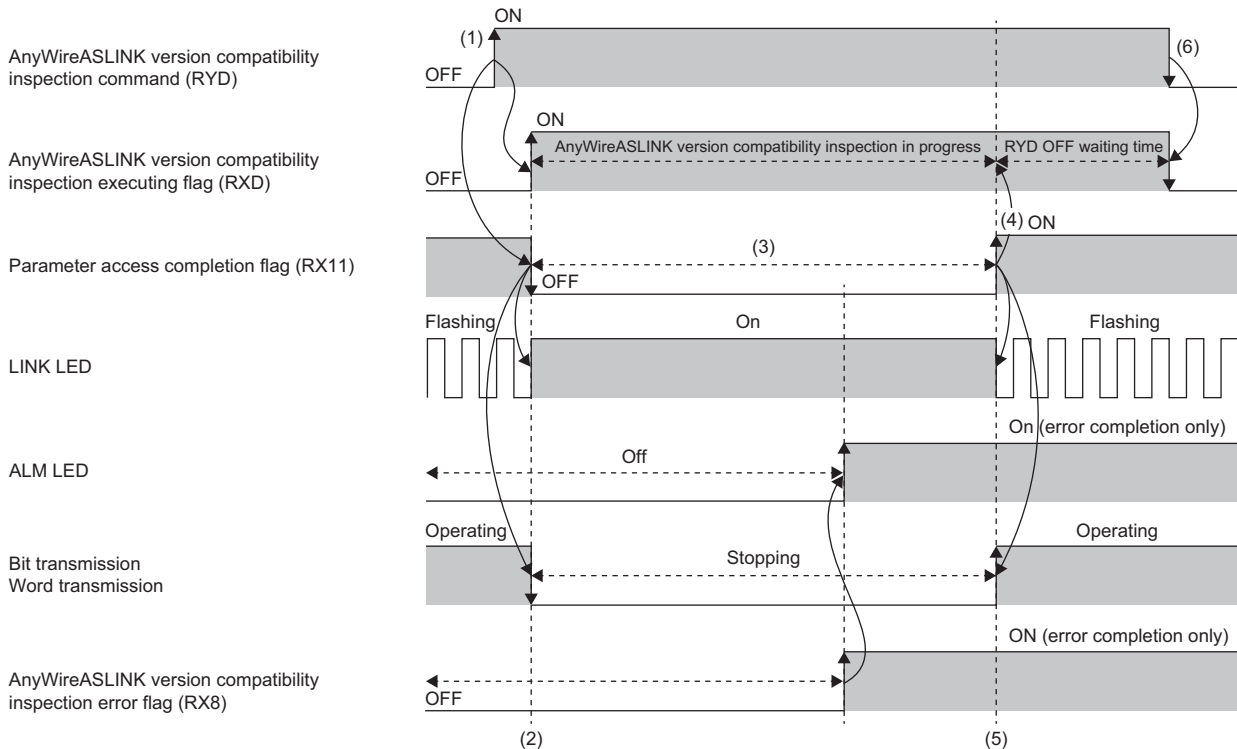
(1) AnyWireASLINK version compatibility inspection command (RYD) turns on. AnyWireASLINK version compatibility inspection in-execution flag (RXD) turns on, and Parameter access completion flag (RX11) turns off.

(2) The AnyWireASLINK version compatibility inspection starts.

(3) Parameter access is in progress.

(4) Parameter access completion flag (RX11) turns on upon completion of the parameter access.

(5) The AnyWireASLINK version compatibility inspection completes.

(6) AnyWireASLINK version compatibility inspection command (RYD) turns off. AnyWireASLINK version compatibility inspection in-execution flag (RXD) turns off.

■When the inspection is executed by the SET switch
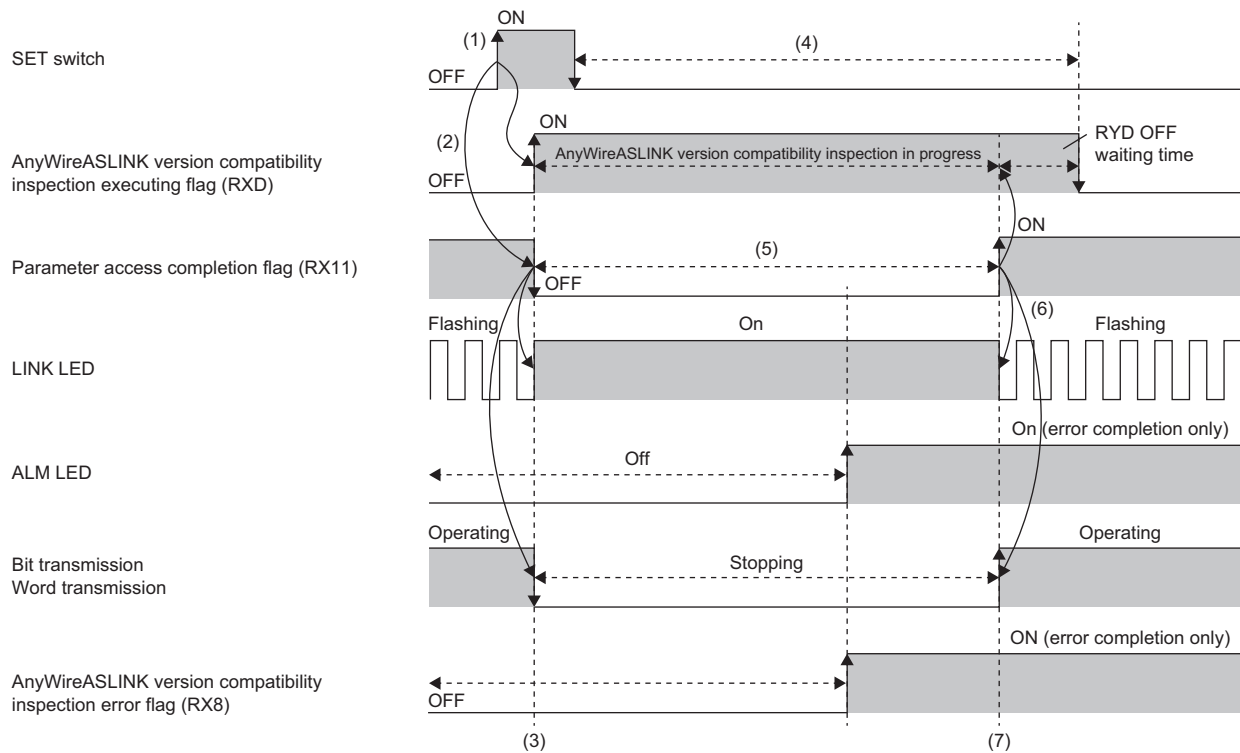
(1) While holding down the SET switch, reset the NZ2AW1GNAL remotely or turn the power off and on. (Hold down the SET switch for one second or longer.)

(2) When the AnyWireASLINK transmission starts, AnyWireASLINK version compatibility inspection in-execution flag (RXD) turns on, and Parameter access completion flag (RX11) turns off.

(3) The AnyWireASLINK version compatibility inspection starts.

(4) During this period, the operation is not affected by the on/off status of the switch or the command.

(5) Parameter access is in progress.

(6) Parameter access completion flag (RX11) turns on upon completion of the parameter access.

(7) The AnyWireASLINK version compatibility inspection completes.

7.14 iQ Sensor Solution Function

This function establishes data communications with AnyWireASLINK-compatible slave modules via CC-Link IE TSN and AnyWireASLINK.

The following iQ Sensor Solution functions can be used.

 • Automatic detection of connected device
 • Sensor/device monitor
 • Sensor parameter read/write

For details on each function, refer to the following manual.

📖 iQ Sensor Solution Reference Manual

7.15 Communication Speed Setting Function

This function sets the communication speed.

Setting method

Use the MODE switch 9 of the NZ2AW1GNAL to set the communication speed.

This setting is common to P1 and P2.

MODE switch 9	Setting value
Off	1Gbps (factory default)
On	100Mbps

> **Point**
>
> The communication speed setting is determined by the status of MODE switch 9 when the NZ2AW1GNAL starts up.

Setting status

Which value is set as the communication speed can be checked by using 'Communication speed setting status' (RX1F). For details, refer to the following.

☞ Page 145 Communication speed setting status

Applicable version

To set the communication speed, check the NZ2AW1GNAL. (☞ Page 201 Added and Changed Functions)

The NZ2AW1GNAL whose firmware version does not support the communication speed setting operates with the fixed communication speed of 1Gbps.

Precautions

- The range of values that can be set for the communication period interval setting in the master station's parameters varies depending on the communication speed. For details, refer to the following.

☞ Page 42 Communication Period Interval Setting

- When using a remote station that operates with the communication speed of 100Mbps, check which system configuration should be used by referring to the following.

📖 User's manual for the master station used

7.16 CC-Link IE TSN Class Setting Function

When the firmware version of the NZ2AW1GNAL is CC-Link IE TSN Protocol version 2.0, CC-Link IE TSN Class (CC-Link IE TSN Class B or CC-Link IE TSN Class A) can be set.

For details on the system configurations in which the NZ2AW1GNAL can be connected according to the CC-Link IE TSN Class, refer to the following.

📖User's manual for the master station used

When using the NZ2AW1GNAL as a CC-Link IE TSN Class B device

The NZ2AW1GNAL operates as a CC-Link IE TSN Class B device by factory default.

When using the NZ2AW1GNAL as a CC-Link IE TSN Class A device

When using the NZ2AW1GNAL in the system configurations shown below, set the CC-Link IE TSN Class of the NZ2AW1GNAL to CC-Link IE TSN Class A.

■When connecting the NZ2AW1GNAL via a switching hub
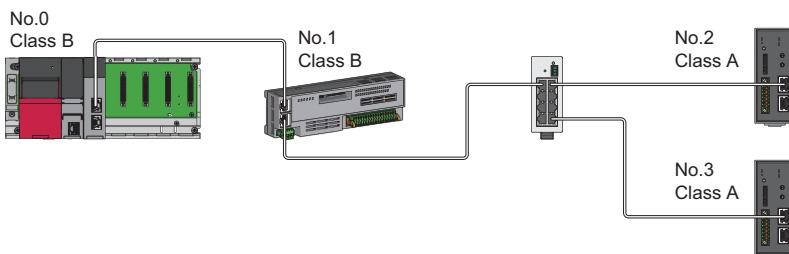
No.0: Master station
No.1: Remote station
No.2, No.3: Remote station (NZ2AW1GNAL)
Class B: CC-Link IE TSN Class B device
Class A: CC-Link IE TSN Class A device

■When connecting the NZ2AW1GNAL after a CC-Link IE TSN Class A remote station
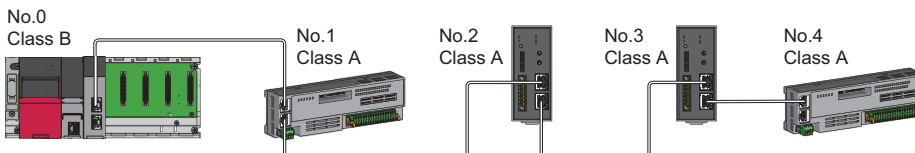
No.0: Master station
No.1, No.4: Remote station
No.2, No.3: Remote station (NZ2AW1GNAL)
Class B: CC-Link IE TSN Class B device
Class A: CC-Link IE TSN Class A device

Applicable version

To set the CC-Link IE TSN Class, check the NZ2AW1GNAL. (☞ Page 201 Added and Changed Functions)

A NZ2AW1GNAL whose firmware version does not support the CC-Link IE TSN Class setting operates as a CC-Link IE TSN Class B device.

Setting method

Set this function using MODE switch 10 and "CC-Link IE TSN Class" in the network configuration settings.

Set the same value for MODE switch 10 and for "CC-Link IE TSN Class" in the network configuration settings.

For details, refer to the following.

☞ Page 27 MODE switch setting

☞ Page 43 Network Configuration Settings

> *Point*
>
> If a different value is set for MODE switch 10 or for "CC-Link IE TSN Class" in the network configuration settings, event code 00C81 is recorded in the event history of the master station, and the NZ2AW1GNAL does not establish a data link.

Check method

The setting status of the CC-Link IE TSN Class can be checked by using a remote input signal or the CC-Link IE TSN/CC-Link IE Field diagnostics.

■Check by remote input signal

The status can be checked by using the remote input signal 'CC-Link IE TSN Class setting status' (RX1E). (☞ Page 145 CC-Link IE TSN Class setting status)

■Check by the CC-Link IE TSN/CC-Link IE Field diagnostics

The setting status can be checked by using the "Selected Station Communication Status Monitor" of the CC-Link IE TSN/CC-Link IE Field diagnostics.

🖱 [Diagnostics] ⇨ [CC-Link IE TSN/CC-Link IE Field Diagnostics]
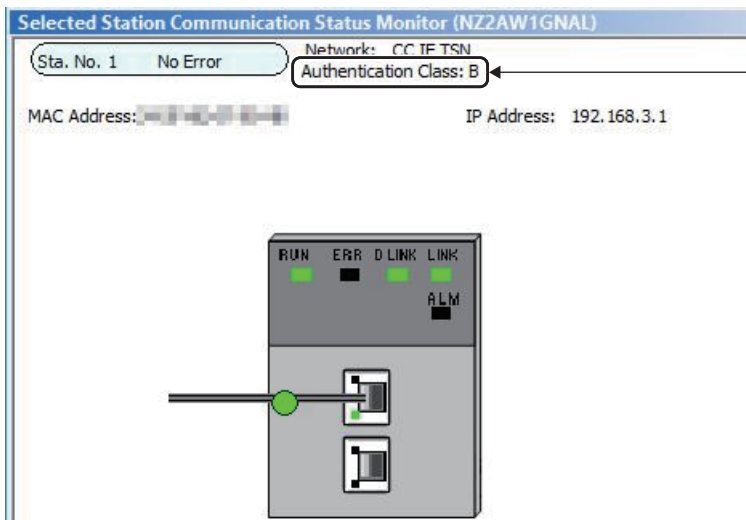
In this manual, "Authentication Class is described as "CC-Link IE TSN Class".

Precautions

- The range of values that can be set for the communication period interval setting in the master station's parameters varies depending on the set CC-Link IE TSN Class. (☞ Page 42 Communication Period Interval Setting)
- When the CC-Link IE TSN Class is set to CC-Link IE TSN Class A, ring topology cannot be used. To configure ring topology, set the CC-Link IE TSN Class to CC-Link IE TSN Class B.

7.17 Firmware Update Function

This function updates the firmware of an NZ2AW1GNAL via CC-Link IE TSN.

Update firmware by using the CC-Link IE TSN Firmware Update Tool.

When the CC-Link IE TSN Firmware Update Tool is necessary, please consult your local Mitsubishi representative.

System configuration

Connect the personal computer to the NZ2AW1GNAL targeted for firmware update using Ethernet cables.
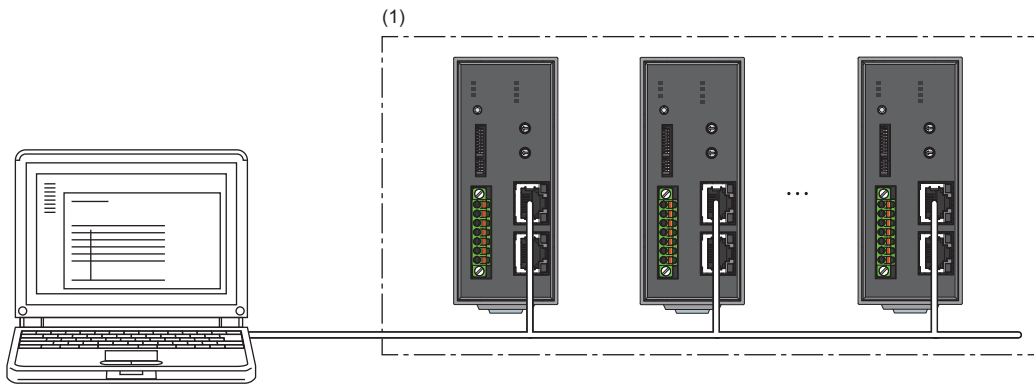
(1) NZ2AW1GNAL targeted for firmware update

Firmware update file

When the firmware update file is necessary, please consult your local Mitsubishi representative.

The file name of the firmware update file is listed below.

Model name	File name
NZ2AW1GNAL	CCIET_ASL.SYF

Setting method

Setting the CC-Link IE TSN Firmware Update Tool is required to update the firmware for the NZ2AW1GNAL.

For details, refer to the "Help" of the CC-Link IE TSN Firmware Update Tool.

■"Network Configuration Settings" window

Set the following items in the "Network Configuration Settings" window.

Item	Description
Model Name	Set the model name of the NZ2AW1GNAL whose firmware is to be updated.
IP Address	Set the IP address of the NZ2AW1GNAL whose firmware is to be updated.
Equipment Name	This setting is optional. Set this item when you register multiple pieces of equipment and need to distinguish them.
FTP User name	Set CCIET_ASL.
FTP Password	Set CCIET_ASL.
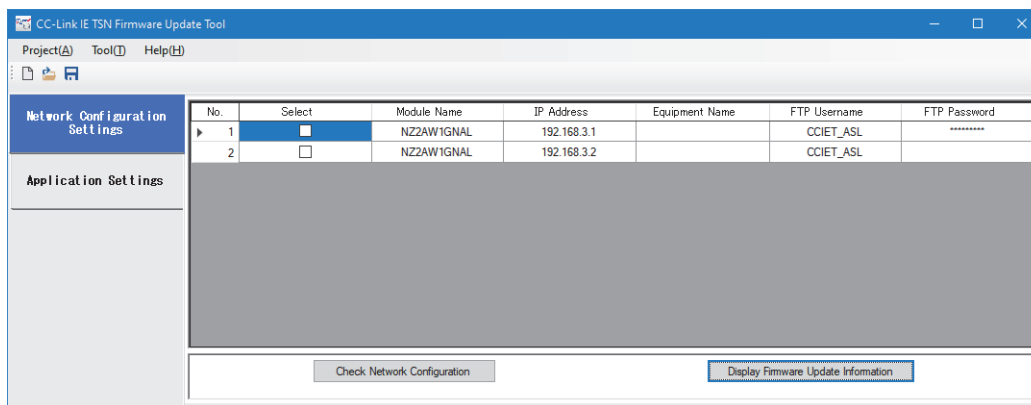
■"Application Settings" window

Set the following items in the "Application Settings" window.

Classification	Item	Setting range	Description
PC Settings	IP Address	0.0.0.1 to 223.255.255.254	Set the IP address of the personal computer.
	Port Number	0, 49152 to 65535	Set 0.
FTP Settings	FTP Mode	"Active Mode" (fixed)	NZ2AW1GNAL supports only "Active Mode".
	FTP Timeout(s)	1 to 600(s)	Set the FTP timeout time.
Watching Time Settings	Firmware Update Timeout(s)	1 to 1200(s)	Set the firmware update timeout time.
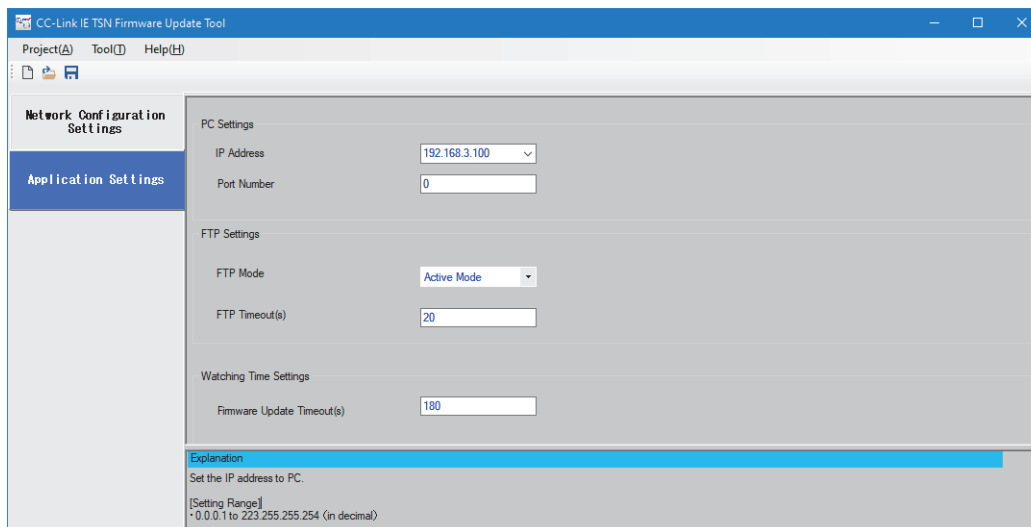
Operation

■LED status

The state of firmware update can be checked with the LED of NZ2AW1GNAL.

LED	Normal operation	Firmware update in progress	Firmware update completed (either completed successfully or completed with an error)
RUN LED	On	Flashing	Off

Error information list

The following table lists errors specific to the NZ2AW1GNAL that may occur during firmware update.

Error information	Error name	Description and cause	Action
0001H	File error	The specified file is one that cannot be used for the NZ2AW1GNAL targeted for the update.	Review the firmware update file specified with the CC-Link IE TSN Firmware Update Tool.
0002H	Communication error	A communication error has occurred during firmware update.	• Check whether Ethernet cables are connected properly. • Take measures to reduce noise on the transmission path. After taking the above measures, turn off and on the module power supply, and restart the CC-Link IE TSN Firmware Update Tool.
0003H	Module error	An error has occurred on the module during firmware update.	Turn off and on the module power supply, and restart the CC-Link IE TSN Firmware Update Tool. If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
0004H	Firmware update disabled	Firmware update was attempted during data link.	Update firmware while data link is not being performed (disconnected).
C05CH	File transfer error	A data link was established during file transfer.	• Turn off and on the module power supply, and restart the CC-Link IE TSN Firmware Update Tool. • Maintain the state of data link not performed (disconnected) until the firmware update is completed.

If error information other than the above is displayed on the CC-Link IE TSN Firmware Update Tool, refer to the "Help" on the CC-Link IE TSN Firmware Update Tool.

Precautions

• After the completion of the firmware update, power off and on the NZ2AW1GNAL. Note that after firmware update, it takes a longer time for the NZ2AW1GNAL to restart (turning on of RUN LED) compared with ordinary times, since reconstruction processing is performed at restart after firmware update.

• Firmware cannot be updated for an NZ2AW1GNAL where data link is being performed. To perform firmware update on an NZ2AW1GNAL, do not connect the NZ2AW1GNAL to the master station. If firmware update is attempted for an NZ2AW1GNAL where data link is being performed, a firmware update disabled (error code: 0004H) is displayed on the error information of the firmware update information window.

• If an error has occurred on firmware update, power off and on the NZ2AW1GNAL or perform remote reset before attempting firmware update again.

• Do not update the firmware for the NZ2AW1GNAL simultaneously by using multiple CC-Link IE TSN Firmware Update Tools.

8 PROGRAMMING

This chapter describes the programming of the NZ2AW1GNAL.

8.1 Precautions on Programming

This section describes precautions on programming on the CC-Link IE TSN.

Cyclic transmission program

In a cyclic transmission program, use the following link special relay (SB) and link special register (SW) to interlock.
- Data link error status of own station (of master station) (SB0049)
- Data link status of each station (SW00B0 to SW00B7)

📖 User's manual for the master station used

Ex.
Interlock example
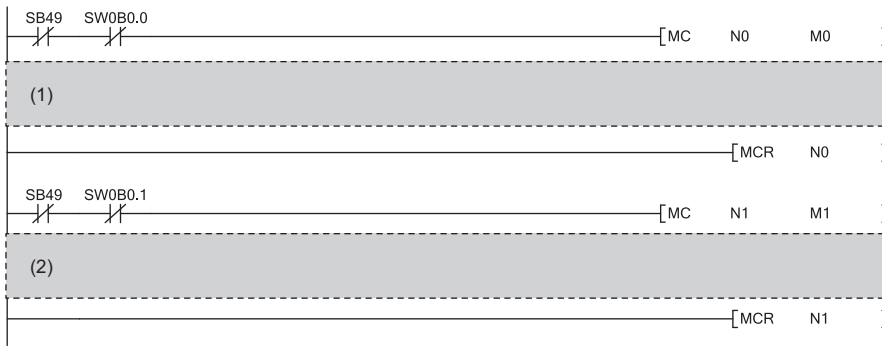
(1) Communication program with station number 1
(2) Communication program with station number 2

8.2 Program Example

System configuration example

System configuration
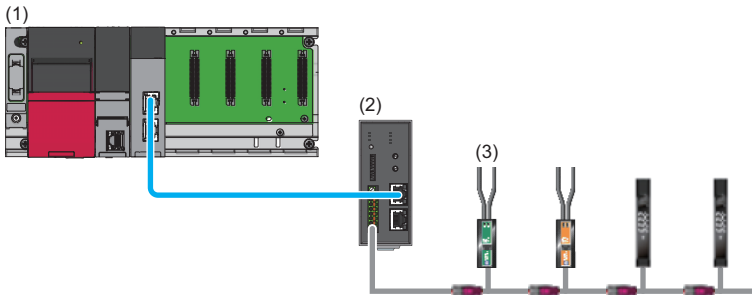
(1) Master station
 • Power supply module: R61P
 • CPU module: R04CPU
 • Master/local module: RJ71GN11-T2 (start I/O number: 0000H to 001FH)
(2) Remote station
 • NZ2AW1GNAL (IP address: 192.168.3.1)
(3) AnyWireASLINK slave module
 • Input ASLINKER: Disconnection detection LINKER (bit address: 0)
 • Output ASLINKER: 4-wire cable type (bit address: 0)
 • Input ASLINKAMP: Analog input module (word address: 0)
 • Output ASLINKAMP: Analog output module (word address: 0)

Link device assignment
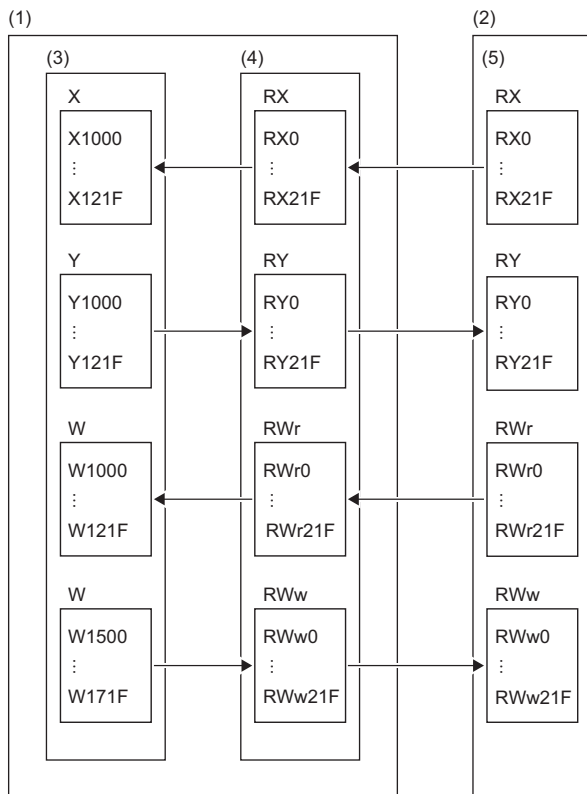
(1) Master station
(2) Remote station
(3) CPU module
(4) Master/local module
(5) NZ2AW1GNAL

Device to use

The following table lists the relationships between each signal of this system and the devices.

■Remote input signals

Remote input signal	Name	Device number
RX0	Remote READY	X1000
RX1	DP/DN short error	X1001
RX2	24V/DP short error	X1002
RX3	Module power supply voltage drop error	X1003
RX4	DP/DN disconnection error	X1004
RX5	Error status flag	X1005
RX6	Alarm status flag	X1006
RX8	AnyWireASLINK version compatibility inspection error flag	X1008
RX9	Number of transmission points setting switch enable/disable status flag	X1009
RXC	Module parameter reflection completion flag	X100C
RXD	AnyWireASLINK version compatibility inspection in-execution flag	X100D
RXF	Adjustment mode flag	X100F
RX10	Slave module alarm signal	X1010
RX11	Parameter access completion flag	X1011
RX12	Parameter access error	X1012
RX14	Automatic address detection flag	X1014
RX15	Address inspection flag	X1015
RX16	One slave module easy replacement in progress flag	X1016
RX17	One slave module easy replacement completion flag	X1017
RX18	Automatic address detection operation mode	X1018
RX1E	CC-Link IE TSN Class setting status	X101E
RX1F	Communication speed setting status	X101F
RX20 to RX2F	AnyWireASLINK bit input signal 0 to 15	X1020 to X102F
RX30 to RX3F	AnyWireASLINK bit input signal 16 to 31	X1030 to X103F
⋮	⋮	⋮
RX200 to RX20F	AnyWireASLINK bit input signal 480 to 495	X1200 to X120F
RX210 to RX21F	AnyWireASLINK bit input signal 496 to 511	X1210 to X121F

■Remote output signals

Remote output signal	Name	Device number
RY0	Error reset request flag	Y1000
RY1	Automatic address detection command	Y1001
RY2	Address inspection command	Y1002
RYC	Module parameter reflection request flag	Y100C
RYD	AnyWireASLINK version compatibility inspection command	Y100D
RY10	Slave module parameter access request command	Y1010
RY11	Slave module parameter batch read command	Y1011
RY12	Slave module parameter batch write command	Y1012
RY20 to RY2F	AnyWireASLINK bit output signal 0 to 15	Y1020 to Y102F
RY30 to RY3F	AnyWireASLINK bit output signal 16 to 31	Y1030 to Y103F
⋮	⋮	⋮
RY200 to RY20F	AnyWireASLINK bit output signal 480 to 495	Y1200 to Y120F
RY210 to RY21F	AnyWireASLINK bit output signal 496 to 511	Y1210 to Y121F

Parameter setting

Setting in the master station

Connect the engineering tool to the CPU module on the master station and set parameters.

1. Set the CPU module as follows.

✎ [Project] ⇨ [New]

New			×
Series		🔲 RCPU	⌄
Type		🔳 R04	⌄
Mode			⌄
Program Language		📄 Ladder	⌄
	OK	Cancel	
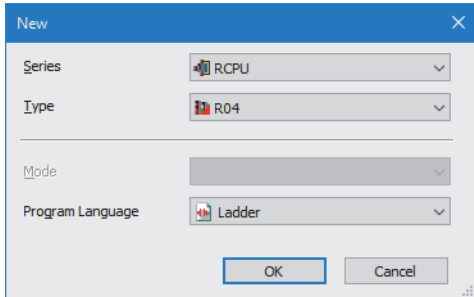
2. Set "Link Direct Device Setting" in "CPU Parameter" to "Extended Mode (iQ-R Series Mode)".

✎ [CPU Parameter] ⇨ [Memory/Device Setting] ⇨ [Link Direct Device Setting] ⇨ [Link Direct Device Setting]

Item	Setting
⊟ **Link Direct Device Setting**	
Link Direct Device Setting	Extended Mode (iQ-R Series Mode)

> **Restriction** ✋
>
> When using the engineering tool to write the module parameters of RJ71GN11-T2 to the CPU module, set "Link Direct Device Setting" to "Extended Mode (iQ-R Series Mode)".
> When "Link Direct Device Setting" is "Q Series Compatible Mode", "Write to PLC" cannot be executed.

3. Set the master/local module as follows.

✎ [Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ right-click ⇨ [Add New Module]

Add New Module		×
FIND		FIND
Module Selection		
Module Type	🔲 Network Module	⌄
Module Name	RJ71GN11-T2	⌄
Station Type	Master Station	⌄
Advanced Settings		
Mounting Position		
Mounting Base	Main Base	
Mounting Slot No.	0	⌄
Start I/O No. Specification	Not Set	⌄
Start I/O No.	0000 H	
Number of Occupied Points per 1 Sl	32 Points	
Module Type		
Select module type.		
	OK	Cancel
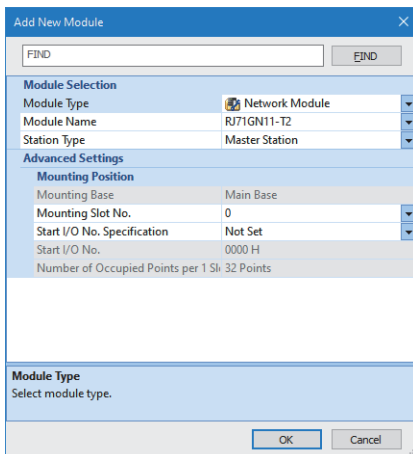
4. Display the "CC-Link IE TSN Configuration" window and set parameters as follows.

☞ [Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ RJ71GN11-T2 ⇨ [Basic Settings] ⇨ [Network Configuration Settings] ⇨ [Detailed Setting]
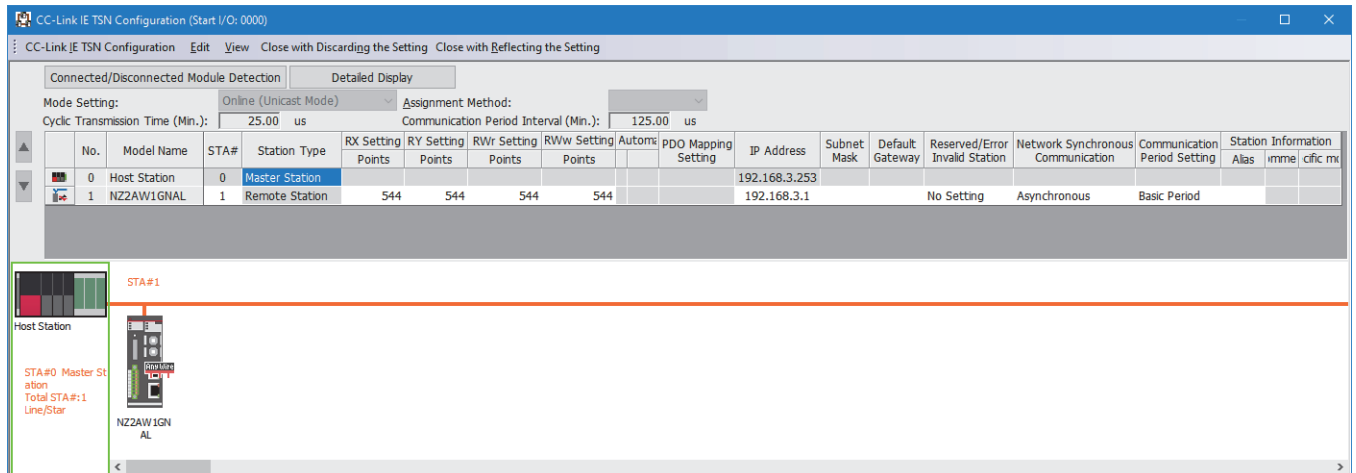
Item		Setting value
RX setting	Number of points	544
	Start	0000
RY setting	Number of points	544
	Start	0000
RWr setting	Number of points	544
	Start	0000
RWw setting	Number of points	544
	Start	0000

5. Select [Close with Reflecting the Setting].

6. Display the refresh parameter setting window and set as follows.

☞ [Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ RJ71GN11-T2 ⇨ [Basic Settings] ⇨ [Refresh Setting] ⇨ [Detailed Setting]

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	512	00000	001FF	⬌	Specify Device	SB	512	00000	001FF
-	SW	512	00000	001FF	⬌	Specify Device	SW	512	00000	001FF
1	RX	544	00000	0021F	⬌	Specify Device	X	544	01000	0121F
2	RY	544	00000	0021F	⬌	Specify Device	Y	544	01000	0121F
3	RWr	544	00000	0021F	⬌	Specify Device	W	544	01000	0121F
4	RWw	544	00000	0021F	⬌	Specify Device	W	544	01500	0171F

7. Click the [Apply] button.

8. Write the set parameters to the CPU module on the master station. Then, reset the CPU module on the master station, or power off and on the programmable controller.

☞ [Online] ⇨ [Write to PLC]

9. Set the CPU module on the master station to RUN and check that the D LINK LED of NZ2AW1GNAL is on.

> **Point**
>
> In this example, default values are used for parameters that are not shown above. For the parameters, refer to the following.
> 📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Application)

NZ2AW1GNAL settings

Set the NZ2AW1GNAL parameters while the master station and the NZ2AW1GNAL are communicating normally.

1. From the "CC-Link IE TSN configuration" window, open the "Parameter of Slave Station" window.

✎ [Navigation window] ⇨ [Parameter] ⇨ [Module information] ⇨ RJ71GN11-T2 ⇨ [Basic Settings] ⇨ [Network Configuration Settings] ⇨ [Detailed Setting] ⇨ select station No.1 ⇨ [CC-Link IE TSN Configuration] ⇨ [Parameter of Slave Station]

2. Set "Method Selection" to "Parameter write".
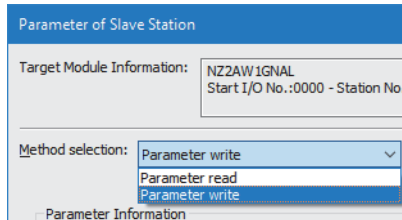
3. Set the parameters of the NZ2AW1GNAL as follows.
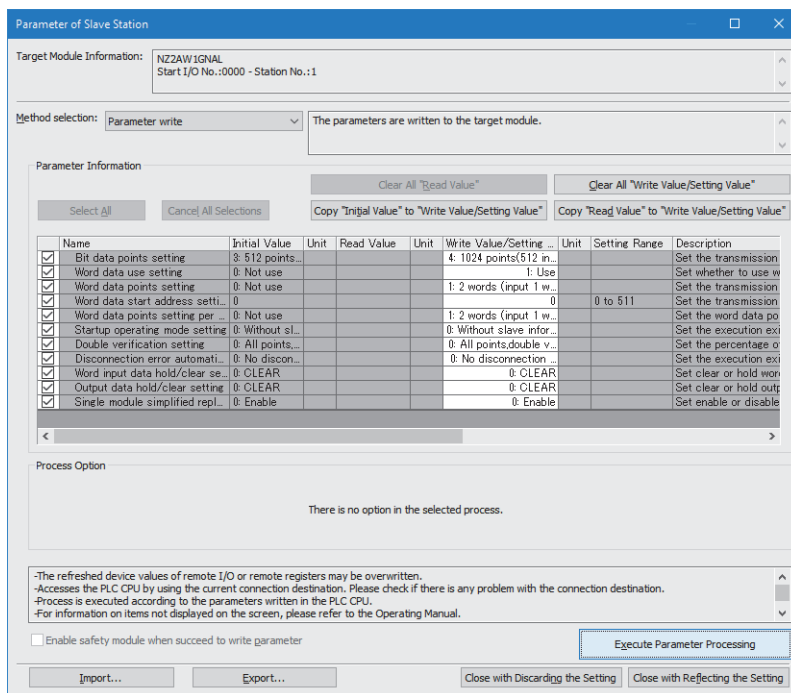
4. Click the [Execute Parameter Processing] button to write the parameters to the NZ2AW1GNAL.

5. Click the [Close with Reflecting the Setting] button.

8

Sample program

A sample program is shown for the following contents.

Description	Reference
Executes automatic address detection at any timing	☞ Page 98 Automatic address detection
Changes the bit address of the input ASLINKER from 0 to 2	☞ Page 100 Remote address change
Reads remote buffer memory for the NZ2AW1GNAL	☞ Page 102 Remote buffer memory read
Sets module parameters for the NZ2AW1GNAL	☞ Page 105 Module parameter setting
Reads parameters for the input ASLINKER	☞ Page 110 Parameter individual read
Writes parameters for the input ASLINKER	☞ Page 113 Parameter individual write

Automatic address detection

This program executes automatic address detection at any timing.

■Device to use

Device	Description
X1000	Remote READY
X1001	DP/DN short error
X1002	24V/DP short error
X1003	Module power supply voltage drop error
X100F	Adjustment mode flag
X1011	Parameter access completion flag
X1014	Automatic address detection flag
X1015	Address inspection flag
Y1001	Automatic address detection command
W1000	Latest error code storage area
W1002	Latest alarm code storage area
F1	Same ID used error
F2	No ID setting error
F3	Excess connected slave modules error
F4	Other errors
T0	Timer contact after Remote READY
M0	Automatic address detection completed successfully
M50	Program starting contact
M100	Communication ready flag (station No.1)
SD63	Number of annunciators
SB49	Data link status of own station (of master station)
SW0B0.0	Data link status of each station (station No.1)
N0	Nesting (station No.1)

■Program

(0) SB49 — SW0B0.0 ——————————————————— [MC | N0 | M100]

N0 — M100

(4) X1000 ——————————————————————————— [OUT | T0 | K10]

(9) T0 — X1001 — X1002 — X1003 — X100F — X1011 — X1014 — X1015 — M50 ——— [SET | Y1001]
                                                                          [RST | M0]
                                                                          [RST | M50]

(21) X1014 ——————————————————————————— [RST | Y1001]

(23) X1014 ↓ — [= | H0D90 | W1002] ——————————————— (F1)
              — [= | H0D91 | W1002] ——————————————— (F2)
              — [= | H0D93 | W1002] ——————————————— (F3)
              — [< | H0 | W1002] — [= | H0 | SD63] — (F4)
              — [< | H0 | W1000]
              — F1 — F2 — F3 — F4 ——————————————————— [SET | M0]

(62) —————————————————————————————————— [MCR | N0]

(63) —————————————————————————————————— [END]
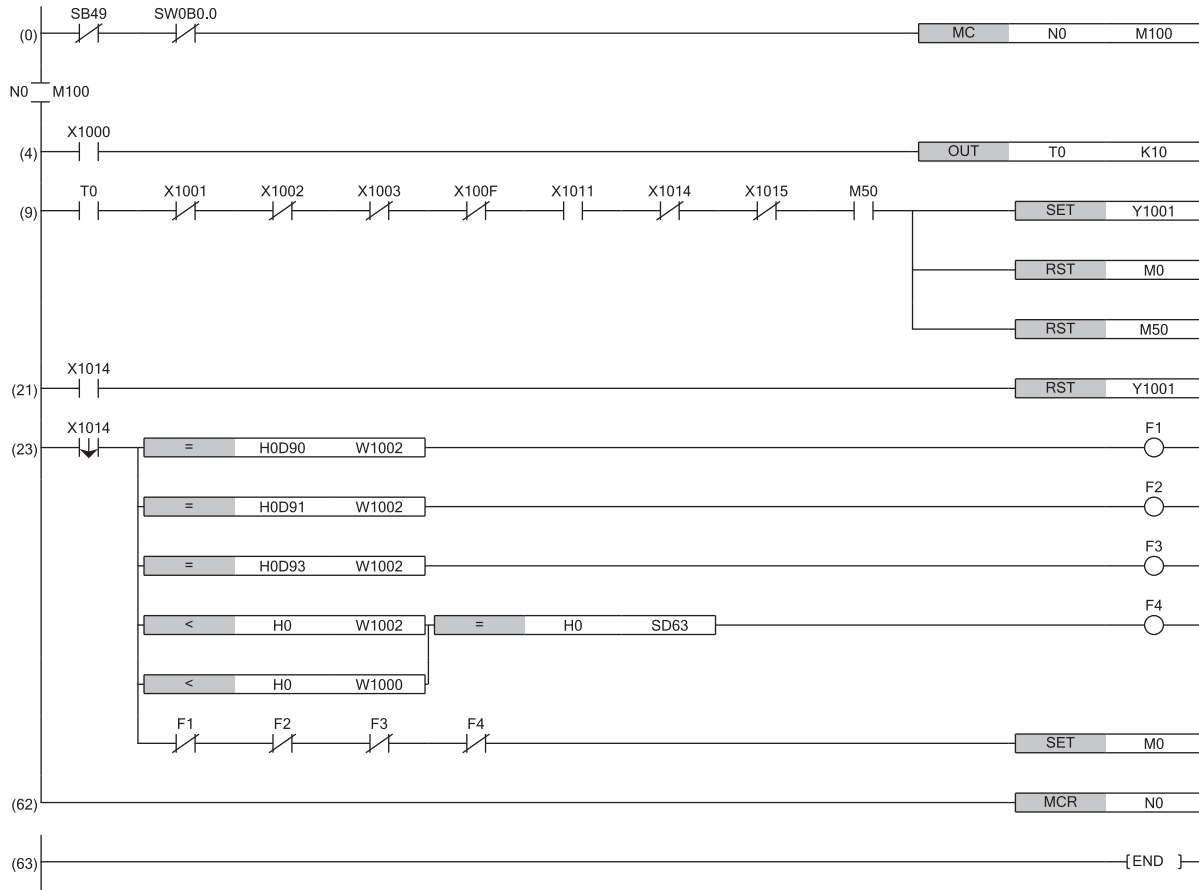
(4)   When Remote READY (X1000) of the NZ2AW1GNAL is on, the program is executed.

(9)   By turning on Program starting contact (M50), automatic address detection starts.

(23) When an error occurs, processing is performed.

8

Remote address change

This program uses the remote address change function to change the bit address of the input ASLINKER from 0 to 2.

■Device to use

Device	Description
X1000	Remote READY
X1001	DP/DN short error
X1002	24V/DP short error
X1003	Module power supply voltage drop error
X1004	DP/DN disconnection error
X100F	Adjustment mode flag
X1011	Parameter access completion flag
X1014	Automatic address detection flag
X1015	Address inspection flag
Y1010	Slave module parameter access request command
W1000	Latest error code storage area
W1002	Latest alarm code storage area
W1500	Parameter access specification
W1501	Parameter access target module ID specification
W1502	Change ID specification
F1	Parameter access target module ID error
F2	New ID error
F3	Other errors
M0	Remote address change completed successfully
M50	Program starting contact
M100	Communication ready flag (station No.1)
T0	Timer contact after Remote READY
SD63	Number of annunciators
SB49	Data link status of own station (of master station)
SW0B0.0	Data link status of each station (station No.1)
N0	Nesting (station No.1)
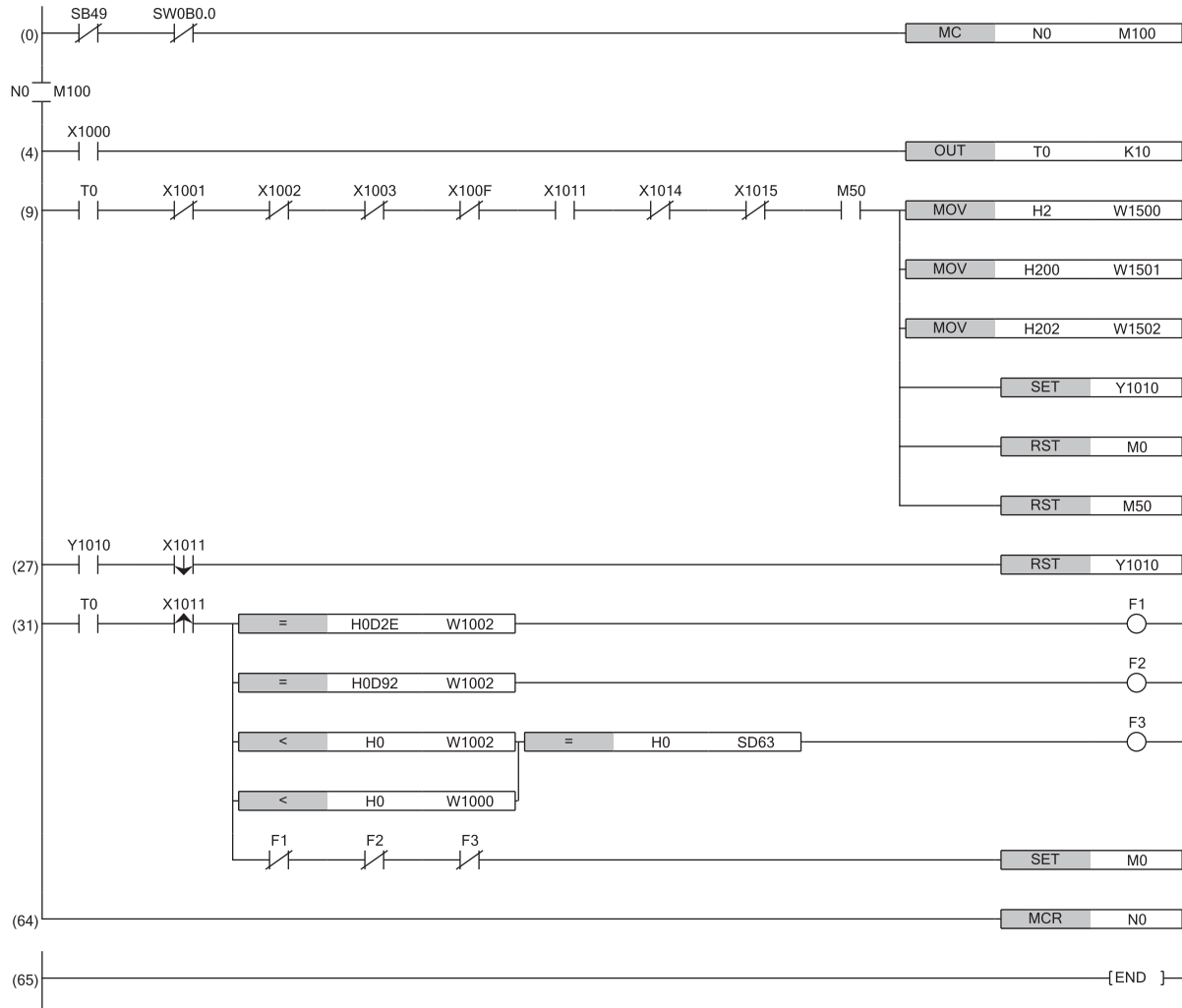
■Program

(4) When Remote READY (X1000) of the NZ2AW1GNAL is on, the program is executed.

(9) By turning on Program starting contact (M50), the bit address of the input ASLINKER is changed from 0 to 2.

(31) When an error occurs, processing is performed.

Remote buffer memory read

This program uses Memory Read (command: 0613H) with the SLMPSND instruction to read the remote buffer memory (0310H to 031BH).

■Devices to be used

Device	Description
X1000	Remote READY
X1001	DP/DN short error
X1002	24V/DP short error
X1003	Module power supply voltage drop error
W1000	Latest error code storage area
W1002	Latest alarm code storage area
D200 to D211	Control data used with the SLMPSND instruction • D200: Execution/error completion type • D201: Completion status • D202: Channel used by own station • D203: IP address of external device (third and fourth octets) • D204: IP address of external device (first and second octets) • D205: Destination port number • D206: Request destination network number • D207: Request destination station number • D208: Request destination module I/O number • D209: Request destination multidrop station number • D210: Number of resends • D211: Arrival monitoring time
D300 to D306	Request data used with the SLMPSND instruction • D300: Request data length • D301: Monitoring timer • D302: Command • D303: Subcommand • D304: Start address (lower 16 bits) • D305: Start address (upper 16 bits) • D306: Word length
D400	Response data (read) used with the SLMPSND instruction • D400: Response data start device
F1	SLMPSND instruction completed with an error
F2	Remote buffer memory access error
F3	Other errors
M0	SLMPSND instruction completed
M1	SLMPSND instruction completed (error)
M2	Remote buffer memory read completed successfully
M50	Program starting contact
M51	SLMPSND instruction (read) completion flag
SD63	Number of annunciators
SB49	Data link status of own station (of master station)
SW0B0.0	Data link status of each station (station No.1)
T0	Timer contact after Remote READY
J1	Own station network number
N0	Nesting (station No.1)

■Program

```
          M51                                                                                    F2
(79)  ────┤├──┬──[ =    H1020      W1000 ]──────────────────────────────────────────────────────( )──
          │                                                                                      F3
          │  ├──[ <    H0         W1000 ]──┬──[ =    H0         SD63 ]──────────────────────────( )──
          │  │                             │
          │  └──[ <    H0         W1002 ]──┘
          │     F2      F3
          └──────┤/├─────┤/├────────────────────────────────────────────────────────[ SET    M2 ]──
                                                                                      [ MCR    N0 ]──
(103) ────────────────────────────────────────────────────────────────────────────────────────────

(104) ────────────────────────────────────────────────────────────────────────────────[ END ]──────
```

(4)   When Remote READY (X1000) of the NZ2AW1GNAL is on, the program is executed.

(9)   By turning on Program starting contact (M50), the remote buffer memory of the NZ2AW1GNAL is read.

(79) When an error occurs, processing is performed.

Module parameter setting

This program executes module parameter settings for the NZ2AW1GNAL at any timing.

After executing the program, power off and on the NZ2AW1GNAL or perform a remote reset to start operating the NZ2AW1GNAL with the set parameters.

The changed parameters are as follows.

Item	Setting value
Bit data points setting	4: 1024 points (512 input points/512 output points)
Word data use setting	1: Use
Word data points setting	10: 1024 words (input 512 words, output 512 words)
Word data start address setting	0
Word data points setting per frame	5: 32 words (input 16 words, output 16 words)
Startup operating mode setting	1: With slave information acquisition
Double verification setting	20: Double verification of the 16 bit (word) until the 20th word
Disconnection error automatic recovery mode setting	1: Disconnection error automatic recovery
Word input data hold/clear setting when disconnected	1: HOLD
Output data hold/clear setting	1: HOLD
Single module simplified replacement	1: Disable

■Device to use

Device	Description
X1000	Remote READY
X100C	Module parameter reflection completion flag
Y100C	Module parameter reflection request flag
W1000	Latest error code storage area
W1002	Latest alarm code storage area
D200 to D211	Control data used with the SLMPSND instruction • D200: Execution/error completion type • D201: Completion status • D202: Channel used by own station • D203: IP address of external device (third and fourth octets) • D204: IP address of external device (first and second octets) • D205: Destination port number • D206: Request destination network number • D207: Request destination station number • D208: Request destination module I/O number • D209: Request destination multidrop station number • D210: Number of resends • D211: Arrival monitoring time
D300 to D319	Request data used with the SLMPSND instruction • D300: Request data length • D301: Monitoring timer • D302: Command • D303: Subcommand • D304: Start address (lower 16 bits) • D305: Start address (upper 16 bits) • D306: Word length • D307: Write data (Bit data points setting) • D308: Write data (Word data use setting) • D309: Write data (Word data points setting) • D310: Write data (Word data start address setting) • D312: Write data (Number of word data points setting per frame) • D314: Write data (Startup operation mode setting) • D315: Write data (Bit data double verification mode setting) • D316: Write data (Disconnection error automatic recovery mode setting) • D317: Write data (Word input data hold/clear setting when disconnection occurs) • D318: Write data (Output data hold/clear setting when error occurs) • D319: Write data (Easy replacement function for one slave module setting)
D400	Response data used with the SLMPSND instruction • D400: Response data start device
F1	SLMPSND instruction completed with an error
F2	Bit data points setting range error

Device	Description
F3	Word data use setting range error
F4	Word data points setting range error
F5	Word data start address setting range error
F6	Number of word data points per frame setting range error
F7	Startup operation mode setting range error
F8	Bit data double verification setting range error
F9	Disconnection error automatic recovery mode setting range error
F10	Word input data hold/clear setting when disconnection occurs range error
F11	Output data hold/clear setting range error
F12	Easy replacement setting for one slave module range error
F13	Transmission points setting error
F14	Word data setting combination error
F15	Other errors
M0	SLMPSND instruction completed
M1	SLMPSND instruction completed (error)
M2	Error control flag
M3	Module parameter setting completed successfully
M50	Program starting contact
M51	SLMPSND instruction (write) successful completion flag
SD63	Number of annunciators
SB49	Data link status of own station (of master station)
SW0B0.0	Data link status of each station (station No.1)
T0	Timer contact after Remote READY
J1	Own station network number
N0	Nesting (station No.1)

■Program

Step	Ladder
(0)	SB49 —/— SW0B0.0 —/— .... MC N0 M100
N0	M100
(4)	X1000 —| |— .... OUT T0 K10
(9)	T0 —| |— M50 —| |— .... RST M2
	RST M3
	RST M51
	MOV H1 D200
	MOV H0 D201
	MOV H1 D202
	MOV H301 D203
	MOV H0C0A8 D204
	MOV H0B0B7 D205
	MOV H0 D206
	MOV H0FF D207
	MOV H3FF D208
	MOV H0 D209
	MOV H1 D210
	MOV K5 D211
	MOV K38 D300
	MOV K10 D301
	MOV H1613 D302
	MOV H0 D303
	MOV H100 D304
	MOV H0 D305
	MOV K13 D306
	MOV H4 D307
	MOV H1 D308
	MOV H0A D309
	MOV H0 D310

```
        F2      F3      F4      F5      F6      F7      F8      F9
       ─│/├────│/├────│/├────│/├────│/├────│/├────│/├────│/├──── [SET   M2]

        M2      F10     F11     F12     F13     F14     F15
       ─│ ├────│/├────│/├────│/├────│/├────│/├────│/├──────────── [SET   M3]

(215)                                                           ─[MCR   N0]

(216)                                                           ─[END  ]
```

(4)   When Remote READY (X1000) of the NZ2AW1GNAL is on, the program is executed.

(9)   By turning on Program starting contact (M50), the module parameters of the NZ2AW1GNAL are changed.

(102) When an error occurs, processing is performed.

Parameter individual read

This program reads parameters for the input ASLINKER with bit address 0.

■Device to use

Device	Description
X1000	Remote READY
X1011	Parameter access completion flag
Y1010	Slave module parameter access request command
W1000	Latest error code storage area
W1002	Latest alarm code storage area
W1500	Parameter access specification
W1501	Parameter access target module ID specification
D200 to D211	Control data used with the SLMPSND instruction • D200: Execution/error completion type • D201: Completion status • D202: Channel used by own station • D203: IP address of external device (third and fourth octets) • D204: IP address of external device (first and second octets) • D205: Destination port number • D206: Request destination network number • D207: Request destination station number • D208: Request destination module I/O number • D209: Request destination multidrop station number • D210: Number of resends • D211: Arrival monitoring time
D300 to D306	Request data (read) used with the SLMPSND instruction • D300: Request data length • D301: Monitoring timer • D302: Command • D303: Subcommand • D304: Start address (lower 16 bits) • D305: Start address (upper 16 bits) • D306: Word length
D400 to D402	Response data (read, parameter storage location memory number) used with the SLMPSND instruction • D400: Response data start device • D401: End code • D402: Read data (parameter storage location memory number)
D500 to D547	Response data (read, parameter read for slave module) used with the SLMPSND instruction • D500: Response data start device • D501: End code • D502: Read data (module ID) • D503: Read data (device parameter 1) • D504: Read data (device parameter 2) ⋮ • D521: Read data (device parameter 19) • D541: Read data (status details) • D542: Read data (sensing level) • D546: Read data (model number) • D547: Read data (device version)
F1	SLMPSND instruction (read) completed with an error
F2	SLMPSND instruction (read, parameter storage location memory number) completed with an error
F3	Parameter access target module ID error
F4	Parameter access error
F5	Other errors
M0	SLMPSND instruction (read, parameter storage location memory number) completed
M1	SLMPSND instruction (read, parameter storage location memory number) completed (error)
M2	SLMPSND instruction (read, parameter read for slave module) completed
M3	SLMPSND instruction (read, parameter read for slave module) completed (error)
M4	Parameter read for slave module completed successfully
M10	Parameter reflection request (read)
M50	Program starting contact
M51	SLMPSND instruction (read) successful completion flag

Device	Description
SD63	Number of annunciators
SB49	Data link status of own station (of master station)
SW0B0.0	Data link status of each station (station No.1)
T0	Timer contact after Remote READY
J1	Own station network number
N0	Nesting (station No.1)

■Program

```
         SB49    SW0B0.0
(0)      ─┤/├────┤/├────────────────────────────────────────────[ MC    N0     M100 ]

    N0 ┬ M100
       │
         X1000
(4)      ─┤├──────────────────────────────────────────────────────[ OUT   T0     K10 ]

         T0     M50
(9)      ─┤├────┤├──┬───────────────────────────────────────────[ MOV   H0     W1500 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H200   W1501 ]
                    │
                M50 │
                ─┤↑├───────────────────────────────────────────[ SET           M10 ]
                    │
                    ├───────────────────────────────────────────[ RST           M4 ]
                    │
                    ├───────────────────────────────────────────[ RST           M51 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H1      D200 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H0      D201 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H1      D202 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H301    D203 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H0C0A8  D204 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H0B0B7  D205 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H0      D206 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H0FF    D207 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H3FF    D208 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H0      D209 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H1      D210 ]
                    │
                    ├───────────────────────────────────────────[ MOV   K5      D211 ]
                    │
                    ├───────────────────────────────────────────[ MOV   K12     D300 ]
                    │
                    ├───────────────────────────────────────────[ MOV   K10     D301 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H613    D302 ]
                    │
                    ├───────────────────────────────────────────[ MOV   H0      D303 ]
                    │
                    └───────────────────────────────────────────[ MOV   H4200   D304 ]
```

		MOV	H0	D305
		MOV	K1	D306
		MOV	H0	D400

X1011 ↑ — JP.SLMPSND J1 D200 D300 D400 M0

M0 ↑ — M1 ↑ — (F1)
— RST M50

M1 ↓ — MOV D402 D304
— MOV H0 D305
— MOV K48 D306
— MOV H0 D500
— JP.SLMPSND J1 D200 D300 D500 M2

M2 ↑ — RST M50
M3 ↓ — SET M51
M3 ↑ — (F2)

(120) M51 — [= H0D2E W1002] (F3)
— [= H0D30 W1002] (F4)
— [< H0 W1000] [= H0 SD63] (F5)
— [< H0 W1002]
F2 ↓ — F3 ↓ — F4 ↓ — SET M4

(151) M10 — X1011 — SET Y1010
X1011 ↓ — RST Y1010
— RST M10

(159) — MCR N0

(160) — [END]
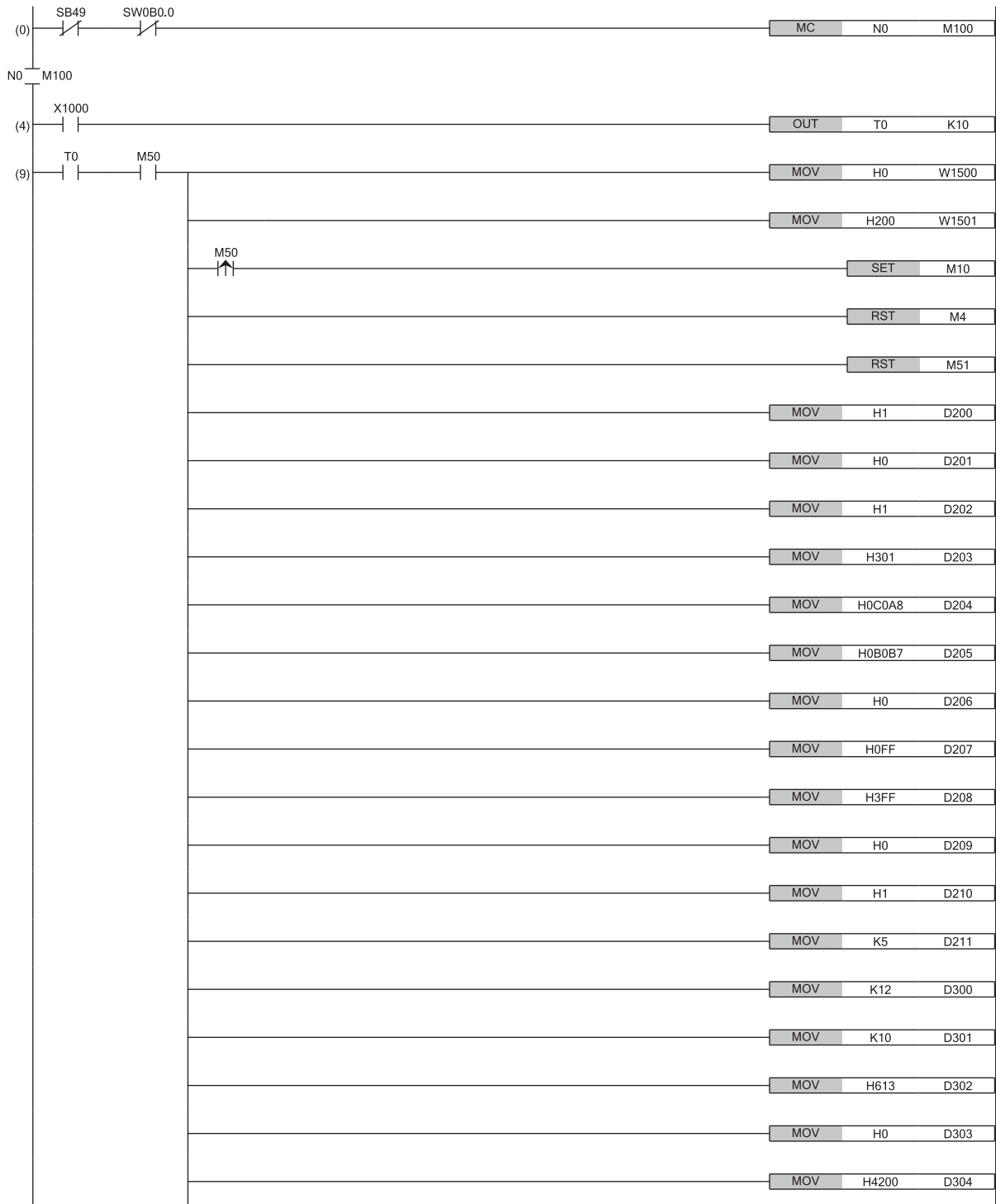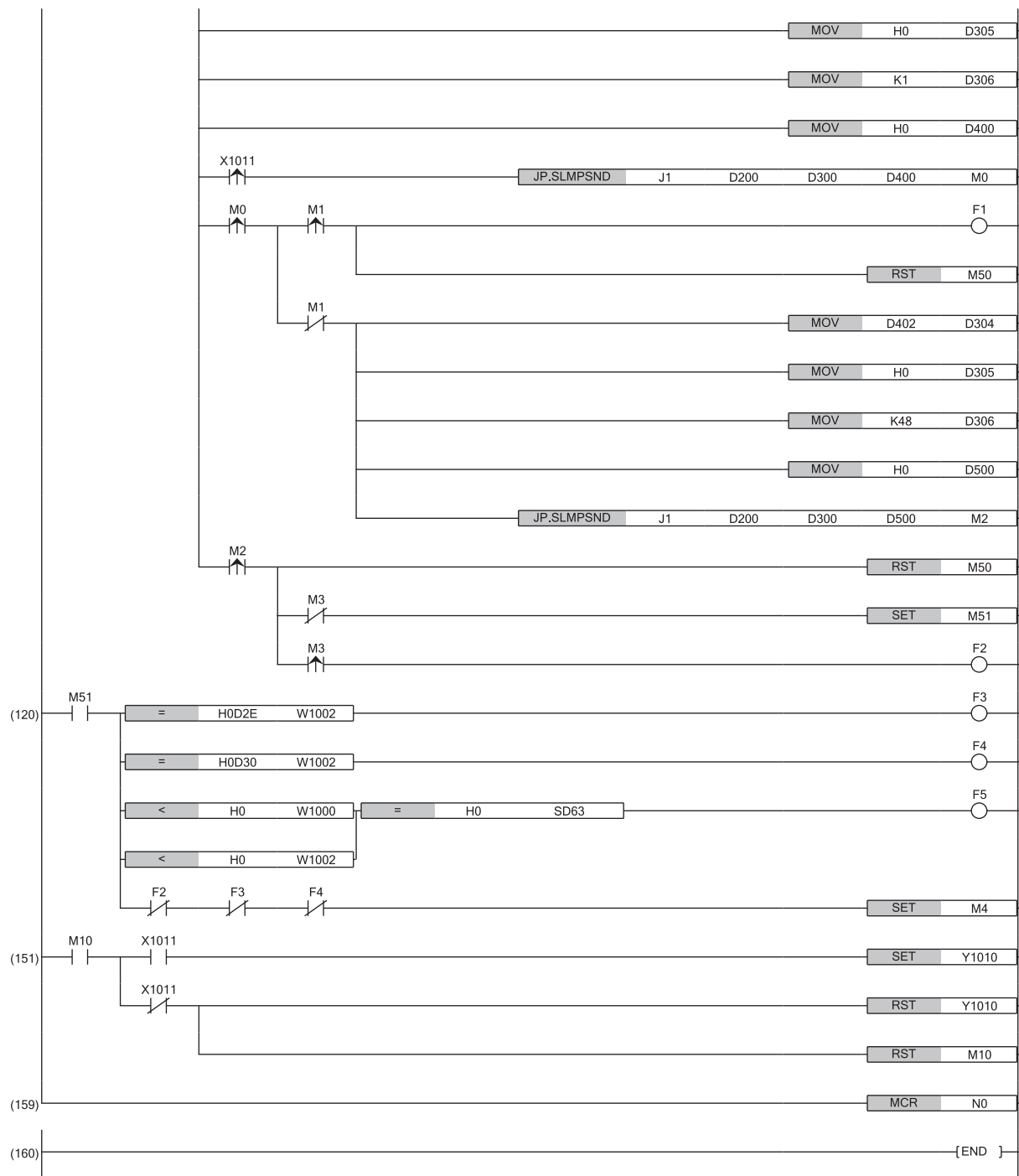
(4)   When Remote READY (X1000) of the NZ2AW1GNAL is on, the program is executed.

(9)   By turning on Program starting contact (M50), the input ASLINKER parameters are read.

(120) When an error occurs, processing is performed.

(151) Parameter access completion flag (X1011) turns off during parameter access, and Slave module parameter access request command (Y1010) turns on when reading is completed.

Parameter individual write

This program writes parameters to the input ASLINKER with bit address 0.

The parameters to be written to the slave module are as follows.

Item[1]	Setting value
Device parameter 1 (disconnection monitoring function setting)	2 (monitor only the signal side)
Device parameter 2 (disconnection detection enabled CH setting)	1 (IN0 only)

[1] For details on the parameters, refer to the manual for the slave module used.

■Device to use

Device	Description
X1000	Remote READY
X1011	Parameter access completion flag
Y1010	Slave module parameter access request command
W1000	Latest error code storage area
W1002	Latest alarm code storage area
W1500	Parameter access specification
W1501	Parameter access target module ID specification
D200 to D211	Control data used with the SLMPSND instruction • D200: Execution/error completion type • D201: Completion status • D202: Channel used by own station • D203: IP address of external device (third and fourth octets) • D204: IP address of external device (first and second octets) • D205: Destination port number • D206: Request destination network number • D207: Request destination station number • D208: Request destination module I/O number • D209: Request destination multidrop station number • D210: Number of resends • D211: Arrival monitoring time
D300 to D308	Request data (write) used with the SLMPSND instruction • D300: Request data length • D301: Monitoring timer • D302: Command • D303: Subcommand • D304: Start address (lower 16 bits) • D305: Start address (upper 16 bits) • D306: Word length • D307: Write data (device parameter 1) • D308: Write data (device parameter 2)
D400	Response data (write) used with the SLMPSND instruction • D400: Response data start device
F1	SLMPSND instruction (write) completed with an error
F2	Parameter access target module ID error
F3	Parameter setting value error
F4	Parameter access error
F5	Other errors
M0	SLMPSND instruction (write) completed
M1	SLMPSND instruction (write) completed (error)
M2	Parameter write for slave module completed successfully
M10	Parameter reflection request (read)
M11	Parameter reflection request (write)
M50	Read start contact
M51	Write start contact
M52	Parameter read for slave module completion flag
M53	SLMPSND instruction (write) successful completion flag
SD63	Number of annunciators
SB49	Data link status of own station (of master station)

Device	Description
SW0B0.0	Data link status of each station (station No.1)
T0	Timer contact after Remote READY
J1	Own station network number
N0	Nesting (station No.1)

■**Program**

```
        SB49   SW0B0.0
(0)    --|/|----|/|--------------------------------[MC    N0    M100]

N0   M100
(4)    --| |-------X1000--------------------------[OUT   T0    K10]

        T0     M50
(9)    --| |----| |--------------------------------[MOV   H0     W1500]
                                                   [MOV   H200   W1501]
              M50
             --|↑|-------------------------------- [SET   M10]
                                                   [RST   M2]
              X1011
             --|↑|-------------------------------- [RST   M50]
                                                   [SET   M52]

        T0     M51
(25)   --| |----| |--------------------------------[MOV   H1      D200]
                                                   [MOV   H0      D201]
                                                   [MOV   H1      D202]
                                                   [MOV   H301    D203]
                                                   [MOV   H0C0A8  D204]
                                                   [MOV   H0B0B7  D205]
                                                   [MOV   H0      D206]
                                                   [MOV   H0FF    D207]
                                                   [MOV   H3FF    D208]
                                                   [MOV   H0      D209]
                                                   [MOV   H1      D210]
                                                   [MOV   K5      D211]
                                                   [MOV   K16     D300]
                                                   [MOV   H10     D301]
                                                   [MOV   H1613   D302]
                                                   [MOV   H0      D303]
                                                   [MOV   H1031   D304]
                                                   [MOV   H0      D305]
```

			MOV	K2	D306
			MOV	K2	D307
			MOV	K1	D308
			MOV	H0	D400
	JP.SLMPSND	J1	D200	D300	D400	M0

```
        M0
       ─┤↑├───────────────────────────────[RST  M51]
              M1
             ─┤/├──────────────────────────[SET  M53]
                                           [MOV  H1    W1500]
                                           [MOV  H200  W1501]
                                           [SET  M11]
              M1
             ─┤↑├───────────────────────────( F1 )
(99)   M52                                     ( F2 )
      ─┤ ├──[= H0D2E  W1002]
       M53                                     ( F3 )
      ─┤ ├──[= H0D2F  W1002]
                                               ( F4 )
             [= H0D30  W1002]
                                               ( F5 )
             [< H0  W1000]──[= H0  SD63]
             [< H0  W1002]
```

```
        M52   M53   F2    F3    F4    F5
(132)  ─┤ ├──┤/├──┤/├──┤/├──┤/├──┤/├────────[SET  M51]
                                           [RST  M52]

        M52   M53   F2    F3    F4    F5    X1011
(140)  ─┤/├──┤ ├──┤/├──┤/├──┤/├──┤/├──┤↑├──[SET  M2]
                                           [RST  M53]

        M10   X1011
(150)  ─┤ ├──┤ ├────────────────────────────[SET  Y1010]
        M11   X1011
      ─┤ ├──┤/├─────────────────────────────[RST  Y1010]
                                            [RST  M10]
                                            [RST  M11]

(160)                                       [MCR  N0]

(161)                                       [END]
```

(4) When Remote READY (X1000) of the NZ2AW1GNAL is on, the program is executed.

(9) By turning on Read start contact (M50), the input ASLINKER parameters are read.

(25) By turning on Write start contact (M51), the parameters are written to the input ASLINKER.

(99) When an error occurs, processing is performed.

(150) Parameter access completion flag (X1011) turns off during parameter access, and Slave module parameter access request command (Y1010) turns on when reading and writing are completed.

9 MAINTENANCE AND INSPECTION

To maintain the best condition of the system, perform the inspection in accordance with the items described in the user's manual of the CPU module used.

This chapter describes the product-specific items that are not described in the user's manual of the CPU module used.

9.1 Daily Inspection

The following table lists the items that must be inspected on a daily basis.

Item	Inspection Item		Inspection method	Judgment criterion	Action
1	Mounting of the NZ2AW1GNAL	Looseness of the NZ2AW1GNAL	Check that the tabs of the NZ2AW1GNAL are securely hooked on the DIN rail.	The NZ2AW1GNAL must be mounted on the DIN rail securely.	Hook the tabs of the NZ2AW1GNAL on the DIN rail securely.
2	Connection status	Terminal screw loosening	Check for the terminal screw loosening.	The terminal screws must not be loose.	Retighten the terminal screws.
		Clearance between the solderless terminals	Check for the clearance between the solderless terminals.	The proper clearance must be provided between solderless terminals.	Provide the proper clearance.
		Connector loosening	Check for the cable connector loosening.	The cable connector must not be loose.	Tighten the terminal block mounting screws securely.
3	LED status	PW LED	Check that the LED is on.	The LED must be on.	Refer to the following and take actions. (☞ Page 118 Checking with LEDs)
		RUN LED	Check that the LED is on.	The LED must be on.	
		D LINK LED	Check that the LED is on.	The LED must be on.	
		ERR. LED	Check that the LED is off.	The LED must be off.	
		LINK LED	Check that the LED is on or flashing.	The LED must be on during the version compatibility inspection. The LED must be flashing during a data link.	
		SET LED	Check that the LED is off.	The LED must be off.	
		ALM LED	Check that the LED is off.	The LED must be off.	

9.2 Periodic Inspection

The following table lists the item that must be inspected periodically.

Note that the following item should be inspected when the facility is moved or modified, or when the wiring is changed.

Item	Inspection Item	Inspection method	Judgment criterion	Action
1	Power supply voltage check	Measure a voltage between the 24VDC terminals.	21.6 to 27.6VDC	Change the supply power.

10 TROUBLESHOOTING

This chapter describes the details of errors that may occur when using the NZ2AW1GNAL and troubleshooting.

10.1 Checking with LEDs

This section describes troubleshooting using the LEDs.

Determining the module error status

The error status can be determined as follows by the status of the RUN LED and ERR. LED.

RUN LED	ERR. LED	Error type[*1]	Description
Off	On[*2]	Major error	This error stops operation of the module and requires consultation with your local Mitsubishi representative.
On	On	Moderate error	This error stops operation of the module but can be dealt with by the customer.
On	Flashing	Minor error	This error does not stop the module from operating.

*1 If multiple errors occur, the error status is displayed in the order of major error > moderate error > minor error.
*2 If a module is in failure, the LED may not turn on.

If the PW LED does not turn on

If the PW LED does not turn on, check the following items.

Check item	Action
Are any LEDs other than the PW LED on?	If any LEDs other than the PW LED are on, the possible cause is a hardware error. Please consult your local Mitsubishi representative.
Is the module power supply (24VDC) wired?	Wire the module power supply (24VDC).
Is the module power supply (24VDC) turned on?	Turn on the module power supply (24VDC).
Is the voltage of the module power supply (24VDC) within the specified range?	Keep the voltage value within the performance specifications.

If the RUN LED does not turn on

If the RUN LED does not turn on, check the following items.

Check item	Action
Has a hardware error occurred?	Power off and on the module power supply (24VDC). If the RUN LED does not turn on, the module may be in failure. Please consult your local Mitsubishi representative.

When the RUN LED flashes

When the RUN LED flashes, check the following items.

Check item	Action
Is the unit test running?	After the unit test is completed, turn off the module power supply. After turning off the module power supply (24VDC), turn off MODE switch 1 and turn the module power supply from off to on.

When the LINK LED turns on or off

When the LINK LED turns on or off, check the following items.

Check item	Action
Has an error or alarm occurred?	Use the engineering tool to check the content of the error or alarm, and take corrective action. (☞ Page 127 How to Check Error Codes and Alarm Codes)
Is the AnyWireASLINK version compatibility inspection in progress?	After the AnyWireASLINK version compatibility inspection is completed, check again.

When the ALM LED turns on or flashes

When the ALM LED turns on or flashes, check the following items.

Check item	Action
Has an alarm occurred?	Use the engineering tool to check the error or alarm content of the NZ2AW1GNAL, and take corrective action. (☞ Page 127 How to Check Error Codes and Alarm Codes)

When the D LINK LED is off or flashing

If the D LINK LED is off or flashing, check the following items.

Check item	Action
Is an Ethernet cable that meets the standards being used?	Replace the cable with an Ethernet cable that meets the standards. (📖 User's manual for the master station used)
Is the station-to-station distance 100m or less?	Change the station-to-station distance to 100m or less.
Is the condition of the laid cabling (bending radius) within the specifications?	Refer to the manual for the Ethernet cable, and correct the bending radius to within the specification.
Is the Ethernet cable disconnected?	Replace the Ethernet cable.
Is the Ethernet cable properly attached?	If the Ethernet cable is not properly attached, attach it properly. (☞ Page 32 CC-Link IE TSN Connector Wiring)
Are the other stations connected to the NZ2AW1GNAL operating normally?	Check that the systems on other stations are powered on.
Is the switching hub used operating normally?	• Check that the switching hub is powered on. • Check that the switching hub being used supports the specifications of the master station used. (📖 User's manual for the master station used) • After disconnecting the Ethernet cable, attach the Ethernet cable again. • Power off and on the switching hub.
Is the master station connected on the network and operating normally?	If an error has occurred at the master station, clear the master station error.
Is another station that is powered off or in the middle of remote reset connected between the master station and the NZ2AW1GNAL?	If another station that is powered off or in the middle of remote reset is connected between the master station and the NZ2AW1GNAL, turn the power on and wait until the remote reset is completed.
Are the stations and switching hub between the master station and the NZ2AW1GNAL linked up at the desired communication speed?	Change the communication speed of the station or switching hub to meet the desired communication speed.
Is the IP address of the NZ2AW1GNAL duplicated with another device in the access range of CC-Link IE TSN?	Change the IP address so that no IP addresses are duplicated in the access range of CC-Link IE TSN.
Do the IP address settings match?	Match the IP address of the NZ2AW1GNAL with the IP address specified in "Network Configuration Settings" of "Basic Settings" of the master station.
Do the station types match?	Match the station type of the NZ2AW1GNAL with the station type specified in "Network Configuration Settings" of "Basic Settings" of the master station.
Is the station a reserved station?	In "Network Configuration Settings" of "Basic Settings" of the NZ2AW1GNAL, set "Reserved/Error Invalid Station" to "No Setting", and write the changed parameters to the CPU module.
Is the IP address of the NZ2AW1GNAL duplicated with other stations?	If two or more stations are set to the same IP address, change them so that all IP addresses are set differently.
Are the third to fourth octets of the IP address duplicated with other stations in the "Network Configuration Settings" of the "Basic Settings" of the master station?	Set the IP addresses for all stations so that the third to fourth octets of the IP addresses are not duplicated.
Does the network address (subnet mask part of the IP address) match the "Network Configuration Settings" of the "Basic Settings" of the master station?	Set the IP address and subnet mask so that the network address of all stations match.

Check item	Action
Is a station with a communication error connected between the master station and the NZ2AW1GNAL?	An NZ2AW1GNAL cannot establish data link if there is no path available with which the NZ2AW1GNAL can communicate with the master station without relaying data via a station with a communication error. If a communication error has occurred in two or more stations, clear the errors one by one, starting from the station closest to the master station on the communication path.
Are the stations linked up between the master station and the NZ2AW1GNAL at the desired communication speed?	Change the communication speed of the station or switching hub to meet the desired communication speed.
Is the time synchronization source station operating normally?	• If an error has occurred at the time synchronization source station, clear the error. • If the time synchronization source station is reset or the power is turned off, the line is temporarily disconnected due to the switching the time synchronization source, so wait until communication restarts.
Is the high-priority time synchronization source station newly connected to the network?	The line is temporarily disconnected due to switching the time synchronization source, so wait until communication restarts.
Does the model name of the slave station set in "Network Configuration Settings" of "Basic Settings" match the model name of the actual device?	Change the network configuration settings so that the model name of the slave station set in "Network Configuration Settings" of "Basic Settings" matches the model name of the actual device. Alternatively, set the NZ2AW1GNAL as a general-purpose remote station in the network configuration settings.
Has an error occurred on the NZ2AW1GNAL?	Use the engineering tool to check the error content of the NZ2AW1GNAL, and clear the error.
Is event code 00C71 registered in the event history of the master station?	If the CC-Link IE TSN network synchronous communication function is enabled for the NZ2AW1GNAL, disable the CC-Link IE TSN network synchronous communication function. If event code 00C71 is still registered after taking the above action, check the manual of the master station and clear the cause of event code 00C71.
Is the event code of 00C81 registered in the event history of the master station?	• Change the CC-Link IE TSN Class setting in the network configuration settings or the CC-Link IE TSN Class setting of the NZ2AW1GNAL so that the CC-Link IE TSN Class setting made in the network configuration settings and the CC-Link IE TSN Class setting of the NZ2AW1GNAL match. • For an NZ2AW1GNAL that does not support the CC-Link IE TSN Class setting function, set the CC-Link IE TSN Class setting in the network configuration settings to CC-Link IE TSN Class B or perform firmware update.
Is the CC-Link IE TSN Class of the NZ2AW1GNAL set to CC-Link IE TSN Class A?	When the CC-Link IE TSN Class of the NZ2AW1GNAL is set to CC-Link IE TSN Class A, take the following action. • The master station may not support CC-Link IE TSN Protocol version 2.0. In that case, update the master station to a version that it supports.
Has another station been reset or powered off?	Disconnection temporarily occurs due to reset or power-off of another station. Wait until communication restarts.
Is a device that is operating as a network other than CC-Link IE TSN connected between the master station and the NZ2AW1GNAL?	Disconnect a device that is not operating as CC-Link IE TSN from the system. For a device that can switch networks, check that it is operating as CC-Link IE TSN.
Is ring topology used?	When the CC-Link IE TSN Class of the NZ2AW1GNAL is CC-Link IE TSN Class A, set it to CC-Link IE TSN Class B or set the system configuration to "Line topology, star topology, or a mixture of star topology and line topology".

When the P1 LINK LED and P2 LINK LED turn off

When the P1 LINK LED and P2 LINK LED turn off, check the following items.

Check item	Action
Is the Ethernet cable properly attached?	If the Ethernet cable is not properly attached, attach it properly. (☞ Page 32 CC-Link IE TSN Connector Wiring)
Is an Ethernet cable that meets the standards being used?	Replace the cable with an Ethernet cable that meets the standards. (📖 User's manual for the master station used)
Is the station-to-station distance 100m or less?	Change the station-to-station distance to 100m or less.
Is the condition of the laid cabling (bending radius) within the specifications?	Refer to the manual for the Ethernet cable, and correct the bending radius to within the specification.
Is the Ethernet cable disconnected?	Replace the Ethernet cable.
Are the other stations connected to the NZ2AW1GNAL operating normally?	Check that the systems on other stations are powered on.
Is the switching hub used operating normally?	• Check that the switching hub is powered on. • Check that the switching hub being used supports the specifications of the master station used. (📖 User's manual for the master station used) • After disconnecting the Ethernet cable, attach the Ethernet cable again. • Power off and on the switching hub.
Is a device supporting the communication speed of the NZ2AW1GNAL connected?	• Connect to a device that can communicate according to the communication speed setting (1Gbps/100Mbps). • When the firmware version of the NZ2AW1GNAL is "02" or earlier, perform a firmware update or connect the NZ2AW1GNAL to a device that can communicate at 1Gbps.

When the ERR. LED turns on or flashes

When the ERR. LED turns on or flashes, check the following items.

Check item	Action
Has an error occurred?	Use the engineering tool to check the error content of the NZ2AW1GNAL, and take corrective action. (☞ Page 127 How to Check Error Codes and Alarm Codes)

When the SET LED turns on or flashes

When the SET LED turns on or flashes, check the following items.

Check item	Action
Was the power turned off during automatic address detection?	Execute automatic address detection again.

10.2 CC-Link IE TSN/CC-Link IE Field Diagnostics

Perform operation such as status monitoring and operation tests for CC-Link IE TSN.

For details on CC-Link IE TSN/CC-Link IE Field diagnostics, refer to the following.

📖User's manual for the master station used

Remote reset

Perform the following operations to remotely reset the selected NZ2AW1GNAL.

Operating procedure

1. Select which NZ2AW1GNAL to reset and click the [Remote Operation] button.
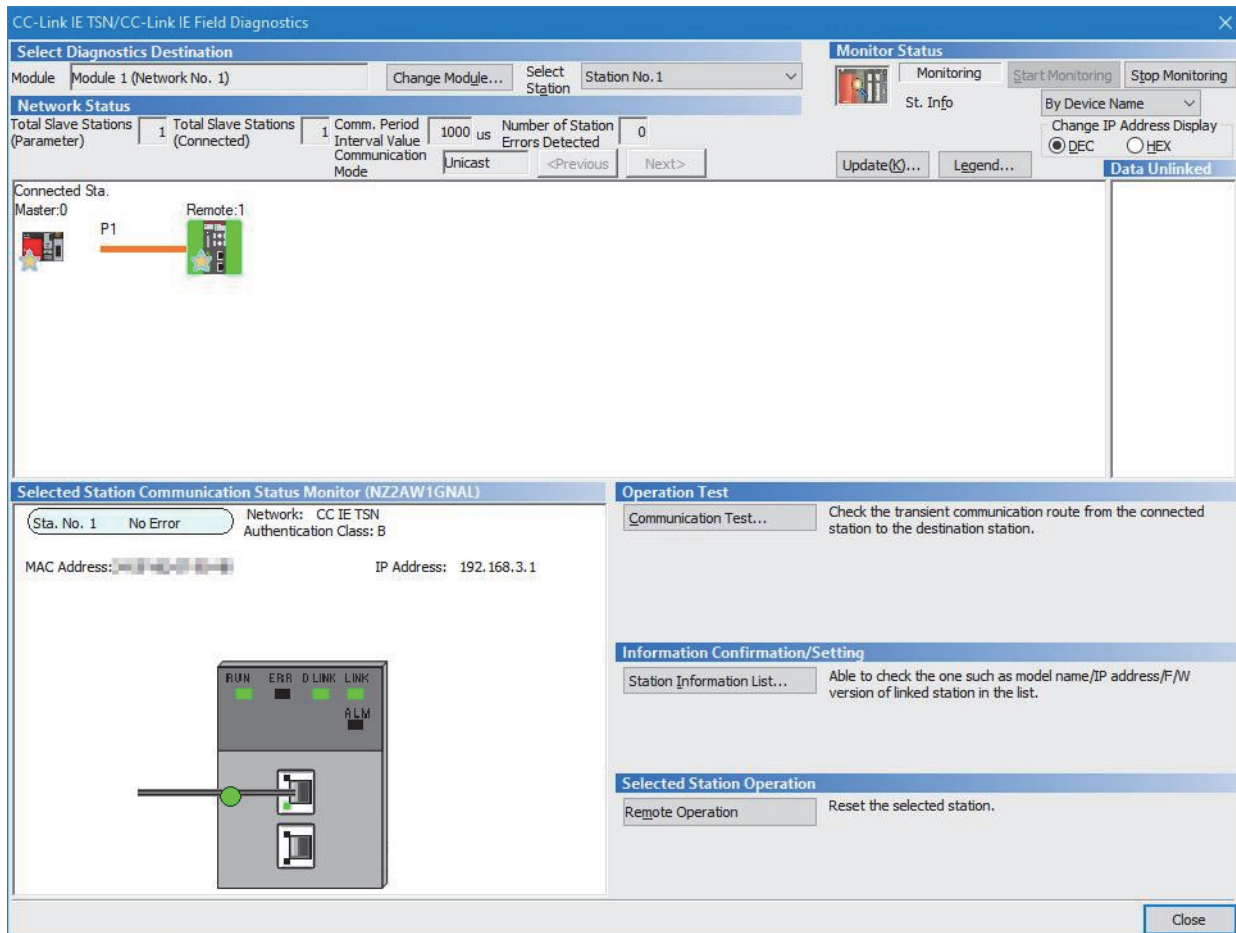
In this manual, "Authentication Class" is described as "CC-Link IE TSN Class".

2. Follow the instructions in the window and click the [Execute] button.

3. Follow the instructions in the window and click the [OK] button.

Precautions

■Remote reset

Remote reset for the NZ2AW1GNAL affects the communication of other stations, and the following condition may occur.

• For line topology, the modules after the NZ2AW1GNAL that was remotely reset are disconnected.

10.3 Unit Test

This function checks the module hardware when communication using the NZ2AW1GNAL is unstable.

1. Turn off the power of the NZ2AW1GNAL.

2. Connect P1 and P2 of the NZ2AW1GNAL with an Ethernet cable.

3. Set the IP address setting switch and MODE switch as follows.
 • IP address setting switch (x1): Any value
 • IP address setting switch (x16): F
 • MODE switch 1: ON
 • MODE switch 2 to MODE switch 12: Any value

4. Turn on the power of the NZ2AW1GNAL.

5. The unit test starts.
During the unit test, the RUN LED flashes and the D LINK LED turns off.
AnyWireASLINK transmission stops during unit test execution. Also, changing the IP address setting switch or MODE switch will be ignored.

6. When the unit test is completed, the RUN LED turns off and the D LINK LED turns on.
 • When completed successfully, the ERR. LED remains off and does not turn on.
 • When completed with an error, the ERR. LED turns on. If the unit test is completed with an error, replace the Ethernet cable and re-execute the unit test. If the test is completed with an error again, a hardware error of the NZ2AW1GNAL is likely. Please consult your local Mitsubishi representative.

10.4 Troubleshooting by Symptom

Troubleshooting by symptom is performed when the NZ2AW1GNAL does not operate normally, even though no error has occurred on the NZ2AW1GNAL. If an error has occurred on the NZ2AW1GNAL, identify the error cause with an engineering tool.

A slave module cannot be detected when automatic address detection is executed

If the connected slave modules cannot be detected correctly when automatic address detection is executed, check the following items.

Item	Action
Is the LINK LED of the NZ2AW1GNAL on or off?	Perform the troubleshooting for when the LINK LED is on or off. (☞ Page 119 When the LINK LED turns on or off)
Are the number of transmission points of the NZ2AW1GNAL and the address setting of the slave module correct?	• Check that the address of the slave module is within the number of transmission points of the NZ2AW1GNAL. • Check that the ID or occupied address range of the slave module is not the same as that of other slave modules. • Check that the bit address is not mixed up with the word address.
	To use word transmission, in the "Parameter of Slave Station" window, check that the following settings are made correctly. • Word data use setting • Word data points setting • Word data start address setting • Word data points per frame setting
Does the total wiring length of the transmission cables (DP, DN) exceed 200m?	Adjust the total wiring length within 200m.
Do the transmission cables (DP, DN) satisfy the specifications?	• Use transmission cables (DP, DN) that satisfy the specifications such as the type, wire diameter, and tightening torque to the terminal block. • Do not run multiple transmission cables (DP, DN) using a multicore cable.
Is the LINK LED of the slave module flashing?	Check the following on the slave module, clear the cause of the error, and execute automatic address detection. • Check the wiring for disconnections, short circuits, and poor contacts. • Check that the power supply is within the specified range.
Are two or more NZ2AW1GNAL and AnyWireASLINK master modules connected within one AnyWireASLINK line?	Connect only one NZ2AW1GNAL or AnyWireASLINK master module within one AnyWireASLINK line.
Does the slave module support 1024 bit points (input 512 points, output 512 points)?	When the number of bit points is set as 1024 points (input 512 points, output 512 points), configure the system only with slave modules supporting 1024 bit points. For whether a slave module supports 1024 bit points, refer to the manual of that slave module.

When parameter read/write and CC-Link IE TSN diagnostics cannot be performed

If parameters cannot read or written and CC-Link IE TSN/CC-Link IE Field diagnostics cannot be performed with the engineering tool, check the following items.

Item	Action
Is the D LINK LED of the NZ2AW1GNAL off or flashing?	Perform the troubleshooting for when the D LINK LED is off or flashing. (☞ Page 119 When the LINK LED turns on or off)
Are the firmware version of the master station and the software version of the engineering tool compatible?	Check the firmware version of the master station and the software version of the engineering tool, and if the version is earlier than the supported version, upgrade it.
After checking all the above, can online functions by the engineering tool be executed normally?	If online functions cannot be performed by the engineering tool, the NZ2AW1GNAL may be in failure. Please consult your local Mitsubishi representative.

When AnyWireASLINK system communication is unstable

When the AnyWireASLINK system communication becomes unstable (I/O signals cannot be read or written correctly), check the following items.

Item	Action
Is the ambient temperature for the module within the specified range?	Keep the ambient temperature within the specified range by taking action such as removing heat sources.
Is any noise affecting the system?	Take measures to reduce noise by using shielded cables for the wiring of the AnyWireASLINK system.
Is the terminating unit connected properly?	Pay attention to the polarities of the terminating unit and connect it properly.
Does the total wiring length of the transmission cables (DP, DN) exceed the specified range?	Adjust the total wiring length of the AnyWireASLINK system within the specified range.
Do the transmission cables (DP, DN) satisfy the specifications?	• Use transmission cables (DP, DN) that satisfy the specifications such as the type, wire diameter, and tightening torque to the terminal block. • Do not run multiple transmission cables (DP, DN) using a multicore cable.
Does the power supply voltage of the 24VDC external power supply satisfy the specifications?	Adjust the power supply voltage of the 24VDC external power supply within the rated value (21.6 to 27.6VDC). (The recommended voltage is 26.4VDC.)
Are two or more NZ2AW1GNAL and AnyWireASLINK master modules connected within one AnyWireASLINK line?	Connect only one NZ2AW1GNAL or AnyWireASLINK master module within one AnyWireASLINK line.
Is the I/O information of the slave module stored in the following remote I/O signals and remote registers? • AnyWireASLINK bit input signal (RX20 to RX21F) • AnyWireASLINK bit output signal (RY20 to RY21F) • AnyWireASLINK word input signal (RWr20 to RWr21F) • AnyWireASLINK word output signal (RWw20 to RWw21F)	• Check that the remote I/O signals and remote registers listed on the left are correctly assigned in the refresh settings of the AnyWireASLINK master module. • Check that information regarding the slave module has been properly assigned and that the instructions written in the program are free from mistakes.

When the easy replacement setting for one slave module is not available

When the easy replacement setting for one slave module is not available, check the following items.

Check item	Action
Is the easy replacement setting for one slave module enabled?	Enable the easy replacement setting for one module using "single module simplified replacement" in the "Parameter of Slave Station" window. (☞ Page 77 Easy Replacement Function for One Slave Module)
Does a DP/DN disconnection error exist on only one slave module?	Disconnect the slave module to be replaced from the transmission cable, and replace it using the easy replacement for one slave module function. To replace two or more slave modules, turn off the power after replacing the first module, disconnect the second slave module, and replace it using the easy replacement setting for one slave module.
Are the old and new slave modules of the same type?	Replace the slave module with a new one of the same type.
Is the new slave module the same as the old slave module, or does new one have an updated device version?	Replace the slave module with a new one of the same type or with an updated device version.
Is the new slave module connected firmly?	Connect the new slave module firmly to the transmission cable.
Does the new slave module support easy replacement function for one slave module?	Replace the slave module with a new one supporting easy replacement function for one slave module. For details on whether a slave module supports easy replacement of one slave module, refer to the manual for each slave module used.
Do any errors other than DP/DN disconnection errors exist?	Eliminate errors other than DP/DN disconnection errors, and replace the slave module using the easy replacement for one slave module function.

When the AnyWireASLINK version compatibility inspection cannot be executed

When the AnyWireASLINK version compatibility inspection cannot be executed, check the following items.

Check item	Action
Is Word data usage setting on the NZ2AW1GNAL enabled?	Set the word data points setting of the NZ2AW1GNAL to 2 words (1 input word/1 output word) or larger, and execute the AnyWireASLINK version compatibility inspection again.
Has an error that prevents execution of the AnyWireASLINK version compatibility inspection occurred?	Eliminate errors other than an AnyWireASLINK version compatibility inspection error, and execute the AnyWireASLINK version compatibility inspection again.
Is a slave module with a duplicate ID connected?	Change the address of the slave module so that the ID is not duplicated, and execute the AnyWireASLINK version compatibility inspection again.
Are more slave modules than the maximum number of connectable modules connected?	Reduce the number of connected slave modules to the maximum number of connectable modules or less, and execute the AnyWireASLINK version compatibility inspection again.

When the remote address cannot be changed

When the remote address cannot be changed, check the following items.

Check item	Action
Has automatic address detection been performed?	Change the remote address after performing automatic address detection.
Is a slave module with a duplicate ID connected?	Change the address of the slave module so that the ID is not duplicated, and perform automatic address detection. Then, change the remote address again.
Does the slave module support remote address change?	Replace the slave module with one that supports remote address change, and change the remote address again. For details on whether a slave module supports remote address change, refer to the manual for each slave module used.

10.5 How to Check Error Codes and Alarm Codes

Error codes and alarm codes can be checked by using one of the following methods.
- Check by CC-Link IE TSN/CC-Link IE Field diagnostics (☞ Page 127 Check by CC-Link IE TSN/CC-Link IE Field diagnostics)
- Check by remote register (☞ Page 129 Check by refresh target device)

Point
- When multiple errors or alarms occur, the latest error code or alarm code detected by the NZ2AW1GNAL is stored in Latest error code storage area (RWr0) or Latest alarm code storage area (RWr2).
- For error and alarm resets, refer to the following.
☞ Page 130 Reset methods

Check by CC-Link IE TSN/CC-Link IE Field diagnostics

The error history stored inside the NZ2AW1GNAL can be read. The error that occurred before the power turned off can also be checked.

Point
- The error history records up to 16 errors in the order of most recent. If 17 or more errors occur, the oldest errors are deleted in order.
- If the same error occurs consecutively, only the first instance of the error is stored in the error history.
- Error history is stored in the non-volatile memory of the NZ2AW1GNAL and does not disappear even after the power supply is turned off. However, if the upper limit on the number of times that the non-volatile memory can be written is reached, the error history cannot be stored in the non-volatile memory.
- The date and time of occurrence in the error history is recorded after the time is delivered from the master station. If an error occurs before the time is delivered from the master station, the date and time of occurrence will not be recorded.

Operating procedure

1. Connect the engineering tool to the CPU module.

2. Start CC-Link IE TSN/CC-Link IE Field Diagnostics from the menu.

    👆 [Diagnostics] ⇨ [CC-Link IE TSN/CC-Link IE Field Diagnostics]

3. Right-click on the slave station whose error history will be checked, and select "Error History".

4. Follow the instructions in the window and click the [Yes] button.

5. The error history is displayed.

Error History Station No.: 1	✕

Selected Station Information

NZ2AW1GNAL   [Delete Error History]

Network No. [1]   Station No. [1]   IP Address [192.168.3.1]

Error History List

No.	Error Details
1	IP address setting switch changed error
2	Hardware error

Error Details

Name	Read Value	Unit	Explanation
Error Code	0x1030		
Error Details	IP address setting switches has been change...		
Solution Methods	Return the IP address setting switches to th...		
Occurrence Date	███████████		
Error detailed information	0x0FFF		

[Close]

Point 🖉

To initialize the error history, click the [Delete Error History] button.

Check by refresh target device

Check with the refresh target device of the master module.

Operating procedure

👆 [Online] ⇨ [Monitor] ⇨ [Device/Buffer Memory Batch Monitor]

■Check with the Latest error code storage area (RWr0)

Ex.
When the refresh target device of the Latest error code storage area (RWr0) is W1000
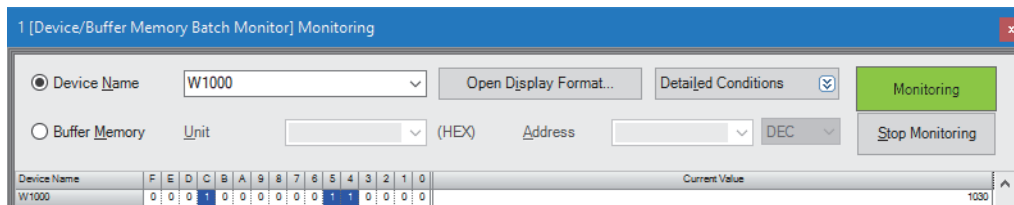
■Check with the Latest alarm code storage area (RWr2)

Ex.
When the refresh target device of the Latest alarm code storage area (RWr2) is W1002
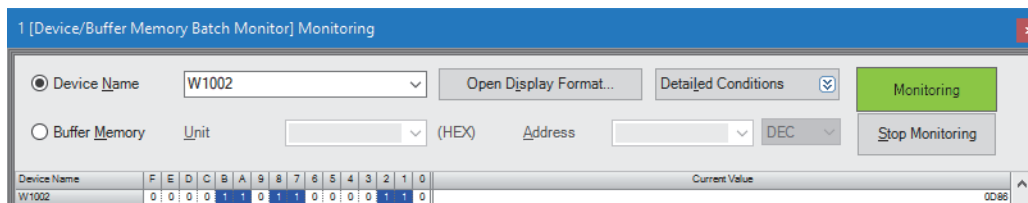
Reset methods

■How to reset errors and alarms

The reset method differs for each error type.

Error type	Error reset method
Major error	Error reset is not possible.
Moderate error	After clearing the cause of the error, execute one of the following. • Turn the module power supply off and on. • Perform a remote reset.
Minor error	After clearing the cause of the error, execute one of the following. • Turn on and off Error reset request flag (RY0). • Turn the module power supply off and on. • Perform a remote reset.
Alarm	

- Error: Indicates an error related to the NZ2AW1GNAL settings, hardware, or CC-Link IE TSN communication.
- Alarm: Indicates an error related to AnyWireASLINK transmission.

■Error reset method by slave station command execution

This section describes how to perform an error reset by slave station command execution.

Operating procedure

1. Select NZ2AW1GNAL from the station list in the "CC-Link IE TSN Configuration" window.

2. Open the "Command Execution of Slave Station" window.

☞ Right-click on the target NZ2AW1GNAL ⇨ [Online] ⇨ [Command Execution of Slave Station]
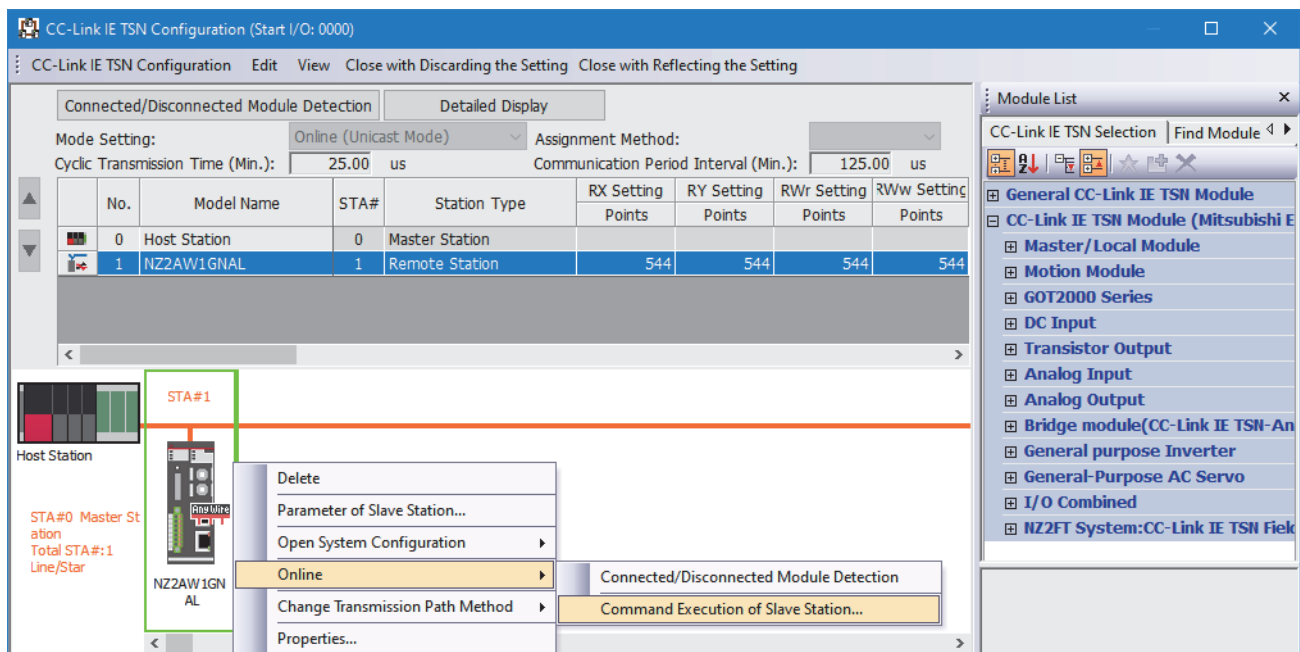
3. Set "Method Selection" to "Error clear request" and click the [Execute] button.
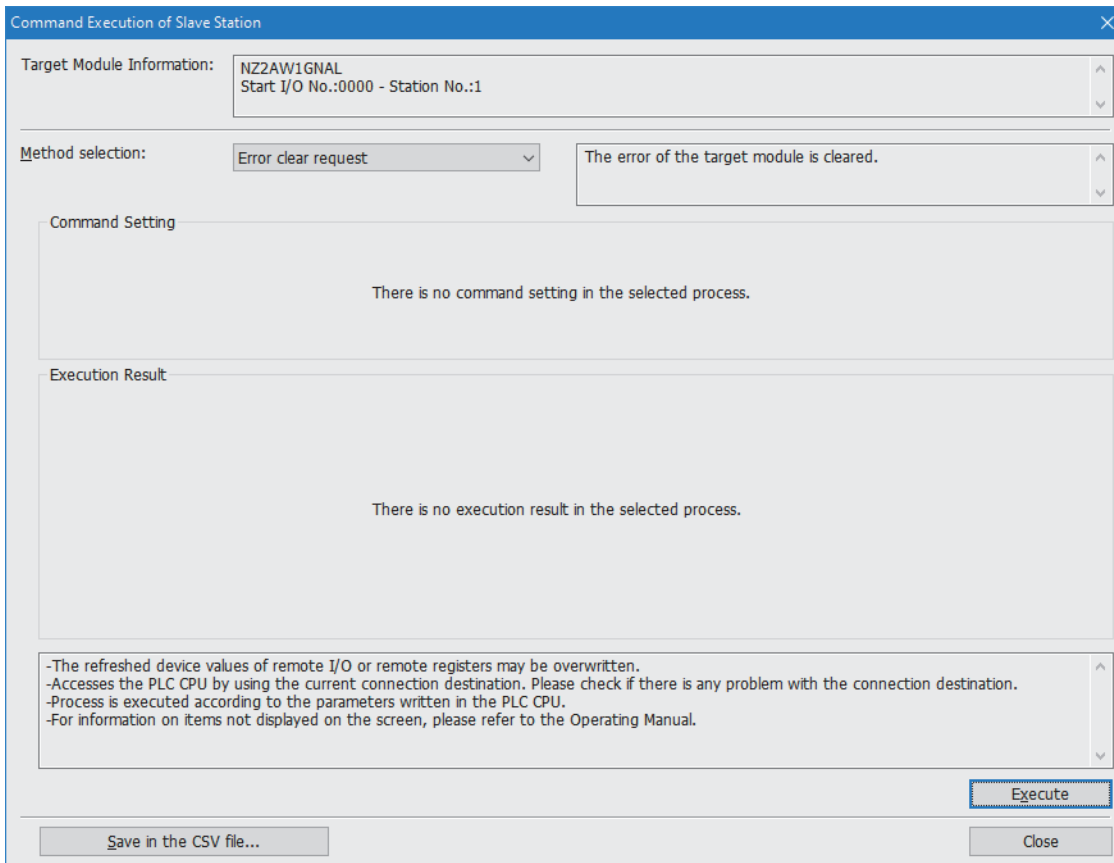
4. When the following window is displayed, click the [Yes] button.
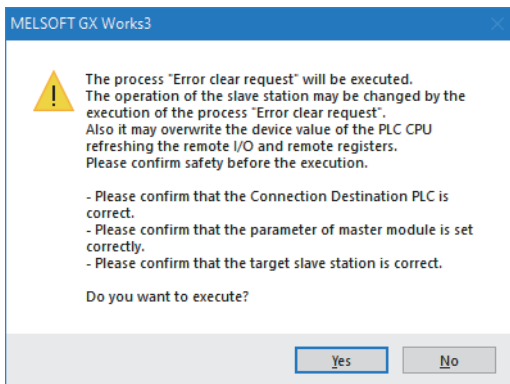
5. When the following window is displayed, click the [OK] button.
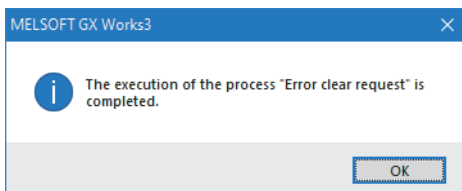
6. The NZ2AW1GNAL errors are cleared.

10.6 List of Error Codes

Error codes can be classified into the following three types.

Classification	Description
Major error	Indicates that the error is irrecoverable, and the RUN LED turns off. AnyWireASLINK transmission stops.
Moderate error	Indicates that operation of the module cannot continue, and the ERR. LED turns on. AnyWireASLINK transmission stops.
Minor error	Indicates that operation of the module can continue, and the ERR. LED flashes.

If these errors occur, check that the D LINK LED is on, and take the corrective action for the error code below.

| Error code (hexadecimal)	Classification	Error name	Error description and cause	Action
1020H	Minor error	Remote buffer memory access error	The SLMPSND instruction accessed outside the range of the remote buffer memory.	Correct the setting data of the SLMPSND instruction to access within the range of the remote buffer memory.
1021H	Minor error	Number of transmission points of AnyWireASLINK setting error	The points setting was executed from the engineering tool while Number of transmission points of AnyWireASLINK was enabled.	When executing points setting from the engineering tool, disable Number of transmission points of AnyWireASLINK.
1022H	Minor error	MODE switch setting error	The MODE switch is a combination that prohibits setting.	Change the MODE switch to a combination that does not prohibit setting, and power off and on the module power supply.
1030H	Minor error	IP address setting switch change error	The IP address setting switch was changed while the module was powered on.	Return the IP address setting switch to the setting it had when the module power supply was turned on.
1041H	Minor error	MODE switch 1 change error	MODE switch 1 was changed while the module was powered on.	Return MODE switch 1 to the setting it had when the module power supply was turned on.
1042H	Minor error	MODE switch 2 change error	MODE switch 2 was changed while the module was powered on.	Return MODE switch 2 to the setting it had when the module power supply was turned on.
1043H	Minor error	MODE switch 3 change error	MODE switch 3 was changed while the module was powered on.	Return MODE switch 3 to the setting it had when the module power supply was turned on.
1044H	Minor error	MODE switch 4 change error	MODE switch 4 was changed while the module was powered on.	Return MODE switch 4 to the setting it had when the module power supply was turned on.
1045H	Minor error	MODE switch 5 change error	MODE switch 5 was changed while the module was powered on.	Return MODE switch 5 to the setting it had when the module power supply was turned on.
1046H	Minor error	MODE switch 6 change error	MODE switch 6 was changed while the module was powered on.	Return MODE switch 6 to the setting it had when the module power supply was turned on.
1047H	Minor error	MODE switch 7 change error	MODE switch 7 was changed while the module was powered on.	Return MODE switch 7 to the setting it had when the module power supply was turned on.
1048H	Minor error	MODE switch 8 change error	MODE switch 8 was changed while the module was powered on.	Return MODE switch 8 to the setting it had when the module power supply was turned on.
1049H	Minor error	MODE switch 9 change error	MODE switch 9 was changed while the module was powered on.	Return MODE switch 9 to the setting it had when the module power supply was turned on.
104AH	Minor error	MODE switch 10 change error	MODE switch 10 was changed while the module was powered on.	Return MODE switch 10 to the setting it had when the module power supply was turned on.
104BH	Minor error	MODE switch 11 change error	MODE switch 11 was changed while the module was powered on.	Return MODE switch 11 to the setting it had when the module power supply was turned on.
104CH	Minor error	MODE switch 12 change error	MODE switch 12 was changed while the module was powered on.	Return MODE switch 12 to the setting it had when the module power supply was turned on.
1050H	Minor error	Error history storage limit error	The number of times that the error history has been saved has reached the maximum.	No more errors can be saved in the error history. Check the errors with the latest error codes.
1051H	Minor error	IP address storage limit error	The number of times that an IP address has been saved has reached the maximum.	IP address changes made after this error occurs are not saved in the non-volatile memory.
1052H	Minor error	Module parameter storage limit error	The number of times that the module parameters have been saved has reached the maximum.	Module parameter changes made after this error occurs are not saved in the non-volatile memory.

Error code (hexadecimal)	Classification	Error name	Error description and cause	Action
1060H	Minor error	Non-volatile memory access error (error history)	An error could not be saved because an error was detected when accessing the non-volatile memory.	• Errors that occurred before this error may not have been saved in the non-volatile memory. • Take measures to reduce noise. • If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
1061H	Minor error	Non-volatile memory access error (IP address)	The IP address could not be saved because an error was detected when accessing the non-volatile memory.	• The IP address is not saved in the non-volatile memory. • Take measures to reduce noise. • If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
1062H	Minor error	Non-volatile memory access error (module parameter)	Module parameters could not be saved because an error was detected when accessing the non-volatile memory.	• Module parameters are not saved in the non-volatile memory. • Take measures to reduce noise. • If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
1063H	Minor error	Non-volatile memory data error (slave module ID, parameter)	The slave module ID and parameter information saved in the non-volatile memory are faulty.	• The slave module ID and parameter information saved in the non-volatile memory are faulty. Execute automatic address detection again. DP/DN disconnection detection and parameter access cannot be performed until automatic address detection is executed. • If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
1801H	Minor error	Bit data points setting range error	The value being set is outside the settable range for the bit data points setting.	Change Bit data points setting (address: 0100H) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
1802H	Minor error	Word data use setting range error	The value being set is outside the settable range for the word data usage setting.	Change Word data use setting (address: 0101H) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
1803H	Minor error	Word data points setting range error	The value being set is outside the settable range for the word data points setting.	Change Word data points setting (address: 0102H) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
1804H	Minor error	Word data start address setting range error	The value being set is outside the settable range for the word data start address setting.	Change Word data start address setting (address: 0103H) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
1805H	Minor error	Number of word data points per frame setting range error	The value being set is outside the settable range for the number of word data points setting per frame.	Change Word data points setting per frame (address: 0105H) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
1806H	Minor error	Startup operation mode setting range error	The value being set is outside the settable range for the startup operation mode setting.	Change Startup operating mode setting (address: 0107H) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
1807H	Minor error	Bit data double verification setting range error	The value being set is outside the settable range for the bit data double check mode setting.	Change Double verification setting (address: 0108H) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
1808H	Minor error	Disconnection error automatic recovery mode setting range error	The value being set is outside the settable range for the disconnection error automatic recovery mode setting.	Change Disconnection error automatic recovery mode setting (address: 0109H) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
1809H	Minor error	Word input data hold/clear setting when disconnection occurs range error	The value being set is outside the settable range for the word input data hold/clear setting when disconnection occurs.	Change Word input data hold/clear setting when disconnected (address: 010AH) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).

Error code (hexadecimal)	Classification	Error name	Error description and cause	Action
180AH	Minor error	Output data hold/clear setting range error	The value being set is outside the settable range for the output data hold/clear setting.	Change Output data hold/clear setting (address: 010BH) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
180BH	Minor error	Easy replacement setting for one slave module range error	The value being set is outside the settable range for the easy replacement setting for one slave module.	Change Easy replacement setting for one slave module (address: 010CH) to a setting value within the settable range, and turn on Module parameter reflection request flag (RYC).
180CH	Minor error	Transmission points setting error	The value being set to Bit data points setting (remote buffer memory address: 0100H) is 0 points (no bit data) (000AH), and Word data usage setting (address: 0102H) is set to Do not use word data (0000H).	Change either or both of the following settings, and turn on Module parameter reflection request flag (RYC). 1. Bit data points setting (address: 0100H) to other than 0 points (no bit data) (000AH) 2. Word data use setting (address: 0101H) to Use word data (0001H)
180DH	Minor error	Word data setting combination error	Setting values that cannot be combined in regards to "Word data use setting", "Word data points setting", "Word data start address setting", and "Word data points setting per frame" are being set.	On the "Parameter of Slave Station" window, review whether "Word data use setting", "Word data points setting", "Word data start address setting", and "Word data points setting per frame" are consistent.
D010H	Minor error	IP address duplication detection	A duplicate IP address has been detected.	Change the IP address so that no IP addresses are duplicated in the access range of CC-Link IE TSN. After the change, power off and on the module power supply.
2010H	Moderate error	Non-volatile memory data error (parameter)	The parameter data saved in the non-volatile memory is faulty.	• After changing Parameter area initialization command (address: 0402H) from No command (0) to Command (1) and back to No command (0), turn the module power supply off and on to set the parameters in non-volatile memory to the default values. Then, set the parameters again. • Take measures to reduce noise. • If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
2011H	Moderate error	Non-volatile memory data error (IP address)	The IP address and subnet mask saved in the non-volatile memory are faulty.	• Immediately after the error occurs, it is automatically restored. However, the saved IP address and subnet mask are lost, and the system operates as though the following were saved. IP address: 192.168.3.250 Subnet mask: 255.255.255.0 • Take measures to reduce noise. • If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
2400H	Moderate error	IP address setting switch range error	The IP address setting switch is set to 255.	Turn on the power with the IP address setting switch set to a value from 0 to 254.
2500H	Moderate error	Module power supply voltage drop error	The module power supply voltage has dropped.	• Check the status of the module power supply. • Check that the power supply meets the NZ2AW1GNAL specifications.
3000H	Moderate error	Non-volatile memory access error (slave module information)	An error was detected when accessing the non-volatile memory that stores slave module information.	• Power off and on the module power supply. • If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.
3C00H	Major error	Hardware error	The module has a hardware error.	• Power off and on the module power supply. • If the error occurs again, the module may be in failure. Please consult your local Mitsubishi representative.

10.7 Alarm Code List

This section describes the list of alarm codes.

Alarm codes indicate that operation of the module can continue despite the error, and the ALM LED turns on or flashes.

Alarm code (hexadecimal)	Alarm name	Alarm description and cause	Action
0CC9H	DP/DN short error	A short circuit between DP and DN or a current exceeding the maximum supply current of the transmission cable (DP, DN) has occurred.	• Check that the wiring between DP and DN has not short-circuited. • When crimping the link connector, check that the pin assignment is correct. • Check that no contact or incorrect wiring exists between DP and DN in the terminal block wiring of the NZ2AW1GNAL and the slave module. • Correct the cables (wire diameter, total wiring length) and modules (type, number of connected modules) so that the current consumption of all the slave modules does not exceed the transmission cable supply current of the NZ2AW1GNAL.
0CCBH	24V/DP short error	A short circuit between may be occurring 24V and DP.	• Check that the wiring between 24V and DP has not short-circuited. • When crimping the link connector, check that the pin assignment is correct. • Check that no contact or incorrect wiring exists between 24V and DP in the terminal block wiring of the NZ2AW1GNAL and the slave module.
0D00H	DP/DN disconnection error	The slave module gives no response due to disconnection between DP and DN.	• Check that the entirety of the transmission 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 wires are properly connected to the terminal block of the NZ2AW1GNAL. • Check that no wiring is incorrect and that the screws are tightened sufficiently. • When creating a new system or changing the system configuration, perform automatic address detection. 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 is not flashing, check that no disconnection, short circuit, incorrect wiring, or poor contact exists between DP and DN around the module.
0D2CH	Slave module access error	Abnormal parameter access has occurred.	• When the error occurs during execution easy replacement for one slave module or the remote address change function, check that the slave module supports those functions. • Take measures to reduce noise. • Power off and on the NZ2AW1GNAL and the slave module in which the error has occurred. • If it occurs again, consult Anywire Corporation.
0D2DH	Slave module access error	Abnormal parameter access has occurred.	• Take measures to reduce noise. • Power off and on the NZ2AW1GNAL and the slave module in which the error has occurred. • If it occurs again, consult Anywire Corporation.
0D2EH	Parameter access target module ID error	Parameter access or a remote address change was executed for an ID not detected by the automatic address detection.	• Check that the setting value of Parameter access target module ID specification (RWw1) is correct. • Execute automatic address detection, check that the target ID is detected, and perform parameter access again.
0D2FH	Parameter setting value error	A setting value that cannot be set has been set in the device parameter of the slave module.	Check the manual of the slave module with the ID where the error occurred, and set values within the settable range.
0D30H	Parameter access error	Parameter access to the slave module has failed.	• Check that only one slave module is set to the ID where the error occurred is connected. • Take measures to reduce noise.
0D31H	Slave module status error	The slave module is in the error status.	Check the status details of the slave module with the ID where the error occurred, and eliminate the error that occurred. For details about the error, refer to the manual for each slave module used.

Alarm code (hexadecimal)	Alarm name	Alarm description and cause	Action
0D40H	AnyWireASLINK transmission function execution error	The following functions could not be executed because other functions are being executed. • Parameter access • Automatic address detection • Address inspection • Remote address change	Check that the remote I/O signals are as shown below, and re-execute. • Remote READY (RX0): On • Adjustment mode flag (RXF): Off • Parameter access completion flag (RX11): On • Automatic address detection flag (RX14): Off • Address inspection flag (RX15): Off
0D80H	Type mismatch error	When trying to use easy replacement for one slave module, the replacement failed because the old and new slave models are different types.	Use the same type of slave module as before replacement, and perform the easy replacement function for one slave module.
0D81H	Slave module device version inconsistency error	When trying to use easy replacement for one slave module, the replacement failed because the device version of the new slave module is older than that of the old slave module.	Use the same device version or a newer device version as for the old slave module, and perform the easy replacement function for one slave module.
0D82H	Easy replacement for one slave module error (Parameter access error)	When trying to use easy replacement of one slave module, the replacement failed because access to the slave module failed.	After performing the following, perform easy replacement for one slave module again. • Check that no more than one slave module set to the default address is connected. • Take measures to reduce noise.
0D83H	Non-compatible slave module connection error	During the AnyWireASLINK version compatibility inspection, a non-compatible slave module was detected.	Replace the slave module that has the ID where the error occurred with a compatible slave module, and perform the AnyWireASLINK version compatibility inspection.
0D84H	Compatibility inspection error (Parameter access error)	During the AnyWireASLINK version compatibility inspection, the access to the slave module failed, and the AnyWireASLINK version compatibility inspection was interrupted.	Perform the following for the slave module that has the ID where the error occurred, and perform the AnyWireASLINK version compatibility inspection again. • Check that only one slave module is set to the ID where the error occurred is connected. • Take measures to reduce noise.
0D85H	Compatibility inspection error (Excess number of connected slave modules error)	The AnyWireASLINK version compatibility inspection was executed while the number of slave modules exceeded the maximum number of connectable modules.	Disconnect unnecessary slave modules so that the number of connected slave modules is less than or equal to the maximum number of connectable modules, and perform the AnyWireASLINK version compatibility inspection.
0D86H	Compatibility inspection error (Word data usage setting)	The AnyWireASLINK version compatibility inspection could not be executed because "Word data use setting" is "0: Not Use".	Change "Word data use setting" to "1: Use" and execute the AnyWireASLINK version compatibility inspection.
0D90H	Same ID used error	An address of the connected slave modules is duplicated.	Change the address of the slave module whose address is duplicated, and execute automatic address detection.
0D91H	No ID setting error	A slave module with an unset address is connected.	Set the address for the slave module whose address is not set, and execute the automatic address detection.
0D92H	New ID error	When the remote address change function is executed, an ID that cannot be specified is set as the new ID.	Check the following for the new ID that was set. • Is it being used by another slave module? • Is a value outside the settable range specified? Change the new ID to an ID that can be set, and execute the remote address change function.
0D93H	Excess number of connected slave modules error	Address automatic detection was executed while the number of slave modules exceeded the maximum number of connectable modules.	Disconnect unnecessary slave modules so that the number of connected slave modules is less than or equal to the maximum number of connectable modules, and execute the automatic address detection.
0DA0H	1024-point non-compatible slave module connection detection error	A slave module that does not support 1024 bit points is connected.	Replace the slave module that has the ID where the error occurred with a slave module that supports 1024 bit points, and execute the automatic address detection.

APPENDICES

Appendix 1 Remote I/O Signals

List of remote I/O signals

The following table lists the I/O signals for the master/local module.

For the assignment of the I/O signals, an example of assigning the remote I/O signals of the NZ2AW1GNAL to RX0 to RX21F and RY0 to RY21F is described.

The remote input (RX) is an input signal from the NZ2AW1GNAL to the master/local module.

The remote output (RY) is an output signal from the master/local module to the NZ2AW1GNAL.

> **Point**
>
> Do not use any remote I/O signals whose use is prohibited. Doing so may result in an accident due to an incorrect output or malfunction.

A

Remote input signal

Remote input (RX)	Name
RX0	Remote READY
RX1	DP/DN short error
RX2	24V/DP short error
RX3	Module power supply voltage drop error
RX4	DP/DN disconnection error
RX5	Error status flag
RX6	Alarm status flag
RX7	Use prohibited
RX8	AnyWireASLINK version compatibility inspection error flag
RX9	Number of transmission points setting switch enable/disable status flag
RXA	Use prohibited
RXB	Use prohibited
RXC	Module parameter reflection completion flag
RXD	AnyWireASLINK version compatibility inspection executing flag
RXE	Use prohibited
RXF	Adjustment mode flag
RX10	Slave module alarm signal
RX11	Parameter access completion flag
RX12	Parameter access error
RX13	Use prohibited
RX14	Automatic address detection flag
RX15	Address inspection flag
RX16	One slave module easy replacement in progress flag
RX17	One slave module easy replacement completion flag
RX18	Automatic address detection operation mode
RX19 to RX1D	Use prohibited
RX1E	CC-Link IE TSN Class setting status[1]
RX1F	Communication speed setting status[1]
RX20 to RX21F	AnyWireASLINK bit input signal

[1] Supported for modules with the firmware version "03" or later.

Remote output signal

Remote output (RY)	Name
RY0	Error reset request flag
RY1	Automatic address detection command
RY2	Address inspection command
RY3 to RYB	Use prohibited
RYC	Module parameter reflection request flag
RYD	AnyWireASLINK version compatibility inspection command
RYE to RYF	Use prohibited
RY10	Slave module parameter access request command
RY11	Slave module parameter batch read command
RY12	Slave module parameter batch write command
RY13 to RY1F	Use prohibited
RY20 to RY21F	AnyWireASLINK bit output signal

Details of remote I/O signals

Remote READY

■Device No.

Name	Device No.
Remote READY	RX0

■Description

Remote READY (RX0) turns on when the NZ2AW1GNAL is powered off and on.

Remote READY is used for interlocking reading or writing from the master module.

■Turning off Remote READY

If a major or moderate error occurs, the remote READY (RX0) turns off.

DP/DN short error

■Device No.

Name	Device No.
DP/DN short error	RX1

■Description

This signal 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 (RX1), after eliminating the short-circuit in the transmission cables (DP, DN) or adjusting the current to be within the specification range, perform either of the following operations.

Until then, DP/DN short error (RX1) remains on.

- Turn off and on the NZ2AW1GNAL or execute the remote reset.
- Turn on and off Error reset request flag (RY0).

24V/DP short error

■Device No.

Name	Device No.
24V/DP short error	RX2

■Description

This signal turns on when 24V-DP is short-circuited.

■Turning off 24V/DP short error

To turn off 24V/DP short error (RX2), after eliminating the short-circuit in the transmission cables (24V, DP), perform either of the following operations.

Until then, 24V/DN short error (RX2) remains on.

- Turn off and on the NZ2AW1GNAL or execute the remote reset.
- Turn on and off Error reset request flag (RY0).

A

Module power supply voltage drop error

■Device No.

Name	Device No.
Module power supply voltage drop error	RX3

■Description

This signal turns on when the module power supply (24V) voltage drops.

■Turning off Module power supply voltage drop error

To turn off Module power supply voltage drop error (RX3), after eliminating the voltage drop of the module power supply (24V), perform the following operations.

Until then, Module power supply voltage drop error (RX3) remains on.

 • Turn off and on the NZ2AW1GNAL or execute the remote reset.

DP/DN disconnection error

■Device No.

Name	Device No.
DP/DN disconnection error	RX4

■Description

This signal turns on when the transmission cables (DP, DN) or a slave module is disconnected.

■Turning off DP/DN disconnection error

To turn off DP/DN disconnection error (RX4), after eliminating the disconnection in the transmission cables (DP, DN) or that of the slave module, perform either of the following operations.

Until then, DP/DN disconnection error (RX4) remains on.

 • Turn off and on the NZ2AW1GNAL or execute the remote reset.
 • Turn on and off Error reset request flag (RY0).

Error status flag

■Device No.

Name	Device No.
Error status flag	RX5

■Description

This signal turns on when an error occurs. For details on the errors, refer to the following.

☞Page 152 Latest error code storage area

☞Page 152 Latest error ID storage area

■Turning off Error status flag

The timing at which Error status flag (RX5) turns on and off differs depending on the error classification. For details, refer to the following.

☞Page 130 How to reset errors and alarms

Alarm status flag

■Device No.

Name	Device No.
Alarm status flag	RX6

■Description

This signal turns on when an alarm occurs. For details on the alarms, refer to the following.

☞ Page 152 Latest alarm code storage area

☞ Page 153 Latest alarm ID storage area

■Turning off Alarm status flag

After eliminating the cause of the alarm, Alarm status flag (RX6) remains on until either of the following operations is performed.

- Turning off and on the NZ2AW1GNAL or executing the remote reset
- Turn on and off Error reset request flag (RY0).

AnyWireASLINK version compatibility inspection error flag

■Device No.

Name	Device No.
AnyWireASLINK version compatibility inspection error flag	RX8

■Description

This signal turns on when an error is detected in the AnyWireASLINK version compatibility inspection.

■Turning off AnyWireASLINK version compatibility inspection error

To turn off AnyWireASLINK version compatibility inspection error flag (RX8), eliminate the cause of the error and perform either of the following operations.

Until then, AnyWireASLINK version compatibility inspection error (RX8) remains on.

- Turn off and on the NZ2AW1GNAL or execute the remote reset.
- Turn on and off Error reset request flag (RY0).
- Turn off and on AnyWireASLINK version compatibility inspection command (RYD).

A

Number of transmission points setting switch enable/disable status flag

■Device No.

Name	Device No.
Number of transmission points setting switch enable/disable status flag	RX9

■Description

The status of number of transmission points of AnyWireASLINK setting switch can be checked.
- When enabled: ON
- When disabled: OFF

> **Point**
>
> Even if the switch is changed after the module is started, because the module operation does not change, the value of Number of transmission points setting switch enable/disable status flag (RX9) does not change and the state at the time of module start-up is maintained.
> If the number of points is set from the engineering tool when the number of transmission points of AnyWireASLINK setting is enabled, an error will occur.

Module parameter reflection completion flag

■Device No.

Name	Device No.
Module parameter reflection completion flag	RXC

■Description

When setting the module parameters from the program, Module parameter reflection request flag (RYC) turns on and this signal turns on when the parameter data writing to the non-volatile memory is completed.
This signal automatically turns off when Module parameter reflection request flag (RYC) turns off.

AnyWireASLINK version compatibility inspection executing flag

■Device No.

Name	Device No.
AnyWireASLINK version compatibility inspection executing flag	RXD

■Description

This signal turns on when the AnyWireASLINK version compatibility inspection is started.

■Turning off AnyWireASLINK version compatibility inspection executing flag

AnyWireASLINK version compatibility inspection executing flag (RXD) turns off when the following conditions are met.
- The AnyWireASLINK version compatibility inspection has completed.
- AnyWireASLINK version compatibility inspection command (RYD) is turned on and off.

Adjustment mode flag

■Device No.

Name	Device No.
Adjustment mode flag	RXF

■Description

This flag turns on when the ASLINKMONITOR is in the adjustment mode.

■Turning off Adjustment mode flag

Adjustment mode flag (RXF) turns off when either of the following conditions is met.

- The ASLINKMONITOR is in the normal mode.
- The ASLINKMONITOR in the adjustment mode is disconnected.

For details on the adjustment mode, consult Anywire Corporation.

Slave module alarm signal

■Device No.

Name	Device No.
Slave module alarm signal	RX10

■Description

This signal turns on when any of the following errors occurs.

- Slave module access error (alarm code: 0D2CH)
- Slave module access error (alarm code: 0D2DH)
- Parameter setting value error (alarm code: 0D2FH)
- Parameter access error (alarm code: 0D30H)
- Slave module status error (alarm code: 0D31H)
- Type mismatch error (alarm code: 0D80H)
- Slave module device version inconsistency error (alarm code: 0D81H)
- Compatibility inspection error (Parameter access error) (alarm code: 0D84H)
- Same ID used error (alarm code: 0D90H)
- No ID setting error (alarm code: 0D91H)
- 1024-point non-compatible slave module connection detection error (alarm code: 0DA0H)

■Turning off Slave module alarm signal

To turn off Slave module alarm signal (RX10), after eliminating the status error in the slave module or setting the address of the slave module again, perform either of the following operations.

Until then, Slave module alarm signal (RX10) remains on.

- Turn off and on the NZ2AW1GNAL or execute the remote reset.
- Turn on and off Error reset request flag (RY0).

A

Parameter access completion flag

■Device No.

Name	Device No.
Parameter access completion flag	RX11

■Description

This flag turns on after Remote READY (RX0) turns on.

It turns off while any of the following is being executed.

- Slave module parameter read/write
- AnyWireASLINK version compatibility inspection function
- Easy replacement function for one slave module
- Automatic address detection
- Slave information acquisition at start-up function
- Remote address change function

Parameter access error

■Device No.

Name	Device No.
Parameter access error	RX12

■Description

This signal 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 (RX12), after eliminating the error, perform either of the following operations.

Until then, Parameter access error (RX12) remains on.

- Turn off and on the NZ2AW1GNAL or execute the remote reset.
- Turn on and off Error reset request flag (RY0).

Automatic address detection flag

■Device No.

Name	Device No.
Automatic address detection flag	RX14

■Description

The signal remains on from the start of execution of automatic address detection to the end of the execution.

Address inspection flag

■Device No.

Name	Device No.
Address inspection flag	RX15

■Description

The signal remains on from the start of execution of address inspection to the end of the execution.

One slave module easy replacement in progress flag

■Device No.

Name	Device No.
One slave module easy replacement in progress flag	RX16

■Description

This flag turns on during the slave module replacement using the easy replacement function for one slave module.

One slave module easy replacement completion flag

■Device No.

Name	Device No.
One slave module easy replacement completion flag	RX17

■Description

This flag turns on when the slave module replacement using the easy replacement function for one slave module is completed. It turns on for five seconds and then automatically turns off.

Automatic address detection operation mode

■Device No.

Name	Device No.
Automatic address detection operation mode	RX18

■Description

The status of operation mode of automatic address detection can be checked.

- In standard mode: Off
- In high-speed mode: On

CC-Link IE TSN Class setting status

■Device No.

Name	Device No.
CC-Link IE TSN Class setting status	RX1E

■Description

The CC-Link IE TSN Class setting status can be checked.

- CC-Link IE TSN Class A: On
- CC-Link IE TSN Class B: Off

Communication speed setting status

■Device No.

Name	Device No.
Communication speed setting status	RX1F

■Description

The CC-Link IE TSN communication speed status can be checked.

- 100Mbps: On
- 1Gbps: Off

A

AnyWireASLINK bit input signal

■Device No.

Name	Device No.
AnyWireASLINK bit input signal	RX20 to RX21F

■Description

This area automatically stores the on/off status of the input signal of the slave module (On: 1, Off: 0).

■Example 1

If the address of the 2-point bit input slave module is set to 30, the 2 bits from RX3E to RX3F are occupied for the input signal because the setting address is 30.

The input area is 512 points.

Remote input signal	Input data bit															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RX2□	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RX3□	31[*1]	30[*1]	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RX4□	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RX5□	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RX6□	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
⋮	⋮															
RX1F□	479	478	477	476	475	474	473	472	471	470	469	468	467	466	465	464
RX20□	495	494	493	492	491	490	489	488	487	486	485	484	483	482	481	480
RX21□	511	510	509	508	507	506	505	504	503	502	501	500	499	498	497	496

The value from 0 to F of the input data bit goes into □.

*1 The occupied area when the setting address of the 2-point bit input slave module is 30

■Example 2

If the address of the 16-point bit input slave module is set to 50, the 16 bits from RX52 to RX61 are occupied for the input signal because the setting address is 50.

The input area is 512 points.

Remote input signal	Input data bit															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RX2□	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RX3□	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RX4□	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RX5□	63[*1]	62[*1]	61[*1]	60[*1]	59[*1]	58[*1]	57[*1]	56[*1]	55[*1]	54[*1]	53[*1]	52[*1]	51[*1]	50[*1]	49	48
RX6□	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65[*1]	64[*1]
⋮	⋮															
RX1F□	479	478	477	476	475	474	473	472	471	470	469	468	467	466	465	464
RX20□	495	494	493	492	491	490	489	488	487	486	485	484	483	482	481	480
RX21□	511	510	509	508	507	506	505	504	503	502	501	500	499	498	497	496

The value from 0 to F of the input data bit goes into □.

*1 The occupied area when the setting address of the 16-point bit input slave module is 50

Details of remote output signals

Error reset request flag

■Device No.

Name	Device No.
Error reset request flag	RY0

■Description

When Error reset request flag (RY0) is turned off and on when a minor error and alarm occurs, the error information and alarm information are cleared. However, the error information will not be cleared if Parameter access completion flag (RX11) is off. The signals that are cleared when the error information and alarm information are cleared are as follows.

- DP/DN short error (RX1)
- 24V/DP short error (RX2)
- DP/DN disconnection error (RX4)
- Error status flag (RX5)
- Alarm status flag (RX6)
- AnyWireASLINK version compatibility inspection error flag (RX8)
- Slave module alarm signal (RX10)
- Parameter access error (RX12)
- Latest error code storage area (RWr0)
- Latest error ID storage area (RWr1)
- Latest alarm code storage area (RWr2)
- Latest alarm ID storage area (RWr3)
- Number of the IDs of the disconnected modules (RWr6)
- Number of the alarm IDs (RWr8)
- Disconnected module ID information storage area (5100H to 51FFH)
- Disconnected module ID information bit area (5200H to 527FH)
- Alarm ID information storage area (5500H to 55FFH)
- Version compatibility inspection error ID area (5700H to 577FH)

Automatic address detection command

■Device No.

Name	Device No.
Automatic address detection command	RY1

■Description

When Automatic address detection command (RY1) is turned off and on, the automatic address detection is executed.

For details on automatic address detection, refer to the following.

A

Address inspection command

■Device No.

Name	Device No.
Address inspection command	RY2

■Description

When Address inspection command (RY2) is turned off and on, the automatic inspection is executed.

For details on address inspection, refer to the following.

☞ Page 64 Address Inspection Function

Module parameter reflection request flag

■Device No.

Name	Device No.
Module parameter reflection request flag	RYC

■Description

This flag is used when setting module parameters in the program.

After writing the parameter data to the remote buffer memory, turn on Module parameter reflection request flag (RYC) to write the parameter data to the non-volatile memory.

Power off and on the system or perform the remote reset and the module starts operating with the saved settings.

AnyWireASLINK version compatibility inspection command

■Device No.

Name	Device No.
AnyWireASLINK version compatibility inspection command	RYD

■Description

Turn on this signal to execute the AnyWireASLINK version compatibility inspection.

Slave module parameter access request command

■Device No.

Name	Device No.
Slave module parameter access request command	RY10

■Description

Turn on this signal to perform the following operations from the NZ2AW1GNAL to a slave module.

• Read or write the parameter of the slave module.

• Execute the remote address change function.

Slave module parameter batch read command

■Device No.

Name	Device No.
Slave module parameter batch read command	RY11

■Description

Turn on this signal to collectively read parameters from all slave modules that the NZ2AW1GNAL recognizes.

Slave module parameter batch write command

■Device No.

Name	Device No.
Slave module parameter batch write command	RY12

■Description

Turn on this signal to collectively write parameters to all slave modules that the NZ2AW1GNAL recognizes.

AnyWireASLINK bit output signal

■Device No.

Name	Device No.
AnyWireASLINK bit output signal	RY20 to RY21F

■Description

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

■Example 1

If the address of the 2-point bit output slave module is set to 30, the 2 bits from RY3E to RY3F are occupied for the output signal because the setting address is 30.

The output area is 512 points.

Remote output signal	Output data bit															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RY2□	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RY3□	31[*1]	30[*1]	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RY4□	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RY5□	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
RY6□	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
⋮	⋮															
RY1F□	479	478	477	476	475	474	473	472	471	470	469	468	467	466	465	464
RY20□	495	494	493	492	491	490	489	488	487	486	485	484	483	482	481	480
RY21□	511	510	509	508	507	506	505	504	503	502	501	500	499	498	497	496

The value from 0 to F of the output data bit goes into □.

*1   The occupied area when the setting address of the 2-point bit output slave module is 30

■Example 2

If the address of the 16-point bit output slave module is set to 50, the 16 bits from RY52 to RY61 are occupied for the output signal because the setting address is 50.

The output area is 512 points.

Remote output signal	Output data bit															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
RY2□	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RY3□	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RY4□	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
RY5□	63[*1]	62[*1]	61[*1]	60[*1]	59[*1]	58[*1]	57[*1]	56[*1]	55[*1]	54[*1]	53[*1]	52[*1]	51[*1]	50[*1]	49	48
RY6□	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65[*1]	64[*1]
⋮	⋮															
RY1F□	479	478	477	476	475	474	473	472	471	470	469	468	467	466	465	464
RY20□	495	494	493	492	491	490	489	488	487	486	485	484	483	482	481	480
RY21□	511	510	509	508	507	506	505	504	503	502	501	500	499	498	497	496

The value from 0 to F of the output data bit goes into □.

*1   The occupied area when the setting address of the 16-point bit output slave module is 50

Appendix 2 Remote Register

Lists of remote register areas

The following lists remote register areas for the master/local module.

For the assignment of the remote register, an example of assigning the remote register of the NZ2AW1GNAL to RWr0 to RWr21F and RWw0 to RWw21F is described.

The remote register (RWr) is the information input from the NZ2AW1GNAL to the master/local module.

The remote register (RWw) is the information output from the master/local module to the NZ2AW1GNAL.

Remote register input

Remote register input (RWr)	Name
RWr0	Latest error code storage area
RWr1	Latest error ID storage area
RWr2	Latest alarm code storage area
RWr3	Latest alarm ID storage area
RWr4 to RWr5	Use prohibited
RWr6	Number of the IDs of the disconnected modules
RWr7	Number of the IDs of the connected modules
RWr8	Number of the alarm IDs
RWr9 to RWr1F	Use prohibited
RWr20 to RWr21F	AnyWireASLINK word input signal

Remote register output

Remote register output (RWw)	Name
RWw0	Parameter access setting
RWw1	Parameter access target module ID specification
RWw2	Change ID specification
RWw3 to RWw1F	Use prohibited
RWw20 to RWw21F	AnyWireASLINK word output signal

A

Details of remote register areas

Latest error code storage area

■Device No.

Name	Device No.
Latest error code storage area	RWr0

■Description

An error code is stored in this area when an error occurs in the NZ2AW1GNAL. After eliminating the cause of the error that occurred, turn on Error reset request flag (RY0) to clear the error code.

Latest error ID storage area

■Device No.

Name	Device No.
Latest error ID storage area	RWr1

■Description

0FFFH is stored in this area when an error occurs. After eliminating the cause of the error that occurred, turn on Error reset request flag (RY0) to clear the error occurrence ID.

Latest alarm code storage area

■Device No.

Name	Device No.
Latest alarm code storage area	RWr2

■Description

An alarm code is stored in this area when an alarm occurs in the NZ2AW1GNAL.

After eliminating the cause of the alarm that occurred, turn on Error reset request flag (RY0) to clear the alarm code.

Latest alarm ID storage area

■Device No.

Name	Device No.
Latest alarm ID storage area	RWr3

■Description

This area stores the ID of the slave module that was the target of the latest alarm code when an alarm occurs.

However, 0FFFH is stored when the following alarm occurs.

- DP/DN short error (alarm code: 0CC9H)
- 24V/DP short error (alarm code: 0CCBH)
- Parameter access target module ID error (alarm code: 0D2EH)
- AnyWireASLINK transmission function execution error (alarm code: 0D40H)
- Easy replacement error for one slave module (Parameter access error) (alarm code: 0D82H)
- Non-compatible slave module connection error (alarm code: 0D83H)
- Compatibility inspection error (Excess number of connected slave modules error) (Alarm code: 0D85H)
- Compatibility inspection error (Word data usage setting) (alarm code: 0D86H)
- New ID error (alarm code: 0D92H)
- Excess number of connected slave modules error (alarm code: 0D93H)

The IDs relevant to alarm occurrence are stored in the alarm ID information storage area below.

After eliminating the cause of the alarm that occurred, turn on Error reset request flag (RY0) to clear the alarm ID.

Number of the IDs of the disconnected modules

■Device No.

Name	Device No.
Number of the IDs of the disconnected modules	RWr6

■Description

This area stores the number of slave module IDs that send no response due to disconnection of the transmission cable (DP, DN) or a failure in the slave module alone among the IDs of the connected modules. (Up to 256)

If the disconnection error automatic recovery function is enabled, the number of slave modules (number of disconnected module IDs) from which errors are cleared automatically decreases.

After automatic address detection, the data are updated as soon as a response error is detected.

For details on the disconnected module IDs, refer to the disconnected module ID information storage area below.

A

Number of the IDs of the connected modules

■Device No.

Name	Device No.
Number of the IDs of the connected modules	RWr7

■Description

This area stores the number of IDs of the connected modules detected by automatic address detection. (Up to 256)

The number of IDs stored is maintained even after turning the power on and off or executing the remote reset.

The data are updated at the time of automatic address detection and after turning the power off and on.

For details on the connected module ID, refer to the connection module ID information storage area below.

☞ Page 175 Connected module ID information storage area

Number of the alarm IDs

■Device No.

Name	Device No.
Number of the alarm IDs	RWr8

■Description

The number of slave module IDs relevant to alarm occurrence is stored. (Up to 256)

For alarm codes stored, refer to the following.

 • Slave module access error (alarm code: 0D2CH)
 • Slave module access error (alarm code: 0D2DH)
 • Parameter setting value error (alarm code: 0D2FH)
 • Parameter access error (alarm code: 0D30H)
 • Slave module status error (alarm code: 0D31H)
 • Type mismatch error (alarm code: 0D80H)
 • Slave module device version inconsistency error (alarm code: 0D81H)
 • Compatibility inspection error (Parameter access error) (alarm code: 0D84H)
 • Same ID used error (alarm code: 0D90H)
 • No ID setting error (alarm code: 0D91H)
 • 1024-point non-compatible slave module connection detection error (alarm code: 0DA0H)

The stored value is maintained until either of the following operations is performed after eliminating the cause of the alarm.

 • Turn off and on the NZ2AW1GNAL or execute the remote reset.
 • Turn on and off Error reset request flag (RY0).

The data are updated when the NZ2AW1GNAL is turned off and on or when an alarm has occurred after automatic address detection.

For details on the alarm IDs, refer to the alarm ID information storage area below.

☞ Page 176 Alarm ID information storage area

AnyWireASLINK word input signal

■Device No.

Name	Device No.
AnyWireASLINK word input signal	RWr20 to RWr21F

■Description

This area automatically stores the word input status of the slave module.

■Example

For a word input slave module (address: 3) with 2-word data points, the 2 words (RWr23, RWr24) from RWr23 are occupied for the word input signal because the address is 3.

Input signals	Word input information area
RWr20	0
RWr21	1
RWr22	2
RWr23	3[*1]
RWr24	4[*1]
⋮	⋮
RWr21C	508
RWr21D	509
RWr21E	510
RWr21F	511

*1   The occupied area when the setting address of the word input slave module with 2-word data points is 3

Parameter access setting

■Device No.

Name	Device No.
Parameter access setting	RWw0

■Description

Specify the parameter access method to a slave module.

Value	Operation
0000H	Parameter read (AnyWireASLINK slave module → NZ2AW1GNAL)
0001H	Parameter write (NZ2AW1GNAL → AnyWireASLINK slave module)
0002H	Remote address change

When any value other than the above is stored, the operation is set to parameter read (0000H).

A

Parameter access target module ID specification

■Device No.

Name	Device No.
Parameter access target module ID specification	RWw1

■Description

Specify the target ID for accessing the parameters of individual slave modules.

The IDs that can be set are as follows.

ID	Slave module type
0000H to 01FFH	Bit output slave module
0200H to 03FFH	Bit input slave module Bit I/O combined slave module
0400H to 05FFH	Word output slave module
0600H to 07FFH	Word input slave module Word I/O combined slave module

Change ID specification

■Device No.

Name	Device No.
Change ID specification	RWw2

■Description

Specify a new ID of when changing the remote address.

The ID that can be set is the same as Parameter access target module ID specification (RWw1).

For details, refer to the remote address change function below.

AnyWireASLINK word output signal

■Device No.

Name	Device No.
AnyWireASLINK word output signal	RWw20 to RWw21F

■Description

When the word output information of a slave module is written, the slave module automatically outputs a signal.

■Example

For a word output slave module (address: 508) with 2-word data points, the 2 words (RWw21C, RWw21D) from RWw21C are occupied for the word output signal because the address is 508.

Output signals	Word output information area
RWw20	0
RWw21	1
RWw22	2
RWw23	3
RWw24	4
⋮	⋮
RWw21C	508[1]
RWw21D	509[1]
RWw21E	510
RWw21F	511

*1   The occupied area when the setting address of the word output slave module with 2-word data points is 508

Appendix 3 Remote Buffer Memory

Data can be read/written from/to the remote buffer memory areas by the SLMPSND instruction in a program.

For how to read/write data from/to the remote buffer memory areas using the SLMPSND instruction, refer to the following.

☞ Page 102 Remote buffer memory read

Note that the following instructions for reading/writing data from/to remote stations cannot be used.

- REMTO instruction
- REMTOD instruction
- REMTOIP instruction
- REMTODIP instruction
- REMFR instruction
- REMFRD instruction
- REMFRIP instruction
- REMFRDIP instruction

The following table lists the assignment of the remote buffer memory addresses of the NZ2AW1GNAL.

Address	Item
0000H to 01FFH	Parameter area
0200H to 03FFH	Monitor area
0400H to 05FFH	Module control area
1000H to 4FFFH	Slave parameters
5000H to 5FFFH	Slave information

A

List of buffer memory addresses

Parameter area

○: Possible, ×: Impossible

Address		Name	Initial value	Read	Write
Decimal	**Hexadecimal**				
0 to 255	0000H to 00FFH	System area	—	—	—
256	0100H	Bit data points setting	0003H	○	○
257	0101H	Word data use setting	0000H	○	○
258	0102H	Word data points setting	0000H	○	○
259	0103H	Word data start address setting	0000H	○	○
260	0104H	Use prohibited	—	—	—
261	0105H	Word data points setting per frame	0000H	○	○
262	0106H	Use prohibited	—	—	—
263	0107H	Startup operating mode setting	0000H	○	○
264	0108H	Double verification setting	0000H	○	○
265	0109H	Disconnection error automatic recovery mode setting	0000H	○	○
266	010AH	Word input data hold/clear setting when disconnected	0000H	○	○
267	010BH	Output data hold/clear setting	0000H	○	○
268	010CH	Easy replacement setting for one slave module	0000H	○	○
269 to 511	010DH to 01FFH	Use prohibited	—	—	—

Monitor area

○: Possible, ×: Impossible

Address		Name	Initial value	Read	Write
Decimal	**Hexadecimal**				
512 to 521	0200H to 0209H	Use prohibited	—	—	—
522 to 523	020AH to 020BH	Bit transmission cycle time	—	○	×
524 to 525	020CH to 020DH	Word transmission cycle time	—	○	×
526 to 783	020EH to 030FH	Use prohibited	—	—	—
784	0310H	Bit data points setting value	—	○	×
785	0311H	word data use setting value	—	○	×
786	0312H	Word data points setting value	—	○	×
787	0313H	Word data start address setting value	—	○	×
788	0314H	Word data points setting value per frame	—	○	×
789	0315H	Number of word cycles	—	○	×
790	0316H	Startup operating mode setting value	—	○	×
791	0317H	Double verification setting value	—	○	×
792	0318H	Disconnection error automatic recovery mode setting value	—	○	×
793	0319H	Word input data hold/clear setting value when disconnection occurs	—	○	×
794	031AH	Output data hold/clear setting value	—	○	×
795	031BH	Easy replacement setting value for one slave module	—	○	×
796 to 1023	031CH to 03FFH	Use prohibited	—	—	—

Module control area

○: Possible, ×: Impossible

Address		Name	Initial value	Read	Write
Decimal	Hexadecimal				
1024 to 1025	0400H to 0401H	Use prohibited	—	—	—
1026	0402H	Parameter area initialization command	0000H	○	○
1027	0403H	Parameter area initialization completion	0000H	○	×
1028 to 1535	0404H to 05FFH	Use prohibited	—	—	—

Slave parameters

○: Possible, ×: Impossible

Address		Name	Initial value	Read	Write
Decimal	Hexadecimal				
4096 to 16383	1000H to 3FFFH	Slave parameter storage area	—	○	×
16384 to 18431	4000H to 47FFH	Parameter storage location memory number	—	○	×
18432 to 20479	4800H to 4FFFH	Use prohibited	—	—	—

Slave information

○: Possible, ×: Impossible

Address		Name	Initial value	Read	Write
Decimal	Hexadecimal				
20479 to 20735	5000H to 50FFH	Use prohibited	—	—	—
20736 to 20991	5100H to 51FFH	Disconnected module ID information storage area	—	○	×
20992 to 21119	5200H to 527FH	Disconnected module ID information bit area	—	○	×
21120 to 21247	5280H to 52FFH	Use prohibited	—	—	—
21248 to 21503	5300H to 53FFH	Connected module ID information storage area	—	○	×
21504 to 21759	5400H to 54FFH	Use prohibited			
21760 to 22015	5500H to 55FFH	Alarm ID information storage area	—	○	×
22016 to 22271	5600H to 56FFH	Use prohibited	—	—	—
22272 to 22399	5700H to 577FH	Version compatibility inspection error ID area	—	○	×
22400 to 24575	5780H to 5FFFH	Use prohibited	—	—	—

Details of buffer memory addresses

Bit data points setting

■Address

Name	Address
Bit data points setting	0100H

■Description

Set the total number of input/output points for bit data to be used.

The relationship between setting and setting value is as follows.

Setting	Setting value
64 points (32 input points/32 output points)	0000H
128 points (64 input points/64 output points)	0001H
256 points (128 input points/128 output points)	0002H
512 points (256 input points/256 output points)	0003H (initial value)
1024 points (512 input points/512 output points)	0004H
0 points (0 input points/0 output points)	000AH

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Bit data points setting range error (error code: 1801H) is displayed. Also, the setting will not be reflected in the non-volatile memory.

If Module parameter reflection request flag (RYC) is turned on after writing 000AH (0 points (0 input points/0 output points)) to Bit data points setting (address: 0100H), and writing 0000H (Not Use) to Word data use setting (address: 0101H), Transmission points setting error (error code: 180CH) is displayed. Also, the setting will not be reflected in the non-volatile memory.

Word data use setting

■Address

Name	Address
Word data use setting	0101H

■Description

Set whether to use the word data.

The relationship between setting and setting value is as follows.

Setting	Setting value
Not use	0000H (initial value)
Use	0001H

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Word data use setting range error (error code: 1802H) is displayed. Also, the setting will not be reflected in the non-volatile memory.

If Word data points setting (address: 0102H) is 0000H (Not Use), set this setting to 0000H (Not Use) also.

If Module parameter reflection request flag (RYC) is turned on after writing 000AH (0 points (0 input points/0 output points)) to Bit data points setting (address: 0100H), and writing 0000H (Not Use) to Word data use setting (address: 0101H), Transmission points setting error (error code: 180CH) is displayed. Also, the setting will not be reflected in the non-volatile memory.

If Module parameter reflection request flag (RYC) is turned on after writing a combination other than the one that can be set, Word data setting combination error (error code: 180DH) is displayed. Also, the setting will not be reflected in the non-volatile memory.

The combinations that can be set are as follows.

Word data use setting	Word data points setting	Word data start address setting	Word data points setting per frame
0: Not use	0: Not use	0	0: Not use
1: Use	1: 2 words (input 1 word, output 1 word)	0 to 511	1: 2 words (input 1 word, output 1 word)
	2: 4 words (input 2 words, output 2 words)	0 to 511	1: 2 words (input 1 word, output 1 word) 2: 4 words (input 2 words, output 2 words)
	3: 8 words (input 4 words, output 4 words)	0 to 511	1: 2 words (input 1 word, output 1 word) 2: 4 words (input 2 words, output 2 words) 3: 8 words (input 4 words, output 4 words)
	4: 16 words (input 8 words, output 8 words)	0 to 511	1: 2 words (input 1 word, output 1 word) 2: 4 words (input 2 words, output 2 words) 3: 8 words (input 4 words, output 4 words) 4: 16 words (input 8 words, output 8 words)
	5: 32 words (input 16 words, output 16 words) 6: 64 words (input 32 words, output 32 words) 7: 128 words (input 64 words, output 64 words) 8: 256 words (input 128 words, output 128 words) 9: 512 words (input 256 words, output 256 words) 10: 1024 words (input 512 words, output 512 words)	0 to 511	1: 2 words (input 1 word, output 1 word) 2: 4 words (input 2 words, output 2 words) 3: 8 words (input 4 words, output 4 words) 4: 16 words (input 8 words, output 8 words) 5: 32 words (input 16 words, output 16 words)

A

Word data points setting

■Address

Name	Address
Word data points setting	0102H

■Description

Set the total number of word data input/output points to be used.

The word data use setting and the relationship between setting and setting value are as follows.

Setting	Setting value
Not use	0000H (initial value)
2 words (input 1 word, output 1 word)	0001H
4 words (input 2 words, output 2 words)	0002H
8 words (input 4 words, output 4 words)	0003H
16 words (input 8 words, output 8 words)	0004H
32 words (input 16 words, output 16 words)	0005H
64 words (input 32 words, output 32 words)	0006H
128 words (input 64 words, output 64 words)	0007H
256 words (input 128 words, output 128 words)	0008H
512 words (input 256 words, output 256 words)	0009H
1024 words (input 512 words, output 512 words)	000AH

If Word data use setting (address: 0101H) is 0000H (Not use), set this setting to 0000H (Not use) also.

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Word data points setting range error (error code: 1803H) is displayed. Also, the setting will not be reflected in the non-volatile memory.

If Module parameter reflection request flag (RYC) is turned on after writing a combination other than the one that can be set, Word data setting combination error (error code: 180DH) is displayed. Also, the setting will not be reflected in the non-volatile memory.

The combinations that can be set are the same as those for the word data use setting.

Word data start address setting

■Address

Name	Address
Word data start address setting	0103H

■Description

The set value becomes the word data start address.

The settable range is 0 to 511. (Initial value: 0000H)

If word data is not to be used, set the word address to 0.

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Word data start address setting range error (error code: 1804H) is displayed. Also, the setting will not be reflected in the non-volatile memory.

If Module parameter reflection request flag (RYC) is turned on after writing a combination other than the one that can be set, Word data setting combination error (error code: 180DH) is displayed. Also, the setting will not be reflected in the non-volatile memory.

The combinations that can be set are the same as those for the word data use setting.

Number of word data points setting per frame

■Address

Name	Address
Word data points setting per frame	0105H

■Description

Set the number of points to be stored in one frame of AnyWireASLINK transmission frame.

The word data use setting and the relationship between setting and setting value are as follows.

Setting	Setting value
Not use	0000H (initial value)
2 words (input 1 word, output 1 word)	0001H
4 words (input 2 words, output 2 words)	0002H
8 words (input 4 words, output 4 words)	0003H
16 words (input 8 words, output 8 words)	0004H
32 words (input 16 words, output 16 words)	0005H

If Word data use setting (address: 0101H) is 0000H (Not use), set this setting to 0000H (Not use) also.

The settings that can be set differ depending on the word data use setting. The number of word points that exceeds the word points setting cannot be set.

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Number of word data points per frame setting range error (error code: 1805H) is displayed. Also, the setting will not be reflected in the non-volatile memory.

If Module parameter reflection request flag (RYC) is turned on after writing a combination other than the one that can be set, Word data setting combination error (error code: 180DH) is displayed. Also, the setting will not be reflected in the non-volatile memory.

The combinations that can be set are the same as those for the word data use setting.

Startup operating mode setting

■Address

Name	Address
Startup operating mode setting	0107H

■Description

Set whether to acquire slave module information at start-up.

The relationship between setting and setting value is as follows.

Setting	Setting value
Without slave module information acquisition	0000H (initial value)
With slave module information acquisition	0001H

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Startup operation mode setting range error (error code: 1806H) is displayed. Also, the setting will not be reflected in the non-volatile memory.

Bit data double verification setting

■Address

Name	Address
Double verification setting	0108H

■Description

Set the bit data double verification mode.

The relationship between setting and setting value is as follows.

Setting	Setting value
All points, double verification of a bit	0000H (initial value)
Double verification of the 16 bit (word) until the 1st word	0001H
Double verification of the 16 bit (word) until the 2nd word	0002H
Double verification of the 16 bit (word) until the 3rd word	0003H
Double verification of the 16 bit (word) until the 4th word	0004H
Double verification of the 16 bit (word) until the 5th word	0005H
Double verification of the 16 bit (word) until the 6th word	0006H
Double verification of the 16 bit (word) until the 7th word	0007H
Double verification of the 16 bit (word) until the 8th word	0008H
Double verification of the 16 bit (word) until the 9th word	0009H
Double verification of the 16 bit (word) until the 10th word	000AH
Double verification of the 16 bit (word) until the 11th word	000BH
Double verification of the 16 bit (word) until the 12th word	000CH
Double verification of the 16 bit (word) until the 13th word	000DH
Double verification of the 16 bit (word) until the 14th word	000EH
Double verification of the 16 bit (word) until the 15th word	000FH
Double verification of the 16 bit (word) until the 16th word	0010H
Double verification of the 16 bit (word) until the 17th word	0011H
Double verification of the 16 bit (word) until the 18th word	0012H
Double verification of the 16 bit (word) until the 19th word	0013H
Double verification of the 16 bit (word) until the 20th word	0014H
Double verification of the 16 bit (word) until the 21st word	0015H
Double verification of the 16 bit (word) until the 22nd word	0016H
Double verification of the 16 bit (word) until the 23rd word	0017H
Double verification of the 16 bit (word) until the 24th word	0018H
Double verification of the 16 bit (word) until the 25th word	0019H
Double verification of the 16 bit (word) until the 26th word	001AH
Double verification of the 16 bit (word) until the 27th word	001BH
Double verification of the 16 bit (word) until the 28th word	001CH
Double verification of the 16 bit (word) until the 29th word	001DH
Double verification of the 16 bit (word) until the 30th word	001EH
Double verification of the 16 bit (word) until the 31st word	001FH
All points, double verification of the 16 bit (word)	0020H

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Bit data double verification setting range error (error code: 1807H) is displayed. Also, the setting will not be reflected in the non-volatile memory.

Disconnection error automatic recovery mode setting

■Address

Name	Address
Disconnection error automatic recovery mode setting	0109H

■Description

Set whether to automatically recover from the alarm status.

The relationship between setting and setting value is as follows.

Setting	Setting value
No disconnection error automatic recovery	0000H (initial value)
Disconnection error automatic recovery	0001H

The alarm that automatically recovers is DP/DN disconnection error (alarm code: 0D00H).

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Disconnection error automatic recovery mode setting range error (error code: 1808H) is displayed. Also, the setting will not be reflected in the non-volatile memory.

Word input data hold/clear setting when disconnection occurs

■Address

Name	Address
Word input data hold/clear setting when disconnected	010AH

■Description

Set whether to clear or retain the word input data when the word slave module is disconnected.

The relationship between setting and setting value is as follows.

Setting	Setting value
Clear word input when disconnection occurs	0000H (initial value)
Hold word input when disconnection occurs	0001H

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Word input data hold/clear setting when disconnection occurs range error (error code: 1809H) is displayed. Also, the setting will not be reflected in the non-volatile memory.

A

Output data hold/clear setting

■Address

Name	Address
Output data hold/clear setting	010BH

■Description

Set whether to clear or retain the output to the AnyWireASLINK slave module when the line from the CC-Link IE TSN is disconnected and a stop error occurs in the CPU module.

The relationship between setting and setting value is as follows.

Setting	Setting value
Clear output when error occurs	0000H (initial value)
Hold output when error occurs	0001H

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Output data hold/clear setting range error (error code: 180AH) is displayed. Also, the setting will not be reflected in the non-volatile memory.

Easy replacement setting for one slave module

■Address

Name	Address
Easy replacement setting for one slave module	010CH

■Description

Enable or disable easy replacement setting for one slave module.

The relationship between setting and setting value is as follows.

Setting	Setting value
Easy replacement enable for one slave module	0000H (initial value)
Easy replacement disable for one slave module	0001H

If Module parameter reflection request flag (RYC) is turned on after writing anything other than the above, Easy replacement setting for one slave module range error (error code: 180BH) is displayed. Also, the setting will not be reflected in the non-volatile memory.

Bit transmission cycle time

■Address

Name	Address
Bit transmission cycle time	020AH to 020BH

■Description

These areas are for checking the bit transmission cycle time of AnyWireASLINK.

These areas store 32-bit integers. (Unit: 0.1ms, rounded up to the 2nd decimal point)

020AH (522)	020BH (523)
Upper	Lower

For details on the calculation formula of the bit transmission cycle time, refer to the following.

Word transmission cycle time

■Address

Name	Address
Word transmission cycle time	020CH to 020DH

■Description

These areas are for checking the word transmission cycle time of AnyWireASLINK.

These areas store 32-bit integers. (Unit: 0.1ms, rounded up to the 2nd decimal point)

020CH (524)	020DH (525)
Upper	Lower

For details on the calculation formula of the word transmission cycle time, refer to the following.

☞ Page 188 Transmission cycle time formula

Bit data points setting value

■Address

Name	Address
Bit data points setting value	0310H

■Description

This area is for checking the bit point settings of AnyWireASLINK.

The relationship between monitor value and number of bit points is as follows.

Monitor value	Number of bit points
0000H	64 points (32 input points/32 output points)
0001H	128 points (64 input points/64 output points)
0002H	256 points (128 input points/128 output points)
0003H	512 points (256 input points/256 output points)
0004H	1024 points (512 input points/512 output points)
000AH	0 points (No bit data)

Word data use setting value

■Address

Name	Address
Word data use setting value	0311H

■Description

This area is for checking whether word transmission is used.

The relationship between monitor value and number of word points is as follows.

Monitor value	Number of word points
0000H	Not use word transmission
0001H	Use word transmission

Word data points setting value

■Address

Name	Address
Word data points setting value	0312H

■Description

This area is for checking the word point setting of AnyWireASLINK.

The relationship between monitor value and number of word points is as follows.

Monitor value	Number of word points
0000H	0 words (input 0 words, output 0 words)
0001H	2 words (input 1 word, output 1 word)
0002H	4 words (input 2 words, output 2 words)
0003H	8 words (input 4 words, output 4 words)
0004H	16 words (input 8 words, output 8 words)
0005H	32 words (input 16 words, output 16 words)
0006H	64 words (input 32 words, output 32 words)
0007H	128 words (input 64 words, output 64 words)
0008H	256 words (input 128 words, output 128 words)
0009H	512 words (input 256 words, output 256 words)
000AH	1024 words (input 512 words, output 512 words)

If no word transmission is used, 0000H is stored.

Word data start address setting value

■Address

Name	Address
Word data start address setting value	0313H

■Description

This area stores the setting value of the word data start address.

If no word data is used, 0 is stored.

Number of word data points setting value per frame

■Address

Name	Address
Number of word data points setting value per frame	0314H

■Description

This area stores the word data points setting per frame.

The relationship between monitor value and number of word data points per frame is as follows.

Monitor value	Number of word points
0000H	0 words (input 0 words, output 0 words)
0001H	2 words (input 1 word, output 1 word)
0002H	4 words (input 2 words, output 2 words)
0003H	8 words (input 4 words, output 4 words)
0004H	16 words (input 8 words, output 8 words)
0005H	32 words (input 16 words, output 16 words)

If no word transmission is used, 0000H is stored.

Number of word cycles

■Address

Name	Address
Number of word cycles	0315H

■Description

This area stores the number of word cycles.

If no word transmission is used, 0 is stored.

Startup operating mode setting value

■Address

Name	Address
Startup operating mode setting value	0316H

■Description

This area stores the setting value of the startup operating mode.

The relationship between monitor value and setting is as follows.

Monitor value	Setting
0000H	Without slave module information acquisition
0001H	With slave module information acquisition

A

Bit data double verification setting value

■Address

Name	Address
Double verification setting value	0317H

■Description

This area stores the setting value of the bit data double verification mode.

The relationship between monitor value and setting is as follows.

Monitor value	Configuration
0000H	All points, double verification of the 16 bit (word)
0001H	Double verification of the 16 bit (word) until the 1st word
0002H	Double verification of the 16 bit (word) until the 2nd word
0003H	Double verification of the 16 bit (word) until the 3rd word
0004H	Double verification of the 16 bit (word) until the 4th word
0005H	Double verification of the 16 bit (word) until the 5th word
0006H	Double verification of the 16 bit (word) until the 6th word
0007H	Double verification of the 16 bit (word) until the 7th word
0008H	Double verification of the 16 bit (word) until the 8th word
0009H	Double verification of the 16 bit (word) until the 9th word
000AH	Double verification of the 16 bit (word) until the 10th word
000BH	Double verification of the 16 bit (word) until the 11th word
000CH	Double verification of the 16 bit (word) until the 12th word
000DH	Double verification of the 16 bit (word) until the 13th word
000EH	Double verification of the 16 bit (word) until the 14th word
000FH	Double verification of the 16 bit (word) until the 15th word
0010H	Double verification of the 16 bit (word) until the 16th word
0011H	Double verification of the 16 bit (word) until the 17th word
0012H	Double verification of the 16 bit (word) until the 18th word
0013H	Double verification of the 16 bit (word) until the 19th word
0014H	Double verification of the 16 bit (word) until the 20th word
0015H	Double verification of the 16 bit (word) until the 21st word
0016H	Double verification of the 16 bit (word) until the 22nd word
0017H	Double verification of the 16 bit (word) until the 23rd word
0018H	Double verification of the 16 bit (word) until the 24th word
0019H	Double verification of the 16 bit (word) until the 25th word
001AH	Double verification of the 16 bit (word) until the 26th word
001BH	Double verification of the 16 bit (word) until the 27th word
001CH	Double verification of the 16 bit (word) until the 28th word
001DH	Double verification of the 16 bit (word) until the 29th word
001EH	Double verification of the 16 bit (word) until the 30th word
001FH	Double verification of the 16 bit (word) until the 31st word
0020H	All points, double verification of the 16 bit (word)

Disconnection error automatic recovery mode setting value

■Address

Name	Address
Disconnection error automatic recovery mode setting value	0318H

■Description

This area stores the setting value of the disconnection error automatic recovery mode setting.

The relationship between monitor value and setting is as follows.

Monitor value	Setting
0000H	No disconnection error automatic recovery
0001H	Disconnection error automatic recovery

Word input data hold/clear setting value when disconnection occurs

■Address

Name	Address
Word input data hold/clear setting value when disconnection occurs	0319H

■Description

This area stores the setting value of the word input data hold/clear setting when disconnection occurs.

The relationship between monitor value and setting is as follows.

Monitor value	Setting
0000H	Clear word input when disconnection occurs
0001H	Hold word input when disconnection occurs

Output data hold/clear setting value

■Address

Name	Address
Output data hold/clear setting value	031AH

■Description

This area stores the setting value of the output data hold/clear setting.

The relationship between monitor value and setting is as follows.

Monitor value	Setting
0000H	Clear word output when error occurs
0001H	Hold word output when error occurs

Easy replacement setting value for one slave module

■Address

Name	Address
Easy replacement setting value for one slave module	031BH

■Description

This area stores the setting value of the easy replacement setting for one slave module.

The relationship between monitor value and setting is as follows.

Monitor value	Setting
0000H	Easy replacement enable for one slave module
0001H	Easy replacement disable for one slave module

Parameter area initialization command

■Address

Name	Address
Parameter area initialization command	0402H

■Description

This area is used for clearing the parameter information stored in the non-volatile memory, such as when Non-volatile memory data error (parameter) (error code: 2010H) occurs.

Setting a fixed bit other than 0 does not cause an error.

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
0															(1)

(1) 0: No command, 1: With command

If 1: With command is selected for b0, the parameter information of the non-volatile memory is initialized and the initial value is stored in the non-volatile memory. (The initial value is set to 0: No command.)

The initial values are stored in the monitor area and parameter area after the module is powered off and on.
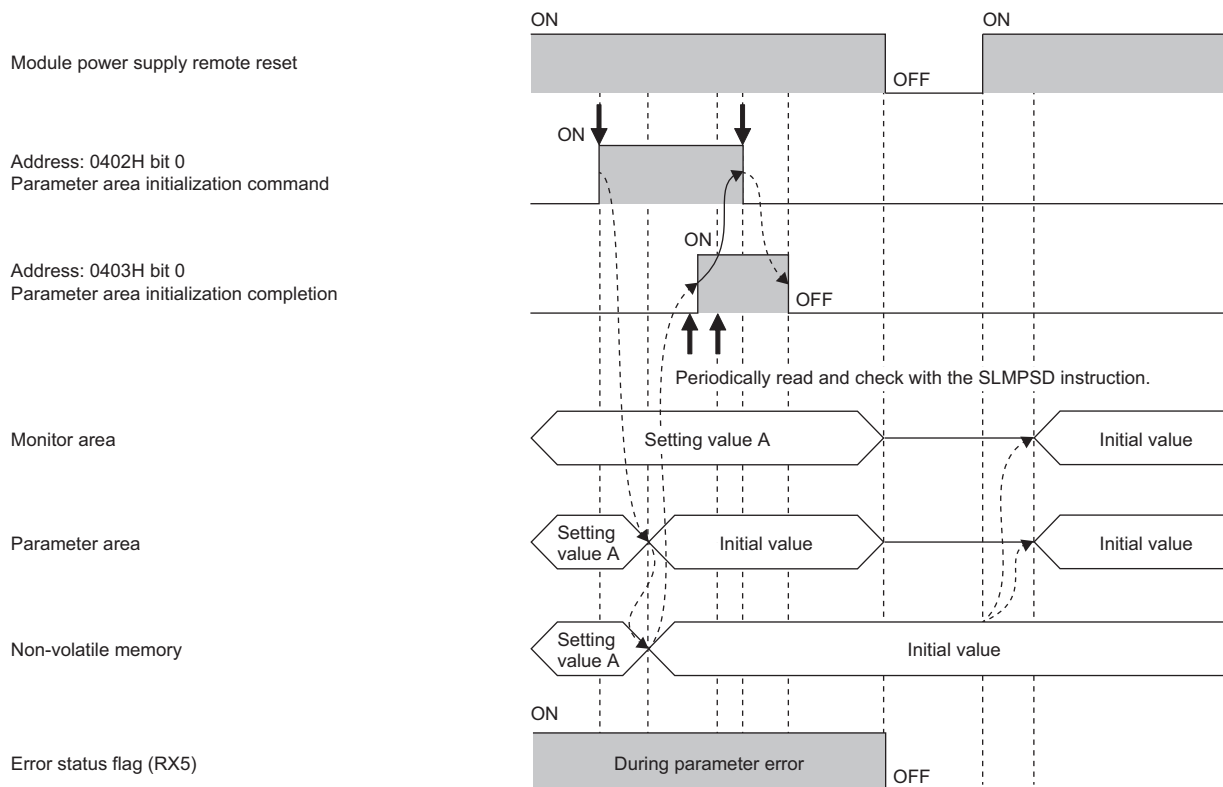
Parameter area initialization completion

■Address

Name	Address
Parameter area initialization completion	0403H

■Description

This area indicates the initialization completion status of the parameter information stored in the non-volatile memory.

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
0															(1)

(1) 0: Not executed, 1: Completed

When the initialization of the parameter information is completed, b0 becomes 1: Completed. (The initial value is set to 0: Not executed.)

For details, refer to the following.

☞Page 172 Parameter area initialization command

Slave parameter storage area

■Address

Name	Address
Slave parameter storage area	1000H to 3FFFH

■Description

Parameters of each ID are stored in 1000H to 3FFFH.

The following table lists the assignment of the remote buffer memory addresses.

Address	Name	Details
1000H to 102FH	Parameter area 1st module (48 words)	The parameter area of each ID has 48 words and can store information of up to 256 parameters.
1030H to 105FH	Parameter area 2nd module (48 words)	
⋮	⋮	
3FA0H to 3FCFH	Parameter area 255th module (48 words)	
3FD0H to 3FFFH	Parameter area 256th module (48 words)	

> **Point**
>
> The first word of the 48 words indicates the ID, and the data is arranged in ascending order of ID in units of 48 words.
>
> When adding a slave module or changing the ID, perform the automatic address detection function again.
>
> ☞Page 56 Automatic Address Detection Function

The following table lists the configuration of 48 words using the parameter area 1st module (48 words) as an example.

○: Possible, ×: Impossible

Address	Name	Read	Write	Parameter name
1000H	Module ID	○	×	AnyWireASLINK parameter
1001H	Device parameter 1	○	○	Device parameter
1002H	Device parameter 2	○	○	
⋮	⋮	○	○	
1012H	Device parameter 18	○	○	
1013H	Device parameter 19	○	○	
1014H to 1026H	System area	×	×	
1027H	Status details	○	×	AnyWireASLINK parameter
1028H	Sensing level	○	×	
1029H	System area	×	×	
102AH	Word point pattern	○	×	
102BH	Bit point pattern	○	×	
102CH	Model number	○	×	
102DH	Device version	○	×	
102EH to 102FH	System area	×	×	

For details on each parameter, refer to the following.

Parameter storage location memory number

■Address

Name	Address
Parameter storage location memory number	4000H to 47FFH

■Description

After automatic address detection, the start address of the buffer memory that stores the parameter of the connected slave module is stored in these areas. The parameters of the slave module are 48 words.

The following table lists the assignment of the remote buffer memory addresses.

Address	Parameter storage location buffer memory start address
4000H	Parameter storage location buffer memory start address of the slave module ID 0000H
4001H	Parameter storage location buffer memory start address of the slave module ID 0001H
⋮	⋮
47FFH	Parameter storage location buffer memory start address of the slave module ID 07FFH

Disconnected module ID information storage area

■Address

Name	Address
Disconnected module ID information storage area	5100H to 51FFH

■Description

- These areas store the ID of the slave module in which the transmission cable is broken as the disconnected module ID in ascending order.
- Up to 256 IDs are stored.
- For ID numbers stored, refer to the following.

☞ Page 62 Remote Address Change Function

- The stored value is maintained until the concerned slave module is powered off and on or Error reset request flag (RY0) is turned on after the error is cleared.
- If the disconnection error automatic recovery function is enabled, the error flag is automatically cleared (only the ID for which the error has been cleared) after the error is cleared.
- After automatic address detection, the data are updated as soon as a response error is detected.
- For the number of disconnected module IDs, refer to the following.

☞ Page 153 Number of the IDs of the disconnected modules

Disconnected module ID information bit area

■Address

Name	Address
Disconnected module ID information bit area	5200H to 527FH

■Description

These areas show the disconnected module IDs stored in Disconnected module ID information storage area (address: 5100H to 51FFH) in bits instead of in words.

It is turned off (0) when there is no error and is turned on (1) when an error occurs.

The following table lists the assignment of the remote buffer memory addresses.

Address	Disconnected module ID															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
5200H	FH	EH	DH	CH	BH	AH	9H	8H	7H	6H	5H	4H	3H	2H	1H	0H
5201H	1FH	1EH	1DH	1CH	1BH	1AH	19H	18H	17H	16H	15H	14H	13H	12H	11H	10H
⋮	⋮															
527EH	7EFH	7EEH	7EDH	7ECH	7EBH	7EAH	7E9H	7E8H	7E7H	7E6H	7E5H	7E4H	7E3H	7E2H	7E1H	7E0H
527FH	—	7FEH	7FDH	7FCH	7FBH	7FAH	7F9H	7F8H	7F7H	7F6H	7F5H	7F4H	7F3H	7F2H	7F1H	7F0H

Connected module ID information storage area

■Address

Name	Address
Connected module ID information storage area	5300H to 53FFH

■Description

- These areas store the ID information of all the slave modules connected to the NZ2AW1GNAL in the ascending order.
- For ID numbers stored, refer to the following.

☞ Page 62 Remote Address Change Function

- Information of the stored ID is maintained even after power-off.
- The data are updated when automatic address detection is completed.
- For the number of connected module IDs, refer to the following.

☞ Page 154 Number of the IDs of the connected modules

Alarm ID information storage area

■Address

Name	Address
Alarm ID information storage area	5500H to 55FFH

■Description

- These areas store the IDs of the slave modules where an alarm has occurred in the ascending order. However, the ID of the slave module where DP/DN disconnection error (alarm code: 0D00H) has occurred is stored in Disconnection module ID information storage area (5100H to 51FFH).
- For ID numbers stored, refer to the slave module addresses and IDs below.

☞ Page 62 Remote Address Change Function

- The stored value is maintained until the concerned slave module is powered off and on or Error reset request flag (RY0) is turned on after the error is cleared.
- After automatic address detection, the data are updated as soon as a response error is detected.
- IDs that are not registered in Connected module ID information storage area (address: 5300H to 53FFH) are not stored.
- For the number of alarm IDs, refer to the number of the alarm IDs below.

☞ Page 154 Number of the alarm IDs

Version compatibility inspection error ID area

■Address

Name	Address
Version compatibility inspection error ID area	5700H to 577FH

■Description

These areas store the target IDs of the event codes stored in Latest alarm code storage area (RWr2) as a bit-expanded value. For the bit position of each ID, refer to the following.

Address	ID storage position															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
5700H	FH	EH	DH	CH	BH	AH	9H	8H	7H	6H	5H	4H	3H	2H	1H	0H
5701H	1FH	1EH	1DH	1CH	1BH	1AH	19H	18H	17H	16H	15H	14H	13H	12H	11H	10H
⋮	⋮															
577EH	7EFH	7EEH	7EDH	7ECH	7EBH	7EAH	7E9H	7E8H	7E7H	7E6H	7E5H	7E4H	7E3H	7E2H	7E1H	7E0H
577FH	7FFH	7FEH	7FDH	7FCH	7FBH	7FAH	7F9H	7F8H	7F7H	7F6H	7F5H	7F4H	7F3H	7F2H	7F1H	7F0H

Valid values are stored only when Non-compatible slave module connection error (alarm code: 0D83H) and Compatibility inspection error (Parameter access error) (alarm code: 0D84H) are registered in Latest alarm code storage area (RWr2). The values are cleared by the following operations.

- Turn off and on Error reset request flag (RY0).
- Automatic address detection
- Turn off and on AnyWireASLINK version compatibility inspection command (RYD).
- Turn off and on the module or execute the remote reset.

Appendix 4 Double Verification

Bit data double verification

A double verification is an error control system. In this system, cycle data in AnyWireASLINK transmission is recognized as valid data if the data matches with the data of the last transmission or is ignored as invalid data if the data does not match with the last data. A double verification ensures reliability of communication.

There are two types of double verification: double verification in 1-bit unit and double verification in 16-bit units.

Overview

■Double verification in 1-bit unit

If one bit of data is the same between two successive transmission cycles, the data is valid and I/O data is communicated.
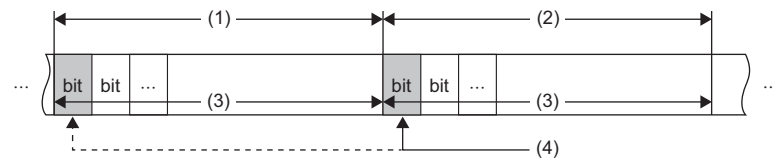
(1) Transmission cycle (last)
(2) Transmission cycle (current)
(3) I/O data
(4) The data is compared with the verification data (one bit) of the last transmission cycle.

■Double verification in 16-bit units

If one word (16 bits) of data is the same between two successive transmission cycles, the data is valid and I/O data is communicated.
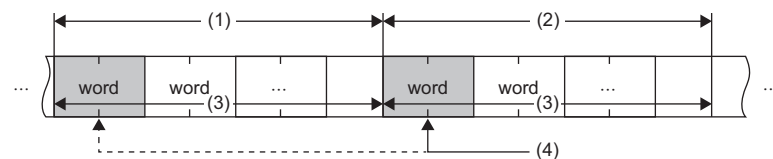
(1) Transmission cycle (last)
(2) Transmission cycle (current)
(3) I/O data
(4) The data is compared with the verification data (one word) of the last transmission cycle.

> **Point**
>
> The bit slave modules with digital input (ASLINKER, ASLINKTERMINAL, or other modules) is suitable for the double verification in 1-bit unit since they handle information in units of a bit.
> The bit slave modules (analog input module, pressure sensor, or other modules) using analog data is suitable for the double verification in 16-bit unit since they handle information in units of 16 bits.

Setting method

Set the setting value in the bit data double verification of the remote buffer memory. (☞ Page 164 Bit data double verification setting)

Operation example

The operation examples of the double verification setting of bit data are as follows. (The value indicates the address.)

■All points, double verification of a bit
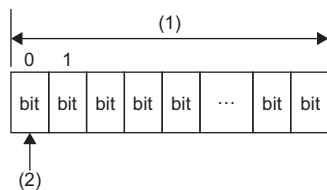
(1) Transmission cycle
(2) Perform double verification in 1-bit unit.

■Double verification in 16-bit (1 word) units until the 1st word
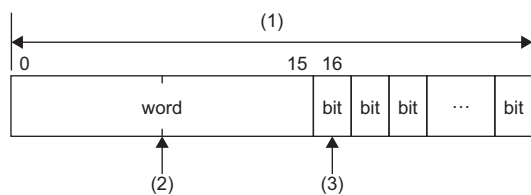
(1) Transmission cycle
(2) Perform double verification in 16-bit (word) units until the 1st word.
(3) Perform double verification in 1-bit unit after the 16th bit (one word + one bit).

■Double verification in 16-bit (1 word) units until the 2nd word
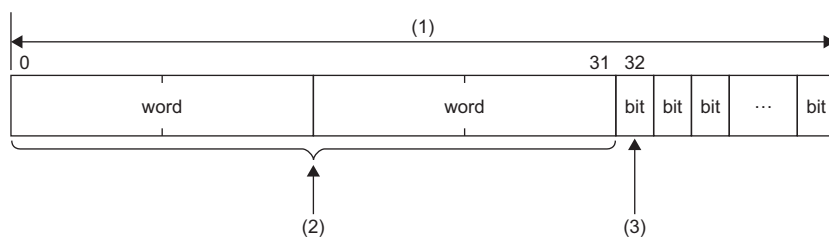
(1) Transmission cycle
(2) Perform double verification in 16-bit (word) units until the 2nd word.
(3) Perform double verification in 1-bit unit after the 32nd bit (two words + one bit).

■Double verification in 16-bit (1 word) units until the 16th word
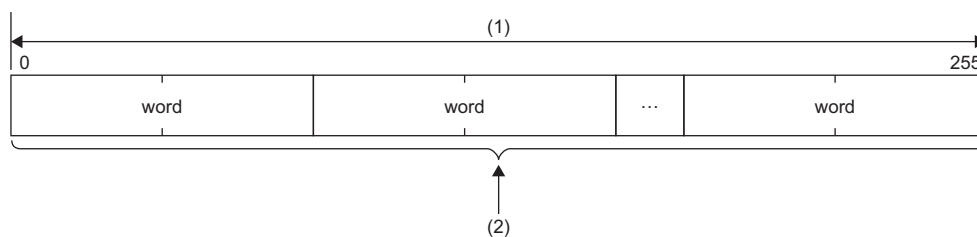
(1) Transmission cycle
(2) Perform double verification in 16-bit (word) units until the 16th word.

Word data double verification

Word transmission performs the inverted data double verification for error control.

The inverted data double verification sends normal word data and inverted word data to the same frame in AnyWireASLINK transmission.

This function is an error control system in which data is verified on the receiving side and the data is recognized as valid data if the data matches with the data of the last transmission or is ignored as invalid data if the data does not match with the last data.
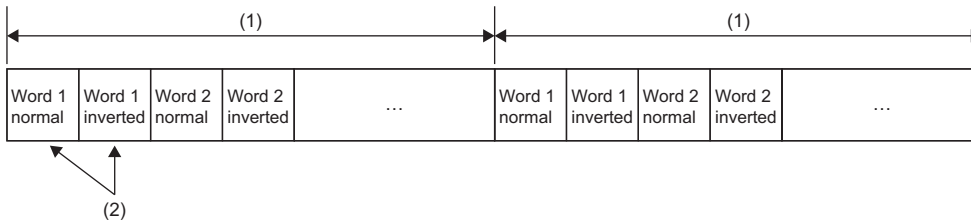
(1) Transmission cycle
(2) Perform data verification between normal data and inverted data. If they are matched, the data is input or output as valid data.

Setting method

Setting parameters are not required for the inverted data double verification since the settings are always enabled.

Appendix 5 Processing Time

This section describes the processing time related to the transmission of AnyWireASLINK.

The following shows the processing time of when using the NZ2AW1GNAL.

The transmission delay time is the total of (1) to (5) below.
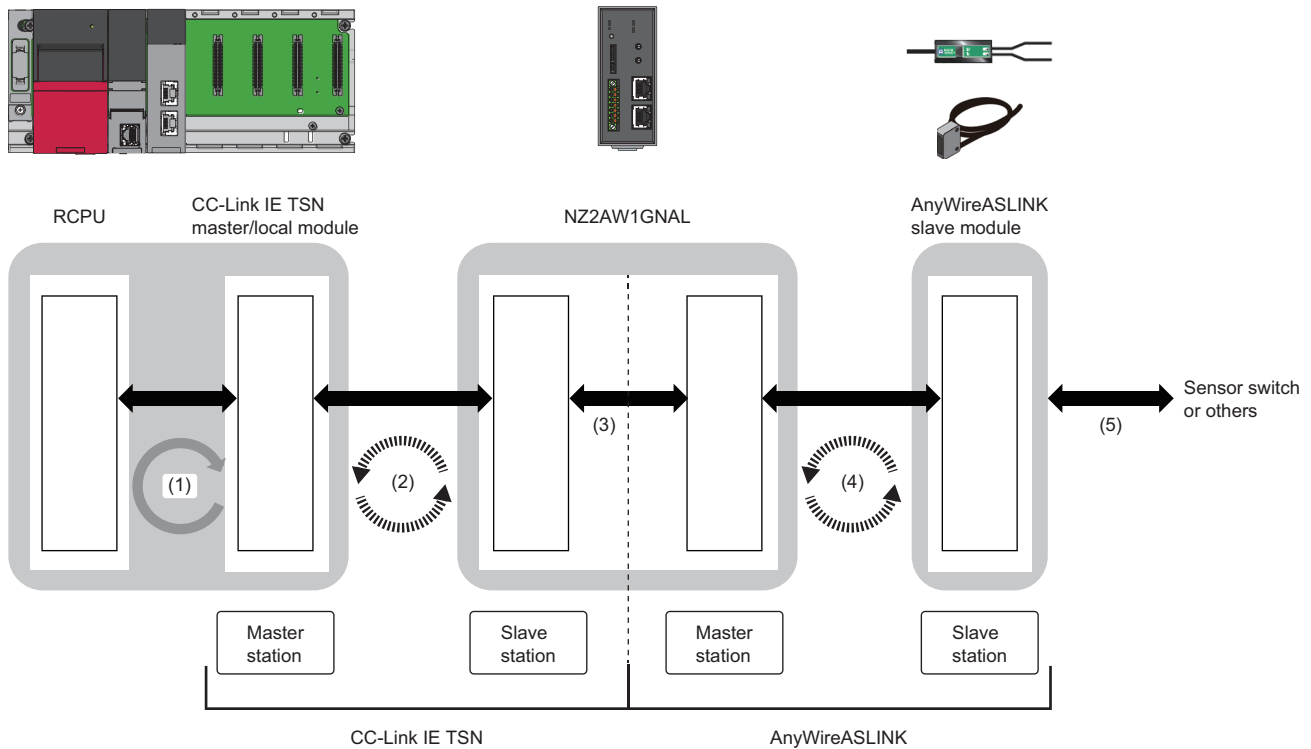
No.	Description	Required time
(1)	Sequence scan	Since the sequence scan depends on the performance of the CPU module, refer to the user's manual for the CPU module used.
(2)	CC-Link IE TSN communication cycle interval	For the calculation formula of the communication cycle interval, refer to the following. 📖 User's manual for the master station used
(3)	Processing time of the NZ2AW1GNAL	1.5ms
(4)	AnyWireASLINK transmission cycle time	The transmission cycle time varies depending on the specified number of bit data points and the specified number of word data points. ☞ Page 181 Transmission cycle time
(5)	AnyWireASLINK slave module processing time	Refer to the slave module product guide.

Transmission cycle time

The transmission cycle time is the time required for the NZ2AW1GNAL and all the slave modules to update I/O data.
The following table lists the transmission cycle time for each setting.

Bit transmission cycle time

The bit transmission cycle time is determined according to "Bit data points setting" and "Word data points setting per frame" in the basic setting.

Word data use setting	Bit data points setting	Word data points setting per frame	Bit transmission cycle time
Not use	64 points (32 input points/32 output points)	—	2.4ms
	128 points (64 input points/64 output points)	—	3.6ms
	256 points (128 input points/128 output points)	—	6.0ms
	512 points (256 input points/256 output points)	—	10.7ms
	1024 points (512 input points/512 output points)	—	20.2ms
Use	64 points (32 input points/32 output points)	2 words (input 1 word, output 1 word)	4.9ms
		4 words (input 2 words, output 2 words)	6.1ms
		8 words (input 4 words, output 4 words)	8.5ms
		16 words (input 8 words, output 8 words)	13.2ms
		32 words (input 16 words, output 16 words)	22.7ms
	128 points (64 input points/64 output points)	2 words (input 1 word, output 1 word)	6.1ms
		4 words (input 2 words, output 2 words)	7.3ms
		8 words (input 4 words, output 4 words)	9.7ms
		16 words (input 8 words, output 8 words)	14.4ms
		32 words (input 16 words, output 16 words)	23.9ms
	256 points (128 input points/128 output points)	2 words (input 1 word, output 1 word)	8.5ms
		4 words (input 2 words, output 2 words)	9.7ms
		8 words (input 4 words, output 4 words)	12.0ms
		16 words (input 8 words, output 8 words)	16.8ms
		32 words (input 16 words, output 16 words)	26.2ms
	512 points (256 input points/256 output points)	2 words (input 1 word, output 1 word)	13.2ms
		4 words (input 2 words, output 2 words)	14.4ms
		8 words (input 4 words, output 4 words)	16.8ms
		16 words (input 8 words, output 8 words)	21.5ms
		32 words (input 16 words, output 16 words)	31.0ms
	1024 points (512 input points/512 output points)	2 words (input 1 word, output 1 word)	22.7ms
		4 words (input 2 words, output 2 words)	23.9ms
		8 words (input 4 words, output 4 words)	26.2ms
		16 words (input 8 words, output 8 words)	31.0ms
		32 words (input 16 words, output 16 words)	40.4ms

A

Word transmission cycle time

The word transmission cycle time is determined according to "Bit data points setting", "Word data points setting", and "Word data points setting per frame" in the basic setting.

■When "Bit data points setting" is set to 0 (when the bit transmission is not used)

Word data points setting	Word data points setting per frame	Word transmission cycle time
2 words (input 1 word, output 1 word)	2 words (input 1 word, output 1 word)	3.7ms
4 words (input 2 words, output 2 words)	2 words (input 1 word, output 1 word)	7.4ms
	4 words (input 2 words, output 2 words)	4.9ms
8 words (input 4 words, output 4 words)	2 words (input 1 word, output 1 word)	14.8ms
	4 words (input 2 words, output 2 words)	9.8ms
	8 words (input 4 words, output 4 words)	7.3ms
16 words (input 8 words, output 8 words)	2 words (input 1 word, output 1 word)	29.5ms
	4 words (input 2 words, output 2 words)	19.5ms
	8 words (input 4 words, output 4 words)	14.5ms
	16 words (input 8 words, output 8 words)	12.0ms
32 words (input 16 words, output 16 words)	2 words (input 1 word, output 1 word)	59.0ms
	4 words (input 2 words, output 2 words)	39.0ms
	8 words (input 4 words, output 4 words)	29.0ms
	16 words (input 8 words, output 8 words)	24.0ms
	32 words (input 16 words, output 16 words)	21.5ms
64 words (input 32 words, output 32 words)	2 words (input 1 word, output 1 word)	117.9ms
	4 words (input 2 words, output 2 words)	77.9ms
	8 words (input 4 words, output 4 words)	57.9ms
	16 words (input 8 words, output 8 words)	47.9ms
	32 words (input 16 words, output 16 words)	42.9ms
128 words (input 64 words, output 64 words)	2 words (input 1 word, output 1 word)	235.7ms
	4 words (input 2 words, output 2 words)	155.7ms
	8 words (input 4 words, output 4 words)	115.8ms
	16 words (input 8 words, output 8 words)	95.8ms
	32 words (input 16 words, output 16 words)	85.8ms
256 words (input 128 words, output 128 words)	2 words (input 1 word, output 1 word)	471.3ms
	4 words (input 2 words, output 2 words)	311.4ms
	8 words (input 4 words, output 4 words)	231.5ms
	16 words (input 8 words, output 8 words)	191.6ms
	32 words (input 16 words, output 16 words)	171.6ms
512 words (input 256 words, output 256 words)	2 words (input 1 word, output 1 word)	942.5ms
	4 words (input 2 words, output 2 words)	622.8ms
	8 words (input 4 words, output 4 words)	463.0ms
	16 words (input 8 words, output 8 words)	383.1ms
	32 words (input 16 words, output 16 words)	343.1ms
1024 words (input 512 words, output 512 words)	2 words (input 1 word, output 1 word)	1885.0ms
	4 words (input 2 words, output 2 words)	1245.6ms
	8 words (input 4 words, output 4 words)	925.9ms
	16 words (input 8 words, output 8 words)	766.1ms
	32 words (input 16 words, output 16 words)	686.2ms

■When "Bit data points setting" is set to 64

Word data points setting	Word data points setting per frame	Word transmission cycle time
2 words (input 1 word, output 1 word)	2 words (input 1 word, output 1 word)	4.9ms
4 words (input 2 words, output 2 words)	2 words (input 1 word, output 1 word)	9.8ms
	4 words (input 2 words, output 2 words)	6.1ms
8 words (input 4 words, output 4 words)	2 words (input 1 word, output 1 word)	19.5ms
	4 words (input 2 words, output 2 words)	12.1ms
	8 words (input 4 words, output 4 words)	8.5ms
16 words (input 8 words, output 8 words)	2 words (input 1 word, output 1 word)	39.0ms
	4 words (input 2 words, output 2 words)	24.2ms
	8 words (input 4 words, output 4 words)	16.9ms
	16 words (input 8 words, output 8 words)	13.2ms
32 words (input 16 words, output 16 words)	2 words (input 1 word, output 1 word)	77.9ms
	4 words (input 2 words, output 2 words)	48.4ms
	8 words (input 4 words, output 4 words)	33.7ms
	16 words (input 8 words, output 8 words)	26.4ms
	32 words (input 16 words, output 16 words)	22.7ms
64 words (input 32 words, output 32 words)	2 words (input 1 word, output 1 word)	155.7ms
	4 words (input 2 words, output 2 words)	96.8ms
	8 words (input 4 words, output 4 words)	67.4ms
	16 words (input 8 words, output 8 words)	52.7ms
	32 words (input 16 words, output 16 words)	45.3ms
128 words (input 64 words, output 64 words)	2 words (input 1 word, output 1 word)	311.4ms
	4 words (input 2 words, output 2 words)	193.6ms
	8 words (input 4 words, output 4 words)	134.7ms
	16 words (input 8 words, output 8 words)	105.3ms
	32 words (input 16 words, output 16 words)	90.6ms
256 words (input 128 words, output 128 words)	2 words (input 1 word, output 1 word)	622.8ms
	4 words (input 2 words, output 2 words)	387.2ms
	8 words (input 4 words, output 4 words)	269.4ms
	16 words (input 8 words, output 8 words)	210.5ms
	32 words (input 16 words, output 16 words)	181.1ms
512 words (input 256 words, output 256 words)	2 words (input 1 word, output 1 word)	1245.6ms
	4 words (input 2 words, output 2 words)	774.4ms
	8 words (input 4 words, output 4 words)	538.8ms
	16 words (input 8 words, output 8 words)	421.0ms
	32 words (input 16 words, output 16 words)	362.1ms
1024 words (input 512 words, output 512 words)	2 words (input 1 word, output 1 word)	2491.2ms
	4 words (input 2 words, output 2 words)	1548.7ms
	8 words (input 4 words, output 4 words)	1077.5ms
	16 words (input 8 words, output 8 words)	841.9ms
	32 words (input 16 words, output 16 words)	724.1ms

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■When "Bit data points setting" is set to 128

Word data points setting	Word data points setting per frame	Word transmission cycle time
2 words (input 1 word, output 1 word)	2 words (input 1 word, output 1 word)	6.1ms
4 words (input 2 words, output 2 words)	2 words (input 1 word, output 1 word)	12.1ms
	4 words (input 2 words, output 2 words)	7.3ms
8 words (input 4 words, output 4 words)	2 words (input 1 word, output 1 word)	24.2ms
	4 words (input 2 words, output 2 words)	14.5ms
	8 words (input 4 words, output 4 words)	9.7ms
16 words (input 8 words, output 8 words)	2 words (input 1 word, output 1 word)	48.4ms
	4 words (input 2 words, output 2 words)	29.0ms
	8 words (input 4 words, output 4 words)	19.3ms
	16 words (input 8 words, output 8 words)	14.4ms
32 words (input 16 words, output 16 words)	2 words (input 1 word, output 1 word)	96.8ms
	4 words (input 2 words, output 2 words)	57.9ms
	8 words (input 4 words, output 4 words)	38.5ms
	16 words (input 8 words, output 8 words)	28.7ms
	32 words (input 16 words, output 16 words)	23.9ms
64 words (input 32 words, output 32 words)	2 words (input 1 word, output 1 word)	193.6ms
	4 words (input 2 words, output 2 words)	115.8ms
	8 words (input 4 words, output 4 words)	76.9ms
	16 words (input 8 words, output 8 words)	57.4ms
	32 words (input 16 words, output 16 words)	47.7ms
128 words (input 64 words, output 64 words)	2 words (input 1 word, output 1 word)	387.2ms
	4 words (input 2 words, output 2 words)	231.5ms
	8 words (input 4 words, output 4 words)	153.7ms
	16 words (input 8 words, output 8 words)	114.7ms
	32 words (input 16 words, output 16 words)	95.3ms
256 words (input 128 words, output 128 words)	2 words (input 1 word, output 1 word)	774.4ms
	4 words (input 2 words, output 2 words)	463.0ms
	8 words (input 4 words, output 4 words)	307.3ms
	16 words (input 8 words, output 8 words)	229.4ms
	32 words (input 16 words, output 16 words)	190.5ms
512 words (input 256 words, output 256 words)	2 words (input 1 word, output 1 word)	1548.7ms
	4 words (input 2 words, output 2 words)	925.9ms
	8 words (input 4 words, output 4 words)	614.5ms
	16 words (input 8 words, output 8 words)	458.8ms
	32 words (input 16 words, output 16 words)	381.0ms
1024 words (input 512 words, output 512 words)	2 words (input 1 word, output 1 word)	3097.4ms
	4 words (input 2 words, output 2 words)	1851.8ms
	8 words (input 4 words, output 4 words)	1229.0ms
	16 words (input 8 words, output 8 words)	917.6ms
	32 words (input 16 words, output 16 words)	762.0ms

■When "Bit data points setting" is set to 256

Word data points setting	Word data points setting per frame	Word transmission cycle time
2 words (input 1 word, output 1 word)	2 words (input 1 word, output 1 word)	8.5ms
4 words (input 2 words, output 2 words)	2 words (input 1 word, output 1 word)	16.9ms
	4 words (input 2 words, output 2 words)	9.7ms
8 words (input 4 words, output 4 words)	2 words (input 1 word, output 1 word)	33.7ms
	4 words (input 2 words, output 2 words)	19.3ms
	8 words (input 4 words, output 4 words)	12.0ms
16 words (input 8 words, output 8 words)	2 words (input 1 word, output 1 word)	67.4ms
	4 words (input 2 words, output 2 words)	38.5ms
	8 words (input 4 words, output 4 words)	24.0ms
	16 words (input 8 words, output 8 words)	16.8ms
32 words (input 16 words, output 16 words)	2 words (input 1 word, output 1 word)	134.7ms
	4 words (input 2 words, output 2 words)	76.9ms
	8 words (input 4 words, output 4 words)	47.9ms
	16 words (input 8 words, output 8 words)	33.5ms
	32 words (input 16 words, output 16 words)	26.2ms
64 words (input 32 words, output 32 words)	2 words (input 1 word, output 1 word)	269.4ms
	4 words (input 2 words, output 2 words)	153.7ms
	8 words (input 4 words, output 4 words)	95.8ms
	16 words (input 8 words, output 8 words)	66.9ms
	32 words (input 16 words, output 16 words)	52.4ms
128 words (input 64 words, output 64 words)	2 words (input 1 word, output 1 word)	538.8ms
	4 words (input 2 words, output 2 words)	307.3ms
	8 words (input 4 words, output 4 words)	191.6ms
	16 words (input 8 words, output 8 words)	133.7ms
	32 words (input 16 words, output 16 words)	104.8ms
256 words (input 128 words, output 128 words)	2 words (input 1 word, output 1 word)	1077.5ms
	4 words (input 2 words, output 2 words)	614.5ms
	8 words (input 4 words, output 4 words)	383.1ms
	16 words (input 8 words, output 8 words)	267.3ms
	32 words (input 16 words, output 16 words)	209.5ms
512 words (input 256 words, output 256 words)	2 words (input 1 word, output 1 word)	2154.9ms
	4 words (input 2 words, output 2 words)	1229.0ms
	8 words (input 4 words, output 4 words)	766.1ms
	16 words (input 8 words, output 8 words)	534.6ms
	32 words (input 16 words, output 16 words)	418.9ms
1024 words (input 512 words, output 512 words)	2 words (input 1 word, output 1 word)	4309.8ms
	4 words (input 2 words, output 2 words)	2458.0ms
	8 words (input 4 words, output 4 words)	1532.1ms
	16 words (input 8 words, output 8 words)	1069.2ms
	32 words (input 16 words, output 16 words)	837.7ms

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■When "Bit data points setting" is set to 512

Word data points setting	Word data points setting per frame	Word transmission cycle time
2 words (input 1 word, output 1 word)	2 words (input 1 word, output 1 word)	13.2ms
4 words (input 2 words, output 2 words)	2 words (input 1 word, output 1 word)	26.4ms
	4 words (input 2 words, output 2 words)	14.4ms
8 words (input 4 words, output 4 words)	2 words (input 1 word, output 1 word)	52.7ms
	4 words (input 2 words, output 2 words)	28.7ms
	8 words (input 4 words, output 4 words)	16.8ms
16 words (input 8 words, output 8 words)	2 words (input 1 word, output 1 word)	105.3ms
	4 words (input 2 words, output 2 words)	57.4ms
	8 words (input 4 words, output 4 words)	33.5ms
	16 words (input 8 words, output 8 words)	21.5ms
32 words (input 16 words, output 16 words)	2 words (input 1 word, output 1 word)	210.5ms
	4 words (input 2 words, output 2 words)	114.7ms
	8 words (input 4 words, output 4 words)	66.9ms
	16 words (input 8 words, output 8 words)	42.9ms
	32 words (input 16 words, output 16 words)	31.0ms
64 words (input 32 words, output 32 words)	2 words (input 1 word, output 1 word)	421.0ms
	4 words (input 2 words, output 2 words)	229.4ms
	8 words (input 4 words, output 4 words)	133.7ms
	16 words (input 8 words, output 8 words)	85.8ms
	32 words (input 16 words, output 16 words)	61.9ms
128 words (input 64 words, output 64 words)	2 words (input 1 word, output 1 word)	841.9ms
	4 words (input 2 words, output 2 words)	458.8ms
	8 words (input 4 words, output 4 words)	267.3ms
	16 words (input 8 words, output 8 words)	171.6ms
	32 words (input 16 words, output 16 words)	123.7ms
256 words (input 128 words, output 128 words)	2 words (input 1 word, output 1 word)	1683.7ms
	4 words (input 2 words, output 2 words)	917.6ms
	8 words (input 4 words, output 4 words)	534.6ms
	16 words (input 8 words, output 8 words)	343.1ms
	32 words (input 16 words, output 16 words)	247.4ms
512 words (input 256 words, output 256 words)	2 words (input 1 word, output 1 word)	3367.3ms
	4 words (input 2 words, output 2 words)	1835.2ms
	8 words (input 4 words, output 4 words)	1069.2ms
	16 words (input 8 words, output 8 words)	686.2ms
	32 words (input 16 words, output 16 words)	494.7ms
1024 words (input 512 words, output 512 words)	2 words (input 1 word, output 1 word)	6734.6ms
	4 words (input 2 words, output 2 words)	3670.4ms
	8 words (input 4 words, output 4 words)	2138.4ms
	16 words (input 8 words, output 8 words)	1372.3ms
	32 words (input 16 words, output 16 words)	989.3ms

■When "Bit data points setting" is set to 1024

Word data points setting	Word data points setting per frame	Word transmission cycle time
2 words (input 1 word, output 1 word)	2 words (input 1 word, output 1 word)	22.7ms
4 words (input 2 words, output 2 words)	2 words (input 1 word, output 1 word)	45.3ms
	4 words (input 2 words, output 2 words)	23.9ms
8 words (input 4 words, output 4 words)	2 words (input 1 word, output 1 word)	90.6ms
	4 words (input 2 words, output 2 words)	47.7ms
	8 words (input 4 words, output 4 words)	26.2ms
16 words (input 8 words, output 8 words)	2 words (input 1 word, output 1 word)	181.1ms
	4 words (input 2 words, output 2 words)	95.3ms
	8 words (input 4 words, output 4 words)	52.4ms
	16 words (input 8 words, output 8 words)	31.0ms
32 words (input 16 words, output 16 words)	2 words (input 1 word, output 1 word)	362.1ms
	4 words (input 2 words, output 2 words)	190.5ms
	8 words (input 4 words, output 4 words)	104.8ms
	16 words (input 8 words, output 8 words)	61.9ms
	32 words (input 16 words, output 16 words)	40.4ms
64 words (input 32 words, output 32 words)	2 words (input 1 word, output 1 word)	724.1ms
	4 words (input 2 words, output 2 words)	381.0ms
	8 words (input 4 words, output 4 words)	209.5ms
	16 words (input 8 words, output 8 words)	123.7ms
	32 words (input 16 words, output 16 words)	80.8ms
128 words (input 64 words, output 64 words)	2 words (input 1 word, output 1 word)	1448.1ms
	4 words (input 2 words, output 2 words)	762.0ms
	8 words (input 4 words, output 4 words)	418.9ms
	16 words (input 8 words, output 8 words)	247.4ms
	32 words (input 16 words, output 16 words)	161.6ms
256 words (input 128 words, output 128 words)	2 words (input 1 word, output 1 word)	2896.1ms
	4 words (input 2 words, output 2 words)	1523.9ms
	8 words (input 4 words, output 4 words)	837.7ms
	16 words (input 8 words, output 8 words)	494.7ms
	32 words (input 16 words, output 16 words)	323.1ms
512 words (input 256 words, output 256 words)	2 words (input 1 word, output 1 word)	5792.2ms
	4 words (input 2 words, output 2 words)	3047.7ms
	8 words (input 4 words, output 4 words)	1675.4ms
	16 words (input 8 words, output 8 words)	989.3ms
	32 words (input 16 words, output 16 words)	646.2ms
1024 words (input 512 words, output 512 words)	2 words (input 1 word, output 1 word)	11584.3ms
	4 words (input 2 words, output 2 words)	6095.3ms
	8 words (input 4 words, output 4 words)	3350.8ms
	16 words (input 8 words, output 8 words)	1978.5ms
	32 words (input 16 words, output 16 words)	1292.4ms

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Transmission cycle time formula

The transmission cycle times can be calculated using the following formulas.

■Bit transmission cycle time formula (when the word transmission is not used)

((Number of bit data points ÷ 2) + 32) × 37μs

■Bit transmission cycle time formula (when the word transmission is used)

((Number of bit data points ÷ 2) + 67.5 + (Number of word data points per frame ÷ 2 × 32)) × 37μs

■Word transmission cycle time formula

((Number of bit points ÷ 2) + 67.5 + (Number of word data points per frame ÷ 2 × 32)) × Number of word cycles × 37μs

The number of word cycles changes depending on the value of the word start address.

The number of word cycles can be calculated using the following formulas. (Rounded up to the first decimal point)

Condition	Number of word cycles
$d \leq 512$	$a \div c$
$d > 512$	$(a \div c) - (d - 512) \div (c \div 2)$

a: Number of word data points
b: Word data start address setting
c: Number of word data points per frame
d: $a \div 2 + b$

Point

If the word data start address is set to a value other than 0, the calculation formula differs from the one above. For the exact transmission cycle time, refer to Bit transmission cycle time (address: 020AH to 020BH) and Word transmission cycle time (address: 020CH to 020DH).

Bit data update timing

Input

Unless the NZ2AW1GNAL receives the same bit input data twice successively, data in the bit input area is not updated.

A minimum of 1-bit transmission cycle time and a maximum of 2-bit transmission cycle time are required as data response time.

Therefore, when an input signal is shorter than 2-bit transmission cycle time, the input data may not be captured depending on the timing.

To ensure the response, provide an input signal that is longer than 2-bit transmission cycle time.

■Case of minimum data response time

If no change is detected in input data between two sampling timings, communication in 1-bit transmission cycle time is possible.
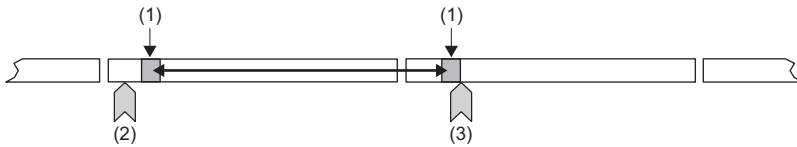
(1) Sampling timing
(2) Change of the input data
(3) Update of the input data

■Case of maximum data response time

The input data is changed after a sampling, and thus the next sampling will be the first data reception. Time equivalent to 2-bit transmission cycle time is required.
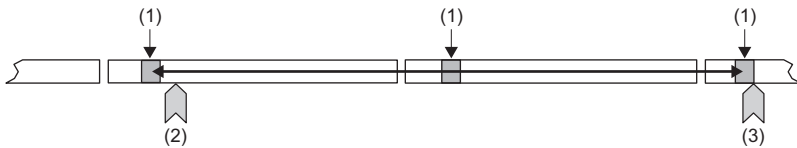
(1) Sampling timing
(2) Change of the input data
(3) Update of the input data

Output

As the bit data double verification is performed on the slave module side, the time required is the same as that for input, namely a minimum of 1-bit transmission cycle time and a maximum of 2-bit transmission cycle time.

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Update timing of word data

Input

The NZ2AW1GNAL receives the main data and the verification data in the same frame, and therefore the word input data will be sampled with the response delay time of 1-word transmission cycle time or shorter.

Therefore, when an input signal is shorter than 1-word transmission cycle time, the input data may not be captured depending on the timing.

To ensure the response, provide an input signal that is longer than 1-word transmission cycle time.

■Case of minimum data response time

If the word data has no abnormalities, the input data is updated in 1-word transmission cycle time or shorter.
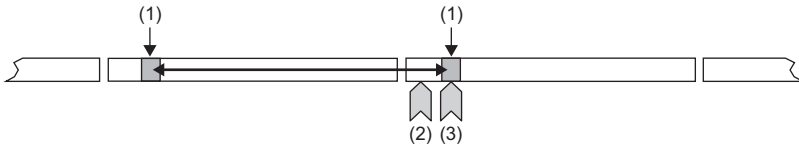
(1) Sampling timing
(2) Change of the input data
(3) Update of the input data

■Case of maximum data response time

As with the minimum case, the input data is updated in 1-word transmission cycle time or shorter.
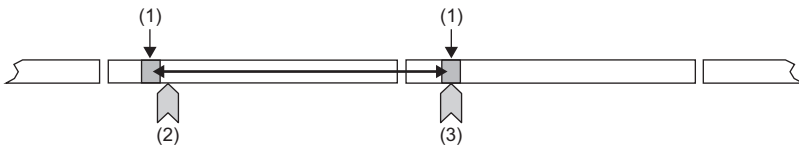
(1) Sampling timing
(2) Change of the input data
(3) Update of the input data

Output

As the double verification of the word data is executed on the slave module side, the time required is the same as that for input, namely a maximum of 1-word transmission cycle time.

Response delay time

The following shows the response delay time of input and output.

Input response delay time

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

The input response delay time is the total of ❶ to ❸ in the following figure.
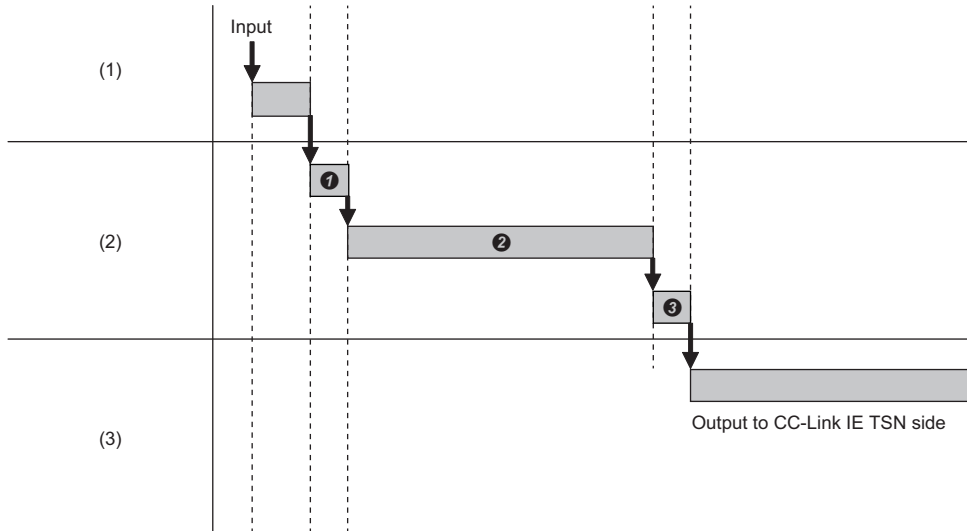
(1) Input device
(2) AnyWireASLINK system
(3) CC-Link IE TSN

No.	Description	Required time
❶	Input response time on the slave module	Refer to the manual of the slave module connected to the system (manufactured by Anywire Corporation).
❷	Transmission time	• Bit data: Bit transmission cycle time × 2 • Word data: Word transmission cycle time The transmission cycle time varies depending on the specified number of bit data points and the specified number of word data points. ☞ Page 188 Transmission cycle time formula
❸	Processing time of the NZ2AW1GNAL	1.0ms

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Output response delay time

The figure below shows the time between the remote register device turning on/off and a signal output of the slave module turning on/off.

The output response delay time is the total of ❶ to ❸ in the following figure.

(1) I/O device
(2) AnyWireASLINK system
(3) CC-Link IE TSN

No.	Description	Required time
❶	Processing time of the NZ2AW1GNAL	1.0ms
❷	Transmission time	• Bit data: Bit transmission cycle time × 2 • Word data: Word transmission cycle time The transmission cycle time varies depending on the specified number of bit data points and the specified number of word data points. ☞ Page 188 Transmission cycle time
❸	Output response time on the slave module	Refer to the manuals for the slave modules connected to the system and the devices connected to the slave modules (manufactured by Anywire Corporation).

Parameter access response time

The parameters of AnyWireASLINK provide monitoring information of slave modules or the entire system and setting information of the slave modules.

Parameter data is synchronized between the NZ2AW1GNAL and slave modules at a cycle different from that of I/O data. Use the following calculation formulas to obtain the parameter access response time.

Item	Calculation formula
Update interval time of automatically updated parameters[1]	Number of AnyWireASLINK system connected IDs × Transmission cycle time × 3
Time required for reading parameters	Number of target IDs × Bit transmission cycle time × 27[2]
Time required for writing parameters	Number of target IDs × Bit transmission cycle time × 39[2]

[1] The parameters to be accessed are the status details and the sensing level.
[2] The number of target IDs is as follows.
   During parameter access: 1
   During parameter batch read: The number of IDs registered at the time of automatic address detection
   During parameter batch write: The number of IDs registered at the time of automatic address detection

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Appendix 6 EMC and Low Voltage Directives

In each country, laws and regulations concerning electromagnetic compatibility (EMC) and electrical safety are enacted.
For the products sold in the European countries, compliance with the EU's EMC Directive has been a legal obligation as EMC regulation since 1996, as well as the EU's Low Voltage Directive as electrical safety regulation since 1997.
Manufacturers who recognize their products are compliant with the EMC and Low Voltage Directives are required to attach a "CE marking" on their products in European countries.
In some other countries and regions, manufacturers are required to make their products compliant with applicable laws or regulations and attach a certification mark on the products as well (such as UK Conformity Assessed (UKCA) marking in the UK, and Korea Certification (KC) marking in South Korea).
Each country works to make their regulatory requirements consistent across countries based on international standards. When the requirements are consistent, measures to comply with the EMC and electrical safety regulations become common across countries.
The UK and South Korea have enacted EMC regulations whose requirements are consistent with those of the EMC Directive. The UK has also enacted electrical safety regulations whose requirements are consistent with those of the Low Voltage Directive. In this section, the requirements of the EMC and Low Voltage Directives are described as examples of those of the EMC and electrical safety regulations.

Measures to comply with the EMC Directive

The EMC Directive specifies that "products placed on the market must be so constructed that they do not cause excessive electromagnetic interference (emissions) and are not unduly affected by electromagnetic interference (immunity)".
This section summarizes the precautions on compliance with the EMC Directive of the machinery constructed with the module.
These precautions are based on the requirements and the standards of the regulation, however, it does not guarantee that the entire machinery constructed according to the descriptions will comply with abovementioned directives.
The method and judgment for complying with the EMC Directive must be determined by the person who constructs the entire machinery.

EMC Directive related standards

■Emission requirements

Specifications	Test item	Test details	Standard value
EN 61131-2:2017	CISPR16-2-3 Radiated emission[*2]	Radio waves from the product are measured.	• 30M-230MHz QP: 40dBμV/m (10m in measurement range)[*1] • 230M-1000MHz QP: 47dBμV/m (10m in measurement range)
	CISPR16-2-1, CISPR16-1-2 Conducted emission[*2]	Noise from the product to the power line is measured.	• 150k-500kHz QP: 79dB, Mean: 66dB[*1] • 500k-30MHz QP: 73dB, Mean: 60dB

*1   QP: Quasi-peak value, Mean: Average value
*2   The module is an open type device (a device designed to be housed in other equipment) and must be installed inside a conductive control panel. The tests were conducted with the module installed in a control panel.

■Immunity requirements

Specifications	Test item	Test details	Standard value
EN 61131-2:2017	EN 61000-4-2 Electrostatic discharge immunity[1]	Static electricity is applied to the cabinet of the equipment.	• 8kV Air discharge • 4kV Contact discharge
	EN 61000-4-3 Radiated, radio-frequency, electromagnetic field immunity[1]	Electric fields are radiated to the product.	• 150k-500kHz QP: 79dB, Mean: 66dB[1] • 500k-30MHz QP: 73dB, Mean: 60dB
	EN 61000-4-4 Electrical fast transient/burst immunity[1]	Burst noise is applied to the power line and signal line.	• AC/DC main power, I/O power, AC I/O (unshielded): 2kV • DC I/O, analog, communication: 1kV
	EN 61000-4-5 Surge immunity[1]	A lightning surge is applied to the power line and signal line.	• AC power line, AC I/O power, AC I/O (unshielded): 2kV CM, 1kV DM • DC power line, DC I/O power: 0.5kV CM, DM • DC I/O, AC I/O (shielded), analog, communication: 1kV CM
	EN 61000-4-6 Conducted RF immunity[1]	High frequency noise is applied to the power line and signal line.	0.15M-80MHz, 80% AM modulation @1kHz, 10Vrms
	EN 61000-4-8 Power-frequency magnetic field immunity[1]	The product is installed in an inductive magnetic field.	50Hz/60Hz, 30A/m
	EN 61000-4-11 Voltage dips and interruption immunity[1]	A momentary power failure is caused to the power supply voltage.	• Apply at 0%, 0.5 cycles and zero-cross point • 0%, 250/300 cycles (50/60Hz) • 40%, 10/12 cycles (50/60Hz) • 70%, 25/30 cycles (50/60Hz)

[1] The module is an open type device (a device designed to be housed in other equipment) and must be installed inside a conductive control panel. The tests were conducted with the module installed in a control panel.

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Installation in a control panel

The module is open type devices and must be installed inside a control panel.

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

■Control panel

- Use a conductive control panel.
- When securing the top or bottom plate using bolts, cover the grounding part on the control panel so that the part will not be painted.
- To ensure electrical contact between the inner plate and control panel, take measures such as covering the bolts so that conductivity can be ensured in the largest possible area.
- Ground the control panel with a thick ground cable so that low impedance can be ensured even at high frequencies.
- Holes in the control panel must be 10cm diameter or less. If the holes are larger than 10cm in diameter, radio waves may leak. In addition, because radio waves leak through a clearance between the control panel and its door, reduce the clearance as much as possible. The leakage of radio waves can be suppressed by the direct application of an EMI gasket on the paint surface.

Our tests have been carried out on a control panel having the damping characteristics of 37dB (max.) and 30dB (mean) (measured by 3m method, 30 to 300MHz).

■Wiring of power cables and ground cables

Near the power supply part, provide a ground point to the control panel. Ground the FG terminal with the thickest and shortest possible ground cable (30cm or shorter).

Ethernet cable

Use shielded cables for the cables which are connected to the module and run out from the control panel. If a shielded cable is not used or not grounded correctly, the noise immunity will not meet the specified value.

■Ethernet cable

A shielded cable is used for the Ethernet cable. Strip a part of the jacket as shown below and ground the exposed shield in the largest possible area.
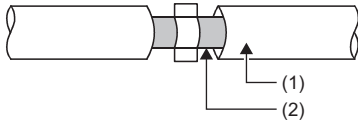
(1) Ethernet
(2) Shield

■Grounding the cable clamp

Use shielded cables for external wiring and ground the shields of the external wiring cables to the control panel with the AD75CK-type cable clamp (Mitsubishi). (Ground the shield section 20 to 30cm away from the module.)

For detail on AD75CK, refer to the following.

📖 AD75CK-type Cable Clamping Instruction Manual

External power supply

- Use a CE-marked product for an external power supply and always ground the FG terminal. (External power supply used for the tests conducted by Mitsubishi: TDK-Lambda DRJ100-24-1)
- Use a power cable of 30m or shorter when connecting it to the module power supply terminal.

Others

■Ferrite core

A ferrite core has the effect of reducing radiated noise in the 30MHz to 100MHz band.

It is recommended to attach ferrite cores if shielded cables coming out of the control panel do not provide sufficient shielding effects.

Note that the ferrite cores must be attached at the position closest to the cable hole inside the control panel. If attached at an improper position, the ferrite core will not produce any effect.

For the terminals that are connected to the external power supply, attach a ferrite core 4cm away from the module.

For the AnyWireASLINK cable, install a ferrite core at a point as close to the AnyWireASLINK 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: TOKIN Corporation ESD-SR-250, TDK Corporation ZCAT3035-1330)

Ex.
Ferrite core attachment example
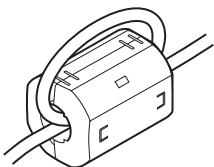
■Noise filter (power supply line filter)

A noise filter is a component which has an effect on conducted noise. Attaching the filter can suppress more noise. (The noise filter has the effect of reducing conducted noise of 10MHz or less.)

Connect a noise filter to the external power supply of the module. Use a noise filter with the damping characteristics equivalent to those of RSEN-2006 (manufactured by TDK-Lambda Corporation). Note that a noise filter is not required if the module is used in Zone A defined in EN61131-2.

The precautions for attaching a noise filter are described below.

- Do not bundle the cables on the input side and output side of the noise filter. If bundled, the output side noise will be induced into the input side cables from which the noise was filtered.
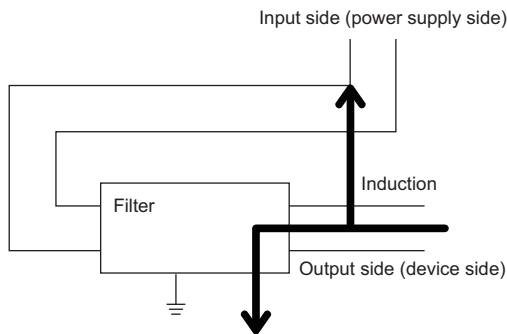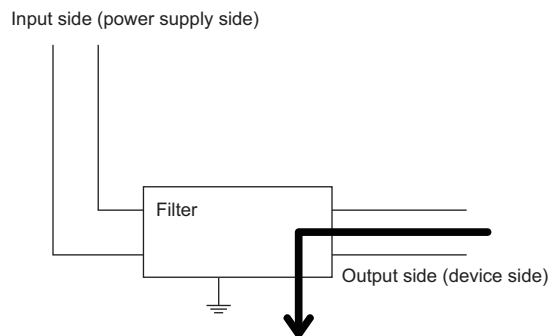
- Ground the noise filter grounding terminal to the control panel with the shortest cable possible (approx. 10cm).
- Attach the noise filter within 3m from the module. (Keep a distance of 30m between an external power supply and module.)

Measures to comply with the Low Voltage Directive

The module operates at the rated voltage of 24VDC.

The Low Voltage Directive is not applied to the modules that operate at the rated voltage of less than 50VAC and 75VDC.

Appendix 7 How to Check Production Information and Firmware Version

Checking the production information

The production information of the NZ2AW1GNAL can be checked with the following.
- Rating plate
- CC-Link IE TSN/CC-Link IE Field diagnostics

Checking on the rating plate

Production information

MAC address

Compliance standard symbol
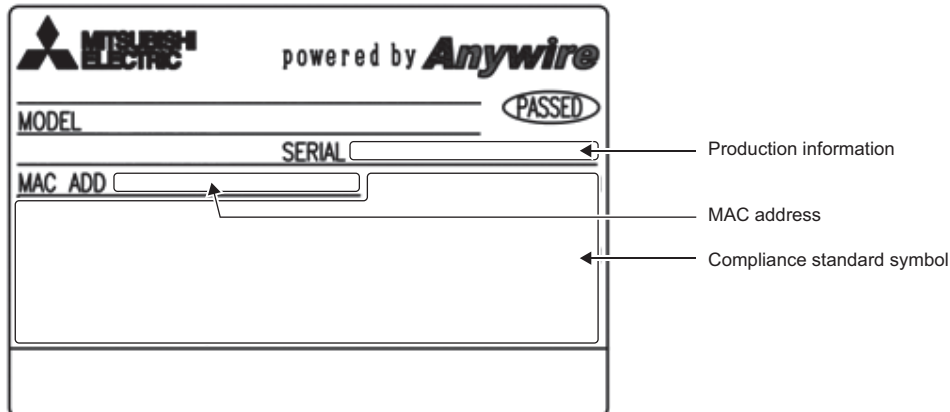
Checking by using CC-Link IE TSN/CC-Link IE Field diagnostics

The production information of the NZ2AW1GNAL can be checked on the network map in the CC-Link IE TSN/CC-Link IE Field diagnostics.

Follow the procedure below.

1. Right-click the slave station whose production information you want to check, and select "Production Information".

2. The production information appears.

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Checking the firmware version

The firmware version of the module can be checked by the CC-Link IE TSN Firmware Update Tool.

For details, refer to the "Help" of the CC-Link IE TSN Firmware Update Tool.

Appendix 8 Added and Changed Functions

This section lists functions added to or changed in the NZ2AW1GNAL.

Details of additions/changes	Firmware version	Profile version	Reference
Communication speed setting function	"03" or later	"01" or later	☞ Page 86 Communication Speed Setting Function
CC-Link IE TSN Class setting function	"03" or later	"01" or later	☞ Page 87 CC-Link IE TSN Class Setting Function
Support for data transmission speed of 100Mbps	"03" or later	"01" or later	☞ Page 19 Performance Specifications of Ethernet
Support for CC-Link IE TSN Protocol version 2.0	"03" or later	"01" or later	☞ Page 17 Performance Specifications

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Appendix 9　External Dimensions

(Unit: mm)

MEMO

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REVISIONS

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

Revision date	*Manual number	Description
May 2021	SH(NA)-082405ENG-A	First edition
November 2021	SH(NA)-082405ENG-B	■Added or modified parts SAFETY PRECAUTIONS, COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES, Section 5.5, Appendix 6
March 2022	SH(NA)-082405ENG-C	■Added or modified part Section 5.5
November 2022	SH(NA)-082405ENG-D	■Added functions Communication speed setting function, CC-Link IE TSN Class setting function ■Added or modified parts INTRODUCTION, TERMS, Chapter 1, Section 2.2, 2.3, 2.4, 4.2, 4.3, 5.1, 5.5, 6.1, 7.15, 7.16, 10.1, 10.2, Appendix 1, 8, COPYRIGHT

Japanese manual number: SH-082404-E

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WARRANTY

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

1. **Gratis Warranty Term and Gratis Warranty Range**

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

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

   [Gratis Warranty Term]

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

   [Gratis Warranty Range]

   (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

   (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

      1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.

      2. Failure caused by unapproved modifications, etc., to the product by the user.

      3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.

      4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.

      5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.

      6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.

      7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. **Onerous repair term after discontinuation of production**

   (1) Mitsubishi shall accept onerous product repairs for one year after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

   (2) Product supply (including repair parts) is not available after production is discontinued.

3. **Overseas service**

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

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

   Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

   (1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

   (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

   (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

   (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. **Changes in product specifications**

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

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