MITSUBISHI ELECTRIC

Mitsubishi Programmable Controller

CC-Link-AnyWire DB A20 Bridge Module
User's Manual

-NZ2AW1C2D2

AnyWire DB A20

PRECAUTIONS REGARDING WARRANTY AND SPECIFICATIONS
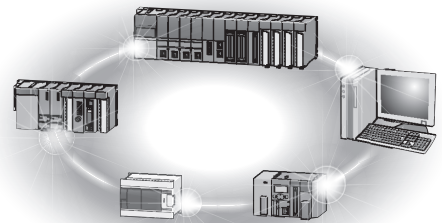
The NZ2AW1C2D2 is jointly developed and manufactured by Mitsubishi and Anywire Corporation.
Note that there are some precautions regarding warranty and specifications of this product.

<Warranty>

Item	NZ2AW1C2D2	Other programmable controller products (e.g. MELSEC-Q series)
Repair term after discontinuation of production	1 year	7 years

<Application of the EMC Directive>

Item	NZ2AW1C2D2	Other programmable controller products (e.g. MELSEC-Q series)
Applicable EMC standard	EN61131-2[*1]	EN61131-2

*1   The module with a serial number (the sixth digit) of 3 or later must comply with this standard.

<Application of the UL/cUL standards>

Item	NZ2AW1C2D2	Other programmable controller products (e.g. MELSEC-Q series)
Applicable UL standard/cUL standard	UL508[*1] CSA22.2[*1]	UL508 CSA22.2

*1   The module with a serial number (the sixth digit) of 3 or later must comply with this standard.

●SAFETY PRECAUTIONS●

(Read these precautions before using this product.)

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

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

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

⚠WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠ CAUTION" may lead to serious consequences.
Observe the precautions of both levels because they are important for personal and system safety.

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

[Design Precautions]

⚠ WARNING

● An AnyWire DB A20 system has no control function for ensuring safety.
● When a communication failure occurs in the network, data in the master module are held.
  Check the communication status information and configure an interlock circuit in the sequence program to ensure that the entire system will operate safely.

[Design Precautions]

⚠ CAUTION

● Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
● Configure safety circuits, such as an emergency stop circuit and interlock circuit, external to the AnyWire DB A20 system.

[Installation Precautions]

⚠ CAUTION
● Use the module in an environment that meets the general specifications in this manual. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product. ● Securely fix the module with a DIN rail. ● Do not directly touch any conductive parts or electronic components of the module. 　Doing so can cause malfunction or failure of the module.

[Wiring Precautions]

⚠ CAUTION
● 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. ● Individually ground the FG terminal of the programmable controller with a ground resistance of 100Ω 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 screw 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, 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 AnyWire DB A20 system. ● Use 24VDC stabilized power supplies for devices in the AnyWire DB A20 system. ● Do not install the control lines or communication cables together with the main circuit lines or power cables. 　Failure to do so may result in malfunction due to noise.

[Wiring Precautions]

⚠ CAUTION
● Make sure to place the communication and power cables to be connected to the module in a duct or fasten them using a clamp. If the cables are not placed in a duct or fastened with a clamp, their positions may be unstable or moved, and they may be pulled inadvertently. This may damage the module and the cables or cause the module to malfunction because of faulty cable connections. ● When disconnecting the communication and power cables from the module, do not pull the cables by hand. When disconnecting a cable connected to a terminal block, loosen the screws on the terminal block first before removing the cable. If a cable is pulled while being connected to the module, it may cause the module to malfunction or damage the module and the cable.

[Startup and Maintenance Precautions]

⚠ WARNING
● Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction. ● Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal screws or module fixing screws. Failure to do so may result in electric shock. Undertightening the terminal screws can cause short circuit or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.

[Startup and Maintenance Precautions]

⚠ CAUTION
● Do not disassemble or modify the modules. Doing so may cause failure, malfunction, injury, or a fire. ● Shut off the external power supply (all phases) used in the system before mounting or removing a module. Failure to do so may cause the module to fail or malfunction. ● After the first use of the product, do not mount/remove the terminal block to/from the module more than 50 times (IEC 61131-2 compliant). Exceeding the limit may cause malfunction. ● Before handling the module, touch a grounded metal object to discharge the static electricity from the human body. Failure to do so may cause the module to fail or malfunction.

[Disposal Precautions]

⚠ CAUTION
● When disposing of this product, treat it as industrial waste.

●CONDITIONS OF USE FOR THE PRODUCT●

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

i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and

ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

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

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

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

• Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.

• Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.

• Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

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

COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

(1) Method of ensuring compliance

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

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

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

(2) Additional measures

To ensure that this product maintains EMC and Low Voltage Directives, please refer to Page 62, Appendix 1.

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TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
NZ2AW1C2D2	The abbreviation for the CC-Link–AnyWire DB A20 bridge module, NZ2AW1C2D2
Intelligent function module	A Q-series module other than CPU modules, power supply modules, and I/O modules, which is mounted on a base unit
Master module	A module that controls a data link system. One master module is required for one system.
Remote I/O module	A module that communicates I/O data with a master module
Programming tool	A generic term for GX Works2 and GX Developer
GX Works2	The product name of the software package for the MELSEC programmable controllers
GX Developer	
AnyWire DB A20	An original transmission system provided by Anywire Corporation. The full-duplex transmission mode enables a high-speed and long-distance communication. This system provides a high-speed and highly-reliable sensor network.
Slave module	A generic term for modules that communicate data with a master module
Terminating unit	A waveform shaper
Transmission cycle time	A data sampling interval
Buffer memory	A memory in an intelligent function module, where data (such as setting values and monitoring values) exchanged with a CPU module are stored
RX	Remote input (for CC-Link) Information input in bit units from the slave station to the master station.
RY	Remote output (for CC-Link) Information output in bit units from the master station to the slave station.
RWw	Remote register (Write area for CC-Link) Information output in 16-bit units from the master station to the slave station.
RWr	Remote register (Read area for CC-Link) Information input in 16-bit units from the slave station to the master station.

CHAPTER 1 OVERVIEW

This manual describes the specifications, part names, and settings of the NZ2AW1C2D2 CC-Link–AnyWire DB A20 bridge module (hereafter abbreviated as the NZ2AW1C2D2) used as a remote device station in the CC-Link Ver 2.00 system.

This module, a product of the joint development project with Anywire Corporation, allows the AnyWire DB A20 system to connect with CC-Link.

The AnyWire DB A20 system provides a high-speed and highly reliable sensor network system.

<Features of the NZ2AW1C2D2>

The NZ2AW1C2D2 is a bridge module used for the connection between AnyWire DB A20 having the full-duplex transmission mode and CC-Link Ver 2.00.

The transmission distance can be selected from 50m, 200m, 1km, and 3km using the dip switch.

Disconnections can be detected even when the wiring is branched.

Up to 512 remote input points and 512 remote output points can be connected to one NZ2AW1C2D2 module.

MELSEC-Q series

CC-Link Ver 2.00

AnyWire DB A20

AnyWire DB A20 remote I/O module (input)*1

AnyWire DB A20 remote I/O module (output)*1

AnyWire DB A20 terminating unit*1
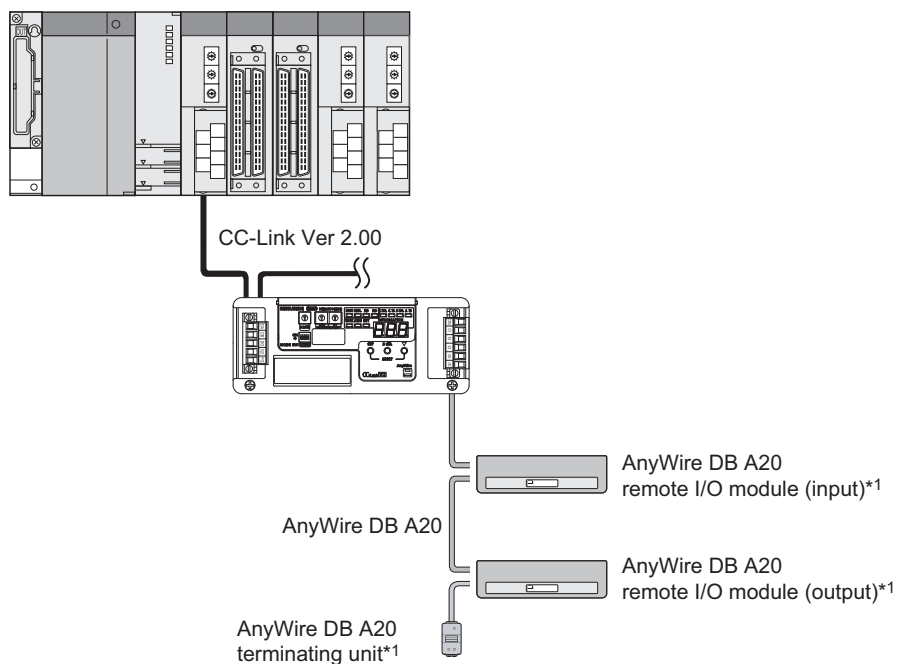
*1: Manufactured by Anywire Corporation

<Configuration of the AnyWire DB A20 system>

The following table lists the maximum number of connectable modules in one AnyWire DB A20 system.

Module	The maximum number of connectable modules
Bridge module	1
Slave module	128

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CHAPTER 2 SPECIFICATIONS

2.1 General Specifications

Item	Specifications				
Operating ambient temperature	0 to 55°C				
Storage ambient temperature	-25 to 75°C				
Operating ambient humidity	10 to 90%RH, non-condensing				
Storage ambient humidity					
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2		Frequency	Constant acceleration	Half amplitude	The number of sweeps
		Under intermittent vibration	5 to 8.4Hz	—	3.5mm	10 times each in X, Y, and Z directions
			8.4 to 150Hz	9.8m/s^2	—	
		Under continuous vibration	5 to 8.4Hz	—	1.75mm	—
			8.4 to 150Hz	4.9m/s^2	—	
Shock resistance	Compliant with JIS B 3502 and IEC 61131-2 (147m/s^2, 3 times each in X, Y, and Z directions)				
Operating atmosphere	No corrosive gas				
Operating altitude[*1]	0 to 2000m				
Installation location	Inside a control panel				
Overvoltage category[*2]	II or lower				
Pollution degree[*3]	2 or less				

*1 Do not use or store the programmable controller under pressure higher than the atmospheric pressure at sea level. Doing so may cause malfunction.
When using the programmable controller under pressure, please consult your local Mitsubishi representative.

*2 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises.
Category II applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for up to the rated voltage of 300V is 2500V.

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

2.2   Performance Specifications

2.2.1   Performance specifications

Classification	Item	Specifications			
CC-Link side	Station type	Remote device station			
	CC-Link version	Ver. 2.00			
	Extended cyclic settings	Double			
	Communication speed	10M/5M/2.5M/625K/156Kbps (switching by the transmission speed setting switch)			
	No. of occupied stations of CC-Link	4 stations (RX/RY number of occupied points: 224 points for each) (RWr/RWw 32/32)			
	No. of connectable modules	Up to 16			
	Connection location of the NZ2AW1C2D2	No restriction			
	Connection cable[*1]	CC-Link dedicated cable/High-performance CC-Link dedicated cable/ Ver.1.10- compatible CC-Link dedicated cable			
AnyWire DB A20 side	Transmission clock	125kHz	31.3kHz	7.8kHz	2kHz
	Maximum transmission distance (total length)	50m	200m	1km	3km
	No. of connectable modules	Up to 128	Up to 128	Up to 128	Up to 32[*2]
	Transmission system	Total Frame Cyclic method with double-duplex mode			
	Connection type	Bus topology (Multidrop system, T-branch system, tree branch system)			
	Transmission protocol	Dedicated protocol (AnyWire DB A20)			
	Error control	Double-check system			
	No. of connected I/O points	Up to 1024 points (512 input points/512 output points)			
	RAS function	Disconnected transmission line location detection function, transmission line short detection function, transmission line voltage drop detection function			
	DB A20 transmission line	• UL-listed general-purpose 2-/4-wire cable (VCTF, VCT 0.75 to 1.25mm^2, rated temperature 70°C or higher) • UL-listed general-purpose wire (0.75 to 1.25mm^2, rated temperature 70°C or higher) • FK4-UL075-100 (Anywire) (0.75mm^2, rated temperature 90°C) (UL listed) (Regardless of the type of the transmission line, when the transmission distance exceeds 200m, use wires with a diameter of 0.9 to 1.25mm^2.)			
	24VDC power cable	• UL-listed general-purpose 2-wire cable (VCTF, VCT 0.75 to 2.0mm^2, rated temperature 70°C or higher) • UL-listed general-purpose wire (0.75 to 2.0mm^2, rated temperature 70°C or higher) • FK4-UL075-100 (Anywire) (0.75mm^2, rated temperature 90°C) (UL listed)			
	Maximum no. of writes to EEPROM	Up to 100000 times			
Common	Power supply	Voltage 21.6 to 27.6VDC (24VDC -10% to +15%), ripple 0.5Vp-p or lower Current 0.4 [A] (When 128 slave modules are connected and the load current is not included)			
	External dimensions	57mm (H) × 140mm (W) × 44mm (D)			
	Weight	0.18kg			

*1   Ver.1.10- compatible CC-Link dedicated cable, CC-Link dedicated cable (Ver.1.00), and high-performance CC-Link dedicated cable cannot be used at the same time. If those cables are used at the same time, normal transmission is not guaranteed.
In addition, use the terminating resistor according to the type of cable used.
*2   Up to 64 modules can be connected within 2km.

2.2.2 Power supply sequence and handling of I/O data

An incorrect input/output may occur depending on the procedure for supplying the power to the NZ2AW1C2D2 and the slave module. Pay attention to the following points.

- After the NZ2AW1C2D2 is turned on, do not make the access related to this module until the remote station's READY signal (RX(n+D)B) turns on.
- Supply the power according to the steps below.
  (1) Turn on the programmable controller (CC-Link master module).
  (2) Turn on the bridge module (NZ2AW1C2D2).
  (3) Turn on the slave module (when the power supply is only for the slave module).
  (4) Before accessing the slave module, turn on the error reset request flag (for 500ms or longer) and turn it off.

2.3 Applicable System

2.3.1 Applicable master module

Master modules that can be used are listed on the website of CC-Link Partner Association (CLPA).
For the website of CC-Link Partner Association (CLPA), refer to the following.
http://www.cc-link.org/

2.3.2 Differences in parameter settings depending on the CC-Link version

The NZ2AW1C2D2 is a remote device station supporting CC-Link Ver.2.00.
For the setting of "Mode" and "Station Information (Station Type)" of a Mitsubishi master module to which the NZ2AW1C2D2 is connected, use any of the following combinations.

(1) Parameter setting of the master module supporting CC-Link Ver.2.00

Master module	Parameter setting item	
	Mode setting[*1]	Station information (station type)
QJ61BT11N, L26CPU-BT, L26CPU-PBT, LJ61BT11, Q80BD-J61BT11N, Q81BD-J61BT11	Remote network-Ver.2 mode	Ver.2 remote device station
	Remote network-addition mode[*2]	Ver.2 remote device station
FX3U-16CCL-M	Remote network-Ver.2 mode	Ver.2-compatible remote device station
	Remote network-addition mode[*2]	

*1   For the mode setting, refer to the user's manual of the master station used.
*2   To add a station number of a Ver.2-compatible remote device station, add it after the station number used in the existing system.

2.3.3 CC-Link dedicated instruction

In the NZ2AW1C2D2, dedicated instructions accessing the NZ2AW1C2D2 from a CC-Link master module cannot be used.

2.4 External Dimensions

(Unit: mm)

2.5 Part Names

Transmission speed setting switch
Station number setting switch
LED indicator

CC-Link side terminal block
Rating plate
Specification selection switch (MODE switch)
Connector for maintenance (cannot be used)
SET switch (automatic address detection switch)
Display selection switch (D SEL switch and ▼ switch)
AnyWire DB A20 side terminal block
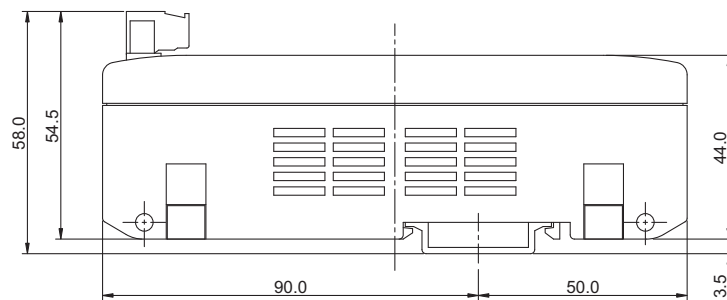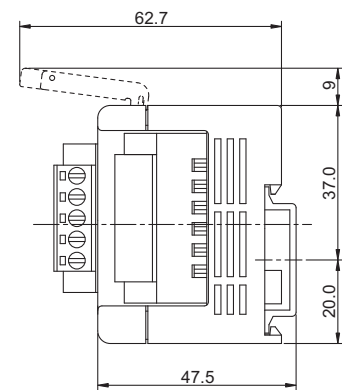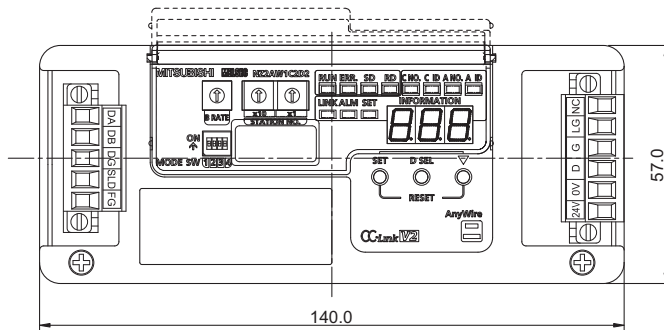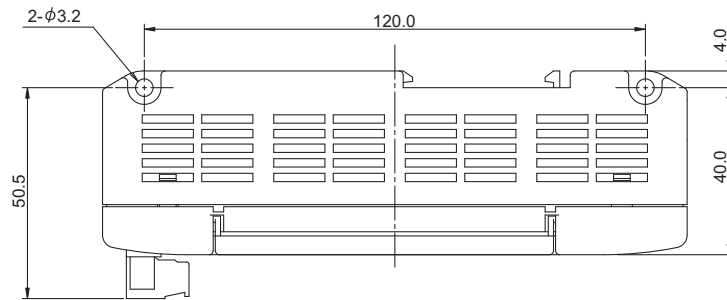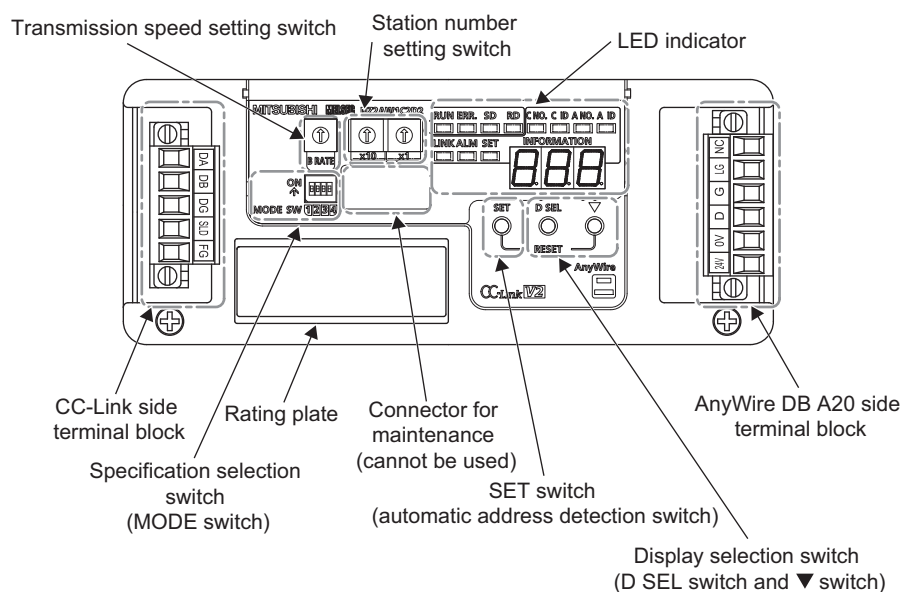
For details on each part, refer to the following.

• CC-Link side terminal block	: ☞ Page 23, Section 4.1
• AnyWire DB A20 side terminal block	: ☞ Page 25, Section 4.2
• Station number setting switch	: ☞ Page 28, Section 5.1 (1)
• Transmission speed setting switch	: ☞ Page 29, Section 5.1 (2)
• Specification selection switch	: ☞ Page 30, Section 5.2 (1)
• Reset operation	: ☞ Page 31, Section 5.3
• SET switch	: ☞ Page 44, Section 9.1
• LED indicator	: ☞ Page 41, Section 8.1 (1), Page 42, Section 8.1 (2)
• Display selection switch	: ☞ Page 43, Section 8.1 (3)

2.6 Checking Function Version and Serial Number

The serial number and the function version of the NZ2AW1C2D2 are shown on the rating plate.

(1) Checking on the rating plate

The rating plate is on the front of the NZ2AW1C2D2.
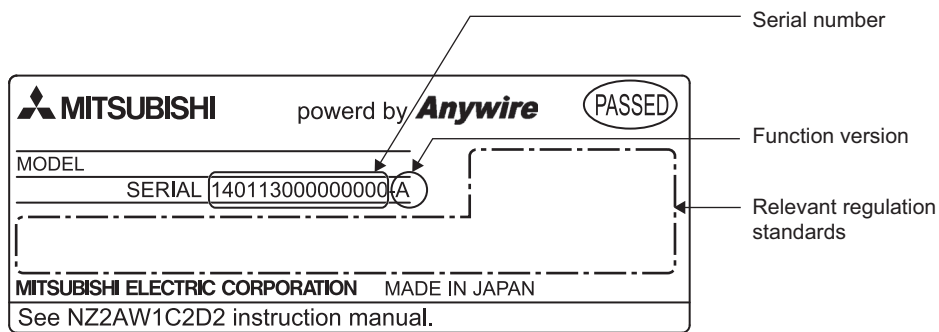
CHAPTER 3   MODULE MOUNTING

Mount this module on a DIN rail before use.

The module can be mounted in horizontal or vertical orientation.

3.1   Module Mounting Orientation

Since the NZ2AW1C2D2 radiates heat, place it in an airy place in the orientations shown below.

Horizontal installation (basic)

DIN rail

Vertical installation (basic)
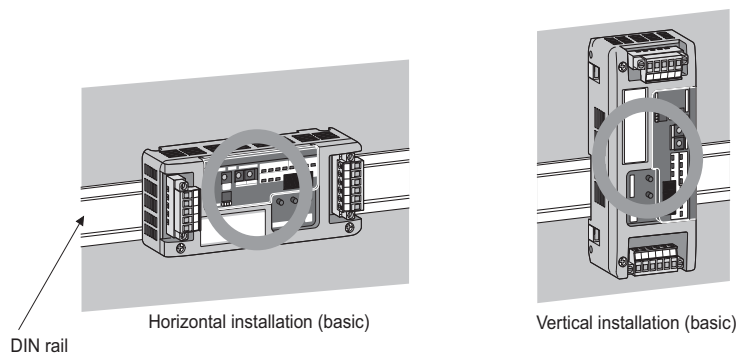
Do not place the module as shown below.

Downward installation

Horizontal installation

Vertical installation
(upside down)

Upward installation
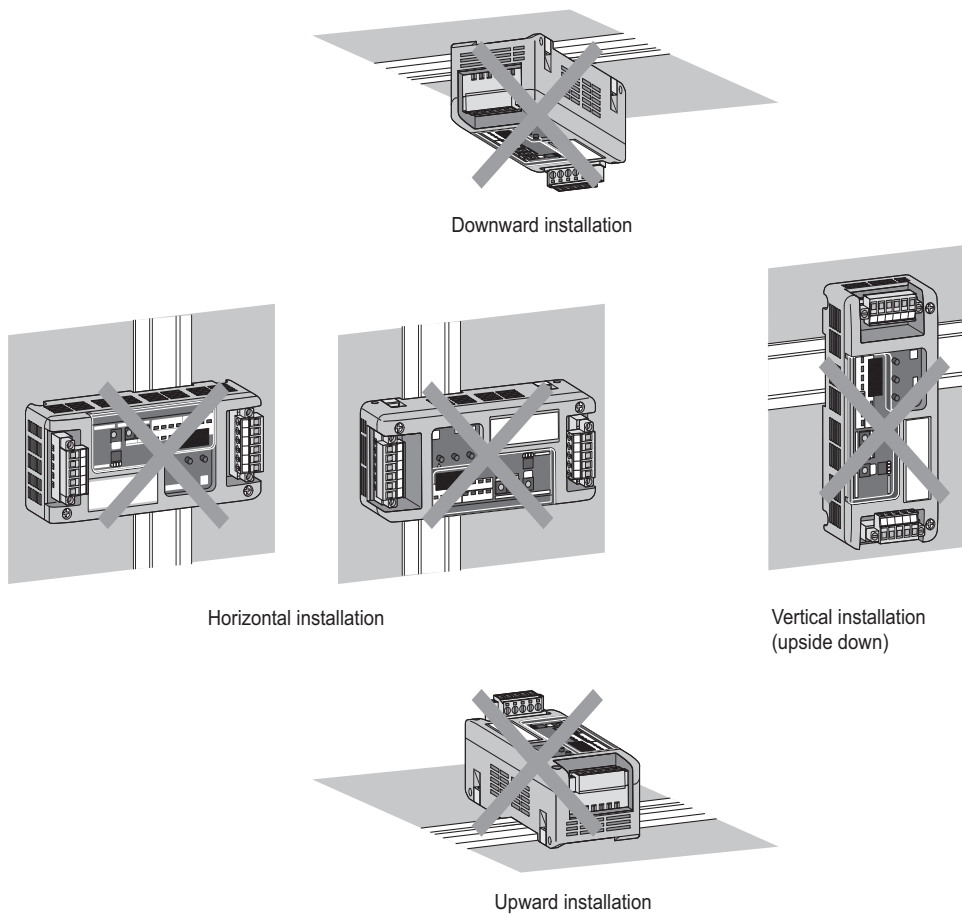
3.2 Mounting in Horizontal Orientation

(1) Mounting on a DIN rail
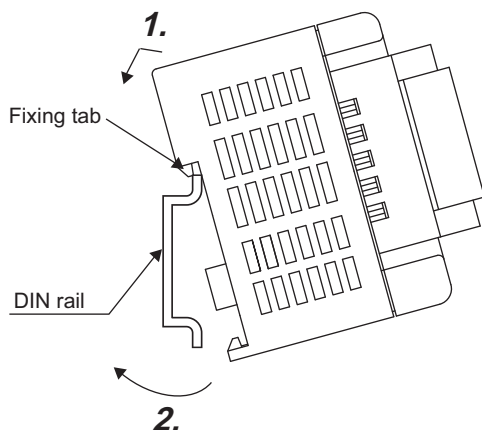
1. Hook the upper fixing tab on the bottom of the module to the DIN rail.
2. Push and engage the NZ2AW1C2D2 in the DIN rail.

(2) Removing from a DIN rail
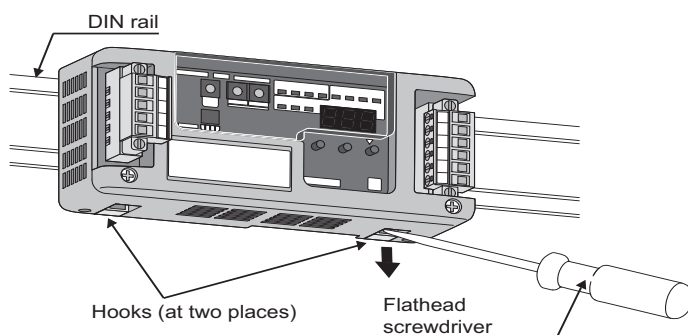
1. Insert a flathead screwdriver into the hook shown on the left and pull the hook downward to remove from the DIN rail (two hooks).

2. Lift the module on the hook side and remove it using the fixing tab as the supporting point.
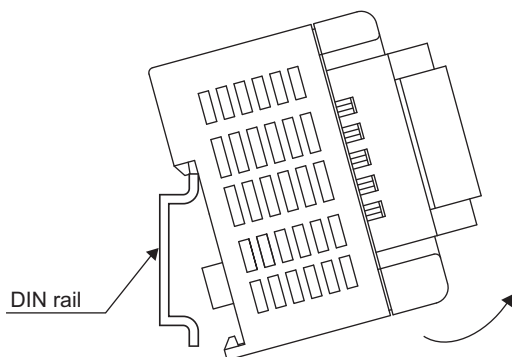
3.3 Mounting in Vertical Orientation

(1) Mounting on a DIN rail
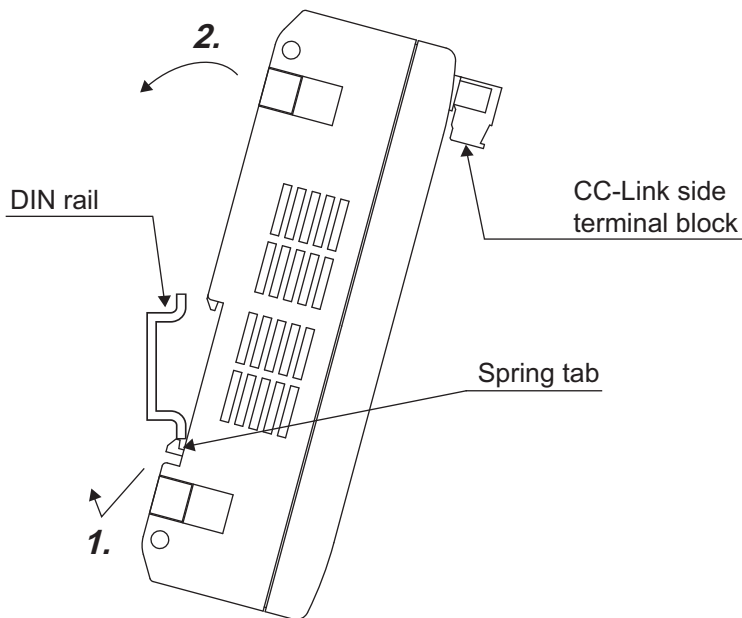
1. Hook the lower spring tab on the bottom of the module to the DIN rail.

2. Push and engage the NZ2AW1C2D2 in the DIN rail.

(2) Removing from a DIN rail
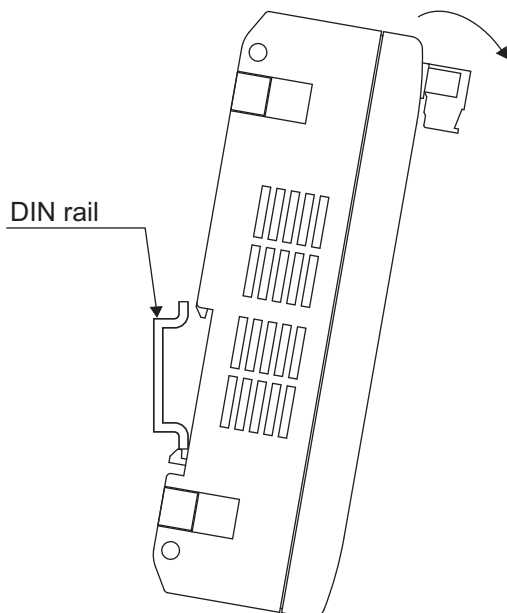
1. Pull the upper side of the NZ2AW1C2D2 to remove it from the DIN rail.

Point

When mounting the NZ2AW1C2D2 vertically, do not mount it in reverse orientation (with the CC-Link side terminal block placed down).
Doing so may cause the module to come off from the DIN rail due to vibration or other reasons.

CHAPTER 4 CONNECTIONS

4

4.1 CC-Link Side Terminal Block

The NZ2AW1C2D2 is handled as a remote device station on CC-Link. The CC-Link side terminal block is a connector-type terminal block which is easily connected and disconnected.

CC-Link side   Fixing screw
terminal block
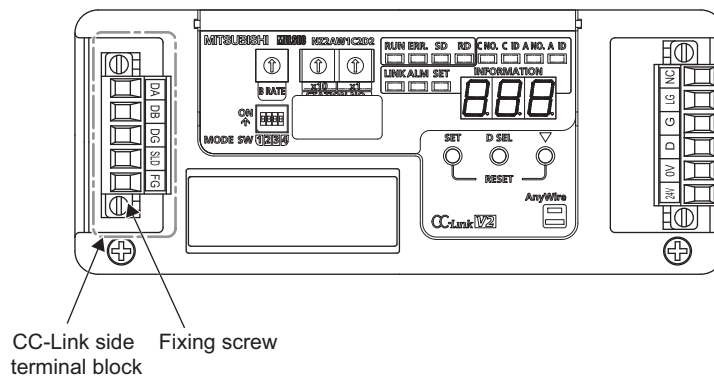
Manufacturer   : Phoenix Contact Co., Ltd. (Contact: http://www.phoenixcontact.com/)
Model   : MSTB2,5/5-STF-5,08AU
Tightening torque   : 0.5 to 0.6N•m

To tighten the connector, a flathead screwdriver having a tipped size of 0.6 × 3.5mm is required.
Before removing the CC-Link side terminal block, check that the fixing screws on both sides are completely loosened (removed from the socket).
Pulling with excessive force while the fixing screws on both sides are still tightened may cause damage to the devices.
Before connecting the connector, check that there are no short circuits due to the disconnected or frayed wires. Then tighten the screws at both sides securely. (Tightening torque: 0.5 to 0.6N•m)

Point

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

4.1.1   Connecting a CC-Link dedicated cable

The connection example of the CC-Link dedicated cable is shown below.
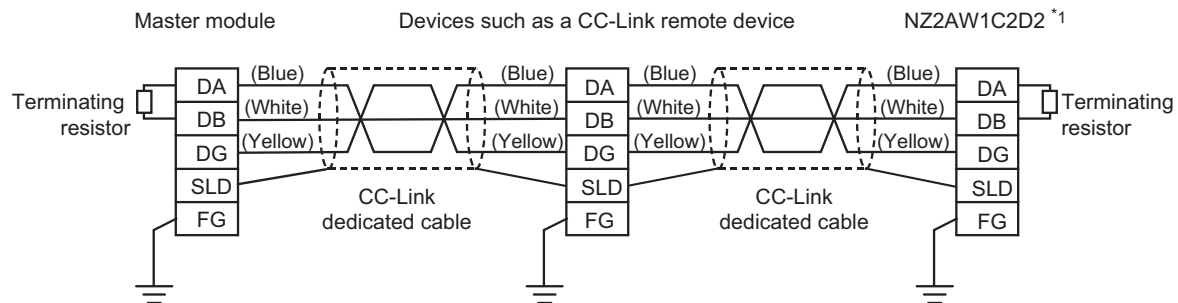
*1   SLD and FG are connected inside the module.

When the NZ2AW1C2D2 is the last station, mount a terminating resistor between DA and DB.
Users need to process the terminating resistor to be mounted on the NZ2AW1C2D2. Refer to the catalog or website of
Phoenix Contact Co., Ltd.
If the terminating resistor is not mounted, communication on the CC-Link side may fail.

4.1.2   Cable processing

Bare cables can be connected to the CC-Link side terminal block; however, for safety reasons, it is recommended to
connect crimped bar terminals.
For wiring, use the connection cables listed in Page 14, Section 2.2.1 and tighten them within the applicable tightening
torque range.
Use UL-listed solderless terminals and for processing, use a tool recommended by their manufacturer.
For processing and installing the CC-Link dedicated cables, refer to "CC-Link Cable Wiring Manual" published by CC-
Link Partner Association.

[Recommended bar terminals (manufactured by Phoenix Contact Co., Ltd.)]
 • For crimping one wire to any of the DA, DB, or DG terminal   : AI 0,5-8 WH
 • For crimping one wire to the SLD terminal   : AI 2,5-8 BU[1]
 • For crimping two wires collectively to any of the DA, DB, or DG terminal   : AI-TWIN 2 x 0,5-8 WH[2]
 • For crimping two wires collectively to the SLD terminal   : AI-TWIN 2 x 1,5-8 BK[2][3]

*1   When crimping one SLD wire to the solderless terminal, twist the shield mesh and the drain wires together.
*2   When connecting two wires to one terminal, crimp the two wires together to the TWIN bar terminal.
      When TWIN bar terminals are used for the CC-Link side terminal block, the maximum wire diameter is 1.25mm^2.
*3   When crimping the SLD wire to the TWIN bar terminal, twist the drain wires only.

4.2 AnyWire DB A20 Side Terminal Block

The AnyWire DB A20 side terminal block is a connector-type terminal block which is easily connected and disconnected.

Fixing screw

AnyWire DB A20 side terminal block
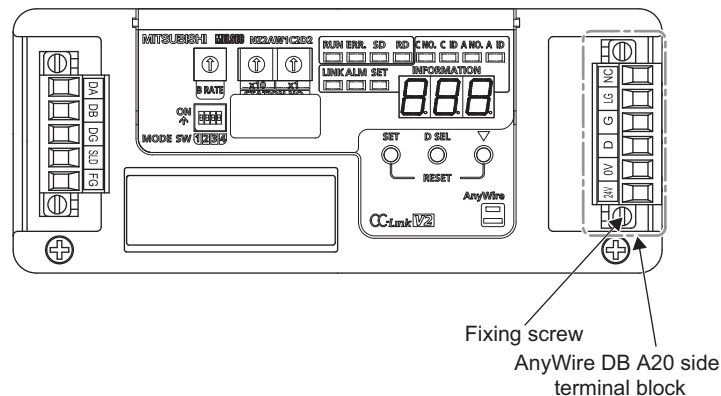
Manufacturer   : Phoenix Contact Co., Ltd. (Contact: http://www.phoenixcontact.com/)
Model   : MSTBT2,5/6-STF-5,08
Tightening torque   : 0.5 to 0.6N•m

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

Before removing the AnyWire DB A20 side terminal block, check that the fixing screws on both sides are completely loosened (removed from the socket).

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

Before connecting the connector, check that there are no short circuits due to the disconnected or frayed wires. Then tighten the screws at both sides securely. (Tightening torque: 0.5 to 0.6N•m)

Point

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

4.2.1 Description of the terminals of an AnyWire DB A20 side terminal block

Terminal	Description
D	AnyWire DB A20 transmission signal terminals D: Transmission line (+), G: Transmission line (-)
G	Connect to the D and G terminals on the slave module and terminating unit.
24V	Power supply for the NZ2AW1C2D2.
0V	
LG	Connect the LG terminal to the neutral point of the noise filter inserted between the 24V and 0V terminals. Ground the LG terminal with the FG terminal on the CC-Link side at a single point.
NC	Do not connect anything to this terminal.

4.2.2   Cable processing

Bare cables can be connected to the AnyWire DB A20 side terminal block; however, for safety reasons, it is recommended to connect crimped bar terminals.
For wiring, use the connection cables listed in Page 14, Section 2.2.1 and tighten them within the applicable tightening torque range.
Use UL-listed solderless terminals and for processing, use a tool recommended by their manufacturer.

[Recommended bar terminals (manufactured by Phoenix Contact Co., Ltd.)]
- For processing a 0.75mm^2 wire   : AI 0,75-8 GY
- For processing a 1.25mm^2 wire   : AI 1,5-8 BK or others
- For processing a 2mm^2 wire   : AI 2,5-8 BU or others
- For processing two 0.75mm^2 wires   : AI-TWIN 2 x 0,75-8 GY
- For processing two 1.25mm^2 wires   : AI-TWIN 2 x 1,5-8 BK or others

When connecting two wires to one terminal, connect the two wires together to the TWIN bar terminal.

When TWIN bar terminals are used for these transmission line connectors, the maximum wire diameter is 1.25mm^2.
For details on sizes other than those listed above and crimping tools, refer to the catalog or website of Phoenix Contact Co., Ltd.

Point

● Do not run multiple transmission lines (D, G) using a multicore cable.
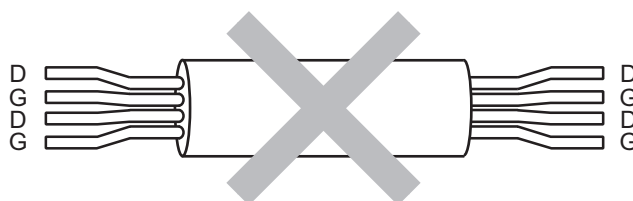
● Use the following line diameters for the transmission lines.
  - 200m or shorter: 0.75mm^2 to 1.25mm^2
  - 200m or longer: 0.9mm^2 to 1.25mm^2

● The voltage should not fall below the lower limit of the allowable voltage range due to the voltage drop caused by the cable.
  If the voltage falls below the lower limit, malfunctions may occur.
  If the voltage falls substantially, install the external power supply.

● Do not connect soldered cables directly to the terminals. Doing so may loosen the screws, resulting in a poor contact.

4.3 **Terminating Unit**

To ensure more stable transmission quality, connect a terminating unit (AT2 manufactured by Anywire Corporation) to the end of the transmission line.

■ Terminating unit connection

Basic

Important	Connect a terminating unit at the end of a line for one master module. Transmission distance 50m (total length)

Transmission distance 50m (total length)
200m (total length)
1km (total length)
3km (total length)
The setting applies to all the transmission speeds.
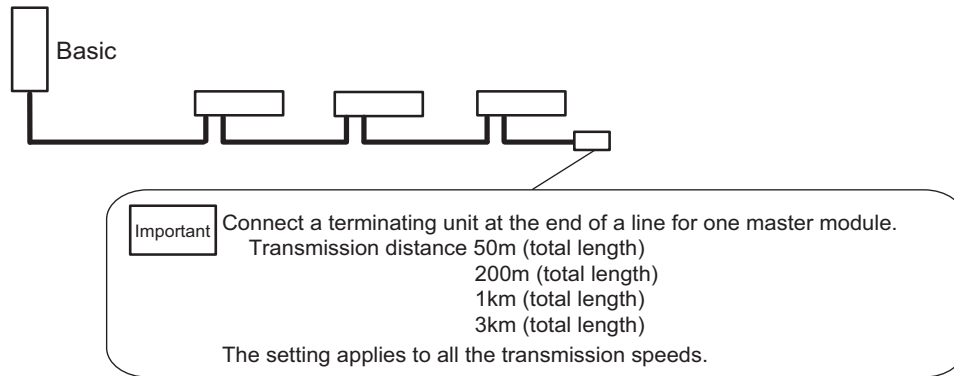
■ Branch of transmission lines (transmission distance: 1km)

<Example>

AnyWire at the end

Branch line: 200m

Main line: 500m

Branch line: 300m

Important	Connect one terminating unit at the end of a branch line that exceeds 200m. Contact us if more than two branch lines exceed 200m.

■ Total length

Basic

A

B

The total length of the transmission distance for the AnyWire DB A20 system can be calculated from A + B. Note that the total length should not exceed the maximum transmission distance set for the system to branch lines.

CHAPTER 5 SWITCH SETTING

5.1 CC-Link Side

(1) Station number setting switch

Set the station number of CC-Link using the station number setting switch (STATION NO. switch).

Since the NZ2AW1C2D2 occupies four stations, the maximum setting value is 61.

Station number setting switch
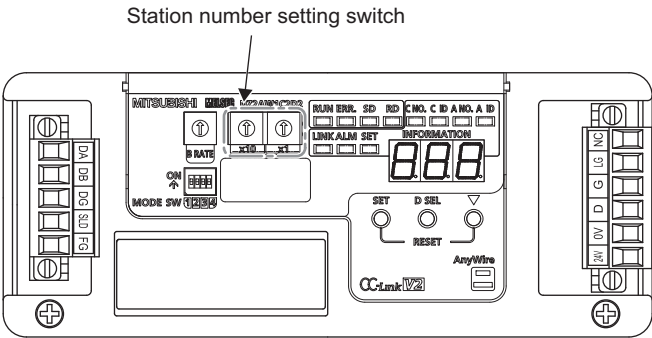
Station number[1]	Station number setting switch	
	×10	×1
1	0	1
2	0	2
3	0	3
4	0	4
⋮	⋮	⋮
60	6	0
61	6	1

[1] All the switch positions are set to zero (0) when the product is shipped.
    The ERR. LED turns on when the switch is set to zero (0) or 62 or larger.

(2) Transmission speed setting switch

Set the communication speed of CC-Link using the transmission speed setting switch (B RATE switch).
Set the same value as the master station.

Transmission speed setting switch
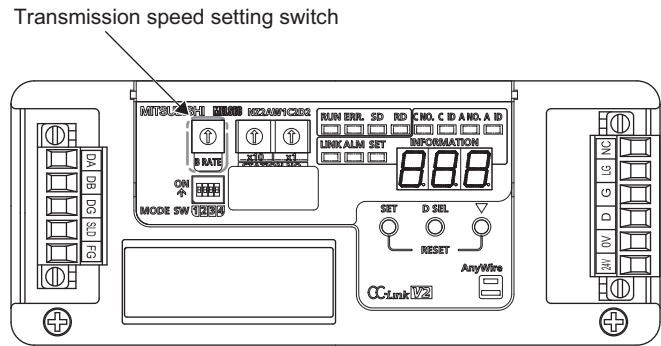
Setting value of the transmission speed setting switch	Communication speed
0[*1]	156Kbps
1	625Kbps
2	2.5Mbps
3	5Mbps
4	10Mbps
5 to F	Unable to set[*2]

*1   The switch is set to zero (0) when the product is shipped.
*2   The ERR. LED turns on when the switch is set to five (5) or larger.

5.2 AnyWire DB A20 Side

(1) Specification selection switch (MODE switch)

Set the transmission specifications of AnyWire DB A20 using the specification selection switch (MODE switch).
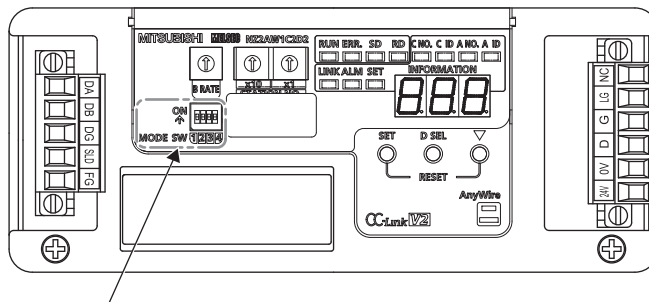
Specification selection switch (MODE switch)

SW-1, 2   Set the transmission specification using a combination of ON/OFF of 1 and 2.

SW-3   System reserve (Set the switch to OFF. Using the module with this switch set to ON may cause malfunction.)

SW-4   Select the clear mode/hold mode of the output.

Specification selection switch		Specifications
1	2	
OFF	OFF	2kHz 3km
OFF	ON	7.8kHz 1km
ON	OFF	31.3kHz 200m
ON	ON	125kHz 50m

Specification selection switch 4	Operation mode	Specifications
OFF	Clear mode	Clears the output on the AnyWire DB A20 side when the CPU module is switched to STOP from RUN or the Reset switch is pressed. Forced output is not available from the programming tool.
ON	Hold mode	Holds the output on the AnyWire DB A20 side when the CPU module is switched to STOP from RUN or the Reset switch is pressed. Forced output is available from the programming tool.

Point

● Switch off the power supply before setting the specification selection switch.

● Set the specification selection switch according to the number of transmission points to be used.

● If the transmission specifications of the NZ2AW1C2D2 do not match with those of the connected slave module, transmission cannot be performed correctly.
Failure to do so may cause malfunction.

● The specification selection switch is recessed from the front surface.
When setting the switch, use a precision driver or a similar tool and be careful not to damage any of the internal boards.

5.3 Reset Operation

The NZ2AW1C2D2 can be reset by pressing the SET switch with the "▼" switch pressed. After reset, release both of the switches at the same time.

When the SET switch is held down for three seconds or longer, the automatic address detection is performed. Do not try to reset the NZ2AW1C2D2 during automatic address detection. Otherwise, the address of the slave module may not be registered successfully.
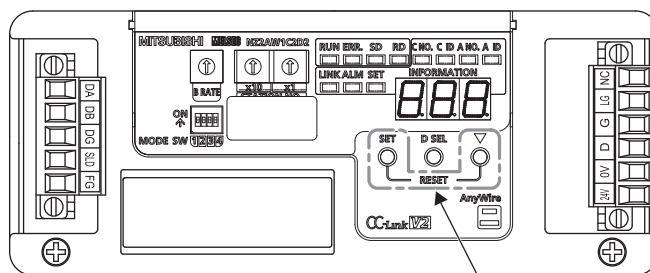
SET switch and ▼ switch

During reset, the transmission signal goes into suspend state and the slave module for output operates according to the setting assigned to Switch 4 of the specification selection switch. Check that no problem exists in the system when resetting the module.

CHAPTER 6 MEMORY MAPS

The NZ2AW1C2D2 occupies four stations starting from the station number specified in the CC-Link system and operates in the extended cyclic double mode.
Remote input (RX) and remote output (RY) use 224 points (14 words), respectively.
Remote registers (RWw and RWr) use 32 words, respectively.
For information about the buffer memory address of the master module, refer to the user's manual of the master module used.

6.1 Remote I/O Signal List

Signal direction: From the NZ2AW1C2D2 to the master module		Signal direction: From the master module to the NZ2AW1C2D2	
Remote input (RX)	**Name**	**Remote output (RY)**	**Name**
RXn0	The D/G line short-circuited detection	RYn0	Automatic address detection command output[*1]
RXn1	The D/24V line short-circuited detection	RYn1 to RY(n+D)9	Use prohibited
RXn2	24V not applied, or voltage drop detection		
RXn3	Transmission line disconnection detection, slave module failure, or power not applied		
RXn4 to RXn7	Use prohibited		
RXn8 to RXnF	No. of error addresses		
RX(n+1)0 to RX(n+1)F	Error address 1		
RX(n+2)0 to RX(n+2)F	Error address 2		
RX(n+3)0 to RX(n+3)F	Error address 3		
RX(n+4)0 to RX(n+4)F	Error address 4		
RX(n+5)0 to RX(n+5)F	Error address 5		
RX(n+6)0 to RX(n+6)F	Error address 6		
RX(n+7)0 to RX(n+7)F	Error address 7		
RX(n+8)0 to RX(n+8)F	Error address 8		
RX(n+9)0 to RX(n+9)F	Error address 9		
RX(n+A)0 to RX(n+A)F	Error address 10		
RX(n+B)0 to RX(n+B)F	Error address 11		
RX(n+C)0 to RX(n+C)F	Error address 12		
RX(n+D)0 to RX(n+D)9	Use prohibited		
RX(n+D)A	Error status flag	RY(n+D)A	Error reset request flag
RX(n+D)B	Remote station READY	RY(n+D)B	Use prohibited
RX(n+D)C	Use prohibited	RY(n+D)C	
RX(n+D)D		RY(n+D)D	Use prohibited
RX(n+D)E		RY(n+D)E	
RX(n+D)F		RY(n+D)F	

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

*1 Turning it from OFF to ON starts the automatic address detection.
However, it does not start if a transmission error occurs in AnyWire DB A20.

Point

● How to check error addresses
Below is the example of when the NZ2AW1C2D2 is station No. 1 and RX is assigned starting from X1000 on GX Works2.

The following are the areas related to error addresses:
   • X1000 to X100F: RX0000 to RX000F
   • X1010 to X101F: RX0010 to RX001F
   • X1020 to X102F: RX0020 to RX002F
        :
   • X10C0 to X10CF :RX00C0 to RX00CF

	Bit No.															
X1000 to X100F	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Number of modules with an error detected								Spare				D-G line disconnection	24V not supplied/low voltage	D-24V line short-circuited	D-G line short-circuited
X1010 to X101F	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0				Error address 1											
X1020 to X102F	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0				Error address 2											
:	:				:											
X10C0 to X10CF	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0				Error address 12											

● Expression of error addresses
   • Binary values for 0 to 511 = Output slave module address
   • Binary values for 512 to 1023 - 512 = Input slave module address

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6.2 Remote Register List

Input or output of AnyWire DB A20 uses the remote register of CC-Link.

Thirty-two words are used respectively for input and output.

Set the address for slave modules in the range from 0 to 511 for both input and output modules.

CC-Link side remote register input	AnyWire DB A20 side input address	CC-Link side remote register output	AnyWire DB A20 side output address
RWrn+0_H	0 to 15	RWwm+0_H	0 to 15
RWrn+1_H	16 to 31	RWwm+1_H	16 to 31
RWrn+2_H	32 to 47	RWwm+2_H	32 to 47
⋮	⋮	⋮	⋮
RWrn+$1D_H$	464 to 479	RWwm+$1D_H$	464 to 479
RWrn+$1E_H$	480 to 495	RWwm+$1E_H$	480 to 495
RWrn+$1F_H$	496 to 511	RWwm+$1F_H$	496 to 511

m, n: Address assigned to the master station by the station number setting

6.3 Correspondence between Remote Registers and AnyWire Addresses

This section describes the correspondence between the remote register and AnyWire address.

Ex. When RWrn = D1000 is set with the network parameters of GX Works2

Remote register	Bit No.															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn + 0_H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn + 1_H	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16

D1001.F = AnyWire input address: 31   D1000.0 = AnyWire input address: 0

The slave module requires "Address setting" which specifies the start number assigned in the transmission frame. The settings are configured in 2-point unit. The addresses of both an input slave module (e.g. input remote I/O module) and an output slave module (e.g. output remote I/O module) start from "0", and the area later than that number is occupied corresponding to the number of module points.

Ex. Assignment of two 8-point input remote I/O modules

Remote register	Bit No.															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn + 0_H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

AnyWire address: 15 - AnyWire address: 0

Occupied area by the address 8 on the 8-point input remote I/O module   Occupied area by the address 0 on the 8-point input remote I/O module

6.4 Error Reset

"Remote station READY" is turned on after the reset by supplying the power.

"Error status flag" is set (OFF to ON) when an error occurs. Turning on "Error reset request flag" from off resets "Error status flag" (ON to OFF), provided that the error cause has been removed.

"Remote station READY" is reset (ON to OFF) when an error occurs. "Remote station READY" remains reset (OFF) until "Error reset request flag" is turned off from on.
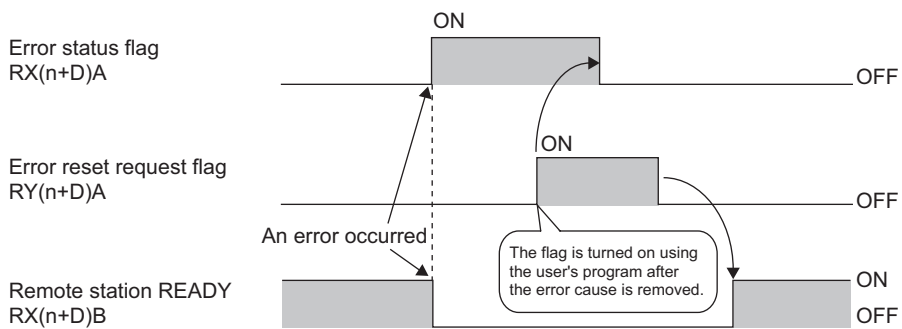
CHAPTER 7 PREPARATION FOR OPERATION

This chapter provides examples of the parameter setting for the MELSEC-Q series systems.

(1) System configuration

Master module: QJ61BT11N
Start I/O number: 0000 (X0 to X1F/Y0 to Y1F)

CC-Link Ver 2.00

NZ2AW1C2D2 (station No.1)

AnyWire DB A20
remote I/O module (input)*1

AnyWire DB A20

AnyWire DB A20
remote I/O module (output)*1

AnyWire DB A20
terminating unit*1
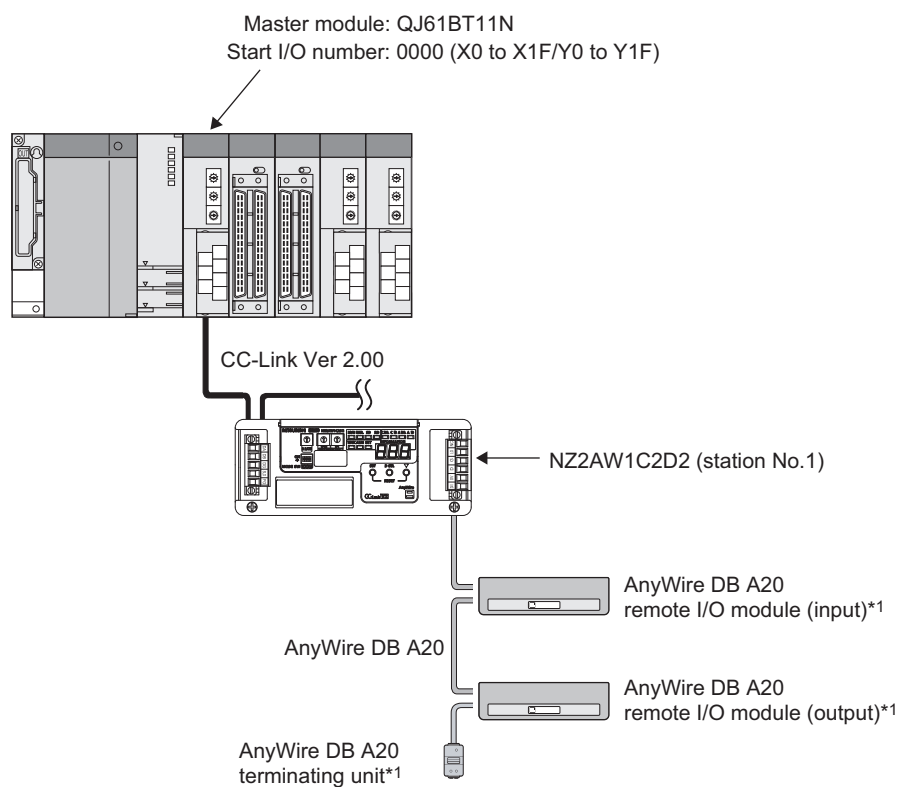
*1: Manufactured by Anywire Corporation

(2) Correlation among a CPU module, a mater module, the NZ2AW1C2D2, and an AnyWire DB A20 remote I/O module
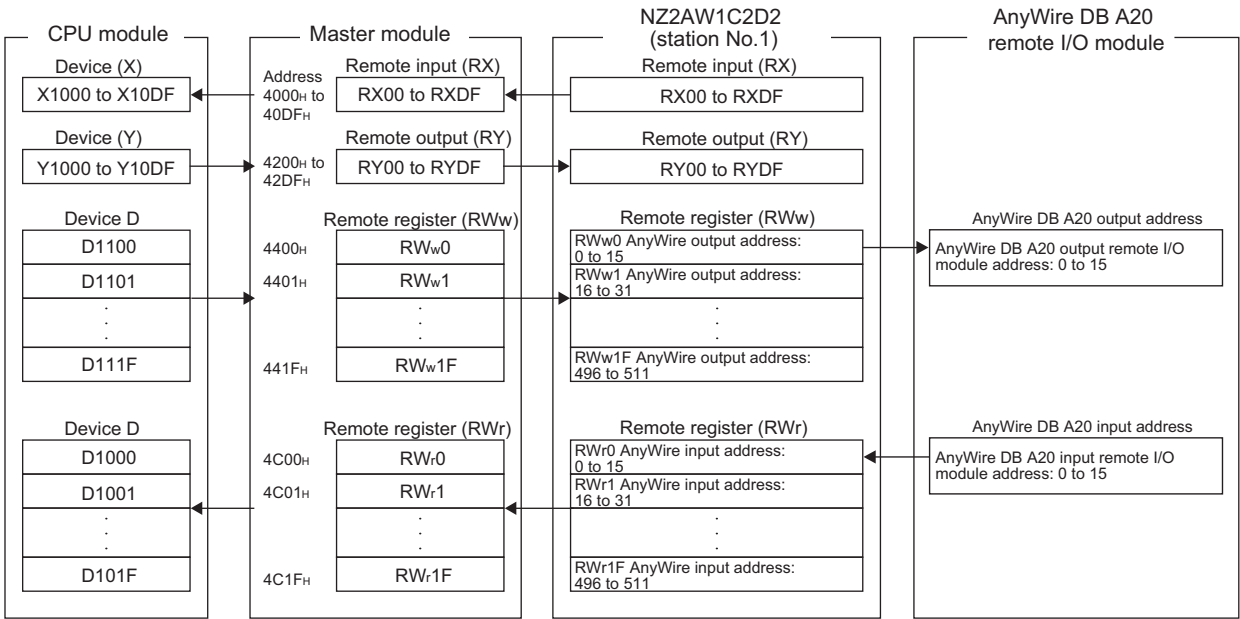
(3) Parameter setting

Parameter setting is required for CC-Link communication between the master station and the NZ2AW1C2D2.

Parameter setting for CC-Link can be configured by the network parameter of the programming tool.

(Setting can also be configured using the program.)

Point

Configure the parameter setting by either the network parameter setting or program.
Redundant settings by different means may cause unstable output because of the duplicated access to the buffer memory.

7

[Setting example]

	1
Start I/O No.	0000
Operation Setting	Operation Setting
Type	Master Station ▼
Master Station Data Link Type	PLC Parameter Auto Start ▼
Mode	Remote Net(Ver.2 Mode) ▼
Total Module Connected	1
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	D1000
Remote Register(RWw)	D1100
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	3
Automatic Reconnection Station Count	1
Standby Master Station No.	
PLC Down Select	Stop ▼
Scan Mode Setting	Asynchronous ▼
Delay Time Setting	0
Station Information Setting	Station Information
Remote Device Station Initial Setting	Initial Setting
Interrupt Settings	Interrupt Settings

Double-click "Station Information" to open the "Station Information Setting" window as shown below.

Station No.	Station Type	Expanded Cyclic Setting	Exclusive Count	Remote Station Points	Reserve/Invalid Station Select	Intelligent Buffer Select(Word)		
						Send	Receive	Automatic
1/1	Ver.2 Remote Device Station ▼	Double ▼	Exclusive Station 4 ▼	224Points ▼	No Setting ▼			

In this sample setting, the correspondence between each signal and device is as indicated in the following table.

Signal	Name	Corresponding device for station No. 1
RX	The D/G line short-circuited detection	X1000
	The D/24V line short-circuited detection	X1001
	24V not applied or voltage drop detection	X1002
	Transmission line disconnection detection, slave module failure, or power not applied	X1003
	Use prohibited	X1004 to X1007
	No. of error addresses	X1008 to X100F
	Error address 1	X1010 to X101F
	⋮	⋮
	Error address 12	X10C0 to X10CF
	Use prohibited	X10D0 to X10D9
	Error status flag	X10DA
	Remote station READY	X10DB
	Use prohibited	X10DC to X10DF
RY	Automatic address detection command output	Y1000
	Use prohibited	Y1001 to Y10D9
	Error reset request flag	Y10DA
	Use prohibited	Y10DB - Y10DF
RWr	AnyWire DB A20 input address 0	D1000.0
	AnyWire DB A20 input address 1	D1000.1
	⋮	⋮
	AnyWire DB A20 input address 14	D1000.E
	AnyWire DB A20 input address 15	D1000.F
RWw	AnyWire DB A20 output address 0	D1100.0
	AnyWire DB A20 output address 1	D1100.1
	⋮	⋮
	AnyWire DB A20 output address 14	D1100.E
	AnyWire DB A20 output address 15	D1100.F

7

CHAPTER 8 POWER-ON AND PART INDICATION

Check each connection before turning on the power.

The status of the indicator is as shown below when each setting and connection are correct.
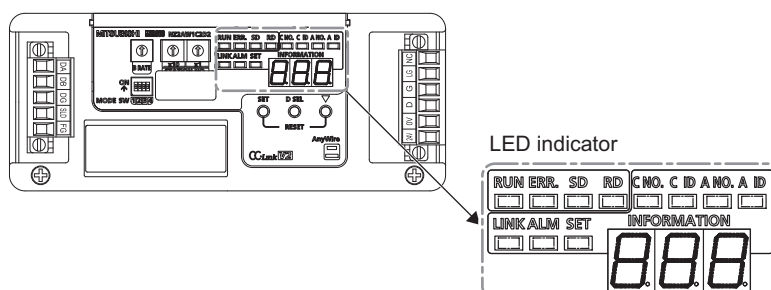
LED indicator

■ LED indication on the NZ2AW1C2D2

LED on the CC-Link side		LED on the AnyWire DB A20 side	
Indicator	**Status**	**Indicator**	**Status**
RUN	On	LINK	Flashing
ERR.	Off	ALM	Off
SD	On	SET	Off
RD	On		

■ LED indication on a slave module

LED on the AnyWire DB A20 side	
Indicator	**Status**
RDY	On
LINK	Flashing

Check the LED indication described above before performing the automatic address detection. (⟾ Page 44, Section 9.1)

When the indication is different from the information above, check the indication condition and possible cause. Then eliminate the problem according to the troubleshooting steps. (⟾ Page 52, CHAPTER 12)

Point

● When the power is turned on for the first time, "A-4" is indicated on the INFORMATION display. This is because the slave module has not been registered by the automatic address detection operation.

● Registering a slave module by the automatic address detection operation enables the disconnected transmission line location detection function.

● Data is transmitted regardless of the automatic address detection operation.

● After the automatic address detection operation is carried out, the number of slave modules is indicated on the INFORMATION display.
If the indicated number differs from the actual number of connected modules, it may possibly be due to duplicated address setting, incorrect wiring, or effect of noise. Eliminate the problem according to the troubleshooting steps.
(⟾ Page 52, CHAPTER 12)

8.1 LED Indication Specification

(1) LED on the CC-Link side

Indicator	Name	Color		Description
RUN	CC-Link communication status	Green	On	Normal communication
			Off	• Transmission cable disconnected • Transmission cable connected incorrectly • Wrong transmission speed selected • Hardware reset under way
ERR.	CC-Link error display	Red	On	• CRC error • Incorrect setting of the station number setting switch (set to zero or 62 or larger) • Incorrect setting of the transmission speed setting switch (set to 5 or larger)
			Off	• Normal communication • Hardware reset under way
			Flashing	• Flashing regularly (0.4 second): Setting for the station number or transmission speed setting switch has been changed while the power is on. • Flashing irregularly: A terminating resistor has not been connected. The module or CC-Link dedicated cable is affected by noise.
SD	CC-Link data transmission display	Yellow	On	Data transmission under way
			Off	• Transmission cable disconnected • Transmission cable connected incorrectly • Wrong transmission speed selected • Hardware reset under way
			Flashing	A terminating resistor has not been inserted on the CC-Link master module and the last station module.
RD	CC-Link data reception display	Yellow	On	Data reception under way
			Off	• Transmission cable disconnected • Transmission cable connected incorrectly • Hardware reset under way
			Flashing	A terminating resistor has not been inserted on the CC-Link master module and the last station module.

(2) LED on the AnyWire DB A20 side
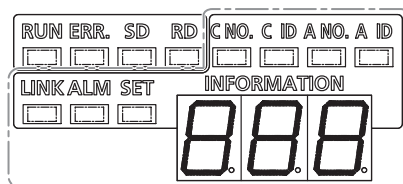
Indicator	Name	Color	Description	
LINK	AnyWire DB A20 transmission status	Green	On	Module operating status
			Off	Module failure
ALM	AnyWire DB A20 alarm display	Red	On	D/G line disconnection, or no response from the slave module
			Slow flashing[*1]	The D/G or D/24V line short-circuited, or the equivalent status
			Rapid flashing[*2]	24VDC is not supplied, or the supply voltage is too low
			Off	During normal transmission
SET	Automatic address detection display	Yellow	On	During automatic address detection operation
			Off	During normal transmission
C NO.	INFORMATION indication	Green	On	No. of connected modules displayed
C ID		Green	On	Connection address displayed
A NO.		Green	On	No. of error modules displayed
A ID		Green	On	Error address displayed
INFORMATION (Segment indication)	AnyWire DB A20 connection information	-	The no. of connected modules is displayed in normal operation (the ALM LED off), and the alarm code is displayed in the case of an error (the ALM LED on).	
			A-1	The D/G line short-circuited
			A-2	The D/24V line short-circuited
			A-3	24VDC is not supplied, or the supply voltage is too low
			A-4	Transmission line disconnection, slave module failure, or power not applied

*1   "Slow flashing": at approximately one-second intervals.
*2   "Rapid flashing": at approximately 0.2-second intervals.

Point

● Indication of "A-1", "A-2", or "A-3" on the INFORMATION display is restored, not retained, when the error is removed.

● Indication of "A-4" on the INFORMATION display is retained until the power is turned off, the error is reset, or the automatic address detection is performed.

● When the D SEL switch or ▼ switch is not operated for about five seconds, the indication shows the number of the connected modules in normal operation and the alarm code in the case of an error.

(3) Display selection switch

Select indication on the INFORMATION display by using the D SEL or ▼ switch.
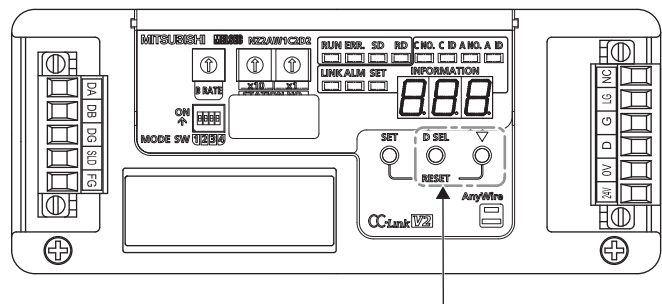
Display selection switch
(D SEL switch and ▼ switch)

The following table lists indication displayed using the D SEL switch..

INFORMATION display	Error description
Normal operation	→ C.No.→ C.ID
Error (in the case of A-4)	Alarm code → A.No.→ A.ID → C.No.→ C.ID
Error (in the case other than A-4)	Alarm code → C.No.→ C.ID

Pressing the ▼ switch while the C ID LED or the A ID LED is on displays the address of the slave module. The addresses are displayed in hexadecimal.

INFORMATION display	Description
000_H to $1FF_H$	Address of the output slave module
200_H to $3FF_H$	Address of the input slave module

CHAPTER 9 MONITORING FUNCTION

The AnyWire DB A20 slave module has a specific ID (address). By sending an ID (address) and receiving a response from the slave module having that ID (address), the NZ2AW1C2D2 detects disconnection and the existence of the slave module.

Through the automatic address detection operation, the NZ2AW1C2D2 stores the addresses of the currently connected slave modules in the EEPROM.

This information is stored even when the power is turned off.

Then the NZ2AW1C2D2 sends registered IDs (addresses) in order. If the module does not receive a response from the corresponding slave modules, it regards them as disconnected and the ALM LED shows the disconnection.

The addresses of the error slave modules can be checked using the INFORMATION display.

9.1 Automatic Address Detection

Automatic address detection is a function to store the IDs (addresses) of the connected slave modules in the EEPROM of the NZ2AW1C2D2.

Operate the automatic address detection in the following situations.

- When starting the system operation with all the slave modules connected to the bridge module
- When adding a slave module
- When removing a slave module
- When changing the address of a slave module

9.1.1 Automatic address detection operation

Use the SET switch or Automatic address detection command output (RYn0) to operate the automatic address detection.

Using the SET switch
Procedure

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

2. **Keep pressing the SET switch until the SET LED (yellow) turns on.**

3. **When the SET LED turns on, flashes, and turns off, the ID (address) has been stored.**

SET switch
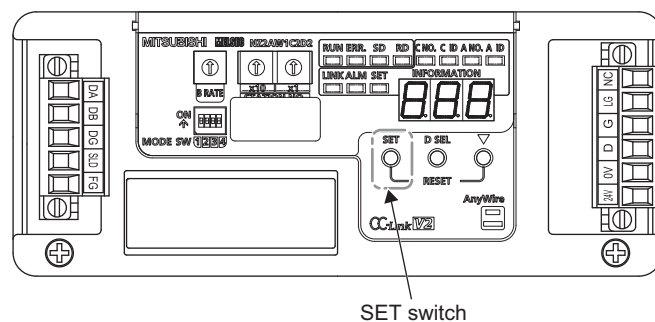
Using Automatic address detection command output (RYn0)

Procedure

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

2. **Turn Automatic address detection command output (RYn0) from off to on.**

(For details on Automatic address detection command output (RYn0), refer to Page 32, CHAPTER 6.)

3. **When the SET LED turns on, flashes, and turns off, the ID (address) has been stored.**

Point

● During the automatic address detection, input or output may not be accepted. When operating the automatic address detection, stop executing the programmable controller's program to ensure that the equipment is not interfered.

● When an error such as a short circuit occurs in AnyWire DB A20, or for approximately five seconds after the power is turned on or the module is reset, the automatic address detection cannot be operated.

● Do not operate the automatic address detection when a disconnection error has occurred while in operation. Otherwise, disconnection information may be lost.

9.2 Monitoring Operation

Registered IDs (addresses) are sent in order. If the slave module does not reply, disconnection is detected.

In the case of disconnection, the ALM LED turns on and the input RXn3 turns on.

This error information is maintained until the power is turned off or Error reset request flag (RY(n+D)A) is turned on.

Point

To reset the ALM LED indication detected during operation or line disconnection detection (RXn3: ON), remove the error cause and reset the power of the NZ2AW1C2D2 or turn on Error reset request flag (RY(n+D)A).
The automatic address detection operation also clears the indication and the flag. However, if an unresponding module exists, its ID (address) is not registered; therefore it is not monitored.

CHAPTER 10 CC-LINK I/O RESPONSE TIME

10

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

Remark •

When only one NZ2AW1C2D2 is connected to the master station, the link scan time is about 1.4ms at a transmission speed of 10Mbps.
The table below provides the transmission delay time on the CC-Link side in the asynchronous mode when the sequence scan time of the master station is "10ms", the extended cyclic setting is "Double", and the processing time of the NZ2AW1C2D2 is "1ms".

Signal direction	Transmission delay time	
	TYP	MAX
Remote device station (RX) to the master station (RX)	Approx. 15.3ms	Approx. 19.6ms
Master station (RY) to the remote device station (RY)	Approx. 16.7ms	Approx. 21.0ms
Remote device station (RWr) to the master station (RWr)	Approx. 15.3ms	Approx. 19.6ms
Master station (RWw) to the remote device station (RWw)	Approx. 16.7ms	Approx. 21.0ms

• •

Memo

CHAPTER 11 TRANSMISSION TIME

This chapter describes the transmission cycle time and transmission delay time of AnyWire DB A20.

11.1 Transmission Cycle Time

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

11.1.1 Transmission cycle time of the NZ2AW1C2D2

The transmission cycle time of the NZ2AW1C2D2 is listed in the table below.

Setting of the maximum no. of transmission points	Transmission cycle time			
	125kHz (50m)	31.3kHz (200m)	7.8kHz (1km)	2kHz (3km)
1024 points (512 points × 2)	4.3ms	17.1ms	68.2ms	262.9ms

11.1.2 Effects of the double check system

(1) Input

Unless the same data is received twice successively on the NZ2AW1C1BY side, the input area data is not updated (double check). Therefore, a minimum of one-transmission cycle time and a maximum of two-transmission cycle time are required as the data response time.

Signals of two-transmission cycle time or less may not be captured depending on the timing.

Therefore, to ensure the response, provide an input signal that is longer than two-transmission cycle time.
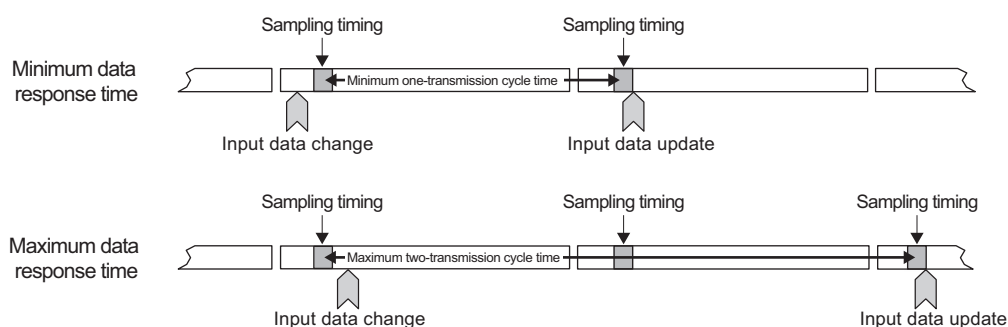
(2) Output

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

11.2 Transmission Delay Time

This section describes the transmission delay time (time until data is transmitted).

11.2.1 Slave module (input) to bridge module

The figure below shows the time between a signal input to the slave module and the bridge module remote device (RX) turning on/off.
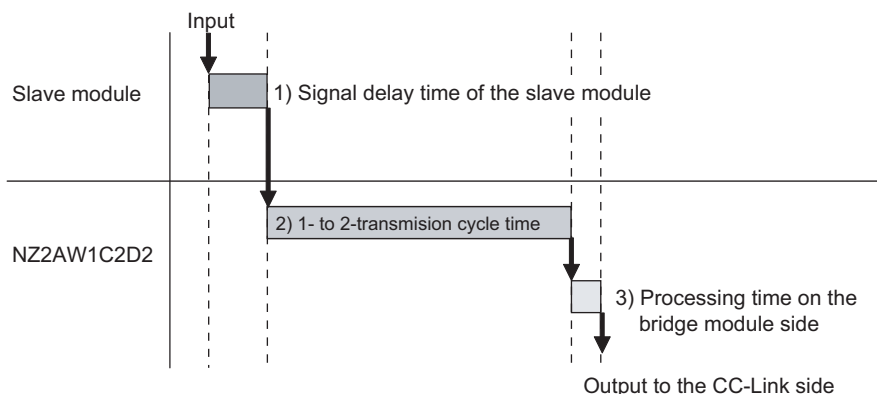
[Calculation formula]
1) Signal delay time of the slave module + 2) Transmission cycle time × 2 + 3) Processing time on the bridge module side [ms]

[Calculation example]
1) Signal delay time of the slave module
   Signal delay time of the slave module is 0.17ms.: 0.17[ms]
2) Transmission cycle time × 2
   When the transmission speed is set to 31.3kHz: 17.1 × 2 = 34.2[ms]
3) Processing time on the bridge module side
   Processing time on the bridge module side = Transmission speed clock width × 16
   When the transmission speed is set to 31.3kHz: $(1 ÷ 31.3k) × 16 = 0.511$[ms]

Therefore, the transmission delay time is $0.17 + 34.2 + 0.511 ≒ 35$[ms].

11.2.2 Bridge module to slave module (output)

The figure below shows the time between the bridge module remote device (RY) turning on/off and the slave module output turning on/off.
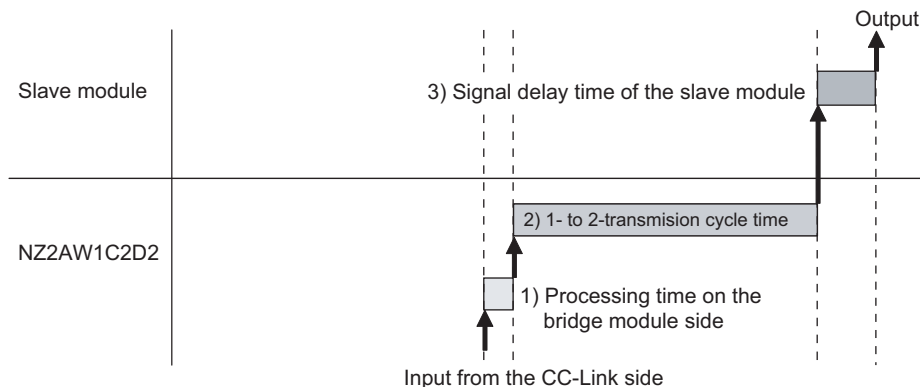
[Calculation formula]
1) Processing time on the bridge module side + 2) Transmission cycle time × 2 + 3) Signal delay time of the slave module [ms]

[Calculation example]
1) Processing time on the bridge module side
   Processing time on the bridge module side = Transmission speed clock width × 16
   When the transmission speed is set to 31.3kHz: (1 ÷ 31.3k) × 16 = 0.511[ms]
2) Transmission cycle time × 2
   When the transmission speed is set to 31.3kHz: 17.1 × 2 = 34.2[ms]
3) Signal delay time of the slave module
   Signal delay time of the slave module is 0.01ms.: 0.01[ms]

Therefore, the transmission delay time is 0.511 + 34.2 + 0.01 ≒ 35[ms].

CHAPTER 12 TROUBLESHOOTING

If the transmission does not start normally, check the following items and perform the troubleshooting.

- The CC-Link cable is properly connected.
- The terminating resistor of CC-Link is properly connected.
- A unique station number has been set for each station on CC-Link.
- AnyWire DB A20 devices are being supplied with 24VDC power.
- The LINK LED on the slave module of AnyWire DB A20 is flashing.
- The address settings of AnyWire DB A20 are correct and unique.

Remark •

The reference pages for each specification required during troubleshooting are listed below.

• •

For details on the entire AnyWire system, refer to the "AnyWire DB A20 Series Technical Manual" (manufactured by Anywire Corporation).

12.1 Troubleshooting Flow

12.1.1 When transmission does not start

```
                    ┌─────────────────────────────┐
                    │  Transmission does not start. │
                    └─────────────────────────────┘
                                  │
                                  ▼
            ◇ Is the LINK LED on the bridge ──NO──▶ ┌──────────────────────────────┐
              module flashing?                       │ The applicable module may be  │
                    │                                │ in failure. Please consult    │
                   YES                               │ your local Mitsubishi         │
                    ▼                                │ representative.               │
                                                     └──────────────────────────────┘
            ◇ Is the ALM LED on the ──────NO──────▶
              bridge module off?                     ( 🔖 Page 56, Section 12.1.3   )
                    │                                Refer to the troubleshooting steps for when
                   YES                               the ALM LED on the bridge module is on or
                    ▼                                flashing.

            ◇ Is the RDY LED on the slave ──NO──▶   ┌──────────────────────────────────────┐
              module on?                             │ The external power supply voltage may be │
                    │                                │ insufficient. Check the following:    │
                   YES                               │ 1. Is the external power supply voltage within │
                    ▼                                │    the specified range?               │
                                                     │ 2. Is the power supply stable? (Has a │
                                                     │    momentary power failure for 0.6ms or longer │
                                                     │    occurred in the 24VDC power supply?) │
                                                     │ 3. Isn't the power cable disconnected? │
                                                     │ 4. Isn't there any reverse connection, │
                                                     │    loose screw, or short-circuited wiring? │
                                                     │ 5. Are the capacity of the external power supply │
                                                     │    and the diameter of the power supply cable │
                                                     │    appropriate?                       │
                                                     └──────────────────────────────────────┘
            ◇ Is the LINK LED on the slave ──NO──▶
              module flashing?                       ( 🔖 Page 57, Section 12.1.4   )
                    │                                Refer to the troubleshooting steps for when
                   YES                               the LINK LED on the slave module does
                    ▼                                not flash.

            ◇ Is the ERR. LED on the CC-Link ──NO──▶ ┌──────────────────────────────┐
              master station flashing?                │ The applicable module may be  │
                    │                                 │ in failure. Please consult    │
                   YES                                │ your local Mitsubishi         │
                    ▼                                 │ representative.               │
                                                      └──────────────────────────────┘
    ┌──────────────────────────────────────┐
    │ Perform the troubleshooting steps for when │
    │ the ERR. LED on the CC-Link master station │
    │ is flashing.                               │
    └──────────────────────────────────────┘
```

12.1.2 When the ERR. LED on the CC-Link master station is flashing

```
          ┌──────────────────────────┐
          │ The ERR. LED on the      │
          │ master station is flashing.│
          └──────────────────────────┘
                      │
                      ▼
              ╱Is the╲               NO
           ╱ parameter setting ╲ ──────────►  ┌──────────────────────────┐
          ╱ consistent with the  ╲            │ Correct the parameter    │
          ╲ system configuration ╱            │ setting or the system    │
           ╲    used?   ╱                      │ configuration used.      │
              ╲     ╱                          └──────────────────────────┘
               │YES                                      │
               ▼                                         │
            ╱Are the╲                NO                  │
          ╱link special registers╲ ───►  ┌────────────────────────┐
         ╱ SW0080 to SW0083 (data ╲      │ The master station is  │
         ╲ link status of other    ╱     │ in failure.            │
          ╲ stations) of the master╱     └────────────────────────┘
           ╲ station on? ╱
               │YES
               ▼
           ╱Are the╲                  NO
         ╱link special registers╲ ──────────────────┐
        ╱ SW0098 to SW009B (station╲                │
        ╲ number duplication status)╱               │
         ╲ of the master station  ╱                 │
          ╲    on?    ╱                              │
               │YES                                 ▼
               ▼                          ┌────────────────────────┐
   ┌────────────────────────┐            │ Check the module of    │
   │ Check the module of    │────────────│ which SW0080 to SW0083  │
   │ which SW0098 to SW009B  │            │ are on.                │
   │ are on.                │            └────────────────────────┘
   └────────────────────────┘
```

Check on the master station
Check on the slave station

```
               ▼                                 ▼
          ╱Has the╲              NO         ╱Is the power╲        NO
        ╱ station number ╲ ───►┌────────┐   ╲   on?   ╱ ──────►┌────────────┐
        ╲ setting switch ╱     │Correctly│     ╲   ╱           │Power on the│
         ╲ been correctly╱     │configure│      │YES           │ module.    │
          ╲ configured? ╱      │the station│    │              └────────────┘
               │YES            │number    │     │
               │               │setting    │     ▼
               │               │switch.   │ ╱Is the ALM LED╲   NO
               │               └────────┘ ╱ on the bridge   ╲ ──►┌──────────────────┐
               │                   │      ╲ module off?    ╱     │(☞ Page 56,       │
               │                   │        ╲          ╱         │  Section 12.1.3 )│
               │                   ▼           │YES              │Refer to the      │
               │          ┌──────────────┐     │                 │troubleshooting   │
               │          │Power on the  │     │                 │steps for when the│
               │          │module again. │     │                 │ALM LED on the    │
               │          └──────────────┘     │                 │bridge module is  │
               ▼                  │            │                 │on or flashing.   │
   ┌────────────────────────┐     │            │                 └──────────────────┘
   │ The applicable module  │     │            │
   │ is in failure.         │     │            │
   └────────────────────────┘     │            │
               │                  │            │
               ▼                  ▼            ▼
             (1)                (2)          (3)
```

① ② ③

Is the RUN LED on? — NO →

Has the station number setting switch been correctly configured? — NO → Correctly configure the station number.

YES → Power on the module again.

Is the transmission speed setting correct? — NO → Correctly configure the transmission speed setting.

YES → Power on the module again.

Is the communication cable properly wired?*1 — NO → Properly wire the communication cable.

YES → The applicable module is in failure (transmission speed setting switch).

Has the station number setting switch been correctly configured? — NO → Correctly configure the station number.

YES → The applicable module is in failure (station number setting switch).

Power on the module again.

Completed

*1   Check for short circuit, reverse connection, disconnection, terminating resistor, FG connection, total length, and distance between stations.

12

12.1.3 When the ALM LED on the bridge module is on or flashing

```
                        ┌─────────────────────────┐
                        │   The ALM LED on the     │
                        │  bridge module is on or  │
                        │       flashing.          │
                        └─────────────────────────┘
                                    │
                                    ▼
                        ╱─────────────────────╲
                       ╱  Is the ALM LED slowly ╲         YES        ┌────────────────────────────────────────┐
                       ╲ flashing (at approx. 1-second ╱ ──────────► │ Check the following:                    │
                        ╲    intervals)?       ╱                     │ 1. Isn't the D/G signal line short-     │
                         ╲───────────────────╱                      │    circuited?                           │
                                    │                               │ 2. Aren't the D and 24V cables in contact?│
                                   NO                               │ 3. Isn't there any reverse connection or │
                                    │                               │    loose screw on the AnyWire DB A20 side │
                                    ▼                               │    terminal block?                      │
                        ╱─────────────────────╲                     └────────────────────────────────────────┘
                       ╱  Is the ALM LED rapidly ╲       YES
                       ╲ flashing (at approx. 0.2-second ╱──────────►┌────────────────────────────────────────┐
                        ╲    intervals)?       ╱                     │ The external power supply voltage for the│
                         ╲───────────────────╱                      │ master module may be insufficient. Check │
                                    │                               │ the following:                          │
                                   NO                               │ 1. Is the 24VDC power supply supplying  │
                                    │                               │    power to the master module properly? │
                                    ▼                               │ 2. Isn't there any reverse connection,  │
                                                                    │    loose screw, or short circuit on the │
                                                                    │    24VDC power supply wiring?           │
                                                                    └────────────────────────────────────────┘
┌─────────────────────────────────────────────────────────────────┐
│ If the ALM LED is on, the D/G signal line may be disconnected or  │
│ the slave module is not responding. Check the following:          │
│ 1. Isn't the D/G signal line/cable disconnected?                  │
│ 2. Isn't there any reverse connection or loose screw on the       │
│    transmission cable connector?                                  │
│ 3. Was the automatic address detection correctly executed?        │
│    (☞ Page 44, Section 9.1  )                                     │
│ 4. Is the slave module in normal state? (Refer to the             │
│    troubleshooting steps for the slave module.)                   │
└─────────────────────────────────────────────────────────────────┘
```

12.1.4 When the LINK LED on the slave module does not flash

```
          ┌────────────────────────────┐
          │  The LINK LED on the slave │
          │  module does not flash.    │
          └────────────────────────────┘
                        │
                        ▼
          ╱────────────────────────╲      NO
         ╱ Is the external power supply ╲──────────┐
         ╲ voltage for the slave module ╱          ▼
          ╲  within the specified range? ╱   ┌──────────────────────────────┐
           ╲────────────────────────╱       │ Adjust the external power     │
                   │ YES                     │ supply voltage within the     │
                   ▼                         │ specified range.              │
          ╱────────────────────────╲        └──────────────────────────────┘
         ╱  Is the switch setting of the ╲   NO
         ╲  transmission speed consistent ╲──────────┐
          ╲ with that of the bridge module?╱         ▼
           ╲────────────────────────╱        ┌──────────────────────────────┐
                   │ YES                      │ Correctly set the transmission│
                   ▼                          │ speed and reset the power     │
          ╱────────────────────────╲         │ supply.                       │
         ╱   Was the transmission line ╲  NO  └──────────────────────────────┘
         ╲   wiring already checked?   ╱──────────┐
          ╲────────────────────────╱             ▼
                   │ YES                   ┌────────────────────────────────────────┐
                   ▼                       │ Check the following:                     │
       ┌────────────────────────────────┐ │ 1. Isn't the D/G terminal short-circuited?│
       │ The applicable module may be in │ │ 2. Isn't the D/G transmission line       │
       │ failure. Please consult your    │ │    disconnected?                         │
       │ local Mitsubishi representative. │ │ 3. Isn't there any reverse connection or │
       └────────────────────────────────┘ │    loose screw?                          │
                                           └────────────────────────────────────────┘
```

12.1.5 When the slave module does not operate as expected

```
      ┌──────────────────────────┐
      │  The slave module does not │
      │   operate as expected.     │
      └──────────────────────────┘
                   │
                   ▼
         ◇ Is the terminating unit ◇  ──NO──►  ┌──────────────────────────────────────┐
           properly connected?                 │ If the terminating unit is not properly│
                   │                            │ connected, transmission becomes unstable.
                  YES                           │ Check the following:                   │
                   │                            │                                        │
                   ▼                            │ 1. Is the terminating unit connected properly?
         ◇ Is the address setting of ◇ ──NO──► │ 2. Isn't the terminating unit reverse-connected?
           the slave module correct?            └──────────────────────────────────────┘
                   │                            ┌──────────────────────────────────────┐
                  YES                           │ Check the following:                   │
                   │                            │                                        │
                   ▼                            │ 1. Isn't the address of the slave module
         ◇ Is the I/O indication LED ◇ ──NO──► │    duplicated?                         │
           on the slave module on?              │ 2. Is the address setting of the slave module
                   │                            │    correct?                            │
                  YES                           └──────────────────────────────────────┘
                   │                            ┌──────────────────────────────────────┐
                   ▼                            │ For the output, check the memory map.  │
         ◇ Is the transmission line ◇  ──NO──► │ For the input, check the operating current of
           length in accordance with            │ the sensor, remaining voltage, and memory
           the specification?                    │ map.                                   │
                   │                            └──────────────────────────────────────┘
                  YES                           ┌──────────────────────────────────────┐
                   │                            │ Check the following:                   │
                   ▼                            │                                        │
         ◇ Is the transmission line ◇ ──NO──►  │ 1. Check that the total length of the transmission
           thickness in accordance with         │    line is in accordance with the specification.
           the specification?                    └──────────────────────────────────────┘
                   │                            ┌──────────────────────────────────────┐
                  YES                           │ Check the following:                   │
                   │                            │                                        │
                   ▼                            │ 1. Check that the diameter of the transmission
      ┌──────────────────────────┐             │    line is in accordance with the specification.
      │ The applicable module may  │             └──────────────────────────────────────┘
      │ be in failure. Please consult│
      │ your local Mitsubishi      │
      │ representative.            │
      └──────────────────────────┘
```

The slave module does not operate as expected.

Is the terminating unit properly connected? — NO → If the terminating unit is not properly connected, transmission becomes unstable. Check the following:
1. Is the terminating unit connected properly?
2. Isn't the terminating unit reverse-connected?

YES ↓

Is the address setting of the slave module correct? — NO → Check the following:
1. Isn't the address of the slave module duplicated?
2. Is the address setting of the slave module correct?

YES ↓

Is the I/O indication LED on the slave module on? — NO → For the output, check the memory map. For the input, check the operating current of the sensor, remaining voltage, and memory map.

YES ↓

Is the transmission line length in accordance with the specification? — NO → Check the following:
1. Check that the total length of the transmission line is in accordance with the specification.

YES ↓

Is the transmission line thickness in accordance with the specification? — NO → Check the following:
1. Check that the diameter of the transmission line is in accordance with the specification.

YES ↓

The applicable module may be in failure. Please consult your local Mitsubishi representative.

12.2 Symptom Checklist

(1) CC-Link side

Symptom	Check item	Check method	Check
The data link is failed in the entire system.	Is the cable disconnected?	Check the condition of the cable visually or by line test. Check Line status (SW0090).	☐
	Are the terminating resistors (110Ω) connected to the stations on both ends?	Connect the terminating resistors included with the master/local modules to the stations on both ends.	☐
	Is there an error in the CPU module of the master station?	Check the error code of the CPU module and take corrective actions.	☐
	Were the parameters set in the master station?	Check the parameter settings. Remote network-Ver.2 mode or Remote network-addition mode Ver.2 remote device station Double, Exclusive Station 4	☐
	Is Data link startup request (Yn6 or Yn8) turned on?	Check the program.	☐
	Is there an error in the master station?	Check the following. • Host parameter status (SW0068) • Switch setting status (SW006A) • Loading status (SW0069) • Whether or not the ERR. LED on the master station is flashing.	☐
	Does the scan time exceed the maximum value while the synchronous mode is selected?	Select the asynchronous mode or reduce the transmission speed.	☐
The remote input (RX) of the NZ2AW1C2D2 cannot be loaded.	Is the remote device station in the data link?	Check the status by the following methods. • LED indication status of the module • Other station data link status (SW0080 to SW0083)	☐
	Is the data being read from the correct address of the remote input RX (buffer memory)?	Check the program.	☐
	Was it set as a reserved station?	Check the parameters.	☐
	Is the same station number used for multiple stations?	Check the station numbers.	☐
The remote output (RY) of the NZ2AW1C2D2 cannot be turned on/off.	Is the remote device station in the data link?	Check the status by the following methods. • LED indication status of the module • Other station data link status (SW0080 to SW0083)	☐
	Is Refresh instruction (Yn0) of the master station turned on?	Check the program.	☐
	Is the data being written to the correct address of the remote output RY (buffer memory)?	Check the program.	☐
	Was it set as a reserved station?	Check the parameters.	☐
	Is the same station number used for multiple stations?	Check the station numbers.	☐
The data of the remote register (RWr) of the NZ2AW1C2D2 cannot be loaded.	Is the remote device station in the data link?	Check the status by the following methods. • LED indication status of the module • Other station data link status (SW0080 to SW0083)	☐
	Is the data being read from the correct address of the remote register RWr (buffer memory)?	Check the sequence program.	☐
	Was it set as a reserved station?	Check the parameters.	☐
	Is the same station number used for multiple stations?	Check the station numbers.	☐
Faulty stations cannot be detected.	Was it set as an error invalid station?	Check the parameters.	☐
	Is the same station number used for multiple stations?	Check the station numbers.	☐

(2) AnyWire DB A20 side

Symptom	Check item	Check method	Check
Data I/O is impossible.	■NZ2AW1C2D2 side		
	Is 24VDC being supplied appropriately?	Check the power voltage.	☐
	Is the D/G signal line connected correctly?	Check the wiring for AnyWire DB A20.	☐
	Was the MODE switch set correctly?	Check the MODE switch setting.	☐
	■Slave module side		
	Is 24VDC power being supplied appropriately?	Check the power voltage.	☐
	Is the D/G signal line connected correctly?	Check the wiring for AnyWire DB A20.	☐
	Was the address set correctly?	Check the address setting.	☐
	Is the transmission speed consistent with that of the bridge module?	Check the transmission speed setting.	☐
Data I/O is unstable.	Are AT2s (terminating units) connected? Are they connected in the correct polarities?	Check that the terminating units are connected correctly.	☐
	Does the actual transmission line length exceed the setting?	Check that the total length and transmission speed have been set correctly.	☐
	Is the shield line being used for multiple-point grounding?	Check the wiring for AnyWire DB A20.	☐
The RDY LED on the slave module is flashing.	Is the supply voltage within the allowable voltage range (21.6V to 27.6V)?	Check the power voltage.	☐
	Is the power supply line disconnected? Is the power supply terminal loose?	Check the wiring for AnyWire DB A20.	☐
	Is the transmission speed consistent with that of the bridge module?	Check the transmission speed setting.	☐
	Is the D/G signal terminal loose?	Check the wiring for AnyWire DB A20.	☐
	Is the D/G signal line disconnected?	Check the wiring for AnyWire DB A20.	☐
The ALM LED on the NZ2AW1C2D2 is on.	Is the D/G signal line disconnected?	Check the wiring for AnyWire DB A20.	☐
	At the startup, was the automatic address detection operated correctly?	Check the status of the slave module and the wiring of AnyWire DB A20, and perform the automatic address detection.	☐
	Are the screws on the terminal block loose?	Check the wiring for AnyWire DB A20.	☐
The ALM LED on the NZ2AW1C2D2 is flashing slowly[*1].	Is the DP/DN signal line short-circuited?	Check the wiring for AnyWire DB A20.	☐
	Are the cables connected to the D and 24V terminals in contact?	Check the wiring for AnyWire DB A20.	☐
The ALM LED on the NZ2AW1C2D2 is flashing rapidly[*2].	Is 24VDC power being supplied to the NZ2AW1C2D2? Is the voltage too low?	Check the power voltage. Check the wiring for AnyWire DB A20.	☐

*1   "Slow flashing": at approximately one-second intervals.
*2   "Rapid flashing": at approximately 0.2-second intervals.

Memo

APPENDIX

Appendix 1　EMC and Low Voltage Directives

Compliance with the EMC Directive, which is one of the EU directives, has been mandatory for the products sold within EU member states since 1996 as well as compliance with the Low Voltage Directive since 1997.
To prove the compliance with these Directives, manufacturers must issue an EC Declaration of Conformity and the products must bear a CE marking.

(1) Sales representative in EU member states

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

Appendix 1.1　Measures to comply with the EMC Directive

The EMC Directive sets two requirements for compliance: emission (conducted and radiated electromagnetic energy emitted by a product) and immunity (the ability of a product to function without being influenced by externally generated electromagnetic energy), and all applicable products are required to satisfy these requirements. This section summarizes the precautions for machinery constructed with this product to comply with the EMC Directive. These precautions are based on the requirements of the EMC Directive and the harmonized standards. However, they do not guarantee that the entire machinery constructed according to the descriptions complies with the EMC Directive. The manufacturer of the machinery must determine the testing method for compliance and declare conformity to the EMC Directive.

(1) Installation in a control panel

This product is an open type device and must be installed inside a control panel.[1]

This ensures safety as well as effective shielding of electromagnetic noise emitted from this product.

> [1]   Modules on the remote station in each network must be also installed inside the control panel.
> However, waterproof modules on the remote station can be installed outside the control panel.

(a) Control panel

- Use a conductive control panel.
- Mask off the area used for grounding when securing the top or bottom plate to the control panel using bolts.
- To ensure electrical contact between the inner plate and the control panel, mask off the bolt installation areas of an inner plate so that conductivity can be ensured in the largest possible area.
- Ground the control panel with a thick ground cable so that low impedance can be ensured even at high frequencies.
- Keep the diameter of the holes in the control panel 10cm or less.
  If the diameter is larger than 10cm, electromagnetic wave may be emitted. In addition, because electromagnetic wave leaks through a clearance between the control panel and its door, reduce the clearance as much as possible.
  The leakage of radio waves can be suppressed by the direct application of an EMI gasket on the paint surface.

The tests by Mitsubishi were conducted using a panel having the damping characteristics of 37dB (maximum) and 30db (average) (measured at 3m distance, 30 to 300MHz).

(b) Wiring a ground cable

Run the cable of this product as instructed below.

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

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(2) Cables

### (a) CC-Link dedicated cable

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

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

CC-Link Ver.1.10 compatible cable
Shield

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

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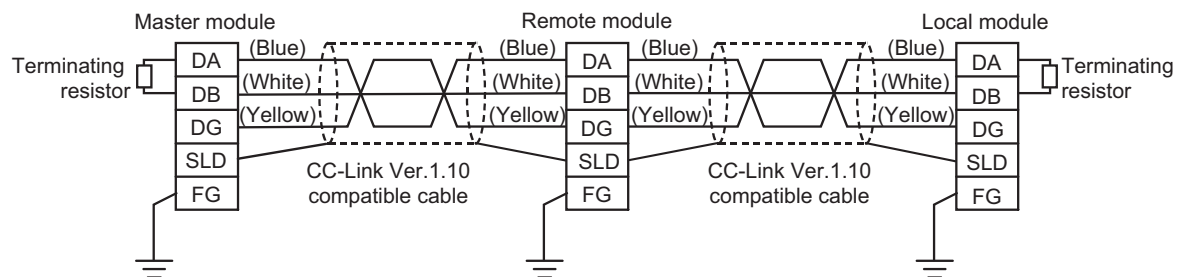

For the CC-Link dedicated cable, attach a ferrite core having the attenuation characteristics equivalent to that of ZCAT3035-1330 made by TDK Corporation as close to the CC-Link side terminal block of this product as possible. Use a ferrite core with two turns of wire as shown below.
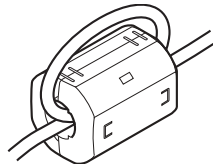
(b) AnyWire DB A20 cable

For the AnyWire DB A20 cable, attach a ferrite core having the attenuation characteristics equivalent to that of ZCAT3035-1330 made by TDK Corporation as close to the AnyWire DB A20 side terminal block of this product as possible. Use a ferrite core with two turns of wire as shown below.
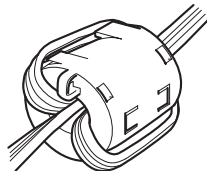
(c) Power cable for the 24VDC power supply terminal

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

(3) Power supply module

Use a CE-marked external power supply and ground the FG terminal.

(External power supply used for the tests conducted by Mitsubishi: PS5R-SF24 made by IDEC Corporation)

(4) Installation environment

Use this product in Zone A[*1].

*1   Zone means a category determined according to the industrial environment conditions and defined by the harmonized standard EN61131-2 of the EMC and Low Voltage Directives.

Zone C: Main power supply insulated from the public power supply by a special transformer

Zone B: Special power supply with the secondary surge protector from the main power (Rated voltage is assumed to be 300V or less.)

Zone A: Local power supply protected by an AC-DC converter or an insulating transformer from the special power supply (Rated voltage is assumed to be 120V or less.)

Appendix 1.2   Measures to comply with the Low Voltage Directive

The Low Voltage Directive does not apply to this product because it operates on 24VDC power supply.

For making the PLC system used comply with the Low Voltage Directive, refer to the section about the EMC and Low Voltage Directives in the user's manual of the CPU module to be used.

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Appendix 1 EMC and Low Voltage Directives
Appendix 1.2 Measures to comply with the Low Voltage Directive

REVISIONS

Print date	*Manual number	Revision
June 2011	SH(NA)-080993ENG-A	First edition
March 2013	SH(NA)-080993ENG-B	Revision due to compliance with EMC and UL/cUL

WARRANTY

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

1. Gratis Warranty Term and Gratis Warranty Range

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

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

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

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

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for one year after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

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

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

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

5. Changes in product specifications

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

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

SH(NA)-080993ENG-B(1303)MEE
MODEL: NZ2AW1C2D2-U-E
MODEL CODE: 13JZ62

MITSUBISHI ELECTRIC CORPORATION

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

Specifications subject to change without notice.