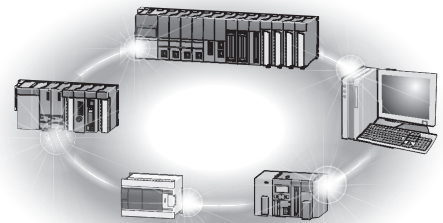


# Mitsubishi Programmable Controller

## CC-Link-AnyWire Bitty Bridge Module User's Manual

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-NZ2AW1C1BY



**Powered by**  
**Anywire**

This product was jointly developed and manufactured by Mitsubishi and Anywire Corporation.  
\*Note that the warranty on this product differs from that on other programmable controller products.  
(Refer to "WARRANTY" in this manual.)

***AnyWire Bitty***



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## PRECAUTIONS REGARDING WARRANTY AND SPECIFICATIONS

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The NZ2AW1C1BY 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  | NZ2AW1C1BY | Other programmable controller products<br>(e.g. MELSEC-Q series) |
|---|------------|--|
| Repair term after discontinuation of production | 1 year     | 7 years  |

### <Application of the EMC Directive>

| Item                    | NZ2AW1C1BY              | Other programmable controller products<br>(e.g. MELSEC-Q series) |
|-------------------------|-------------------------|--|
| Applicable EMC standard | EN61131-2 <sup>*1</sup> | 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                                | NZ2AW1C1BY                                   | Other programmable controller products<br>(e.g. MELSEC-Q series) |
|-------------------------------------|--|--|
| Applicable UL standard/cUL standard | UL508 <sup>*1</sup><br>CSA22.2 <sup>*1</sup> | UL508<br>CSA22.2   |

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

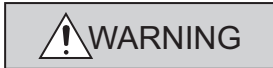
# ● SAFETY PRECAUTIONS ●

(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".



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



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 Bitty 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 Bitty 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 for the system in all phases 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 Bitty system.
- Use 24VDC stabilized power supplies for devices in the AnyWire Bitty 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.
- 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

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## **(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 65, Appendix 1.



# Memo

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# TERMS

Unless otherwise specified, this manual uses the following terms.

| Term                        | Description  |
|-----------------------------|--|
| NZ2AW1C1BY                  | The abbreviation for the CC-Link–AnyWire Bitty bridge module, NZ2AW1C1BY   |
| 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.<br>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 Bitty               | An original transmission system provided by Anywire Corporation.<br>This module supplies power using a transmission line, minimizing wiring for machines and equipment.<br>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)<br>Information input in bit units from the slave station to the master station.   |
| RY                          | Remote output (for CC-Link)<br>Information output in bit units from the master station to the slave station.   |
| RWw                         | Remote register (Write area for CC-Link)<br>Information output in 16-bit units from the master station to the slave station.   |
| RWr                         | Remote register (Read area for CC-Link)<br>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 NZ2AW1C1BY CC-Link–AnyWire Bitty bridge module (hereafter abbreviated as the NZ2AW1C1BY) used as a remote device station in the CC-Link system.

This module, a product of the joint development project with Anywire Corporation, allows the AnyWire Bitty system to be connected with CC-Link.

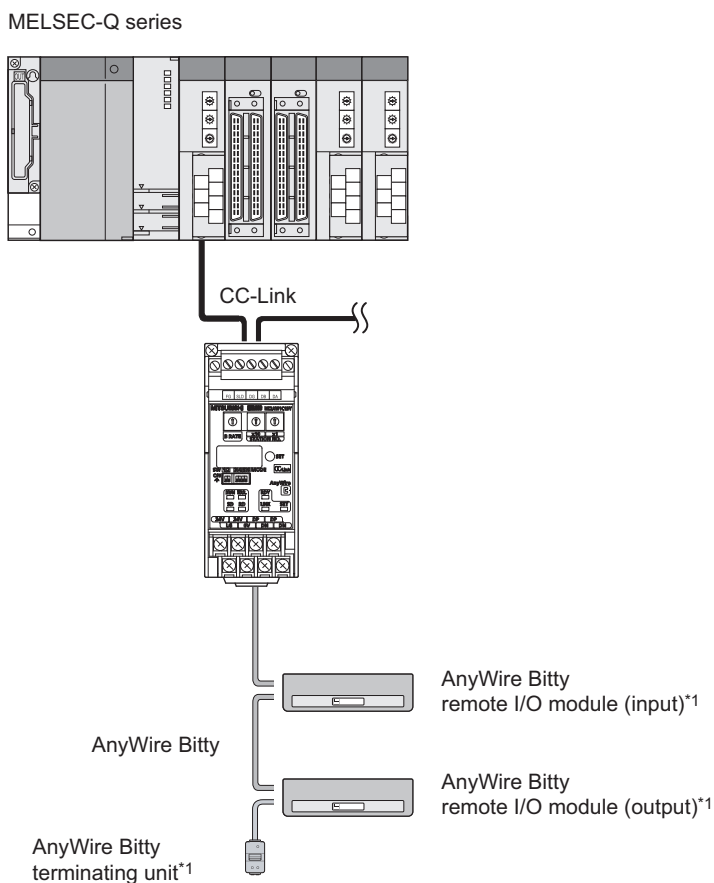
The AnyWire Bitty system provides a high-speed and highly reliable sensor network system.

## <Features of the NZ2AW1C1BY>

The NZ2AW1C1BY is the bridge module used for the connection between AnyWire Bitty having the DC transmission line system and CC-Link.

Disconnections can be detected even when the wiring is branched.

Up to 256 remote input points and 256 remote output points can be connected to one NZ2AW1C1BY module.



\*1: Manufactured by Anywire Corporation

## <Configuration of the AnyWire Bitty system>

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

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

# Memo

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# CHAPTER 2 SPECIFICATIONS

## 2.1 General Specifications

2

| 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 | No. 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 <sup>2</sup>   | —              |   |
|                                    |  | Under continuous vibration   | 5 to 8.4Hz   | —                     | 1.75mm         | —                                       |
|                                    |  |                              | 8.4 to 150Hz | 4.9m/s <sup>2</sup>   | —              |   |
| Shock resistance                   | Compliant with JIS B 3502 and IEC 61131-2 (147m/s <sup>2</sup> , 3 times each in X, Y, and Z directions) |                              |              |                       |                |   |
| Operating atmosphere               | No corrosive gas   |                              |              |                       |                |   |
| Operating altitude* <sup>1</sup>   | 0 to 2,000m  |                              |              |                       |                |   |
| Installation location              | Inside the control panel   |                              |              |                       |                |   |
| Overvoltage category* <sup>2</sup> | II or less   |                              |              |                       |                |   |
| Pollution degree* <sup>3</sup>     | 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. 1.10  |
|                                      | Communication speed  | 10M/5M/2.5M/625K/156Kbps (switching by transmission speed setting switch)  |
|                                      | Number of occupied stations  | Remote device stations 1 to 4 are occupied according to the setting of the specification selection switch.<br>1 station (RX/RX number of occupied points: 32 points) (RWr/RWw 4/4)<br>2 stations (RX/RX number of occupied points: 64 points) (RWr/RWw 8/8)<br>3 stations (RX/RX number of occupied points: 96 points) (RWr/RWw 12/12)<br>4 stations (RX/RX number of occupied points: 128 points) (RWr/RWw 16/16) |
|                                      | Number of connectable modules  | Up to 42   |
|                                      | Connection location of NZ2AW1C1BY  | No restriction   |
|                                      | Connection cable*1   | CC-Link dedicated cable/High-performance CC-Link dedicated cable/<br>Ver.1.10- compatible CC-Link dedicated cable  |
| AnyWire Bitty side                   | Transmission clock   | 27.0kHz  |
|                                      | Maximum transmission distance (total length) *2  | 100m   |
|                                      | Number of connectable modules  | Up to 128 (varies depending on the current consumption of each slave module)   |
|                                      | Transmission system  | DC transmission line total frame cyclic transmission   |
|                                      | Connection type  | Bus topology (multidrop system, T-branch system, tree branch system)   |
|                                      | Transmission protocol  | Dedicated protocol (AnyWire Bitty)   |
|                                      | Error control  | Double-check system  |
|                                      | Number of connected I/O points   | Up to 512 points (256 input points/256 output points)  |
|                                      | RAS function   | Disconnected transmission line location detection function, transmission line short detection function, transmission line voltage drop detection function  |
|                                      | Bitty transmission line*2  | <ul style="list-style-type: none"> <li>UL-compliant general-purpose 2-wire cable (VCTF, VCF 1.25mm<sup>2</sup>, 0.75mm<sup>2</sup>, rated temperature 70°C or higher)</li> <li>UL-compliant general-purpose wire (1.25mm<sup>2</sup>, 0.75mm<sup>2</sup>, rated temperature 70°C or higher)</li> </ul>   |
|                                      | 24VDC power cable  | <ul style="list-style-type: none"> <li>UL-compliant general-purpose 2-wire cable (VCTF, VCT 0.75 to 2.0mm<sup>2</sup>, rated temperature 70°C or higher)</li> <li>UL-compliant general-purpose wire (0.75 to 2.0mm<sup>2</sup>, rated temperature 70°C or higher)</li> </ul>   |
| Power supply for transmission line*2 | When using a 1.25mm <sup>2</sup> wire: Up to 2A<br>When using a 0.75mm <sup>2</sup> wire: Up to 1A |  |
| Maximum number of writes to EEPROM   | Up to 100000 times   |  |
| Common                               | Power supply   | Voltage 21.6 to 27.6VDC (24VDC -10 to +15%), ripple voltage 0.5Vp-p or lower<br>Recommended voltage 26.4V (24VDC +10%)<br>Current Module current consumption: 0.2[A]<br>(When 128 slave modules are connected, the load current is not included.)<br>Transmission line supply current: Up to 2[A] *2   |
|                                      | External dimensions  | 100mm(H)×40mm(W)×66mm(D)   |
|                                      | Weight   | 0.16kg   |



- \*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 Refer to the table below for information about the relationship among the total length, the diameter of connection cable, and the supply current for transmission line.

| Diameter of connection cable | Supply current for transmission line |  |
|------------------------------|--------------------------------------|--|
|                              | Total length of 50m or less          | Total length of 50m to 100m  |
| 1.25mm <sup>2</sup>          | Up to 2A                             | Up to 0.7A<br>Non-isolated slave modules cannot be used.                           |
| 0.75mm <sup>2</sup>          | Up to 1A                             | Only a fool-proof terminal can be connected (manufactured by Anywire Corporation). |

When a total length exceeds 50m, use isolated slave modules.

On some slave modules with cables, the diameter of module-integrated cables may be 0.75mm<sup>2</sup> or less. However, they can be used without any problem, provided that the diameter of connection cables meets the requirement above.

## 2.2.2 Scope of the power supply for the transmission line

To implement the AnyWire Bitty system, all conditions specified by the following calculation formulas (1) to (3) have to be met.

Calculation formula 1)

$$I \text{ (A)} = (I_{hin} \times m) + (I_{ho} \times n) + (I_{zdin} \times p) + (I_{zdo} \times q) \leq \text{the maximum value of the transmission line supply current}$$

The number of connected modules by type: m, n, p, q

Calculation formula 2)

$$V_m \text{ (V)} - \Delta V \text{ (V)} \geq 20V$$

Calculation formula 3)

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

### ■ Description of calculation formula (1)

#### (1) Related constant of non-isolated slave modules ( $I_{hin}$ , $I_{ho}$ )

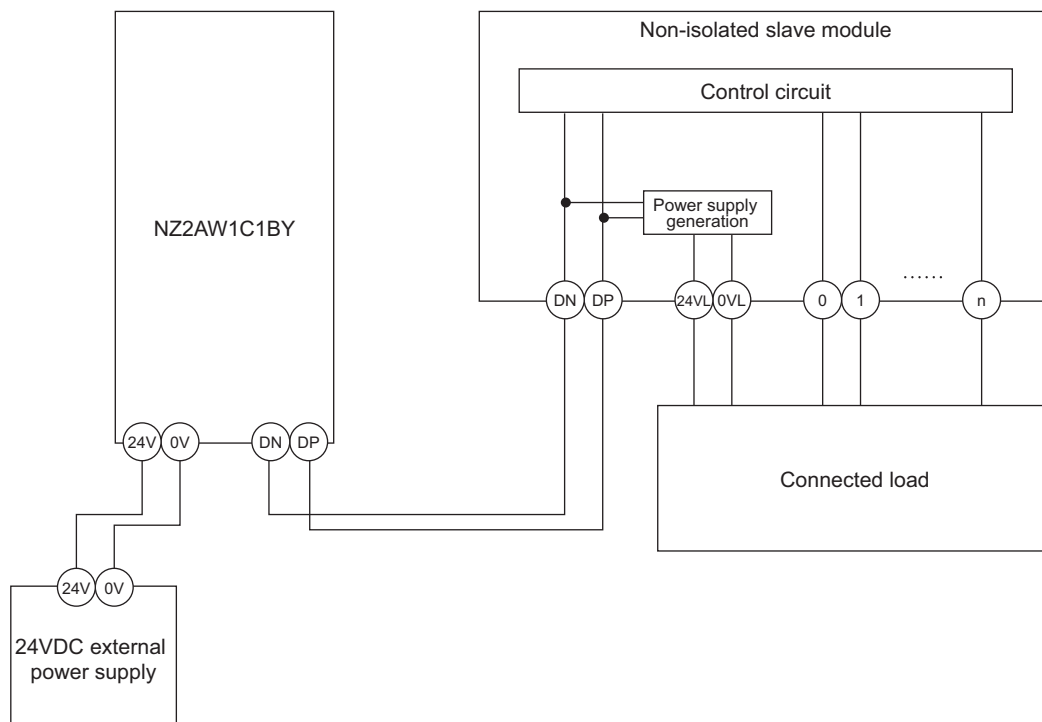
In non-isolated slave modules, current required for the control circuit and connection load is supplied through the transmission line (DP and DN).

$I_{hin}$ (A) = Current consumption of non-isolated input module

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

$I_{ho}$ (A) = Current consumption of non-isolated output module

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



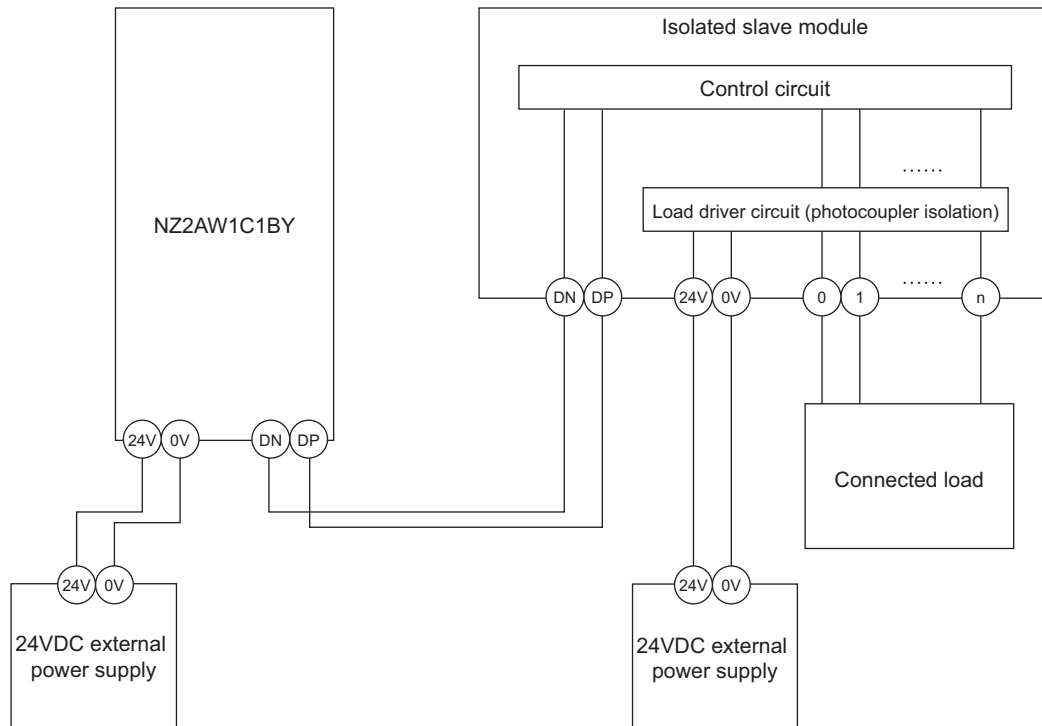
### Point

- 24VL and 0VL terminals are used to supply the power to the connected load. For details, refer to the manual for the slave module used.
- For information about the current consumption of slave modules, refer to the manual for the slave module used.

**(2) Related constant of isolated slave modules (Izdin, Izdo)**

In isolated slave modules, current required for the control circuit is supplied through the transmission line (DP and DN), whereas that for the connected load is supplied through an external power supply.

- Izdin(A) = Internal current consumption of isolated input module
- Izdo(A) = Internal current consumption of isolated output module



**Point**

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

**(3) Supply current for transmission line (I (A))**

The supply current for the transmission line of the AnyWire Bitty system is determined by the following formula.

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

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

**(4) Maximum value of supply current for transmission line**

For information about the maximum value of the supply current for the transmission line, refer to Page 14, Section 2.2.1.

■ Description of calculation formulas (2) and (3)

**(1) Vm: Supply voltage to master module (bridge module)**

Voltage 24VDC -10 to +15% (21.6 to 27.6VDC), Ripple 0.5Vp-p or less  
 Recommended voltage 26.4V

**(2) ΔV (V): Voltage drop between lines**

$\Delta V (V) = \text{Supply current for transmission line } I (A) \times \text{Line resistance } R (\Omega)$

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

- Line diameter 1.25mm<sup>2</sup> → Conductor resistance 0.015Ω/m
- Line diameter 0.75mm<sup>2</sup> → Conductor resistance 0.025Ω/m

■ Calculation example

The example shows how to check whether the total length of 50m is sufficient for the implementation in the following system.

Condition

- Non-isolated remote I/O module (input)
  - Number of I/O points : 4 points
  - Module current consumption : 29mA
  - Number of modules : 12
- Connected load (three-wire sensor)
  - Three-wire sensor current consumption : 13mA
  - Number of sensors : 4 per module
  - Power voltage : 24V ±10%
- Diameter of connection cable
  - Cable diameter : 0.75mm<sup>2</sup>
- Power supply for the NZ2AW1C1BY
  - Power voltage : 24V

Calculation result

Calculation formula (1)  $(I_{in}(A) \times m) = I(A) \leq \text{The maximum supply current to transmission lines}$   
 $(0.029 + (0.013 \times 4)) \times 12 = 0.972A \leq 1A \quad \rightarrow \text{Satisfied}$

Calculation formula (2)  $V_m(V) - \Delta V(V) \geq 20V$   
 $24 - (0.972 \times 50 \times 0.025 \times 2) = 24 - 2.43 = 21.57V \geq 20V \quad \rightarrow \text{Satisfied}$

Calculation formula (3)  $V_m(V) - \Delta V(V) \geq \text{The lowest limit of the allowable voltage range for connected load}$   
 The lowest limit of the allowable voltage range for connected load =  $24 - 24 \times 0.1 = 21.6V$   
 $21.57V < 21.6V \quad \rightarrow \text{Not satisfied}$

Based on the above calculation results (1) through (3), system implementation has been found impossible. However, changing the diameter of the connection cable and the power supply for the NZ2AW1C1BY enables the system to be configured.

## 2.2.3 Power supply sequence and handling of I/O data

---

An incorrect input/output may occur depending on the supply procedure of the power of the NZ2AW1C1BY and the power supply for slave module. Pay attention to the following points.

- Do not make the access related to this module until the remote station READY signal turns on after powering on the NZ2AW1C1BY.
- Supply the power according to the steps below.
  - (1) Turn on the programmable controller (CC-Link master module).
  - (2) Turn on the bridge module (NZ2AW1C1BY).
  - (3) Turn on the slave module (when isolated I/O module is used).
  - (4) Turn on (for 500ms or longer) and off Error reset request flag before accessing the slave module.

## 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 versions

The NZ2AW1C1BY is a remote device station supporting CC-Link Ver1.10.  
For the setting of "Mode" and "Station Information (Station Type)" of a Mitsubishi master module to which the NZ2AW1C1BY is connected, use any of the following combinations.

#### (1) Parameter settings of the master module for CC-Link Ver1.10 and earlier versions

| Master module                                | Parameter setting item     |                                    |
|--|----------------------------|------------------------------------|
|  | Mode setting <sup>*1</sup> | Station Information (Station Type) |
| QJ61BT11                                     | Remote Net(Ver.1 Mode)     | Remote Device Station              |
| AJ61BT11, AJ61QBT11, A1SJ61BT11, A1SJ61QBT11 | Online (remote net mode)   |                                    |
| FX2N-16CCL-M                                 | Online                     |                                    |

\*1 For the mode setting, refer to the user's manual of the master station used.

#### (2) Parameter settings of the master module for CC-Link Ver2.00

| Master module   | Parameter setting item                    |  |
|---|---|--|
|   | Mode setting <sup>*1</sup>                | Station Information (Station Type)     |
| QJ61BT11N, L26CPU-BT, L26CPU-PBT, LJ61BT11, Q80BD-J61BT11N, Q81BD-J61BT11 | Remote Net(Ver.1 Mode)                    | Remote Device Station                  |
|   | Remote Net(Ver.2 Mode)                    | Ver.1 Remote Device Station            |
|   | Remote Net(Additional Mode) <sup>*2</sup> | Ver.1 Remote Device Station            |
| FX3U-16CCL-M  | Remote Net(Ver.1 Mode)                    | Ver.1-compatible remote device station |
|   | Remote Net(Ver.2 Mode)                    |  |
|   | Remote Net(Additional Mode) <sup>*2</sup> |  |

\*1 For the mode setting, refer to the user's manual of the master station used.

\*2 When there is a station number used as "Ver.2 Remote Device Station" in the existing system, specify the station number of additional "Ver.1 Remote Device Station" before specifying that of "Ver.2 Remote Device Station".

## 2.3.3 CC-Link dedicated instruction

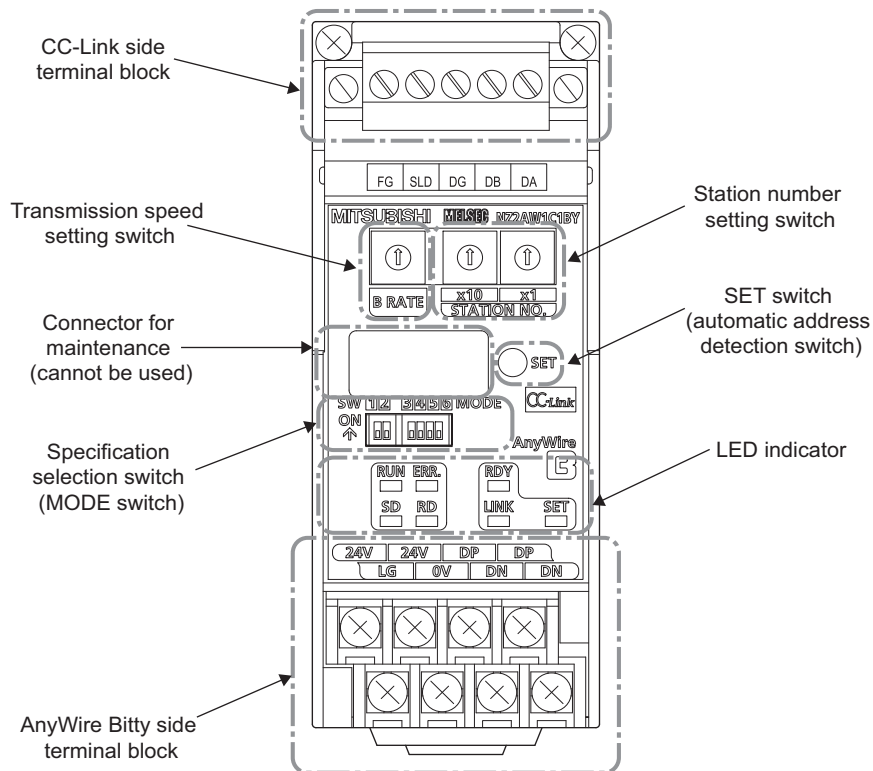
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In the NZ2AW1C1BY, dedicated instructions accessing the NZ2AW1C1BY from a CC-Link master module cannot be used.












## 2.5 Part Names



For details on each part, refer to the following.

- CC-Link side terminal block :  Page 27, Section 4.1
- AnyWire Bitty side terminal block :  Page 29, Section 4.2
- Station number setting switch :  Page 32, Section 5.1 (1)
- Transmission speed setting switch :  Page 33, Section 5.1 (2)
- Specification selection switch :  Page 34, Section 5.2 (1)
- SET switch :  Page 48, CHAPTER 9
- LED indicator :  Page 45, CHAPTER 8

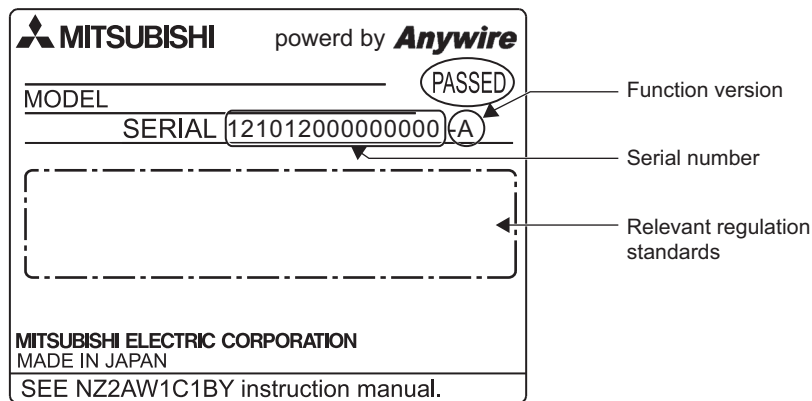
## 2.6 Checking Function Version and Serial Number

---

The serial number and function version of the NZ2AW1C1BY can be checked on the rating plate.

### (1) Checking on the rating plate

The rating plate is located at the top of the NZ2AW1C1BY.

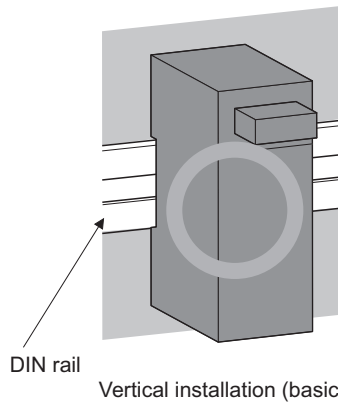


# CHAPTER 3 MODULE MOUNTING

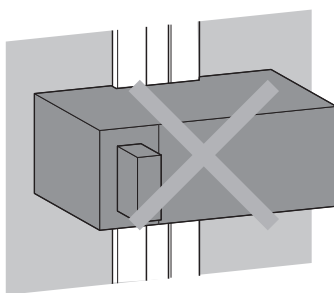
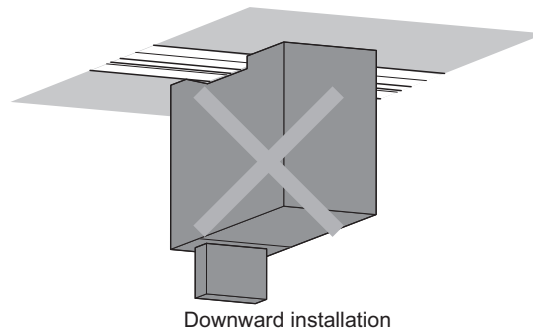
Mount this module on a DIN rail before use.

## (1) Direction of mounting a module

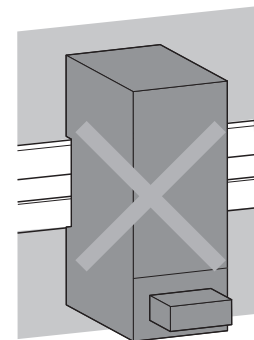
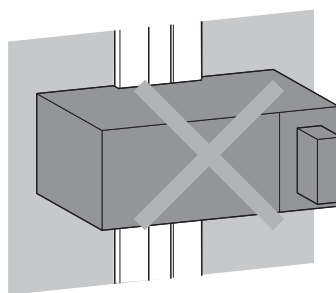
Since the NZ2AW1C1BY radiates heat, place it in an airy place in the direction shown below.



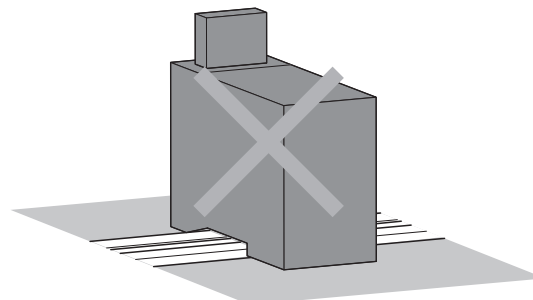
Do not place the module in the directions shown below.



Horizontal installation

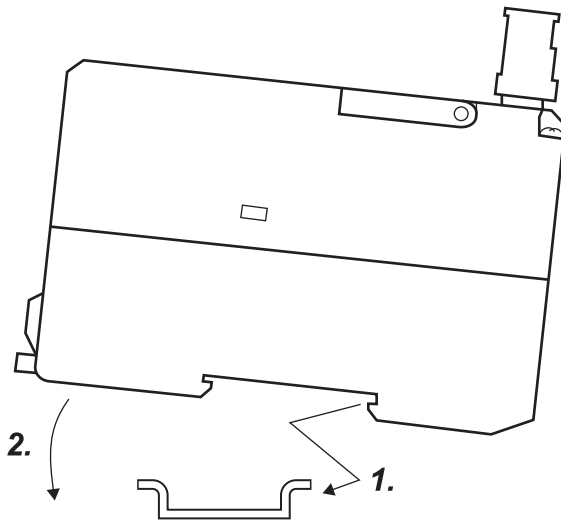


Vertical installation  
(upside down)



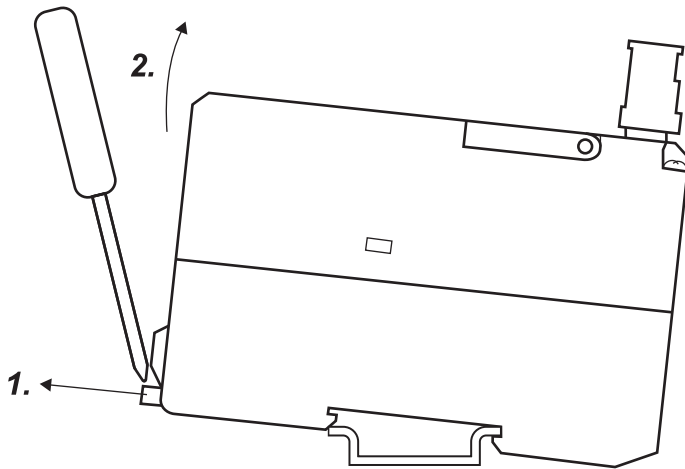
Upward installation

## (2) Mounting a module on a DIN rail



1. Hook the upper fixing tab on the bottom of the module to the DIN rail.
2. Push and engage the NZ2AW1C1BY in the DIN rail.

## (3) Removing a module from a DIN rail



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

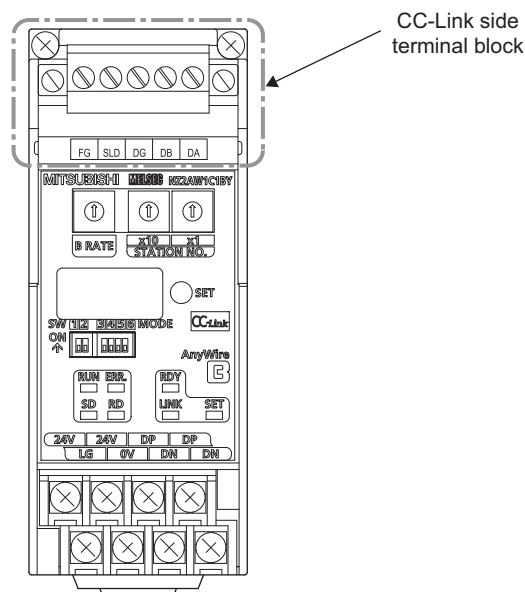
# CHAPTER 4 CONNECTIONS

## Point

For compliance with the EMC and Low Voltage Directives, refer to Page 65, Appendix 1.  
Even when the compliance with the EMC and Low Voltage Directives is not required, use of an EMC-compliant configuration may reduce the influence from external noise.

## 4.1 CC-Link Side Terminal Block

The NZ2AW1C1BY 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.



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).

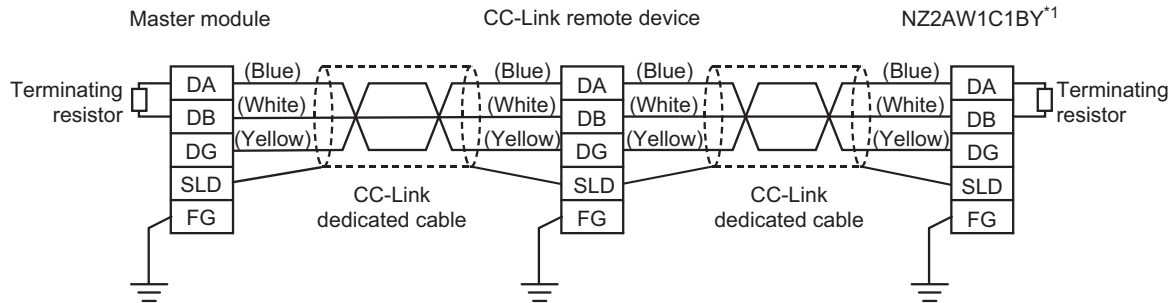
Pulling with excessive force while the fixing screws on both sides are still tightened may cause damage to the devices. Before connecting the connector, check that there are no short circuits due to the disconnected or frayed wires. Then tighten the screws at both sides securely. (Tightening torque: 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 NZ2AW1C1BY is the last station, mount a terminating resistor between DA and DB.

Users need to process the terminating resistor to be mounted on the NZ2AW1C1BY. Refer to the catalog or website of Phoenix Contact Co., Ltd.

If the terminating resistor is not mounted, communication on 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 the 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 either SLD or FG terminal : AI 2,5-8 BU \*1
- For crimping two wires collectively to any of the DA, DB, or DG terminal : AI-TWIN 2×0,5-8 WH \*2
- For crimping two wires collectively to the SLD terminal : AI-TWIN 2×1,5-8 BK \*2 \*3

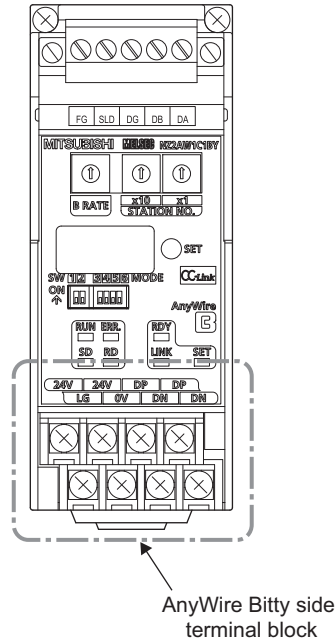
\*1 When crimping one SLD cable to the solderless terminal, twist the shield mesh and the drain wires together.

\*2 When connecting two cables to one terminal, connect the two cables together to the TWIN bar terminal.

\*3 When crimping the SLD cable to the TWIN bar terminal, twist the drain wires only.

## 4.2 AnyWire Bitty Side Terminal Block

The AnyWire Bitty side terminal block is the eight-point screw terminal block.



Screw terminal : M3 × 4.5  
Tightening torque : 0.5 to 0.8N•m

### 4.2.1 Description of the terminals of an AnyWire Bitty side terminal block

| Terminal | Description   |
|----------|---|
| DP       | AnyWire Bitty transmission signal terminals   |
| DN       | DP: Transmission line (+), DN: Transmission line (-)<br>Connect the DP and DN terminals to those on the slave module and terminating unit.  |
| 24V      | Power supply for the NZ2AW1C1BY   |
| 0V       |   |
| LG       | Connect the LG terminal to the neutral point of the noise filter inserted between the 24V and 0V terminals.<br>Ground the LG terminal with the FG terminal on the CC-Link side at a single point. |

## 4.2.2 Cable processing

---

Following are recommended solderless terminals for the transmission lines and power cables.

- V1.25-3 (JST Mfg. Co., Ltd.)
- TG1.25-3, TG1.25-3N (Nichifu Terminal Industries Co.,Ltd.)
- V1.25-3 (Fuji Terminal Industry Co. Ltd.)
- 170780-1 (Tyco Electronics AMP K.K.)

The following terminals can be also used for a power cable with a diameter of 2mm<sup>2</sup>.

- V2-MS3 (JST Mfg. Co., Ltd.)
- TG2-3N (Nichifu Terminal Industries Co., Ltd.)

For wiring, use the wires listed in Page 14, Section 2.2 and tighten them within the applicable tightening torque range.

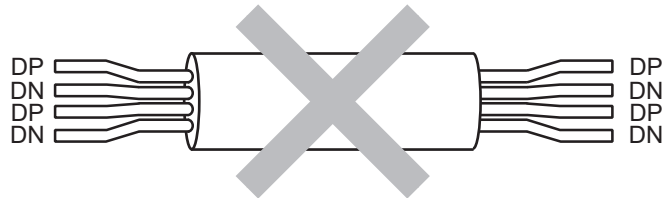
Use UL-listed solderless terminals and, for processing, use a tool recommended by their manufacturer.

Tightening torque: 0.5 to 0.8N•m

### *Point*

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- Do not run multiple transmission lines (D, G) using a multicore cable.



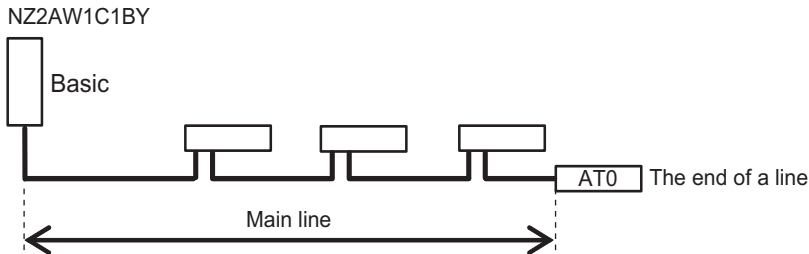
- The voltage should not fall below the lower limit of the allowable voltage range due to the voltage drop caused by the cable.  
If the voltage falls below the lower limit, malfunctions may occur.
  - Do not connect soldered cables directly to the terminals. Doing so may loosen the screws, resulting in a poor contact.
-



# 4.3 Terminating Unit

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

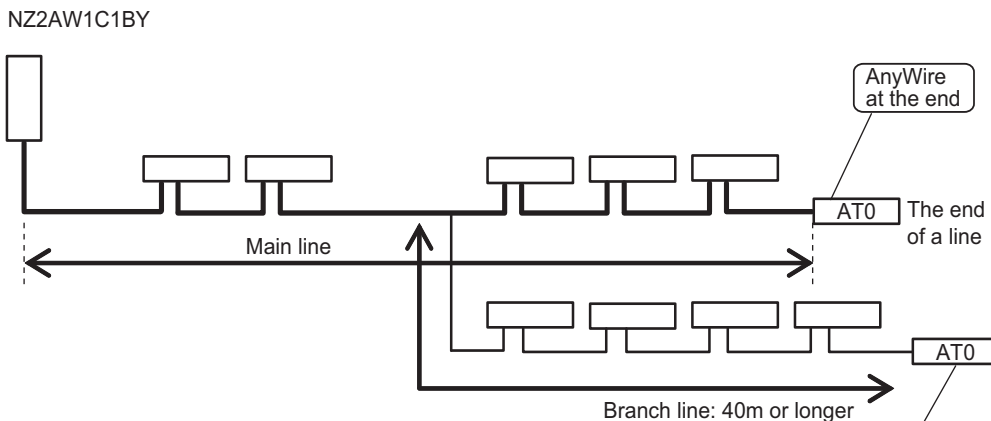
## Terminating unit connection



**Important** Connect a terminating unit at the end of a line for one master module.

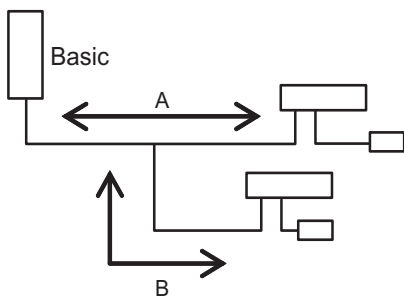
## Branch of transmission lines

[Example]



**Important** Connect one terminating unit at the end of a branch line that exceeds 40m. Three terminating units can be connected in total in the AnyWire Bitty system.

## Total length



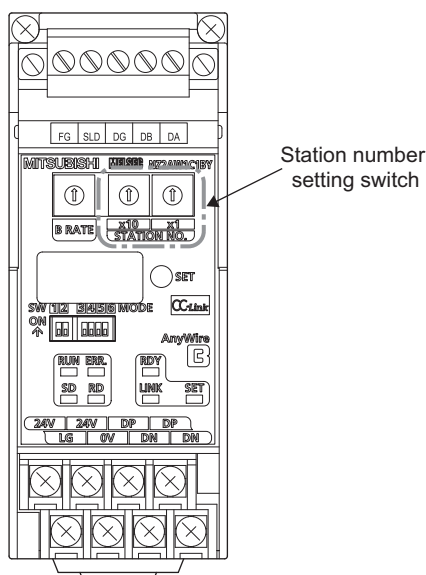
The total length of the transmission distance for the AnyWire Bitty system can be calculated from  $A + B$ . Note that the total length should not exceed the maximum transmission distance set for the system to branch lines.

# 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).  
The number of occupied stations is set by using the specification selection switch (MODE switch).

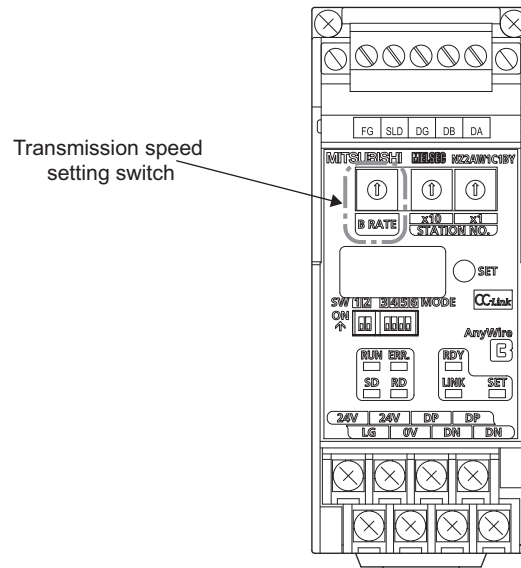


| Station number*1  | Station number setting switch |    |
|---|-------------------------------|----|
|   | x10                           | x1 |
| 1   | 0                             | 1  |
| 2   | 0                             | 2  |
| 3   | 0                             | 3  |
| 4   | 0                             | 4  |
| ⋮   | ⋮                             | ⋮  |
| 61 (The largest station number when 4 stations are occupied.) | 6                             | 1  |
| 62 (The largest station number when 3 stations are occupied.) | 6                             | 2  |
| 63 (The largest station number when 2 stations are occupied.) | 6                             | 3  |
| 64 (The largest station number when 1 station is occupied.)   | 6                             | 4  |

\*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 the number larger than the largest station number.

## (2) Transmission speed setting switch

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



| 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     |

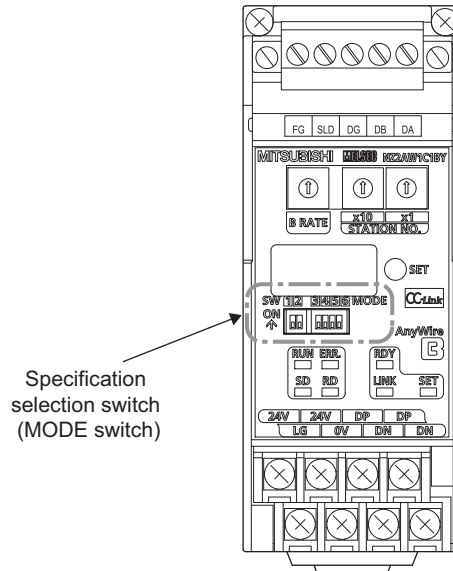
\*1 The switch is set to zero (0) when the product is shipped.

\*2 The ERR. LED turns on when the switch is set to five (5) or larger.

## 5.2 AnyWire Bitty Side

### (1) Specification selection switch (MODE switch)

Set the number of occupied stations of CC-Link and that of transmission points of AnyWire Bitty using the specification selection switch (MODE switch).



SW-1, 2      Set the transmission specification using a combination of ON/OFF for 1 and 2.  
 SW-3 to 6      System reserve (Set the switch to OFF. Using the module with this switch set to ON may cause malfunction.)

| Specification selection switch |     | Number of occupied stations of CC-Link | Number of transmission points of AnyWire Bitty |            |
|--------------------------------|-----|--|--|------------|
| 1                              | 2   |  | Input  | Output     |
| OFF                            | OFF | 4                                      | 256 points                                     | 256 points |
| ON                             | OFF | 3                                      | 192 points                                     | 192 points |
| OFF                            | ON  | 2                                      | 128 points                                     | 128 points |
| ON                             | ON  | 1                                      | 64 points                                      | 64 points  |

#### Point

- Switch off the power supply before operating the specification selection switch.
- Always set the specification selection switch according to the number of transmission points being used.
- 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.

# CHAPTER 6 MEMORY MAPS

The NZ2AW1C1BY occupies 1 to 4 stations starting from the station number specified in the CC-Link system. For information about the buffer memory address of master modules, refer to the user's manual of the master module used.

## 6.1 Remote I/O Signal List

### (1) Remote I/O signal when 1 station is occupied

| Signal direction: NZ2AW1C1BY to master module |                      | Signal direction: Master module to NZ2AW1C1BY |                          |
|---|----------------------|---|--------------------------|
| Remote input (RX)                             | Name                 | Remote output (RY)                            | Name                     |
| RXn0 to RX(n+1)9                              | Use prohibited       | RYn0 to RY(n+1)9                              | Use prohibited           |
| RX(n+1)A                                      | Error status flag    | RY(n+1)A                                      | Error reset request flag |
| RX(n+1)B                                      | Remote station READY | RY(n+1)B to RY(n+1)F                          | Use prohibited           |
| RX(n+1)C to RX(n+1)F                          | Use prohibited       |   |                          |

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

### (2) Remote I/O signal when 2 stations are occupied

| Signal direction: NZ2AW1C1BY to master module |                      | Signal direction: Master module to NZ2AW1C1BY |                          |
|---|----------------------|---|--------------------------|
| Remote input (RX)                             | Name                 | Remote output (RY)                            | Name                     |
| RXn0 to RX(n+3)9                              | Use prohibited       | RYn0 to RY(n+3)9                              | Use prohibited           |
| RX(n+3)A                                      | Error status flag    | RY(n+3)A                                      | Error reset request flag |
| RX(n+3)B                                      | Remote station READY | RY(n+3)B to RY(n+3)F                          | Use prohibited           |
| RX(n+3)C to RX(n+3)F                          | Use prohibited       |   |                          |

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

### (3) Remote I/O signal when 3 stations are occupied

| Signal direction: NZ2AW1C1BY to master module |                      | Signal direction: Master module to NZ2AW1C1BY |                          |
|---|----------------------|---|--------------------------|
| Remote input (RX)                             | Name                 | Remote output (RY)                            | Name                     |
| RXn0 to RX(n+5)9                              | Use prohibited       | RYn0 to RY(n+5)9                              | Use prohibited           |
| RX(n+5)A                                      | Error status flag    | RY(n+5)A                                      | Error reset request flag |
| RX(n+5)B                                      | Remote station READY | RY(n+5)B to RY(n+5)F                          | Use prohibited           |
| RX(n+5)C to RX(n+5)F                          | Use prohibited       |   |                          |

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

### (4) Remote I/O signal when 4 stations are occupied

| Signal direction: NZ2AW1C1BY to master module |                      | Signal direction: Master module to NZ2AW1C1BY |                          |
|---|----------------------|---|--------------------------|
| Remote input (RX)                             | Name                 | Remote output (RY)                            | Name                     |
| RXn0 to RX(n+7)9                              | Use prohibited       | RYn0 to RY(n+7)9                              | Use prohibited           |
| RX(n+7)A                                      | Error status flag    | RY(n+7)A                                      | Error reset request flag |
| RX(n+7)B                                      | Remote station READY | RY(n+7)B to RY(n+7)F                          | Use prohibited           |
| RX(n+7)C to RX(n+7)F                          | Use prohibited       |   |                          |

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

## 6.2 Remote Register List

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

### (1) Remote register list when 1 station is occupied

Four words are used respectively for input and output of AnyWire Bitty.

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

| CC-Link side<br>remote register input | AnyWire Bitty side<br>input address | CC-Link side<br>remote register output | AnyWire Bitty side<br>output address |
|---------------------------------------|-------------------------------------|--|--------------------------------------|
| RWr <sub>n</sub> +0 <sub>H</sub>      | 0 to 15                             | RWw <sub>m</sub> +0 <sub>H</sub>       | 0 to 15                              |
| RWr <sub>n</sub> +1 <sub>H</sub>      | 16 to 31                            | RWw <sub>m</sub> +1 <sub>H</sub>       | 16 to 31                             |
| RWr <sub>n</sub> +2 <sub>H</sub>      | 32 to 47                            | RWw <sub>m</sub> +2 <sub>H</sub>       | 32 to 47                             |
| RWr <sub>n</sub> +3 <sub>H</sub>      | 48 to 63                            | RWw <sub>m</sub> +3 <sub>H</sub>       | 48 to 63                             |

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

### (2) Remote register list when 2 stations are occupied

Eight words are used respectively for input and output of AnyWire Bitty.

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

| CC-Link side<br>remote register input | AnyWire Bitty side<br>input address | CC-Link side<br>remote register output | AnyWire Bitty side<br>output address |
|---------------------------------------|-------------------------------------|--|--------------------------------------|
| RWr <sub>n</sub> +0 <sub>H</sub>      | 0 to 15                             | RWw <sub>m</sub> +0 <sub>H</sub>       | 0 to 15                              |
| RWr <sub>n</sub> +1 <sub>H</sub>      | 16 to 31                            | RWw <sub>m</sub> +1 <sub>H</sub>       | 16 to 31                             |
| RWr <sub>n</sub> +2 <sub>H</sub>      | 32 to 47                            | RWw <sub>m</sub> +2 <sub>H</sub>       | 32 to 47                             |
| ⋮                                     | ⋮                                   | ⋮                                      | ⋮                                    |
| RWr <sub>n</sub> +5 <sub>H</sub>      | 80 to 95                            | RWw <sub>m</sub> +5 <sub>H</sub>       | 80 to 95                             |
| RWr <sub>n</sub> +6 <sub>H</sub>      | 96 to 111                           | RWw <sub>m</sub> +6 <sub>H</sub>       | 96 to 111                            |
| RWr <sub>n</sub> +7 <sub>H</sub>      | 112 to 127                          | RWw <sub>m</sub> +7 <sub>H</sub>       | 112 to 127                           |

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

**(3) Remote register list when 3 stations are occupied**

Twelve words are used respectively for input and output of AnyWire Bitty.

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

| CC-Link side<br>remote register input | AnyWire Bitty side<br>input address | CC-Link side<br>remote register output | AnyWire Bitty side<br>output address |
|---------------------------------------|-------------------------------------|--|--------------------------------------|
| RWrn+0 <sub>H</sub>                   | 0 to 15                             | RWwm+0 <sub>H</sub>                    | 0 to 15                              |
| RWrn+1 <sub>H</sub>                   | 16 to 31                            | RWwm+1 <sub>H</sub>                    | 16 to 31                             |
| RWrn+2 <sub>H</sub>                   | 32 to 47                            | RWwm+2 <sub>H</sub>                    | 32 to 47                             |
| ⋮                                     | ⋮                                   | ⋮                                      | ⋮                                    |
| RWrn+9 <sub>H</sub>                   | 144 to 159                          | RWwm+9 <sub>H</sub>                    | 144 to 159                           |
| RWrn+10 <sub>H</sub>                  | 160 to 175                          | RWwm+10 <sub>H</sub>                   | 160 to 175                           |
| RWrn+11 <sub>H</sub>                  | 176 to 191                          | RWwm+11 <sub>H</sub>                   | 176 to 191                           |

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

**(4) Remote register list when 4 stations are occupied**

Sixteen words are used respectively for input and output of AnyWire Bitty.

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

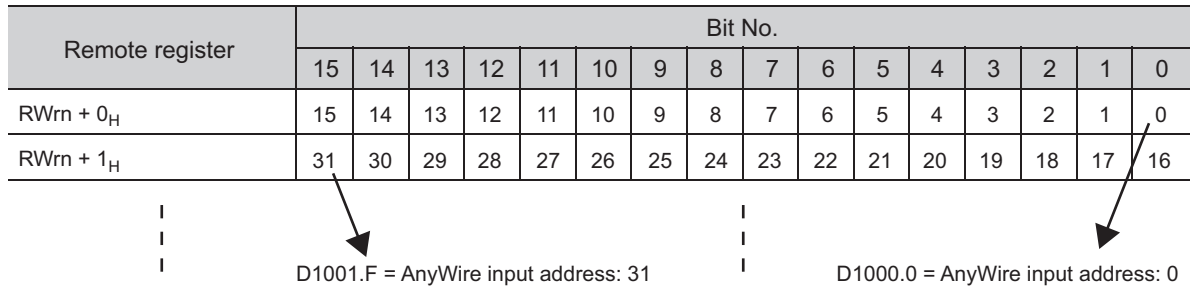
| CC-Link side<br>remote register input | AnyWire Bitty side<br>input address | CC-Link side<br>remote register output | AnyWire Bitty side<br>output address |
|---------------------------------------|-------------------------------------|--|--------------------------------------|
| RWrn+0 <sub>H</sub>                   | 0 to 15                             | RWwm+0 <sub>H</sub>                    | 0 to 15                              |
| RWrn+1 <sub>H</sub>                   | 16 to 31                            | RWwm+1 <sub>H</sub>                    | 16 to 31                             |
| RWrn+2 <sub>H</sub>                   | 32 to 47                            | RWwm+2 <sub>H</sub>                    | 32 to 47                             |
| ⋮                                     | ⋮                                   | ⋮                                      | ⋮                                    |
| RWrn+13 <sub>H</sub>                  | 208 to 223                          | RWwm+13 <sub>H</sub>                   | 208 to 223                           |
| RWrn+14 <sub>H</sub>                  | 224 to 239                          | RWwm+14 <sub>H</sub>                   | 224 to 239                           |
| RWrn+15 <sub>H</sub>                  | 240 to 255                          | RWwm+15 <sub>H</sub>                   | 240 to 255                           |

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

## 6.3 Correspondence between the Remote Register and AnyWire Address

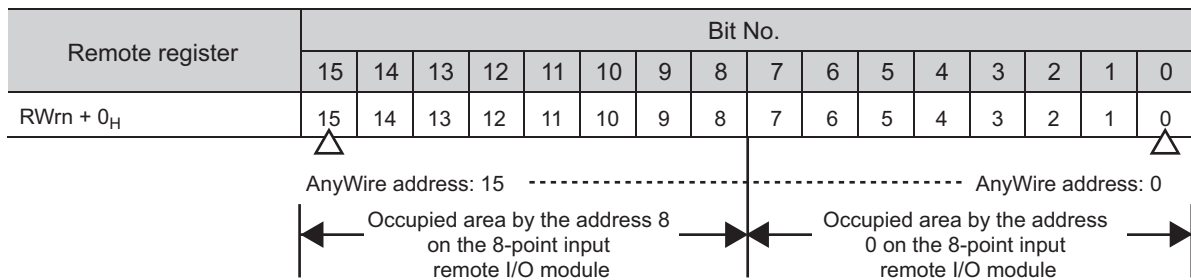
This section describes the correspondence between the remote register and AnyWire address.

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



The slave module requires "Address setting" which specifies the start number assigned in the transmission frame. The settings are configured in 1-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



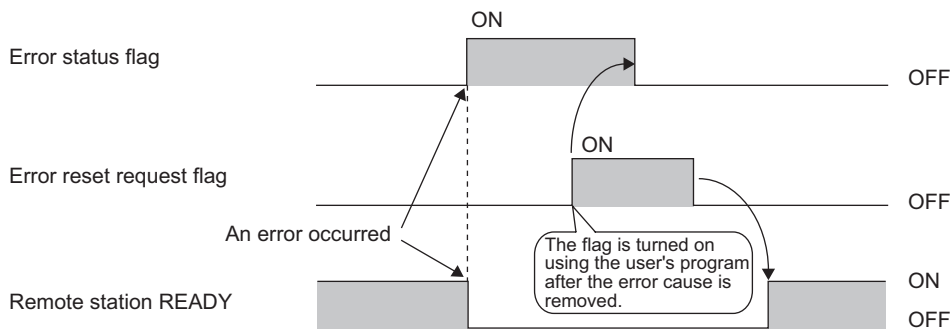


# 6.4 Error Reset

"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. "Error status flag" is reset (ON to OFF) by turning on "Error reset request flag" from off, provided that the error cause has been removed.

"Remote station READY" is reset (ON to OFF) when an error has occurred. "Remote station READY" remains reset (OFF) until "Error reset request flag" is turned off from on.



The remote device values for "Remote station READY", "Error status flag", and "Error reset request flag" at each occupied station setting are shown in the table below.

| Name                     | Number of occupied stations |                     |                     |                     |
|--------------------------|-----------------------------|---------------------|---------------------|---------------------|
|                          | 1 station occupied          | 2 stations occupied | 3 stations occupied | 4 stations occupied |
| Remote station READY     | RX(n+1)A                    | RX(n+3)A            | RX(n+5)A            | RX(n+7)A            |
| Error status flag        | RX(n+1)B                    | RX(n+3)B            | RX(n+5)B            | RX(n+7)B            |
| Error reset request flag | RY(n+1)A                    | RY(n+3)A            | RY(n+5)A            | RY(n+7)A            |

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

# CHAPTER 7 PREPARATION FOR OPERATION

## 7.1 Setting by the Parameter

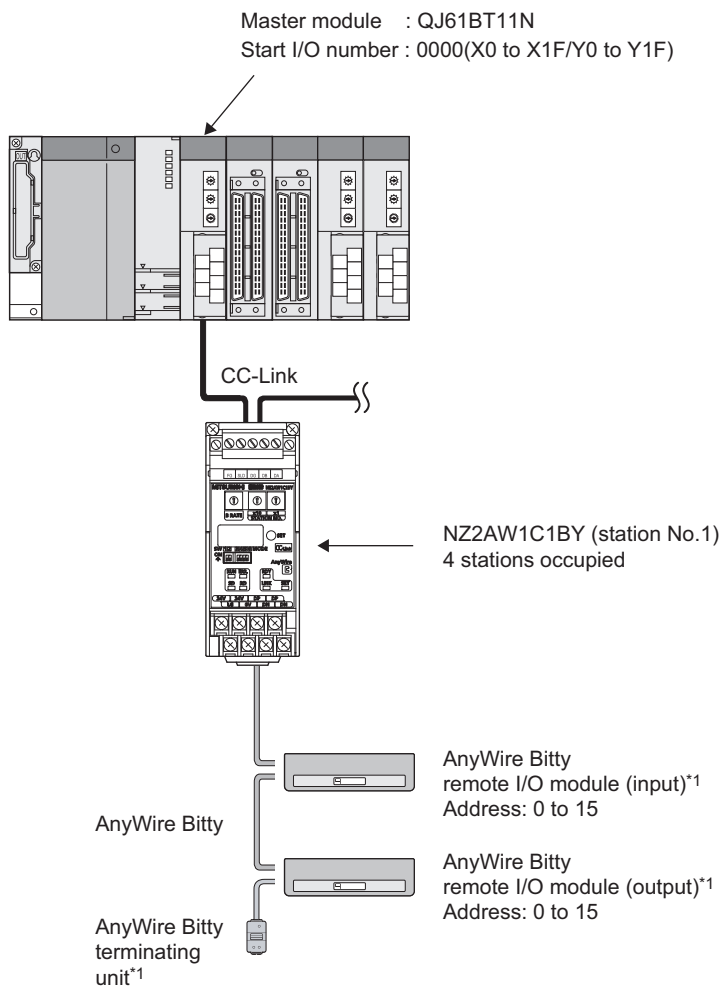
This section provides an example of the parameter setting for the MELSEC-Q series systems.

### Point

In the MELSEC-A/QnA series systems, settings cannot be configured by the network parameters. Configure the setting on the program. (Page 43, Section 7.2)

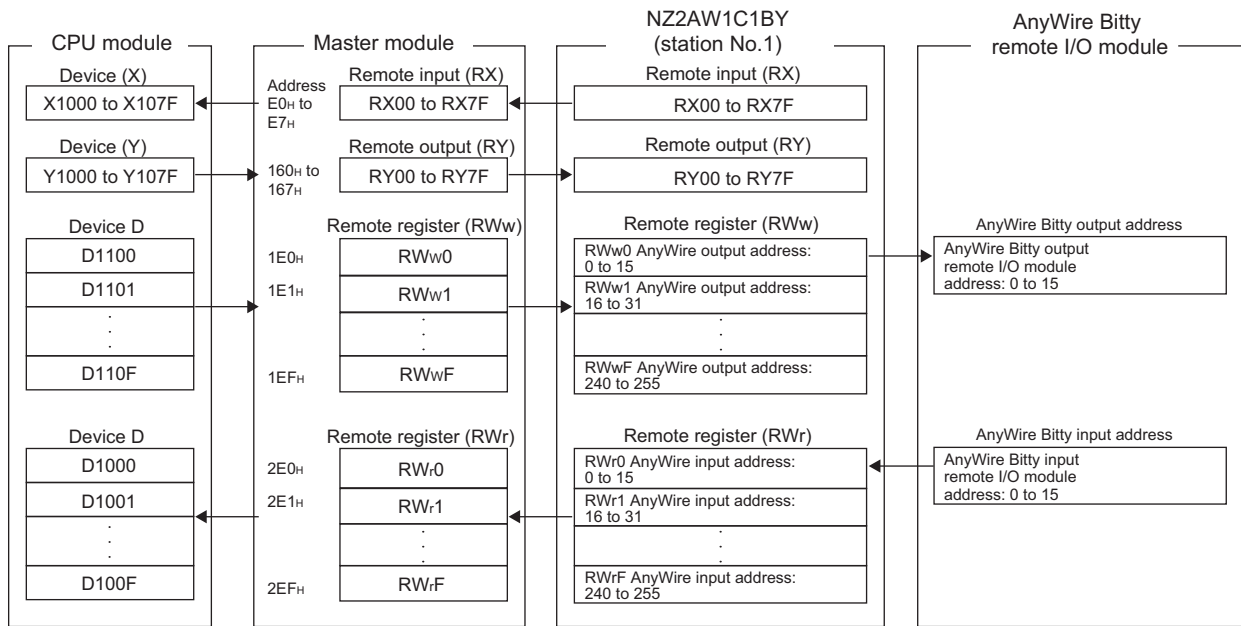
When applying the program examples introduced in this manual to the actual system, ensure the applicability and confirm that it does not cause system control problems.

### (1) System configuration



\*1: Manufactured by Anywire Corporation

## (2) Correlation among the CPU module, master module, NZ2AW1C1BY, and AnyWire Bitty remote I/O module



### (3) Parameter setting


Parameter setting is required for CC-Link communication between the master station and the NZ2AW1C1BY. Parameter setting for CC-Link can be configured by the network parameter of the programming tool. (Setting can be also configured on the program.)

**Point**

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

7.1 Setting by the Parameter

[Setting example]

 Project window ⇨ [Parameter] ⇨ [Network parameter] ⇨ [CC-Link]

|                                       |                          |       |
|---------------------------------------|--------------------------|-------|
| Start I/O No.                         | 1                        | 0000  |
| Operation Setting                     | Operation Setting        |       |
| Type                                  | Master Station           | ▼     |
| Master Station Data Link Type         | PLC Parameter Auto Start | ▼     |
| Mode                                  | Remote Net(Ver.1 Mode)   | ▼     |
| Total Module Connected                |                          | 1     |
| Remote Input(RX)                      |                          | 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)                     |                          | S60   |
| 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         | Remote Device Station | Single                  | Exclusive Station 4 | 128 Points            | 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 number 1 |
|--------|-------------------------------------|---|
| RX     | Use prohibited                      | X1000 to X10D9                            |
|        | Error status flag                   | X107A                                     |
|        | Remote station READY                | X107B                                     |
| RY     | Use prohibited                      | X10DC to X10DF                            |
|        | Use prohibited                      | Y1000 to Y10D9                            |
|        | Error reset request flag            | Y107A                                     |
| RWr    | Use prohibited                      | Y10DB to Y10DF                            |
|        | Input address 0 for AnyWire Bitty   | D1000.0                                   |
|        | Input address 1 for AnyWire Bitty   | D1000.1                                   |
|        | ⋮                                   | ⋮   |
|        | Input address 14 for AnyWire Bitty  | D1000.E                                   |
| RWw    | Input address 15 for AnyWire Bitty  | D1000.F                                   |
|        | Output address 0 for AnyWire Bitty  | D1100.0                                   |
|        | Output address 1 for AnyWire Bitty  | D1100.1                                   |
|        | ⋮                                   | ⋮   |
|        | Output address 14 for AnyWire Bitty | D1100.E                                   |
|        | Output address 15 for AnyWire Bitty | D1100.F                                   |

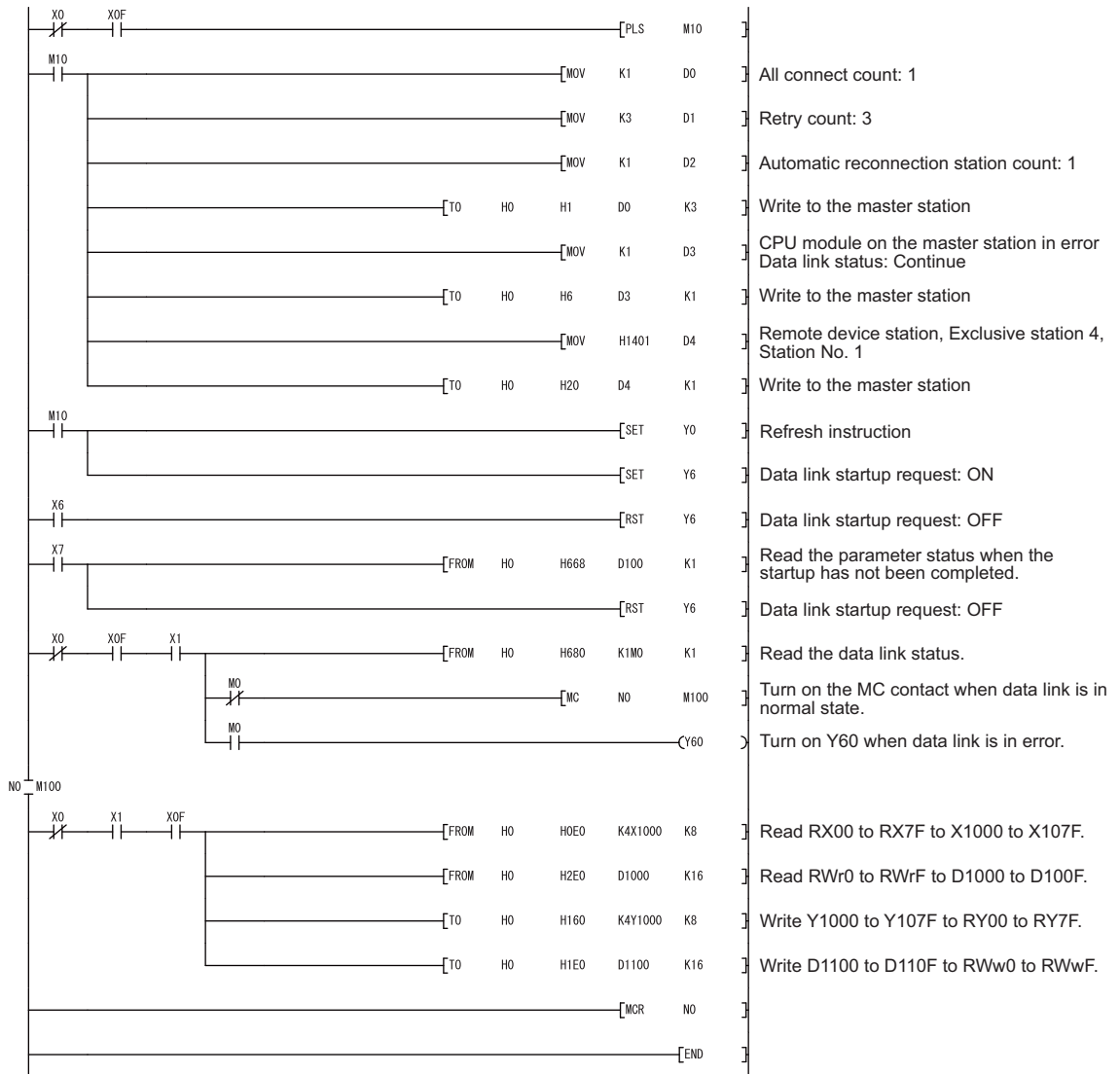
## 7.2 Setting on the Program

This section provides an example of the setting for MELSEC-QnA series systems.

### (1) List of devices used in the program example

| Device         | Description   |
|----------------|---|
| X0             | Module failure  |
| X1             | Data link status of the host station  |
| X6             | Successful completion of data link startup by parameters of the buffer memory |
| X7             | Data link startup error by parameters of the buffer memory                    |
| XF             | Module READY  |
| X1000 to X107F | Remote device RX  |
| Y0             | Refresh instruction   |
| Y6             | Data link startup request by parameters of the buffer memory                  |
| Y60            | Signal output when data link has an error                                     |
| Y1000 to Y107F | Remote device RY  |
| M0             | Signal in which data link status is stored                                    |
| M10            | Pulse signal to start the network parameter setting                           |
| M100           | Master control contact  |
| D0 to D4       | Device for setting the network parameter                                      |
| D1000 to D100F | Remote register (input from the AnyWire Bitty side)                           |
| D1100 to D110F | Remote register (output to the AnyWire Bitty side)                            |

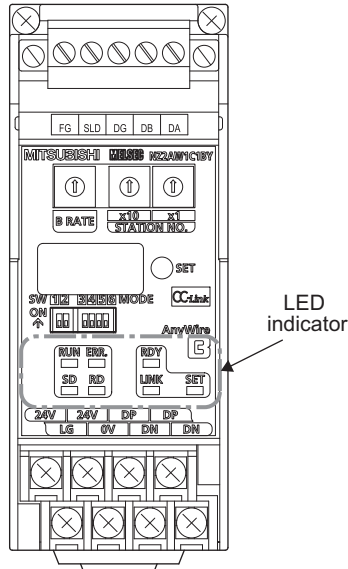
## (2) Program example



# CHAPTER 8 POWER-ON AND PART INDICATION

Check each connection before turning the power on.

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



## ■ LED indication on the NZ2AW1C1BY

| LED on the CC-Link side |        | LED on the AnyWire Bitty side |          |
|-------------------------|--------|-------------------------------|----------|
| Indicator               | Status | Indicator                     | Status   |
| RUN                     | On     | LINK                          | Flashing |
| ERR.                    | Off    | SET                           | Off      |
| SD                      | On     | RDY                           | On       |
| RD                      | On     |                               |          |

## ■ LED indication on the slave module

| LED on the AnyWire Bitty side |          |
|-------------------------------|----------|
| Indicator                     | Status   |
| LINK                          | Flashing |

Check the LED indication mentioned above before performing the automatic address detection. (☞ Page 48, Section 9.1)

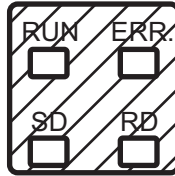
When the indication is different from the information above, check the indication condition and possible cause, and then eliminate the problem according to the troubleshooting steps. (☞ Page 56, CHAPTER 12)

### Point

- 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.
- The LINK LED is turned on in red at the initial power-on because the connection terminal is not registered by the automatic address detection operation. Press the "SET switch" to enable the automatic address detection. (☞ Page 48, Section 9.1)

# 8.1 LED Indication Specification

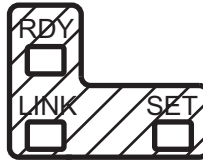
## (1) LED on the CC-Link side



| Indicator | Name                              | Color  | Description |  |
|-----------|-----------------------------------|--------|-------------|--|
| RUN       | CC-Link communication status      | Green  | On          | Normal communication   |
|           |                                   |        | Off         | <ul style="list-style-type: none"> <li>Transmission cable disconnected</li> <li>Transmission cable connected incorrectly</li> <li>Wrong transmission speed set</li> <li>Hardware reset under way</li> </ul>  |
| ERR.      | CC-Link error display             | Red    | On          | <ul style="list-style-type: none"> <li>CRC error</li> <li>Incorrect setting of the station number setting switch (set to zero or 62 or larger)</li> <li>Incorrect setting of the transmission speed setting switch (set to 5 or larger)</li> </ul>   |
|           |                                   |        | Off         | <ul style="list-style-type: none"> <li>Normal communication</li> <li>Hardware reset under way</li> </ul>   |
|           |                                   |        | Flashing    | <ul style="list-style-type: none"> <li>Flashing regularly (0.4 second):<br/>Setting for the station number or transmission speed setting switch has been changed while the power is on.</li> <li>Flashing irregularly:<br/>A terminating resistor has not been connected. The module or CC-Link dedicated cable is affected by noise.</li> </ul> |
| SD        | CC-Link data transmission display | Yellow | On          | Data transmission under way  |
|           |                                   |        | Off         | <ul style="list-style-type: none"> <li>Transmission cable disconnected</li> <li>Transmission cable connected incorrectly</li> <li>Wrong transmission speed set</li> <li>Hardware reset under way</li> </ul>  |
|           |                                   |        | 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         | <ul style="list-style-type: none"> <li>Transmission cable disconnected</li> <li>Transmission cable connected incorrectly</li> <li>Hardware reset under way</li> </ul>  |
|           |                                   |        | Flashing    | A terminating resistor has not been inserted on the CC-Link master module and the last station module.   |



## (2) LED on the AnyWire Bitty side



| Indicator | Name   | Color  | Description                  |  |  |
|-----------|--|--------|------------------------------|--|--|
| RDY       | Module READY                                     | Green  | On                           | Module operating status                                  |  |
|           |  |        | Off                          | Power is not being supplied or the module is in failure. |  |
| LINK      | AnyWire Bitty transmission status/ alarm display | Green  | Flashing                     | During normal transmission                               |  |
|           |  | Red    | On                           | The SET LED is off.                                      | Disconnection of the DP or DN transmission line, or no response from the slave module. |
|           |  |        |                              | The SET LED is flashing. (At every 1 second)             | The DP-DN line short-circuited or low supply voltage                                   |
| SET       | Automatic address detection display              | Orange | On                           | During automatic address detection operation             |  |
|           |  |        | Off                          | During normal transmission                               |  |
|           |  |        | Flashing (at every 20ms)     | The detected address is being written on EEPROM.         |  |
|           |  |        | Flashing (at every 1 second) | The DP-DN line short-circuited or low supply voltage     |  |

# CHAPTER 9 MONITORING FUNCTION

The slave module of AnyWire Bitty has a specific ID (address). When the NZ2AW1C1BY sends an ID (address), the disconnection and the existence of slave modules are detected by receiving a reply from the slave module having the corresponding ID (address).

The NZ2AW1C1BY uses the automatic address detection operation to store the addresses of the currently connected slave modules in the EEPROM.

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

Then registered IDs (addresses) are sent in order. If the slave module does not reply, the LINK LED notifies of the disconnection.

## 9.1 Automatic Address Detection

Automatic address detection is a function to store the ID (address) of the connected slave module in the EEPROM of the NZ2AW1C1BY.

Operate the automatic address detection in the following situations.

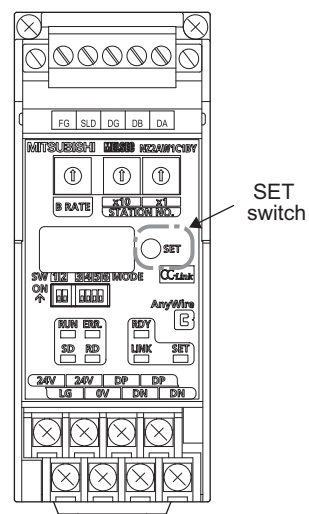
- When starting system operation with all the slave modules connected to the bridge module
- When adding a slave module
- When deleting a slave module
- When changing the address of a slave module

### 9.1.1 Automatic address detection operation

Use the SET switch to operate the automatic address detection.

Procedure

- 1. Check that all of the slave modules are operating normally.**
- 2. Keep pressing the SET switch until the SET LED (orange) turns on.**
- 3. When the SET LED turns on, flashes, and turns off, the ID (address) has been stored.**



**Point** 

- During automatic address detection, input or output may not be accepted. Operate an automatic address detection in the status that does not affect the operation of the equipment, such as while stopping the program execution of the programmable controller.
- When an error such as a short circuit occurs in the AnyWire Bitty bridge module, or for approximately five seconds after the module is turned on or reset, the automatic address detection cannot be operated.
- Do not operate an 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, a disconnection is notified.

The LINK LED turns on when a disconnection occurs.

This error information is retained until the power is turned off or the error is reset.

### *Point*

---

To reset the LINK LED indication detected during operation, remove the error cause and turn off and on the NZ2AW1C1BY or turn on the error reset request flag (RY\*\*).

The automatic address detection operation also clears the display and the flag. However, if a non-responding module exists, its ID (address) is not registered; therefore, it is removed from the monitoring target.

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# CHAPTER 10 CC-LINK I/O RESPONSE TIME

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

# Memo

---

# CHAPTER 11 TRANSMISSION TIME

This section describes the transmission cycle time and transmission delay time of AnyWire Bitty.

## 11.1 Transmission Cycle Time

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

### 11.1.1 Transmission cycle time of the NZ2AW1C1BY

The transmission cycle time of the NZ2AW1C1BY is listed in the table below.

| Number of occupied stations | Transmission cycle time |
|-----------------------------|-------------------------|
| 1 station occupied          | 3.2ms                   |
| 2 stations occupied         | 5.5ms                   |
| 3 stations occupied         | 10.2ms                  |
| 4 stations occupied         | 10.2ms                  |

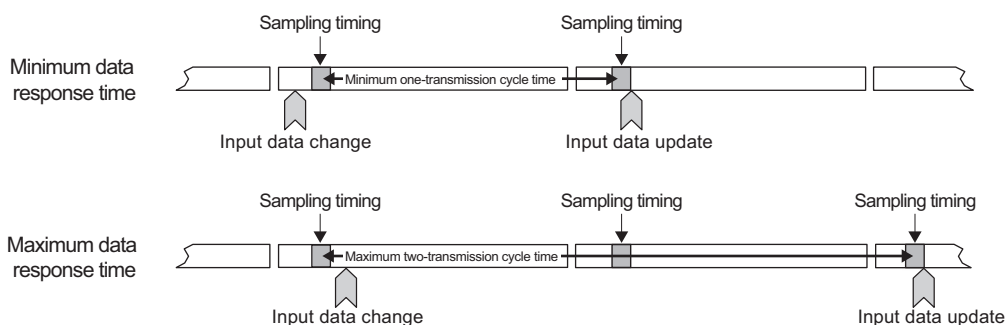
### 11.1.2 Effects of the double check system

#### (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

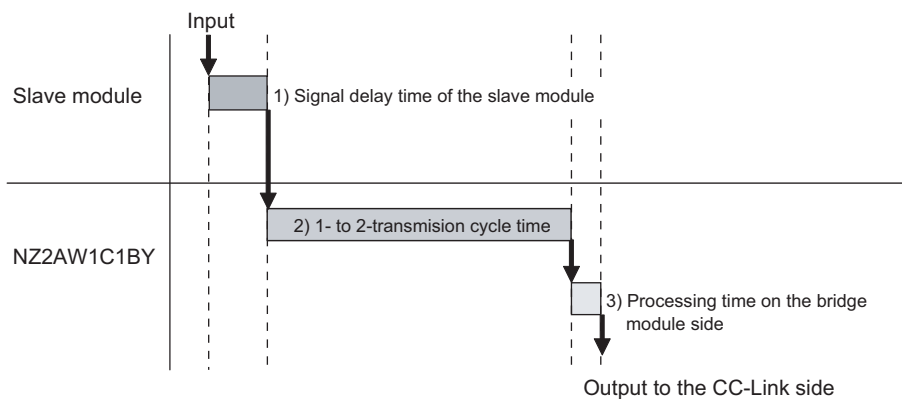
As the double check is performed on the slave module side, the time required is the same as that for input, namely a minimum of one-transmission cycle time and a maximum of two-transmission cycle time.

## 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  $\times$  2 + 3) Processing time on the bridge module side [ms]

[Calculation example]

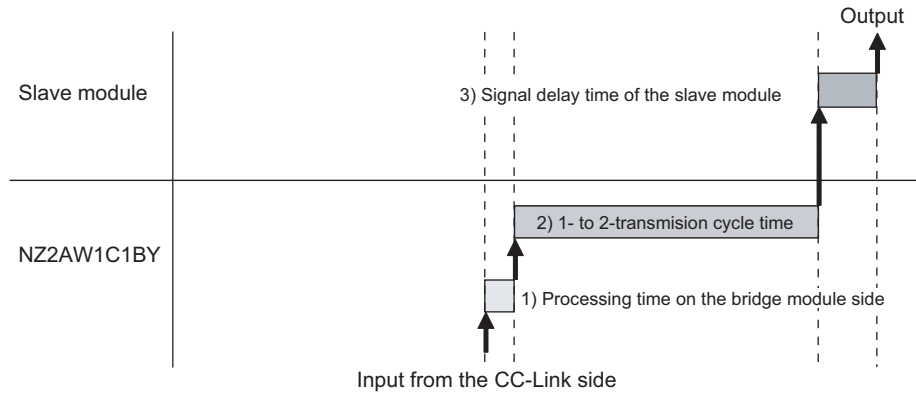
- 1) Signal delay time of the slave module  
Signal delay time of the slave module is 0.17ms.: 0.17[ms]
- 2) Transmission cycle time  $\times$  2  
Number of transmission points is set to 512 points:  $10.2 \times 2 = 20.4$ [ms]
- 3) Processing time on the bridge module side  
Processing time of the NZ2AW1C1BY is 0.592ms.: 0.592[ms]

Therefore, the transmission delay time is  $0.17 + 20.4 + 0.592 \doteq 21$ [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  $\times$  2 + 3) Signal delay time of the slave module [ms]

[Calculation example]

- 1) Processing time on the bridge module side  
Processing time of the NZ2AW1C1BY is 0.592ms. : 0.592[ms]
- 2) Transmission cycle time  $\times$  2  
Number of transmission points is set to 512 points:  $10.2 \times 2 = 20.4$ [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  $0.592 + 20.4 + 0.01 \approx 21$ [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 devices are being supplied with 24VDC power.
- The LINK LED on the slave module of AnyWire is flashing.
- The address settings of AnyWire are correct and unique.

**Remark** .....

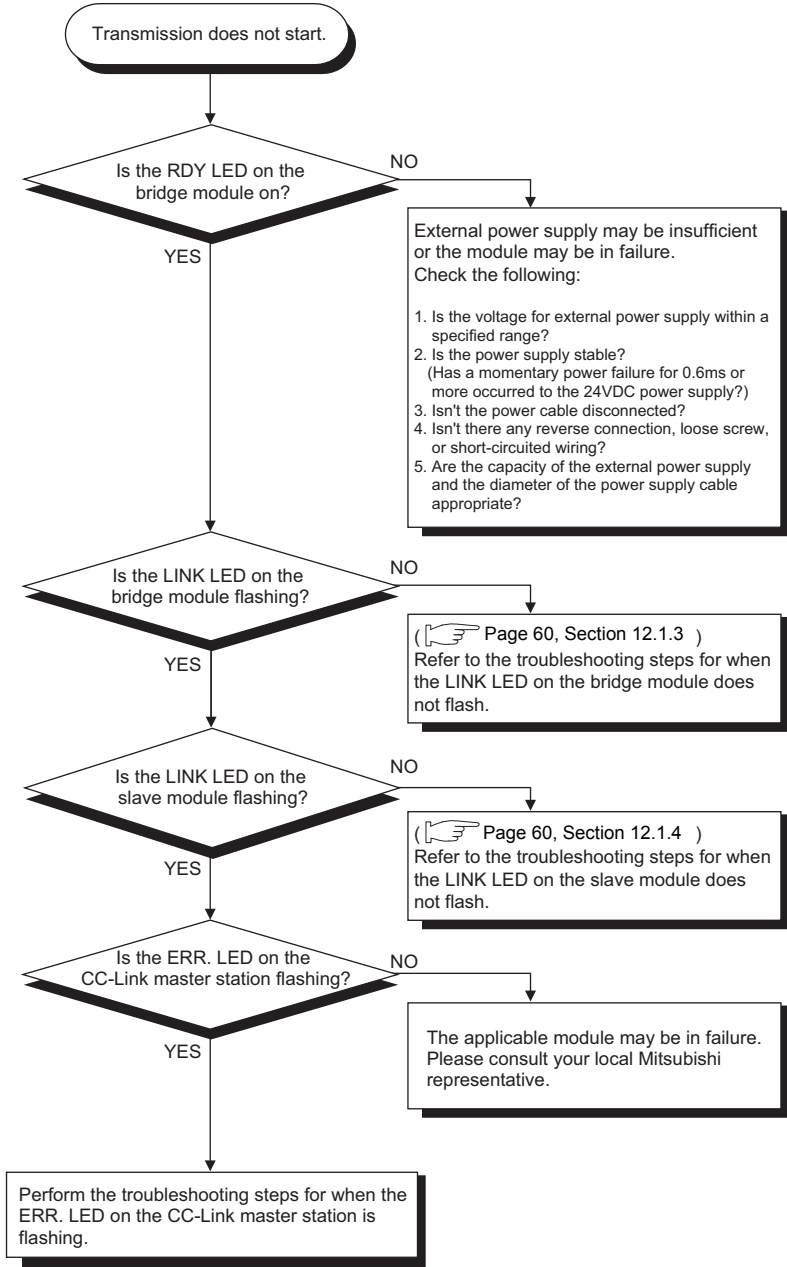
The reference pages for each specification required during troubleshooting are listed below.

- Connections :  Page 27, CHAPTER 4
  - Operation mode :  Page 32, CHAPTER 5
  - Data I/O :  Page 35, CHAPTER 6, Page 40, CHAPTER 7
  - Details of the LED display :  Page 45, CHAPTER 8
- .....

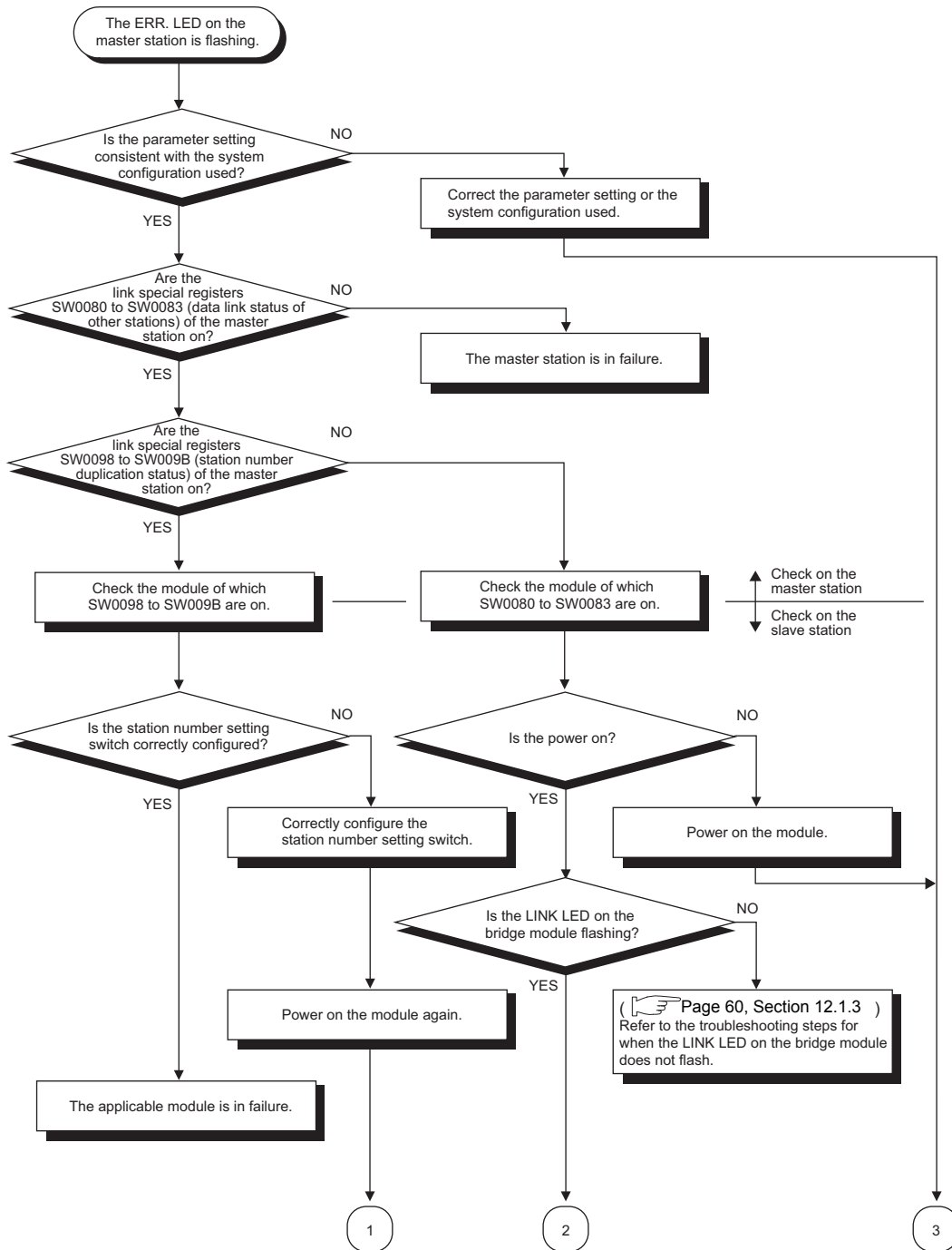
For details on the entire AnyWire system, refer to the "AnyWire Bitty Series Technical Manual" (manufactured by AnyWire Corporation).

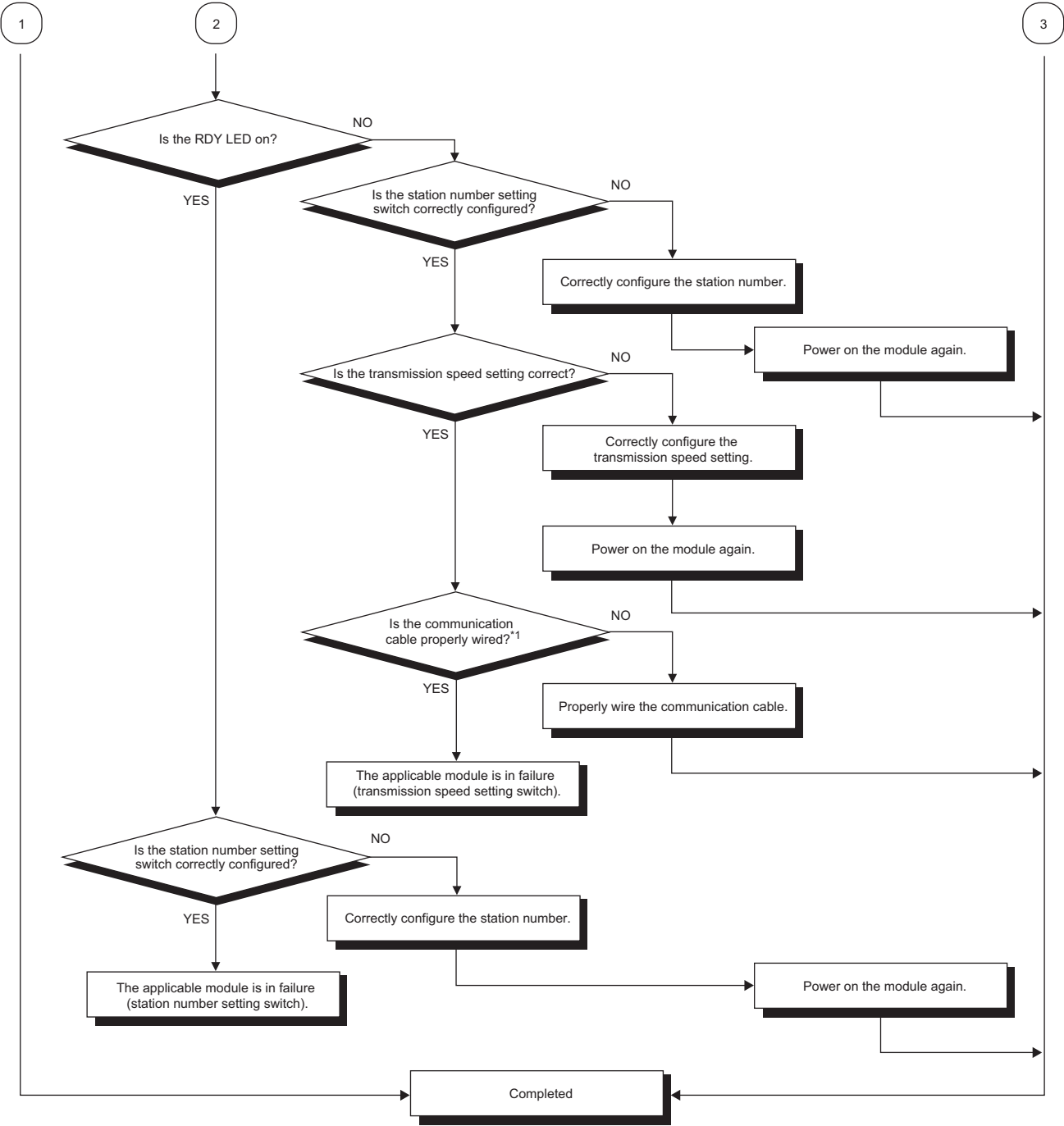
# 12.1 Troubleshooting Flow

## 12.1.1 When transmission does not start



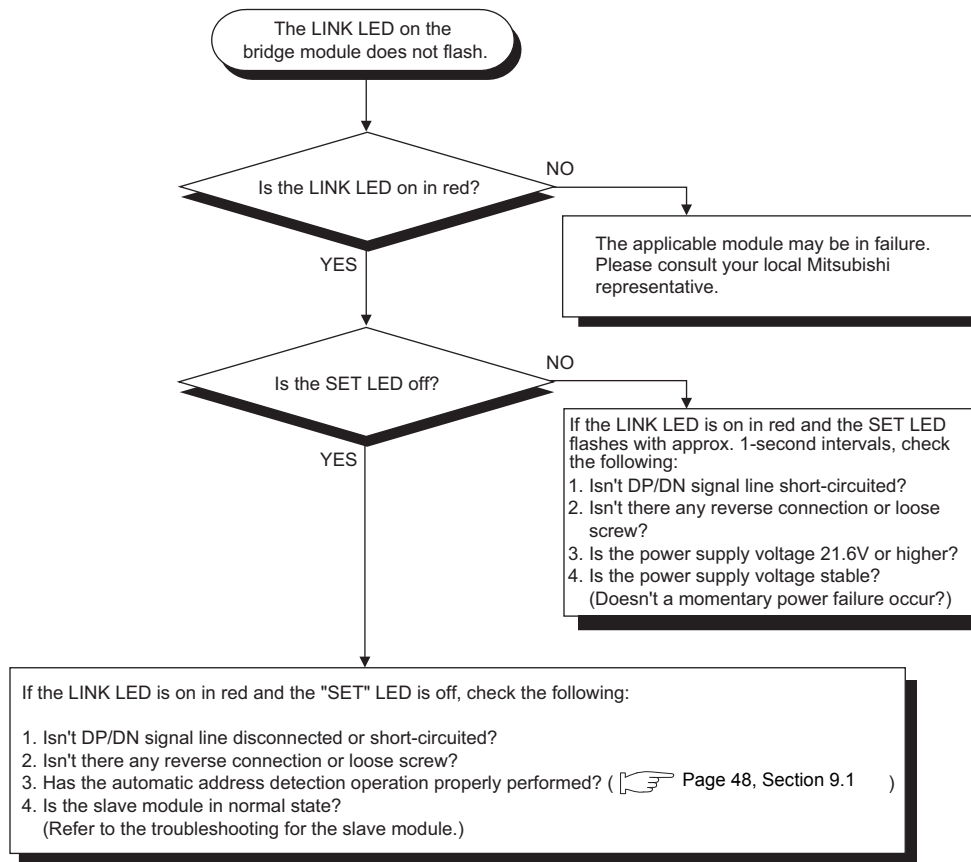
## 12.1.2 When the ERR. LED on the CC-Link master station is flashing



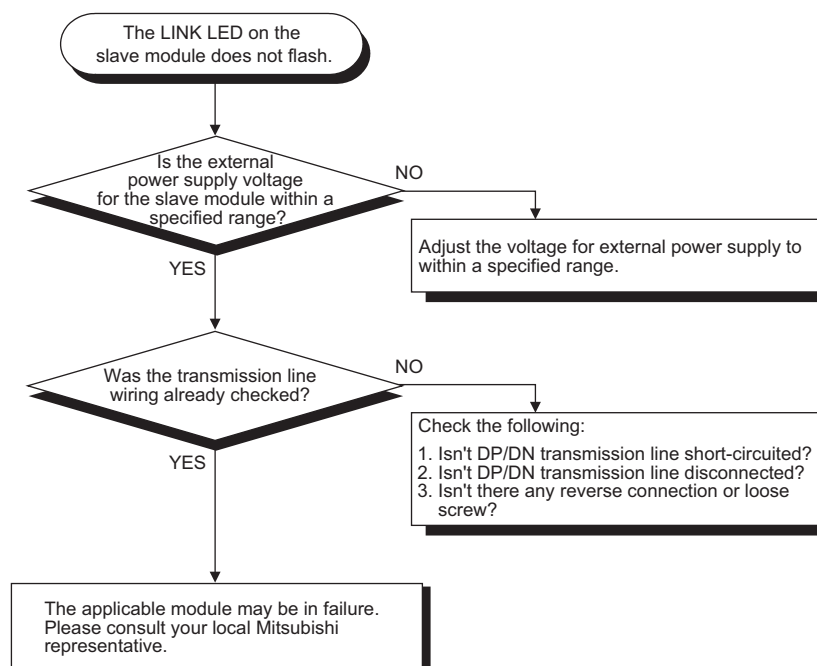


\*1 Check the short circuit, reverse connection, disconnection, terminating resistor, FG connection, total length, and distance between stations.

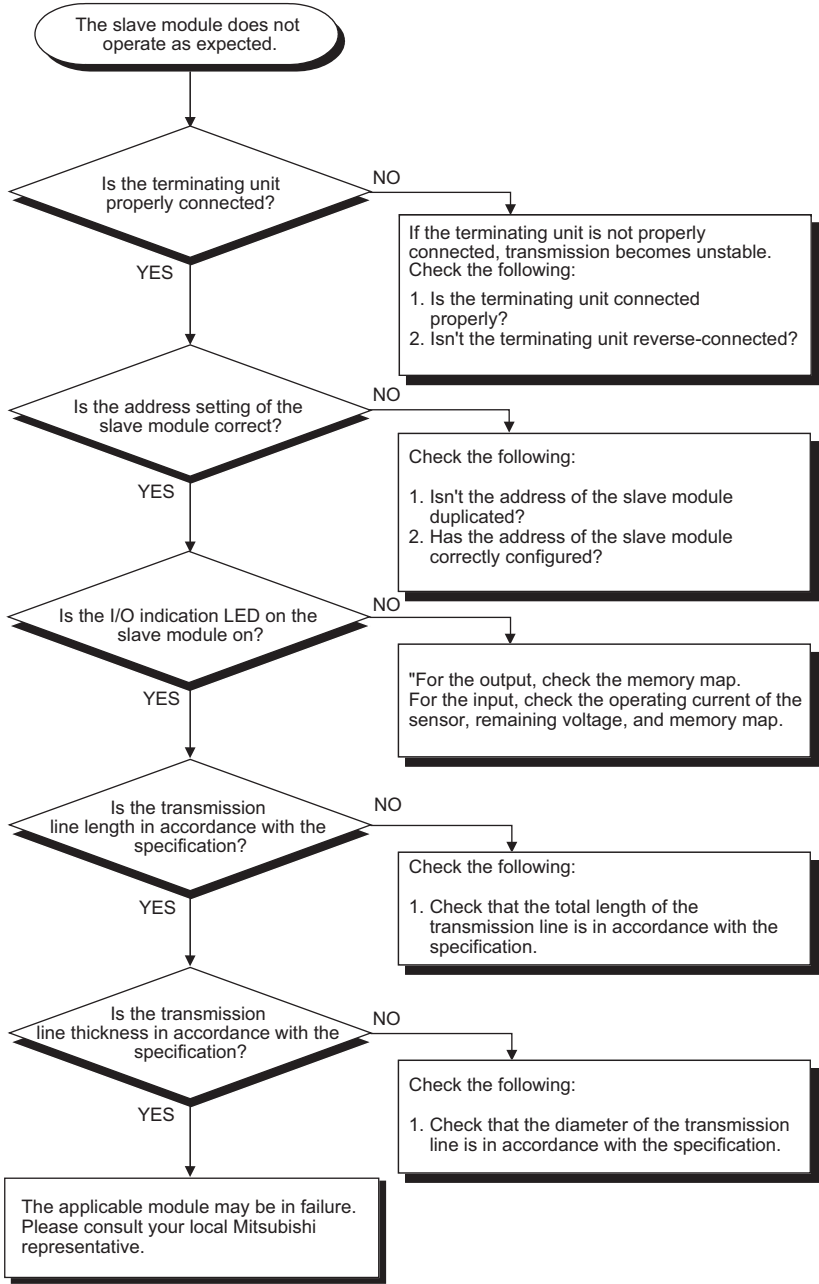
## 12.1.3 When the LINK LED on the bridge module does not flash



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



# 12.1.5 When the slave module does not operate as expected



## 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).  | <input type="checkbox"/> |
|   | 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.  | <input type="checkbox"/> |
|   | Is there an error in the CPU module of the master station?                                  | Check the error code of the CPU module and take corrective actions.   | <input type="checkbox"/> |
|   | Were the parameters set in the master station?  | Check the parameter settings.<br>Remote network-Ver.2 mode or<br>Remote network-addition mode<br>Ver.2 remote device station<br>Double, Exclusive Station 4                                   | <input type="checkbox"/> |
|   | Is Data link startup request (Yn6 or Yn8) turned on?  | Check the program.  | <input type="checkbox"/> |
|   | Is there an error in the master station?  | Check the following.<br>• Host parameter status (SW0068)<br>• Switch setting status (SW006A)<br>• Loading status (SW0069)<br>• Whether or not the ERR. LED on the master station is flashing. | <input type="checkbox"/> |
|   | Does the scan time exceed the maximum value while the synchronous mode is selected?         | Select the asynchronous mode or reduce the transmission speed.  | <input type="checkbox"/> |
| The remote input (RX) of the NZ2AW1C1BY cannot be loaded.                 | Is the remote device station in the data link?  | Check the status by the following methods.<br>• LED indication status of the module<br>• Other station data link status (SW0080 to SW0083)  | <input type="checkbox"/> |
|   | Is the data being read from the correct address of the remote input RX (buffer memory)?     | Check the program.  | <input type="checkbox"/> |
|   | Was it set as a reserved station?   | Check the parameters.   | <input type="checkbox"/> |
|   | Is the same station number used for multiple stations?                                      | Check the station numbers.  | <input type="checkbox"/> |
| The remote output (RY) of the NZ2AW1C1BY cannot be turned on/off.         | Is the remote device station in the data link?  | Check the status by the following methods.<br>• LED indication status of the module<br>• Other station data link status (SW0080 to SW0083)  | <input type="checkbox"/> |
|   | Is Refresh instruction (Yn0) of the master station turned on?                               | Check the program.  | <input type="checkbox"/> |
|   | Is the data being written to the correct address of the remote output RY (buffer memory)?   | Check the program.  | <input type="checkbox"/> |
|   | Was it set as a reserved station?   | Check the parameters.   | <input type="checkbox"/> |
|   | Is the same station number used for multiple stations?                                      | Check the station numbers.  | <input type="checkbox"/> |
| The data of the remote register (RWr) of the NZ2AW1C1BY cannot be loaded. | Is the remote device station in the data link?  | Check the status by the following methods.<br>• LED indication status of the module<br>• Other station data link status (SW0080 to SW0083)  | <input type="checkbox"/> |
|   | Is the data being read from the correct address of the remote register RWr (buffer memory)? | Check the sequence program.   | <input type="checkbox"/> |
|   | Was it set as a reserved station?   | Check the parameters.   | <input type="checkbox"/> |
|   | Is the same station number used for multiple stations?                                      | Check the station numbers.  | <input type="checkbox"/> |



| Symptom                             | Check item   | Check method               | Check                    |
|-------------------------------------|--|----------------------------|--------------------------|
| Faulty stations cannot be detected. | Was it set as an error invalid station?                | Check the parameters.      | <input type="checkbox"/> |
|                                     | Is the same station number used for multiple stations? | Check the station numbers. | <input type="checkbox"/> |

## (2) AnyWire Bitty side

| Symptom   | Check item   | Check method  | Check                    |
|---|--|---|--------------------------|
| Data I/O is impossible.   | ■ NZ2AW1C1BY side  |   |                          |
|   | Is 24VDC being supplied appropriately?   | Check the power voltage.  | <input type="checkbox"/> |
|   | Is the DP/DN signal line connected correctly?  | Check the wiring for AnyWire Bitty.   | <input type="checkbox"/> |
|   | Was the MODE switch set correctly?   | Check the MODE switch setting.  | <input type="checkbox"/> |
|   | ■ Slave module side  |   |                          |
|   | Is 24VDC power being supplied appropriately?   | Check the power voltage.  | <input type="checkbox"/> |
| Data I/O is unstable.   | Is the DP/DN signal line connected correctly?  | Check the wiring for AnyWire Bitty.   | <input type="checkbox"/> |
|   | Was the address set correctly?   | Check the address setting.  | <input type="checkbox"/> |
|   | Are AT0s (terminating units) connected?<br>Are the poles connected in reverse?             | Check that the terminating units are connected correctly.   | <input type="checkbox"/> |
|   | Does the actual transmission line length exceed the setting length?                        | Check that the total length is correct.   | <input type="checkbox"/> |
| The LINK LED on the slave module does not flash.  | Is the shield line being used for multiple-point grounding?                                | Check the wiring for AnyWire Bitty.   | <input type="checkbox"/> |
|   | Is the supply voltage within the allowable voltage range?                                  | Check the power voltage.  | <input type="checkbox"/> |
|   | Is the power supply line disconnected?<br>Is the power supply terminal loose?              | Check the wiring for AnyWire Bitty.   | <input type="checkbox"/> |
|   | Is the DP/DN signal terminal loose?  | Check the wiring for AnyWire Bitty.   | <input type="checkbox"/> |
| The LINK LED of the NZ2AW1C1BY turns on in red.   | Is the DP/DN signal line disconnected?   | Check the wiring for AnyWire Bitty.   | <input type="checkbox"/> |
|   | At the startup, was the automatic address detection operated correctly?                    | Check the status of the slave module and the wiring for AnyWire Bitty, and perform the automatic address detection. | <input type="checkbox"/> |
|   | Are the screws on the terminal block loose?  | Check the wiring for AnyWire Bitty.   | <input type="checkbox"/> |
| The LINK LED of the NZ2AW1C1BY turns on in red and the SET LED flashes in orange (at 1s intervals). | Is the DP/DN signal line short-circuited?<br>Is the power supply voltage lower than 21.6V? | Check the wiring for AnyWire Bitty.<br>Check the power voltage.   | <input type="checkbox"/> |

# Memo

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# APPENDICES

---

## 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 Requirements for compliance 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.

**A**

Appendix 1 EMC and Low Voltage Directives  
Appendix 1.1 Requirements for compliance with the EMC Directive

## **(1) Installation in 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).

## (2) Cables

### (a) CC-Link dedicated cable

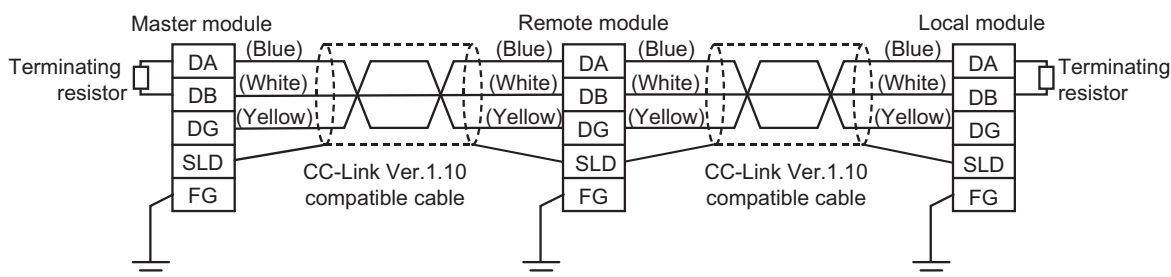
Use the AD75CK cable clamp (Mitsubishi) to shield the cable connected to the CC-Link module located close to the exit of the control panel or each CC-Link station, and ground the shielded part of the CC-Link dedicated cable to the control panel within 30cm from the module or station.

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.

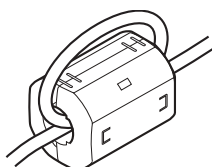


Use the specified Ver.1.10-compatible CC-Link dedicated cable.

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.

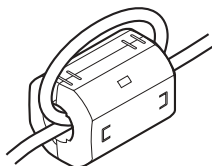


For the CC-Link dedicated cable, attach a ferrite core having the attenuation characteristics equivalent to that of ZCAT3035-1330 made by TDK Corporation as close to the CC-Link side terminal block of this product as possible. Use a ferrite core with two turns of wire as shown below.



### (b) AnyWire Bitty cable

For the AnyWire Bitty cable, attach a ferrite core having the attenuation characteristics equivalent to that of ZCAT3035-1330 made by TDK Corporation as close to the AnyWire Bitty 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.

A

Appendix 1 EMC and Low Voltage Directives  
Appendix 1.1 Requirements for compliance with the EMC Directive

### **(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<sup>\*1</sup>.

- \*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 Requirements for compliance with the Low Voltage Directive**

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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.

## Appendix 2 Functions added or changed due to upgrade

The NZ2AW1C1BY has additional functions and revised specifications due to upgrade.

Available functions and specifications of the NZ2AW1C1BY vary depending on the function version and the serial number.

| Additional function  | Supported function version | Sixth digit of the serial no. of the applicable product |
|--|----------------------------|---|
| Transmission line voltage drop detection function<br>(  Page 14, Section 2.2.1) | A                          | "3" and later   |

# REVISIONS

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

| Print date | *Manual number     | Revision   |
|------------|--------------------|--|
| June 2011  | SH(NA)-080991ENG-A | First edition  |
| March 2013 | SH(NA)-080991ENG-B | Revision due to the addition of the transmission line voltage drop detection function and compliance with EMC and UL/cUL |
|            |                    |  |

Japanese manual version SH-080990-B

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# **WARRANTY**

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

## **1. Gratis Warranty Term and Gratis Warranty Range**

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

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

[Gratis Warranty Term]

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

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

[Gratis Warranty Range]

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

## **2. Onerous repair term after discontinuation of production**

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

## **3. Overseas service**

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

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

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

## **5. Changes in product specifications**

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

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**Anywire** Anywire Corporation <http://www.anywire.jp>

SH(NA)-080991ENG-B(1303)MEE

MODEL: NZ2AW1C1BY-U-E

MODEL CODE: 13JZ61

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