

## BEFORE USE ....

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below.

If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

### ■ PACKAGE INCLUDES:

Network module.....(1)

### ■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

### ■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

### ■ CSP+ file

CSP+ file is downloadable at M-System's web site (<https://www.msystem.co.jp>) or CC-Link Partner Association's web site (<https://cc-link.org>).

## POINTS OF CAUTION

### ■ CONFORMITY WITH EU DIRECTIVES

- The equipment must be mounted inside the instrument panel of a metal enclosure.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure the CE conformity.

### ■ HOT SWAPPABLE MODULES

- It is possible to replace a module with the power supplied provided that the module is replaced with one with the same model number and installed in the same base slot.
- Be sure to replace a module when it is not communicating with the host as it may affect the system. Note that replacing multiple modules at one time may greatly change line voltage levels. We strongly recommend to replace them one by one.

### ■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 10 to 90% RH in order to ensure adequate life span and operation.

### ■ WIRING

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

### ■ R3 I/O MODULE EXTENSION

- The internal bus communication period for R3 series I/O modules installed on the R30EBS is as follows.

Internal bus communication period = 6 msec. x number of I/O module + 10 msec. (Data update period of main CPU)

Example: Four R3 I/O modules

$$6 \text{ msec.} \times 4 + 10 \text{ msec.} = 34 \text{ msec.}$$

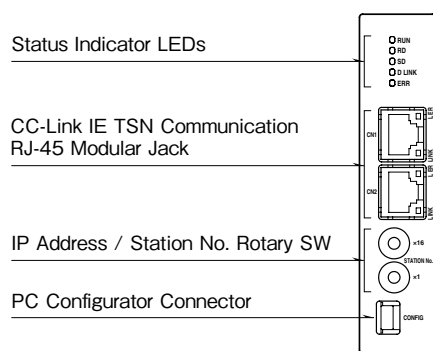
Even when the R30EBS is mounted to the R30BS, the internal bus communication period of R30 series is kept to approx. 1 msec.

### ■ AND ....

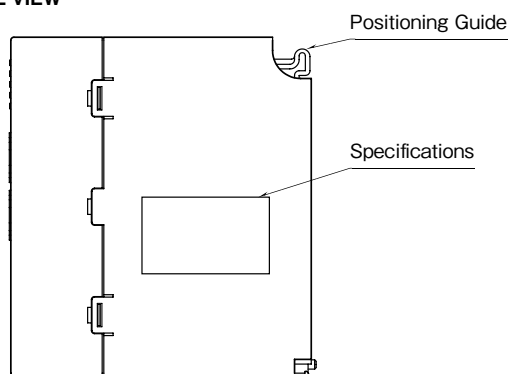
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

## COMPONENT IDENTIFICATION

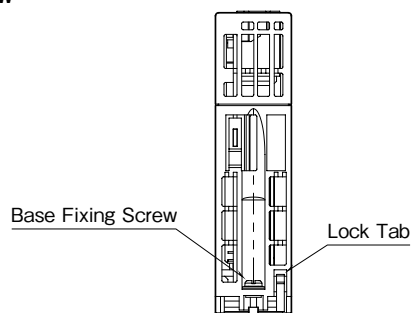
### FRONT VIEW



### SIDE VIEW



### BOTTOM VIEW



### STATUS INDICATOR LED

| ITEM             | ID     | COLOR | FUNCTION               | STATUS             | DESCRIPTION                                |
|------------------|--------|-------|------------------------|--------------------|--|
| Status Indicator | RUN    | Green | Device State           | ON                 | Normal                                     |
|                  |        |       |                        | OFF                | Device error                               |
|                  | RD     | Green | Receiving Data         | ON                 | Receiving                                  |
|                  |        |       |                        | OFF                | Unreceived data                            |
|                  | SD     | Green | Sending Data           | ON                 | Sending                                    |
|                  |        |       |                        | OFF                | Unsent                                     |
|                  | D LINK | Green | Data link Transmitting | ON                 | In action (Cyclic transmitting)            |
|                  |        |       |                        | Blinking           | In action (Stopping cyclic transmitting)*1 |
|                  |        |       |                        | OFF                | Not complied with                          |
| ERR              | Red    | Error | ON                     | Critical failure*2 |  |
|                  |        |       | Blinking               | Minor failure*3    |  |
|                  |        |       | OFF                    | Normal             |  |
| CN1              | LINK   | Green | CN1 Linking Up         | ON                 | Linking up                                 |
|                  |        |       |                        | OFF                | Link-down                                  |
|                  | L ER   | Red   | CN1 Receiving Data     | ON                 | Abnormality receiving data                 |
|                  |        |       |                        | OFF                | Normality receiving data                   |
| CN2              | LINK   | Green | CN2 Linking Up         | ON                 | Linking up                                 |
|                  |        |       |                        | OFF                | Link-down                                  |
|                  | L ER   | Red   | CN2 Receiving Data     | ON                 | Abnormality receiving data                 |
|                  |        |       |                        | OFF                | Normality receiving data                   |

\*1. Setting as reservation area, stop linking and etc..

\*2. Host communication error, internal bus communication error etc.

\*3. Non-volatile memory error, or IP address / station No. setting rotary switch has been changed after turning on the module.

■ IP ADDRESS / STATION NO. SETTING ROTARY SW

Set the fourth octet of IP address and station No. with two rotary switches. The upper rotary SW sets the upper digits (MSB), and the lower rotary SW sets the lowest digit (LSB) with hexadecimal (configurable range is 1 to 254).

Turn off the power supply when setting IP address / Station No. setting Rotary SW, as the setting is activated when turning on the power supply.

Confirm available station numbers in the manual of the master unit (Factory default setting: 01H).

IP address: The first to third octet are common with the first to third octet of IP address for master station.



For setting MSB of Station No. (× 16)



For setting LSB of Station No. (× 1)

\* Station No. setting example

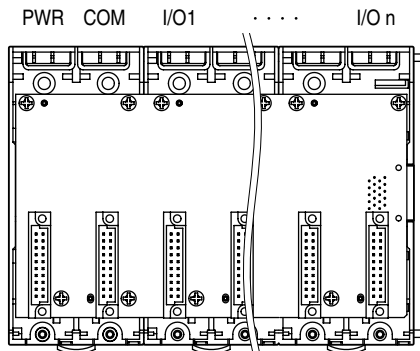
IP address / Station No. setting rotary SW are set with hexadecimal.

For example, in the case of setting station No. 175, Set the Station MSB: A and LSB: F.

## INSTALLATION

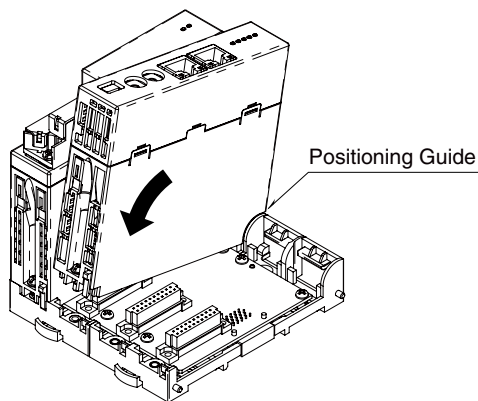
### ■ INSTALLATION TO THE BASE

Use the Installation Base (model: R30BS).  
The mounting slot for the network card is fixed to COM.  
Do not mount the network card to any other slot.

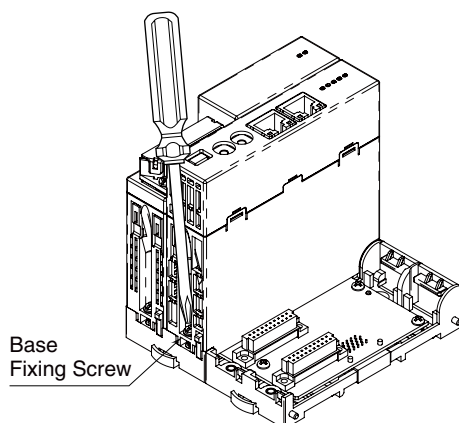


### ■ HOW TO MOUNT THE MODULE

- 1) Engage the positioning guide of the module with the Installation Base.
- 2) Pivot the module on the positioning guide and press it down until the lock tab clicks into place.

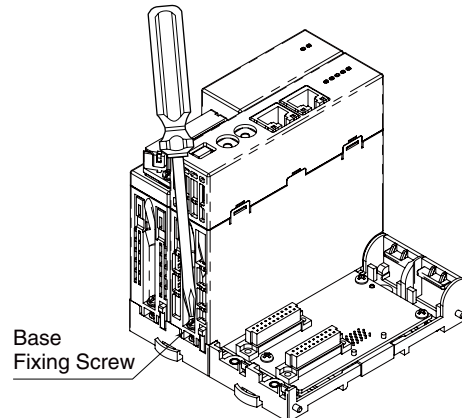


- 3) Tighten the base fixing screw using a screwdriver (stem length: 70 mm/2.76" or more) (torque 0.5 N·m).

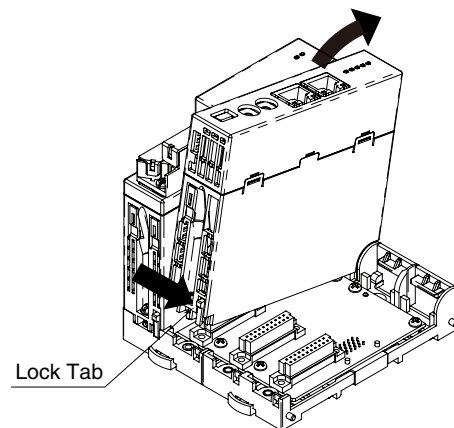


### ■ HOW TO REMOVE THE MODULE

- 1) Loosen the base fixing screw using a screwdriver (stem length: 70 mm/2.76" or more).



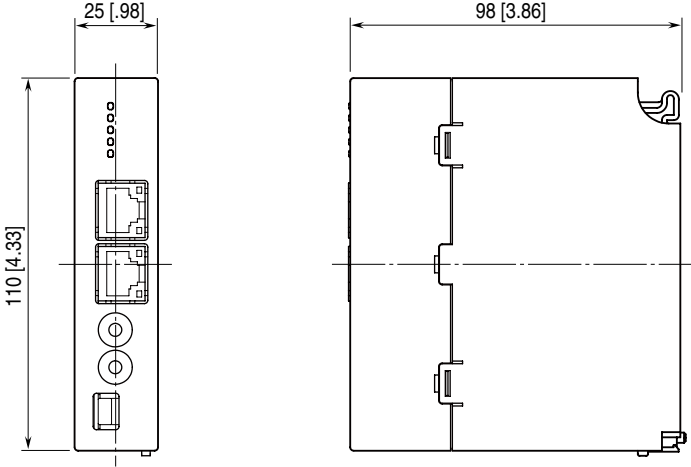
- 2) While pressing the projection on the lock tab, push the module upward.
- 3) Detach the positioning guide of the module from the Installation Base.



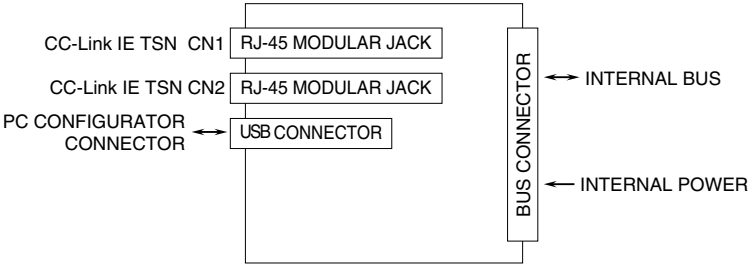
# TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

## EXTERNAL DIMENSIONS unit: mm [inch]



## CONNECTION DIAGRAM



Regarding CN1 and CN2 of RJ-45 connector for CC-Link IE TSN network, there is no restriction for connection order.

## TRANSMISSION DATA DESCRIPTIONS

This unit recognize type of I/O module (number of occupied station) configured the same base, and assign it to I/O Modules data with slot order automatically. However, I/O module assignment is performed only when power is turned on, in the case of changing configuration of I/O module, please turn on power again. Keep number of station occupied of I/O module under 64, because max. number of occupied station is 64 per a node.

When the I/O module has space, data is transmitted close to HOST PC/PLC.

**Station type:** Remote station

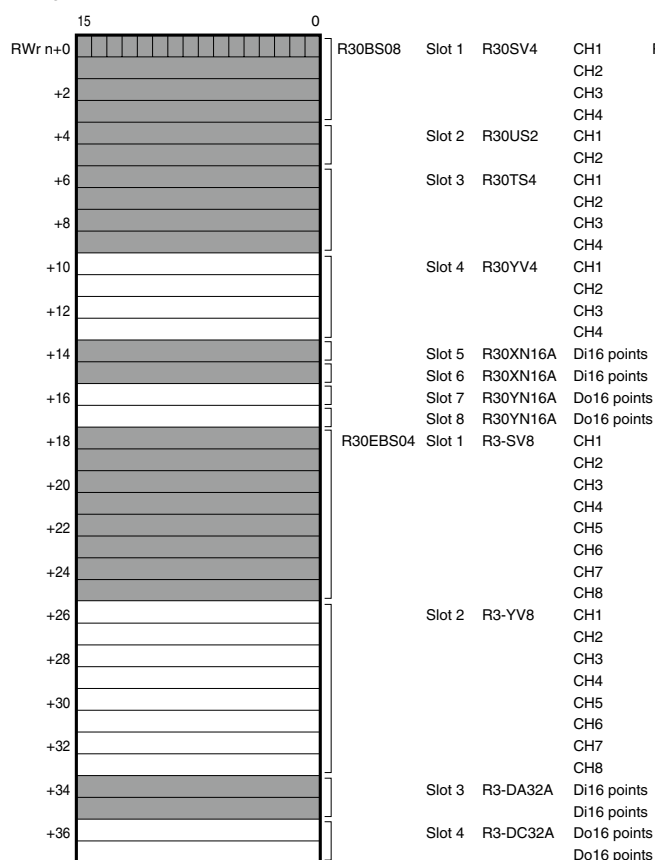
**Link device:** RX/RX 128 points, RWw/RWr 64 points (points are total of R30 series and R3 series module)

For example, the configuration is as below, data areas are assigned as shown below.

| BASE     | SLOT NUMBER | MODEL    | NUMBER OF OCCUPIED STATION |
|----------|-------------|----------|----------------------------|
| R30BS08  | PWR         | R30PS1   | —                          |
|          | COM         | R30NCIE1 | —                          |
|          | 1           | R30SV4   | 4                          |
|          | 2           | R30US2   | 2                          |
|          | 3           | R30TS4   | 4                          |
|          | 4           | R30YV4   | 4                          |
|          | 5           | R30XN16A | 1                          |
|          | 6           | R30XN16A | 1                          |
|          | 7           | R30YN16A | 1                          |
| R30EBS04 | 1           | R3-SV8   | 8                          |
|          | 2           | R3-YV8   | 8                          |
|          | 3           | R3-DA32A | 2                          |
|          | 4           | R3-DC32A | 2                          |

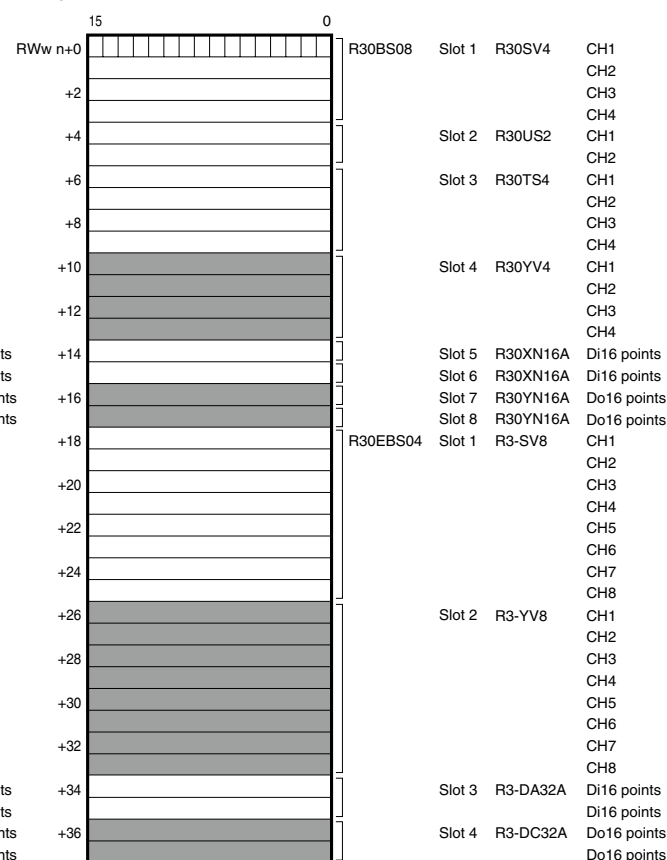
### ■ INPUT DATA

The figure below shows the data sent from the device to the master.

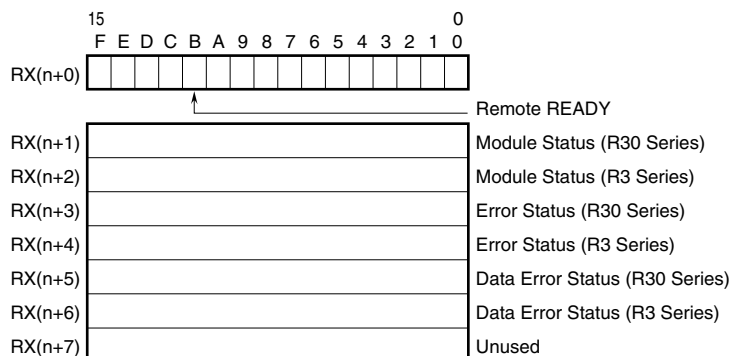


### ■ OUTPUT DATA

The figure below shows the data received from the master.



## ■ STATUS DATA



- RX(n+0)0 to 7 is reservation area, RX(n+0)B is used as Ready signal, the bit is “1” when this module is in normal. RX(n+0)8 to A, RX(n+0)C to F are not used.

When the Ready signal is 0, current input data and status are not reflected correctly.

When the Ready signal is 1, input data and status are determined valid data.

- Module Status**

RX(n+1)0 to RX(n+1)F indicate whether individual I/O modules of R30 series are mounted or not .

RX(n+2)0 to RX(n+2)F indicate whether individual I/O modules of R3 series are mounted or not.

The bit corresponding to the mounted slot turns to “1”, and the unmounted slot to “0”.

- Error Status**

RX(n+3)0 to RX(n+3)F indicate error status for each module of R30 series.

The bit corresponding to such module turns to “1”, as described below.

When the each module is detached, the error bit is cleared.

However, when the last module is detached, the error bit is held.

R30X16(under development) input power in error or disconnected.

R30Y16(under development) output current in error (e.g. load unconnected)

RX(n+4)0 to RX(n+4)F indicate error status for each module of R3 series.

The bit corresponding to such module turns to “1”, as described below.

When the each module is detached, the error bit is held.

R3-TSx, R3-RSx, R3-US4 input burnout

R3-DA16A input power in error or disconnected

R3-YSx output current error (e.g. load unconnected)

R3-PC16A external power supply in error or disconnected

- Data Error Status**

RX(n+5)0 to RX(n+5)F indicate data error status for each module of R30 series.

The bit corresponding to such module turns to “1”, as described below.

When the each module is detached, the error bit is cleared.

However, when the last module is detached, the error bit is held.

Input value is out of -15% to 115%

R30TS4, R30RS4, R30USx input burnout

RX(n+6)0 to RX(n+6)F indicate error status for each module of R3 series.

The bit corresponding to such module turns to “1”, as described below.

When the each module is detached, the error bit is held.

Input value is out of -15% to 115%

In the case of R3-US4 (voltage input) input level out of -10% to 110%.

|                              |                    |
|------------------------------|--------------------|
| RX(n+1)0, RX(n+3)0, RX(n+5)0 | R30 series slot 1  |
| RX(n+1)1, RX(n+3)1, RX(n+5)1 | R30 series slot 2  |
| RX(n+1)2, RX(n+3)2, RX(n+5)2 | R30 series slot 3  |
| ⋮                            |                    |
| RX(n+1)F, RX(n+3)F, RX(n+5)F | R30 series slot 16 |

|                              |                             |
|------------------------------|-----------------------------|
| RX(n+2)0, RX(n+4)0, RX(n+6)0 | R3 series extension slot 1  |
| RX(n+2)1, RX(n+4)1, RX(n+6)1 | R3 series extension slot 2  |
| RX(n+2)2, RX(n+4)2, RX(n+6)2 | R3 series extension slot 3  |
| ⋮                            |                             |
| RX(n+2)F, RX(n+4)F, RX(n+6)F | R3 series extension slot 16 |

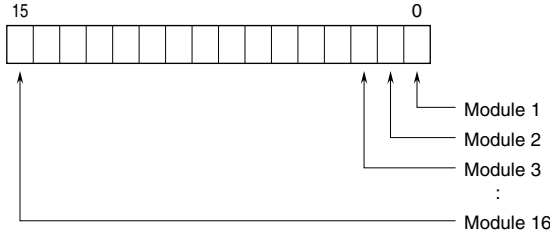
Link devices other than the above are not in use.

## I/O DATA DESCRIPTIONS

### ■ OPERATION IN CASE OF A COMMUNICATION ERROR WITH I/O MODULES

When the communication between the network module and the I/O modules is lost due to an error in an input module, the last process values are held until the communication is re-established.

### ■ MODULE STATUS, ERROR STATUS, DATA ERROR STATUS



### ■ ANALOG DATA (16-bit data, models: R30SV4, R30SV2, R30YV4, R30YS4, R30US4, etc.)

16-bit binary data.

Basically, 0 to 100% of the selected I/O range is converted into 0 to 10000 (binary).

Negative percentage is represented in 2's complements.



### ■ ANALOG DATA (16-bit data, models: R30RS4, R30TS4, R30US4, etc.)

16-bit binary data.

With °C temperature unit, raw data is multiplied by 10. For example, 25.5°C is converted into 255.

With °F temperature unit, the integer section of raw data is directly converted into the data. For example, 135.4°F is converted into 135.

Minus temperature is converted into negative values, represented in 2's complements.



### ■ ANALOG DATA (16-bit data, models: R30CT4E etc.)

16-bit binary data.

Integer that engineering unit value (A) multiplied by 100 (for CLSE-R5, integer that engineering unit value (A) multiplied by 1000).



### ■ ANALOG DATA (32-bit data, models: R3-PA2, PA4A, WT1, WT4, etc.)

32-bit binary data is used for accumulated counts, encoder positions and active energy.

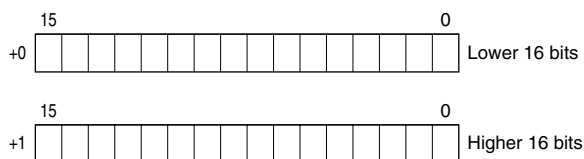
Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.



### ■ ANALOG DATA (32-bit data, models: R3-BA32A, BC32A, etc.)

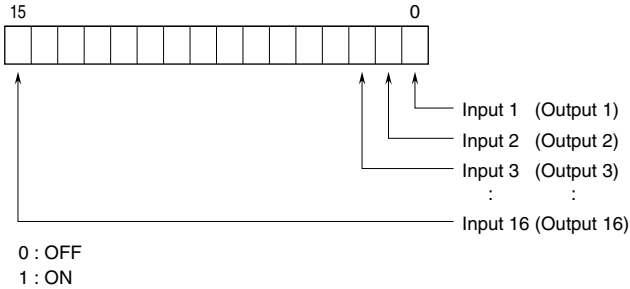
32-bit binary data is used for BCD.

Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.





■ DISCRETE DATA (models: R30XN16A, R30YN16x, etc.)



## SETTING

### ■ SUMMARY

Follow the setting procedure below for configuring R30NCIT1 by using GX Works3 of Mitsubishi Electric (hereinafter referred to as GX Works3).

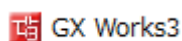
### ■ REGISTRATION FOR PROFILE

This unit supports CC-Link Family system profile (CSP+).

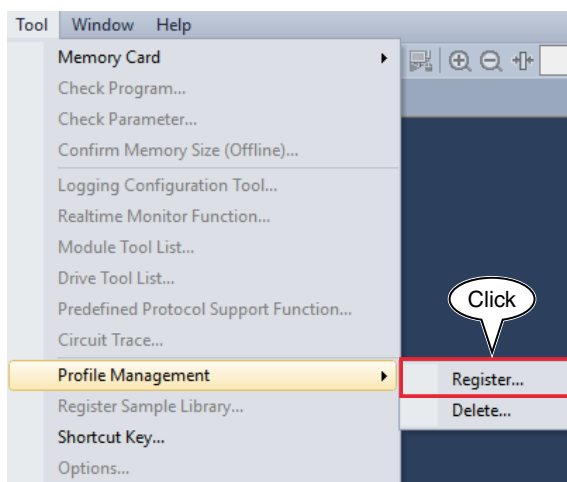
CSP+ can be downloaded from the M-System's web site (<https://www.msystem.co.jp>) or CC-Link Partner Association's web site (<https://www.cc-link.org>).

However, registration of CSP+ is optional. If CSP+ is not needed, skip this section and move on to [Construction of System].

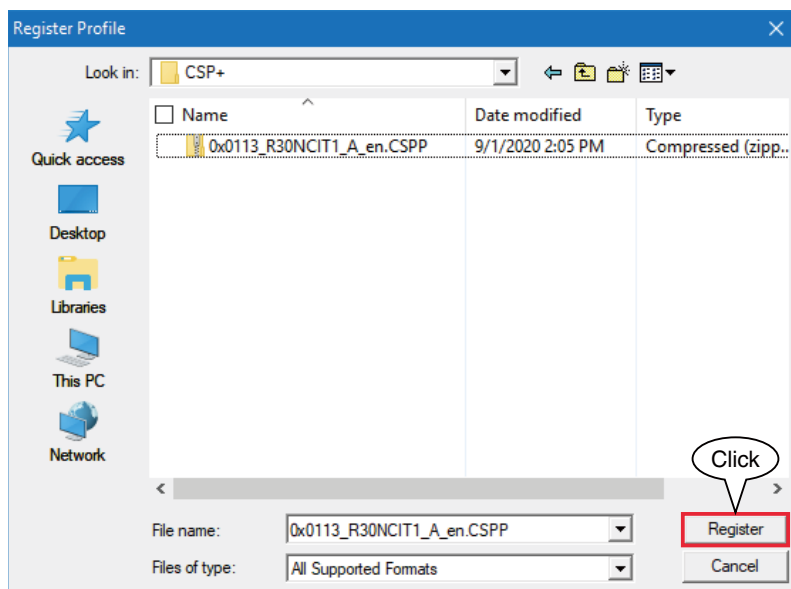
1) Start GX Works3.



2) From the main menu, select [Tool] → [Register Profile].

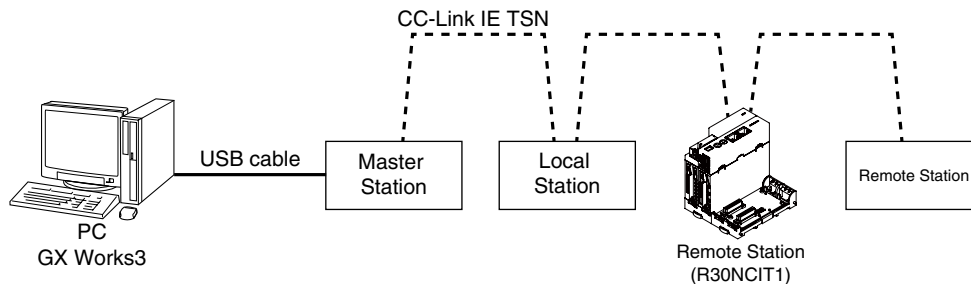


3) Select the downloaded CSP+ file, and click [Register] to finish registration.



## ■ CONSTRUCTION OF SYSTEM

The below figure shows an exemplary configuration of line connection.



1) Master station, Local Station and Remote Station (R30NCIT1) are connected by Ethernet cable. CN1 and CN2 of CC-Link IE TSN Network RJ-45 modular jacks can be connected in any order.

Before wiring, make sure to turn off the power of each unit.

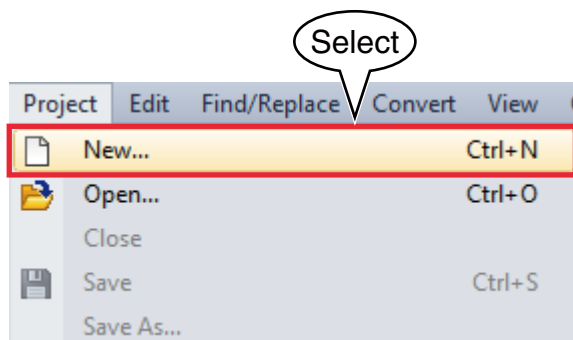
2) After wiring is completed, turn on each unit.

## ■ CREATION OF PROJECT

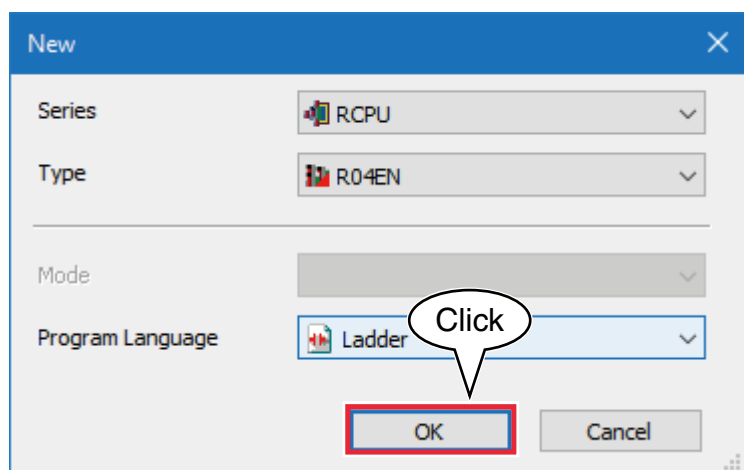
Connect the PC and the master station, and create a project of the master station with GX Works3 installed in the PC.

1) Start GX Works3.

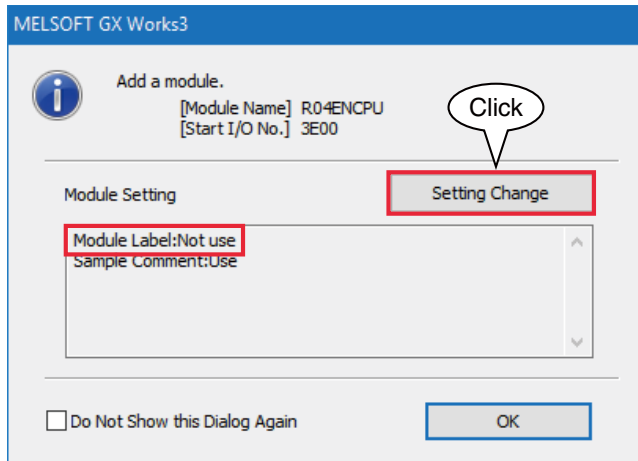
2) From the main menu, select [Project] → [New] to create a new project.



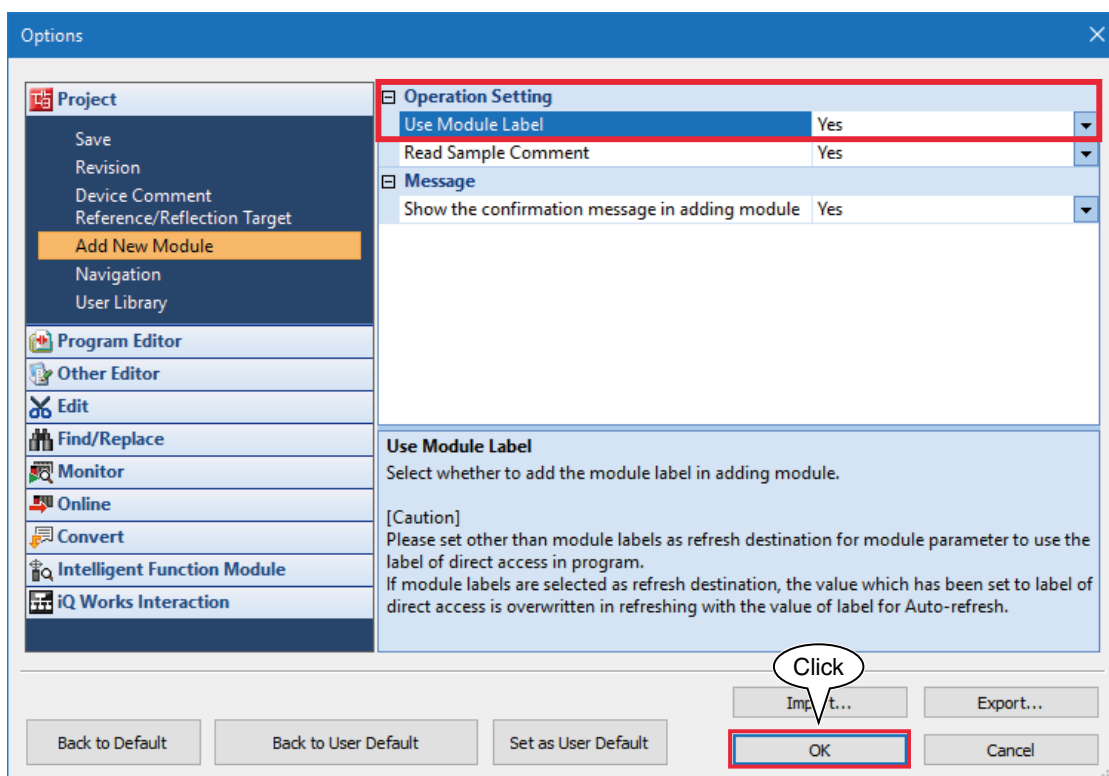
3) Select the series, type, and program language, and click OK.



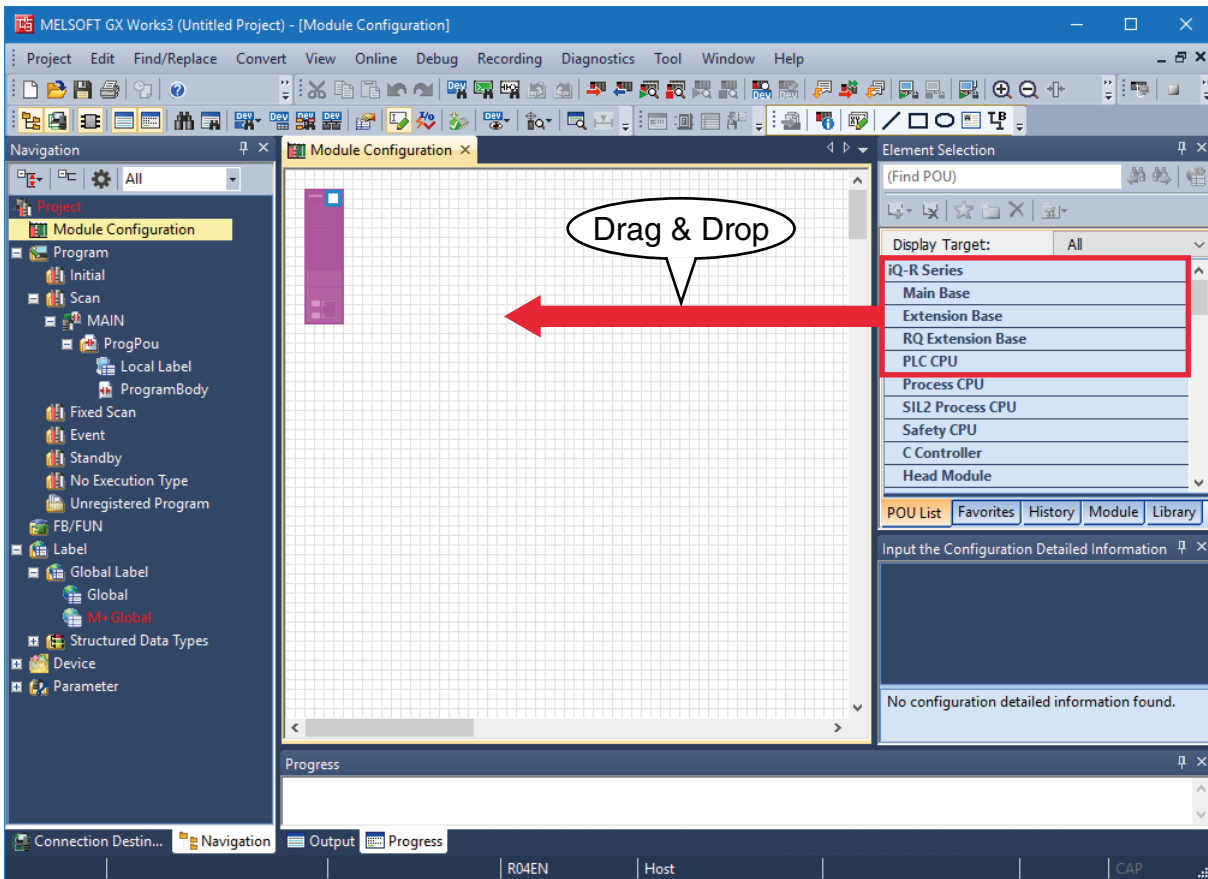
- 4) In the following window, when [Module Label: Not use] is displayed in Module Setting, click [Setting Change] to open the option window, and change to [Use].



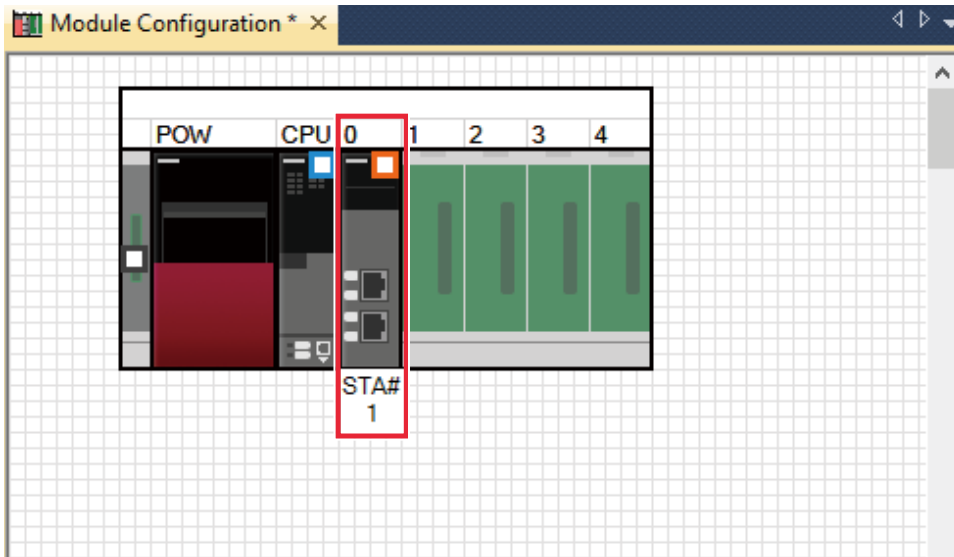
- Select [Yes] for [Use Module Label] in [Operation Setting], and click [OK].



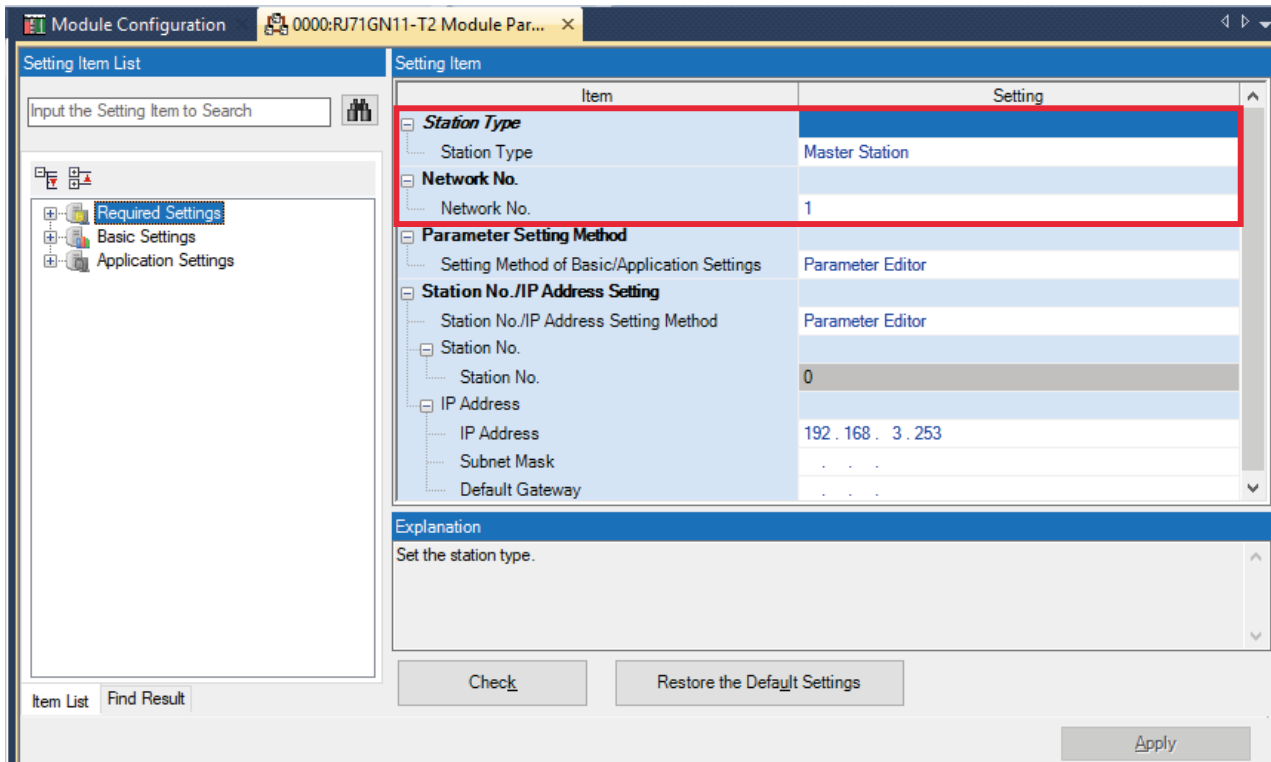
- 5) Double click [Module Configuration] in the Navigation window to open the [Module Configuration] window. According to the real PLC configuration, select the module from [POU List] of the [Element Selection] window, and drag and drop it to the module configuration diagram.



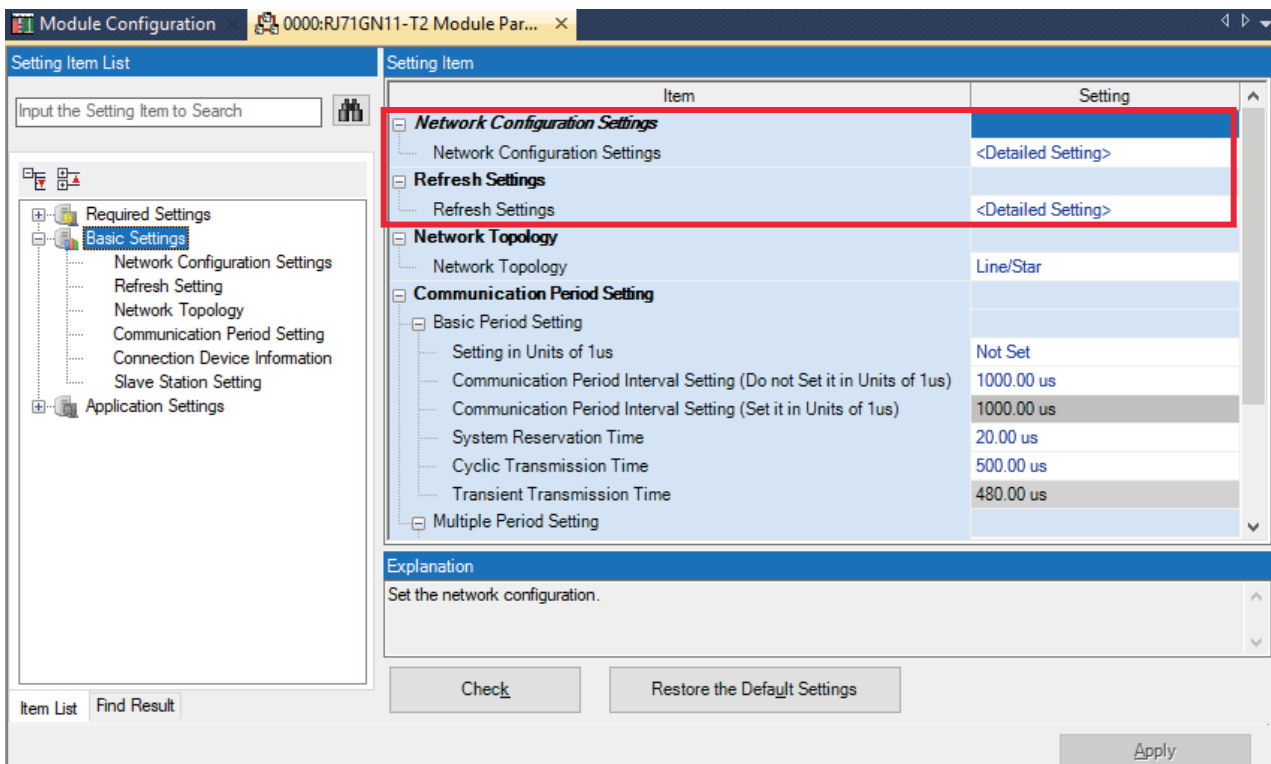
- 6) Double click [CC-Link IE TSN network module] to open the parameter setting window.



7) Set Station Type to [Master Station], Network No. to 1 in [Required Settings].

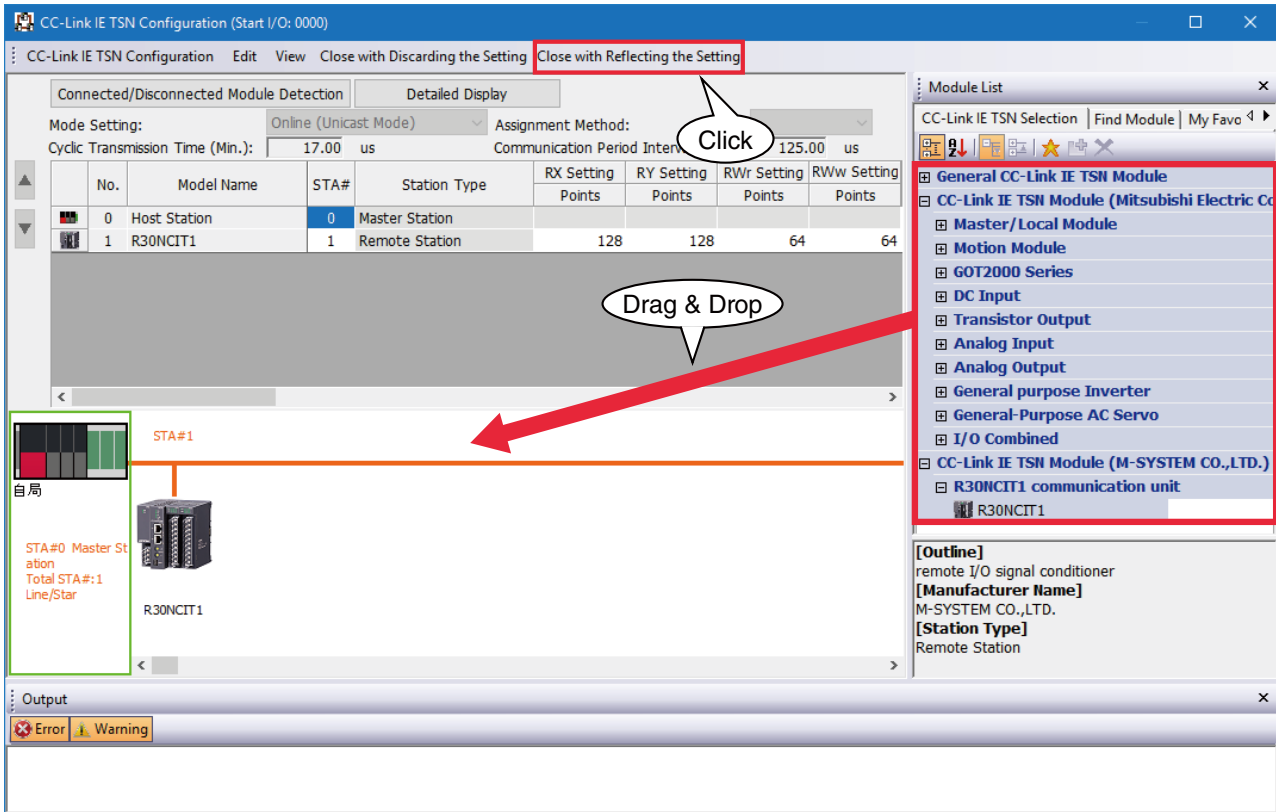


8) Click <Detailed Setting> of [Network Configuration Settings] in [Basic Settings] to display the [CC IE TSN Configuration] window

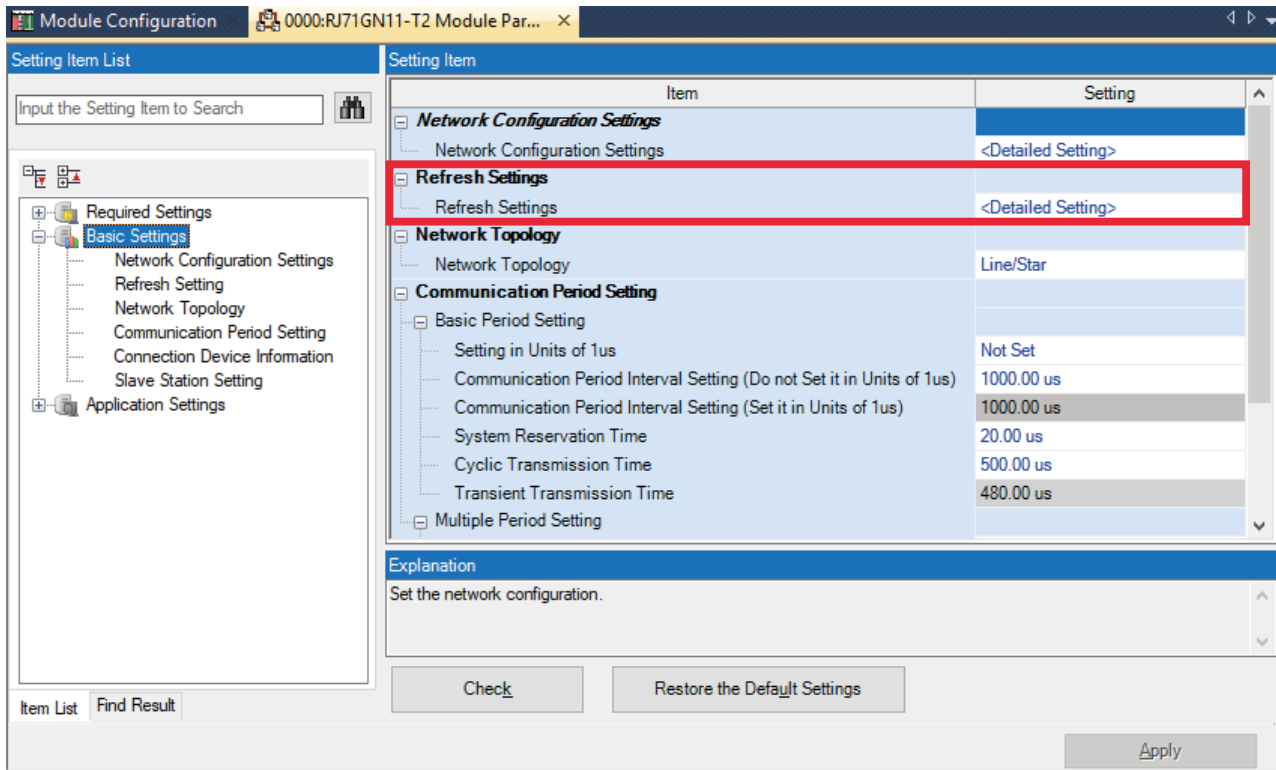


According to the real system configuration, select the device from [Module List], and drag and drop it to the device configuration diagram. Click [Close with Reflecting Setting].

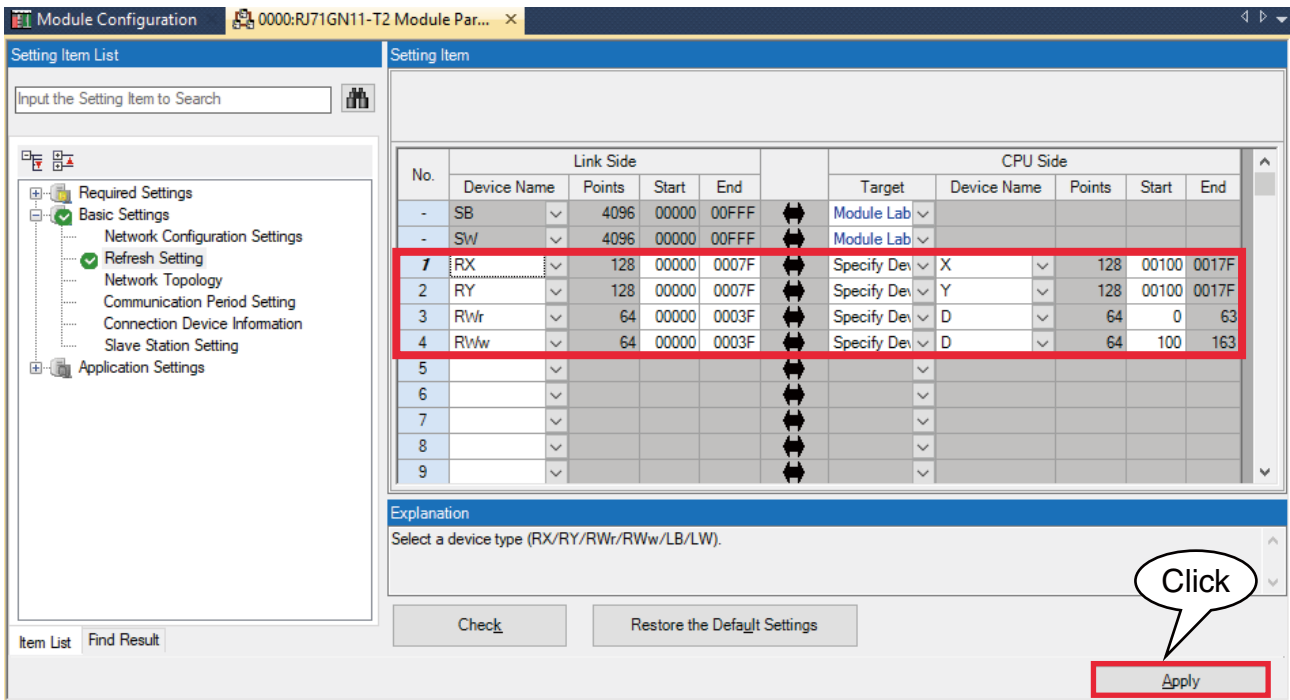
\* When CSP+ not registered, select [General CC IE TSN Module].



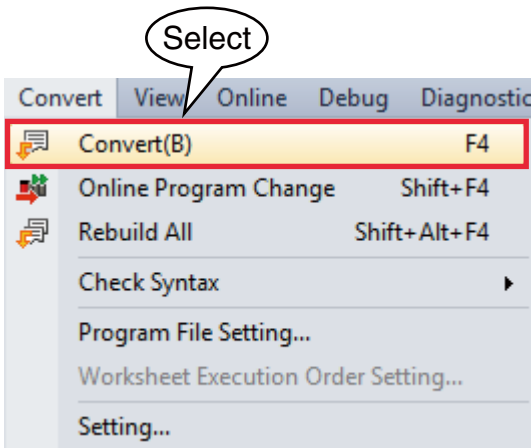
9) Click <Detailed Setting> of [Refresh Setting] to display the Refresh Setting window



Assign link devices RX/RY/RWr/RWw to devices of the CPU unit, click [Apply] to close the window.

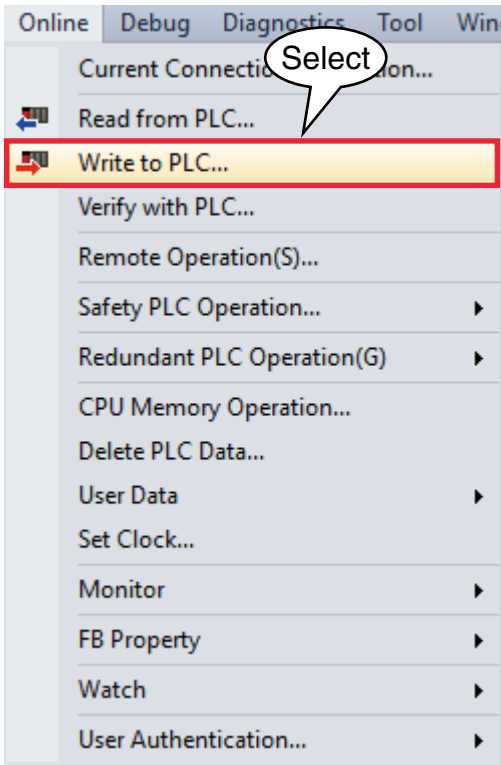


10) Click [Convert] → [Convert] to execute conversion.





11) Click [Write to PLC...] in [Online] on menu bar to open [Online Data Operation] window.



Check necessary items, and click [Execute].

