

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 interface 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.

■ EDS FILE

EDS files are downloadable at M-System's web site:
<http://www.m-system.co.jp>

POINTS OF CAUTION**■ CONFORMITY WITH EU DIRECTIVES**

- The equipment must be mounted inside a panel.
- 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 INSERTION/REMOVAL OF MODULES

- It is possible to replace the module with the power is supplied. Be sure to replace it when the module is not communicating with a host, as it is possible to affect the system. However, replacing multiple modules at once may greatly change line voltage levels. We recommend that you replace them one by one.

■ GENERAL PRECAUTIONS

- Do not set the DIP switch on the side panel while the power is supplied. The DIP switch is selectable for maintenance without the power.

■ 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 30 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.

■ 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.

INSTALLATION

Use the Base Model R6x-BSA or R6x-BSB.

Before mounting the Network Interface Module onto the Base, be sure to configure the module as explained below.

■ DATA ALLOCATION

The setting determines the data area size assigned to each I/O module mounted on the base.

The data sent/received via DeviceNet is mapped according to this setting.

In order to use the second channel of analog I/O modules, choose the Mode 2. (The 2nd channel cannot be sent/received in the Mode 1.)

See "COMPONENT IDENTIFICATION."

■ NODE ADDRESS & BAUD RATE

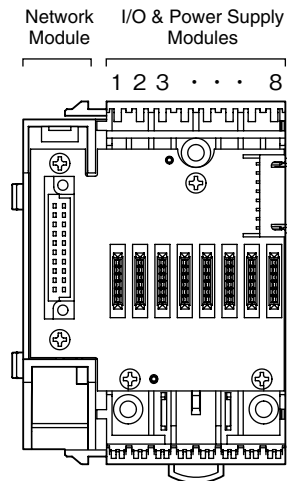
See "COMPONENT IDENTIFICATION."

■ NETWORK SLOTS ON THE BASE

Mount the Network Module to the dedicated slot on the base.

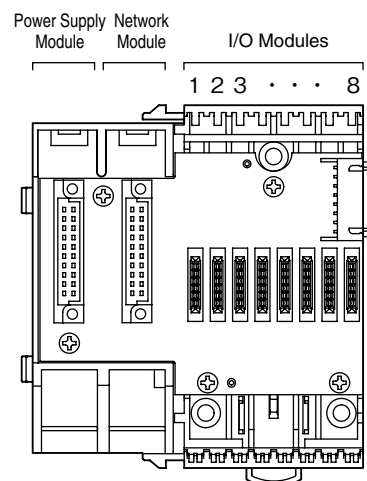
• R6x-BSA

The I/O and the power (model: R6x-PF1) modules can be positioned freely on whichever among the slots 1 through 8. Set a module address to each I/O module.



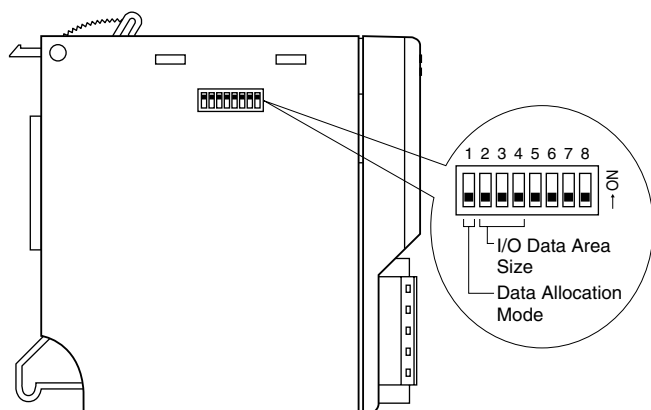
• R6x-BSB

The power module (model: R6-PSM) should be located on the extreme left, the I/O modules can be positioned freely on whichever among the slots 1 through 8. Set a module address to each I/O module.

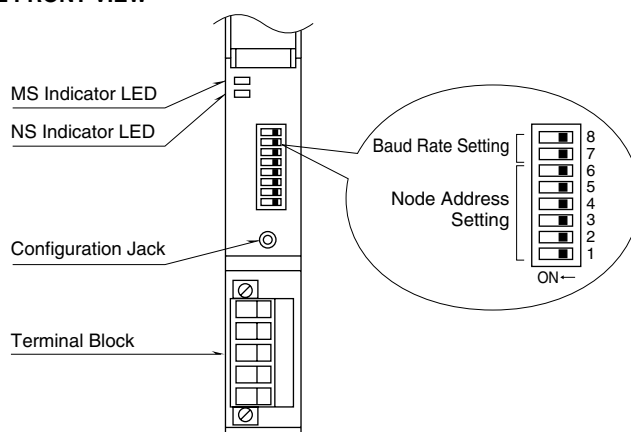


COMPONENT IDENTIFICATION

■ SIDE VIEW



■ FRONT VIEW



■ SIDE DIP SW

(*) Factory setting

SW2 through 4 specify how many words are assigned for the R6-ND1's I/O data. SW1 specifies how many words are assigned per module.

• Data Allocation Mode: SW1

DATA ALLOCATION MODE	SW1
2 (2 words) (*)	
1 (1 word)	■

■ = ON, Blank = OFF

• I/O Data Area Size: SW2, SW3, SW4

INPUT (words)		OUTPUT (words)	SW2	SW3	SW4
DATA	STATUS				
16 (*)	2 (*)	16 (*)			
32	3	32	■		
64	5	64		■	
8	2	8	■	■	
24	3	24			■
40	4	40	■		■
48	4	48		■	■
56	5	56	■	■	■

■ = ON, Blank = OFF

Note 1: Status area size depends upon Data area size.

Note 2: Input area is arranged in order of Input Data followed by Status.

Note 3: Status is arranged in order of the R6-ND1 Status (1 word fixed) followed by I/O Module Status (variable length).

Note 4: Be sure to set unused SW5 through 8 to OFF.

■ FRONT DIP SW

• Node Address: SW1 through SW6

Node Address is defined in a 6-digit binary code. SW1 to SW6 (NA0 to NA5) correspond to the least to the most significant digits as in the table below.

1 (NA0)	2 (NA1)	3 (NA2)	4 (NA3)	5 (NA4)	6 (NA5)
2^0	2^1	2^2	2^3	2^4	2^5

Each combination of the SW1 through SW6 positions corresponds to the addresses as in the table below.

NODE ADDRESS	SW6 (NA5)	SW5 (NA4)	SW4 (NA3)	SW3 (NA2)	SW2 (NA1)	SW1 (NA0)
0 (*)	0	0	0	0	0	0
1	0	0	0	0	0	1
2	0	0	0	0	1	0
3	0	0	0	0	1	1
:	:	:	:	:	:	:
60	1	1	1	1	0	0
61	1	1	1	1	0	1
62	1	1	1	1	1	0
63	1	1	1	1	1	1

0 = OFF, 1 = ON

• Baud Rate: SW7, SW8

BAUD RATE	SW7 (DR0)	SW8 (DR1)
125 kbps (*)		
250 kbps	■	
500 kbps		■
Invalid	■	■

■ = ON, Blank = OFF

Note 5: Setting 'Invalid' is alerted as 'critical link failure' status, turning the NS indicator (red) on.

Note 6: Switching the node address and/or the baud rate setting while the module is in communication status is alerted as 'minor failure' status, turning the MS indicator (red) blinking.

■ INDICATOR LED

ID	STATE	TO INDICATE
MS	Green	Operating in normal conditions
	Blinking Green	Standby (needs commissioning)
	Red	Critical failure
	Blinking Red	Minor failure
	OFF	No power supplied
	NS	Green
Blinking Green		Link on-line but no connections in the established state
Red		Critical link failure
Blinking Red		Minor link failure
OFF		No power supplied

PC CONFIGURATOR

With configurator software, settings shown below are available.
Refer to the software manual of R6CON for detailed operation.

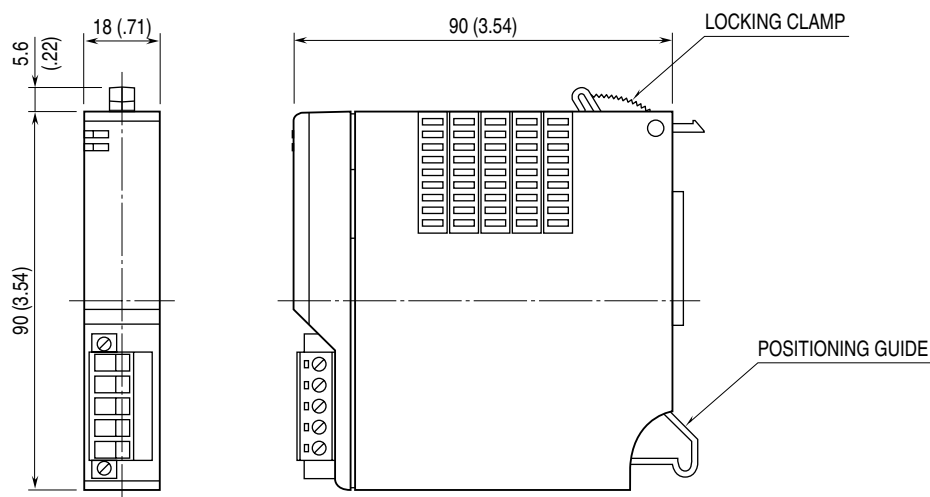
INTERFACE MODULE SETTING

PARAMETER	AVAILABLE RANGE	DEFAULT SETTING
Card map	00000000 to FFFFFFFF	FFFFFFF

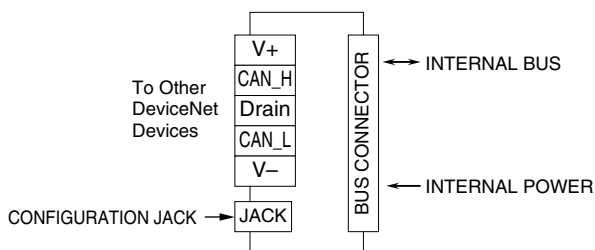
TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

EXTERNAL DIMENSIONS unit : mm (inch)



CONNECTION DIAGRAM



WIRING INSTRUCTIONS

EURO TYPE CONNECTOR TERMINAL (DeviceNet)

Applicable wire size: 0.2 – 2.5 mm² (AWG24 – 12)

Stripped length: 7 mm

TRANSMISSION DATA DESCRIPTIONS

The DIP SW located at the side of the module switches the unit's data allocation mode.

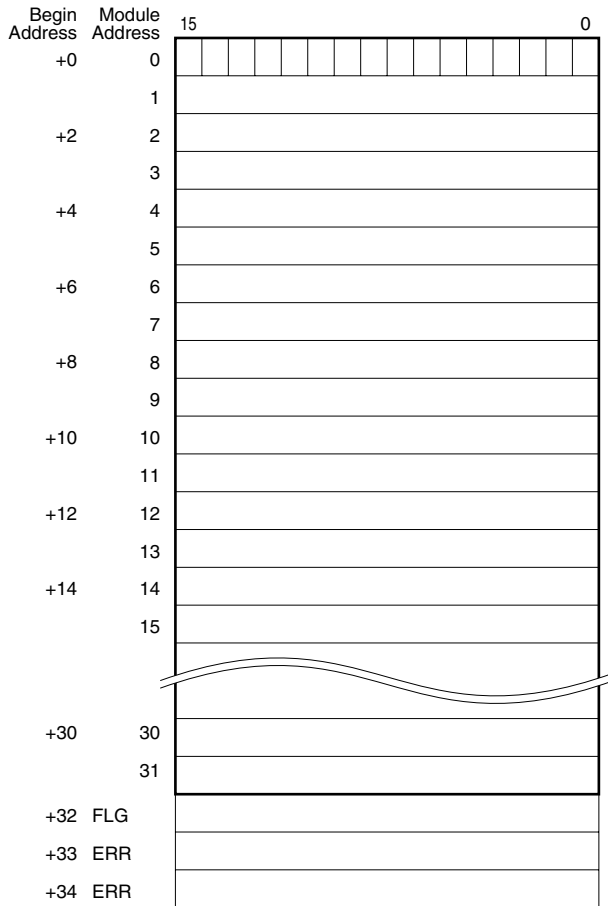
In the Data Allocation Mode 1, one (1) word is assigned per module. The second channel of analog I/O modules cannot be used. In the Data Allocation Mode 2, two (2) words are assigned per module regardless of whether the second word area is required or not, even for discrete I/O modules (Mode 1).

A maximum of 32 I/O modules can be mounted per node.

■ DATA ALLOCATION MODE 1

• Output Data

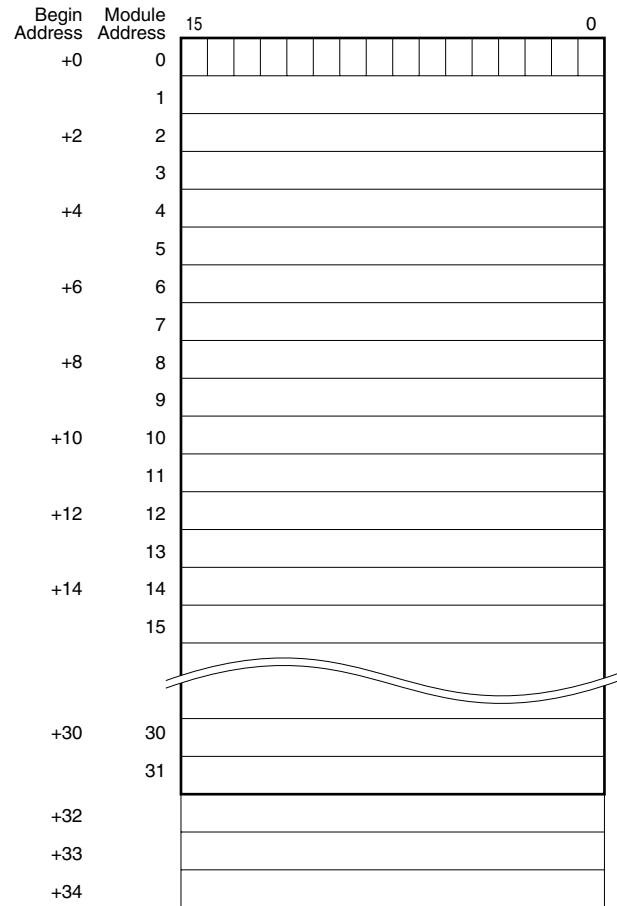
The figure below shows the allocation of data sent from the network module to the master.



I/O data area

• Input Data

The figure below shows the allocation of data sent from the master to the network module.

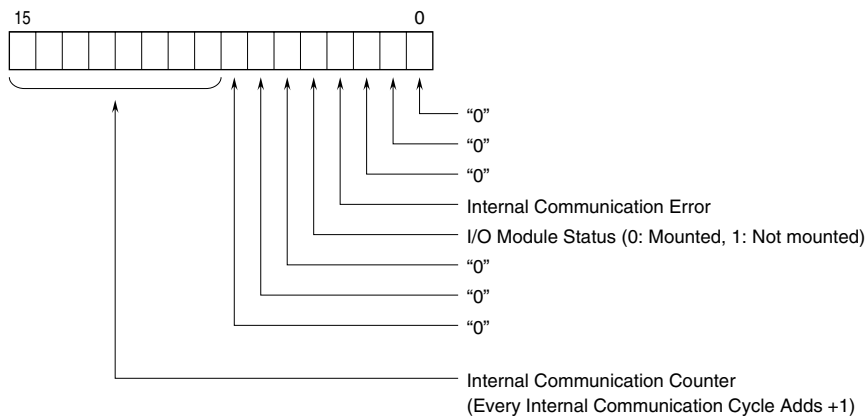


Each module takes one-word areas for input and output respectively, regardless of whether the module type is input or output. If a module for Data Allocation Mode 2 is used, the second channel is invalid.

Field input data is set in the module's output data area. The input data area is also secured though not used for an input module.

• Status Flag

FLG: Communication status data. When the module is unmounted, or when communication errors occur frequently, the corresponding bit turns to "1."

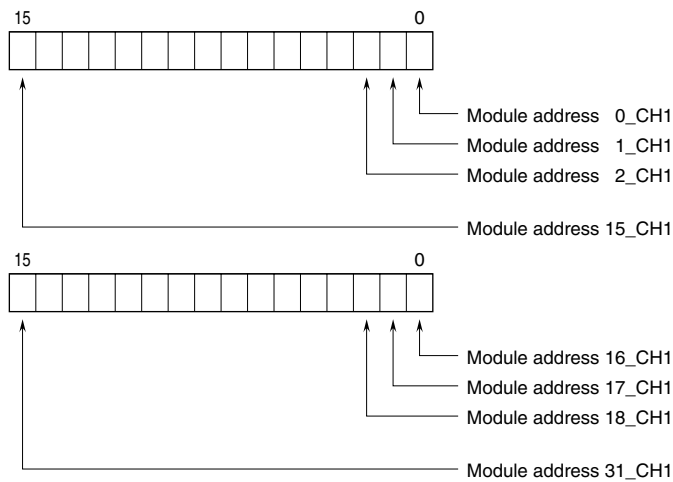


ERR: I/O module data error

- Input overrange ($\leq -15\%$ or $\geq 115\%$) of Input modules except R6x-TS2 and R6x-RS2.
- Inputs of R6x-TS2, R6x-RS2 burnout.
- Output wire breakdown of R6x-YS2 (Firmware Version 2.00 or later). *1

In the above case, the corresponded bit is "1."

Also the corresponded bit for unmounted channels is "1."

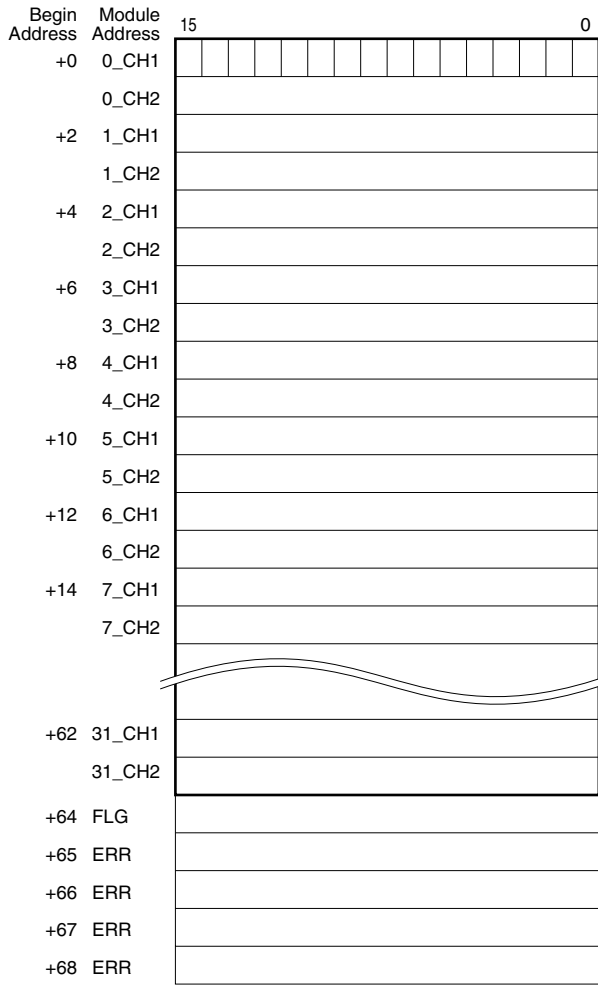



*1. R6-ND1 is compatible with Firmware version 1.03 or later.

■ DATA ALLOCATION MODE 2

• Output Data

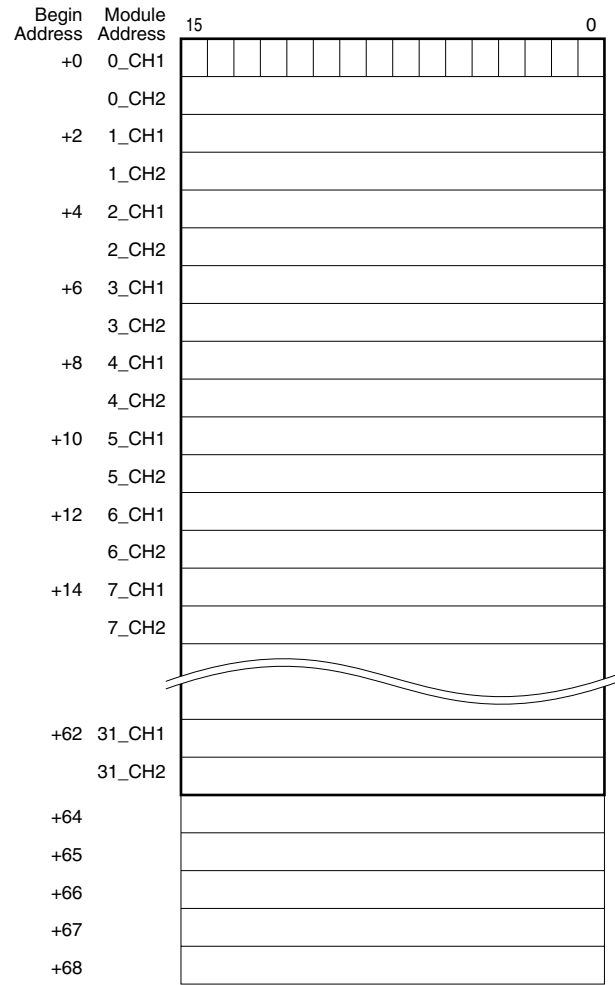
The figure below shows the allocation of data sent from the network module to the master.



 I/O data area

• Input Data

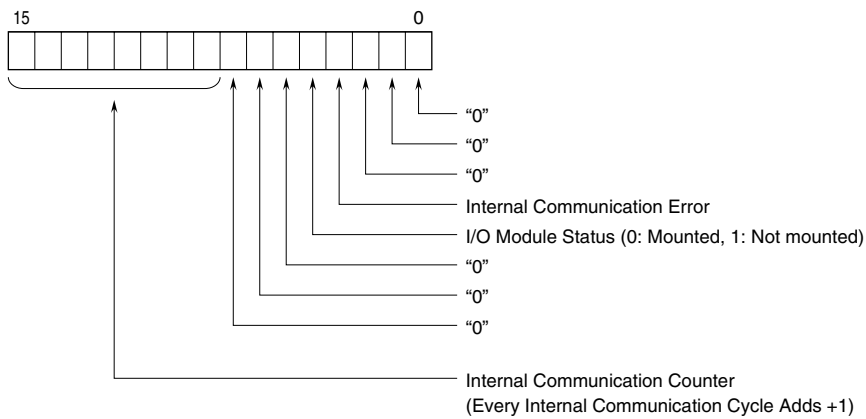
The figure below shows the allocation of data sent from the master to the network module.



Each module takes two-word areas for input and output respectively, regardless of whether the module type is input or output. If a module for Data Allocation Mode 1 is used, all the bits for the second channel data turn to "0" (unused). Field input data is set in the module's output data area. The input data area is also secured though not used for an input module.

• Status Flag

FLG: Communication status data. When the module is unmounted, or when communication errors occur frequently, the corresponding bit turns to "1."

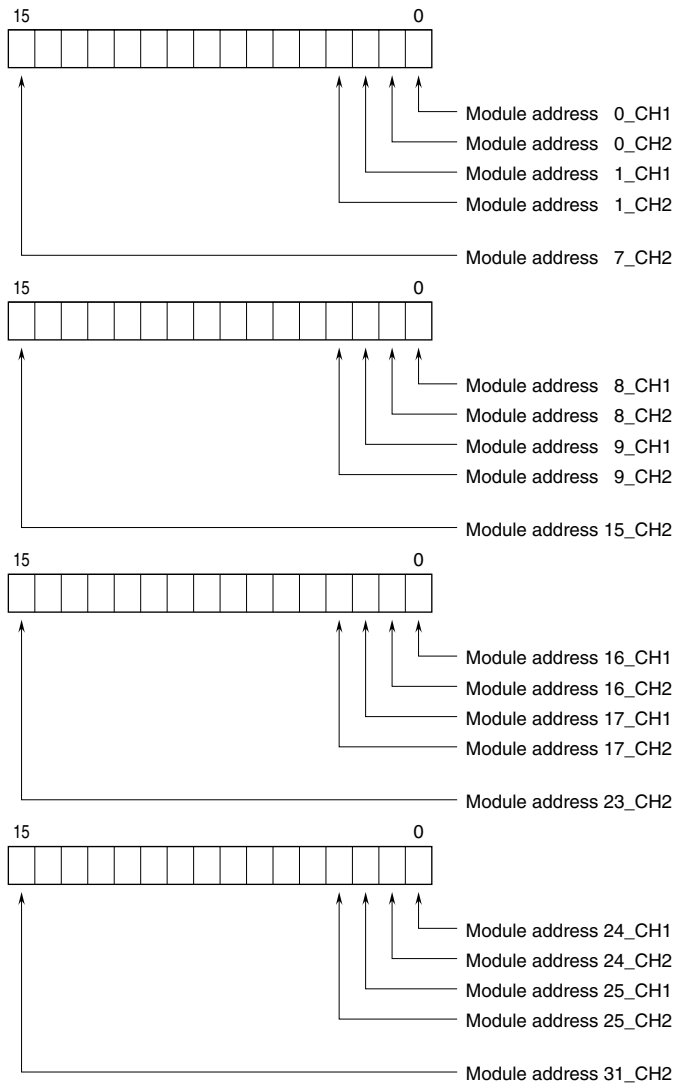


ERR: I/O module data error

- Input overrange ($\leq -15\%$ or $\geq 115\%$) of Input modules except R6x-TS2 and R6x-RS2.
- Inputs of R6x-TS2, R6x-RS2 burnout.
- Output wire breakdown of R6x-YS2 (Firmware Version 2.00 or later). *2

In the above case, the corresponded bit is "1."

Also the corresponded bit for unmounted channels is "1."



*2. R6-ND1 is compatible with Firmware version 1.03 or later.

I/O DATA DESCRIPTIONS

• 16-bit Analog Data

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

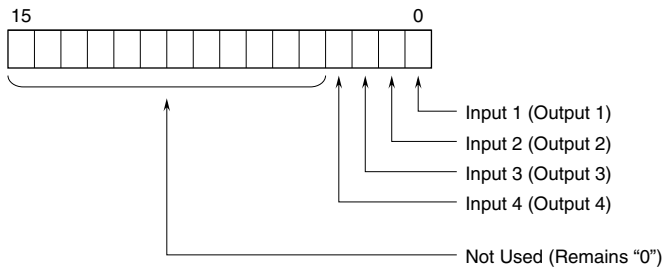
With °C temperature unit, raw data is multiplied by 10. For example, 25.5°C is converted into 255.

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.

Negative values are represented in 2's complements.



• Discrete Data



0 : OFF
1 : ON