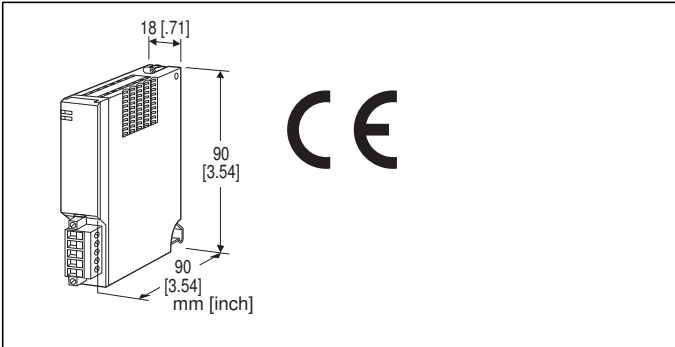


Remote I/O R5 Series

DeviceNet INTERFACE MODULE

(for 16-point analog signals)



Internal bus: Via the Installation Base (model: R5-BS)

Internal power: Via the base (model: R5-BS)

Isolation: DeviceNet to internal bus or internal power

Data allocation: Mode 1 or 2 set with the side DIP switch

DeviceNet COMMUNICATION

Transmission cable: Approved for DeviceNet

Node address setting: DIP switch; 00 - 63

Baud rate setting: DIP switch

125 kbps, 250 kbps, 500 kbps

NS (Network Status) indicator: Bi-color (green/red) LED indicates status of the communication link.

MS (Module Status) indicator: Bi-color (green/red) LED indicates device status.

MODEL: R5-ND1[1]

ORDERING INFORMATION

- Code number: R5-ND1[1]

Specify a code from below for [1].

(e.g. R5-ND1/Q)

- Specify the specification for option code /Q

(e.g. /C01)

[1] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to M-System's web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

RELATED PRODUCTS

- PC configurator software (model: R5CON)

- EDS file

The EDS file and configurator software are downloadable at M-System's web site.

A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual for the PC configurator for applicable cable types.

GENERAL SPECIFICATIONS

Connection

DeviceNet: Euro type connector terminal

(Applicable wire size: 0.2 - 2.5 mm² (AWG 24 to 12), stripped length 7 mm)

INSTALLATION

Supply voltage to network: 11 - 25 V DC supplied through the network terminal block

Supply current to network: 50 mA max.

Operating temperature: -10 to +55°C (14 to 131°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Atmosphere: No corrosive gas or heavy dust

Mounting: Installation Base (model: R5-BS)

Weight: 100 g (0.22 lb)

PERFORMANCE

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute (DeviceNet to internal bus or internal power)

STANDARDS & APPROVALS

EU conformity:

EMC Directive

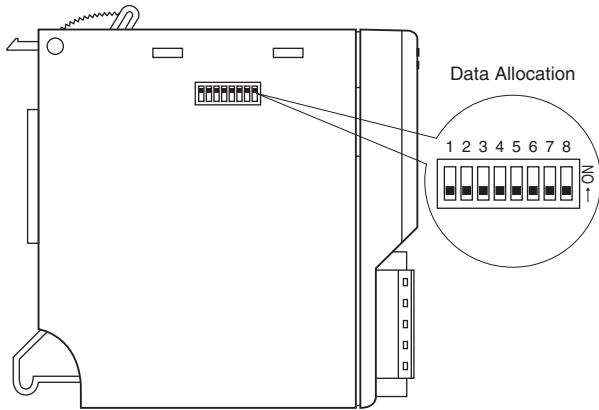
EMI EN 61000-6-4

EMS EN 61000-6-2

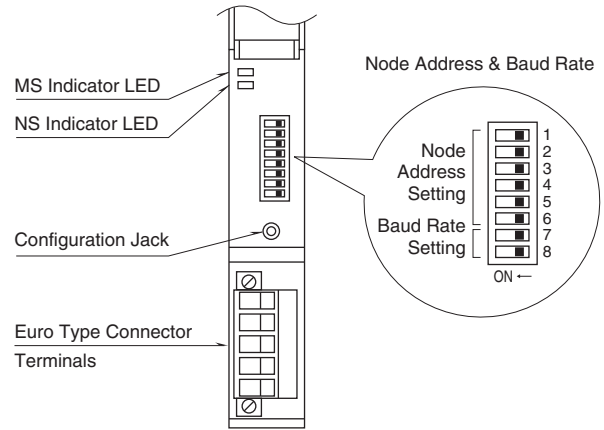
RoHS Directive

EXTERNAL VIEW

■ SIDE VIEW



■ FRONT VIEW



TRANSMISSION DATA DESCRIPTIONS

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

The Data Allocation Mode 1 is used when all analog I/O modules are single-channel types. In this mode, one (1) word is assigned for one I/O module. The second channel on the dual-channel modules cannot be used. Max. 16 I/O modules can be used per station.

The Data Allocation Mode 2 is used when one or more analog I/O modules are dual-channel types. In this mode, two (2) words are assigned for one I/O module regardless of whether the second word area is required or not. For example, discrete I/O modules require only one (1) word, but two (2) words are automatically assigned to these modules.

■ I/O CAPACITY

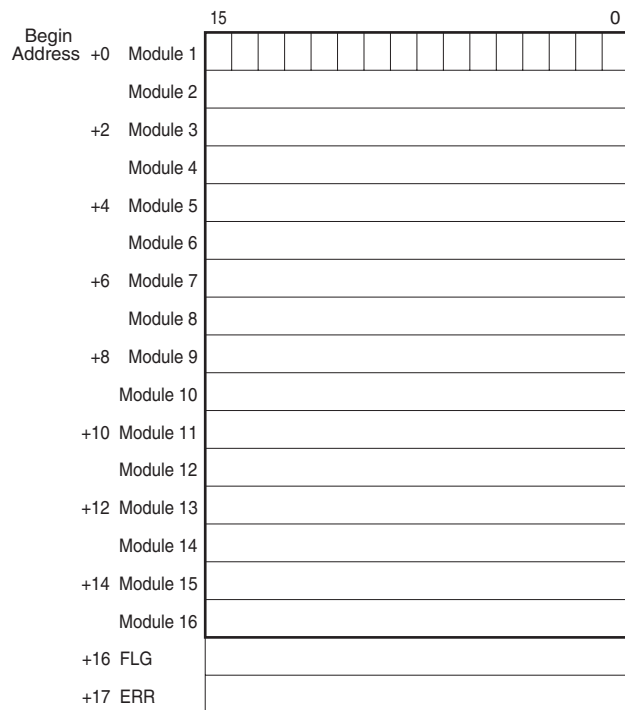
In Data Allocation Mode 1, a maximum of 16 I/O modules can be mounted per node. If two-channel type analog modules are mixed, the second channel I/O cannot be used.

In Data Allocation Mode 2, a maximum of 8 I/O modules can be mounted per node.

■ DATA ALLOCATION MODE 1

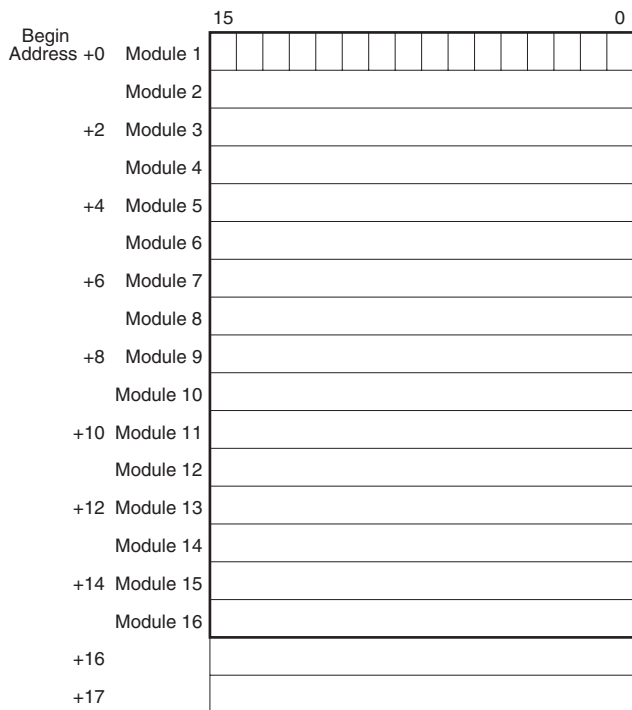
•Output Data

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



•Input Data

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



The area enclosed with a bold line is assigned for I/O data.

Each module takes one-word areas for input and output respectively, regardless of whether the module type is input or output.

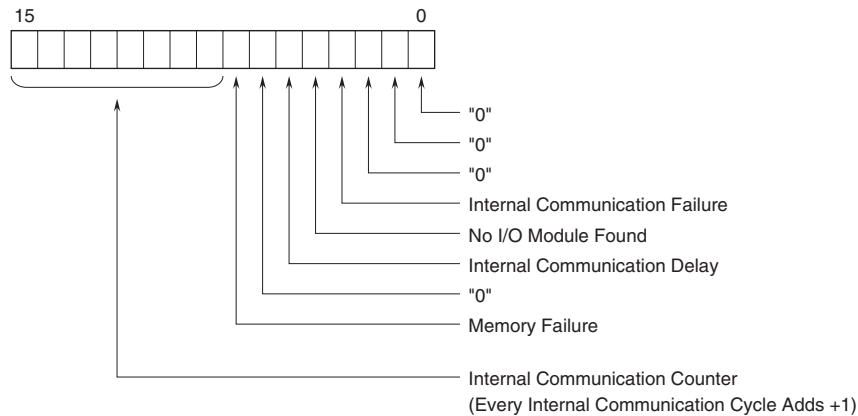
If a module for Data Allocation Mode 2 is used, the second channel data is not transmitted.

Each module can handle either input or output data. Input and output cannot be mixed in one module.

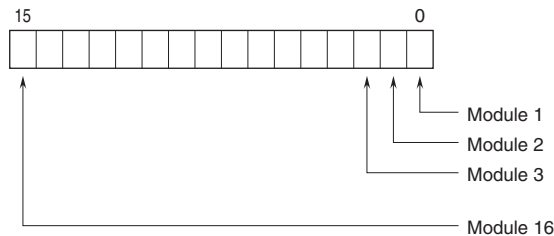
Input data from the master device is transferred to the module's output data area. The master device can read from the output data area the data it has set.

•Status Flag

FLG: Communication status data. When the module is unmounted, the module type is not correct, or when communication errors occur frequently, the corresponding bit turns to "1."



ERR: Analog input modules check high/low limits and ADC. When there is an error in one or more channels, the bit corresponding to the channels turns to "1." The bit corresponding to unmounted channels turns to "1."



■ DATA ALLOCATION MODE 2

•Output Data

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

Begin Address	Module	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
+0	Module 1+0																
	Module 1+1																
+2	Module 2+0																
	Module 2+1																
+4	Module 3+0																
	Module 3+1																
+6	Module 4+0																
	Module 4+1																
+8	Module 5+0																
	Module 5+1																
+10	Module 6+0																
	Module 6+1																
+12	Module 7+0																
	Module 7+1																
+14	Module 8+0																
	Module 8+1																
+16	FLG																
+17	ERR																

•Input Data

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

Begin Address	Module	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
+0	Module 1+0																
	Module 1+1																
+2	Module 2+0																
	Module 2+1																
+4	Module 3+0																
	Module 3+1																
+6	Module 4+0																
	Module 4+1																
+8	Module 5+0																
	Module 5+1																
+10	Module 6+0																
	Module 6+1																
+12	Module 7+0																
	Module 7+1																
+14	Module 8+0																
	Module 8+1																
+16																	
+17																	

The area enclosed with a bold line is assigned for I/O data.

Each module takes two-word areas for input and output respectively, regardless of whether the module type is input or output.

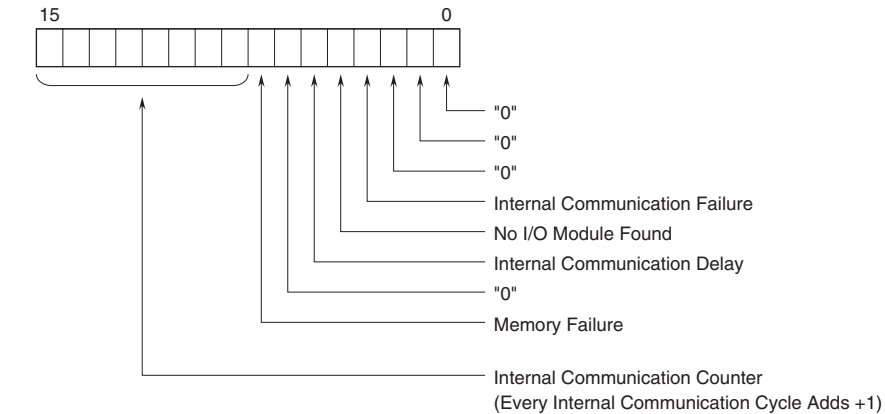
If a module for Data Allocation Mode 1 is used, all the bits for Module n+1 data turn to "0" (unused).

Each module can handle either input or output data. Input and output cannot be mixed in one module.

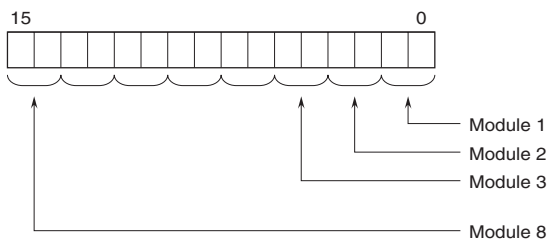
Input data from the master device is transferred to the module's output data area. The master device can read from the output data area the data it has set.

•Status Flag

FLG: Communication status data. When the module is unmounted, the module type is not correct, or when communication errors occur frequently, the corresponding bit turns to "1."



ERR: Analog input modules check high/low limits and ADC. When there is an error in one or more channels, the bit corresponding to the channels turns to "1." The bit corresponding to unmounted channels turns to "1." DC current output modules check output wire breakdown to alert as an error. The bit corresponding to the channels turns to "1."



Among the two bits assigned for each module, the least significant bit is used for channel 1 of a two-channel analog module or for a discrete module.

I/O DATA DESCRIPTIONS

The data allocations for typical I/O modules are shown below. Refer to the manual for each module for detailed data allocations.

■ ANALOG 16 BITS DATA

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

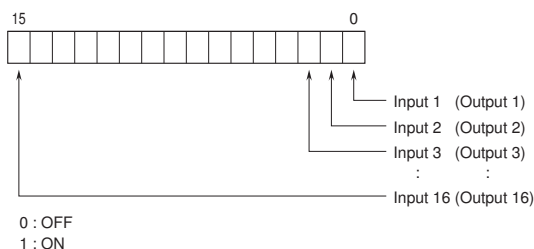
With °C or Kelvin temperature unit, raw data is multiplied by 10. For example, 25.5°C is converted into 255.

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.

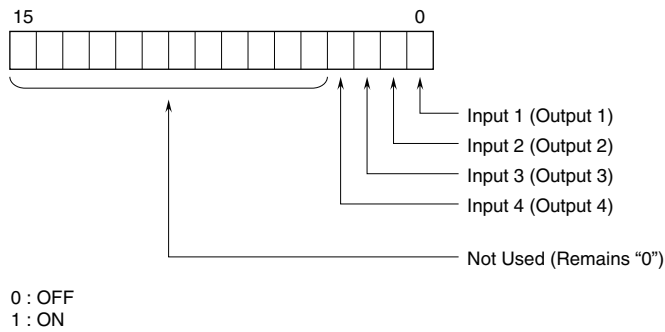
Negative values are represented in 2's complements.



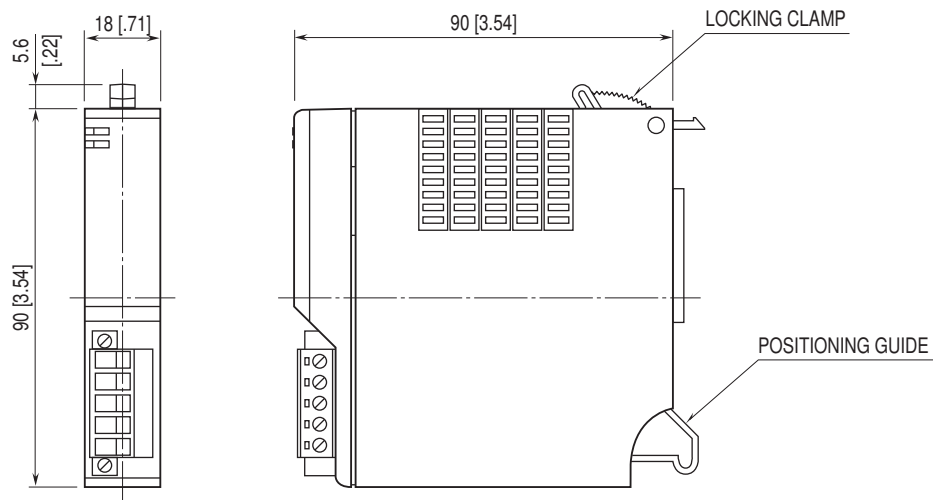
■ 16-POINT DISCRETE DATA



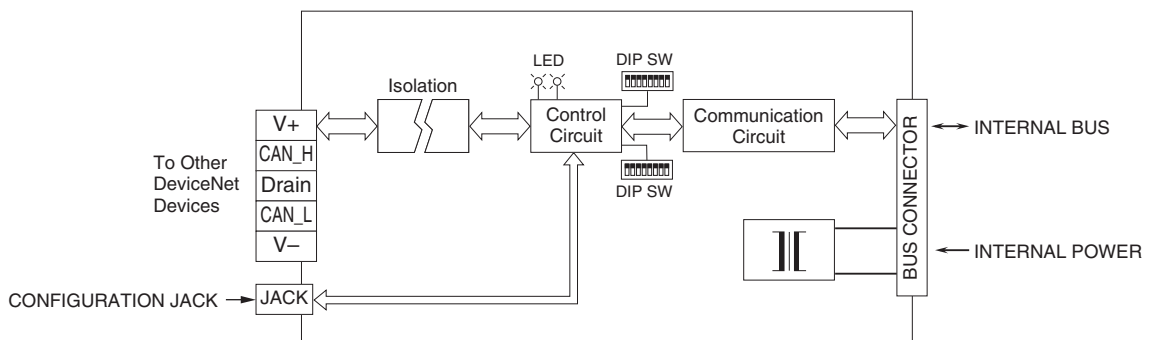
4-POINT DISCRETE DATA



EXTERNAL DIMENSIONS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.