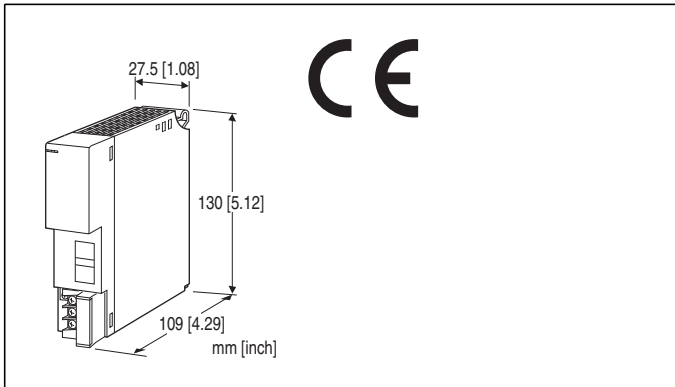


## Remote I/O R3 Series

### MECHATROLINK INTERFACE MODULE

(MECHATROLINK-III)



### MODEL: R3-NML3-[1][2]

#### ORDERING INFORMATION

- Code number: R3-NML3-[1][2]
- Specify a code from below for each of [1] and [2].  
(e.g. R3-NML3-N/CE/Q)
- Specify the specification for option code /Q  
(e.g. /C01)

#### [1] POWER INPUT

**N:** No power supply

AC Power

**K3:** 100 - 120 V AC

(Operational voltage range 85 - 132 V, 47 - 66 Hz) \*

(CE not available)

**L3:** 200 - 240 V AC

(Operational voltage range 170 - 264 V, 47 - 66 Hz) \*

(CE not available)

DC Power

**R:** 24 V DC

(Operational voltage range 24 V  $\pm$ 10 %, ripple 10 %p-p max.) \*

\* Not selectable for use with independent power modules or network modules with the internal power input options.

#### [2] OPTIONS (multiple selections)

Standards & Approvals

**blank:** Without CE

**/CE:** CE marking

Other Options

**blank:** none

**/Q:** Option other than the above (specify the specification)

#### SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our web site.)

**/C01:** Silicone coating

**/C02:** Polyurethane coating

**/C03:** Rubber coating

#### GENERAL SPECIFICATIONS

**Connection**

**MECHATROLINK:** MECHATROLINK connector

**Internal bus:** Via the Installation Base (model: R3-BSx)

**Internal power:** Via the Installation Base (model: R3-BSx)

**Power input, RUN contact output:** M3 separable screw terminal (torque 0.5 N·m)

**Screw terminal:** Nickel-plated steel

**Isolation:** MECHATROLINK to internal bus or internal power to power supply to RUN contact output to FG

**Dual communication setting:** Set with the side DIP switch

**Data allocation setting:** Set with the side DIP switch

**RUN indicator:** Bi-color (green/red) LED

Green ON after correctly receiving CONNECT command;

OFF after wire breakdown or correctly receiving

DISCONNECT command;

Red ON when receiving data (Function selected with DIP SW)

**ERR indicator:** Bi-color (green/red) LED

Green ON when receiving abnormal command;

Green ON when communication cable broken;

OFF when receiving normal command;

Red ON when transmitting data;

OFF at cable breakdown

(Function selected with DIP SW)

#### ■ RUN CONTACT OUTPUT

**RUN contact:** Turns ON when the ERR INDICATOR is OFF (MECHATROLINK in normal communication).

**Rated load:** 250 V AC @ 0.5 A ( $\cos \theta = 1$ )

30 V DC @ 0.5 A (resistive load)

(Less than 50 V AC to conform with EU Directive)

**Maximum switching voltage:** 250 V AC or 30 V DC

**Maximum switching power:** 250 VA or 150 W

**Minimum load:** 1 V DC @ 1 mA

**Mechanical life:**  $2 \times 10^7$  cycles (rate 300 cycles/min.) When driving an inductive load, external contact protection and noise quenching recommended.

#### MECHATROLINK COMMUNICATION

MECHATROLINK-III

**Baud rate:** 100 Mbps

**Transmission distance:** 6300 m max.

**Distance between stations:** 100 m max.

**Transmission media:** CAT5e STP

**Connector:** TYCO AMP Industrial mini I/O connector

**Max. number of slaves:** 62

(The maximum number of slaves might change depending on the master unit. Refer to the manual of the master unit)

**Input output data length:** 16/32/48/64 byte (Function selected with DIP SW on side panel)

12(16 byte setting)

28(32 byte setting)

44(48 byte setting)

60(64 byte setting)

**Station address:** 03H - EFH

(Function selected with Rotary SW)

**Available communication mode:**

Cyclic communication mode: For cyclic communication and message communication

Event-driven communication mode: For Event-driven communication

**Other slaves monitoring:** Not supported

**LNK 1 LED:** ON at normal communication

**LNK 2 LED:** ON at normal communication

## INSTALLATION

**Power consumption****•AC:**

Approx. 25 VA at 100 V

Approx. 30 VA at 200 V

**•DC:** Approx. 15 W

**Current consumption (no power supply):** 110 mA

**Output current (power supply):** 250 mA continuous at 20 V DC; 400 mA for 10 minutes

**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: R3-BSx)

**Weight:** 200 g (0.44 lb)

## PERFORMANCE

**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC

**Dielectric strength:** 1000 V AC @ 1 minute (MECHATROLINK to internal bus or internal power to power input to RUN output to FG)

## STANDARDS & APPROVALS

**EU conformity:**

EMC Directive

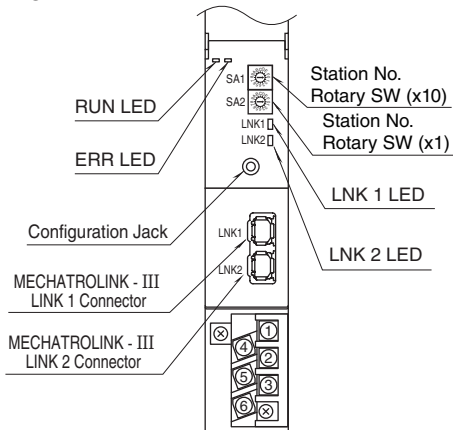
EMI EN 61000-6-4

EMS EN 61000-6-2

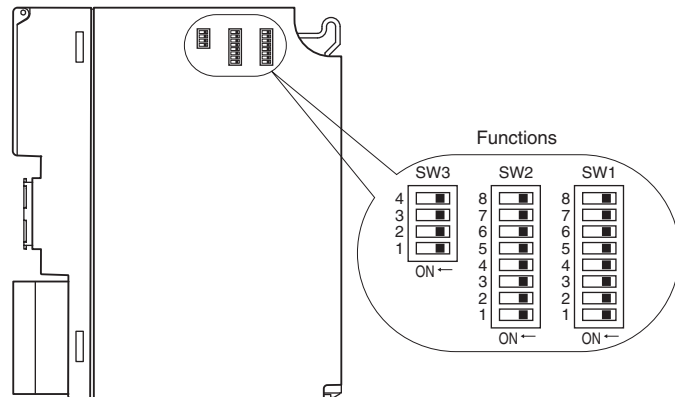
RoHS Directive

## EXTERNAL VIEW

### FRONT VIEW



### SIDE VIEW



## MECHATROLINK RELATED COMMANDS

Commands available with this unit are the following.

PROFILE	COMMAND	CODE	FUNCTION
Common command	NOP	00H	No operation command
	ID_RD	03H	Read ID command
	CONFIG	04H	Setup device command
	ALM_RD	05H	Read alarm or warning command
	ALM_CLR	06H	Clear alarm or warning command
	CONNECT	0EH	Establish connection command
	DISCONNECT	0FH	Release connection command
Standard I/O profile	DATA_RWA	20H	Transmit I/O data

## 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 DATA (16-bit data, models: R3-SV4, YV4, DS4, YS4, US4, etc.)

16-bit binary data.

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

-15 to 0 % is a negative range represented in 2's complement.

In case of R3-US4, -10 to 0% is a negative range represented in 2's complement.



### TEMPERATURE DATA (16-bit data, models: R3-RS4, TS4, US4, 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.



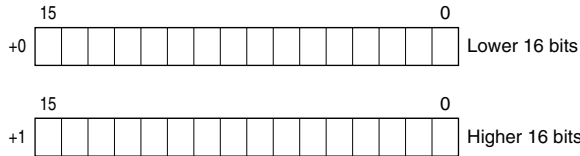
■ ANALOG DATA (16-bit data, models: R3-CT4A, CT4B, etc.)

16-bit binary data.  
 Integer obtained by multiplying unit value (A) by 100.  
 In case of CLSE-R5, integer obtained by multiplying unit value (A) by 1000.



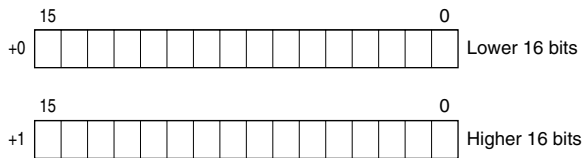
■ ACCUMULATED COUNT DATA (32-bit data, models: R3-PA2, PA4A, WT1, WT4, etc.)

32-bit binary data is used for accumulated counts and encoder positions.  
 Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.

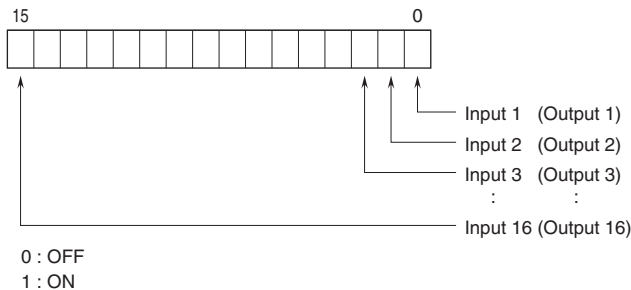


■ BCD DATA (32-bit data, models: R3-BA32A, BC32A, etc.)

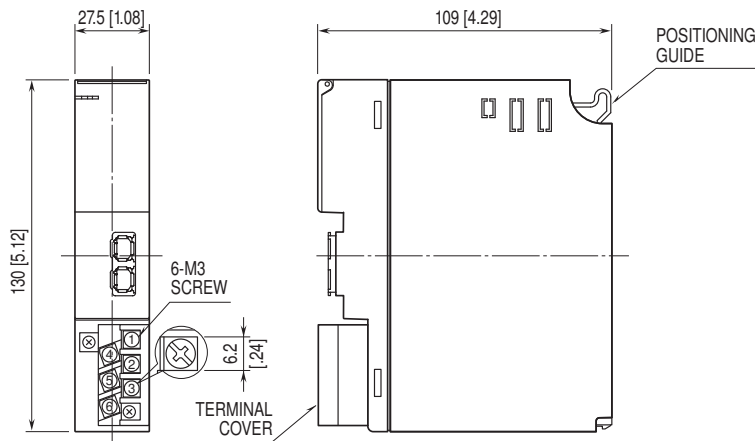
32-bit binary data is used for BCD.  
 Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.



■ 16-POINT DISCRETE DATA (models: R3-DA16, DC16, etc.)



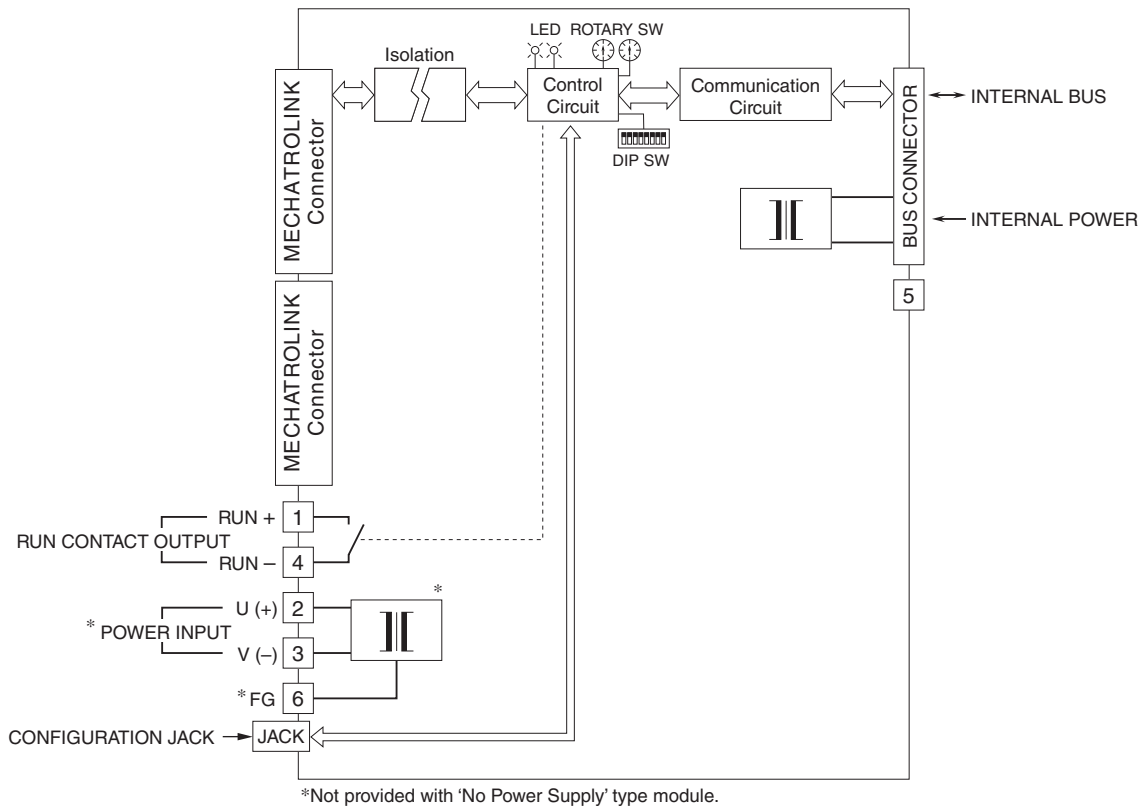
**EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]**



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FG terminal to ground.

Caution: FG terminal is NOT a protective conductor terminal.



Specifications are subject to change without notice.