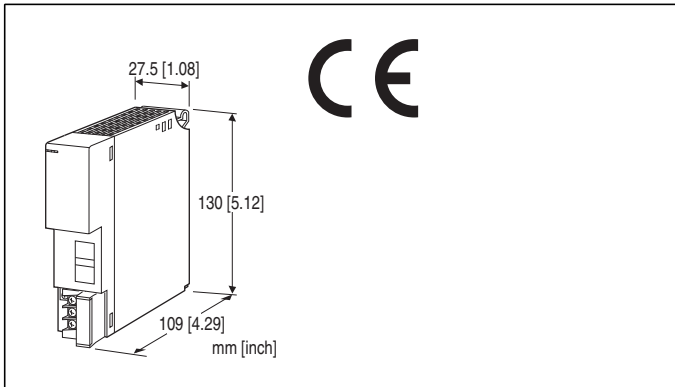


Remote I/O R3 Series

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 M-System's 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: 2×10^7 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

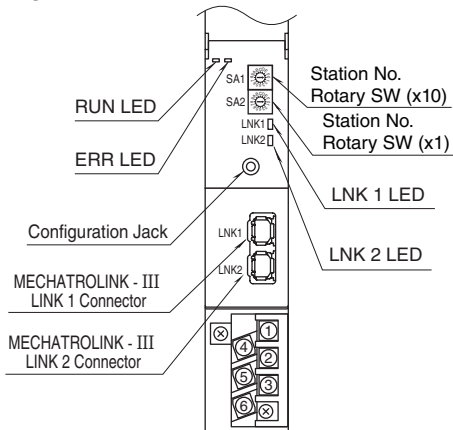
EMI EN 61000-6-4

EMS EN 61000-6-2

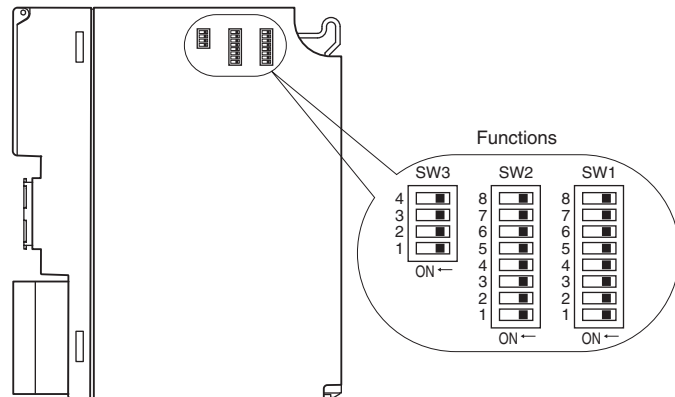
RoHS Directive

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.

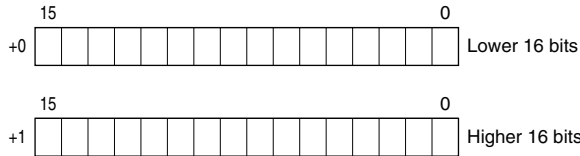
In case of CLSE-R5, integer obtained by multiplying unit value (A) by 1000.



■ 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.

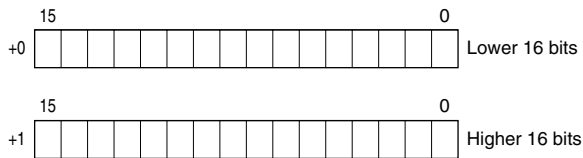
Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.



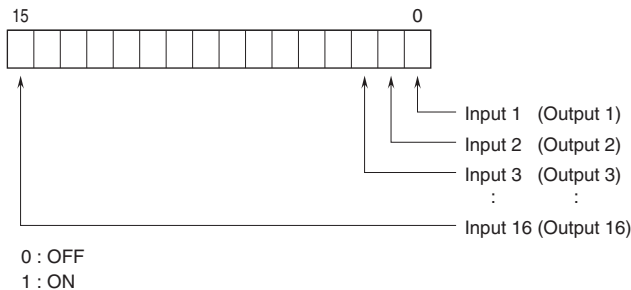
■ BCD DATA (32-bit data, models: R3-BA32A, BC32A, etc.)

32-bit binary data is used for BCD.

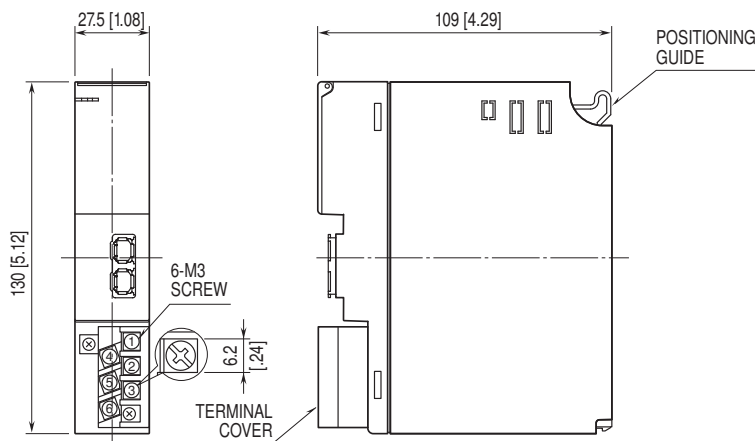
Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.



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



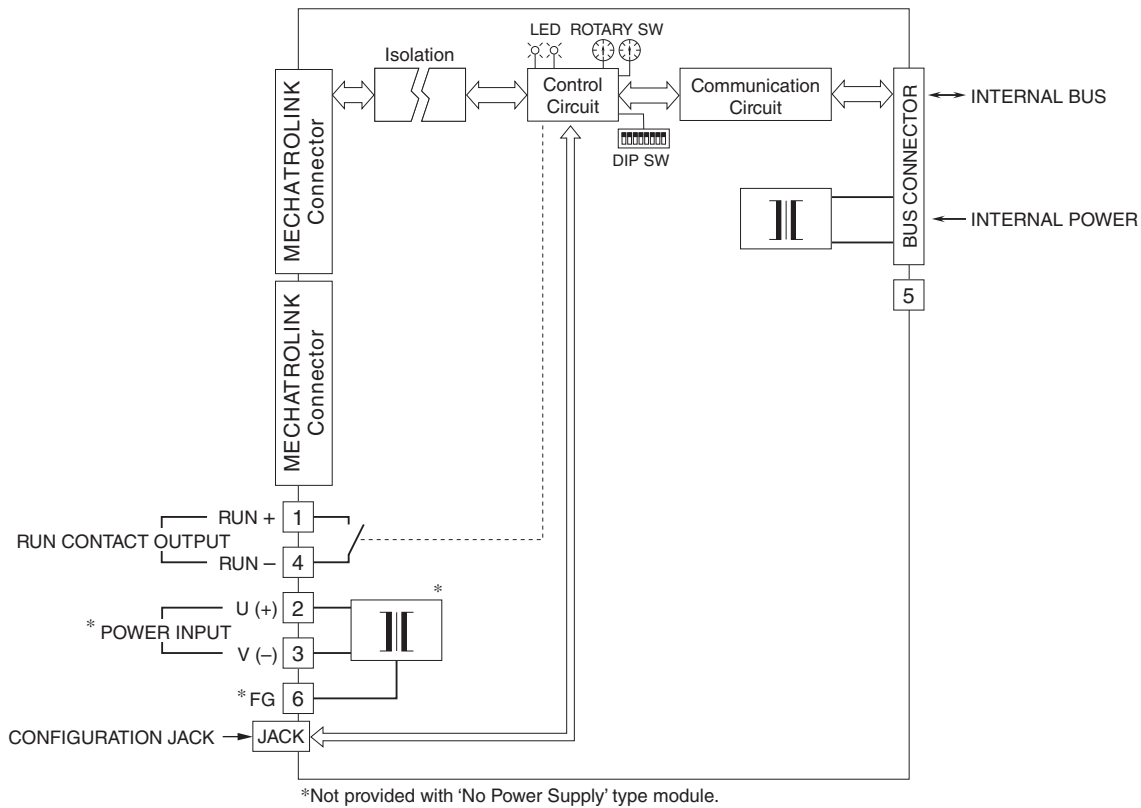
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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.