

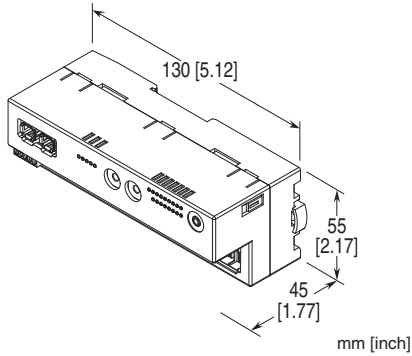
Remote I/O R7G4F Series

MECHATROLINK I/O MODULE

(NPN discreet input, 16 points, e-CON connector, MECHATROLINK- III use)

Functions & Features

16 points NPN discrete input module for MECHATROLINK- III



MODEL: R7G4FML3-B-DA16A-R[1]

ORDERING INFORMATION

- Code number: R7G4FML3-B-DA16A-R[1]
Specify a code from below for [1].
(e.g. R7G4FML3-B-DA16A-R/Q)
- Specify the specification for option code /Q
(e.g. /C01)

TERMINAL BLOCK

B: Tension clamp terminal block for power supply
Connector for MECHATROLINK- III
e-CON connector for I/O

TYPE

DA16A: NPN discrete input, 16 points

POWER INPUT

DC power

R: 24 V DC

(Operational voltage range: $\pm 10\%$; ripple 10 %p-p max.)

[1] OPTIONS

blank: none

/Q: Options 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-III: MECHATROLINK-III connector

Input: e-CON connector

Power input: Separable screwless spring terminal

Housing material: Flame-resistant resin (gray)

Isolation: Input to MECHATROLINK or FE to power

Status indicator LEDs: PWR, ERR, CON, LNK1, LNK2 (5 LEDs) indicate the module's operating conditions. (Refer to the instruction manual)

Discrete input status indicator LED: Green LED turns on with input ON

Read rate: 1 / 5 / 10(*) / 20 / 50 / 70 / 100 / 200 msec.

selectable with R7CFG

(*) factory default setting

MECHATROLINK-III COMMUNICATION

Baud rate: 100 Mbps

Transmission distance: 6300 m max.

Distance between stations: 100 m max.

Transmission media: MECHATROLINK cable (Model JEPMC-W6013-x-E, Yaskawa Controls Co., Ltd.)

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)

Transmission cycle: 125 μ sec., 250 μ sec., 500 μ sec., 1 - 64 msec. (with 1 msec. increments)

Communication cycle: 125 μ sec. through 64 msec.

Applicable profile: Standard I/O profile (cyclic communication)

Event-driven communication acquiring ID profile (event-driven communication)

Transmission bytes: 16 bytes

Station address: 03H through EFH (set with rotary switches)

Cyclic communication: Available

Event-driven communication: Available

Slave monitoring: None

INPUT SPECIFICATIONS

Sensor Excitation (External): 24 V DC $\pm 10\%$ (ripple 5 %p-p max.), ≤ 2 A (including discrete input load charge); rated current 8 A

Common: Positive common (NPN) per 16 points

Maximum inputs applicable at once: No limit (at 24 V DC)

MODEL: R7G4FML3-B-DA16A

Rated input voltage: 24 V DC $\pm 10\%$; ripple 5 %p-p max.
ON voltage / current: ≥ 15 V DC (X0 to X15 input terminal - +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (X0 to X15 input terminal - +24 V) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 k Ω
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.

INSTALLATION

Power consumption: Approx. 75 mA
Operating temperature: -10 to +55°C (14 to 131°F)
Storage temperature: -20 to +65°C (-4 to +149°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Atmosphere: No corrosive gas or heavy dust
Mounting: Surface or DIN rail (35 mm rail)
Weight: 130 g (0.29 lb)

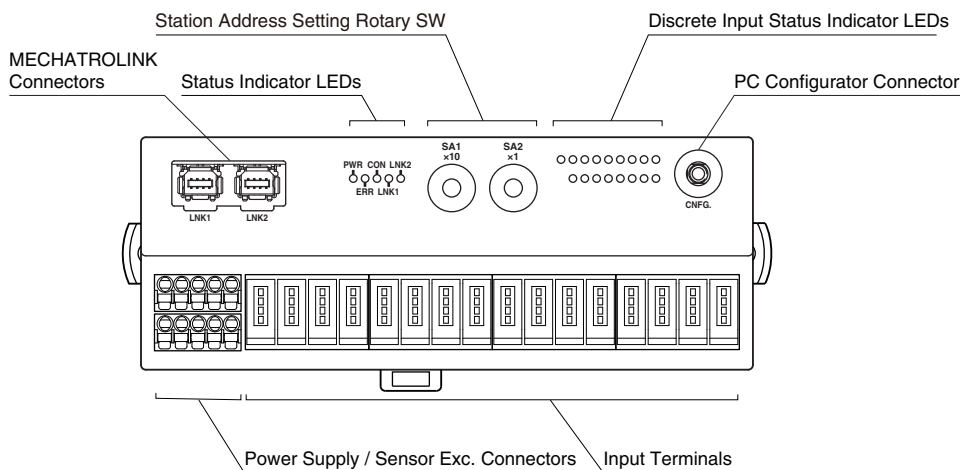
PERFORMANCE

Insulation resistance: ≥ 100 M Ω with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (input to MECHATROLINK or FE to power)

STANDARDS & APPROVALS

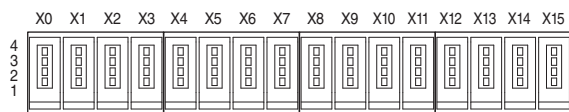
EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive

EXTERNAL VIEW



TERMINAL ASSIGNMENTS

■ INPUT TERMINAL ASSIGNMENT



PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
X0	1	+24V	X8	1	+24V
	2	NC		2	NC
	3	GND		3	GND
	4	X0		4	X8
X1	1	+24V	X9	1	+24V
	2	NC		2	NC
	3	GND		3	GND
	4	X1		4	X9
X2	1	+24V	X10	1	+24V
	2	NC		2	NC
	3	GND		3	GND
	4	X2		4	X10
X3	1	+24V	X11	1	+24V
	2	NC		2	NC
	3	GND		3	GND
	4	X3		4	X11
X4	1	+24V	X12	1	+24V
	2	NC		2	NC
	3	GND		3	GND
	4	X4		4	X12
X5	1	+24V	X13	1	+24V
	2	NC		2	NC
	3	GND		3	GND
	4	X5		4	X13
X6	1	+24V	X14	1	+24V
	2	NC		2	NC
	3	GND		3	GND
	4	X6		4	X14
X7	1	+24V	X15	1	+24V
	2	NC		2	NC
	3	GND		3	GND
	4	X7		4	X15

■POWER SUPPLY TERMINAL ASSIGNMENT

• Tension clamp terminal block

Cable connector: FMC1,5/5-ST-3,5 (Phoenix Contact)

(The cable connector is included in the package.)

Applicable wire size: 0.2 to 1.5 mm²

stripped length: 10 mm

Recommended solderless terminal

- AI0,25-10YE 0.25 mm² (Phoenix Contact)

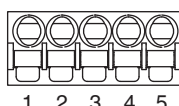
- AI0,34-10TQ 0.34 mm² (Phoenix Contact)

- AI0,5-10WH 0.5 mm² (Phoenix Contact)

- AI0,75-10GY 0.75 mm² (Phoenix Contact)

- A1-10 1.0 mm² (Phoenix Contact)

- A1,5-10 1.5 mm² (Phoenix Contact)



- | | |
|---------------|-------------------|
| 1. PWR + | Power Supply |
| 2. PWR - | Power Supply |
| 3. FE | Functional earth |
| 4. SNSR.EXC + | Sensor excitation |
| 5. SNSR.EXC - | Sensor excitation |

Note: The numbers marked on the connector have no relationship to the pin number of the unit.

Wire according to the instruction manual of the unit.

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

RESPONSE TIME

Response time of discrete input module is the time till when the unit starts sending to a transmission line when a signal is applied to the input module.

T_{COM} : MECHATROLINK-III transmission cycle configured by a host device.

MECHATROLINK-III transmission cycle varies depends on system and configuration.

T_{INF} : Response time of input module $\leq T_a$ Delay of input circuit (ON delay time or OFF delay time) +

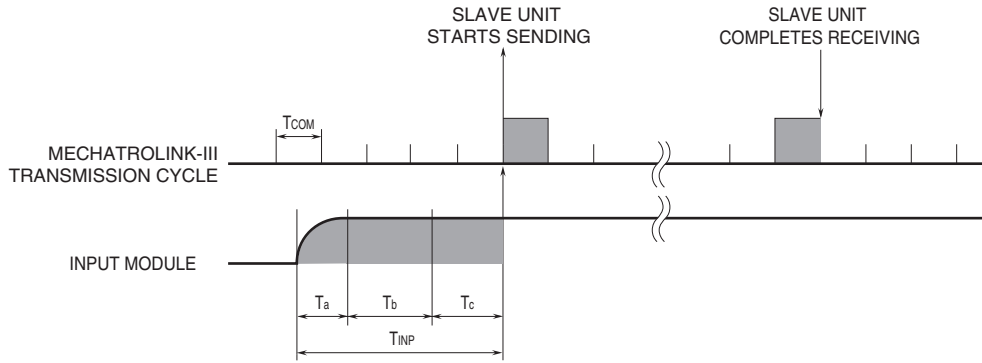
T_b Read rate setting time +

T_c Internal processing delay time (2 cycle of MECHATROLINK-III transmission cycle)

E.g. Read rate of 1 msec., MECHATROLINK-III transmission cycle of 0.25 msec.

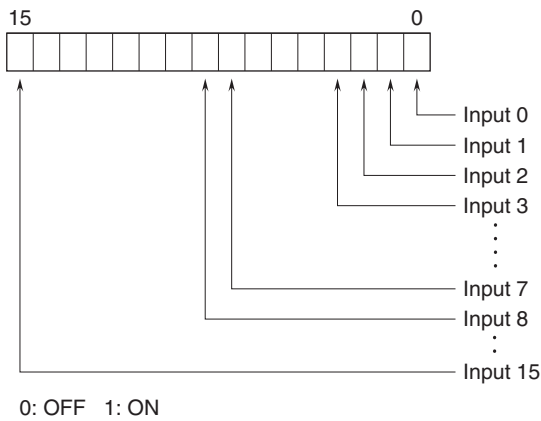
Response time of input module (T_{INF}): Delay of input circuit (0.2 msec.) + Read rate setting time (1 msec.) +

Internal processing delay time (0.25 msec.) $\times 2 = 1.7$ [msec.]

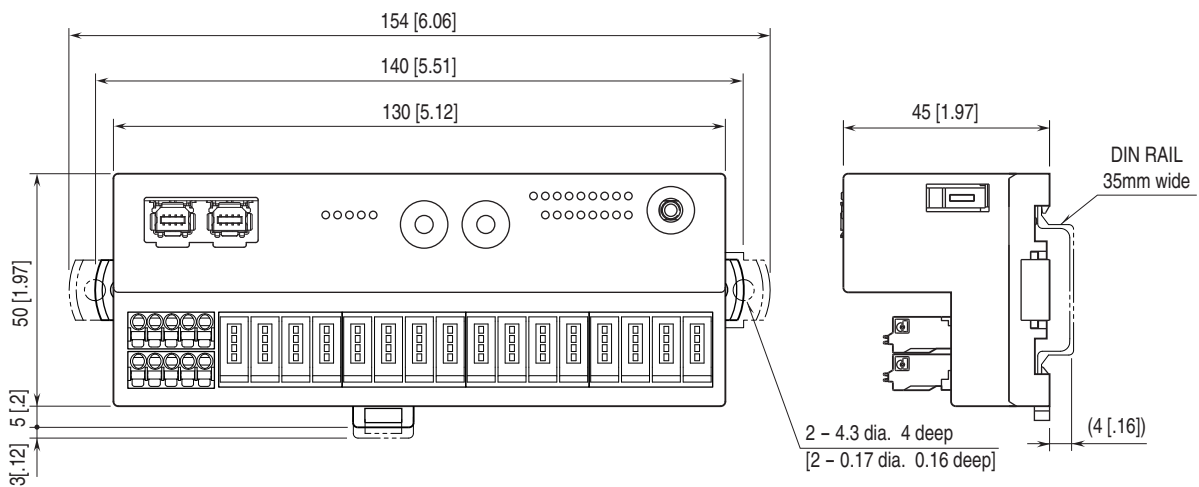


I/O DATA DESCRIPTIONS

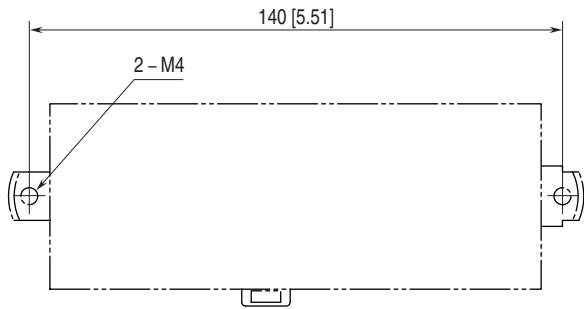
■ DISCRETE INPUT



EXTERNAL DIMENSIONS unit: mm [inch]



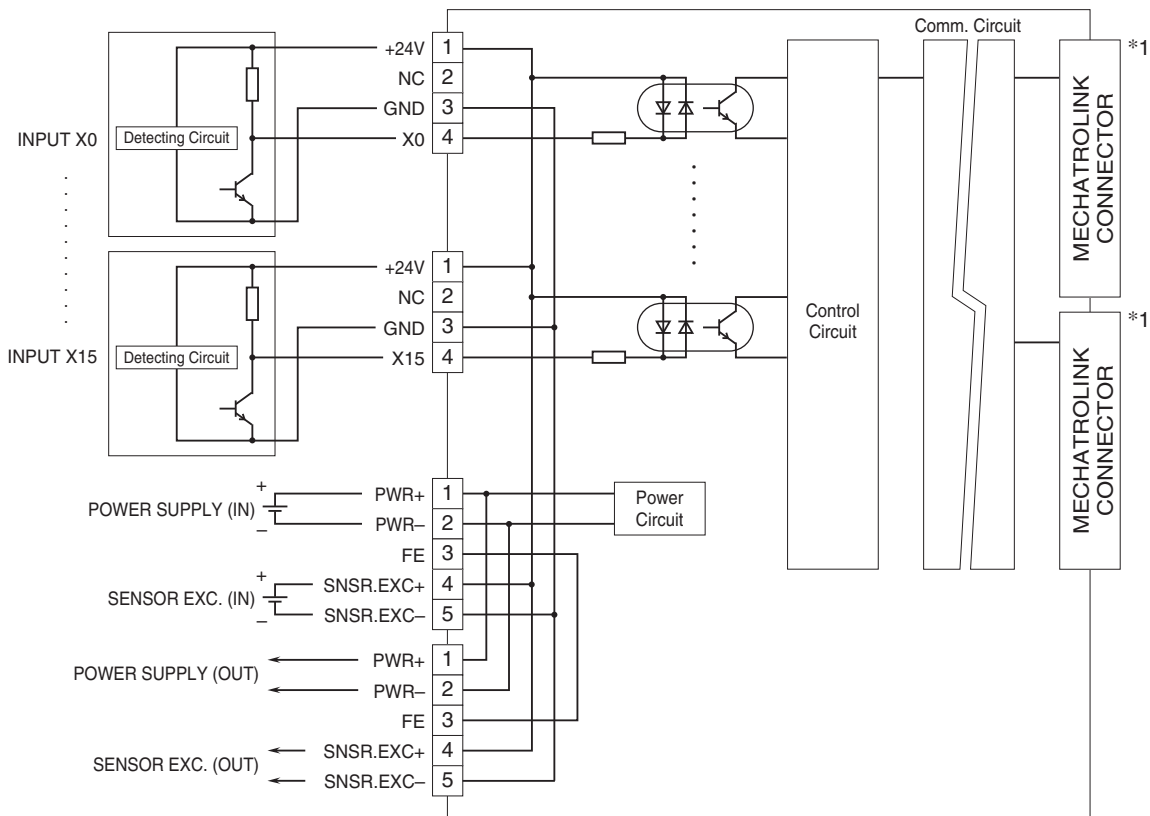
MOUNTING REQUIREMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

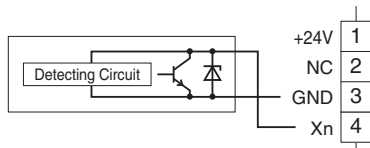
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.



*1. The network cable can be connected to either one.

■ 2-Wire Sensor



Specifications are subject to change without notice.