

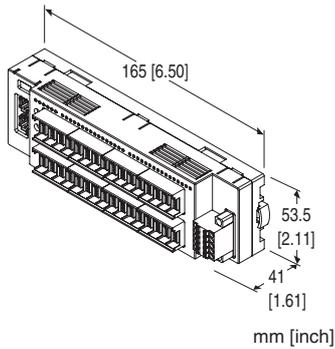
Remote I/O R7I4D Series

MECHATROLINK I/O MODULE

(NPN discrete input, 32 points, e-CON connector, MECHATROLINK-III use)

Functions & Features

32 points NPN discrete input module for MECHATROLINK-III



MODEL: R7I4DML3-DA32A-B-R[1]

ORDERING INFORMATION

- Code number: R7I4DML3-DA32A-B-R[1]
Specify a code from below for [1].
(e.g. R7I4DML3-DA32A-B-R/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

DA32A: NPN discrete input, 32 points

TERMINAL BLOCK

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

POWER INPUT

DC Power
R: 24 V DC
(Operational voltage range 24 V \pm 10 %, ripple 10 %p-p max.)

[1] OPTIONS

blank: none
/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

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

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet
(No. ESU-8008-DA32A)

RELATED PRODUCTS

- PC configurator software (model: R7CFG)
Downloadable at our web site.
For connecting to PC, use commercially available Mini-B type USB cable. (provided by user)

GENERAL SPECIFICATIONS

Connection

MECHATROLINK-III: MECHATROLINK-III connector

Input: e-CON connector

Power & Sensor excitation: Separable screwless spring terminal

Housing material: Flame-resistant resin (gray)

Isolation: Input or sensor excitation 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: Selectable with R7CFG

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

Common: Positive common (NPN) per 32 points
Maximum inputs applicable at once: No limit (at 24V DC)
Sensor excitation: 24 V DC $\pm 10\%$; ripple 5 %p-p max.,
 ≤ 5 A (including discrete input load charge); rated current
8 A
ON voltage / current: ≥ 18 V DC (X0 through X1F to +24V) /
 ≥ 2.0 mA
OFF voltage / current: ≤ 9 V DC (X0 through X1F to +24V) /
 ≤ 1.0 mA
Input current: ≤ 3.0 mA per point at 24 V DC
Input resistance: Approx. 8.6 k Ω
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

INSTALLATION

Current consumption
• DC at 24 V DC: ≤ 70 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: 170 g (0.37 lb)

PERFORMANCE

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

STANDARDS & APPROVALS

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

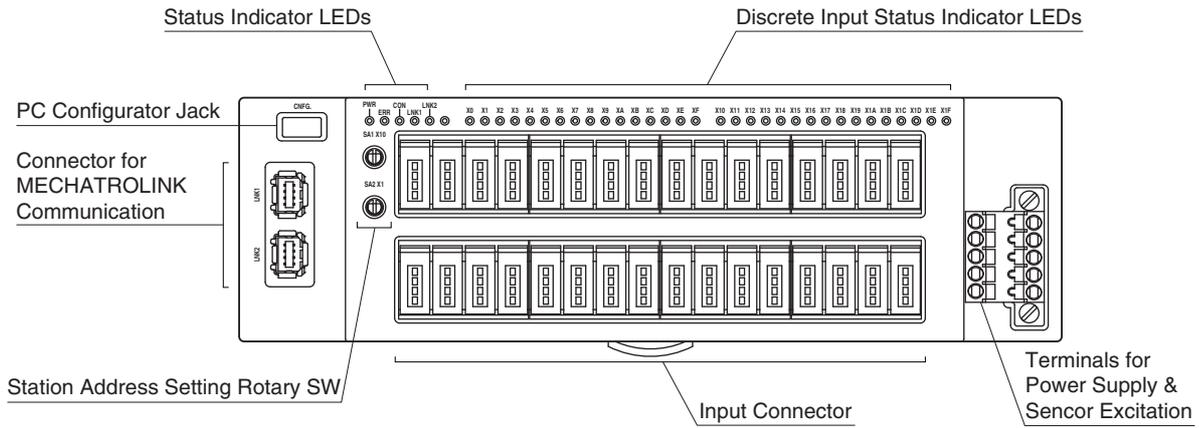
PC CONFIGURATOR

The following parameters can be set with using PC Configurator Software (model: R7CFG)
Refer to the users manual for the R7CFG for detailed operation of the software program.

■ CHANNEL BATCH SETTING

PARAMETER	SETTING RANGE	DEFAULT
Read cycle	1 msec., 5 msec., 10 msec., 20 msec., 50 msec., 70 msec., 100 msec., 200 msec.	10 msec.

EXTERNAL VIEW



TERMINAL ASSIGNMENTS

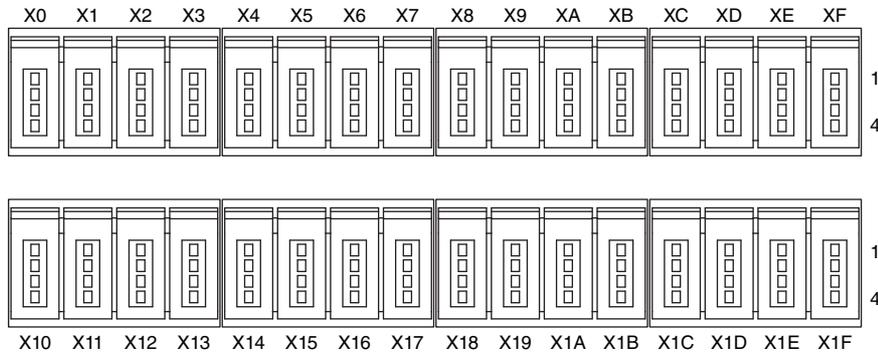
■ INPUT TERMINAL ASSIGNMENT

• e-CON connector

Recommended cable connector: 37104-()-000FL (3M Company)

(The cable connector is not included in the package.)

Specify wire size instead of (); refer to the specifications of the product.)



PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
X0	1	+24V 24V DC	X8	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X0 Input 0		4	X8 Input 8
X1	1	+24V 24V DC	X9	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X1 Input 1		4	X9 Input 9
X2	1	+24V 24V DC	XA	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X2 Input 2		4	XA Input 10
X3	1	+24V 24V DC	XB	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X3 Input 3		4	XB Input 11
X4	1	+24V 24V DC	XC	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X4 Input 4		4	XC Input 12
X5	1	+24V 24V DC	XD	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X5 Input 5		4	XD Input 13
X6	1	+24V 24V DC	XE	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X6 Input 6		4	XE Input 14
X7	1	+24V 24V DC	XF	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X7 Input 7		4	XF Input 15

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
X10	1	+24V 24V DC	X18	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X10 Input 16		4	X18 Input 24
X11	1	+24V 24V DC	X19	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X11 Input 17		4	X19 Input 25
X12	1	+24V 24V DC	X1A	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X12 Input 18		4	X1A Input 26
X13	1	+24V 24V DC	X1B	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X13 Input 19		4	X1B Input 27
X14	1	+24V 24V DC	X1C	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X14 Input 20		4	X1C Input 28
X15	1	+24V 24V DC	X1D	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X15 Input 21		4	X1D Input 29
X16	1	+24V 24V DC	X1E	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X16 Input 22		4	X1E Input 30
X17	1	+24V 24V DC	X1F	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	X17 Input 23		4	X1F Input 31

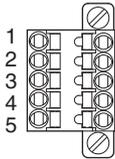
■ POWER SUPPLY, SENSOR EXCITATION

Cable connector: TFMC1,5 / 5-STF-3,5
(Phoenix Contact) (included in the package)

Applicable wire size: 0.2 – 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.

RESPONSE TIME

Response time of discrete input module is the time till when the communication ASIC of the module transmits input data from when input signal is applied to the module.

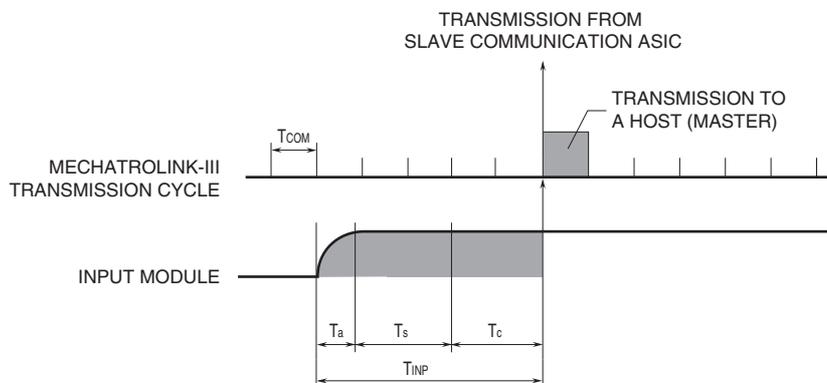
T_{COM} : MECHATROLINK-III transmission cycle configured by a host device.

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

T_{INP} : Response of input module \leq Delay of input circuit (T_a , ON delay time or OFF delay time) + Acquire cycle (T_s) + input internal processing delay time (T_c , two transmission cycle)

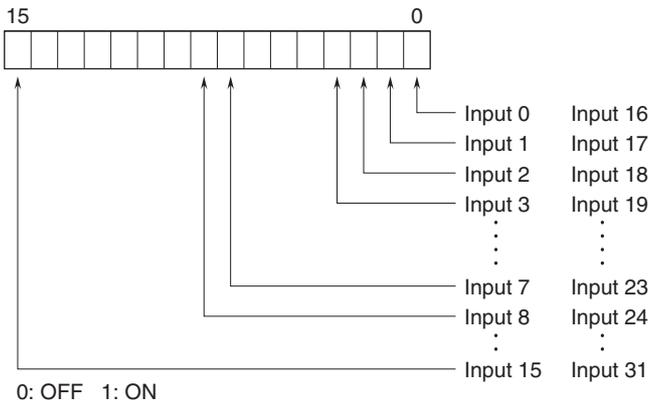
E.g. Read rate of 1 msec., MECHATROLINK-III transmission cycle of 0.125 msec.

Response time of input module (T_{INP}): Delay of input circuit (0.5 msec.) + Read rate setting time (1 msec.) + Internal processing delay time (0.125 msec.) \times 2 = 1.75 [msec.]

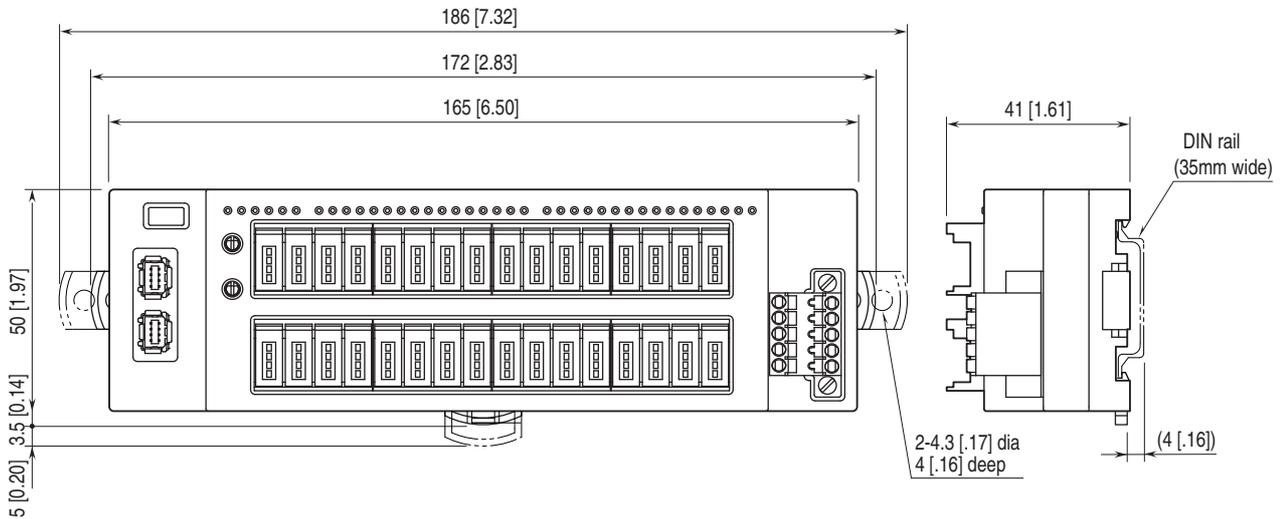


I/O DATA DESCRIPTIONS

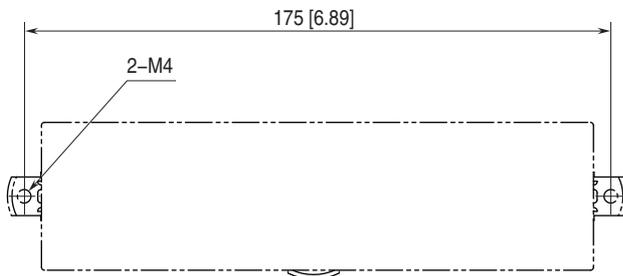
■ DISCRETE INPUT



EXTERNAL DIMENSIONS unit: mm [inch]



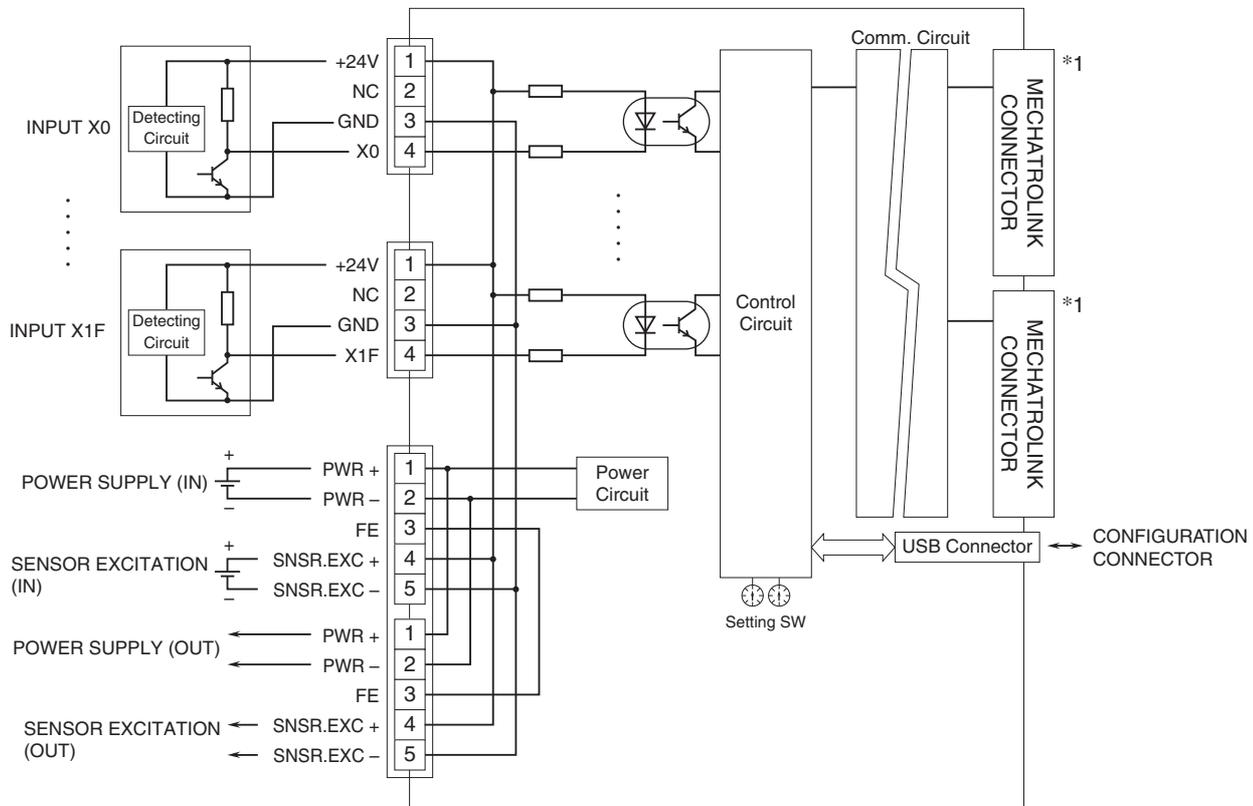
MOUNTING REQUIREMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

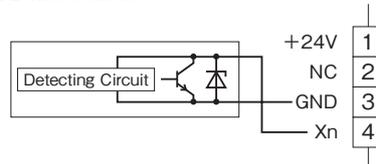
Note: In order to improve EMC performance, bond the FE terminal to ground.

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.