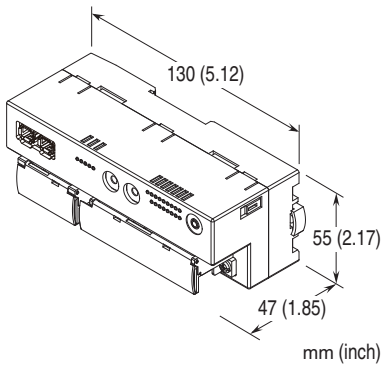
Remote I/O R7G4F Series

MECHATROLINK I/O MODULE

(NPN transistor output, 16 points, screw terminal block, MECHATROLINK- III use)

Functions & Features

16 points NPN transistor output module for MECHATROLINK-III



MODEL: R7G4FML3-6-DC16A-R[1]

ORDERING INFORMATION

• Code number: R7G4FML3-6-DC16A-R[1]
Specify a code from below for [1].
(e.g. R7G4FML3-6-DC16A-R/UL/Q)
• Specify the specification for option code /Q
(e.g. /C01)

TERMINAL BLOCK

6: Screw terminal block for power supply
Connector for MECHATROLINK- III
Screw terminal block for I/O

TYPE

DC16A: NPN transistor output, 16 points

POWER INPUT

DC power

R: 24 V DC
(Operational voltage range: ±10 %; ripple 10 %p-p max.)

[1] OPTIONS (multiple selections)

Standards & Approvals

blank: CE marking
/UL: UL approval, CE marking

Other Options

blank: none
/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q

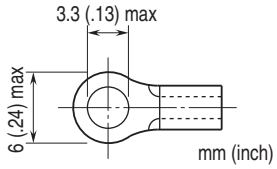
COATING (For the detail, refer to M-System's web site.)

/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating (UL not available)

GENERAL SPECIFICATIONS

Connection
MECHATROLINK-III: MECHATROLINK-III connector
Power input, output: M3 separable screw terminal (torque 0.5 N·m)
Solderless terminal: Refer to the drawing at the end of the section.
Recommended manufacturer: Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,ltd
Applicable wire size: 0.25 to 1.65 mm^2 (AWG 22 to 16)
Screw terminal: Nickel-plated steel
Housing material: Flame-resistant resin (gray)
Isolation: Output to MECHATROLINK or FE to power
Output at the loss of communication:
Output hold(*), Output clear
Selectable with R7CFG
(*) factory default setting
Status indicator LEDs: PWR, ERR, CON, LNK1, LNK2 (5 LEDs) indicate the module's operating conditions. (Refer to the insruction manual)
Discrete output status indicator LED: Green LED turns on with output ON

■**Recommended solderless terminal**



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 µsec., 250 µsec., 500 µsec., 1 – 64

msec. (with 1 msec. increments)
Communication cycle: 125 µsec. 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

OUTPUT SPECIFICATIONS

Common: Negative common (NPN) per 16 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Rated load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat protection function: Turns OFF the outputs when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

INSTALLATION

Current consumption
•**DC**: Approx. 80 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: 190 g (0.42 lb)

PERFORMANCE

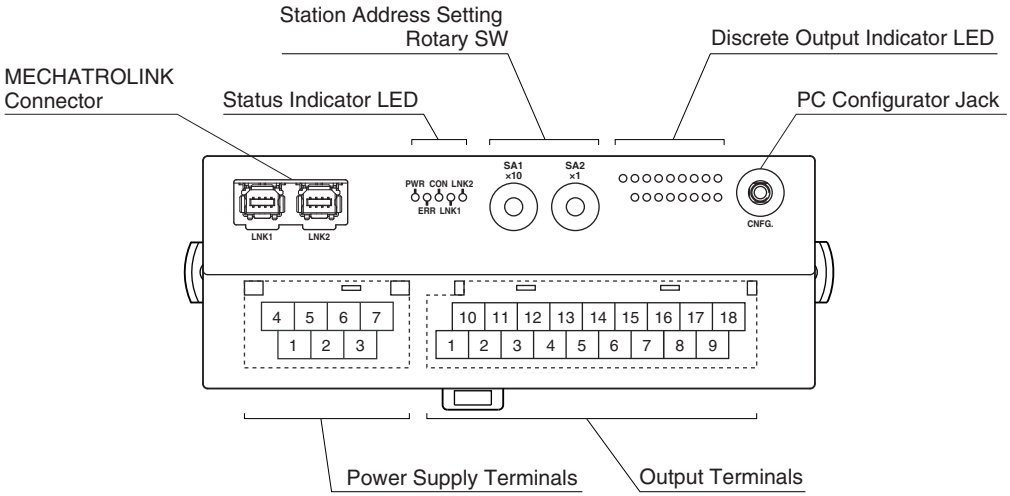
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (output to MECHATROLINK or FE to power)

STANDARDS & APPROVALS

EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive
EN 50581

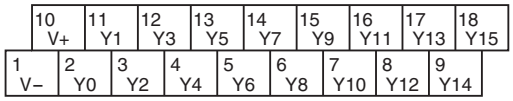
Safety approval:
UL/C-UL general safety requirements
(UL 61010-1, CAN/CSA-C22.2 No.61010-1-12)
(UL 61010-2-201, CAN/CSA-C22.2 No.61010-2-201)

EXTERNAL VIEW



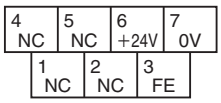
TERMINAL ASSIGNMENTS

■OUTPUT TERMINAL ASSIGNMENT



NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	V−	0V (Out. Common)	10	V+	24V DC
2	Y0	Output 0	11	Y1	Output 1
3	Y2	Output 2	12	Y3	Output 3
4	Y4	Output 4	13	Y5	Output 5
5	Y6	Output 6	14	Y7	Output 7
6	Y8	Output 8	15	Y9	Output 9
7	Y10	Output 10	16	Y11	Output 11
8	Y12	Output 12	17	Y13	Output 13
9	Y14	Output 14	18	Y15	Output 15

■POWER SUPPLY TERMINAL ASSIGNMENT



1. NC –
2. NC –
3. FE Functional earth
4. NC –
5. NC –
6. +24V Power supply (24V DC)
7. 0V Power supply (0V)

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

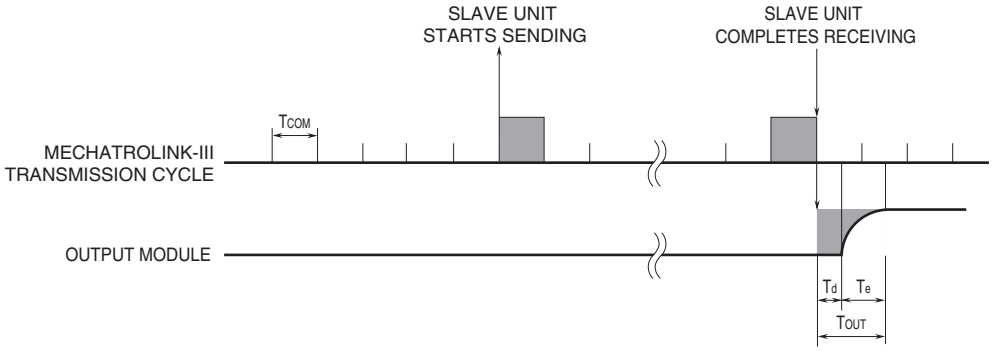
RESPONSE TIME

Response time of discrete output module is the time till when the module outputs a signal when the unit completes receiving from a transmission line.

T_{COM}: MECHATROLINK-III transmission cycle configured by a host device.
MECHATROLINK-III transmission cycle vavies depends on system and configuration.

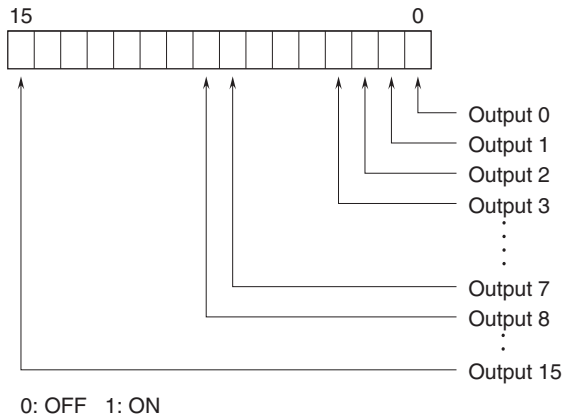
T_{OUT}: Response time of output module ≤ Td Internal processing delay time (1 cycle of min. transmission cycle units can handle)
+ Te Delay of output circuit (ON delay time or OFF delay time)

E.g. MECHATROLINK-III transmission cycle of 0.5 msec.
Response time of output module (T_{OUT}): Internal processing delay time (0.125 msec.) + Delay of output circuit (0.5 msec.)
= 0.625 [msec.]



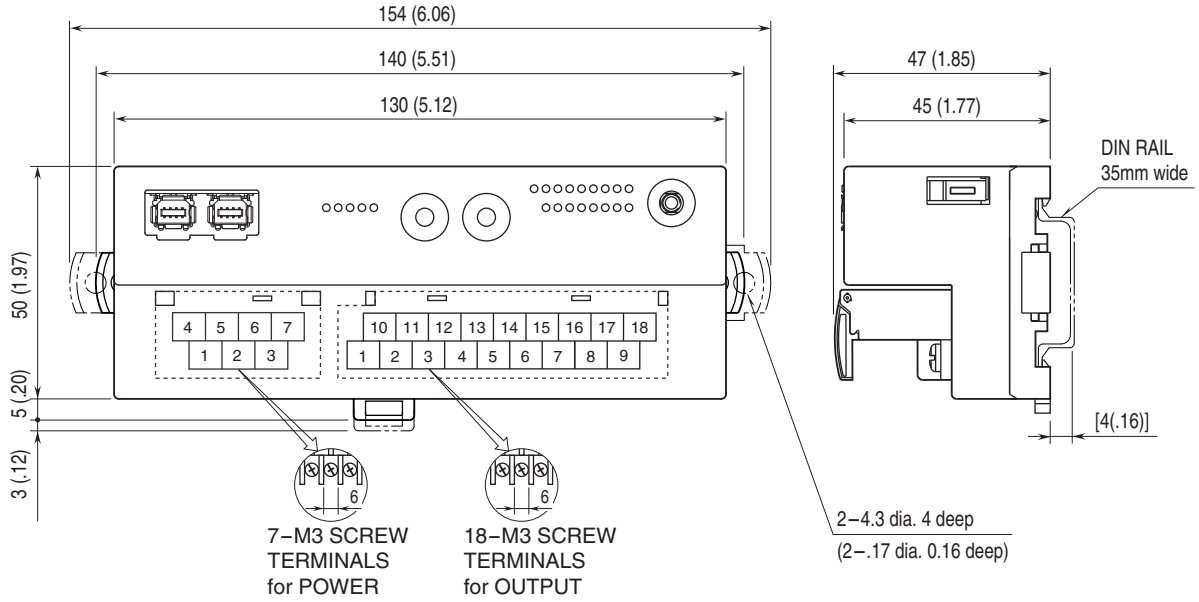
I/O DATA DESCRIPTIONS

■ **DISCRETE OUTPUT**

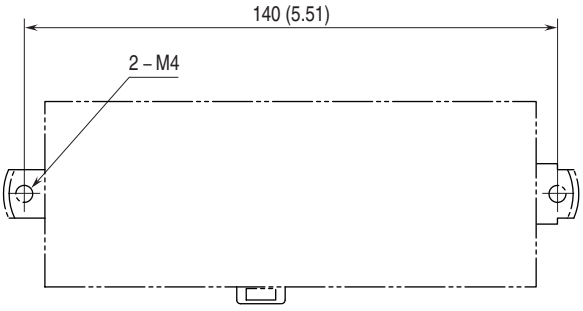


0: OFF 1: ON

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

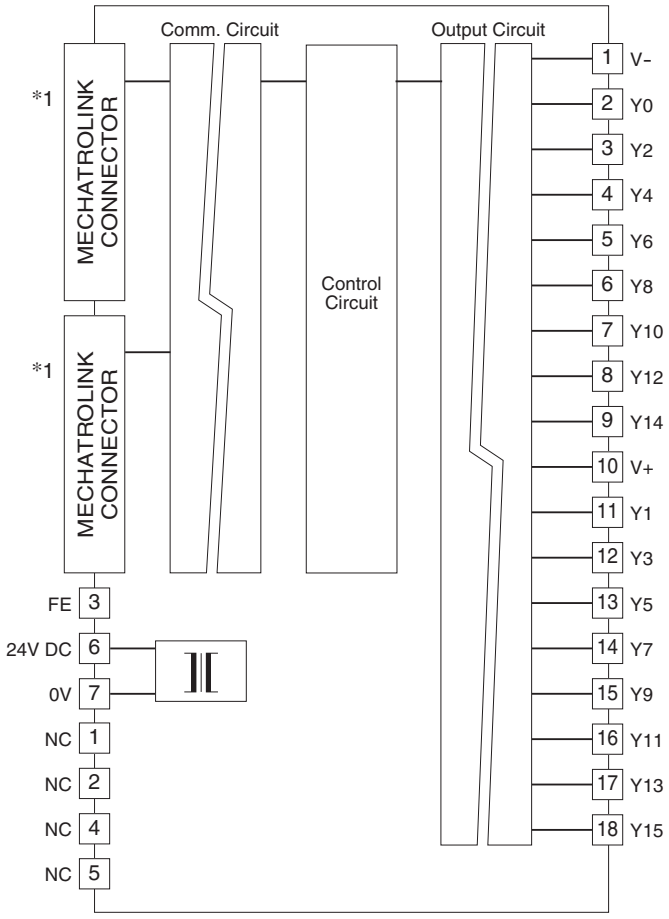


MOUNTING REQUIREMENTS unit: mm (inch)



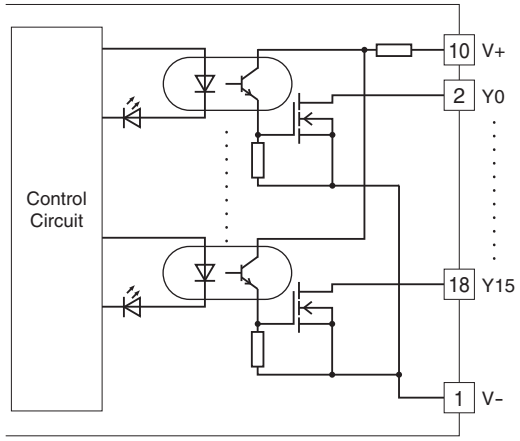
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FE terminal to ground.
Caution: FE terminal is NOT a protective conductor terminal.

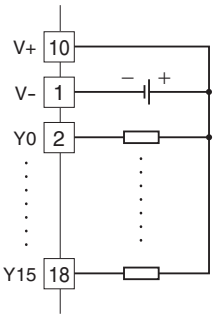


*1. The network cable can be connected to either one.

■ **Output Circuit**



■ **Output Connection Examples**



⚠ Specifications are subject to change without notice.