

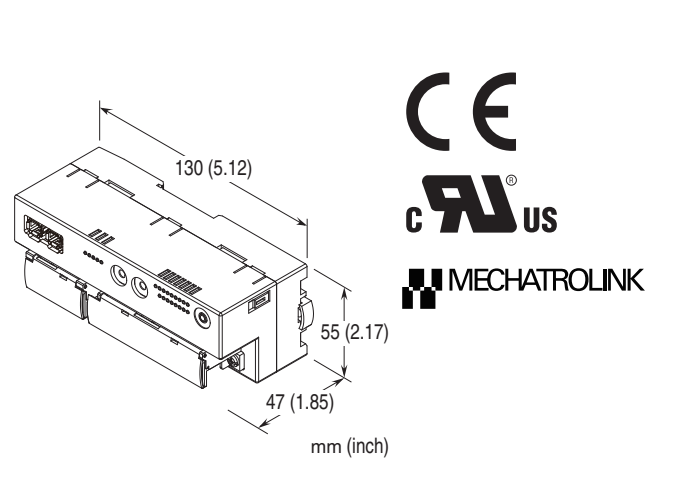
## Remote I/O R7G4F Series

### 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:  $\pm 10\%$ ; 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<sup>2</sup> (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

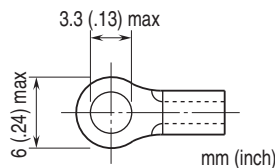
Selectable with R7CFG

(\* ) factory default setting

Status indicator LEDs: PWR, ERR, CON, LNK1, LNK2 (5 LEDs) indicate the module's operating conditions. (Refer to the instruction 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  $\mu$ sec., 250  $\mu$ sec., 500  $\mu$ sec., 1 - 64

msec. (with 1 msec. increments)

**Communication cycle:** 125  $\mu$ 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

## 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)

## 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  $\pm$ 10 %, ripple 5 %p-p max.

**Rated output current:** 0.1 A per point, 1.6 A per common

**Residual voltage:**  $\leq$  1.2 V

**Leakage current:**  $\leq$  0.1 mA

**ON delay:**  $\leq$  0.2 msec.

**OFF delay:**  $\leq$  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:**  $\geq$  100 M $\Omega$  with 500 V DC

**Dielectric strength:** 1500 V AC @ 1 minute (output to MECHATROLINK or FE to power)

## STANDARDS & APPROVALS

### EU conformity:

EMC Directive

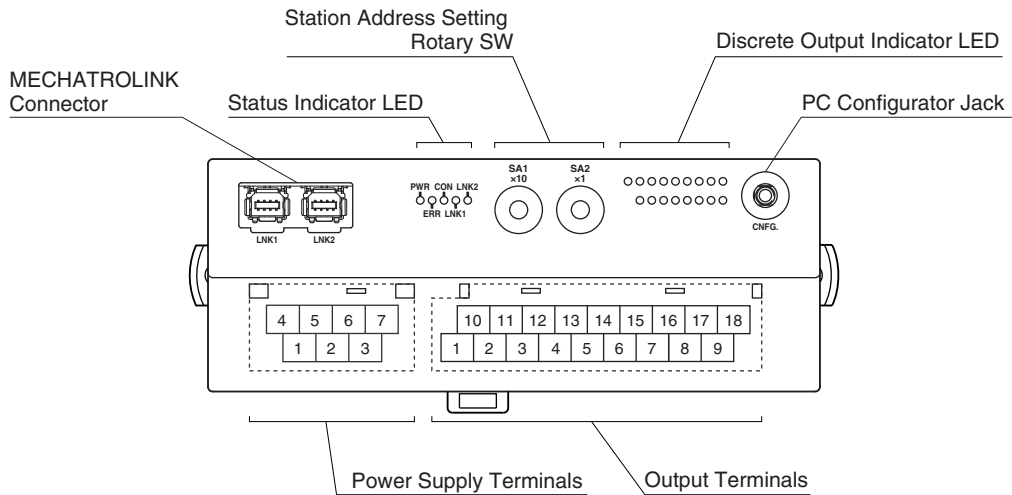
EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

EN 50581

## EXTERNAL VIEW



## TERMINAL ASSIGNMENTS

### OUTPUT TERMINAL ASSIGNMENT

10	11	12	13	14	15	16	17	18
V+	Y1	Y3	Y5	Y7	Y9	Y11	Y13	Y15
1	2	3	4	5	6	7	8	9
V-	Y0	Y2	Y4	Y6	Y8	Y10	Y12	Y14

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

4	5	6	7
NC	NC	+24V	0V
1	2	3	
NC	NC	FE	

- 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.

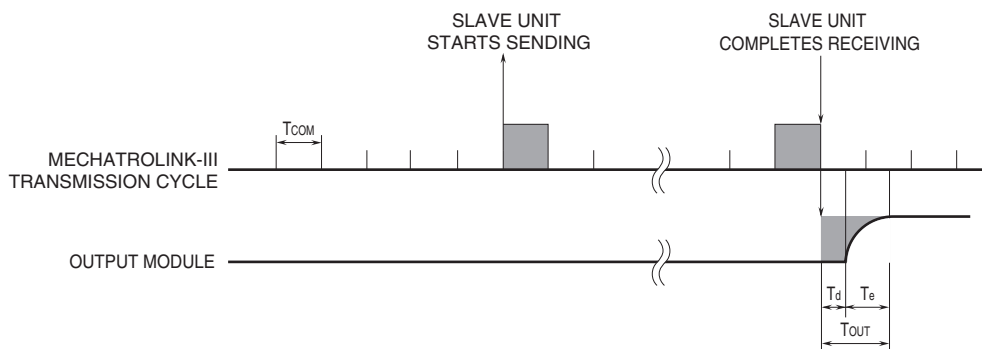
$T_{COM}$ : MECHATROLINK-III transmission cycle configured by a host device.

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

$T_{OUT}$ : Response time of output module  $\leq T_d$  Internal processing delay time (1 cycle of min. transmission cycle units can handle)  
+  $T_e$  Delay of output circuit (ON delay time or OFF delay time)

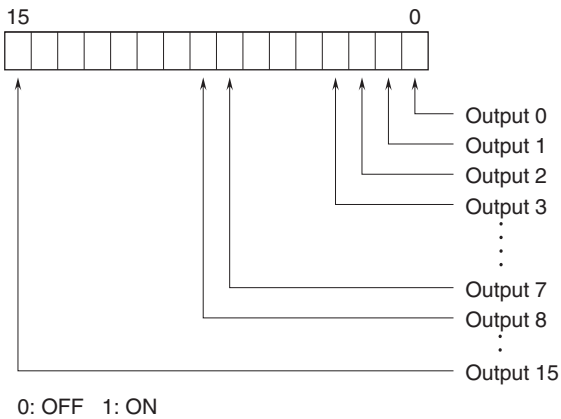
E.g. MECHATROLINK-III transmission cycle of 0.5 msec.

Response time of output module ( $T_{OUT}$ ): Internal processing delay time (0.125 msec.) + Delay of output circuit (0.5 msec.)  
= 0.625 [msec.]

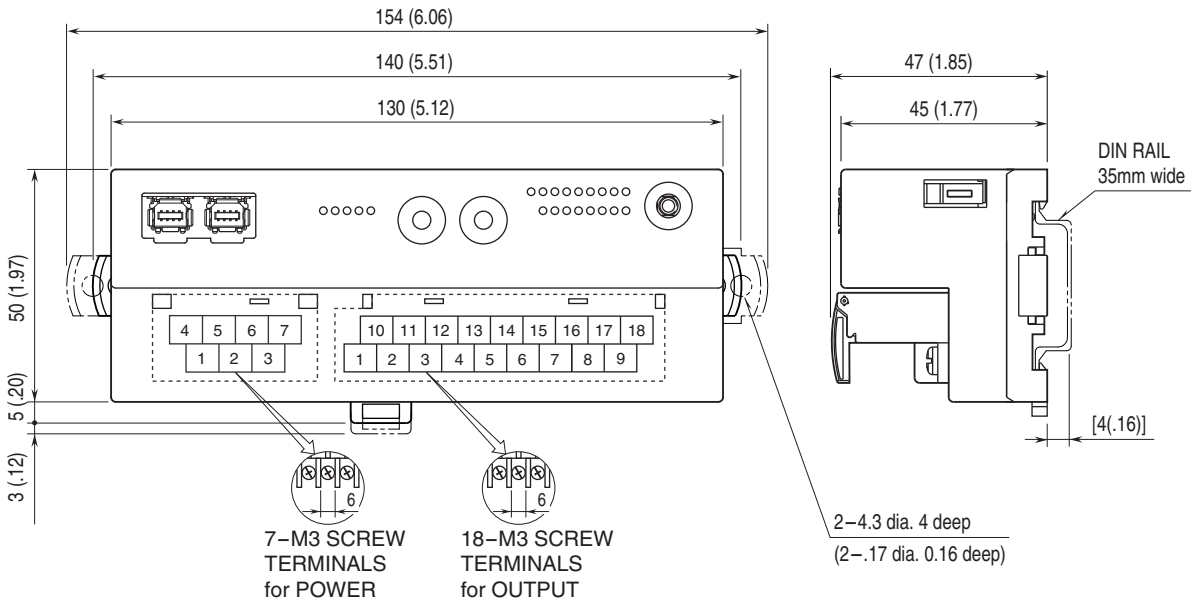


## I/O DATA DESCRIPTIONS

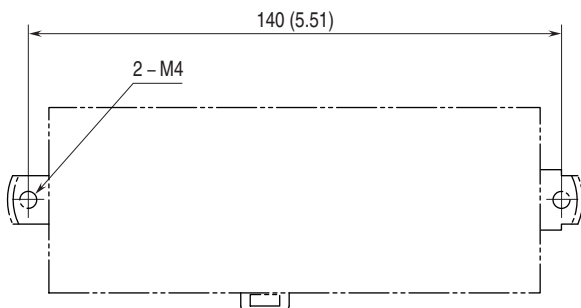
### ■ DISCRETE OUTPUT



## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



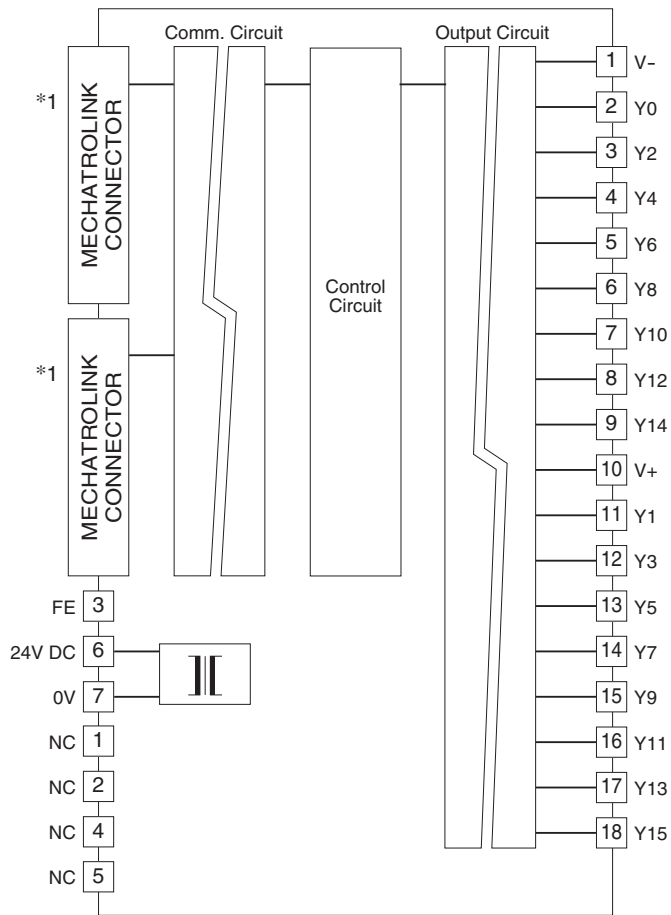
## MOUNTING REQUIREMENTS unit: mm (inch)



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

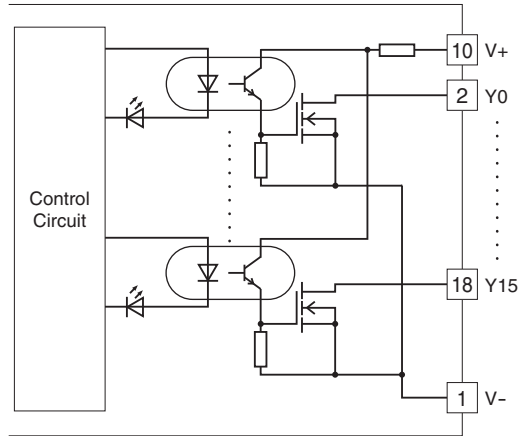
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

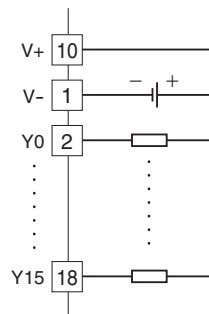


\*1. The network cable can be connected to either one.

### Output Circuit



### Output Connection Examples



Specifications are subject to change without notice.