

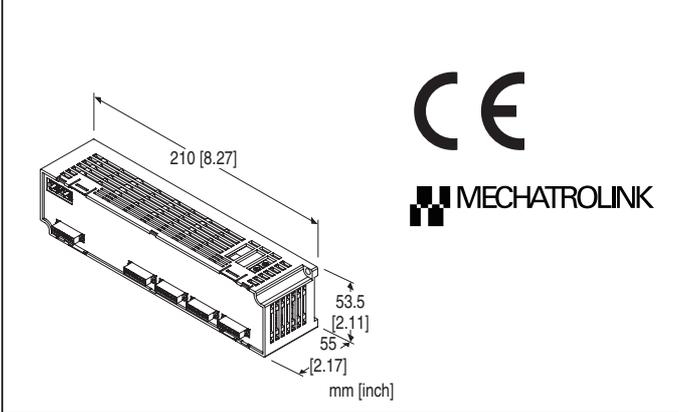
Remote I/O R7K4G Series

MECHATROLINK I/O MODULE

(NPN/PNP discrete input & NPN transistor output, 16 points each, tension clamp terminal, MECHATROLINK- III use)

Functions & Features

- 16 points NPN/PNP discrete input & 16 points NPN transistor output module for MECHATROLINK- III



MODEL: R7K4GML3-DAC32C-E-R[1]

ORDERING INFORMATION

- Code number: R7K4GML3-DAC32C-E-R[1]
Specify a code from below for [1].
(e.g. R7K4GML3-DAC32C-E-R/NR)

TYPE

DAC32C: NPN/PNP discrete input & NPN transistor output, 16 points each

TERMINAL BLOCK

E: Tension clamp terminal block for power supply
Connector for MECHATROLINK- III
Tension clamp terminal block for I/O

POWER INPUT

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

[1] OPTIONS

Output data read back
blank: With
/NR: Without

GENERAL SPECIFICATIONS

Connection

- **MECHATROLINK-III:** MECHATROLINK-III connector
- **Power input, I/O:** Tension clamp terminal block

Housing material: Flame-resistant resin (gray)

Isolation: Input or output to MECHATROLINK or FE to power

Output at the loss of communication:

Output hold (*), Output clear

Selectable with the DIP SW on the top of the unit

(*) 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 I/O status indicator LED: Green LED turns on with I/O ON

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

selectable with the DIP SW on the top of the unit

(*) 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 JPMC-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 or negative common (NPN/PNP) per 16 points

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

Rated input voltage: 24 V DC \pm 10 %; ripple 5 %p-p max.

ON voltage / current: \geq 15 V DC (input - COM) / \geq 3.5 mA

OFF voltage / current: \leq 5 V DC (input - COM) / \leq 1 mA

Input current: \leq 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.

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: ≤ 1.2 V

Leakage current: ≤ 0.1 mA

ON delay: ≤ 0.2 msec.

OFF delay: ≤ 0.5 msec.

With shortcircuit protection

With overheat protection

(When driving an inductive load, connect a diode in parallel with the load.)

INSTALLATION

Current consumption

• **DC at 24 V DC:** ≤ 100 mA

Operating temperature: -10 to $+55^{\circ}\text{C}$ (14 to 131°F)

Storage temperature: -20 to $+65^{\circ}\text{C}$ (-4 to $+149^{\circ}\text{F}$)

Operating humidity: 30 to 90 %RH (non-condensing)

Atmosphere: No corrosive gas or heavy dust

Mounting: Surface or DIN rail (35 mm rail)

Weight: 150 g (0.33 lb)

PERFORMANCE

Insulation resistance: ≥ 100 M Ω with 500 V DC

Dielectric strength: 1500 V AC @ 1 minute (input or 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

FUNCTIONS

■ Output Data Read Back

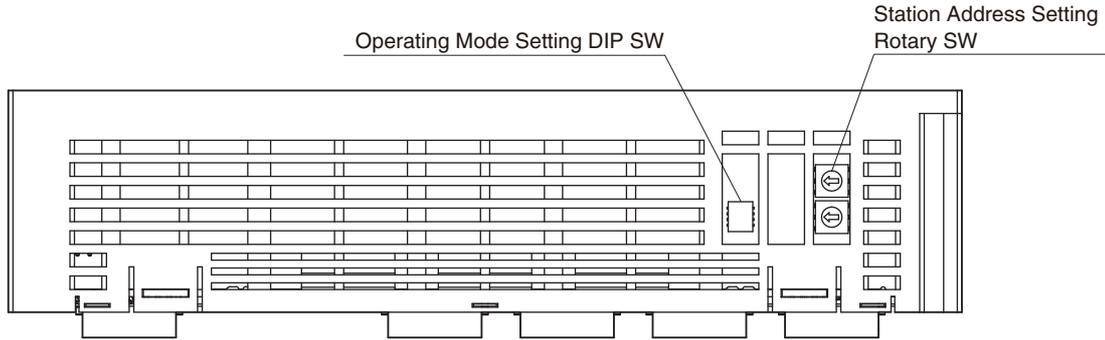
It is possible to send back by return the receiving output data of the unit to the host on MECHATROLINK-III communication data. Specifying option code for the output data read back to /NR enables to set invalid the output data read back.

(With or without the output data read back, the data allocation of DATA_RWA(20H) command data format is different. Refer to the instruction manual for detailed information.)

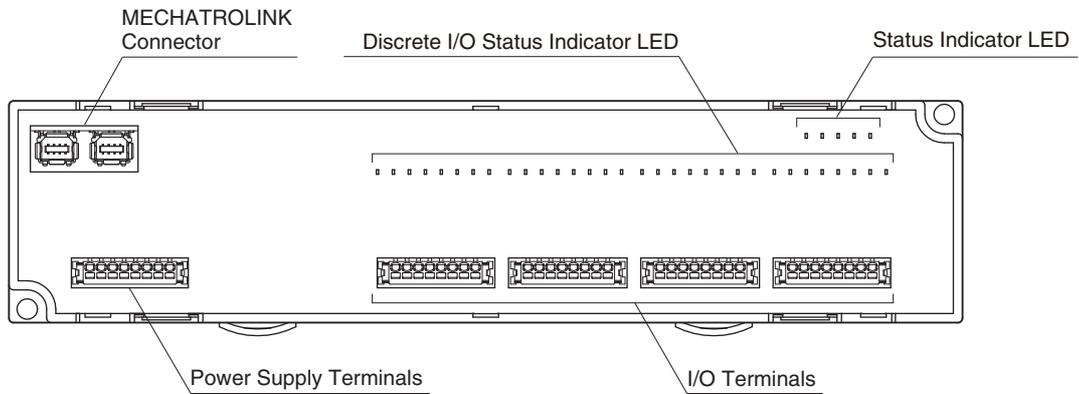
MODEL: R7K4GML3-DAC32C

EXTERNAL VIEW

■ TOP VIEW



■ FRONT VIEW



TERMINAL ASSIGNMENTS

■ POWER SUPPLY, I/O TERMINAL ASSIGNMENT

Unit side connector: PTSM0,5/8-2,5-V SMD R44 (Phoenix Contact)

Applicable wire size: 0.25 - 0.34mm²

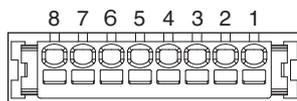
Stripped length: 6mm

Recommended solderless terminal

AI0,25-6BU 0.25mm² (Phoenix Contact)

AI0,25-6YE 0.25mm² (Phoenix Contact)

AI0,34-6TQ 0.34mm² (Phoenix Contact)



. POWER

PIN NO.	ID	FUNCTION
1	COM	Common
2	V+	External excitation (+)
3	V-	External excitation (-)
4	-	Unused
5	24V	Power supply (+)
6	0V	Power supply (-)
7	-	Unused
8	FE	Functional earth

. I/O

PIN NO.	ID	FUNCTION	PIN NO.	ID	FUNCTION	PIN NO.	ID	FUNCTION	PIN NO.	ID	FUNCTION
1	X7	Input 7	1	X15	Input 15	1	Y7	Output 7	1	Y15	Output 15
2	X6	Input 6	2	X14	Input 14	2	Y6	Output 6	2	Y14	Output 14
3	X5	Input 5	3	X13	Input 13	3	Y5	Output 5	3	Y13	Output 13
4	X4	Input 4	4	X12	Input 12	4	Y4	Output 4	4	Y12	Output 12
5	X3	Input 3	5	X11	Input 11	5	Y3	Output 3	5	Y11	Output 11
6	X2	Input 2	6	X10	Input 10	6	Y2	Output 2	6	Y10	Output 10
7	X1	Input 1	7	X9	Input 9	7	Y1	Output 1	7	Y9	Output 9
8	X0	Input 0	8	X8	Input 8	8	Y0	Output 0	8	Y8	Output 8

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 communication ASIC of the module transmits input data from when input signal is applied to the module.

Response time of discrete output module is the time till when the module output the signal from when output data is received by the communication ASIC of the module.

T_{COM} : MECHATROLINK-III transmission cycle set at master
(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)

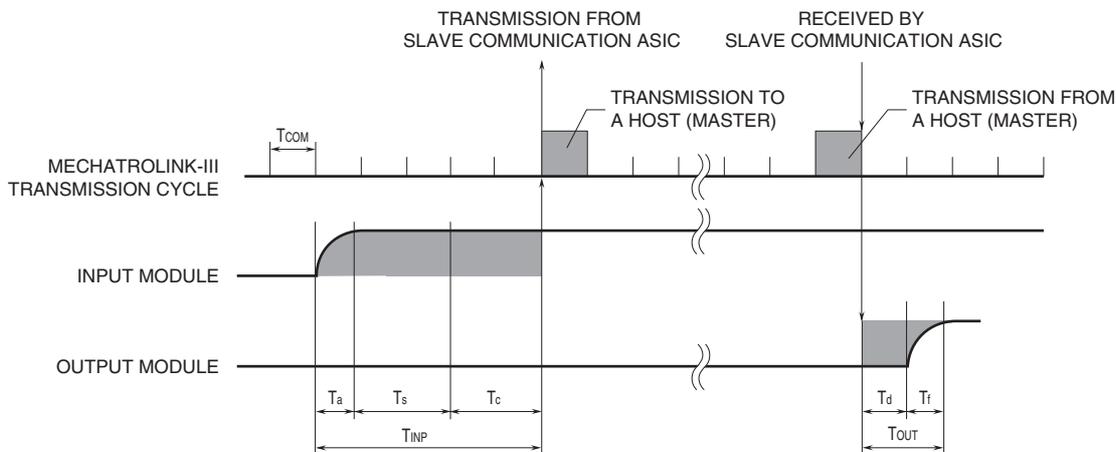
T_{OUT} : Response of output module \leq Output internal processing delay time (T_d , one minimum transmission cycle the unit can handle) + Conversion time (T_e) + Delay of output circuit (T_f , ON delay time or OFF delay time)

E.g. 1: Acquire cycle: 1 msec., MECHATROLINK-III transmission cycle: 0.125 msec., discrete input ON

Response of input module (T_{INP}): Delay of input circuit (0.2 msec.) + Acquire cycle (1 msec.) + input internal processing delay time (0.125 msec. x 2) = 1.45 [msec.]

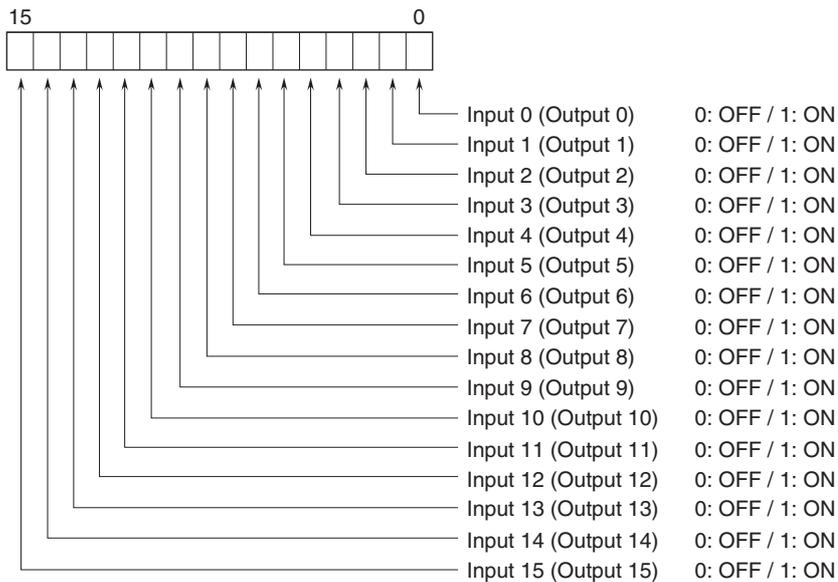
E.g. 2: MECHATROLINK-III transmission cycle: 0.5 msec., discrete output OFF

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

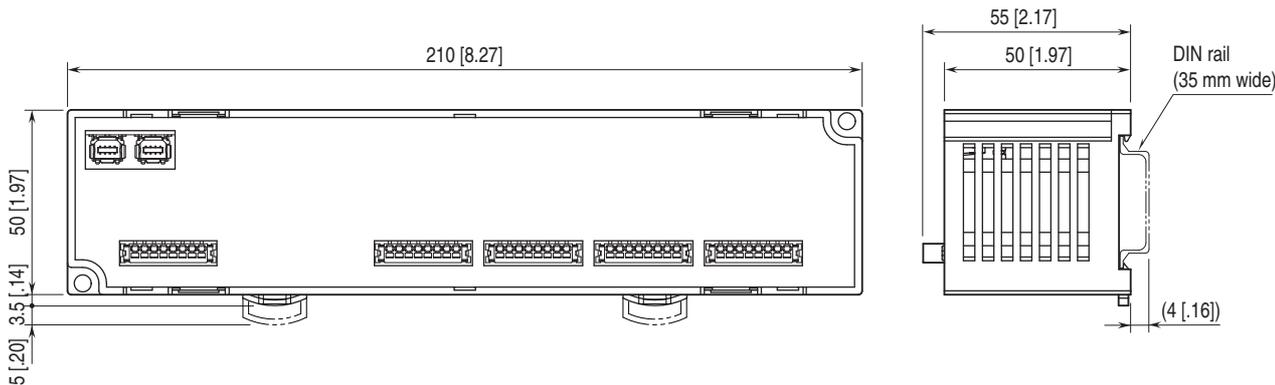


I/O DATA DESCRIPTIONS

■ INPUT DATA / OUTPUT DATA



EXTERNAL DIMENSIONS unit: mm [inch]



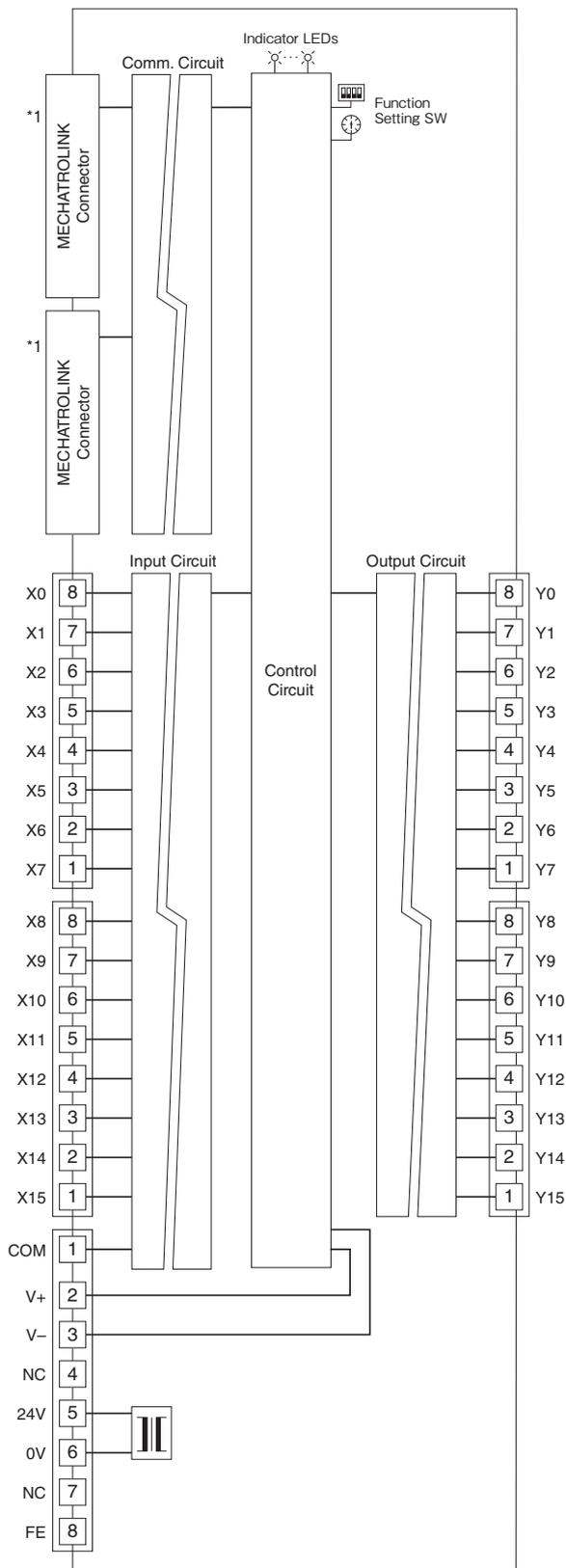
MOUNTING REQUIREMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

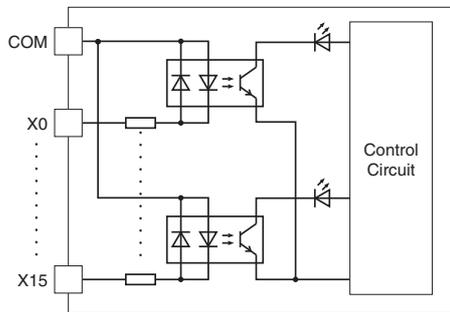
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

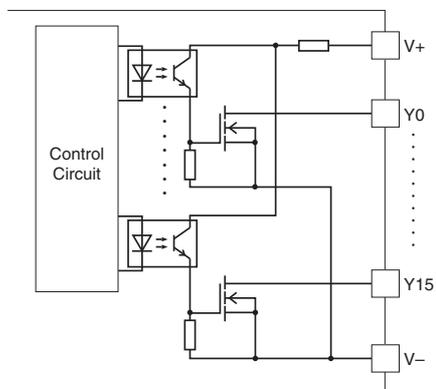


*MECHATROLINK connectors are internally connected.
The network cable can be connected to either one.

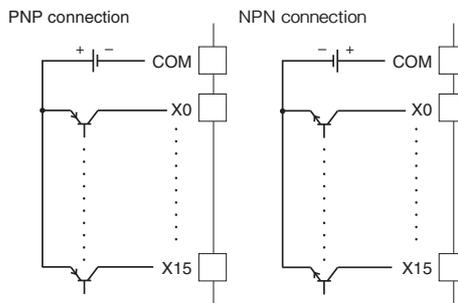
Input Circuit



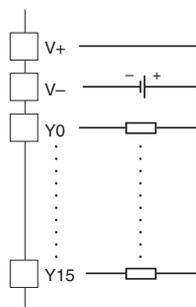
Output Circuit



Input Connection Examples



Output Connection Examples





Specifications are subject to change without notice.