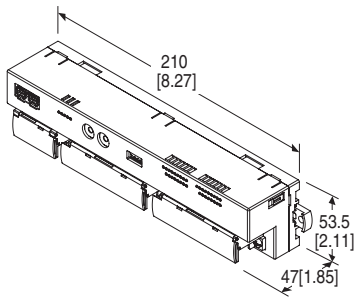
Remote I/O R7K4F Series

MECHATROLINK I/O MODULE

(PNP transistor output, 32 points, screw terminal block, MECHATROLINK-III use, external excitation 24)

Functions & Features

• 32 points PNP transistor output module for MECHATROLINK- III



MECHATROLINK

MODELR7K4FML3-6-DC32B-R[1]

ORDERING INFORMATION

• Code number: R7K4FML3-6-DC32B-R[1]

Specify a code from below for [1].

(e.g. R7K4FML3-6-DC32B-R/Q)

• Specify the specification for option code /Q

(e.g. /C01/SET)

TERMINAL BLOCK

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

I/O TYPE

DC32B: PNP transistor output, 32 points
(24 V external output power)

POWER INPUT

DC power

R: 24 V DC

(Operational voltage range: ±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-7773-DC32)

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

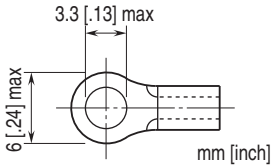
Selectable with the front DIP SW

(*) 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: TE Connectivity Industrial mini I/O connector

Max. number of Subordinate Devices: 62

(The maximum number of Subordinate Devices might change depending on the Main Device unit. Refer to the manual of the Main Device unit)

Transmission cycle: 125 µsec., 250 µsec., 500 µsec., 1 – 64 msec. (with 1 msec. increments)

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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
Subordinate Device monitoring: None

OUTPUT SPECIFICATIONS

Common: Positive common (PNP) per 32 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, 3.2 A (two points total) 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 at 24 V DC**: ≤ 110 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: 330 g (0.73 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

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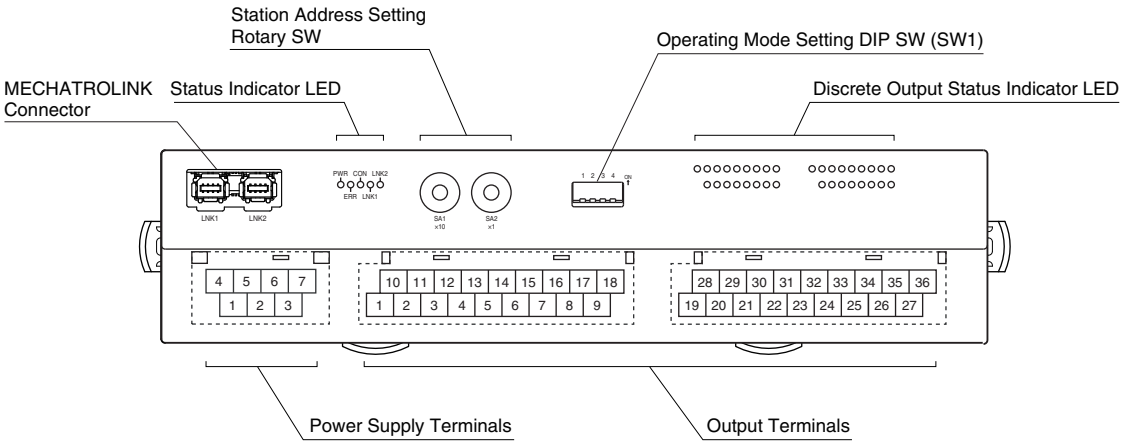
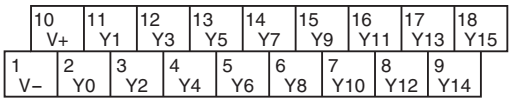
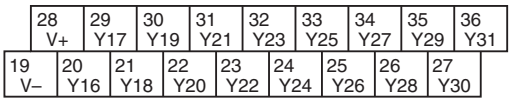
EXTERNAL VIEW



TERMINAL ASSIGNMENTS

■OUTPUT TERMINAL ASSIGNMENT

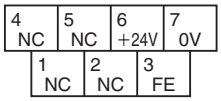




NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	V–	Out. Common	10	V+	External excitation
2	Y0	Output 0	11	Y1	Output 1
3	Y2	Output 2	12	Y3	Output 3
4	Y4	Output 4	13	Y5	Output 5
5	Y6	Output 6	14	Y7	Output 7
6	Y8	Output 8	15	Y9	Output 9
7	Y10	Output 10	16	Y11	Output 11
8	Y12	Output 12	17	Y13	Output 13
9	Y14	Output 14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

NO.	ID	FUNCTION	NO.	ID	FUNCTION
19	V–	Out. Common	28	V+	External excitation
20	Y16	Output 16	29	Y17	Output 17
21	Y18	Output 18	30	Y19	Output 19
22	Y20	Output 20	31	Y21	Output 21
23	Y22	Output 22	32	Y23	Output 23
24	Y24	Output 24	33	Y25	Output 25
25	Y26	Output 26	34	Y27	Output 27
26	Y28	Output 28	35	Y29	Output 29
27	Y30	Output 30	36	Y31	Output 31

■ 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)

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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

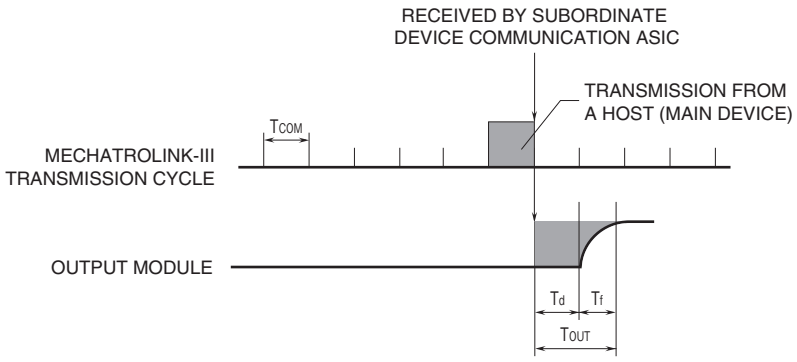
RESPONSE TIME

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

T_{COM}: MECHATROLINK-III transmission cycle set at Main Device
(depends on system and configuration)

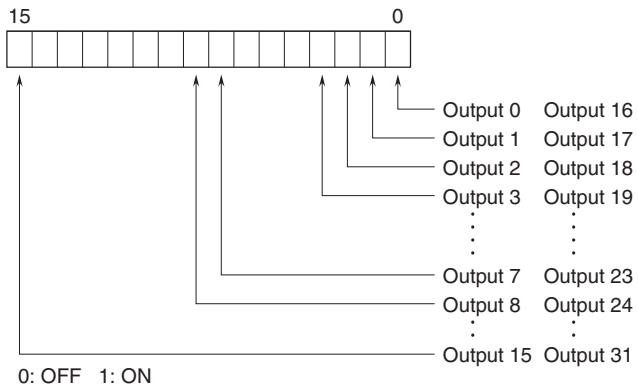
T_{OUT}: Response of output module ≤ Output internal processing delay time (Td, one minimum transmission cycle the unit can handle) + Conversion time (Te) + Delay of output circuit (Tf, ON delay time or OFF delay time)

E.g.: 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.]

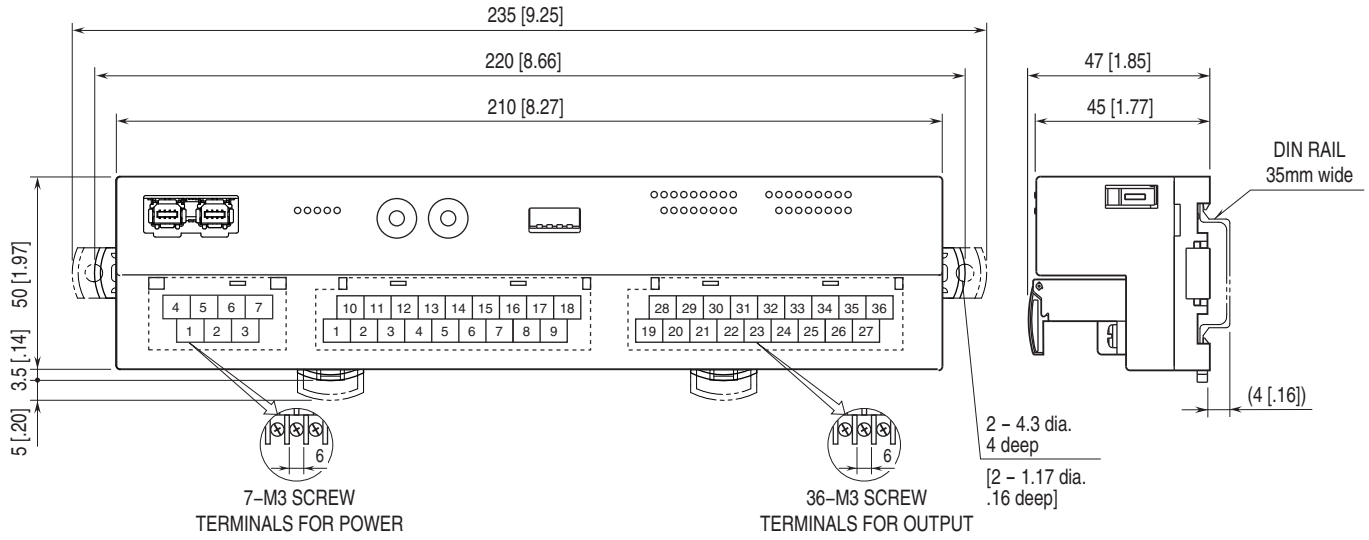


I/O DATA DESCRIPTIONS

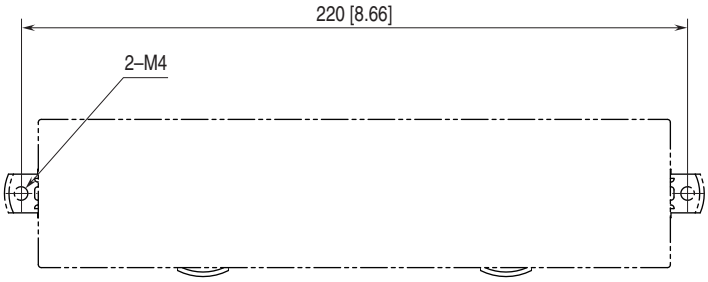
■ **DISCRETE OUTPUT**



EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



MOUNTING REQUIREMENTS unit: mm [inch]



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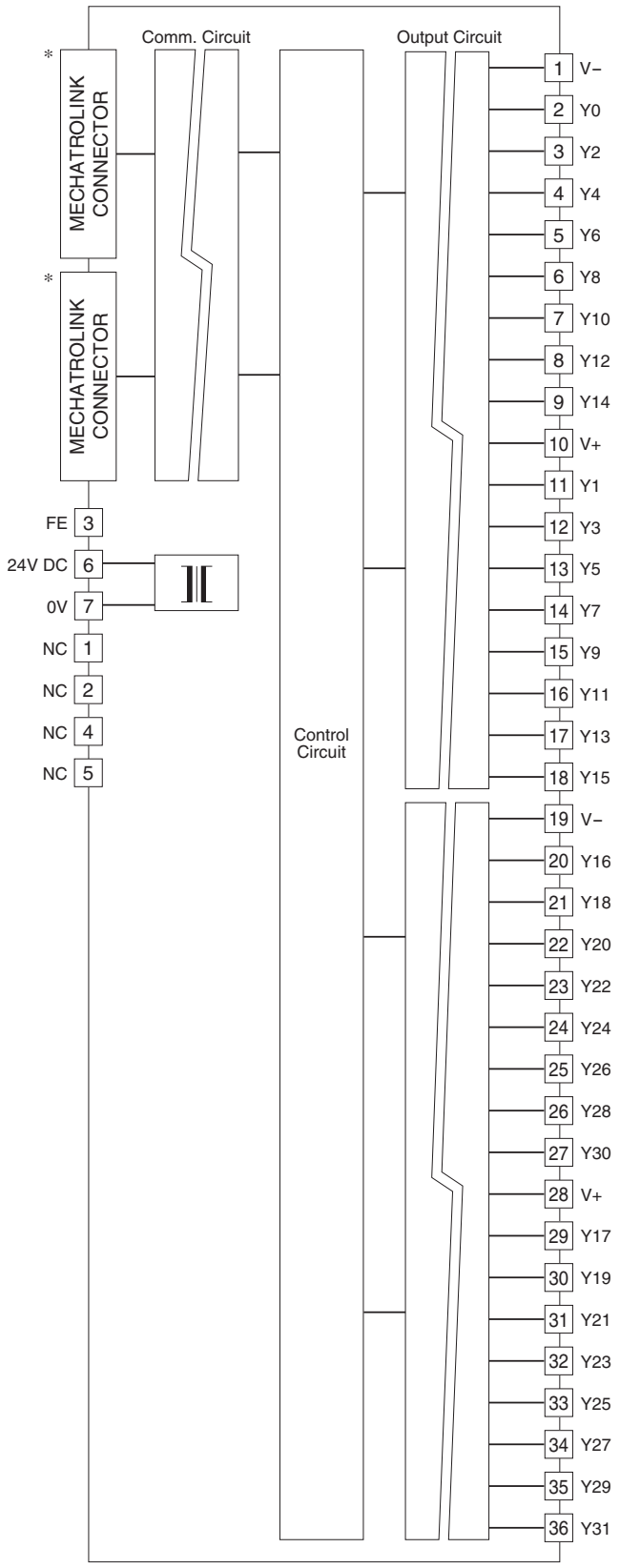
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

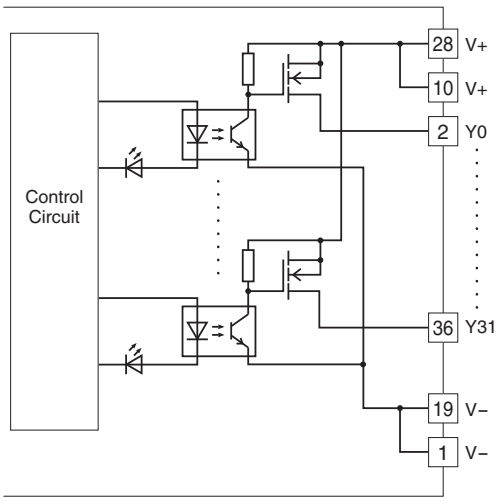
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

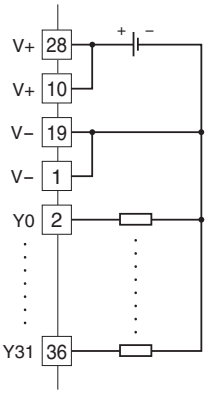


*MECHATROLINK connectors are internally connected.
The network cable can be connected to either one.

■ **Output Circuit**



■ **Output Connection Examples**



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⚠ Specifications are subject to change without notice.

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