

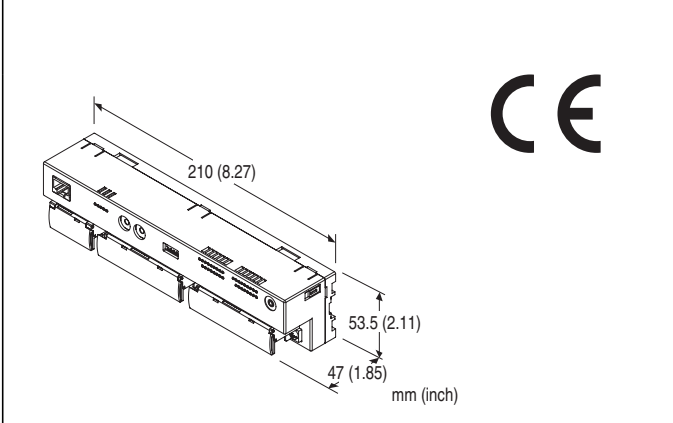
Remote I/O R7K4F Series

ETHERNET I/O MODULE

(Modbus/TCP (Ethernet), relay contact output, 16 points, screw terminal block)

Functions & Features

- 16 points relay contact output module for Modbus/TCP (Ethernet)



MODEL: R7K4FE-6-DC16-R[1]

ORDERING INFORMATION

- Code number: R7K4FE-6-DC16-R[1]
Specify a code from below for [1].
(e.g. R7K4FE-6-DC16-R/Q)
- Specify the specification for option code /Q
(e.g. /C01)

TERMINAL BLOCK

- 6: Screw terminal block for power supply
- RJ-45 Modular jack for communication
- Screw terminal block for I/O

I/O TYPE

DC16: Relay contact output, 16 points

POWER INPUT

DC power

R: 24 V DC

(Operational voltage range: $\pm 10\%$; ripple 10 %p-p max.)

[1] OPTIONS

blank: none

/Q: With options (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

RELATED PRODUCTS

- PC configurator software (model: R7CFG)

Downloadable at M-System's web site.

A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual for the PC configurator for applicable cable types.

GENERAL SPECIFICATIONS

Connection

Ethernet: RJ-45 Modular Jack

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 mm² (AWG 22 to 16)

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (gray)

Isolation: Output 0 to output 1 to output 2 to output 3 to output 4 to output 5 to output 6 to output 7 to output 8 to output 9 to output 10 to output 11 to output 12 to output 13 to output 14 to output 15 to Ethernet or FE to power

Output at the loss of communication:

Output hold (*), Output clear

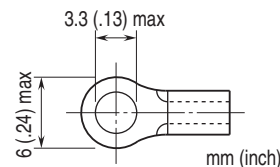
Selectable with the front DIP SW

(*) factory default setting

Status indicator LEDs: PWR, ERR 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



ETHERNET COMMUNICATION

Communication Standard: IEEE 802.3u

Transmission: 10BASE-T, 100BASE-TX

Baud rate: 10/100 Mbps (Auto Negotiation function)

Protocol: Modbus/TCP

Data: RTU (Binary)
Max. number of socket connections: 2
Transmission media: 10BASE-T (STP, Category 5) 100BASE-TX (STP, Category 5e)
Max. length of fieldbus segment: 100 meters
IP address: 192.168.0.1 (factory setting);
Selectable with PC Configurator Software (model: R7CFG)
Port No.: 502
Ethernet indicator LED: Link, Link100, COL
(Refer to the instruction manual)

OUTPUT SPECIFICATIONS

Common: 1 common per 1 point (16 points)
Maximum load current: 2.0 A per point
Maximum outputs applicable at once: No limit (at 24 V DC)
Output supply voltage/current: 24 V DC $\pm 10\%$ / ≥ 120 mA
Rated load: 250 V AC @ 2A, 30 V DC @ 2A
Maximum switching voltage: 250 V AC, 30 V DC
Maximum switching power: 500 VA (AC), 60 W (DC)
Minimum applicable load: 5 V DC @ 1 mA
Mechanical life: 2×10^7 cycles (300 cycles per min.)
When driving an inductive load, external contact protection and noise quenching recommended.
ON delay time: ≤ 10 msec.
OFF delay time: ≤ 10 msec.

INSTALLATION

Current consumption
•DC: Approx. 130 mA (contact output load charge is not included)
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 M Ω with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute
(output 0 to output 1 to output 2 to output 3 to output 4 to output 5 to output 6 to output 7 to output 8 to output 9 to output 10 to output 11 to output 12 to output 13 to output 14 to output 15 to Ethernet or FE to power)

STANDARDS & APPROVALS

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

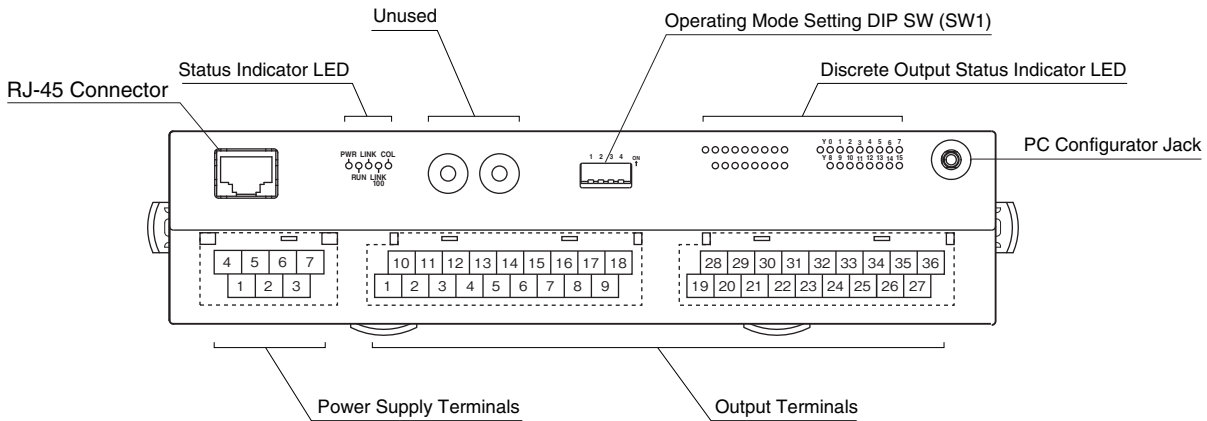
Low Voltage Directive
EN 61010-1, EN 61010-2-201
Measurement Category II (output)
Pollution Degree 2
Output to power: Basic insulation (250 V)
RoHS Directive

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.

PARAMETER	SETTING RANGE	DEFAULT SETTING
IP Adress	0.0.0.0– 255.255.255.255	192.168.0.1
Subnet Mask	0.0.0.0– 255.255.255.255	255.255.255.0
Linger Time	0–3276.7 (sec.)	180.0(sec.)
Time Out	0–3276.7 (sec.)	3.0(sec.)

EXTERNAL VIEW



TERMINAL ASSIGNMENTS

OUTPUT TERMINAL ASSIGNMENT

10	11	12	13	14	15	16	17	18
+24V	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
1	2	3	4	5	6	7	8	9
0V	COM0	COM1	COM2	COM3	COM4	COM5	COM6	COM7

28	29	30	31	32	33	34	35	36
+24V	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
19	20	21	22	23	24	25	26	27
0V	COM8	COM9	COM10	COM11	COM12	COM13	COM14	COM15

NO.	ID	FUNCTION	NO.	ID	FUNCTION	NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	0V	0 V	10	+24V	24 V DC	19	0V	0 V	28	+24V	24 V DC
2	COM0	Common 0	11	Y0	Output 0	20	COM8	Common 8	29	Y8	Output 8
3	COM1	Common 1	12	Y1	Output 1	21	COM9	Common 9	30	Y9	Output 9
4	COM2	Common 2	13	Y2	Output 2	22	COM10	Common 10	31	Y10	Output 10
5	COM3	Common 3	14	Y3	Output 3	23	COM11	Common 11	32	Y11	Output 11
6	COM4	Common 4	15	Y4	Output 4	24	COM12	Common 12	33	Y12	Output 12
7	COM5	Common 5	16	Y5	Output 5	25	COM13	Common 13	34	Y13	Output 13
8	COM6	Common 6	17	Y6	Output 6	26	COM14	Common 14	35	Y14	Output 14
9	COM7	Common 7	18	Y7	Output 7	27	COM15	Common 15	36	Y15	Output 15

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)

MODBUS FUNCTION CODES & SUPPORTED CODES

■ Data and Control Functions

CODE	NAME		
01	Read Coil Status	X	Digital output from the slave (read / write)
02	Read Input Status		Status of digital inputs to the slave (read only)
03	Read Holding Registers		General purpose register within the slave (read / write)
04	Read Input Registers		Collected data from the field by the slave (read only)
05	Force Single Coil	X	Digital output from the slave (read / write)
06	Preset Single Register		General purpose register within the slave (read / write)
07	Read Exception Status		
08	Diagnostics	X	
09	Program 484		
10	Poll 484		
11	Fetch Comm. Event Counter	X	Fetch a status word and an event counter
12	Fetch Comm. Event Log	X	A status word, an event counter, a message count and a field of event bytes
13	Program Controller		
14	Poll Controller		
15	Force Multiple Coils	X	Digital output from the slave (read / write)
16	Preset Multiple Registers		General purpose register within the slave (read / write)
17	Report Slave ID	X	Slave type / 'RUN' status
18	Program 884 / M84		
19	Reset Comm. Link		
20	Read General Reference		
21	Write General Reference		
22	Mask Write 4X Register		
23	Read / Write 4X Registers		
24	Read FIFO Queue		

■ Exception Code

CODE	NAME		
01	Illegal Function	X	Function code is not allowable for the slave
02	Illegal Data Address	X	Address is not available within the slave
03	Illegal Data Value	X	Data is not valid for the function
04	Slave Device Failure		
05	Acknowledge		
06	Slave Device Busy		
07	Negative Acknowledge		
08	Memory Parity Error		

■ Diagnostic Subfunctions

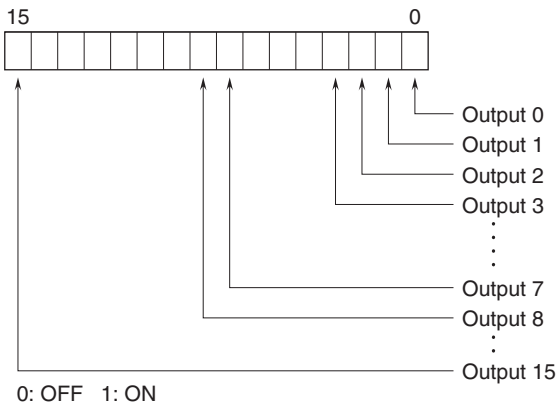
CODE	NAME		
00	Return Query Data	X	Loop back test
01	Restart Comm. Option		
02	Return Diagnostic Register		
03	Change Input Delimiter Character		
04	Force Slave to Listen Only Mode		

MODBUS I/O ASSIGNMENT

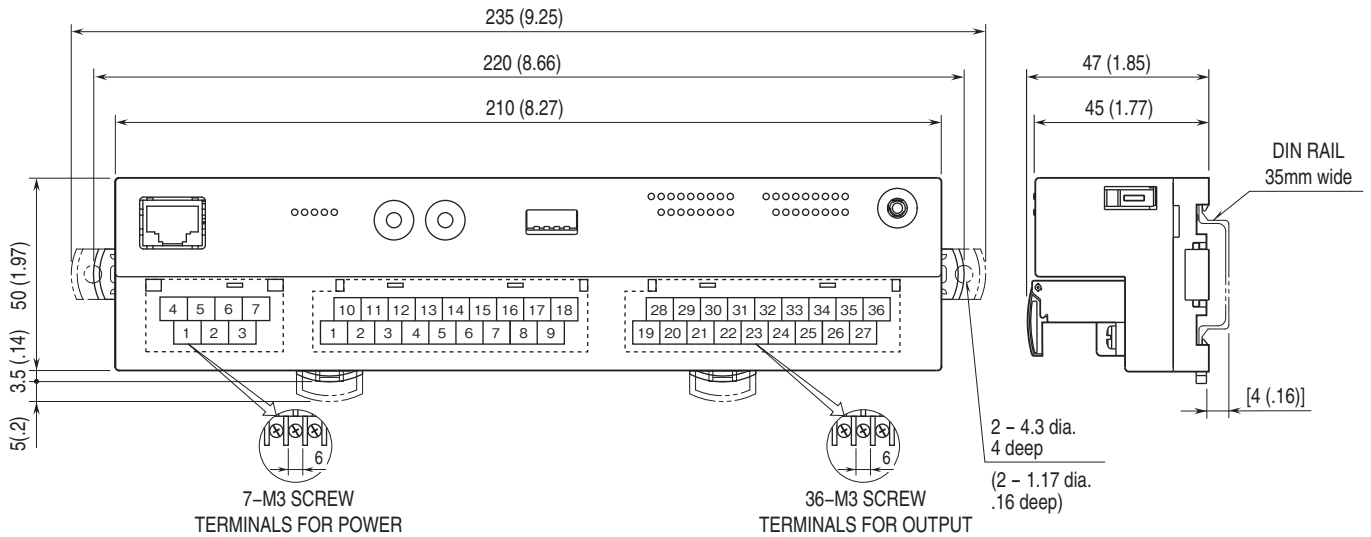
	ADDRESS	DATA TYPE	DATA
Coil (0X)	1 - 16		Digital Output

I/O DATA DESCRIPTIONS

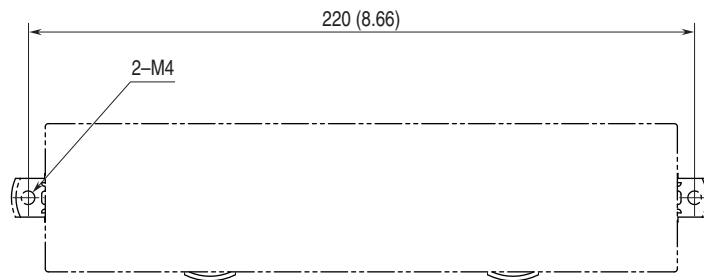
■ DISCRETE OUTPUT



EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



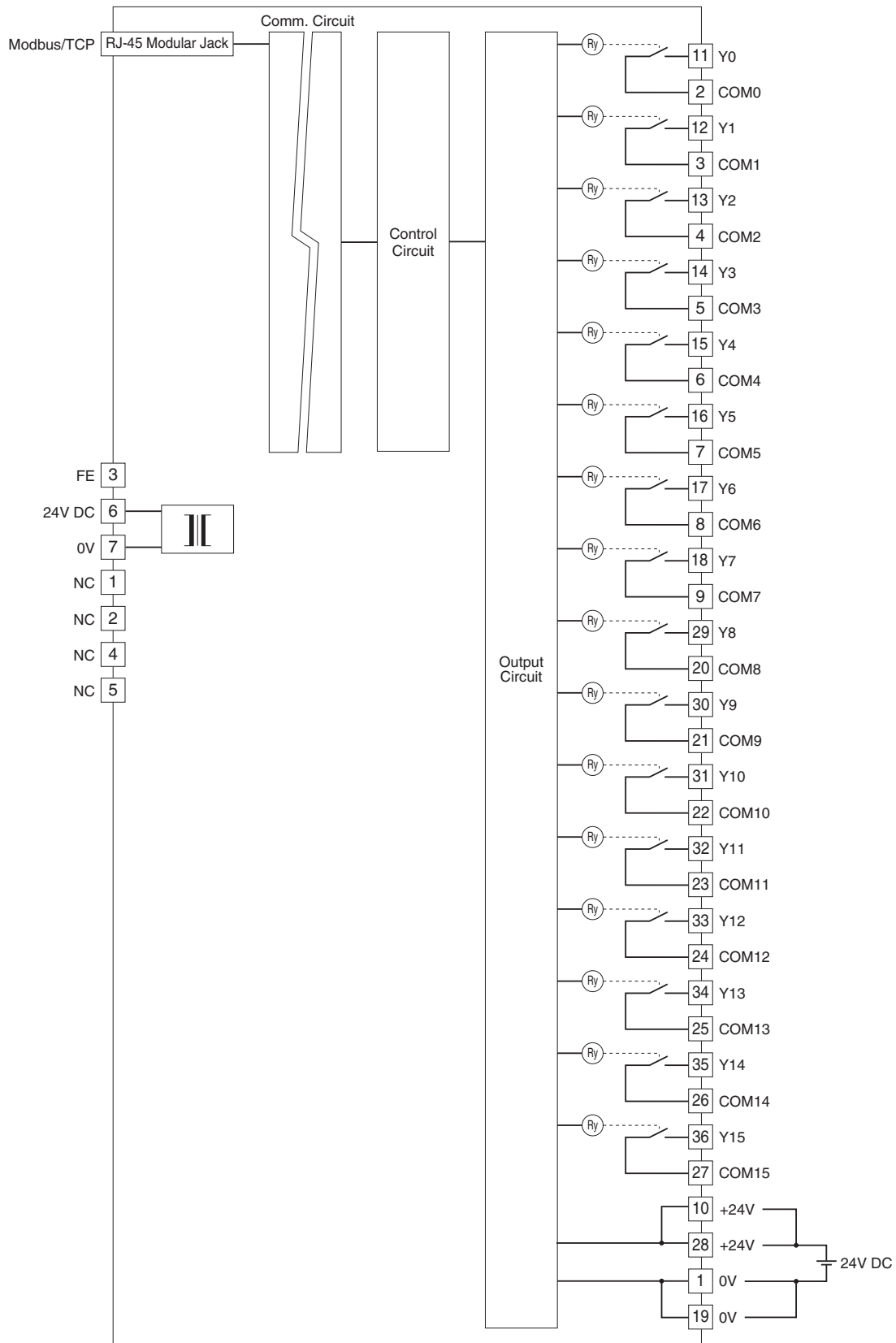
MOUNTING REQUIREMENTS unit: mm [inch]



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.





Specifications are subject to change without notice.