

Remote I/O R7I4D Series

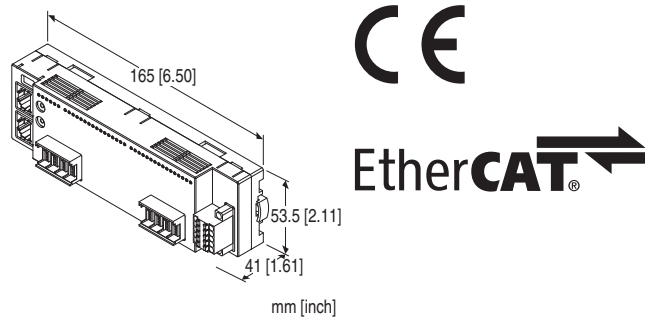
EtherCAT I/O MODULE

(high-speed DC voltage input, 8 points, non-isolated, e-CON connector)

Functions & Features

- 8 points high-speed DC voltage input module for EtherCAT
- Easy parameter setting of individual channels with the configurator software

EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.



MODEL: R7I4DECT-1-SVF8N-R[1]

ORDERING INFORMATION

- Code number: R7I4DECT-1-SVF8N-R[1]
- Specify a code from below for [1].
(e.g. R7I4DECT-1-SVF8N-R/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

TERMINAL BLOCK

- 1: Tension clamp terminal block for power supply
RJ-45 Modular jack for communication
e-CON connector for I/O

I/O TYPE

SVF8N: DC voltage input, high-speed, 8 points (non-isolated)

POWER INPUT

DC Power

R: 24 V DC

(Operational voltage range 24 V ±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-7779-SVF8N)

RELATED PRODUCTS

- PC configurator software (model: R7CFG)
- ESI file

The configurator software and ESI files are downloadable at our web site.

Use a commercially available Mini-B USB cable to connect the unit to a PC.

GENERAL SPECIFICATIONS

Connection

EtherCAT: RJ-45 Modular Jack

Power: Separable screwless spring terminal

Input: e-CON connector

Housing material: Flame-resistant resin (gray)

Isolation: Input to EtherCAT or FE to power

Zero adjustments: Configurable via R7CFG

Span adjustments: Configurable via R7CFG

Input range: Configurable via R7CFG

Number of times of averaging: Configurable via R7CFG

Status indicator LED: PWR, RUN, ERR, L/A IN, L/A OUT
(Refer to the instruction manual.)

EtherCAT COMMUNICATION

Standard: IEEE 802.3u

Transmission type: 100BASE-TX

Transmission speed: Full-duplex 100 Mbps

Transmission media: 100BASE-TX (STP cable; Category 5e)

Maximum internode length: 100 meters

Fixed address: Set with rotary switches

(The master must support MDP.)

INPUT SPECIFICATIONS

Input resistance: ≥ 1 MΩ

Input range: -10 - +10 V DC, -5 - +5 V DC, 0 - 10 V DC,
0 - 5 V DC, 1 - 5 V DC

INSTALLATION

Current consumption: Approx. 40 mA (rated current 8 A)
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: 170 g (0.37 lb)

PERFORMANCE

Conversion accuracy: $\pm 0.1\%$
Conversion rate: 2.5 msec. / 8 channels
Data range: 0 - 10000 of the input range
Temp. coefficient: $\pm 0.015\%/^{\circ}\text{C}$ ($\pm 0.008\%/^{\circ}\text{F}$)
Input delay time: ≤ 10 msec. (0 - 90 %)
Insulation resistance: $\geq 100\ \text{M}\Omega$ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute
 (input to EtherCAT or FE to power)

STANDARDS & APPROVALS

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

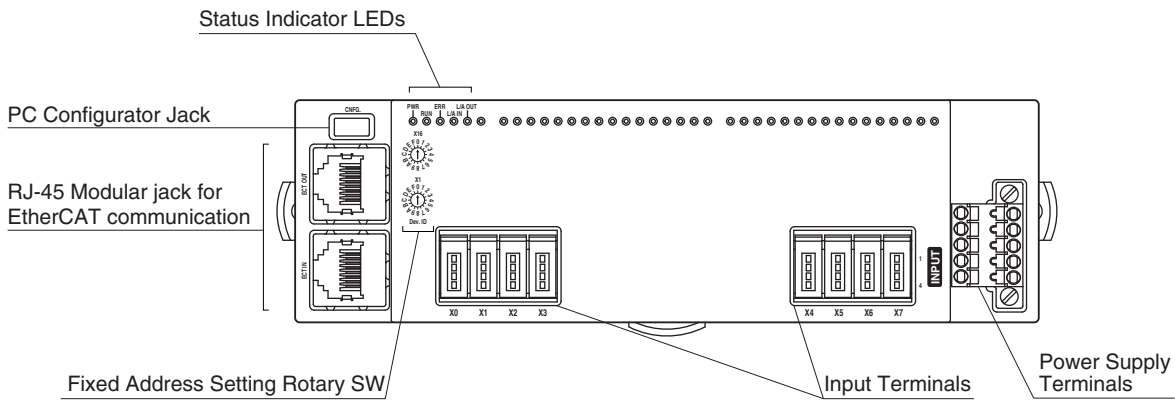
■ CHANNEL INDIVIDUAL SETTING

PARAMETER	SETTING RANGE	DEFAULT
Unused setting	CH enable, CH disable	CH enable
Input range	-10 to +10 V DC -5 to +5 V DC 0 to 10 V DC 0 to 5 V DC 1 to 5 V DC	-10 to +10 V DC
Bias setting	-320.00 to +320.00 (%)	0.00 (%)
Gain setting	-3.2000 to +3.2000	1.0000
Zero scaling value	-32000 to +32000	0
Full scaling value	-32000 to +32000	10000

■ CHANNEL BATCH SETTING

PARAMETER	SETTING RANGE	DEFAULT
No. of moving average	1, 2, 4, 8, 16, 32, 64, 128	1

EXTERNAL VIEW



TERMINAL ASSIGNMENTS

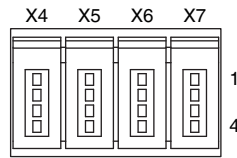
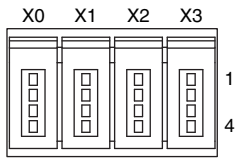
■ INPUT TERMINAL ASSIGNMENT

• e-CON connector

Recommended cable connector: 37104-()-000FL (3M Company)

(The cable connector is not included in the package.)

Specify wire size instead of (); refer to the specifications of the product.)



PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
X0	1	NC	X4	1	NC
	2	COM		2	COM
	3	NC		3	NC
	4	VH0		4	VH4
X1	1	NC	X5	1	NC
	2	COM		2	COM
	3	NC		3	NC
	4	VH1		4	VH5
X2	1	NC	X6	1	NC
	2	COM		2	COM
	3	NC		3	NC
	4	VH2		4	VH6
X3	1	NC	X7	1	NC
	2	COM		2	COM
	3	NC		3	NC
	4	VH3		4	VH7

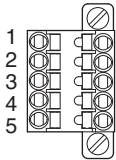
■ POWER SUPPLY

Cable connector: TFMC1,5 / 5-STF-3,5
(Phoenix Contact) (included in the package)

Applicable wire size: 0.2 – 1.5 mm²; stripped length 10 mm

Recommended solderless terminal

- AI0,25–10YE 0.25 mm² (Phoenix Contact)
- AI0,34–10TQ 0.34 mm² (Phoenix Contact)
- AI0,5–10WH 0.5 mm² (Phoenix Contact)
- AI0,75–10GY 0.75 mm² (Phoenix Contact)
- A1–10 1.0 mm² (Phoenix Contact)
- A1,5–10 1.5 mm² (Phoenix Contact)



- | | |
|---------|------------------|
| 1. PWR+ | Power Supply |
| 2. PWR- | Power Supply |
| 3. FE | Functional earth |
| 4. NC | Unused |
| 5. NC | Unused |

Note: The numbers marked on the connector have no relationship to the pin number of the unit.
Wire according to the instruction manual of the unit.

RESPONSE TIME

- Input module

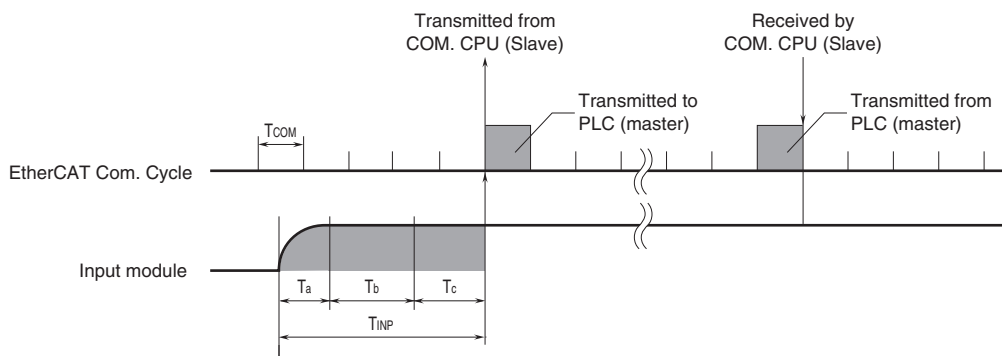
Response time is time from when a step (0 to 100%) input signal is applied to the input module (slave) until when output from its communication CPU reaches 90% of the final value.

T_{COM} : EtherCAT communication cycle set by the host device (master)
(The cycle is determined in accordance with the system configuration and settings.)

T_{INP} : Input module response time \leq Delay time of input circuit (T_a) + Conversion speed^{*1} (T_b) + Input internal processing time (T_c) (Communication cycle x 2)

*1. Conversion speed x No. of moving averages (1 to 128)

ex.) When No. of moving averages: 1 and EtherCAT communication cycle: 1 msec.,
Input module response time (T_{INP}): Delay time of input circuit (10 msec.) + Conversion speed (2.5 msec.) x No. of moving averages (1) + Input internal processing time (1 msec. x 2) = 14.5 [msec.]



I/O DATA DESCRIPTIONS

Scaling of analog input module is configurable with the configurator software (model: R7CFG). Refer to the software manual for details.

■ ANALOG INPUT MODULE

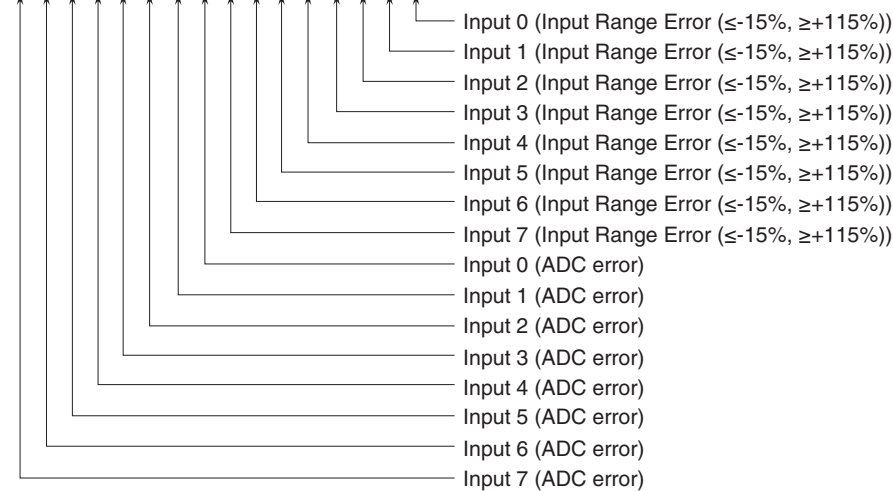
• Input Area Objects



16 bit binary data

Negative values are represented by 2's complements.

■ STATUS (Input Area Object)



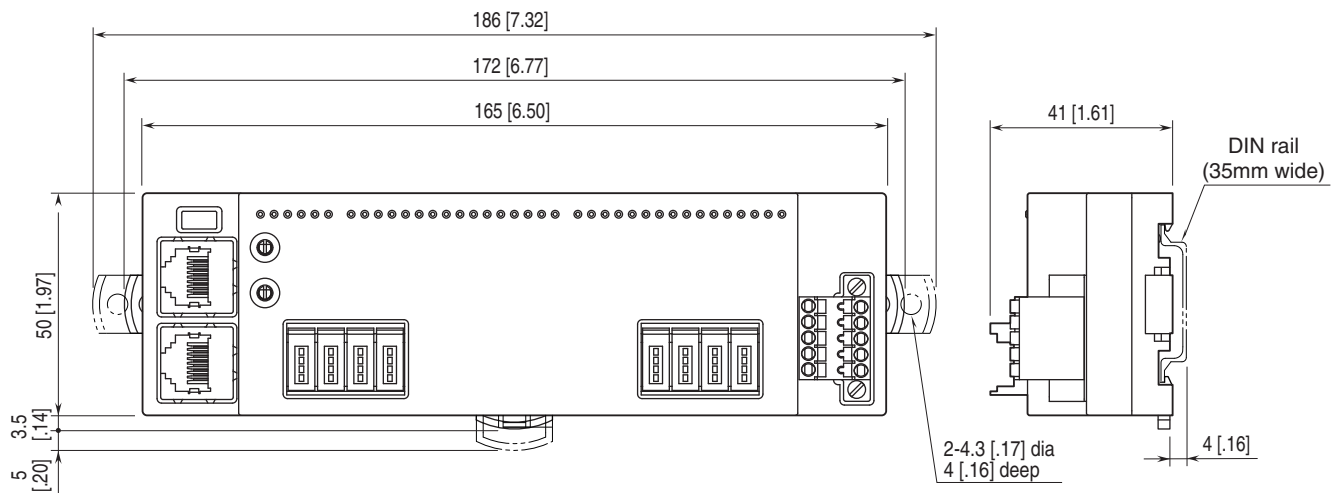
Input Range Error

0 : Normal 1 : Error

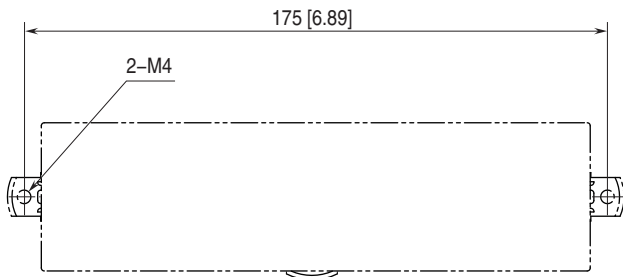
ADC error (no response from ADC)

0 : Normal 1 : Error

EXTERNAL DIMENSIONS unit: mm [inch]



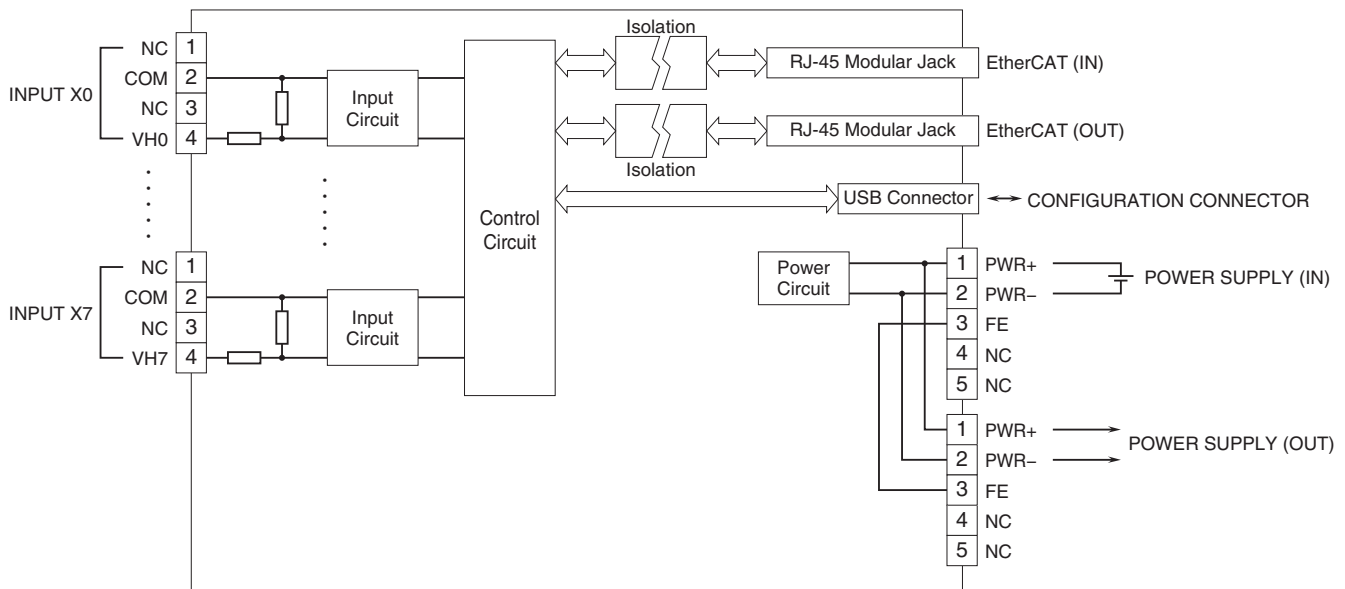
MOUNTING REQUIREMENTS unit: mm [inch]



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.



Specifications are subject to change without notice.