

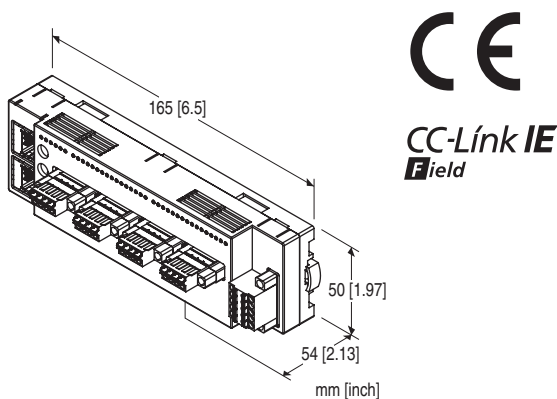
Remote I/O R7I4D Series

CC-Link I/O MODULE

(CC-Link IE Field network, high resolution, high-speed DC voltage/current input, 4 points, isolated, separable tension clamp terminal)

Functions & Features

- 4 points DC voltage/current input module for CC-Link IE Field
- Individual channel setting, zero/span adjustments, and scaling are possible with the engineering software (GX Works2 or GX Works3)



MODEL: R7I4DCIE1-SVAF4-4-R[1]

ORDERING INFORMATION

- Code number: R7I4DCIE1-SVAF4-4-R[1]
Specify a code from below for [1].
(e.g. R7I4DCIE1-SVAF4-4-R/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

SVAF4: high resolution, high-speed DC voltage/current input, 4 points

TERMINAL BLOCK

- 4: Separable tension clamp terminal for power supply
RJ-45 Modular jack for communication
Separable tension clamp terminal 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

Other Options

blank: none

/Q: Option other than the above (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-7746-A)

RELATED PRODUCTS

- CSP+ file

The CSP+ file are downloadable at our web site.

CSP+ file is also downloadable at CC-Link Partner Association's web site.

GENERAL SPECIFICATIONS

Connection

CC-Link IE Field: RJ-45 modular jack

Power supply, Input signal: Separable tension clamp terminal

Housing material: Flame-resistant resin (gray)

Isolation: Input 0 to input 1 to input 2 to input 3 to CC-Link IE Field or FE to power

Parameter setting: Configurable with host engineering tools (GX Works2 or GX Works3)

Status indicator LEDs: PWR, RUN, RD, SD, D LINK, ERR
(Refer to the instruction manual for details)

CC-Link IE Field COMMUNICATION

Protocol: IEEE 802.3

Transmission type: 1000BASE-T

Communication speed: 1 Gbps

Network cable: Cable conformed to CC-Link IE Field Double shielded twist pair cable (CAT5e)
RJ-45 connector

Network topology: Line, star and ring

Max. number of stations: 120 (Total slave stations)

(Number of max. connectable slaves may vary depending on the master module. Refer to the instruction manual of the master module)

Max. station-to-station distance: 100 m

Station type: Remote device station

Link device: RX/RX 16 points, RWw/RWr 16 points

NetWork No.: Configured automatically to the same network number as the master upon power-up.

Synchronous communication: Available

INPUT SPECIFICATIONS

■ Current range

- Input resistance: 50Ω
- Operational range: -23 - +23mA
- Input range: -20 - +20 mA DC, 0 - 20 mA DC, 4 - 20 mA DC

■ Narrow span voltage

- Input resistance: $\geq 100\text{ k}\Omega$
- Operational range: -1.15 - +1.15V
- Input range: -1 - +1 V DC, 0 - 1 V DC, -0.5 - +0.5 V DC

■ Wide span voltage

- Input resistance: $\geq 1\text{ M}\Omega$
- Operational range: -11.5 - +11.5V
- 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

- DC at 24 V DC: $\leq 110\text{ mA}$

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: 180 g (0.40 lb)

PERFORMANCE

Accuracy: $\pm 0.1\%$

Conversion rate: 2 msec. / 4 CH

Conversion data: -32768 - +32767 or 0 - 65535

Temp. coefficient: $\pm 0.015\%$ /°C ($\pm 0.008\%$ /°F)

Input delay time: $\leq 1\text{ msec.}$ (0 - 90 %)

Insulation resistance: $\geq 100\text{ M}\Omega$ with 500 V DC

Dielectric strength: 1500 V AC @ 1 minute

(input 0 to input 1 to input 2 to input 3 to CC-Link IE Field or FE to power)

STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

PARAMETER SETTING

The following settings can be configured by using the engineering tool (GX Works2 or GX Works3).

For details on the setting method, refer to the instruction manual.

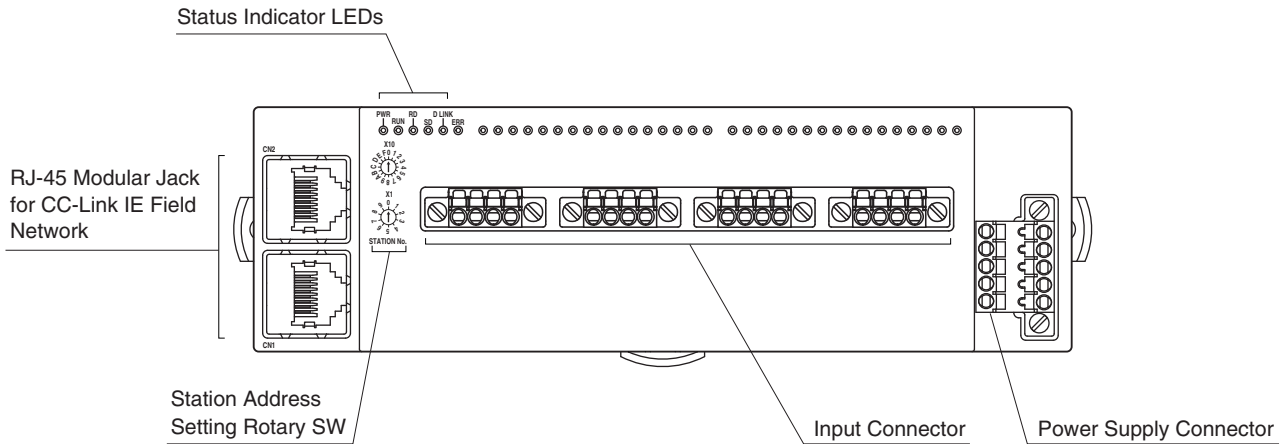
■ CHANNEL INDIVIDUAL SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Unused setting	CH enabled CH disabled	CH enabled
Input range	-10 - +10 V DC -5 - +5 V DC -1 - +1 V DC 0 - 10 V DC 0 - 5 V DC 1 - 5 V DC 0 - 1 V DC -0.5 - +0.5 V DC -20 - +20 mA DC 0 - 20 mA DC 4 - 20 mA DC	-10 - +10 V DC
Bias	-320.00 - +320.00(%)	0.00 (%)
Gain	-3.2000 - +3.2000	1.0000
Data type	Signed Unsigned	Signed
Signed Zero scale	-32,768 - +32,767	0
Signed Full scale	-32,768 - +32,767	10,000
Unsigned Zero scale	0 - 65535	0
Unsigned Full scale	0 - 65535	10,000

■ CHANNEL BATCH SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Moving average	1, 2, 4, 8, 16, 32, 64, 128, 256	1

EXTERNAL VIEW



TERMINAL ASSIGNMENTS

■ INPUT

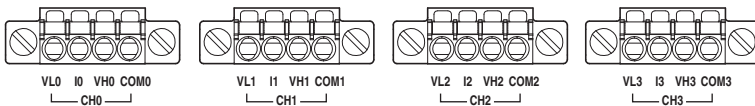
Cable connector: FMC1,5 / 4-STF-3,5

(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)



NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	VL0	Narrow span volt. 0	9	VL2	Narrow span volt. 2
2	I0	Current range 0	10	I2	Current range 2
3	VH0	Wide span volt. 0	11	VH2	Wide span volt. 2
4	COM0	Common 0	12	COM2	Common 2
5	VL1	Narrow span volt. 1	13	VL3	Narrow span volt. 3
6	I1	Current range 1	14	I3	Current range 3
7	VH1	Wide span volt. 1	15	VH3	Wide span volt. 3
8	COM1	Common 1	16	COM3	Common 3

■ POWER SUPPLY

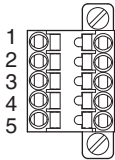
Cable connector: TFMC1,5 / 5-STF-3,5

(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.

DATA CONVERSION

■ INPUT RANGE AND DATA CONVERSION

Analog input data is converted into digital representations of 0 – 100% proportional to each scaled range.

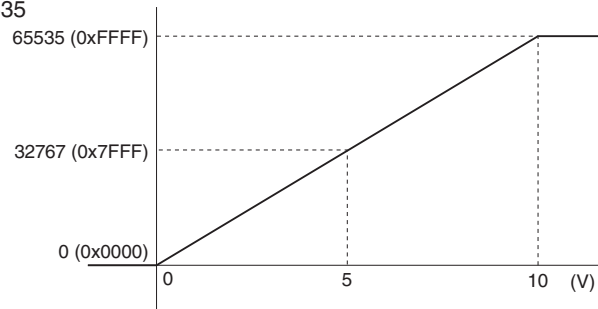
The conversion data is the value converted into 16 bits (0 – 65535 or -32768 – +32767) from this converted % value.

Overrange input is possible from 0 to 100% of the nominal range.

When the signal exceeds the limit, the data is fixed at 0% or 100%.

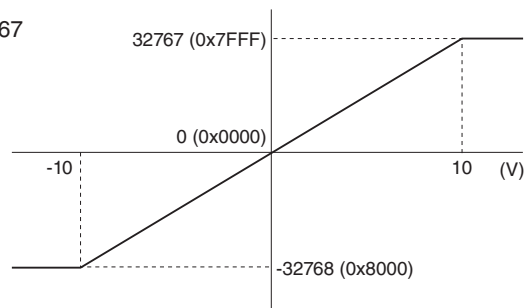
- Input Range: 0 – 10V DC, Data Type: Unsigned, Scaling: 0 – 65535

Input Value	Input %	Converted Data, Decimal	Converted Data, Hex
<0V	0%	0	0x0000
0V	0%	0	0x0000
5V	50%	32767	0x7FFF
10V	100%	65535	0xFFFF
>10V	100%	65535	0xFFFF



- Input Range: -10 – +10V DC, Data Type: Signed, Scaling: -32768 – +32767

Input Value	Input %	Converted Data, Decimal	Converted Data, Hex
<-10V	0%	-32768	0x8000
-10V	0%	-32768	0x8000
0V	50%	0	0x0000
10V	100%	32767	0x7FFF
>10V	100%	32767	0x7FFF



The input range of the hardware is -15% to +115% of the input range.

When the conversion data is narrowed down from 0 – 65535 or -32768 – +32767 in the settings of data type/zero scaling value/full scaling value, conversion data from -15% to +115% can be obtained.

E.g.) When the input range is 0 to 10V with data type: unsigned, zero scaling value: 0, and full scaling value: 10000, the input range of -1.5 to +11.5V will be obtained as the conversion data of -1500 to +11500.

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.

LS: Link scan time (CC-Link IE Field communication cycle)

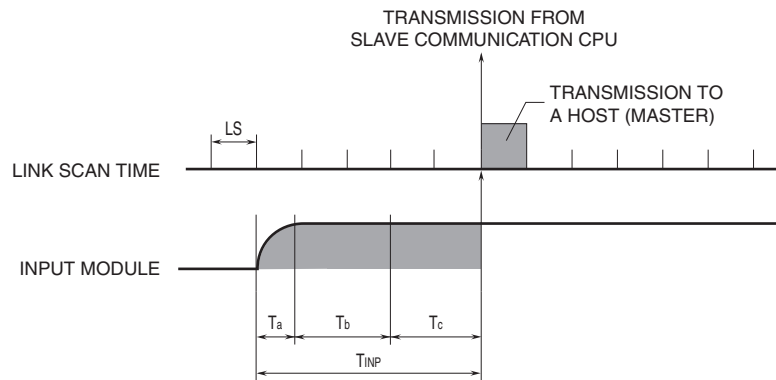
Link scan time depends on the system configuration and settings.

T_{INP} : Input module response time $\leq$ Input Delay time (T_a) + Conversion rate^{*1} (T_b) + input internal processing delay time (T_c) (two link scan time)

*1. Conversion rate x Averaging

E.g.: Averaging (2), input delay time of 1 msec, link scan time of 1 msec.

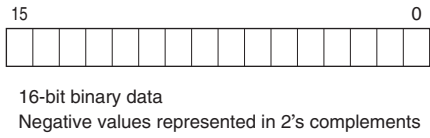
Input module response time (T_{INP}): Input Delay time (1 msec.) + Conversion rate (2 msec.) x Averaging (2) + internal processing delay time (1 msec. x 2) = 7 [msec.]



I/O DATA DESCRIPTIONS

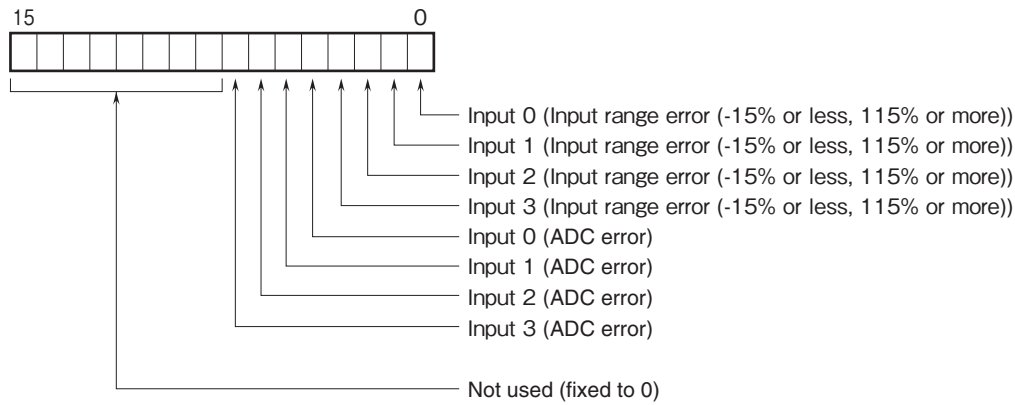
Scaling of analog input module is configurable with the host engineering tool (GX Works2 or GX Works3). Refer to the instruction manual for details.

ANALOG INPUT



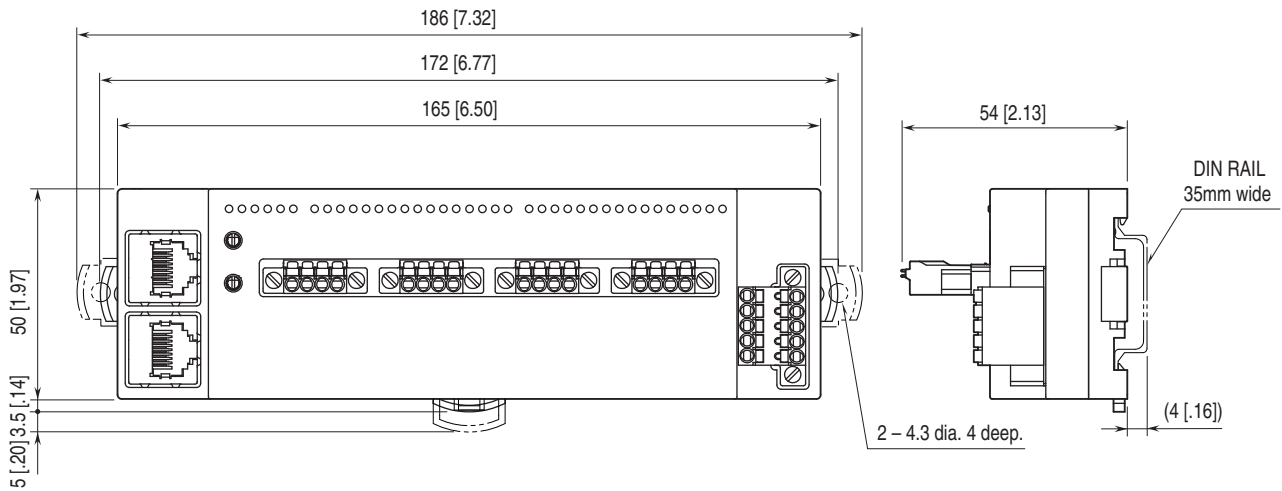
STATUS

Input status of each channel is indicated.

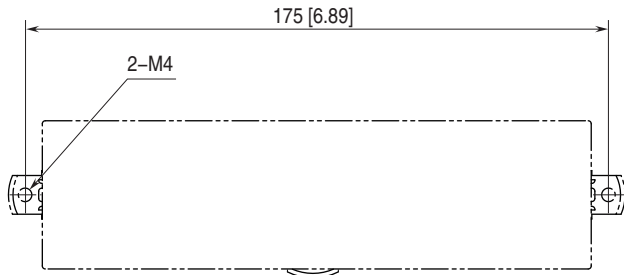


Input range error
0: normal, 1: error
ADC error (no response from ADC)
0: normal, 1: error

EXTERNAL DIMENSIONS unit: mm [inch]



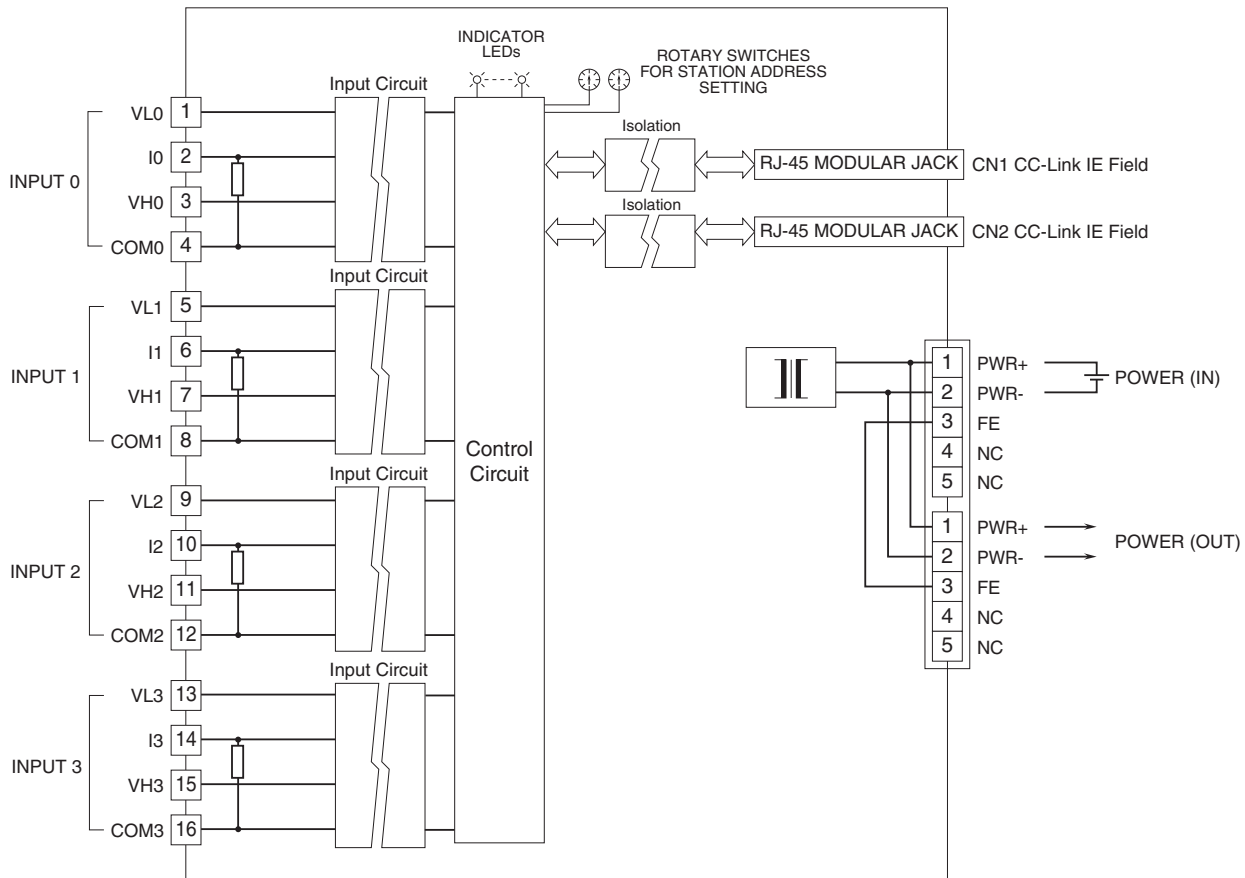
MOUNTING REQUIREMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

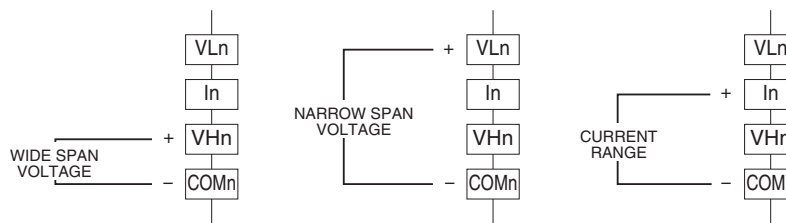
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.



Regarding CN1 and CN2 of RJ-45 connector for CC-Link IE Field network, there is no restriction for connection order.

INPUT CONNECTION EXAMPLE





Specifications are subject to change without notice.