

# RTD-DI-16

## SmartX Controller

### 16 channel RTD/digital input I/O module

#### Introduction

The RTD-DI-16 is a RTD/digital input, 16 channel I/O module.

The inputs of RTD-DI-16 can be configured to read seven different types of inputs:

- 2-wire RTD temperature
- 3-wire RTD temperature
- 2-wire RTD resistive
- 3-wire RTD resistive
- Digital
- Counter
- Resistive

RTD-DI-16 supports 3-wire configurations that consume two input channels. The number of channels available range between 8 to 16 depending on the number of 3-wire configurations that are used.

The inputs can be used for sensing multiple dry contact inputs in applications, such as equipment status monitoring or alarm point monitoring. As counter inputs, they are commonly used in energy metering applications.

The RTD inputs are ideal for temperature points in a building control system.

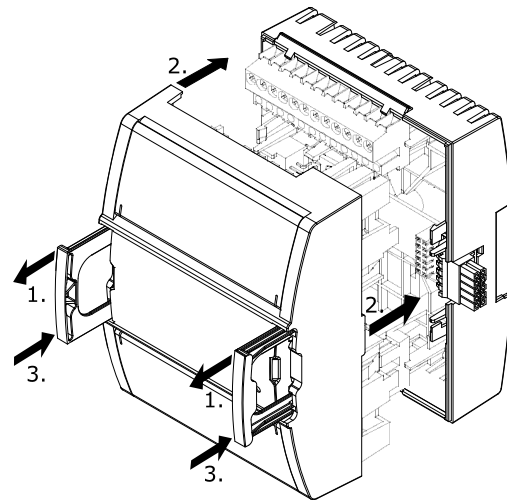
#### Function

##### Modular and scalable system

The modules are part of a modular system that delivers power and communications on a common bus. Connecting modules is a one-step process: just slide the modules together using the built-in connectors.

##### Patented two-piece design

Each module can be separated from its terminal base to allow the site to be wired prior to the installation of the electronics. The patented locking mechanism serves as handles for removing the module from its base. All critical components have a protective cover that permits convection cooling to occur.



Two-piece design

##### Hot-connect and Hot-swap

Because critical applications require 24-hour operation, Schneider Electric designed the I/O modules for hot-connection of terminal bases and hot-swapping of the modules to their bases. This design ensures continuous power and communication during service operations.

##### Auto-addressing

The auto-addressing feature eliminates the need for setting DIP switches or pressing commission buttons. Each module automatically knows its order in the chain and assigns itself accordingly – significantly reducing engineering and maintenance time.

##### Simple DIN-rail installation

Fasteners easily snap into a locked position for panel installation. The fastener has a quick-release feature for easy DIN-rail removal.

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### Efficient terminal management

The I/O module terminals are clearly labeled and protected by transparent covers. The input and output terminals are at the top and bottom of each module and are accessible for maintenance without removing the module. The EcoStruxure Building Operation WorkStation software can generate custom as-built labels for each module. Pre-perforated letter and A4 size label sheets are available as an accessory.

### Accommodates multiple row panel installations

The SmartX devices use built-in connectors for single row connectivity, side by side. If a panel size requires multiple rows, extension cords are available.

### Specifications

Input channels .....	16
3-wire RTDs require 2 inputs	
DC input supply power .....	1.6 W
DC input supply voltage .....	24 VDC

### Environment

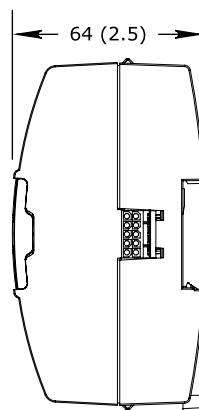
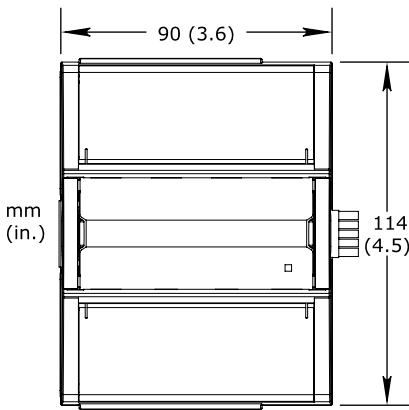
Ambient temperature, operating .....	0 to 50 °C (32 to 122 °F)
Ambient temperature, storage .....	-20 to +70 °C (-4 to +158 °F)
Maximum humidity.....	95 % RH non-condensing

### Material

Plastic flame rating .....	UL94-5VB
Enclosure .....	PC/ABS
Ingress protection rating .....	IP 20

### Mechanical

Dimensions including terminal base .....	90 W x 114 H x 64 D mm (3.6 W x 4.5 H x 2.5 D in.)
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Weight including terminal base .....	0.269 kg (0.59 lb)
Weight excluding terminal base .....	0.146 kg (0.32 lb)

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Terminal base .....TB-IO-W1

### Agency compliances

Emission.....RCM; EN 61000-6-3; FCC Part 15, Sub-part B, Class B  
 Immunity.....EN 61000-6-2  
 Safety.....EN 61010-1; UL 916 C-UL US Listed  
 Product.....EN 61326-1  
 Smoke control product safety.....UL 864

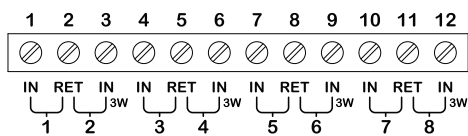
### Part numbers

RTD-DI-16, I/O module  
 16 RTD/digital inputs.....SXWRD16X10001  
 TB-IO-W1, terminal base for I/O module  
 (Required for each I/O module).....SXWTBIOW110001

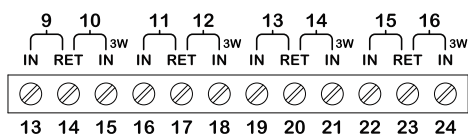
### Accessory part numbers

DIN-RAIL-CLIP, DIN-rail end clip  
 package of 25 pieces.....SXWDINEND10001  
 PRINTOUT-A4-W1, printout sheets for terminal labels  
 A4 sheet size, 100 sheets, 18 labels per sheet.....SXWTERLBL10011  
 PRINTOUT-LTR-W1, printout sheets for terminal labels  
 Letter sheet size, 100 sheets, 16 labels per sheet.....SXWTERLBL10012  
 S-CABLE-L, S-cable extension cord for the I/O bus, L shaped connectors  
 1.5 m.....SXWSCABLE10002  
 S-CABLE-L, S-cable extension cord for the I/O bus, L shaped connectors  
 0.75 m.....SXWSCABLE10003

### Universal inputs



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Absolute maximum ratings .....-0.5 to +24 VDC

### RTD temperature

Reliability check.....Yes  
 Supported RTDs.....Pt100, Pt1000, Ni1000, and LG-Ni1000

### Pt100

Range.....-50 to +150 °C (-58 to +302 °F)  
 Measurement accuracy.....+/-0.3 °C (+/-0.54 °F)

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Resolution .....0.03 °C (0.05°F)

### Pt1000

Range.....-50 to +150 °C (-58 to +302 °F)

Measurement accuracy ..... +/-0.2 °C (+/-0.36 °F)

Resolution .....0.03 °C (0.05 °F)

### Ni1000

Range.....-50 to +150 °C (-58 to +302 °F)

Measurement accuracy ..... +/-0.1 °C (+/-0.18 °F)

Resolution .....0.03 °C (0.05 °F)

### LG-Ni1000

Range.....-50 to +150 °C (-58 to +302 °F)

Measurement accuracy ..... +/-0.1 °C (+/-0.18 °F)

Resolution .....0.03 °C (0.05 °F)

### RTD temperature wiring

Maximum wire resistance.....20 ohm/wire (40 ohm total)

Maximum wire capacitance.....60 nF

The wire resistance and capacitance typically corresponds to a 200 m wire.

### RTD resistive

Reliability check.....Yes

### 100 ohm

Range .....50 to 220 ohm

.....Including wiring resistance

Measurement accuracy..... +/- $(0.08 + 2 \times 10^{-4} \times R)$  ohm

R = resistance in ohm

Resolution .....0.01 ohm

### 1,000 ohm

Range .....500 to 2,200 ohm

.....Including wiring resistance

Measurement accuracy..... +/- $(0.3 + 2 \times 10^{-4} \times R)$  ohm

R = resistance in ohm

Resolution .....0.1 ohm

### RTD resistive wiring

Maximum wire capacitance.....60 nF

### Digital

Range ..... Dry contact switch closure or open collector/open drain, 24 VDC, 2.4 mA

Minimum pulse width .....120 ms

LED polarity ..... Software selectable, if the LED is activated when the input is high or low

LED color .....Red or green, software selectable

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### Counter

Range .....	Dry contact switch closure or open collector/open drain, 24 VDC, 2.4 mA
Minimum pulse width .....	20 ms
Maximum frequency .....	25 Hz
LED polarity .....	Software selectable, if the LED is activated when the input is high or low
LED color .....	Red or green, software selectable

### Resistive

Range .....	0 to 15,000 ohm
Accuracy .....	+/- (3 + 6 x 10 <sup>-4</sup> x R) ohm
R = resistance in ohm	
Resolution .....	1 ohm
Reliability check .....	Yes
Maximum wire capacitance .....	60 nF

For protection from excess current that could be produced by field wiring, follow these instructions:

- Connect one RET terminal on each of the I/O modules to a common chassis/power ground rail in the control panel using a size 16 AWG, 1.3 mm, or larger wire.

- Individual 24 VDC power sources to the field must be current limited to maximum of 4 amps for UL compliant installations, and no more than 6 amps in other areas.
- For more information on wiring, see Hardware Reference Guide.

## Regulatory Notices

**FC Federal Communications Commission**  
 FCC Rules and Regulations CFR 47, Part 15, Class B  
 This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.

**Industry Canada**  
 This Class B digital apparatus complies with Canadian ICES-003.  
 Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

**Regulatory Compliance Mark (RCM) - Australian Communications and Media Authority (ACMA)**  
 This equipment complies with the requirements of the relevant ACMA standards made under the Radiocommunications Act 1992 and the Telecommunications Act 1997. These standards are referenced in notices made under section 182 of the Radiocommunications Act and 407 of the Telecommunications Act.

**CE - Compliance to European Union (EU)**  
 2014/30/EU Electromagnetic Compatibility Directive  
 2011/65/EU Restriction of Hazardous Substances (RoHS) Directive  
 This equipment complies with the rules, of the Official Journal of the European Union, for governing the Self Declaration of the CE Marking for the European Union as specified in the above directive(s) per the provisions of the following standards: EN 61326-1 Product Standard, EN 61010-1 Safety Standard.

**WEEE - Directive of the European Union (EU)**  
 This equipment and its packaging carry the waste of electrical and electronic equipment (WEEE) label, in compliance with European Union (EU) Directive 2012/19/EU, governing the disposal and recycling of electrical and electronic equipment in the European community.

**UL LISTED US**  
 UL 916 Listed products for the United States and Canada, Open Class Energy Management Equipment. UL file E80146.

**UL LISTED SIGNIFIC**  
 UL 864 Listed products for the United States. 10<sup>th</sup> Edition Smoke Control System. UL file S5527.