

UI-16

SmartX Controller

16 channel universal input I/O module

Introduction

The UI-16 is a universal input, 16 channel I/O module.

The universal inputs are ideal for any mix of temperature, pressure, flow, status points, and similar point types in a building control system.

The universal inputs can be configured to read several different types of inputs:

- Digital
- Counter
- Supervised
- Voltage
- Current
- Temperature
- Resistive

As counter inputs they are commonly used in energy metering applications. As supervised inputs they are used for security applications where it is critical to know whether or not a wire has been cut or shorted. These events provide a separate indication of alarms and trouble conditions to the system.

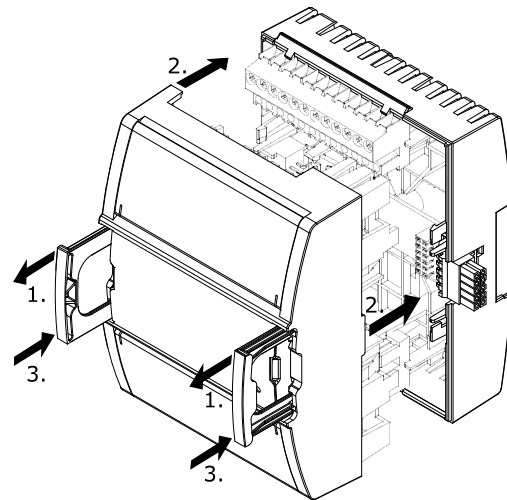
Function

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
DC input supply power	1.8 W
DC input supply voltage	24 VDC

Environment

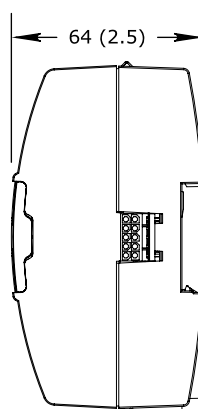
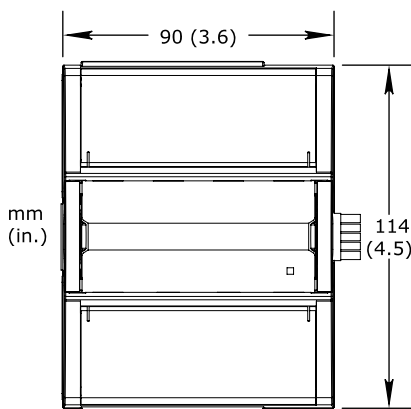
Ambient temperature, operating	0 to 50 °C (32 to 122 °F)
Ambient temperature, storage	-20 to +70 °C (-4 to +158 °F)
Maximum humidity.....	95 % RH non-condensing

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)
Terminal base	TB-IO-W1

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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

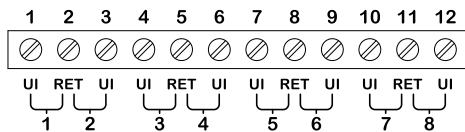
Part numbers

UI-16, I/O module	
16 universal inputs.....	SXWUI16XX10001
TB-IO-W1, terminal base for I/O module (Required for each I/O module).....	SXWTBIOW110001

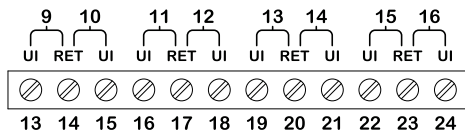
Accessory part numbers

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
A/D converter resolution.....	12 bits

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

Counter

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

Supervised

5 V circuit, 1 or 2 resistors	
Monitored switch combinations	Series only, parallel only, and series and parallel
Resistor range	1 to 10 kohm
For a 2-resistor configuration, each resistor must have the same value +/- 5 %	

Voltage

Range	0 to 10 VDC
Accuracy	+/- (7 mV + 0.2 % of reading)
Resolution	2.7 mV
Impedance	100 kohm
Reliability check	Yes

Current

Range	0 to 20 mA
Accuracy	+/- (0.03 mA + 0.4 % of reading)
Resolution	5.6 μ A
Impedance	47 ohm
Reliability check	Yes

Resistive

10 ohm to 10 kohm accuracy	+/- (7 + $4 \times 10^{-3} \times R$) ohm
R = Resistance in ohm	
10 kohm to 60 kohm accuracy	+/- ($4 \times 10^{-3} \times R + 7 \times 10^{-8} \times R^2$) ohm
R = Resistance in ohm	
Reliability check	Yes

Temperature

Range	-50 to +150 °C (-58 to +302 °F)
Reliability check	Yes

Supported thermistors

Honeywell	20 kohm
Type I (Continuum)	10 kohm
Type II (I/NET)	10 kohm
Type III (Satchwell)	10 kohm
Type IV (FD)	10 kohm
Type V (FD w/ 11k shunt)	Linearized 10 kohm
Satchwell D?T	Linearized 10 kohm
Johnson Controls	2.2 kohm

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Xenta.....	1.8 kohm
Balco.....	1 kohm

Measurement accuracy

20 kohm, 10 kohm, 2.2 kohm, and 1.8 kohm	-50 to -30 °C: +/-1.5 °C (-58 to -22 °F: +/-2.7 °F)
.....	-30 to 0 °C: +/-0.5 °C (-22 to +32 °F: +/-0.9 °F)
.....	0 to 50 °C: +/-0.2 °C (32 to 122 °F: +/-0.4 °F)
.....	50 to 100 °C: +/-0.5 °C (122 to 212 °F: +/-0.9 °F)
.....	100 to 150 °C: +/-1.5 °C (212 to 302 °F: +/-2.7 °F)
Linearized 10 kohm	-50 to -30 °C: +/-3.0 °C (-58 to -22 °F: +/-5.4 °F)
.....	-30 to 0 °C: +/-1.0 °C (-22 to +32 °F: +/-1.8 °F)
.....	0 to 50 °C: +/-0.3 °C (32 to 122 °F: +/-0.5 °F)
.....	50 to 100 °C: +/-0.5 °C (122 to 212 °F: +/-0.9 °F)
.....	100 to 150 °C: +/-2.0 °C (212 to 302 °F: +/-3.6 °F)
1 kohm	-50 to +150 °C: +/-1.5 °C (-58 to +302° F: +/-2.7 °F)

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



UL 864 Listed products for the United States. 10th Edition Smoke Control System. UL file S5527.