UI-8/AO-V-4 and UI-8/AO-V-4-H

SpaceLogic™ Plant Room Controllers

EcoStruxure™ Building

8-channel universal input and 4-channel analog voltage output I/O modules

Introduction

SpaceLogic* UI-8/AO-V-4 and UI-8/AO-V-4-H Central IO modules are universal input, 8-channel and analog output, 4-channel I/O modules.

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.

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The analog outputs are capable of supporting analog voltage point types. Therefore, analog outputs support a wide range of devices, such as actuators.

* Formerly known as SmartX.

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.
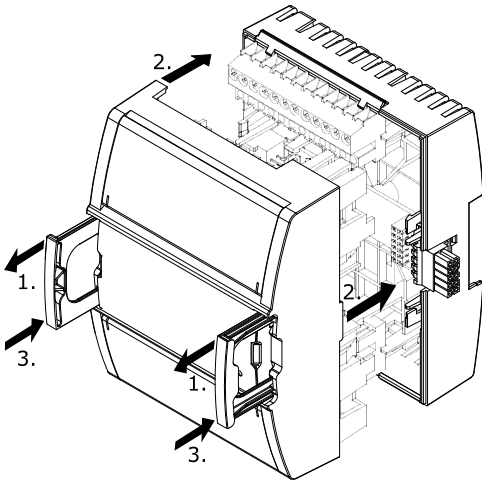
Two-piece design

Hot-connect and Hot-swap

Because critical applications require 24-hour operation, Schneider Electric designed the Central IO 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 helps eliminating 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.

Efficient terminal management

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

LED status indicators

The Central IO module has a status indicator that denotes the health and status of the module.

Each input channel has a dedicated two color status LED. The LED can be configured to display either red or green for each input state.

Hand/Off/Auto switches

The front panel of the UI-8/AO-V-4-H includes Hand/Off/Auto (HOA) switches to provide override control of the analog outputs.

Each output also has a potentiometer to modulate the output signal when the switch is in the Hand position.

The position of the HOA switch is readable through user interfaces, such as the EcoStruxure Building Operation WorkStation software, enabling more precise monitoring and control.

Protection

Protection components on the inputs and the outputs protect against high-voltage short-duration transient events.

The current inputs are protected against over current.

The analog outputs have current limits to protect against permanent short-circuit to ground.

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Specifications

UI-8/AO-V-4 and UI-8/AO-V-4-H	
Input channels	8
Output channels	4
DC input supply power	1.0 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.)

Weight including terminal base	0.275 kg (0.61 lb)
Weight excluding terminal base	0.152 kg (0.34 lb)
Terminal base	TB-IO-W1
Agency compliances	
Emission	RCM; BS/EN 61000-6-3; FCC Part 15, Sub-part B, Class B
Immunity	BS/EN 61000-6-2
Safety standards	BS/EN 61010-1; UL 916 C-UL US Listed
Product	BS/EN 61326-1

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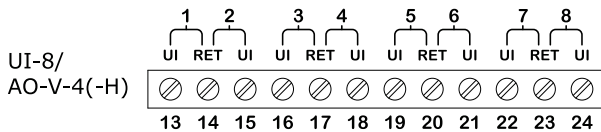|	
Smoke control product safety	UL 864

Part numbers	
UI-8/AO-V-4, Central IO module 8 universal inputs, 4 analog voltage outputs	SXWUI8V4X10001
UI-8/AO-V-4-H, Central IO module with HOA switches 8 universal inputs, 4 analog voltage outputs with Hand/Off/Auto override switches	SXWUI8V4H10001
TB-IO-W1, terminal base for Central IO module (Required for each Central IO 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

UI-8/AO-V-4(-H)

	1		2		3		4		5		6		7		8
	UI	RET	UI		UI	RET	UI		UI	RET	UI		UI	RET	UI
	13	14	15	16	17	18	19	20	21	22	23	24

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
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

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

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 µA
Impedance	47 ohm
Reliability check	Yes

Resistive	
10 ohm to 10 kohm accuracy R = Resistance in ohm	$+/-(7 + 4 \times 10^{-3} \times R)$ ohm
10 kohm to 60 kohm accuracy R = Resistance in ohm	$+/-(4 \times 10^{-3} \times R + 7 \times 10^{-8} \times R^2)$ 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)
Analog outputs, AO	

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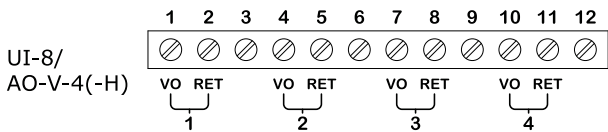
Voltage	
Range	0 to 10 VDC
Accuracy	+/-100 mV
Resolution	42 mV
Minimum load resistance	5 kohm
Load range	-1 to +2 mA
Reliability check	Yes

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

- Connect one RET terminal on each of the Central IO modules to a common chassis/power ground rail in the control panel using a size 16 AWG (1.3 mm^2), or larger wire.

- Individual 24 VDC power sources to the field must be current limited to maximum of 4 A for UL compliant installations, and no more than 6 A in other areas.

- For more information on wiring, see the SpaceLogic Hardware Reference Guide.

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Regulatory Notices

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.

UK Conformity Assessed
S.I. 2016/1091 - Electromagnetic Compatibility Regulations 2016
S.I. 2012/3032 - Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
S.I. 2013/3113 - Waste Electrical and Electronic Equipment Regulations 2013
This equipment complies with the rules, of the UK regulations, for governing the UKCA Marking for the United Kingdom specified in the above directive(s).

CE - Compliance to European Union (EU)
2014/30/EU Electromagnetic Compatibility Directive
2011/65/EU Restriction of Hazardous Substances (RoHS) Directive
2015/863/EU amending Annex II to Directive 2011/65/EU
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).

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.

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