

# UI-8/DO-FC-4 and UI-8/DO-FC-4-H SmartX Controller



## 8 channel universal input and 4 channel Form C digital output I/O modules

### Introduction

The UI-8/DO-FC-4 and UI-8/DO-FC-4-H are universal input, 8 channel and digital 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.

The digital outputs support digital Form C point types. The Form C relays are designed for direct load applications.

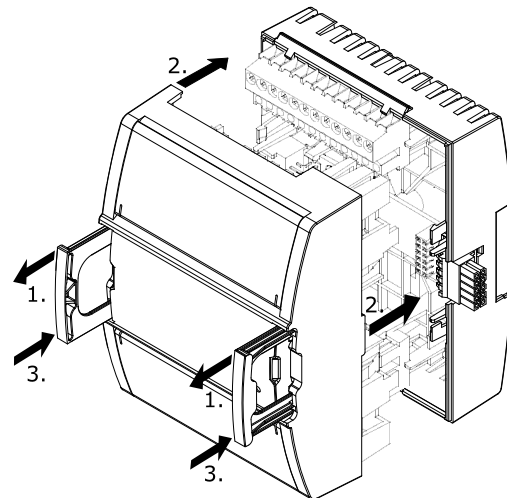
### Function

#### 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

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## 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.

## 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.

## Specifications

Input channels .....	8
Output channels .....	4
DC input supply power .....	1.9 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

## 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.

## LED status indicators

The I/O 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.

Each digital output channel has a dedicated status indicator using a green LED.

## Hand/Off/Auto switches

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

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

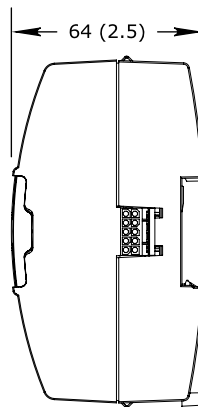
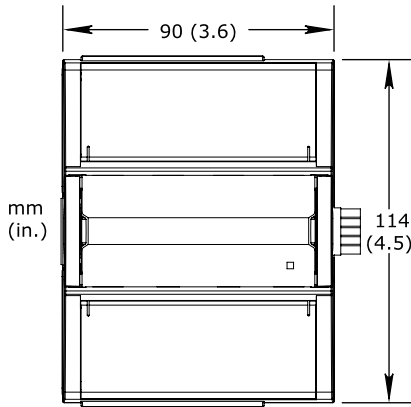
Protection components on the inputs and the outputs protect against high-voltage short-duration transient events.

The current inputs are protected against over current.

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## 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 .....0.304 kg (0.67 lb)

Weight excluding terminal base .....0.181 kg (0.40 lb)

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

UI-8/DO-FC-4, I/O module  
8 universal inputs/4 digital Form C outputs.....SXWUI8D4X10001

UI-8/DO-FC-4-H, I/O module with HOA switches  
8 universal inputs, 4 digital Form C outputs with Hand/Off/Auto override switches .....SXWUI8D4H10001

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

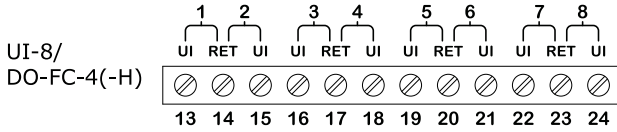
PRINTOUT-LTR-W1, printout sheets for terminal labels  
Letter sheet size, 100 sheets, 16 labels per sheet .....SXWTERLBL10012

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

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## Universal inputs



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

### 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 µA

Impedance .....47 ohm

Reliability check .....Yes

### Resistive

10 ohm to 10 kohm accuracy .....+/- (7 + 4 x 10<sup>-3</sup> x R) ohm  
R = Resistance in ohm

10 kohm to 60 kohm accuracy .....+/- (4 x 10<sup>-3</sup> x R + 7 x 10<sup>-8</sup> x R<sup>2</sup>) ohm

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R = Resistance in ohm

Reliability check.....Yes

### Temperature

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

Reliability check.....Yes

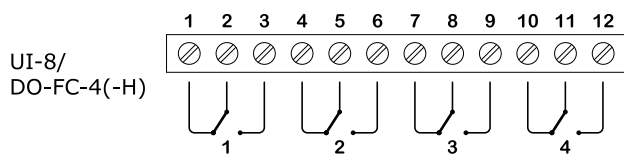
### Supported thermistors

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
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)

### Digital outputs



Contact rating .....	250 VAC/30 VDC, 3 A, Pilot Duty (Power Factor 0.35)
Switch type.....	Form C Relay
.....	Single Pole Double Throw
.....	Normally Open or Normally Closed
Isolation contact to system ground.....	5000 VAC
Cycle life (Resistive load) .....	At least 100,000 cycles
Minimum pulse width .....	100 ms
LED polarity energized relay.....	On

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LED polarity non-energized relay .....Off  
LED color .....Green

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** CE - Compliance to European Union (EU)

2014/30/EU Electromagnetic Compatibility Directive  
2014/35/EU Low Voltage 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. 10<sup>th</sup> Edition Smoke Control System. UL file S5527.