# StruxureWare™ Building Operation

## Automation Server
## I/O Module Family

StruxureWare™ Building Operation provides a broad spectrum of I/O modules that can be combined to meet the unique requirements of each installation. An Automation Server system can have a maximum of 32 modules, including one Automation Server and a mixture of Power Supply modules and I/O modules.

**Make the most of your energy**℠

**Schneider Electric**

# StruxureWare Building Operation Automation Server I/O Module Family Features



Each high density I/O module is designed to accommodate a fixed number of inputs and outputs. Some I/O modules only support a single electrical type, such as digital inputs. Other modules support a combination of electrical types, such as universal inputs mixed with digital outputs. The variety of modules available ensures the right combination of points for any project.

## Modular and scalable system

StruxureWare Building Operation is 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 enable the site to be wired prior to the installation of the electronics. The patented locking mechanism also serves as handles for removing the module from its base. All critical components have a protective cover that permits natural convection cooling to occur.



## Hot-connect / Hot-swap

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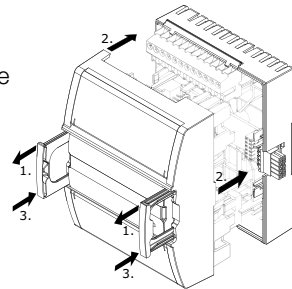


### PRODUCT AT A GLANCE

- Modular and scalable system
- Patented two-piece design
- Hot-connect/ Hot-swap
- Auto-addressing
- Simple DIN-rail installation
- Efficient terminal management
- Accommodates multiple row panel installations
- Hand/Off/Auto switches
- LED status indicators
- Protection

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# StruxureWare Building Operation
# Automation Server I/O Module Family
# Features (continued)

## Auto-addressing

The auto-addressing feature eliminates the need for setting DIP switches or pressing commission buttons. With the Automation Server family, 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 a transparent cover. The input and output terminals are at the top and bottom of each module and are accessible for maintenance without removing the module. The StruxureWare 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 Automation Server module family uses built-in connectors for single row connectivity. If a panel size requires multiple rows, interconnection cables are available.

## Hand/Off/Auto switches

Some modules are available with Hand/Off/Auto (HOA) switches to provide override control of the outputs. Analog outputs with HOA switches also have 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 StruxureWare Building Operation WorkStation software, enabling more precise monitoring and control.

## LED status indicators

Every module has a status indicator that denotes the health and status of that module. Some modules also have LEDs that can be configured to indicate the state of a digital input or output.

## Protection

Unipolar voltage suppressors on all inputs protect against high voltage or current during both transient events as well as improper wiring.

## Dimensional drawing
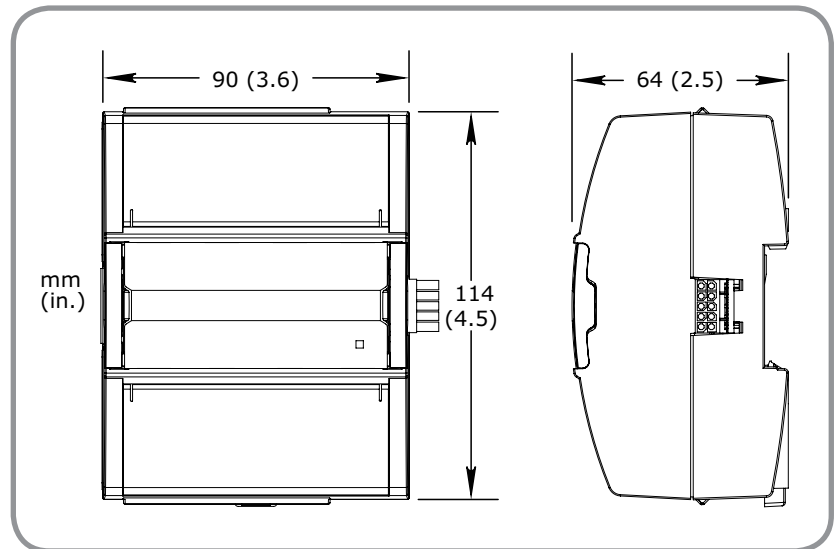
# StruxureWare Building Operation Automation Server I/O Module Family Specifications

The following technical specifications apply to all I/O modules, unless otherwise noted.

**I/O bus power**
24 VDC, max. 30 W per I/O bus power supply, Class 2

**Maximum addresses per I/O bus**
32

**Operation environment**

**Ambient temperature, operating**
0 °C to 50 °C (32 °F to 122 °F)

**Ambient temperature, storage**
–20 °C to +70 °C (–4 °F to +158 °F)

**Humidity**
Max. 95 % RH (non-condensing)

**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.)

**Enclosure** Eco Friendly ABS/PC

**Enclosure rating** IP 20

**Plastic rating**
UL94-5VB rated plastic

**Mounting**
DIN-rail mounting or with screws on wall

The following technical specifications apply to all UI modules:

**Thermistor Accuracy**

**Non-linearized 1.8 kohm and 10 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)

**Balco 1 kohm**
-50 to 150 °C: ±1.5 °C (-58 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)

## I/O Module Inputs and Outputs

| Device name | Inputs Quantity | Contact | Counter | Supervised | Voltage | Current | Resistance | Thermistor | Outputs Quantity | Form-A | Form-C | Voltage | Current | HOA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Digital | | | Analog | | | | | Digital | | Analog | | |
| **Input Only** | | | | | | | | | | | | | | |
| DI-16 | 16 | x | x | | | | | | | | | | | |
| UI-16 | 16 | x | x | x | x | x | x | x | | | | | | |
| **Output Only** | | | | | | | | | | | | | | |
| DO-FA-12 | | | | | | | | | 12 | x | | | | |
| DO-FA-12-H | | | | | | | | | 12 | x | | | | x |
| DO-FC-8 | | | | | | | | | 8 | | x | | | |
| DO-FC-8-H | | | | | | | | | 8 | | x | | | x |
| AO-8 | | | | | | | | | 8 | | | x | x | |
| AO-8-H | | | | | | | | | 8 | | | x | x | x |
| AO-V-8 | | | | | | | | | 8 | | | x | | |
| AO-V-8-H | | | | | | | | | 8 | | | x | | x |
| **Mixed IO** | | | | | | | | | | | | | | |
| UI-8/DO-FC-4 | 8 | x | x | x | x | x | x | x | 4 | | x | | | |
| UI-8/DO-FC-4-H | 8 | x | x | x | x | x | x | x | 4 | | x | | | x |
| UI-8/AO-4 | 8 | x | x | x | x | x | x | x | 4 | | | x | x | |
| UI-8/AO-4-H | 8 | x | x | x | x | x | x | x | 4 | | | x | x | x |
| UI-8/AO-V-4 | 8 | x | x | x | x | x | x | x | 4 | | | x | | |
| UI-8/AO-V-4-H | 8 | x | x | x | x | x | x | x | 4 | | | x | | x |

### Accesory part numbers

**DIN-RAIL-CLIP, DIN-Rail End Clip**
Package of 25 pieces
P/N: SXWDINEND10001

**PRINTOUT-A4-W1, Printout sheets for Terminal Labels**, A4 sheet size, 100 Sheets, 18 labels per Sheet
P/N: SXWTERLBL10011

**PRINTOUT-LTR-W1, Printout sheets for Terminal Labels**, Letter Letter sheet size, 100 Sheets, 16 labels per Sheet
P/N: SXWTERLBL10012

**S-CABLE-I, S-Cable extension cord for Automation Server I/O bus Straight connectors**, 1.5 m
P/N: SXWSCABLE10001

**S-CABLE-L, S-Cable extension cord for Automation Server I/O bus L shaped connectors**, 1.5 m
P/N: SXWSCABLE10002

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MANAGEMENT EQUIPMENT

# 16 Channel Universal Input (UI-16)

## Automation Server I/O Module



I/O Module
UI-16

The UI-16 is a universal input, 16-channel I/O module. Each channel is capable of supporting digital (contact, counter, and supervised) or analog (voltage, current, thermistor, and resistance) point types.

### Analog and digital applications
This module is ideal for any mix of temperature, pressure, flow, status points, and similar inputs in a building control system. The UI-16 supports a 12-bit A/D conversion.

### Counter applications
The maximum counter frequency is 25 Hz on all sixteen inputs with a minimum pulse width of 20 milliseconds. This input type is commonly used in energy metering applications.

### Security applications
Supervised points 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 alarm and trouble conditions to the system.

### Status indicators
Each channel has a dedicated two color (red and green) status LED that provides local monitoring of digital input types. The LED can be configured to display either red or green for each input state.

### Protection
28 V unipolar transient voltage suppressors on all inputs protect against high voltage short duration transient events.

# UI-16
# Automation Server I/O Module
# Specifications

### DC input power
24 VDC, 1.8 W

### Input channels
16

### Digital Inputs

### Contact
**Pulse width**  20 ms minimum

**Range**
Open collector/open drain, 24 V 2.4 mA,
dry contact switch closure

### Counter
**Range**
Open collector/open drain, 24 V 2.4 mA,
dry contact switch closure

**Pulse width**  20 ms minimum

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

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

### Supervised
**Detected resistor values**
Open circuit, short circuit, contact open,
and contact closed

**5 V circuit, 1 or 2 resistors, monitored
switch combinations**
Series only, parallel only, and series and parallel

**Resistor range**
1 k to 10 kohms. For a 2-resistor configuration,
each resistor is assumed to have the same value.

### Analog inputs

### Voltage
**Range**
0-10V

**Resolution**
12 bits

**Accuracy**
+- (0.7mV+0.2% of reading)

**Reliability**
Ability to define the reliability level for upper
and lower electrical limits
Impedance: 100 kOhm

### Current
**Range**
0-20mA

**Resolution**
12 bits

**Accuracy**
+- (0.03mA+0.4% of reading)

**Reliability**
Ability to define the reliability level for upper
and lower electrical limits

**Impedance**
47 Ohm

### Resistance
**10 ohm to 10 kohm**
$\pm(7 + 4 \times 10 \text{ -3} \times R)$ (ohm)

**10 kohm to 60 kohm**
$\pm(0.4 + 7 \times 10 \text{ -6} \times R)$ (%)

**Reliability**
Ability to define the reliability level for upper
and lower electrical limits.

### Thermistor

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

### Resolution
12 bits

### Supported thermistors
1.8 kohm. 10 kohm, and 1 kohm Balco
temp. sensor

### Internal pull-up resistor
10 kohms thermistors: 10 kohm to 5 V
1.0 (Balco) and 1.8 kohm thermistors:
1.5 kohm to 1 V

### Mechanical
**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
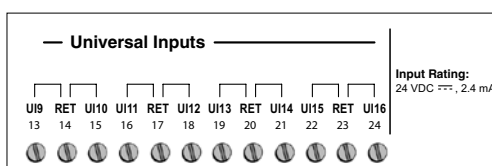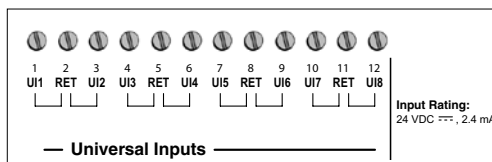
### Part numbers
**UI-16, I/O Module**
16 universal inputs
P/N: SXWUI16XX10001

**TB-IO-W1,Terminal Base for I/O Module**
(Required for each I/O Module)
P/N: SXWTBIOW110001

### Connectors



| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| UI1 | RET | UI2 | UI3 | RET | UI4 | UI5 | RET | UI6 | UI7 | RET | UI8 |

**Input Rating:**
24 VDC ⎓ , 2.4 mA

— **Universal Inputs** —

— **Universal Inputs** —

**Input Rating:**
24 VDC ⎓ , 2.4 mA

| UI9 | RET | UI10 | UI11 | RET | UI12 | UI13 | RET | UI14 | UI15 | RET | UI16 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |

# 16 Channel Digital Input (DI-16)

## Automation Server I/O Module



I/O Module
DI-16

The DI-16 is a digital input, 16-channel I/O module. Each channel is capable of supporting digital (contact and counter) point types.

### Digital applications
This module can be used for cost-effective sensing of multiple dry digital inputs in applications, such as equipment status monitoring or alarm point monitoring.

### Counter applications
The maximum counter frequency is 25 Hz on all sixteen inputs with a minimum pulse width of 20 milliseconds. This input type is commonly used in energy metering applications.

### Protection
28 V unipolar transient voltage suppressors on all inputs protect against high voltage short duration transient events. The DI-16 is designed to accept dry contact inputs but can withstand up to 24 VDC continuous voltages on all sixteen channels.

### Status indicators
Each channel has a dedicated two color (red and green) status LED that provides local monitoring of digital input types. The LED can be configured to display either red or green for each input state.

# DI-16
# Automation Server I/O Module
# Specifications

### DC input power
24 VDC, 1.6 W

### Input channels
16

### Digital Inputs

### Contact
**Pulse width**
20 ms minimum
**Range**
Open collector/open drain, 24 V 2.4 mA,
dry contact switch closure

### Counter
**Range**
Open collector/open drain, 24 V 2.4 mA,
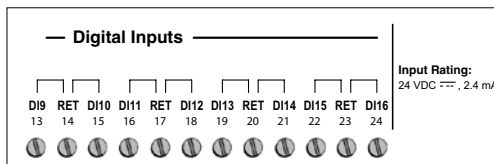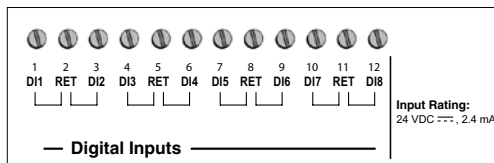dry contact switch closure
**Pulse width**
20 ms minimum
**LED polarity**
Software selectable, if the LED is activated
when the input is high or low
**LED color**
Red or green, software selectable

### Connectors



### Mechanical
**Weight (including terminal base)**
0.255 kg (0.56 lb)
**Weight (excluding terminal base)**
0.131 kg (0.29 lb)

### Terminal base
TB-IO-W1

### Part numbers
**DI-16, I/O Module**
16 digital inputs
P/N: SXWDI16XX10001

**TB-IO-W1, Terminal Base for I/O Module**
(Required for each I/O Module)
P/N: SXWTBIOW110001

# 8 Channel Analog output (AO-8), (AO-8-H)

## Automation Server I/O Module



I/O Module
AO-8



I/O Module
AO-8-H

The AO-8 and AO-8-H are analog output, 8-channel I/O modules. Each channel is capable of supporting analog (voltage and current) point types.

### Analog applications
The AO-8 and AO-8-H are designed for a maximum control range of 0-10 V outputs and therefore support a wide-range of devices, such as valves and actuators.

### Current applications
The AO-8 and AO-8-H can be used to drive a maximum control range of 0-20 mA current signals on any of its eight channels.

### Protection
These I/O Modules have protection against short-circuit to ground.

### Overrides
The front panel of the AO-8-H includes Hand/Off/Auto (HOA) override switches with adjustable potentiometers.

# AO-8
# AO-8-H
# Automation Server I/O Module
# Specifications

**DC input power**

24 VDC, 4.9 W

**Output channels**

8

**Analog outputs**

**Voltage**

**Range**

0 to 10 VDC

**Resolution**

50 mV

**Accuracy**

±100 mV

**Terminals**

Voltage (V), Return

**Minimum load**

**Source:** 2 mA

**Sink:** -1 mA

**Current**

**Range**

0 to 20 mA

**Resolution**

0.1 mA

**Reliability**

Ability to define the reliability level for upper and lower electrical limits.

**Accuracy**

±0.2 mA

**Terminals**

Current (I), Return

**Maximum load**

Output load should not exceed 650 ohm

**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)**

0.282 kg (0.62 lb)

**Weight (excluding terminal base)**

0.159 kg (0.35 lb)

**Terminal base**

TB-IO-W1

**Part numbers**

**AO-8, I/O Module**

8 analog current/voltage outputs

P/N: SXWAO8XXX10001

**AO-8-H, I/O Module with HOA switches**

8 analog current/voltage outputs with Hand/Off/Auto override switches

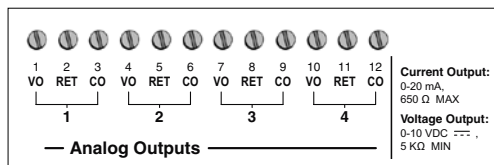P/N: SXWAO8HXX10001

**TB-IO-W1, Terminal Base for I/O Module**

(Required for each I/O Module)

P/N: SXWTBIOW110001

TB-IO-W1, Term base IO W1

SXWTBIOW110001

**Connectors**



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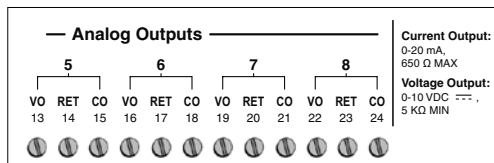
# 8 Channel Analog Output (AO-V-8), (AO-V-8-H)

## Automation Server I/O Module



I/O Module
AO-V-8



I/O Module
AO-V-8-H

The AO-V-8 and AO-V-8-H are analog output, 8-channel I/O modules. Each channel is capable of supporting  analog (voltage) point types.

### Analog applications
The AO-V-8 and AO-V-8-H are designed for a maximum control range of 0-10 V outputs and therefore support a wide-range of devices, such as valves and actuators.

### Protection
These I/O Modules have protection against short-circuit to ground.

### Overrides
The front panel of the AO-V-8-H module includes Hand/Off/Auto (HOA) override switches with adjustable potentiometers.

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# AO-V-8
# AO-V-8-H
# Automation Server I/O Module
# Specifications

## DC input power
24 VDC, 0.7 W

## Output channels
8

## Analog outputs

### Voltage

**Range**
0 to 10 VDC

**Resolution**
50 mV

**Accuracy**
±100 mV

**Terminals**
Voltage (V), Return

**Minimum load**
**Source:** 2 mA
**Sink:** -1 mA

## Mechanical
**Weight (including terminal base)**
0.279 kg (0.61 lb)
**Weight (excluding terminal base)**
0.156 kg (0.34 lb)

## Terminal base
TB-IO-W1

## Part numbers
**AO-V-8, I/O Module**
8 analog voltage outputs
P/N: SXWAOV8XX10001
**AO-V-8-H, I/O Module with HOA switches**
8 analog voltage outputs with Hand/Off/Auto
override switches
P/N: SXWAOV8HX10001
**TB-IO-W1, Terminal Base for I/O Module**
(Required for each I/O Module)
P/N: SXWTBIOW110001

## Connectors



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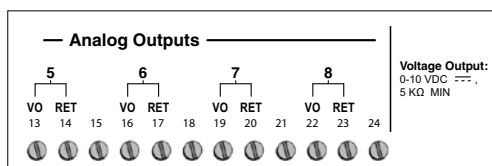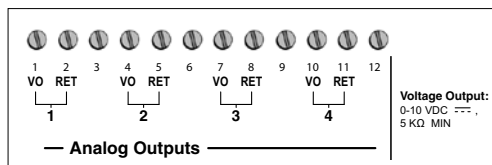
# 12 Channel Digital Output, Form-A (DO-FA-12), (DO-FA-12-H)

## Automation Server I/O Module



I/O Module
DO-FA-12



I/O Module
DO-FA-12-H

The DO-FA-12 and DO-FA-12 are digital output 12-channel I/O modules. Each channel is capable of supporting digital (Form-A) point types.

### Direct load applications
The Form-A relays in the DO-FA-12 and DO-FA-12-H are designed for direct load applications for up to 2 A per output.

### Status indicators and overrides
The front panel of the DO-FA-12 and DO-FA-12-H module includes a digital output indicator using a green LED. Additionally, the DO-FA-12-H module has Hand/Off/Auto (HOA) override switches.

# DO-FA-12
# DO-FA-12-H
# Automation Server I/O Module
# Specifications

**DC input power**
24 VDC, 1.8 W

**Output channels**
12

**Contact rating**
250 VAC, 30 VDC,  2 A

**Digital outputs**
**Form A relay**
**Terminals**
Common (C), Normally Open (NO)
**Pulse width**
100 ms minimum
**Isolation**
1500 VAC minimum, coil to contact

**Mechanical**
**Weight (including terminal base)**
0.317 kg (0.70 lb)
**Weight (excluding terminal base)**
0.194 kg (0.43 lb)

**Terminal base**
TB-IO-W1

**Part numbers**
**DO-FA-12, I/O Module**
12 Form A digital outputs
P/N: SXWDOA12X10001
**DO-FA-12-H, I/O Module with HOA switches**
12 Form A digital outputs with Hand/Off/ Auto override switches
P/N: SXWDOA12H10001
**TB-IO-W1, Terminal Base for I/O Module**
(Required for each I/O Module)
P/N: SXWTBIOW110001

**Connectors**
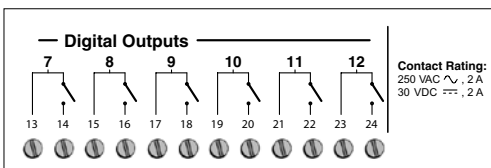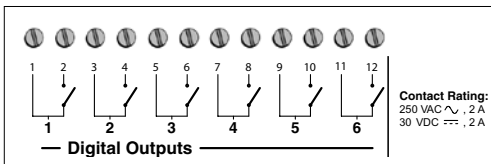
# 8 Channel Digital Output, Form-C (DO-FC-8), (DO-FC-8-H)

## Automation Server
## I/O Module



I/O Module
DO-FC-8

The DO-FC-8 and DO-FC-8-H are digital output 8-channel I/O modules. Each channel is capable of supporting digital (Form-C) point types.

### Direct load applications
The Form-C relays in the DO-FC-8 and DO-FC-8-H are designed for direct load applications for up to 3 A per output.

### Status indicators and overrides
The front panel of the DO-FC-8 and DO-FC-8-H modules includes a digital output indicator using a green LED. Additionally, the DO-FC-8-H module has Hand/Off/Auto (HOA) override switches.



I/O Module
DO-FC-8 -H

# DO-FC-8
# DO-FC-8-H
# Automation Server I/O Module
# Specifications

**DC input power**
24 VDC, 2.2 W

**Output channels**
8

**Contact rating**
250 VAC, 30 VDC, 3 A

**Digital outputs**
**Form C Relay**
**Terminals**
Common (C), Normally Open (NO), Normally Closed (NC)
**Pulse width**
100 ms minimum
**Isolation**
1500 VAC minimum, coil to contact

**Mechanical**
**Weight (including terminal base)**
0.332 kg (0.73 lb)
**Weight (excluding terminal base)**
0.209 kg (0.46 lb)

**Terminal Base**
TB-IO-W1

**Part numbers**
**DO-FC-8, I/O Module**
8 Form C digital outputs
P/N: SXWDOC8XX10001
**DO-FC-8-H, I/O Module with HOA switches**
8 Form C digital outputs with Hand/Off/Auto override switches
P/N: SXWDOC8HX10001
**TB-IO-W1, Terminal Base for I/O Module**
(Required for each I/O Module)
P/N: SXWTBIOW110001

**Connectors**
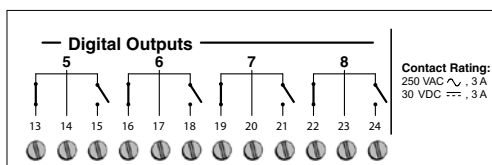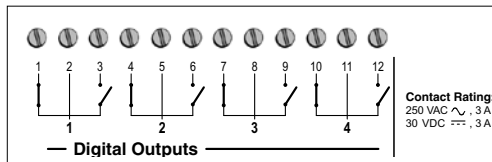
# 8 Channel Universal Inputs with 4 Analog Outputs (UI-8/AO-4, UI-8/AO-4-H)

## Automation Server I/O Module



I/O Module
UI-8/AO-4



I/O Module
UI-8/AO-4-H

The UI-8/AO-4 and UI-8/ AO-4-H are combination I/O modules supporting 8 universal input channels and 4 analog output channels. These compact modules are ideal when an application requires a mix of point types.

### Analog and digital applications
This module is ideal for any mix of temperature, pressure, flow, status points, and similar inputs in a building control system. The eight input channels supports a 12 bit A/D conversion.

### Counter applications
The maximum counter frequency on all eight inputs with a minimum pulse width is 20 milliseconds. This input type is commonly used in energy metering applications.

### Security applications
Supervised points 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 alarm and trouble conditions to the system.

### Analog applications
The UI-8/AO-4 and UI-8/AO-4-H are designed for a maximum control range of 0-10 V outputs and therefore support a wide-range of devices, including valves and actuators on any of its eight output channels.

### Current applications
The UI-8/AO-4 and UI-8/AO-4-H can be used to drive a maximum control range of 0-20 mA current signals on any of its eight output channels.

### Protection
28 V unipolar transient voltage suppressors on all inputs protect against high voltage short duration transient events.

### Status indicators and overrides
The front panel of the UI-8/AO-4 and UI-8/AO-4-H I/O modules includes a digital output indicator using a green LED. Additionally, the UI-8/AO-4-H module has Hand/Off/Auto (HOA) override switches with adjustable potentiometers for each output.

# UI-8/AO-4
# UI-8/AO-4-H
# Automation Server I/O Module
# Specifications

### DC input power
24 VDC, 3.2 W

### Input channels
8

### Digital Inputs

### Contact
**Pulse width** 20 ms minimum

**Range**
Open collector/open drain, 24 V 2.4 mA, dry contact switch closure

### Counter
**Range**
Open collector/open drain, 24 V 2.4 mA, dry contact switch closure

**Pulse width** 20 ms minimum

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

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

### Supervised
**Detected resistor values**
Open circuit, short circuit, contact open, and contact closed

**5 V circuit, 1 or 2 resistors, monitored switch combinations**
Series only, parallel only, and series and parallel

**Resistor range**
1 k to 10 kohm. For a 2-resistor configuration, each resistor is assumed to have the same value.

### Analog inputs

### Voltage
**Range** 0 to 10V
**Resolution** 12 bit
**Accuracy** ±(7 mV + 0.2% of reading)
**Impedance** 100 kohm

### Current
**Accuracy**
±(0.03 mA + 0.4 % of reading)

**Reliability**
Ability to define the reliability level for upper and lower electrical limits.

**Resolution** 12 bit
**Accuracy** ±(0.03 mA + 0.4 % of reading)
**Impedance** 47 ohm

### Resistance
**10 ohm to 10 kohm**
$\pm(7 + 4 \times 10^{-3} \times R)$ (ohm)

**10 kohm to 60 kohm**
$\pm(0.4 + 7 \times 10^{-6} \times R)$ (%)

**Reliability**
Ability to define the reliability level for upper and lower electrical limits.

### Thermistor
**Range**
-50 to 150 °C (-58 to 302 °F)

**Resolution**
12 bits

**Supported thermistors**
1.8 kohm. 10 kohm, and 1 kohm Balco temp. sensor

### Internal pull-up resistor
10 kohms thermistors: 10 kohm to 5 V
1.0 (Balco) and 1.8 kohms thermistors: 1.5 kohm to 1 V

### Output channels
4

### Analog outputs

### Voltage
**Range** 0 to 10 VDC
**Resolution** 50 mV
**Accuracy** ±100 mV
**Terminals** Voltage (V), Return
**Minimum load** Source, 2 mA; Sink, -1 mA

### Current
**Range** 0 to 20 mA
**Resolution** 0.1 mA
**Accuracy** ±0.2 mA
**Terminals** Current (I), Return
**Maximum load**
Output load should not exceed 650 ohms

### Mechanical
**Weight (including terminal base)**
0.276 kg (0.61 lb)
**Weight (excluding terminal base)**
0.152 kg (0.34 lb)

### Terminal base
TB-IO-W1

### Part numbers
**UI-8/AO-4, I/O Module**
8 universal inputs, 4 analog voltage/current outputs
P/N: SXWUI8A4X10001

**UI-8/AO-4-H, I/O Module with HOA switches**
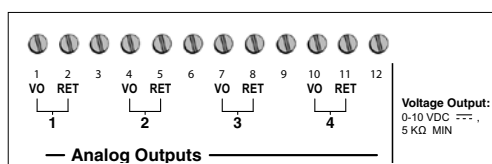8 universal inputs, 4 analog voltage/current outputs with Hand/Off/Auto override switches
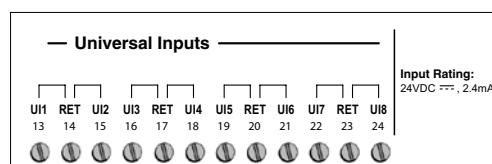P/N: SXWUI8A4H10001

**TB-IO-W1, Terminal Base for I/O Module**
(Required for each I/O Module)
P/N: SXWTBIOW110001

### Connectors



Terminals 3, 6, 9, and 12 are not used

# 8 Channel Universal Inputs with 4 Channel Voltage Outputs (UI-8/AO-V-4, UI-8/AO-V-4-H)

## Automation Server I/O Module

I/O Module
UI-8/AO-V-4-H

The UI-8/AO-V-4 and UI-8/AO-V-4-H are combination I/O modules supporting 8 universal input channels and 4 voltage output channels. These compact modules are ideal when an application requires a mix of point types.

### Analog and digital applications
This module is ideal for any mix of temperature, pressure, flow, status points, and similar inputs in a building control system. The eight input channels supports a 12 bit A/D conversion.

### Counter applications
The maximum counter frequency on all eight inputs with a minimum pulse width is 20 milliseconds. This input type is commonly used in energy metering applications.

### Security applications
Supervised points 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 alarm and trouble conditions to the system.

### Analog applications
The UI-8/AO-4 and UI-8/AO-4-H are designed for a maximum control range of 0-10 V outputs and therefore support a wide-range of devices, such as valves and actuators on any of its eight output channels.

### Protection
28 V unipolar transient voltage suppressors on all inputs protect against high voltage short duration transient events.

### Status indicators and overrides
The front panel of the UI-8/AO-4 and UI-8/AO-4-H I/O modules includes a digital output indicator using a green LED. Additionally, the UI-8/AO-4-H module has Hand/Off/Auto (HOA) override switches with adjustable potentiometers for each output.

**Schneider Electric**  One High Street, North Andover, MA 01845 USA   Telephone: +1 978 975 9600   Fax: +1 978 975 9698   www.schneider-electric.com/buildings

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# UI-8/AO-V-4
# UI-8/AO-V-4-H
# Automation Server I/O Module
# Specifications

## DC input power

24 VDC, 1.0 W

## Input channels

8

## Digital Inputs

### Contact

**Pulse width**  20 ms minimum

**Range**

Open collector/open drain, 24 V 2.4 mA, dry contact switch closure

### Counter

**Range**

Open collector/open drain, 24 V 2.4 mA, dry contact switch closure

**Pulse width**  20 ms minimum

**LED polarity**

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

**LED color**

Red or green, software selectable

### Supervised

**Detected resistor values**

Open circuit, short circuit, contact open, and contact closed

**5 V circuit, 1 or 2 resistors, monitored switch combinations**

Series only, parallel only, and series and parallel

**Resistor range**

1 k to 10 kohm. For a 2-resistor configuration, each resistor is assumed to have the same value.

## Analog inputs

### Voltage

**Range**  0 to 20 mA

**Resolution**  12 bit

**Accuracy**  ±(7 mV + 0.2% of reading)

**Impedance** 100 kohm

### Current

**Accuracy**

±(0.03 mA + 0.4 % of reading)

**Reliability**

Ability to define the reliability level for upper and lower electrical limits.

**Resolution** 12 bit

**Accuracy** ±(0.03 mA + 0.4 % of reading)

**Impedance**  47 ohm

### Resistance

**10 ohm to 10 kohm**

$\pm(7 + 4 \times 10^{-3} \times R)$ (ohm)

**10 kohm to 60 kohm**

$\pm(0.4 + 7 \times 10^{-6} \times R)$ (%)

**Reliability**

Ability to define the reliability level for upper and lower electrical limits.

### Thermistor

**Range**

-50 to 150 °C (-58 to 302 °F)

**Resolution**

12 bits

**Supported thermistors**

1.8 kohm. 10 kohm, and 1 kohm Balco temp. sensor

### Internal pull-up resistor

10 kohms thermistors: 10 kohm to 5 V

1.0 (Balco) and 1.8 kohms thermistors:

1.5 kohm to 1 V

### Output channels

4

## Analog outputs

### Voltage

**Range**

0 to 10 VDC

**Resolution**

50 mV

**Accuracy**

±100 mV

**Terminals**

Voltage (V), Return

**Minimum load**

Source, 2 mA; Sink, -1 mA

### Internal pull-up resistor

10 kohms thermistors:10 kohm to 5 V

1.0 (Balco) and 1.8 kohms thermistors:

1.5 kohm to 1 V

### Mechanical

**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

### Part numbers

**UI-8/AO-V-4, I/O Module**

8 universal inputs, 4 analog voltage outputs
P/N: SXWUI8V4X10001

**UI-8/AO-V-4-H, Module with HOA switches**

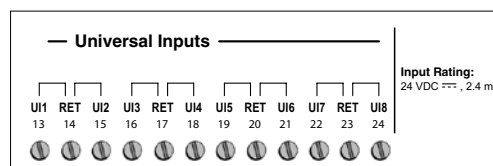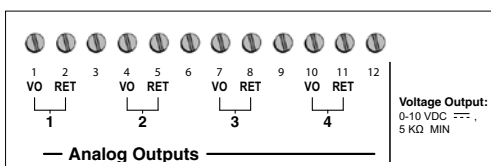8 universal inputs, 4 analog voltage outputs with Hand/Off/Auto override switches
P/N: SXWUI8V4H10001

**TB-IO-W1, Terminal Base for I/O Module**

(Required for each I/O Module)
P/N: SXWTBIOW110001

## Connectors



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# 8 Channel Universal Inputs with 4 Channel Digital Outputs, Form-C (UI-8/DO-FC-4, UI-8/DO-FC-4-H)

## Automation Server I/O Module



I/O Module
UI-8/DO-FC-4



I/O Module
UI-8/DO-FC-4-H

The UI-8/DO-FC-4 and UI-8/DO-FC-4-H are a combination I/O modules supporting 8 universal input channels and 4 digital output channels. These compact modules are ideal when an application requires a mix of point types.

### Analog and digital applications
This module is ideal for any mix of temperature, pressure, flow, status points, and similar inputs in a building control system. The eight input channels supports a 12 bit A/D conversion.

### Counter applications
The maximum counter frequency on all eight inputs with a minimum pulse width is 20 milliseconds. This input type is commonly used in energy metering applications.

### Security applications
Supervised points 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 alarm and trouble conditions to the system.

### Protection
28 V unipolar transient voltage suppressors on all inputs to protect against high voltage short duration transient events.

### Status indicators and overrides
The front panel of the UI-8/AO-4 and UI-8/AO-4-H I/O modules includes a digital output indicator using a green LED. Additionally, the UI-8/AO-4-H module has Hand/Off/Auto (HOA) override switches with adjustable potentiometers for each output.

### Direct load applications
The Form-C relays are designed for direct load applications for up to 3 A per output.

# UI-8/DO-FC-4
# UI-8/DO-FC-4-H
# Automation Server I/O Module
# Specifications

### DC input power
24 VDC, 1.9 W

### Input channels
8

### Digital Inputs

### Contact
**Pulse width**  20 ms minimum
**Range**
Open collector/open drain, 24 V 2.4 mA, dry contact switch closure

### Counter
**Range**
Open collector/open drain, 24 V 2.4 mA, dry contact switch closure
**Pulse width**  20 ms minimum
**LED polarity**
Software selectable, if the LED is activated when the input is high or low
**LED color**
Red or green, software selectable

### Supervised
**Detected resistor values**
Open circuit, short circuit, contact open, and contact closed
**5 V circuit, 1 or 2 resistors, monitored switch combinations**
Series only, parallel only, and series and parallel
**Resistor range**
1 k to 10 kohm. For a 2-resistor configuration, each resistor is assumed to have the same value.

### Analog inputs

### Voltage
**Range**  0 to 20 mA
**Resolution**  12 bit
**Accuracy**  ±(7 mV + 0.2% of reading)
**Impedance** 100 kohm

### Current
**Accuracy**
±(0.03 mA + 0.4 % of reading)
**Reliability**
Ability to define the reliability level for upper and lower electrical limits.
**Resolution** 12 bit
**Accuracy** ±(0.03 mA + 0.4 % of reading)
**Impedance**  47 ohm

### Resistance
**10 ohm to 10 kohm**
±(7 + 4 x 10 -3 x R) (ohm)
**10 kohm to 60 kohm**
±(0.4 + 7 x 10 -6 x R) (%)
**Reliability**
Ability to define the reliability level for upper and lower electrical limits.

### Thermistor
**Range**
-50 to 150 °C (-58 to 302 °F)
**Resolution**
12 bits
**Supported thermistors**
1.8 kohm. 10 kohm, and 1 kohm Balco temp. sensor

### Internal pull-up resistor
10 kohms thermistors: 10 kohm to 5 V
1.0 (Balco) and 1.8 kohms thermistors: 1.5 kohm to 1 V

### Outputs

### Digital channels
4

### Digital outputs

### Form C relay
**Terminals**
Common (C), Normally Open (NO), Normally Closed (NC)
**Pulse Width**
100 ms minimum
**Isolation**
1500 VAC minimum, coil to contact

### Internal pull-up resistor
10 kohm to 5 V, or 1.5 kohm to 1 V

### Mechanical
**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

### Part numbers
**UI-8/DO-FC-4, I/O Module**
8 universal inputs, 4 digital Form C outputs
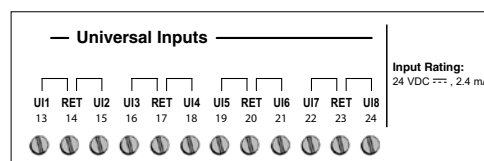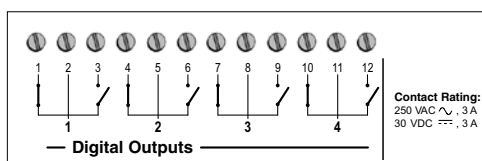P/N: SXWUI8D4X10001
**UI-8/DO-FC-4-H, I/O Module with HOA switches**
8 universal inputs, 4 digital Form C outputs with Hand/Off/Auto override switches
P/N: SXWUI8D4H10001
**TB-IO-W1, Terminal Base for I/O Module**
(Required for each I/O Module)
P/N: SXWTBIOW110001

### Connectors

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