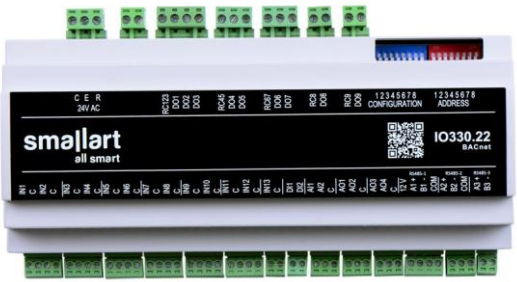
Features



- 24V AC power supply
- 13 pcs Passive Analog Inputs that can be used as voltage-free dry contacts or NTC10K sensors
- 2 pcs Passive Digital Input that can be used as dry contacts
- 2 pcs 0-10V Active Analog Inputs
- 9 pcs 10A Digital Outputs
- 4 pcs 0-10V Analog Outputs
- Configuration DIP Switch (CONFIGURATION)
- BACnet MAC address DIP Switch (ADDRESS)
- BACnet MS/TP communication
- Optional Modbus communication
- IP20 Plastic enclosure
- DIN Rail mounting

Applications

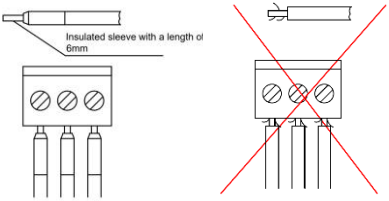
IO330 series IO modules are used in building automation and HVAC applications. The module is designed and manufactured to work seamlessly with all devices thanks to BACnet communication.

Notes on Usage

Please, read this datasheet carefully. IO330 safety rules by the latest technological developments designed and manufactured. To avoid injury and property damage safety warnings must be observed.

Security Advice-Caution

Installation, maintenance, and repair of the device should be done by authorized personnel. The device has a power supply of 24 V AC and 1 A internal fuse. Relay outputs do not have internal protection due to the variety of components that can be used. It is recommended to use an external C type fuse suitable for the required current level. Each pin of the supply and relay terminals can carry a maximum current of 20 A. Before making relay output connections, attention should be paid to recommended current levels.



The ends of the connection wires must be protected against delamination using insulated sleeves as shown on the figure.

Ordering Information

Product Code	Description	Power	Communication
IO330.21	9 pcs Digital Outputs (Relay) 4 pcs Analog Outputs 2 pcs Active Analog Inputs 13 pcs Passive Analog Inputs 2 pcs Passive Digital Inputs 1 pc RS-485 Port	6.0 VA	Modbus RTU
IO330.22			BACnet MS/TP

Technical Specification

Power Supply	24VAC +%10-%15, 50/60Hz
Power Consumption	6.0 VA
Operating Temperature	0 ℃ …+50 ℃
Storage Temperature	-20 ℃…+70 ℃
Relative Humidity	%5….95 RH, Non-Condensing
Wiring Connections	Socket Terminal Block, max 1 x 2,5 mm^2
Measuring Range	NTC10K: -50°C …+150°C Analog Input Voltage: 0-10V
Measuring Resolution	NTC: 0,1°C Analog Input: 0,1V
Inputs	13 pcs Passive Analog Inputs (NTC10K Temperature sensor or Voltage Free Dry Contact) 2 pcs 0-10V Active Analog Inputs
Outputs	9 pcs Digital Outputs (10A Relay)* 4 pcs Analog Outputs (0-10V)
Communication	1 pc RS-485 Port
Plastic Box	IP20 according to EN 60529
Box Type	DIN Rail Plastic Enclosure
Plastic Enclosure Material	ABS (UL 94 V-0)
Dimensions	212 x 59 x 115 mm (W x H x D)

* There is a 10 A relay. For optimal relay life, 8A current is recommended for resistive loads, and maximum 5A current is recommended for inductive loads.

Mounting Location

Due to its structure, the device is suitable for wall mounting or rail mounting within the panel. It is recommended to have space for cable connections to the terminals to be made while mounting on the rail.

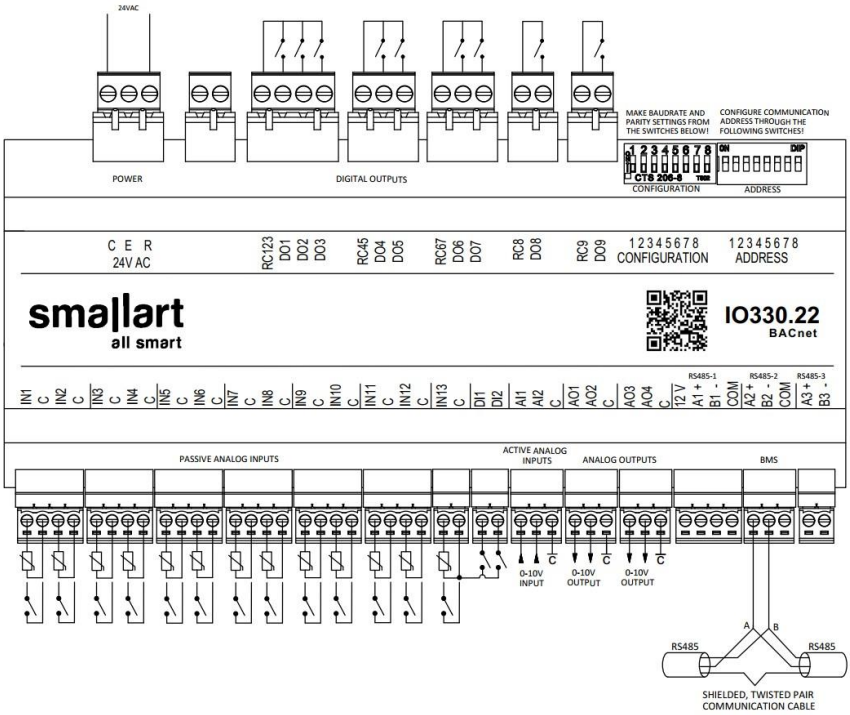
CAUTION: Power off the supply at 1A-C type circuit breaker or glass fuse before installation to avoid fire, shock or death.

Mounting Instructions

Please follow the below instructions during mounting.

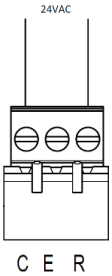
1.Step: Make sure the device is powered OFF.
2.Step: Connect the wires well according to the connection diagrams below.
3.Step: Adjust the baud rate, parity, and BACnet address via ADDRESS and CONFIGURATION DIP Switches.
4.Step: Make sure that all connections are made well.
5.Step: Power the device ON.

Connection Diagram



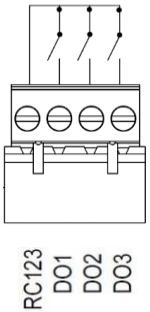
IO330.22 Connection Diagrams

Device Power Connection



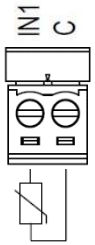
Connect the output of the 24VAC power supply to the R and C terminals.

Digital Outputs DOx Connection



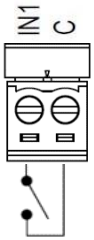
The voltage to be switched with DOx relays should be connected to the RC terminal. The voltage connected to RC terminals can be received from the DOx terminals when the DOx relays are closed. This applies to all digital output terminals. The maximum current that each pin of the terminal can carry is 20 A. 20 A is the maximum current that can pass through the RCX input.

Passive Analog Inputs (NTC10K)



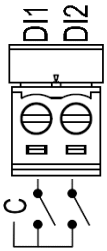
Connect the two cables of the NTC10K sensor as shown in the left picture. You can make this connection for other terminals as shown in the below picture.

Passive Analog Inputs (Dry Contact)



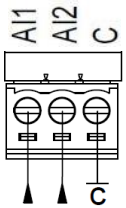
Connect the two cables of the dry contact as shown in the left picture. You can make this connection for other terminals as shown in the below picture.

Digital Inputs



It is used as a dry contact. A connection between the DI1 and DI2 inputs and any “C” terminals on the passive analog input can be established.

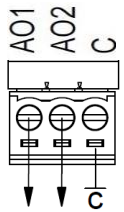
Active Analog Inputs



0-10V INPUTS

Connect the 0-10V output cables coming from the sensors, field devices, etc. to the AIx input and connect the GND or COM cable of the related device to the “C” terminal of the IO module as shown in the left picture.

Analog Outputs



0-10V OUTPUTS

Connect the 0-10V output of the IO module to the related device’s 0-10V input and connect the GND or COM cable of the related device to the “C” terminal of the IO module as shown in the left picture.

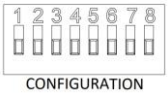
Switch Settings

ADRESS

BACnet MAC Address must be adjusted between **1-127** via Address (ADDRESS) DIP Switch.

ADRESS

→ **E.g.**: Switch **1** and **3** poles must be set to **ON** position to adjust the address as **5**.



CONFIGURATION

Baud rate and Parity can be adjusted via the configuration (CONFIGURATION) DIP Switch according to the **"Baud Rate Setting Table"**.

CONFIGURATION

→ **E.g.**: Switch 4, **7,** and **8** poles must be set to **ON** position to select the baud rate **76800** and parity "**Even**".

BAUD RATE SETTING VIA CONFIGURATION DIP SWITCH			
Decimal	Dip Switch 7	Dip Switch 8	Baud Rate (bps)
0	0	0	9600
1	1	0	19200
2	0	1	38400
3	1	1	76800
Note 1: The default baud rate is 9600 bps Note 2: The baud rate can be adjusted while the device is power off.			

Baud Rate Table

According to BACnet standards, MSTP port configurations are as follows;
-8 Data Bits, None Parity, 1 Stop Bit

MAC Address: Default 1
Baudrate : Default 9600 bps
Note 1: Device Instance Number (Device ID) is automatically calculated as below;

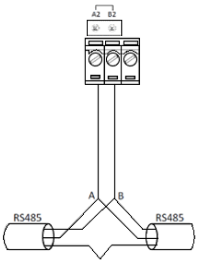
Device ID = 856 * 1000 + MAC Address

For example: MAC address: 13 => Device ID = 856 * 1000 + 13 = 856013

When the MAC address is changed, the Device ID is automatically recalculated to avoid network ID conflict. As a property of Device Object, Device ID value is writable via BACnet between 0 and 4194302. Once the Device ID is changed via BACnet, Device ID automatic calculation mentioned above is ineffective.

Note 2: MAC address and baud rate changing will become effective after power off and power on.

End of Line Resistor



Make a connection between the “A” or “+” terminal on the selected port of your communication device and the A2 terminal of your card and between the “B” or “-“terminal of your device and the B2 terminal as shown in the left figure. To activate the end-of-line resistor, activate the jumper above the word A2 B2 on the PCB.

IO330 BACnet Object List

No	Object No	Value Range	Object name	Description	First Value	W/R
Analog Inputs						
1	Analog Input #1	-50…150 °C	Temperature Input 1	This NTC10K value is measured from IN1.	-	R
2	Analog Input #2	-50…150 °C	Temperature Input 2	This NTC10K value is measured from IN2.	-	R
3	Analog Input #3	-50…150 °C	Temperature Input 3	This NTC10K value is measured from IN3.	-	R
4	Analog Input #4	-50…150 °C	Temperature Input 4	This NTC10K value is measured from IN4.	-	R
5	Analog Input #5	-50…150 °C	Temperature Input 5	This NTC10K value is measured from IN5.	-	R

6	Analog Input #6	-50…150 °C	Temperature Input 6	This NTC10K value is measured from IN6.	-	R
7	Analog Input #7	-50…150 °C	Temperature Input 7	This NTC10K value is measured from IN7.	-	R
8	Analog Input #8	-50…150 °C	Temperature Input 8	This NTC10K value is measured from IN8.	-	R
9	Analog Input #9	-50…150 °C	Temperature Input 9	This NTC10K value is measured from IN9.	-	R
10	Analog Input #10	-50…150 °C	Temperature Input 10	This NTC10K value is measured from IN10.	-	R
11	Analog Input #11	-50…150 °C	Temperature Input 11	This NTC10K value is measured from IN11.	-	R
12	Analog Input #12	-50…150 °C	Temperature Input 12	This NTC10K value is measured from IN12.	-	R
13	Analog Input #13	-50…150 °C	Temperature Input 13	This NTC10K value is measured from IN13.	-	R
14	Analog Input #14	0.0-1000.0 (0-10 V)	Analog Input 1	Voltage value measured from input AI1.	-	R
15	Analog Input #15	0.0-1000.0 (0-10 V)	Analog Input 2	Voltage value measured from input AI2.	-	R

Analog Values

16	Analog Value #1	0…10 V	Analog Output 1	This parameter adjusts the analog output voltage value of AO1.	-	R/W
17	Analog Value #2	0…10 V	Analog Output 2	This parameter adjusts the analog output voltage value of AO2.	-	R/W
18	Analog Value #3	0…10 V	Analog Output 3	This parameter adjusts the analog output voltage value of AO3.	-	R/W
19	Analog Value #4	0…10 V	Analog Output 4	This parameter adjusts the analog output voltage value of AO4.	-	R/W
20	Analog Value #5	0…1000 V	Analog Input 1 Max Value	The maximum limit value for AI1.	-	R/W
21	Analog Value #6	0…1000 V	Analog Input 1 Min Value	The minimum limit value for AI1.	-	R/W
22	Analog Value #7	0…1000 V	Analog Input 2 Max Value	The maximum limit value for AI2.	-	R/W
23	Analog Value #8	0…1000 V	Analog Input 2 Min Value	The minimum limit value for AI2.	-	R/W

Binary Inputs

24	Binary Inputs #1	0…1	Digital Dry Contact IN1	Input state of IN1. 0: Normal 1: Contact	-	R
25	Binary Inputs #2	0…1	Digital Dry Contact IN2	Input state of IN2. 0: Normal 1: Contact	-	R
26	Binary Inputs #3	0…1	Digital Dry Contact IN3	Input state of IN3. 0: Normal 1: Contact	-	R
27	Binary Inputs #4	0…1	Digital Dry Contact IN4	Input state of IN4. 0: Normal 1: Contact	-	R

28	Binary Inputs #5	0…1	Digital Dry Contact IN5	Input state of IN5. 0: Normal 1: Contact	-	R
29	Binary Inputs #6	0…1	Digital Dry Contact IN6	Input state of IN6. 0: Normal 1: Contact	-	R
30	Binary Inputs #7	0…1	Digital Dry Contact IN7	Input state of IN7. 0: Normal 1: Contact	-	R
31	Binary Inputs #8	0…1	Digital Dry Contact IN8	Input state of IN8. 0: Normal 1: Contact	-	R
32	Binary Inputs #9	0…1	Digital Dry Contact IN9	Input state of IN9. 0: Normal 1: Contact	-	R
33	Binary Inputs #10	0…1	Digital Dry Contact IN10	Input state of IN10. 0: Normal 1: Contact	-	R
34	Binary Inputs #11	0…1	Digital Dry Contact IN11	Input state of IN11. 0: Normal 1: Contact	-	R
35	Binary Inputs #12	0…1	Digital Dry Contact IN12	Input state of IN12. 0: Normal 1: Contact	-	R
36	Binary Inputs #13	0…1	Digital Dry Contact IN13	Input state of IN13. 0: Normal 1: Contact	-	R
37	Binary Inputs #14	0…1	Digital Dry Contact IN14	Input state of IN14. 0: Normal 1: Contact	-	R
38	Binary Inputs #15	0…1	Digital Dry Contact IN15	Input state of IN15. 0: Normal 1: Contact	-	R

Binary Values

39	Binary Value #1	0…1	Digital Output 1	This parameter shows the relay output of DO1. 0: Relay deactivated 1: Relay activated	-	R/W
40	Binary Value #2	0…1	Digital Output 2	This parameter shows the relay output of DO2. 0: Relay deactivated 1: Relay activated	-	R/W
41	Binary Value #3	0…1	Digital Output 3	This parameter shows the relay output of DO3. 0: Relay deactivated 1: Relay activated	-	R/W
42	Binary Value #4	0…1	Digital Output 4	This parameter shows the relay output of DO4. 0: Relay deactivated 1: Relay activated	-	R/W

43	Binary Value #5	0…1	Digital Output 5	This parameter shows the relay output of DO5. 0: Relay deactivated 1: Relay activated	-	R/W
44	Binary Value #6	0…1	Digital Output 6	This parameter shows the relay output of DO6. 0: Relay deactivated 1: Relay activated	-	R/W
45	Binary Value #7	0…1	Digital Output 7	This parameter shows the relay output of DO7. 0: Relay deactivated 1: Relay activated	-	R/W
46	Binary Value #8	0…1	Digital Output 8	This parameter shows the relay output of DO8. 0: Relay deactivated 1: Relay activated	-	R/W
47	Binary Value #9	0…1	Digital Output 9	This parameter shows the relay output of DO9. 0: Relay deactivated 1: Relay activated	-	R/W
48	Binary Value #10	0…1	Passive Input (IN1) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN1. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
49	Binary Value #11	0…1	Passive Input (IN2) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN2. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
50	Binary Value #12	0…1	Passive Input (IN3) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN3. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
51	Binary Value #13	0…1	Passive Input (IN4) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN4. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
52	Binary Value #14	0…1	Passive Input (IN5) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN5. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
53	Binary Value #15	0…1	Passive Input (IN6) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN6. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
54	Binary Value #16	0…1	Passive Input (IN7) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN7. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
55	Binary Value #17	0…1	Passive Input (IN8) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN8. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W

56	Binary Value #18	0…1	Passive Input (IN9) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN9. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
57	Binary Value #19	0…1	Passive Input (IN10) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN10. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
58	Binary Value #20	0…1	Passive Input (IN11) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN11. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
59	Binary Value #21	0…1	Passive Input (IN12) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN12. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
60	Binary Value #22	0…1	Passive Input (IN13) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN13. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
61	Binary Value #21	0…1	Passive Input (IN14) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN14. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W
62	Binary Value #22	0…1	Passive Input (IN15) Dry Contact Type Selection	This parameter adjusts the contact type of passive input IN15. 0: Normally Open (NO) 1: Normally Close (NC)	0	R/W

Dimensions(mm)