Features

- 24V DC power supply
- 13 pcs Passive Analog Inputs that can be used as voltage-free dry contacts or NTC10K sensors
- 2 pcs Passive Digital Inputs 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)
- Modbus address DIP Switch (ADDRESS)
- Modbus RTU communication
- Optional BACnet 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 the Modbus communication.

Notes on Usage

Please, read this datasheet carefully. IO330 has been designed and manufactured in accordance with the latest technological developments and safety rules. 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 DC 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.
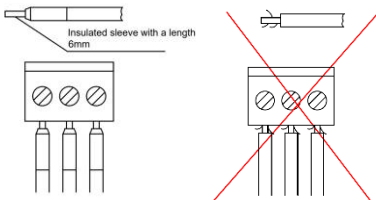
The ends of the connection wires must be protected against delamination using insulated sleeves as shown on the figure.

Ordering Information

Product Code	Description	Power	Communication
IO330.41	9 pcs Digital Outputs (Relay) 4 pcs Analog Outputs 2 pcs Active Analog Inputs	6.0 VA	Modbus RTU
IO330.42	13 pcs Passive Analog Inputs 2 pcs Passive Digital Inputs 1 pc RS-485 Port		BACnet MS/TP

Technical Specification

Power Supply	24VDC +%10-%15, 50/60Hz
Power Consumption	6.0 VA
Operating Temperature	0°C …+50°C
Storage Temperature	-20°C …+70°C
Relative Humidity	%5….95 RH, Non-Condensing
Cable Connections	Socket Terminal Block, Max. 1 x 2,5 mm²
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 lifespan, 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 properly 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 properly.
5.Step: Power the device ON.
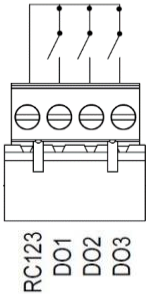
Connection Diagrams
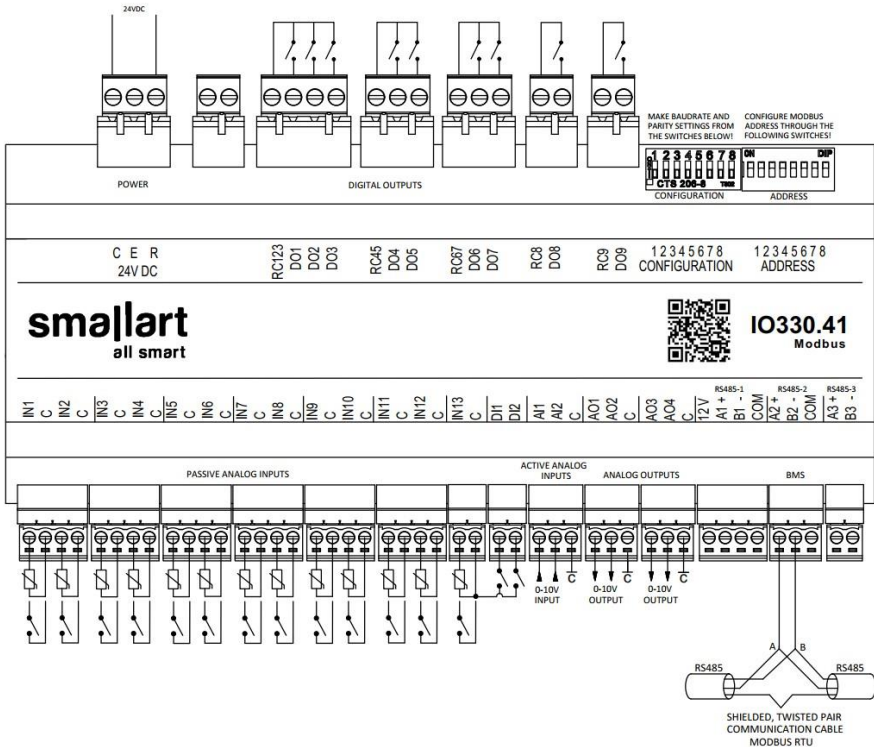
IO330.41 Connection Diagrams

Device Power Connection
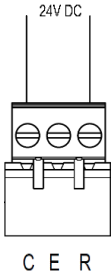
Connect the 24V DC output of the power supply to the R terminal. Connect the GND output of the power supply to the C terminal.

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.
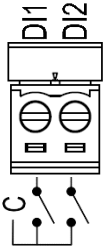
Passive Analog Inputs (NTC10K)
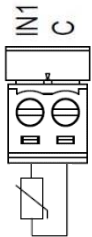
Connect the two cables of the NTC10K sensor as shown in the left picture. You can make this connection for other terminals.

Passive Analog Inputs (Dry Contact)
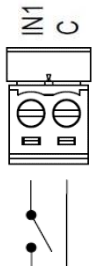
Connect the two cables of the dry contact as shown in the left picture. You can make this connection for other terminals.

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.
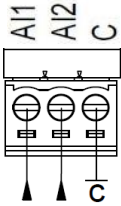
Active Analog Inputs

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.
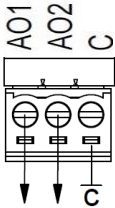
0-10V INPUTS

Analog 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.

0-10V OUTPUTS

Switch Settings

Modbus Address must be adjusted between **1-247** via Address (ADDRESS) DIP Switch.

→ **E.g.**: Switch **1** and **3** poles must be set to **ON** position to adjust the address as **5**.
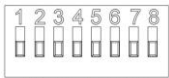
Baud rate and Parity can be adjusted via the configuration (CONFIGURATION) DIP Switch according to the **"Baud Rate Setting Table"**.
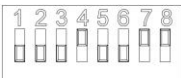
→ **E.g.**: Switch **4**, **7**, and **8** poles must be set to **ON** position to select the baud rate **76800 and Even**

BAUD RATE AND PARITY SETTINGS VIA CONFIGURATION DIP SWITCH

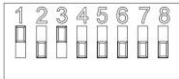| Decimal	Dip Switch 4	Dip Switch 5	Parity	Dip Switch 7	Dip Switch 8	Baud Rate (bps)	Bits	Stop Bit(s)
0	0	0	None	0	0	9600	8	1
1	1	0	Even	1	0	19200	8	1
2	0	1	Odd	0	1	38400	8	1
3	1	1	None	1	1	76800	8	1

Note 1: The device default is 9600 bps and it can be adjusted to communicate with none parity.
Note 2: The baud rate can be adjusted while the device is power off.

Baud Rate and Parity Table

Modbus Address: Default 1
Baud rate: Default 9600 bps
Parity: Default None
Note: Modbus address, baud rate, and parity changings will become effective after power off and power on.

Communication Connection and End of Line (EOL)

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 Modbus Parameters

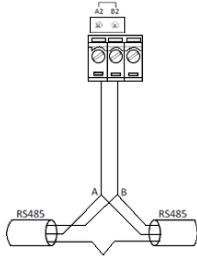| Modbus Address	Parameter Name	Read(R)/ Write(W)	Default	Minimum	Maximum	Description
Decimal: 0	Temperature Input 1	R	-	-500	1500	This NTC10K value is measured from IN1.
Decimal: 1	Temperature Input 2	R	-	-500	1500	This NTC10K value is measured from IN2.
Decimal: 2	Temperature Input 3	R	-	-500	1500	This NTC10K value is measured from IN3.
Decimal: 3	Temperature Input 4	R	-	-500	1500	This NTC10K value is measured from IN4.
Decimal: 4	Temperature Input 5	R	-	-500	1500	This NTC10K value is measured from IN5.
Decimal: 5	Temperature Input 6	R	-	-500	1500	This NTC10K value is measured from IN6.
Decimal: 6	Temperature Input 7	R	-	-500	1500	This NTC10K value is measured from IN7.
Decimal: 7	Temperature Input 8	R	-	-500	1500	This NTC10K value is measured from IN8.
Decimal: 8	Temperature Input 9	R	-	-500	1500	This NTC10K value is measured from IN9.
Decimal: 9	Temperature Input 10	R	-	-500	1500	This NTC10K value is measured from IN10.
Decimal: 10	Temperature Input 11	R	-	-500	1500	This NTC10K value is measured from IN11.
Decimal: 11	Temperature Input 12	R	-	-500	1500	This NTC10K value is measured from IN12.
Decimal: 12	Temperature Input 13	R	-	-500	1500	This NTC10K value is measured from IN13.
Decimal: 13 : Decimal: 17	Reserve	-	-	-	-	-
Decimal: 18	Digital Dry Contact IN1	R	0	0	1	Input state of IN1. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 19	Digital Dry Contact IN2	R	0	0	1	Input state of IN2. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact

						Input state
Decimal: 20	Digital Dry Contact IN3	R	0	0	1	Input state of IN3. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 21	Digital Dry Contact IN4	R	0	0	1	Input state of IN4. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 22	Digital Dry Contact IN5	R	0	0	1	Input state of IN5. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 23	Digital Dry Contact IN6	R	0	0	1	Input state of IN6. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 24	Digital Dry Contact IN7	R	0	0	1	Input state of IN7. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 25	Digital Dry Contact IN8	R	0	0	1	Input state of IN8. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 26	Digital Dry Contact IN9	R	0	0	1	Input state of IN9. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 27	Digital Dry Contact IN10	R	0	0	1	Input state of IN10. NC / NO 0: Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 28	Digital Dry Contact IN11	R	0	0	1	Input state of IN11. Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 29	Digital Dry Contact IN12	R	0	0	1	Input state of IN12. Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 30	Digital Dry Contact IN13	R	0	0	1	Input state of IN13. Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 31	Digital Dry Contact IN14	R	0	0	1	Input state of IN14. Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 32	Digital Dry Contact IN15	R	0	0	1	Input state of IN15. Closed Contact / 0:Open Contact 1: Open Contact / 1:Closed Contact
Decimal: 33 : Decimal: 37	Reserve	-	-	-	-	-

Decimal: 38	Analog Input 1	R	0	0	1000	Voltage value measured from input AI1.
Decimal: 39	Analog Input 2	R	0	0	1000	Voltage value measured from input AI2.
Decimal: 40 : Decimal: 44	Reserve	-	-	-	-	-
Decimal: 45	Digital Output 1	R/W	0	0	1	This parameter shows the relay output of DO1. 0: Relay close 1: Relay open
Decimal: 46	Digital Output 2	R/W	0	0	1	This parameter shows the relay output of DO2. 0: Relay close 1: Relay open
Decimal: 47	Digital Output 3	R/W	0	0	1	This parameter shows the relay output of DO3. 0: Relay close 1: Relay open
Decimal: 48	Digital Output 4	R/W	0	0	1	This parameter shows the relay output of DO4. 0: Relay close 1: Relay open
Decimal: 49	Digital Output 5	R/W	0	0	1	This parameter shows the relay output of DO5. 0: Relay close 1: Relay open
Decimal: 50	Digital Output 6	R/W	0	0	1	This parameter shows the relay output of DO6. 0: Relay close 1: Relay open
Decimal: 51	Digital Output 7	R/W	0	0	1	This parameter shows the relay output of DO7. 0: Relay close 1: Relay open
Decimal: 52	Digital Output 8	R/W	0	0	1	This parameter shows the relay output of DO8. 0: Relay close 1: Relay open
Decimal: 53	Digital Output 9	R/W	0	0	1	This parameter shows the relay output of DO9. 0: Relay close 1: Relay open
Decimal: 54 : Decimal: 58	Reserve	-	-	-	-	-
Decimal: 59	Analog Output 1	R/W	0	0 (0 V)	100 (10 V)	This parameter adjusts the analog output voltage value.
Decimal: 60	Analog Output 2	R/W	0	0 (0 V)	100 (10 V)	This parameter adjusts the analog output voltage value.
Decimal: 61	Analog Output 3	R/W	0	0 (0 V)	100 (10 V)	This parameter adjusts the analog output voltage value.
Decimal: 62	Analog Output 4	R/W	0	0 (0 V)	100 (10 V)	This parameter adjusts the analog output voltage value.

Decimal: 63 : Decimal: 74	Reserve	-	-	-	-	-
Decimal: 75	Passive Input (IN1) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN1. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 76	Passive Input (IN2) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN2. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 77	Passive Input (IN3) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN3. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 78	Passive Input (IN4) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN4. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 79	Passive Input (IN5) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN5. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 80	Passive Input (IN6) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN6. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 81	Passive Input (IN7) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN7. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 82	Passive Input (IN8) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN8. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 83	Passive Input (IN9) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN9. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 84	Passive Input (IN10) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN10. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 85	Passive Input (IN11) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN11. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 86	Passive Input (IN12) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN12. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 87	Passive Input (IN13) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN13. 0: Normally Open (NO) 1: Normally Close (NC)

Decimal: 88	Passive Input (IN14) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN14. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 89	Passive Input (IN15) Dry Contact Type Selection	R/W	0	0	1	This parameter adjusts the contact type of passive input IN15. 0: Normally Open (NO) 1: Normally Close (NC)
Decimal: 90	Temperature Sensor Beta Value	R/W	3435	2000	6000	This parameter determines the beta value used for NTC10K temperature sensors. Note: Please note that if the value of this point is changed, it will affect all temperature inputs.
Decimal: 91	Temperature Input 1 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN1 input.
Decimal: 92	Temperature Input 2 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN2 input.
Decimal: 93	Temperature Input 3 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN3 input.

Decimal: 94	Temperature Input 4 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN4 input.
Decimal: 95	Temperature Input 5 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN5 input.
Decimal: 96	Temperature Input 6 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN6 input.
Decimal: 97	Temperature Input 7 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN7 input.
Decimal: 98	Temperature Input 8 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN8 input.
Decimal: 99	Temperature Input 9 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN9 input.
Decimal: 100	Temperature Input 10 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that read from the IN10 input.
Decimal: 101	Temperature Input 11 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN11 input.
Decimal: 102	Temperature Input 12 Calibration Value		0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN12 input.
Decimal: 103	Temperature Input 13 Calibration Value	R/W	0	-30	30	This parameter determines the calibration value of the NTC10K temperature sensor that is read from the IN13 input.

Dimensions(mm)