Probiz Controls

PC-SERIES IO MODULE

PC-4AI-NTC



FEATURES & BENEFITS

- 4 analog inputs for NTC, 0–10 V DC or 4–20 mA signals
- 12-bit ADC resolution
- Separate Modbus registers for NTC and 0–10 V / 4–20 mA readings
- Compact 110 × 70 × 70 mm housing for small panels
- Modbus RTU slave on RS485 (GND, A, B)
- Works with PC-CPU-V7 or any third-party Modbus master
- No configuration required — ready to poll from the master
- Customer-specific IO configuration available on request
- Failed modules are replaced on site without reprogramming

APPLICATIONS

AHU Air Temperature Supply and return air temperaturewith NTCsensors	**Chilled Water** CHW supply and return temperature	**Analog Transmitters** 0–10 VDCor 4–20 mAfield signals	**Plant Monitoring** Analog values for BMS trending and alarms

4 AI Analog inputs	**NTC** Temperature sensors	**12-bit** ADC resolution	**Modbus RTU** RS485 slave	**24 V** AC/DC supply

Modbus RTU | **4 AI** | **RS485**

0–10 V | **NTC** | **4–20 mA**

The PC-4AI-NTC is a compact DIN-rail mounted extension IO module with 4 analog inputs. It communicates over Modbus RTU on RS485, so it works as an expansion module for the PC-CPU-V7 controller or with any third-party Modbus master. Each input accepts an NTC temperature sensor, a 0–10 V DC or a 4– 20 mA signal with 12-bit resolution, with NTC and voltage / current readings on separate registers — ideal for AHU supply and return air and chilled water temperatures.

TECHNICAL DATA

INPUTS	
Analog inputs	4
Signal types	NTC / 0–10 V DC / 4–20 mA
Resolution	12-bit ADC
Readings	NTC and 0–10 V / 4–20 mA on separate registers

COMMUNICATION	
Protocol	Modbus RTU (slave)
Interface	RS485 — GND, A (+), B (–)
Baud rate	To be confirmed
Compatible masters	PC-CPU-V7, third-party Modbus masters

CONFIGURATION	
Set-up	No configuration required
Custom IO	Customer-specific configuration on request
Commissioning	Modbus master utility (e.g. Modscan) via USB-to-RS485, or PC-CPU-V7 over IP

POWER	
Supply voltage	24 V AC/DC
Power terminals	+24V, –24V
Power consumption	To be confirmed

OPERATING ENVIRONMENT	
Operating temperature	0 °C to 50 °C
Operating humidity	0–95 % RH

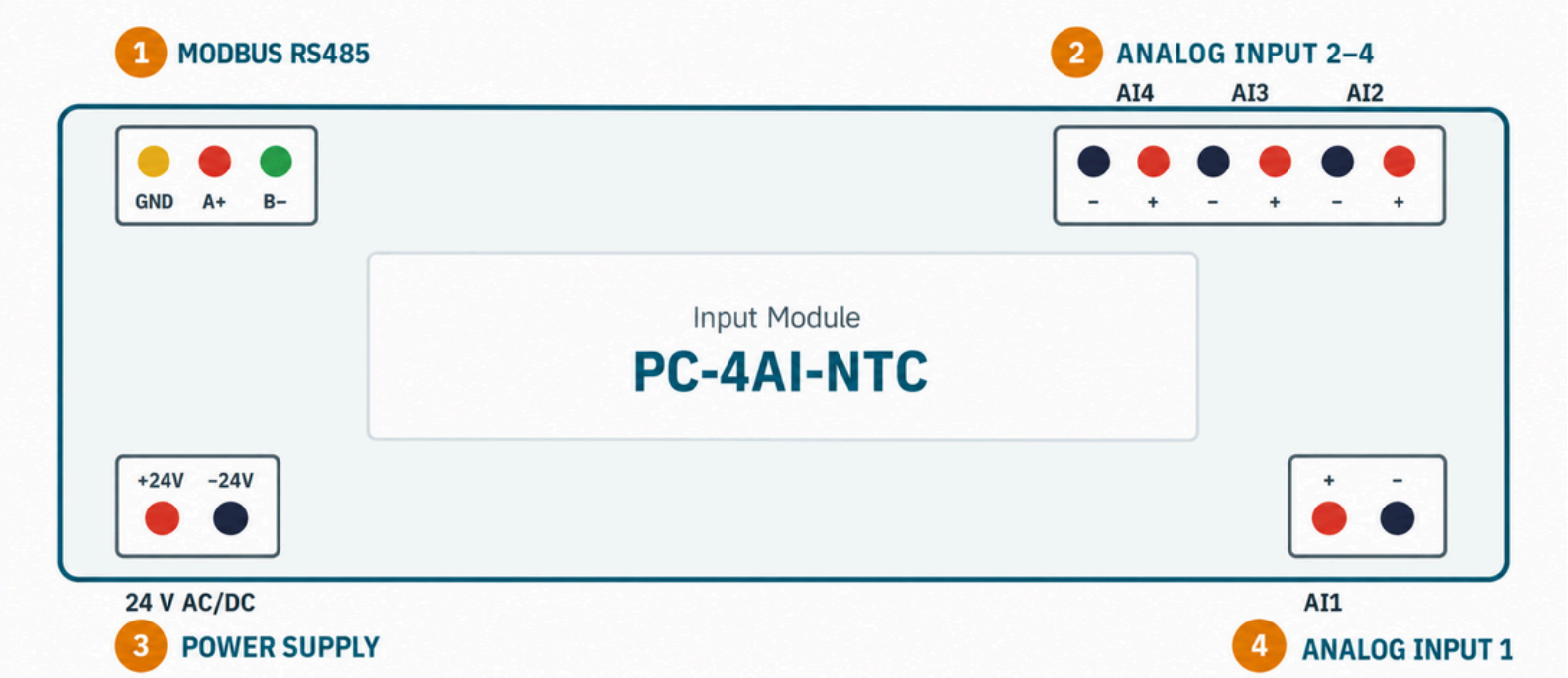
MECHANICAL	
Dimensions (L × W × H)	110 × 70 × 70 mm
Mounting	DIN rail
Enclosure	ABS

STANDARDS & CERTIFICATIONS	
Certifications	CE, RoHS

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
PC-4AI-NTC	PC-series IO module — 4 AI (NTC / 0–10 V DC / 4–20 mA, 12-bit), Modbus RTU RS485, 24 V AC/DC, DIN rail, 110 × 70 × 70 mm
PC-CPU-V7	SmartNova DDC Controller — Modbus master for PC-series IO modules (ordered separately)

- TERMINALS & WIRING



Terminal layout as viewed from the front of the module.

NO.	GROUP	TERMINALS	SIGNAL	DESCRIPTION
1	**Modbus RS485**	**GND, A (+), B (–)**	Modbus RTU	Connection to an EN-CPU-V7 RS485 port or third-party Modbus master
2	**Analog inputs**	**AI4, AI3, AI2: –, +**	NTC / 0–10 V DC / 4–20 mA	Temperature sensor or analog transmitter inputs 2–4
3	**Power supply**	**+24V, –24V**	24 V AC/DC	Module supply input
4	**Analog input**	**AI1: +, –**	NTC / 0–10 V DC / 4–20 mA	Temperature sensor or analog transmitter input 1

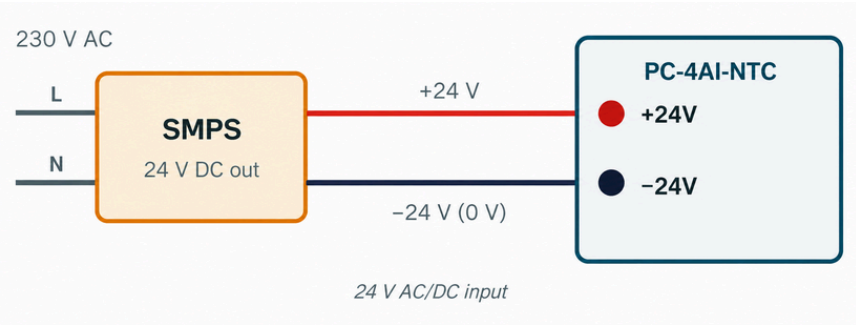
- IO WIRING

- Wire each NTC sensor across the + and – terminals of its analog input.
- Observe + / – polarity when wiring 0–10 V DC and 4–20 mA transmitters.
- Read NTC values from 40006–40009 and 0–10 V / 4–20 mA values from 40002–40005.
- Use shielded cable for analog signals and keep it away from mains wiring.

- RS485 BUS WIRING

- Use shielded twisted-pair cable and daisy-chain modules on the bus.
- Connect A (+), B (–) and GND to the matching terminals on the master and every module.
- Fit 120 Ω termination at both ends of long bus segments.
- Segment length up to 1200 m per TIA/EIA-485, reduced at higher baud rates.

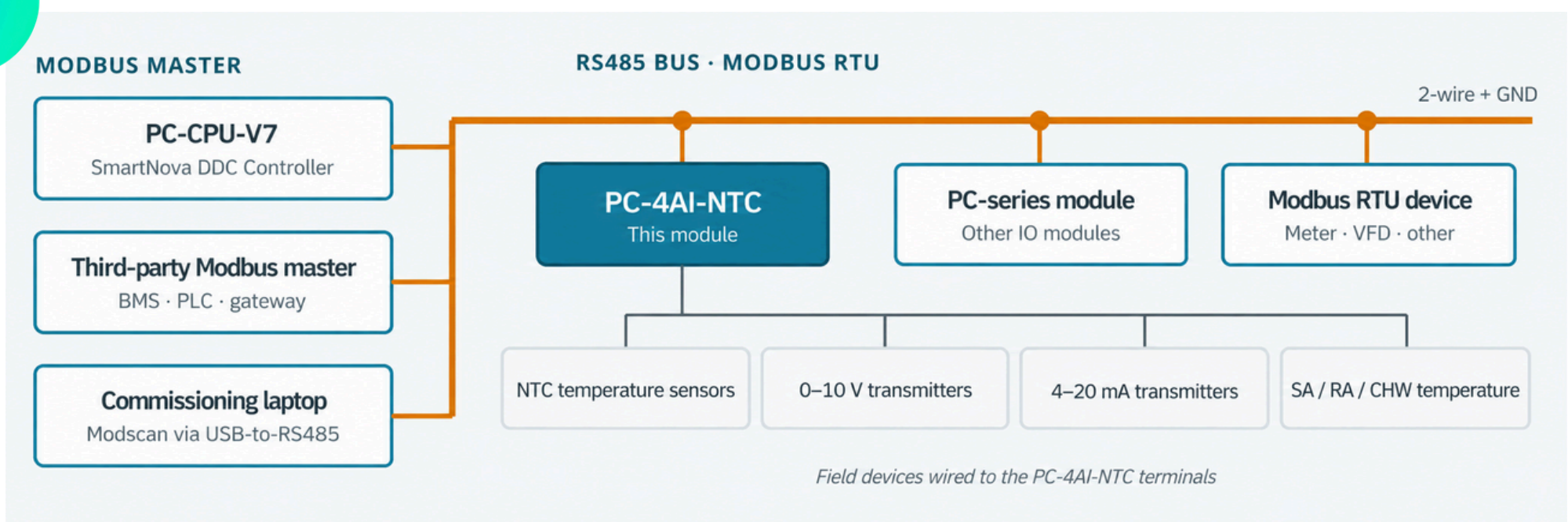
- POWER SUPPLY WIRING



24 V AC/DC input

- Supply from a 24 V AC/DC source, such as a 230 V AC to 24 V DC SMPS.
- Connect + supply to +24V and – supply to –24V.
- One SMPS can feed several modules; size it for the total load.

- SYSTEM ARCHITECTURE



- MODBUS COMMUNICATION

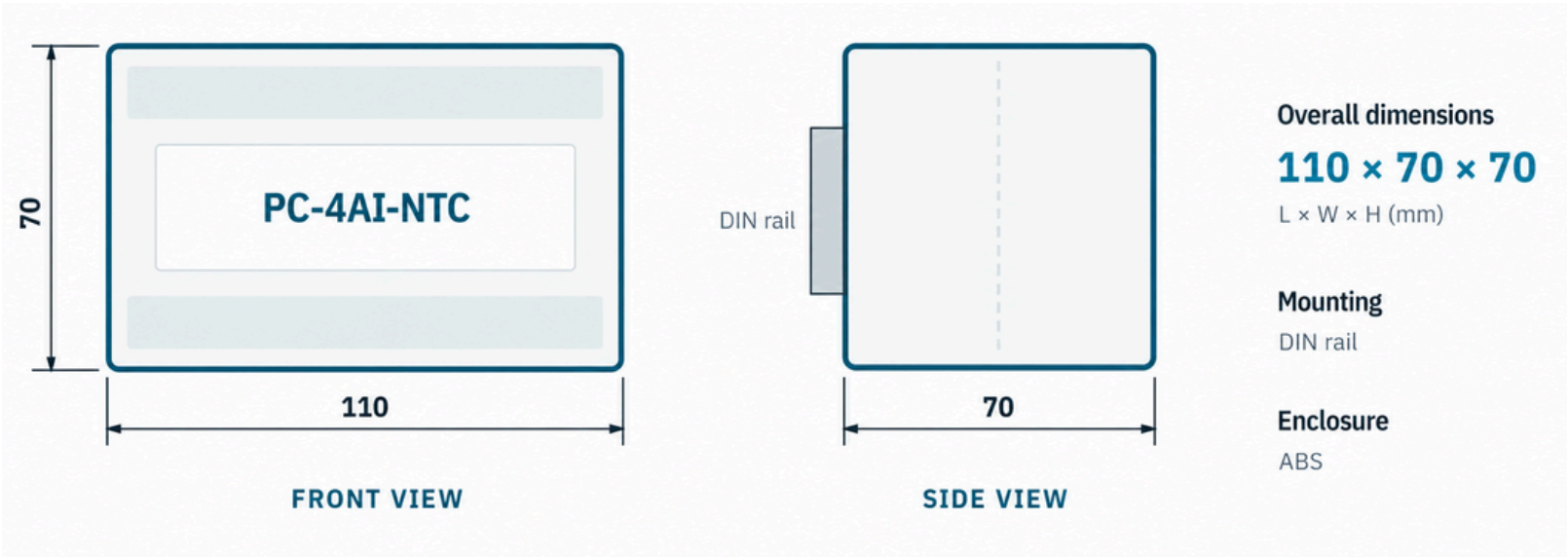
COMMUNICATION SETTINGS	
Protocol	**Modbus RTU, slave**
Physical layer	**RS485, A (+), B (–), GND**
Baud rate	**To be confirmed**
Default slave address	**To be confirmed**
Data format	**To be confirmed**
Function codes	**03**

MODBUS REGISTER MAP

NO.	IO POINT	ADDRESS	TYPE	ACCESS
1	**AI-1 (0–10 V / 4–20 mA)**	**40002**	Holding register	R
2	**AI-2 (0–10 V / 4–20 mA)**	**40003**	Holding register	R
3	**AI-3 (0–10 V / 4–20 mA)**	**40004**	Holding register	R
4	**AI-4 (0–10 V / 4–20 mA)**	**40005**	Holding register	R
5	**AI-1 (NTC)**	**40006**	Holding register	R
6	**AI-2 (NTC)**	**40007**	Holding register	R
7	**AI-3 (NTC)**	**40008**	Holding register	R
8	**AI-4 (NTC)**	**40009**	Holding register	R

Addresses use the standard Modbus 4x notation, as listed in the module address details. Register scaling for analog values to be confirmed.

- DIMENSIONS



- INSTALLATION

- Mount on DIN rail inside a control panel or enclosure.
- Leave space around the unit for ventilation and cable access.
- Isolate the power supply before wiring or servicing.
- Route RS485 and analog signal cables away from power wiring.
- A failed module can be replaced on site and the system resumes without re-programming.

- COMMISSIONING

- Mount the module and connect the 24 V AC/DC supply.
- Wire NTC sensors or 0–10 V / 4–20 mA transmitters to AI1– AI4 as per the wiring drawing.
- Connect RS485 A (+), B (–), GND to the PC-CPU-V7 port or Modbus master.
- Poll the module using the Modbus register map.
- Verify readings with Modscan over USB-to-RS485 or through PC-CPU-V7 over IP.

- SYSTEM REQUIREMENTS

- PC-CPU-V7 controller or any third-party Modbus master
- Modbus master utility (e.g. Modscan) for commissioning
- USB-to-RS485 converter for commissioning over serial
- 24 V AC/DC power supply
- DIN rail mounting inside a control panel

- SAFETY INFORMATION

- Installation, wiring and maintenance must be carried out by qualified personnel in line with local electrical regulations.
- Disconnect all power before connecting or removing terminal wiring.
- Install inside a closed control panel, protected from dust, water and direct sunlight.
- Operate only within the supply voltage and environmental limits stated in this datasheet.
- Observe ESD precautions when handling the unit.
- Dispose of the product as electronic waste in accordance with local e-waste regulations.

- SERVICES & SUPPORT

Technical support | **Installation & setup** | **Maintenance** | **Application support**

Hardware support | **Warranty**

PROBIZ CONTROLS

PC-SERIES IO MODULE

PC-4AI-NTC



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