Probiz Controls

PC-SERIES IO MODULE

PC-AIAO



-FEATURES & BENEFITS

- 1 analog input for 0–10 V DC or 4–20 mA signals
- 1 analog output, 0–10 V DC
- Command and feedback for one modulating device
- Compact 110 × 70 × 70 mm housing for small panels
- Modbus RTU slave on RS485 (B, A, GND), multiple baud rate options
- 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 VFD Speed control and speed feedback	**Control Valves** Valvecommand and position feedback	**Pump VFD** Speed control and speed feedback	**Modulating Dampers** Damper command and position feedback

1 AI 0–10 V / 4–20 mA input	**1 AO** 0–10 V DC output	**110 × 70** Compact footprint (mm)	**Modbus RTU** RS485 slave	**24 V** AC/DC supply

Modbus RTU **1 AI** **RS485**

1 AO

The PC-AIAO is a compact DIN-rail mounted extension IO module with 1 analog input and 1 analog output. It communicates over Modbus RTU on RS485 with multiple baud rate options, so it works as an expansion module for the PC-CPU-V7 controller or with any third-party Modbus master. The 0–10 V DC output sends a speed or position command while the 0–10 V DC / 4–20 mA input reads back feedback — a command-andfeedback pair for one VFD, valve or damper in a single small module.

TECHNICAL DATA

INPUTS & OUTPUTS	
Analog input	1, 0–10 V DC or 4–20 mA
Analog output	1, 0–10 V DC

COMMUNICATION	
Protocol	Modbus RTU (slave)
Interface	RS485 — B, A, GND
Baud rate	Multiple baud rate options
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

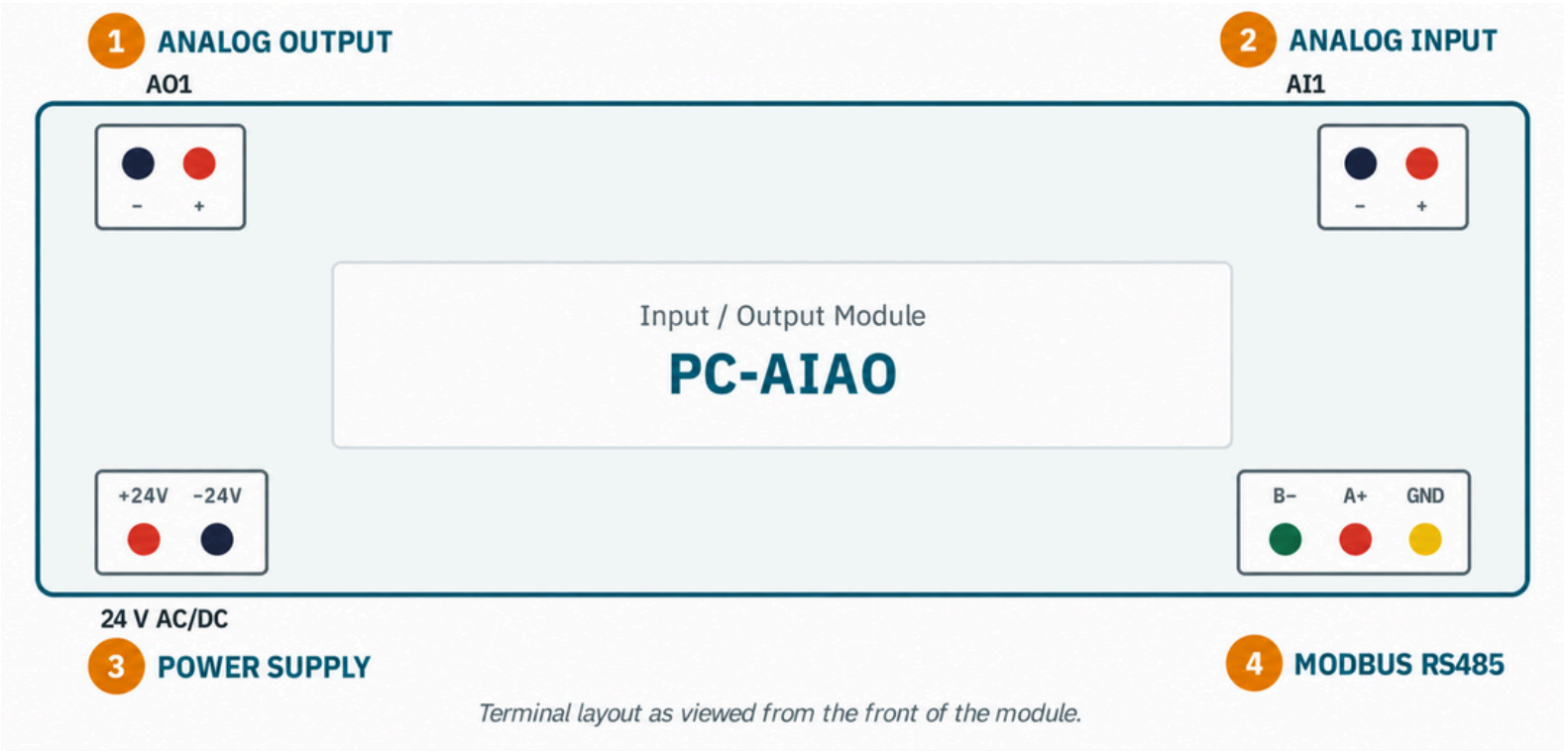
MECHANICAL	
Dimensions (L × W × H)	110 × 70 × 70 mm
Mounting	DIN rail
Enclosure	ABS

STANDARDS & CERTIFICATIONS	
Certifications	CE, RoHS

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
PC-AIAO	PC-series IO module — 1 AI (0–10 V DC / 4–20 mA), 1 AO (0–10 V DC), 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	**Analog output**	**AO1: –, +**	0–10 V DC	Command signal to a VFD, valve or damper actuator
2	**Analog input**	**AI1: –, +**	0–10 V DC / 4–20 mA	Feedback or transmitter input
3	**Power supply**	**+24V, –24V**	24 V AC/DC	Module supply input
4	**Modbus RS485**	**B (–), A (+), GND**	Modbus RTU	Connection to an PC-CPU-V7 RS485 port or third-party Modbus master

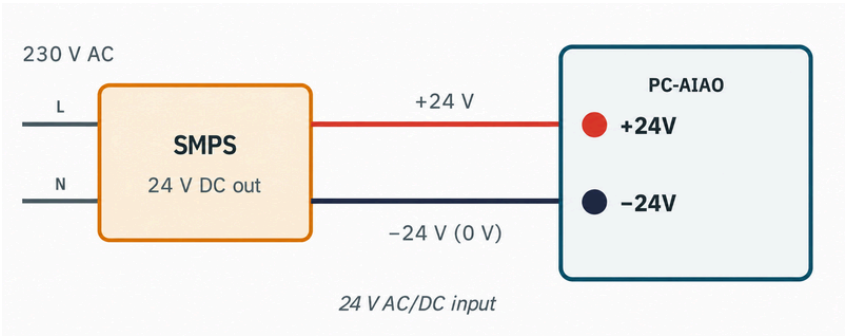
- IO WIRING

- Connect AO1 + to the 0–10 V control input and AO1 – to the signal common of the device.
- Wire the feedback or transmitter signal to AI1, observing + / – polarity.
- Use shielded cable for analog signals and keep it away from mains and VFD power wiring.
- Write the output at 40004 and read the input at 40001 from the Modbus master.

- 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.

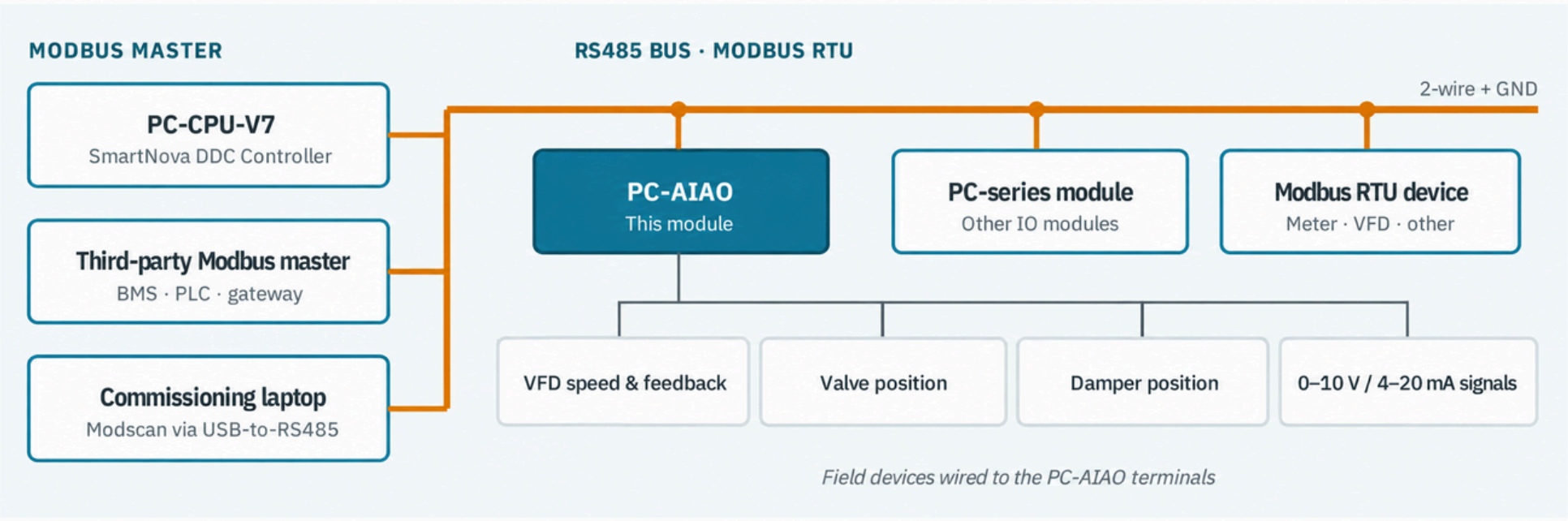
- POWER SUPPLY WIRING



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



Field devices wired to the PC-AIAO terminals

- MODBUS COMMUNICATION

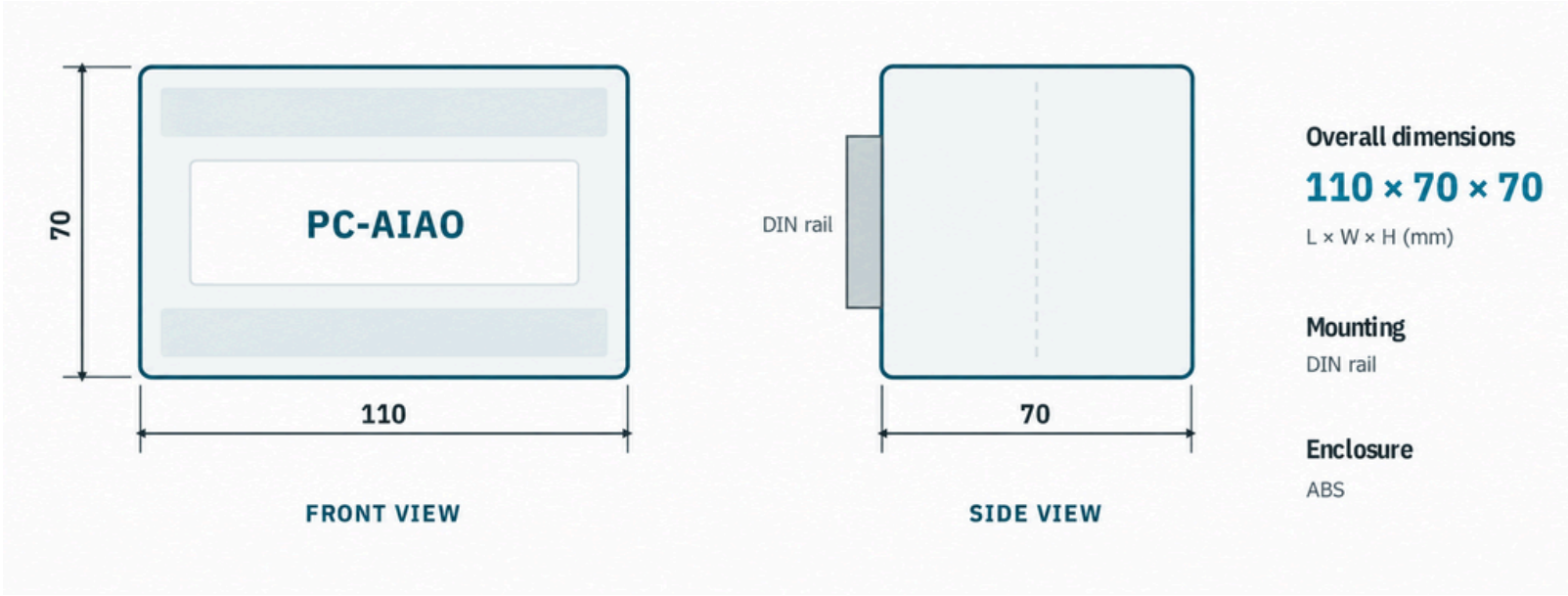
COMMUNICATION SETTINGS	
Protocol	Modbus RTU, slave
Physical layer	RS485, B (–), A (+), GND
Baud rate	Multiple options
Default slave address	To be confirmed
Data format	To be confirmed
Function codes	03, 06

MODBUS REGISTER MAP

NO.	IO POINT	ADDRESS	TYPE	ACCESS
1	AI-1 (0–10 V / 4–20 mA)	**40001**	Holding register	R
2	AO-1 (0–10 V)	**40004**	Holding register	R/W

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 and VFD 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 AO1 to the device control input and AI1 to its feedback signal as per the wiring drawing.
- Connect RS485 B (−), A (+), GND to the PC-CPU-V7 port or Modbus master.
- Write the output and read the input using the Modbus register map.
- Verify with Modscan over USB-to-RS485 or through PC-CPUV7 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-AIAO



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