EN-SERIES IO MODULE

EN-4DI1DO

The EN-4DI1DO is a compact DIN-rail mounted extension IO module with 4 digital inputs and 1 relay output. It communicates over Modbus RTU on RS485, so it works as an expansion module for the EN-CPU-V7 controller or with any third-party Modbus master.

Volt-free inputs read auto / manual, run, trip and filter status, while the relay output rated 230 V, 3 A issues a start / stop command — a good fit for FCUs, exhaust fans and pumps.

Modbus RTU | RS485 | 4 DI | 1 DO

4 DI	1 DO	3 A	Modbus RTU	24 V
Volt-free contact inputs	Relay output (C / NO)	Relay rating at 230 V	RS485 slave	AC/DC supply

FEATURES & BENEFITS

- 4 digital inputs for volt-free status contacts
- 1 relay output (C / NO), rated 230 V, 3 A
- Status plus start / stop command for one equipment item
- Modbus RTU slave on RS485 (B, A, GND)
- Works with EN-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 re-programming
- Modular design for fast, repeatable panel builds

APPLICATIONS

FCU Control
A/M, run and trip status with start / stop

Exhaust Fans & Pumps
Run / trip status and system command

Filter Monitoring
Filter status contacts

Chiller Status
A/M, run and trip status

Typical sectors: Commercial buildings · IT parks · Pharmaceutical · Healthcare · Data centres · Industrial

TECHNICAL DATA

INPUTS & OUTPUTS	
Digital inputs	4, volt-free contact
Digital outputs	1, relay (C / NO)
Relay rating	230 V, 3 A

COMMUNICATION	
Protocol	Modbus RTU (slave)
Interface	RS485 — B, A, GND
Baud rate	Multiple baud rate options
Compatible masters	EN-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 EN-CPU-V7 over IP

POWER	
Supply voltage	24 V AC/DC
Power consumption	To be confirmed

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

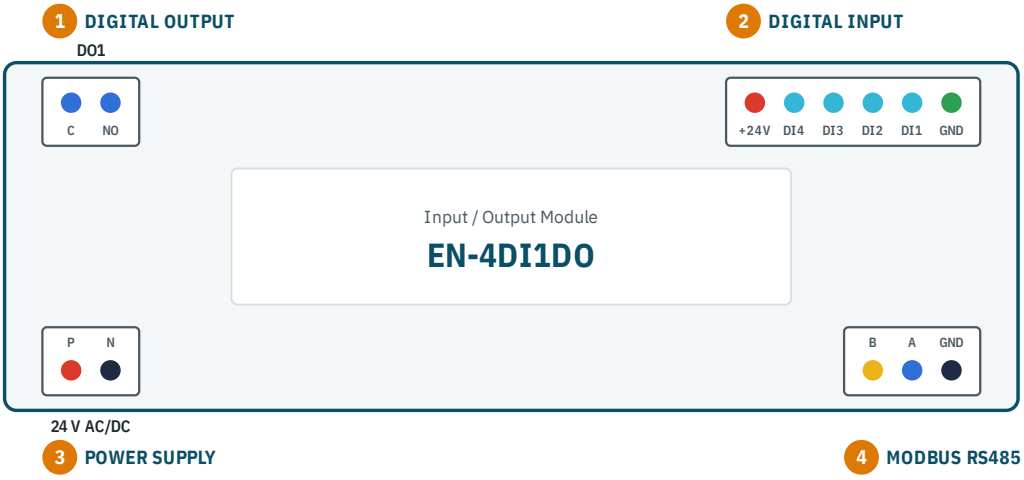
MECHANICAL	
Dimensions (L × W × H)	110 × 110 × 70 mm
Mounting	DIN rail
Enclosure	ABS

STANDARDS & CERTIFICATIONS	
Certifications	CE, RoHS

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
EN-4DI1DO	EN-series IO module — 4 DI (volt-free), 1 DO (relay 230 V, 3 A), Modbus RTU RS485, 24 V AC/DC, DIN rail
EN-CPU-V7	SmartNova DDC Controller — Modbus master for EN-series IO modules (ordered separately)

TERMINALS & WIRING



Terminal layout as viewed from the front of the module.

NO.	GROUP	TERMINALS	SIGNAL	DESCRIPTION
1	**Digital output**	**DO1: C, NO**	Relay, 230 V, 3 A	Relay contact — C = common, NO = normally open
2	**Digital inputs**	**+24V, DI4–DI1, GND**	Volt-free contact	Status inputs; connect each contact between +24V and its DI terminal
3	**Power supply**	**P, N**	24 V AC/DC	Module supply input — P: + supply, N: – supply
4	**Modbus RS485**	**B, A, GND**	Modbus RTU	Connection to an EN-CPU-V7 RS485 port or third-party Modbus master

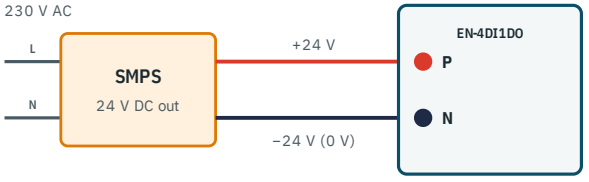
IO WIRING

- Digital inputs accept volt-free (dry) contacts only — do not apply external voltage.
- Connect each contact between the +24V terminal and its DI terminal.
- The relay output switches loads up to 230 V, 3 A; use an interposing relay or contactor for larger loads.
- Keep relay output wiring separate from digital input and RS485 cabling.

RS485 BUS WIRING

- Use shielded twisted-pair cable and daisy-chain modules on the bus.
- Connect B, A and GND to the same 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.

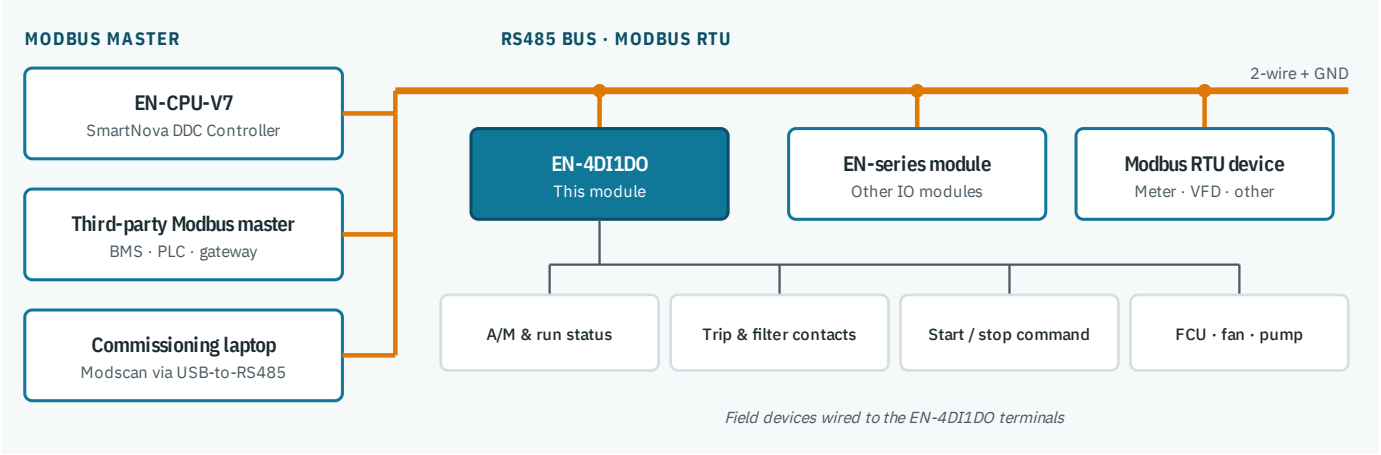
POWER SUPPLY WIRING



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 terminal P and – supply to terminal N.
- One SMPS can feed several modules; size it for the total load.

SYSTEM ARCHITECTURE



Field devices wired to the EN-4DI1DO terminals

MODBUS COMMUNICATION

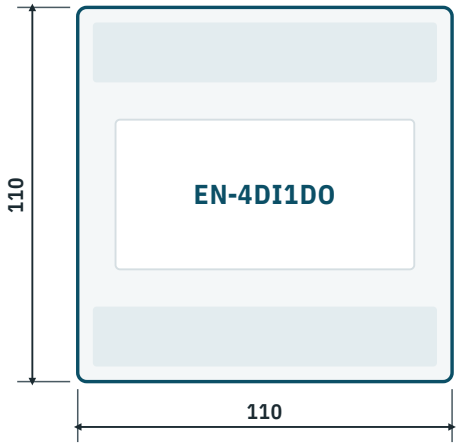
COMMUNICATION SETTINGS	
Protocol	Modbus RTU, slave
Physical layer	RS485, 2-wire + GND
Baud rate	Multiple options
Default slave address	To be confirmed
Data format	To be confirmed
Function codes	01, 02, 05

Addresses use the standard Modbus 0x / 1x notation, as listed in the module address details.

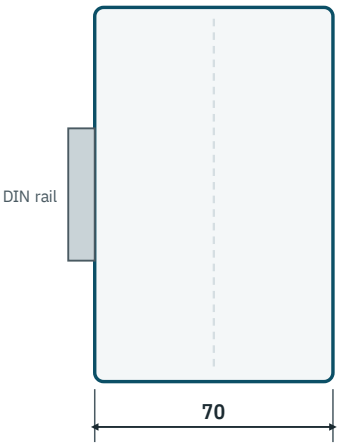
MODBUS REGISTER MAP

NO.	IO POINT	ADDRESS	TYPE	ACCESS
1	DI-1	10002	Input status	R
2	DI-2	10003	Input status	R
3	DI-3	10004	Input status	R
4	DI-4	10005	Input status	R
5	DO-1	00001	Coil status	R/W

DIMENSIONS



FRONT VIEW



SIDE VIEW

Overall dimensions

110 × 110 × 70

L × W × H (mm)

Mounting

DIN rail

Enclosure

ABS

All dimensions in mm.
Simplified outline.

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 digital input cables away from relay output wiring.
- A failed module can be replaced on site and the system resumes without re-programming.

COMMISSIONING

1. Mount the module and connect the 24 V AC/DC supply.
2. Wire digital inputs and relay outputs as per the wiring drawing.
3. Connect RS485 B, A, GND to the EN-CPU-V7 port or Modbus master.
4. Poll the module using the Modbus register map.
5. Verify points with Modscan over USB-to-RS485 or through EN-CPU-V7 over IP.

SYSTEM REQUIREMENTS

- EN-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, including relay output circuits, 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, relay rating 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

EnSmart™ Smart way to connect buildings

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