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SENECA ZE-4DI-2AI-2DO ModBUS mixed IO Modules Instruction Manual

Contents

SENECA ZE-4DI-2AI-2DO ModBUS mixed IO Modules

PRELIMINARY WARNINGS

The word **WARNING** preceded by the symbol indicates conditions or actions that put the user's safety at risk.
The word **ATTENTION** preceded by the symbol indicates conditions or actions that might damage the instrument or the connected equipment. The warranty shall become null and void in the event of improper use or tampering with the module or devices supplied by the manufacturer as necessary for its correct operation, and if the instructions contained in this manual are not followed.
WARNING: The full content of this manual must be read before any operation. The module must only be used by qualified electricians. Specific documentation is available via QR-CODE shown on page 1.
The module must be repaired and damaged parts replaced by the Manufacturer. The product is sensitive to electrostatic discharges. Take appropriate measures during any operation.
Electrical and electronic waste disposal (applicable in the European Union and other countries with recycling). The symbol on the product or its packaging shows the product must be surrendered to a collection centre authorized to recycle electrical and electronic waste.

CONTACT INFORMATION

Technical support **support@seneca.it**
Product information   **sales@seneca.it**
This document is the property of SENECA srl. Copies and reproduction are prohibited unless authorised. The content of this document corresponds to the described products and technologies.
Stated data may be modified or supplemented for technical and/or sales purposes.

MODULE LAYOUT
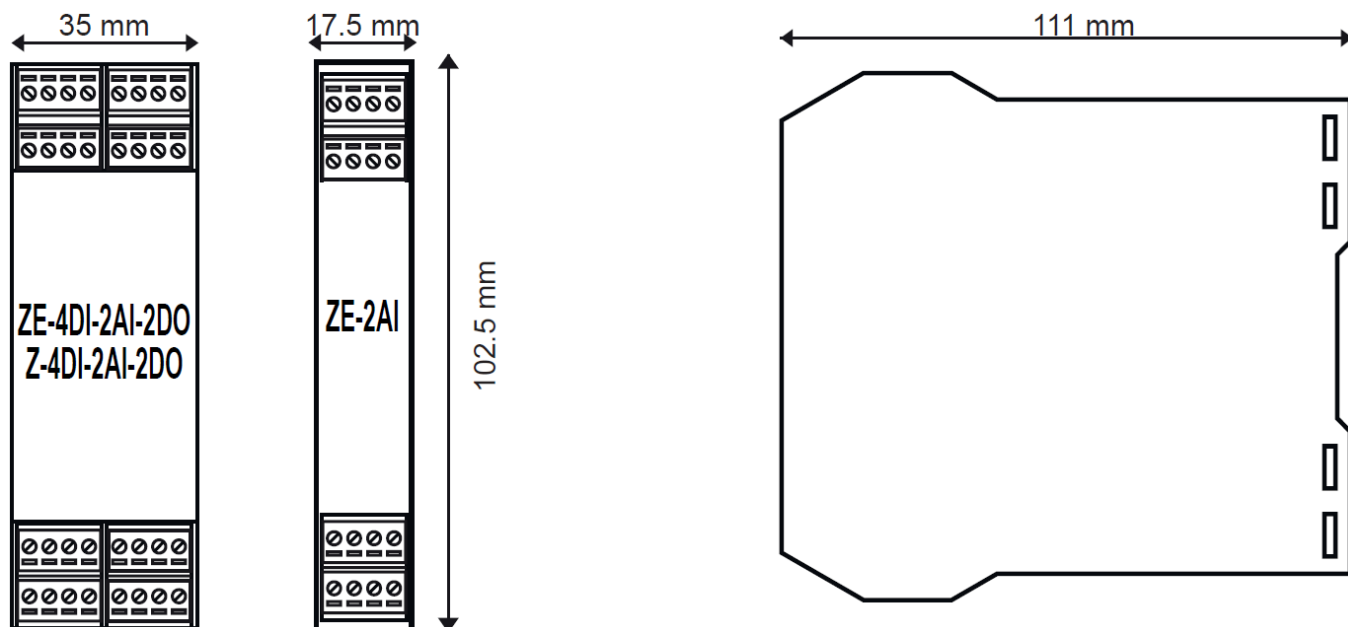
Single module dimensions LxHxD: 17.5 x 102.5 x 111 mm; Weight: 110 g; Enclosure: PA6, black
Double module dimensions LxHxD: 35 x 102.5 x 111 mm; Weight: 110 g; Enclosure: PA6, black

LED SIGNALS ON THE FRONT PANEL (ZE-4DI-2AI-2DO)

LED	STATUS	MEANING
IP / PWR	ON	Module powered IP address acquired
IP / PWR	Flashing	Module powered Waiting for IP address from the DHCP server
Tx/Rx	Flashing	Data transmission and reception on at least one Modbus port
ETH TRF	Flashing	Packet transmission on Ethernet port
ETH LNK	ON	Ethernet port connected
DI1, DI2, DI3, DI4	On / Off	Status of digital input 1, 2, 3, 4
DO1, DO2	On / Off	Status of output 1, 2
FAIL	Flashing	Outputs in fail condition

LED SIGNALS ON THE FRONT PANEL (Z-4DI-2AI-2DO)

LED	STATUS	MEANING
PWR	ON	Module powered
Tx/Rx	Flashing	Data transmission and reception on at least one Modbus port: COM 1 port, COM 2 port
DI1, DI2, DI3, DI4	On / Off	Status of digital input 1, 2, 3, 4
DO1, DO2	On / Off	Status of output 1, 2
FAIL	Flashing	Outputs in fail condition

LED SIGNALS ON THE FRONT PANEL (ZE-2AI)

LED	STATUS	MEANING
IP / PWR	ON	Module powered and IP address acquired
IP / PWR	Flashing	Module powered Waiting for IP address from the DHCP server
FAIL	ON	At least one of the two analogue inputs is out of scale (underscale-overscale)
ETH TRF	Flashing	Packet transmission on Ethernet port
ETH LNK	ON	Ethernet port connected
Tx1	Flashing	Modbus packet transmission from device to COM 1 port
Rx1	Flashing	Modbus packet reception on COM 1 port
Tx2	Flashing	Modbus packet transmission from device to COM 2 port
Rx2	Flashing	Modbus packet reception on COM 2 port

TECHNICAL SPECIFICATIONS
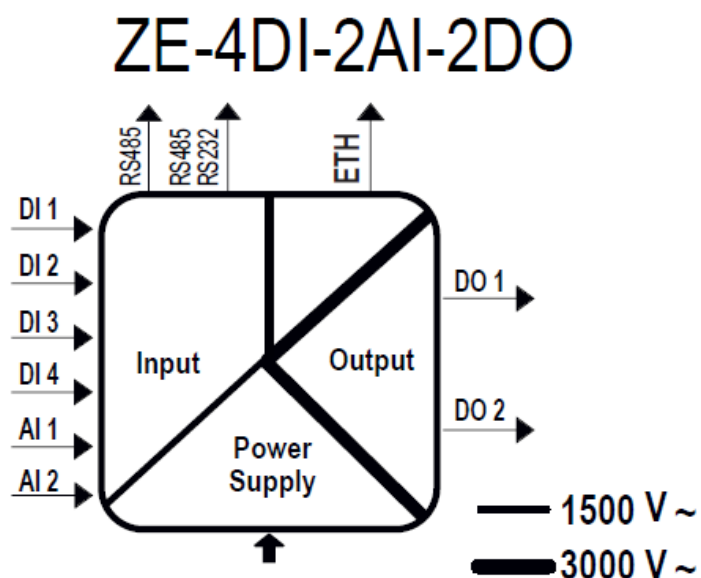
- **CERTIFICATIONS**

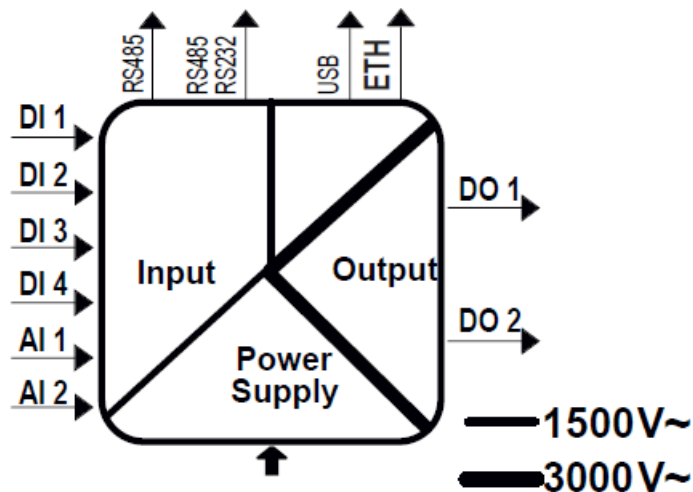   https://www.seneca.it/products/ze-4di-2ai-2do/doc/CE_declaration

    https://www.seneca.it/products/z-4di-2ai-2do/doc/CE_declaration

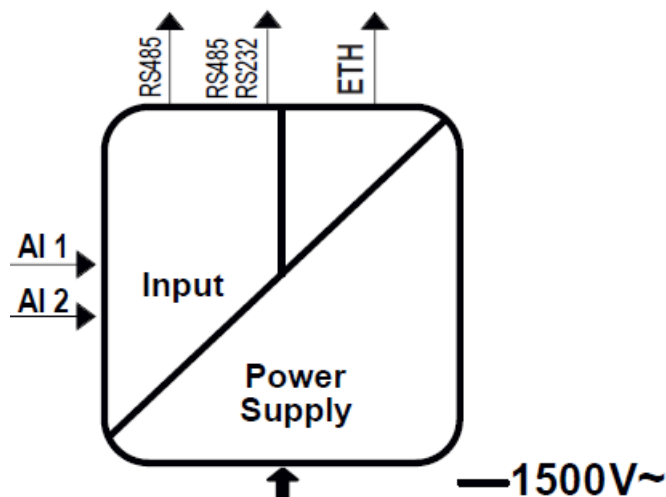   https://www.seneca.it/products/ze-2ai/doc/CE_declaration

- **INSULATION**

-

Z-4DI-2AI-2DO

ZE-2AI

- **ENVIRONMENTAL CONDITIONS**

    Temperature: 25 ÷ + 70°C

    Humidity: 30% ÷ 90% non condensing

    Altitude: Up to 2000 m above sea level

    Storage temperature: -30 ÷ +85°

    Protection rating: IP20.

- **ASSEMBLY**

    IEC EN60715, 35mm DIN rail in vertical position.

- **CONNECTIONS**

    Removable 3-way screw terminals, 5 mm pitch for cable up to 2.5 mm2 Rear connector IDC10 for DIN bar 46277 RJ45 micro USB (Z-4DI-2AI-2DO)

- **POWER SUPPLY**

    Voltage: 11 ÷ 40Vdc; 19 ÷ 28Vac 50 ÷ 60Hz

    Absorption: Typical: 1,5 W @ 24Vdc, Max: 4 W (ZE-4DI-2AI-2DO Z-4DI-2AI-2DO)

    Absorption: Typical: 1,5 W @ 24Vdc, Max: 2 W (ZE-2AI)

- **DIGITAL INPUTS only ZE-4DI-2AI-2DO Z-4DI-2AI-2DO**

    Number of channels 4. Configurable PNP or NPN.

    Voltage input OFF < 4V, ON > 8V (max. 24 Vdc).

Current input 20 mA. Max frequency 5 KHz.

Absorbed current 3mA@12Vdc, 10mA @24Vdc.

- **COUNTERS only ZE-4DI-2AI-2DO Z-4DI-2AI-2DO**

  4 32bit resettable counters on non-volatile memory.

- **DIGITAL OUTPUTS only ZE-4DI-2AI-2DO Z-4DI-2AI-2DO**

  Number of channels 2.

  SPDT free contact relay.

  Max. voltage 250Vac. Max. current 2 A.

- **ANALOGUE INPUTS**

  Number of channels 2. Voltage/Current configurable

  Input Voltage 0÷30 V. Precision 0.1% of full scale, Resolution: 16 bit

  Current input 0 ÷ 20mA– precision 0.1% of full scale, Resolution: 16bit

  Input protection 40V / 25mA

- **COMMUNICATION PORTS**

  RS485 COM1 on IDC10 connector. RS485 or RS232 M10-M11-M12.

  Ethernet 100 base T RJ45 front (ZE-4DI-2AI-2DO, ZE-2AI) side micro USB port (Z-4DI-2AI-2DO)

INSTALLATION REGULATIONS

The module has been designed for vertical installation on a DIN 46277 rail. For optimal operation and long life, adequate ventilation must be provided. Avoid positioning ducting or other objects that obstruct the ventilation slots. Avoid mounting modules over heat-generating equipment. Installation in the bottom part of the electrical panel is recommended.

CAUTION

These are open type devices intended for installation in a final casing/panel that offers mechanical protection and protection against the spread of fire.

ModBUS CONNECTION RULES

1. Install the modules in the DIN rail (120 max)

2. Connect the remote modules using cables of an appropriate length. The following table shows cable length data:

   - Bus length: maximum length of the Modbus network according to the Baud Rate. This is the length of the cables that connect the two farthest modules

   - Derivation length: maximum length of a derivation 2 m

Schema 1

Lunghezza bus	Lunghezza derivazione
1200 m	2 m

Ld= Lunghezza derivazione
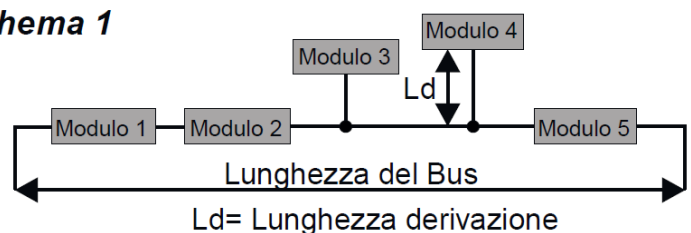
   For maximum performance, it is recommended to use special shielded cables, designed specifically for data communication.
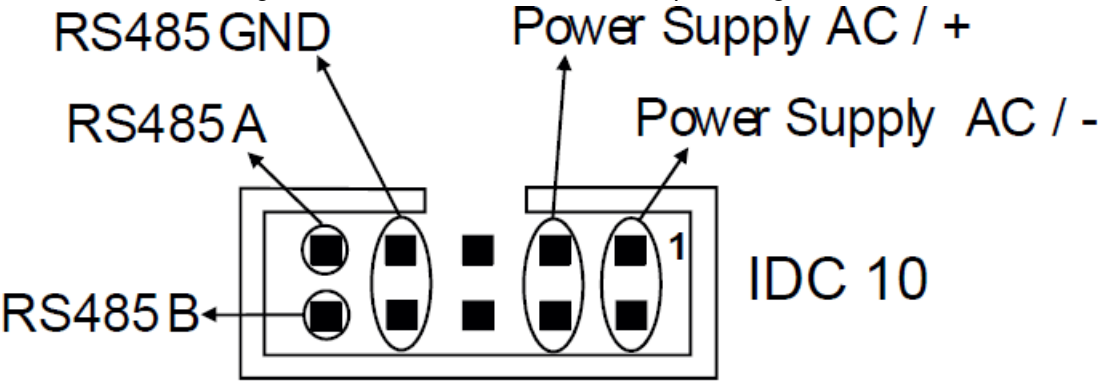
CONNECTOR IDC10

Power supply and Modbus interface are available using the Seneca DIN rail bus, via the IDC10 rear connector, or

the Z-PC-DINAL-17.5 accessory

Back connector (IDC 10)

The illustration shows the meanings of the various IDC10 connector pins if signals are to be sent via them directly.

USB PORT (Z-4DI-2AI-2DO)

The module is designed to exchange data according to the modes defined by the MODBUS protocol. It has a micro USB connector on the front panel and can be configured using applications and/or software programs.
The USB serial port uses the following communication parameters: 115200,8,N,1.
The USB communication port responds exactly like the serial ports, with the exception of the communication parameters.
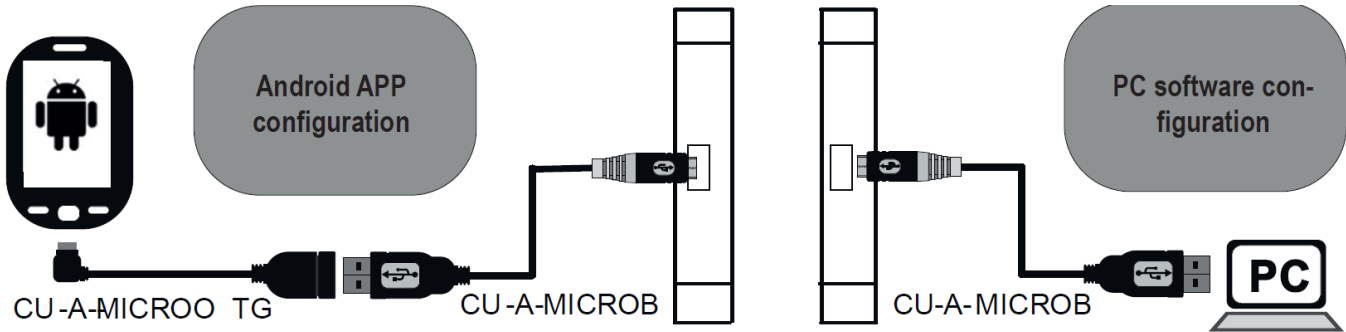
Check that the device in question is included in the list of products supported by the Easy Setup APP

FACTORY IP ADDRESS

The default module IP address is static: 192.168.90.101

SETTING THE DIP-SWITCHES

WARNING

The DIP-switch settings are read only at boot time. At each change, perform a restart.

SW2 DIP-SWITCH:

Through DIP-SWITCH-SW1 it is possible to set the IP configuration of the device:

DESCRIPTION	DIP 1	DIP 2	DIP 3	DIP 4
To obtain the configuration from the Flash memory, both SW1 DIP switch selectors must be set to OFF	☐	☐	RESERVED	RESERVED
To reset the device to factory settings both SW1 DIP switches must be set to ON	☐	☐	RESERVED	RESERVED
To force the device's IP address to the standard value of SENECA Ethernet products: 192.168.90.101	☐	☐	RESERVED	RESERVED
Reserved	☐	☐	RESERVED	RESERVED

ATTENTION
DIP3 and DIP4, on models where they are present, must remain OFF. If set otherwise, the instrument will not operate correctly.

KEY		
1	ON	▣
0	OFF	▣

RS232/RS485 SETTING:
RS232 or RS485 configuration on terminals 10-11-12 (serial port 2)

SW2			
1	ON	▣	RS232 ACTIVATION
0	OFF	▣	RS485 ACTIVATION

WEB SERVER

To access the maintenance Web Server with 192.168.90.101 factory IP address type:
http://192.168.90.101
Default user: admin, Default password: admin.
CAUTION
DO NOT USE DEVICES WITH THE SAME IP ADDRESS IN THE SAME ETHERNET NETWORK.

ELECTRICAL CONNECTIONS

Attention: the upper power supply limits must not be exceeded, as this might cause serious damage to the module.
To meet the electromagnetic immunity requirements:

- use shielded signal cables;
- connect the shield to a preferential instrumentation earth system;
- separate shielded cables from other cables used for power installations (transformers, inverters, motors, induction ovens, etc.).

POWER SUPPLY

- The power supply is connected to terminals 2 and 3.
- The supply voltage must be between:
- 11 and 40Vdc (indifferent polarity), or between 19 and 28 Vac.
- The power supply source must be protected from any failures in the module by means of a suitably sized fuse.

Power supply — 3
Power supply — 2
Auxiliary voltage — 1
+12Vdc at 30mA
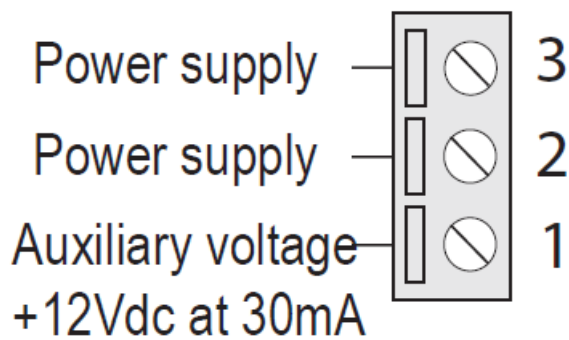
ANALOGUE INPUTS

- The module has two analogue inputs that can be configured via software as voltage or current.
- For the configuration software, see the user manual

Voltage	Active sensor current (4 wires)	Passive sensor current (2 wires)
4GND 5AI1 6AI2	4GND 5AI1 6AI2	1 12V 5A I1 6A I2
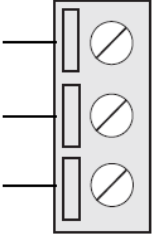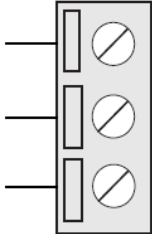
DIGITAL INPUTS (ONLY ZE-4DI-2AI-2DO and Z-4DI-2AI-2DO)

15 +12V	12V ⎓ 20mA 15 +12V	Max 24V ⎓ 15 +12V
14 DI2	14 DI2	14 DI2
13 DI1	13 DI1	13 DI1
18 DI4	18 DI4	18 DI4
17 DI3	17 DI3	17 DI3
0V ⎓ 16 GND	16 GND	0V ⎓ 16 GND

DIGITAL OUTPUTS (ONLY ZE-4DI-2AI-2DO and Z4DI-2AI-2DO)

N.A.1=19
CO.1=20
N.C.1=21

N.A.2=22
CO.2=23
N.C.2=24

COM2 SERIAL PORT

Documents / Resources

INSTALLATION MANUAL ZE-4DI-2AI-2DO Z-4DI-2AI-2DO ZE-2AI	**SENECA ZE-4DI-2AI-2DO ModBUS mixed IO Modules** [pdf] Instruction Manual Z-4DI-2AI-2DO, ZE-2AI, ZE-4DI-2AI-2DO, ModBUS mixed IO Modules, ZE-4DI-2AI-2DO ModBUS mixed IO Modules, IO Modules

References

- Ⓢ **seneca.it/products/z-4di-2ai-2do/doc/CE_declaration**
- Ⓢ **seneca.it/products/ze-2ai/doc/CE_declaration**
- Ⓢ **seneca.it/products/ze-4di-2ai-2do/doc/CE_declaration**