INSTALLATION MANUAL

ZE-4DI-2AI-2DO / ZE-4DI-2AI-2DO-P
Z-4DI-2AI-2DO
ZE-2AI / ZE-2AI-P

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 could damage the instrument or 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 using the 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.

DOCUMENTATION ZE-4DI-2AI-2DO

DOCUMENTATION ZE-4DI-2AI-2DO-P

DOCUMENTATION Z-4DI-2AI-2DO

DOCUMENTATION ZE-2AI-P

DOCUMENTATION ZE-2AI

SENECA

QUALITY MANAGEMENT SYSTEM
ISO 9001:2015

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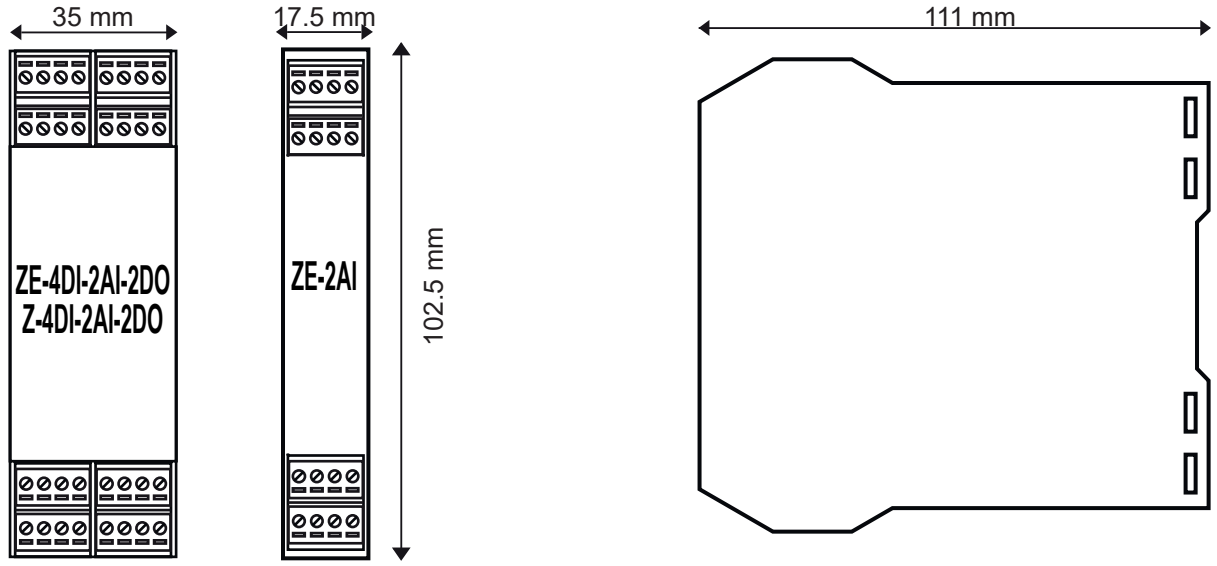
CONTACT INFORMATION

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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 / -P)

LED	STATUS	MEANING
IP / PWR	ON	Module powered IP address acquired
IP / PWR	Flashing	Module powered waiting for IP address from the DHCP server / Profinet communication
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
	ON	At least one of the two analogue inputs is out of scale (underscale-overscale)

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

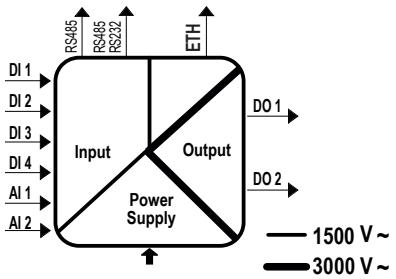
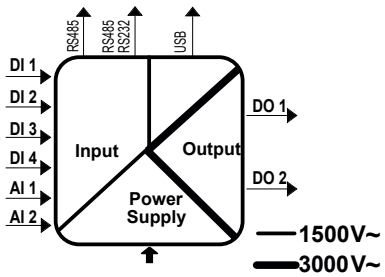
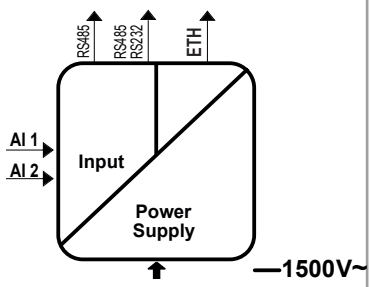
LED	STATUS	MEANING
PWR	ON	Module powered
Tx/Rx	Flashing	Data transmission and reception on at least one Modbus port: COM1, COM2
DI1, DI2, DI3, DI4	On / Off	Status of digital input 1, 2, 3, 4
DO1, DO2	On / Off	Status of output 1, 2
FAIL	Flashing	Outputs in fail condition
	ON	At least one of the two analogue inputs is out of scale (underscale-overscale)

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

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 / Profinet communication
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

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TECHNICAL SPECIFICATIONS

CERTIFICATES	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	ZE-4DI-2AI-2DO / -P 	Z-4DI-2AI-2DO 	ZE-2AI / -P 
POWER SUPPLY	Voltage: 11 ÷ 40Vdc; 19 ÷ 28Vac 50 ÷ 60Hz Absorption: Typical: 1,5 W @ 24Vdc, Max: 4W **(ZE-4DI-2AI-2DO / ZE-4DI-2AI-2DO-P / Z-4DI-2AI-2DO)** Absorption: Typical: 1,5 W @ 24Vdc, Max: 2W **(ZE-2AI / ZE-2AI-P)**		
ENVIRONMENTAL CONDITIONS	Temperature: -25 ÷ + 70 °C Humidity: 30% ÷ 90% non condensing. 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 mm^2		
COMMUNICATION PORTS	RS485 COM1 on IDC10 connector. RS485 or RS232 M10-M11-M12. Ethernet 100 base T RJ45 front. **(ZE-4DI-2AI-2DO /-P)** side micro USB port. **(Z-4DI-2AI-2DO)**		
DIGITAL INPUTS	**Valid only for instruments ZE-4DI-2AI-2DO / -P; 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. Absorbed current 3mA@12Vdc,10mA@24Vdc.		
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.		
COUNTERS:	**Valid only for instruments ZE-4DI-2AI-2DO; Z-4DI-2AI-2DO:** 4 32bit resettable counters on non-volatile memory. Max frequency 5 KHz		
DIGITAL OUTPUTS	**Valid only for instruments ZE-4DI-2AI-2DO / -P; Z-4DI-2AI-2DO:** Number of channels 2. SPDT free contact relay. Max. voltage 250Vac. Max. current 2 A.		

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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

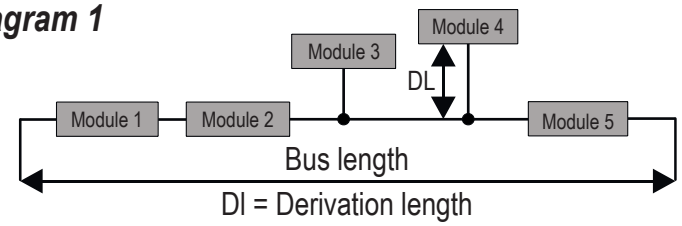
These are open type devices intended for installation in a final casing/panel that offers mechanical protection and protection against the spread of fire.

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 (see Diagram 1).
- Derivation length: maximum length of a derivation 2 m (see Diagram 1).

Bus length	Derivation length
1200 m	2 m

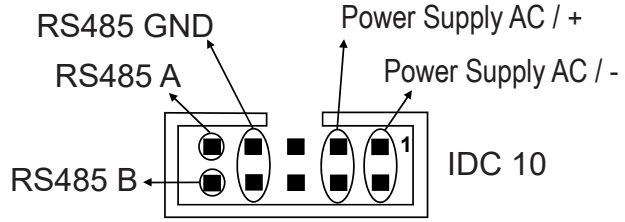
Diagram 1



For maximum performance, it is recommended to use special shielded cables, designed specifically for data communication.

IDC10 CONNECTOR

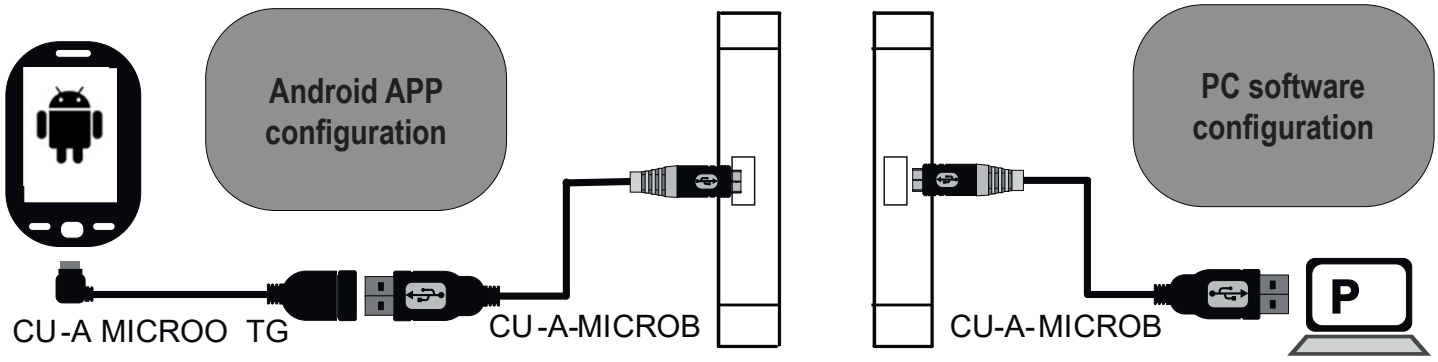
Power supply and Modbus interface are available using the Seneca DIN rail bus, via the IDC10 rear connector, or the Z-PC-DINAL-17.5 accessory.



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 and can be configured using applications and/or software programs. The USB serial port uses the following communication parameters: **38400 BAUD, 8BIT, NO PARITY, 1 STOP BIT.**
The USB communication port behaves exactly like that of the RS485 or RS232 bus except for the communication parameters.



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Check that the device in question is included in the list of products supported by the Easy Setup APP in the store.

SETTING THE DIP-SWITCHES

⚠ WARNING

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

SW1 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

KEY	
ON	
OFF	

⚠ CAUTION

Where present, DIP3 and DIP4 must be set to OFF.
If set differently, the instrument will not work correctly.

RS232/RS485 SETTING:

RS232 or RS485 setting on terminals 10 -11 -12 (serial port 2)

SW2		
ON		**RS232 ACTIVATION**
OFF		**RS485 ACTIVATION**

WEB SERVER

To access the maintenance Web Server with the factory IP address **192.168.90.101** enter:

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.

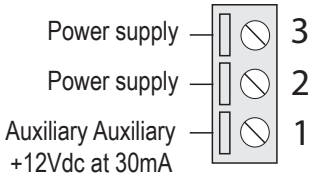
ELECTRICAL CONNECTIONS

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:

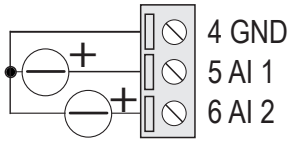
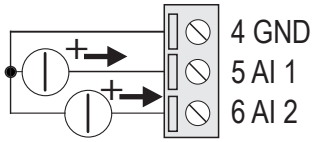
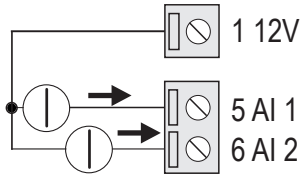
- use shielded signal cables;
- connect the shield to a preferential instrumentation earth system;
- separate shielded cables from other cables used for power installations (transformers, inverters, motors, induction ovens, etc...).

POWER SUPPLY



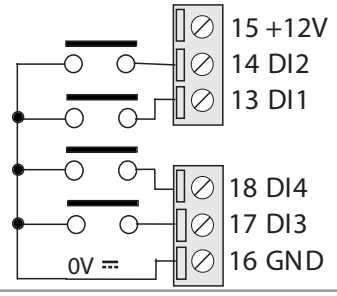
The power supply is connected to terminals 2 and 3.
The supply voltage must be between:
11 and 40Vdc (indifferent polarity), or between 19 and 28 Vac.
The power supply source must be protected from the malfunctions of the module through an appropriately-sized safety fuse.

ANALOGUE INPUTS

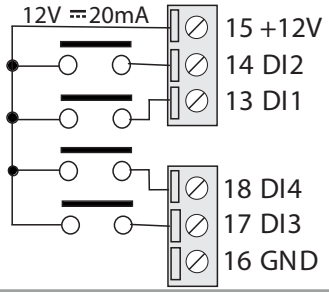
Voltage	Active sensor current (4 wires)	Passive sensor current (2 wires)	
			The module has two analogue inputs that can be configured via software as voltage or current. For the configuration software, see the user manual

DIGITAL INPUTS (ONLY ZE-4DI-2AI-2DO / -P and Z-4DI-2AI-2DO)

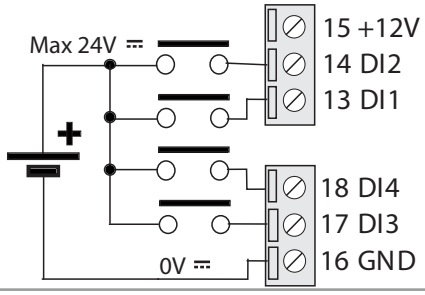
NPN INPUT



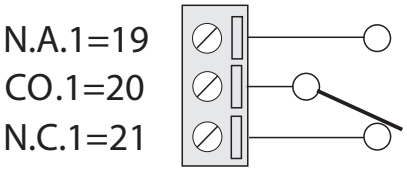
PNP INPUT

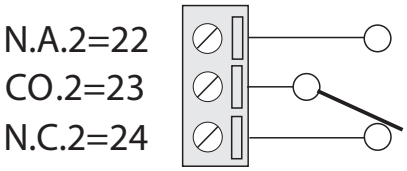


WITH EXTERNAL POWER



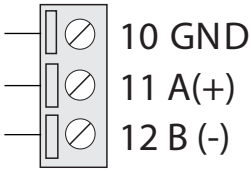
DIGITAL OUTPUTS (ONLY ZE-4DI-2AI-2DO / -P and Z4DI-2AI-2DO)



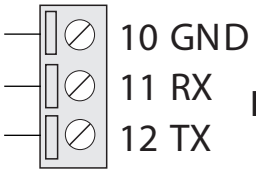


The has two digital outputs with free contacts.
The two figures show the internal relay contacts available.

COM2 SERIAL PORT (ZE-4DI-2AI-2DO, ZE-2AI and Z4DI-2AI-2DO)



RS485 SERIAL PORT (SW2=OFF)



RS232 SERIAL PORT (SW2= ON)

The module has a COM2 serial port at terminals 10-11-12
configurable via switch SW2