INSTALLATION MANUAL

Z-8TC-SI
Z-8TC-SI-LAB

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.

DOCUMENTATION
Z-8TC-SI

DOCUMENTATION
Z-8TC-SI-LAB

SENECA

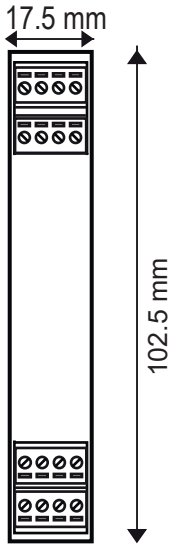
QUALITY MANAGEMENT SYSTEM
ISO 9001:2015

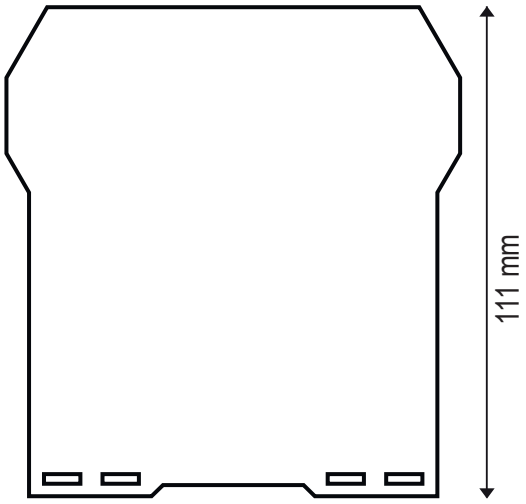
SENECA s.r.l.; Via Austria, 26 – 35127 – PADOVA – ITALY; Tel. +39.049.8705359 - Fax +39.049.8706287

CONTACT INFORMATION

Technical support	support@seneca.it	Product information	sales@seneca.it

MODULE LAYOUT



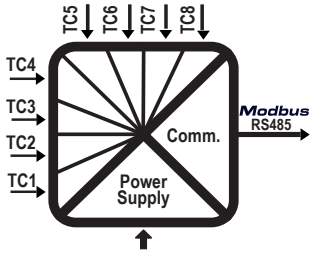


Dimensions: 17.5 x 102.5 x 111 mm
Weight: 100 g
Container: PA6, black

SIGNALS VIA LED ON FRONT PANEL

LED	STATUS	LED meaning
PWR	ON	The device is powered correctly
FAIL	ON	Instrument in error state
RX	Flashing	Data receipt on port #1 RS485
TX	Flashing	Data transmission on port #1 RS485

TECHNICAL SPECIFICATIONS

CERTIFICATIONS	Z-8TC-SI Z-8TC-SI-LAB https://www.seneca.it/products/z8tc-si/doc/CE_declaration https://www.seneca.it/products/z8tc-si-lab/doc/CE_declaration
POWER SUPPLY	Voltage: 10 ÷ 40Vdc; 19 ÷ 28Vac; 50-60 Hz; absorption: 0.6W max
ENVIRONMENTAL CONDITIONS	Operating temperature: -25°C ÷ +70°C. Humidity: 30% ÷ 90% non condensing. Storage temperature: -30°C ÷ +85°C Altitude: Up to 2000 m above sea level Protection rating: IP20
ASSEMBLY	35mm DIN rail IEC EN60715
CONNECTIONS	4-way removable terminal block, 3.5mm pitch, 1.5 mm^2 cable section max
COMMUNICATION PORTS	IDC10 rear connector for IEC EN 60715 DIN bar, ModBUS-RTU, 1200÷115200 Baud Micro USB on the front, ModBUS protocol, 2400 Baud
INSULATION	 **300 Vac** **1500 Vac**
COMMUNICATION PORTS	RS485 on IDC10 connector
PROTOCOL	ModBUS- RTU
TC INPUTS	No. of channels: 8; Type of thermocouples: J, K, E, N, S, R, B, T, L (individually activated and configurable in pairs)

N.B.: A delayed fuse with a maximum rating of 2.5 A must be installed in series with the power supply connection, near the module.

SUPPORTED INPUT SPECIFICATIONS

SENSOR	ACCURACY (AT 23°C)	SOLUTION	MEASURING RANGE	STANDARD
J	± (0.03% + 0.2°C) (**)	0.5µV (~0.01°C @ 0°C)	-210 ÷ +1200°C	EN 60584-1:1997
K	± (0.03% + 0.2°C) (**)	0.5µV (~0.02°C @ 0°C)	-200 ÷ +1372°C	EN 60584-1:1997
R	± (0.03% + 0.3°C) (**)	0.5µV (~0.1°C @ 0°C)	-50 ÷ +1768°C	EN 60584-1:1997
S	± (0.03% + 0.3°C) (**)	0.5µV (~0.1°C @ 0°C)	-50 ÷ +1768°C	EN 60584-1:1997
T	± (0.03% + 0.1°C) (**)	0.5µV (~0.01°C @ 0°C)	-200 ÷ +400°C	EN 60584-1:1997
B	± (0.03% + 0.3°C) (**)	0.5µV (~0.2°C @ 0°C)	+250 ÷ +1820°C (*)	EN 60584-1:1997
E	± (0.03% + 0.2°C) (**)	0.5µV (~0.01°C @ 0°C)	-200 ÷ +1000°C	EN 60584-1:1997
N	± (0.03% + 0.2°C) (**)	0.5µV (~0.02°C @ 0°C)	-200 ÷ +1300°C	EN 60584-1:1997
L	± (0.03% + 0.15°C) (**)	0.5µV (~0.01°C @ 0°C)	-200 ÷ +800°C	Gost 8.585-2001
mV	0.03% + 15µV	0.5µV	± 150 mV	

(*) Up to 250°C a zero temperature value is assumed.
(**) Acquisition speed 100ms, no cold junction compensation.

⚠ CAUTION

Even at constant room temperature, the declared accuracies are achieved after at least 30 minutes from switching on the device.

SPAN mV	±150mV.
IMPEDANCE	> 4MΩ.
ADC	24 bit.
TEMPERATURE DRIFT	< 100ppm/K.
COLD JUNCTION ERROR	<1°C.
TEST CURRENT	<100nA.
CMRR	>120 dB
DMRR	> 70 dB @ 50 Hz; 100 ms. See the user manual for more details.

SETTING THE DIP-SWITCHES

The position of the DIP-switches defines the Modbus communication parameters of the module: Address and Baud Rate The following table shows the values of the Baud Rate and the Address according to the setting of the DIP-switches:

DIP-Switch status					
SW1 POSITION	**BAUD RATE**	**SW1 POSITION**	**ADDRESS**	**POSITION**	**FUNCTION**
1 2 3 4 5 6 7 8		3 4 5 6 7 8		**9**	**BOOTLOADER**
– – – – – – – –	9600		#1		Enabled
– – – – – – – –	19200		#2		Disabled
– – – – – – – –	38400	• • • • • • • •	#...	**10**	**TERMINATOR**
– – – – – – – –	57600		#63		Enabled
	From EEPROM		From EEPROM		Disabled

Note: When DIP - switches 1 to 8 are OFF, the communication settings are taken from programming (EEPROM).
Note 2: The RS485 line must be terminated only at the ends of the communication line.

FACTORY SETTINGS							
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**

KEY	
	ON
	OFF

The position of the dip-switches defines the communication parameters of the module.
The default configuration is as follows: Address 1, 38400, no parity, 1 stop bit.

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

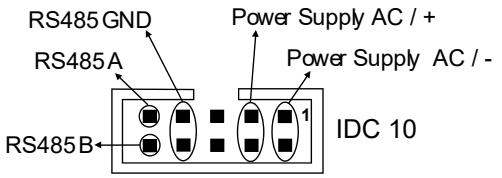
These are open type devices intended for installation in a final casing/panel that offers mechanical protection and protection against the spread of fire.

ELECTRICAL CONNECTIONS

⚠ CAUTION

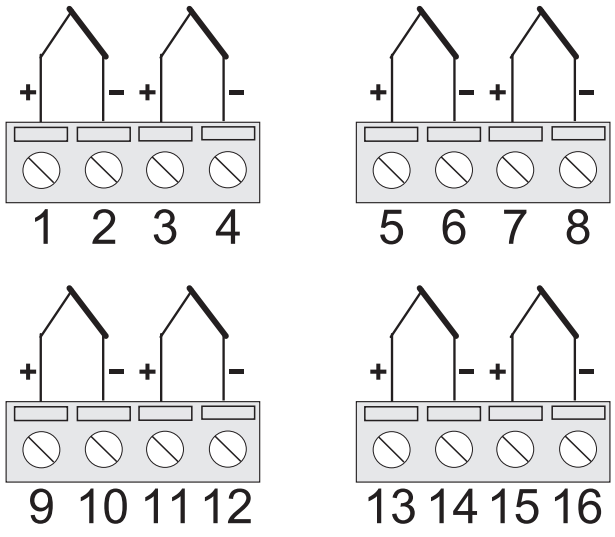
To meet the electromagnetic immunity requirements:
- use shielded signal cables;
- connect the shield to a preferential instrumentation earth system;
- separate shielded cables from other cables used for power installations (transformers, inverters, motors, etc.).

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

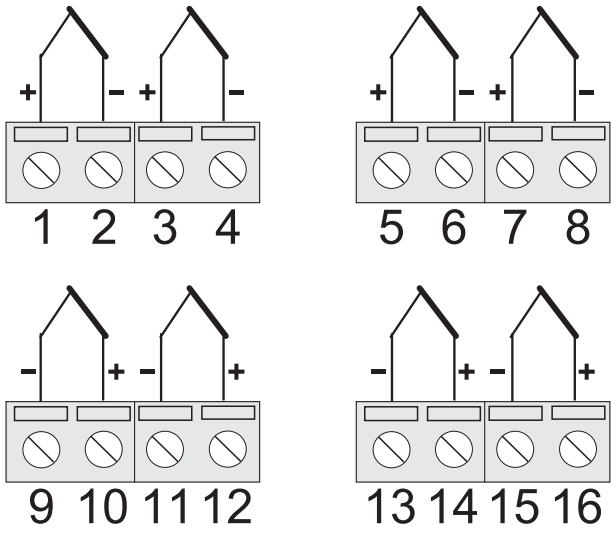


Back connector (IDC 10)
The illustration shows the meanings of the various IDC10 connector pins if signals are to be sent via them directly.

Z-8TC-SI



Z-8TC-SI-LAB

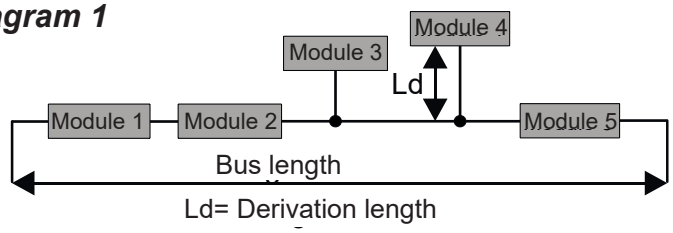


MODBUS CONNECTION RULES

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 manufactured specifically for RS485 communication.