SENECA

Serie Z

EN

# Z113-1

## UNIVERSAL ANALOG INPUT DUAL ALARM THRESHOLD

# Installation Manual

***Contents:***




CE


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Per manuali e software di configurazione, visitare il sito www.seneca.it


CSQ IQNet ISO 9001:2008

## GENERAL SPECIFICATIONS

- Two relay SPST 3A 250V∿ with one output contact in common.
- Available input types: voltage (mV⎓), current (mA⎓), potentiometer (%), thermocouples TC (C°), thermoresistances RTD (C°)
- Removable terminals with section of 2.5 $mm^2$
- Possibility of USB configuration.
- If current input then sensor powered by 2-wire technique is available: 17 V⎓ Max stabilised, 20mA Max with short-circuit protection (terminal 7).
- 1500V∿ isolation between input and power supply 3000 V∿ to the outputs.
- Possibility to set: input type, input filter, alarm output, reiection, burn-out, etc.. (See: www.seneca.it)
- Front panel display: power on, out of range or burn out error and alarms status.

## TECHNICAL SPECIFICATIONS

### Universal Input

| | |
|---|---|
| **Number** | 1 |
| **Resolution** | 14 bit |
| **Sampling time** | Selectable between: 16.66 ms(reiection 60Hz) or 20 ms (reiection 50Hz) |
| **Filter** | The input signal filter's level can be configured:from 0 to 19 |
| **Response time** | Sampling time + 6 ms |
| **Voltage input mode** | Scale span configurable: from 0V to 10V⎓. Input impedance: 120kΩ. Automatic out of range detection. |
| **Current input mode (active / passive module)** | Scale span configurable: from 0mA to 20mA. Internal shunt: 50Ω. Power supply of sensor loop: from sensor to module (passive module) or from module to sensor(actvive module) by terminal 7 (Max 25 mA a Max 17 V) with short-circuit protection. Automatic out of range detection. |
| **Potentiometer input mode** | Scale span configurable: from 1% to 100%. Potentiometer input value from 1kΩ to 100kΩ(a R=330Ω parallel circuit must be added). Energising current:1mA. Input impedance: >5MΩ. Automatic out of range detection. |
| **thermocouples (TC) input mode** | TC type: J, K, R, S, T, B, E, N. input impedance: > 5 MΩ. Automatic burn-out detection |
| **thermoresistances (RTD) input mode** | RTD type: PT100, PT500, PT1000,NI100. (2, 3 or 4 wires resistance measurement). Energising current: 1.1mA (PT100) and 0.11mA (PT1000, PT500). Automatic burn-out detection |

| Errors related to max measuring range | Accuracy | Thermal stability | Linearity error | EMI |
|---|---|---|---|---|
| **Voltage or current input type** | 0.1% | 0.01%/°K | 0.05% | <1% (1) |
| **TC input type: J, K, E, T, N** | 0.1% | 0.01%/°K | 0.2°C | <1% (1) |
| **TC input type: R, S** | 0.1% | 0.01%/°K | 0.5°C | <1% (1) |
| **TC input type: B** (2) | 0.1% | 0.01%/°K | 1.5°C | <1% (1) |
| **Cold junction compensation (for all TC inputs type)** | 2°C tra 0°C e 50°C ambiente | / | / | / |
| **Potentiometer input type** | 0.1% | 0.01%/°K | 0.1% | <1% |
| **Thermoresistance RTD input type: PT100, PT500, PT1000, NI100.**(3) | 0.1% | 0.01%/°K | 0.02%(se t>0°C) 0.05%(se t<0°C) | <1% (4) |

(1) Influence of wire resistances: 0.1 uV/Ω
(2) Output zero if t < 250°C
(3) All the errors have to be calculated with reference to resistive value
(4) Influence of wire resistances: 0.005 %/Ω, max 20 Ω

## Outputs

| | |
|---|---|
| Channel numbers | 2 |
| Output type | RELAYS' SPST N.O. position with common |
| Max RELAY current | 3 A @ 250V∿; 3 A @ 30V⎓ |
| Max RELAY voltage | 250 V∿ CAT. II |

## Power supply

| | |
|---|---|
| Voltage | 10 – 40 V⎓; 19 - 28 V∿ 50 – 60 Hz |
| Consumption | Typical: 2,5 W, Max: 3 W |

## Environmental conditions

| | |
|---|---|
| Temperature | -10 – +65°C |
| Humidity | 30 – 90% a 40°C not condensing |
| Altitude | Up to 2000m a.s.l. |
| StorageTemperature | -20 – +85°C |
| Protection degree | IP20 |

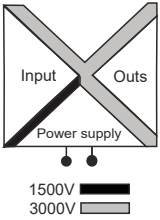
## Electrical connections

| |
|---|
| Removable 3-way screw terminals 200mls pitch |
| MicroUSB frontal plug |

## Dimensions / Module box

| | |
|---|---|
| Dimensions | L: 100 mm; H: 112 mm; W: 17,5 mm |
| Module box | PBT, black |

## Isolations 1500 / 3000 V




## Standards

**The module complies with the following standards:**

CE

**EN61000-6-4** (electromagnetic emission, industrial environment).

**EN61000-6-2** (electromagnetic immunity, industrial environment).

**EN61010-1** (safety).

One max 2.5A fuse must be installed near the module.

**ADDITIONAL NOTES**:
Use in environment with 2 or less pollution degree.
Power Supply must be Class 2.
The relay contacts are suitable for CAT II circuits.

## *INSTALLATION RULES*

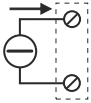
The module is designed to be installed, in vertical position, on DIN 46277 rail. For the best module performance and long life, avoid to place cables raceways and other objects that could obstruct ventilation slits.
Never install the modules near heat sources. We suggest to install the module in the bottom of the control panel.

# ELECTRICAL CONNECTIONS

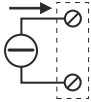
## Power supply


The supply voltage must be between 10 to 40 V⎓ (Any polarity), or between 19 e 28 V~. **These upper limits must not be exceeded to avoid serious damage to the module.**
It's necessary to protect the power supply source against any failure of the module using appropriately sized fuse.

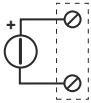
## Universal input



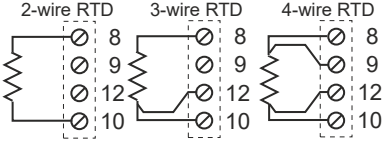

Passive current input (0 – 20 mA). The sensor supplies the current loop.
Use this connection if the input current come from outside.



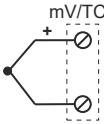

Active current input (0 – 20 mA). The module supplies the current loop.
Use this connection with 2 wire measurement.
The transducer is powered by the module Z113-1.



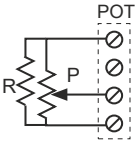

Voltage input (0 – 10 V⎓)




Thermoresistance input type:
PT100, NI100, PT500 and PT1000.

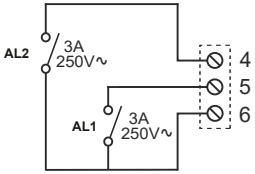



Thermocouple input type: J, K, R, S, T, B, E and N.




Potentiometer input:
One 330Ω resistance parallel circuit is needed.
Potentiometer value must be from1 a 100kΩ

## Outputs




Two relays output with normally open contact.

## *INPUT RANGES*

| | Lower limit | Upper limit |
|---|---|---|
| Voltage (mV) | 0 mV | 11000 mV |
| Current (µA) | 0 µA | 21000 µA |
| Potentiometer (%) | 0 % | 105 % |
| Thermocouple J (°C) | -210° C | 1200° C |
| Thermocouple K (°C) | -200° C | 1370° C |
| Thermocouple R (°C) | -50° C | 1760° C |
| ThermocoupleS (°C) | -50° C | 1760° C |
| Thermocouple T (°C) | -200° C | 400° C |
| Thermocouple B (°C) | 0° C | 1820° C |
| ThermocoupleE (°C) | -200° C | 1000° C |
| Thermocouple N (°C) | -200° C | 1300° C |
| RTD Pt100 (°C) | -200° C | 660° C |
| RTD Ni100 (°C) | -60° C | 250° C |
| RTD Pt500 (°C) | -200° C | 660° C |
| RTD Pt1000 (°C) | -200° C | 660° C |

## *FACTORY SETTING*

- Relays outputs: NORMALLY OPEN
- Safety state : ENABLED
- Safety timer : DISABLED
- Relay inverted state (Normally Closed): DISABLED

## DEFAULT CONDITIONS

| Default module setting parameters: | |
|---|---|
| Input type | Current |
| Input filter (acquired signal) | Disabled |
| Start / End input range | 0 [mA] / 20 [mA] |
| Reiection at mains frequency /<br>Sampling time | Reiection = 50Hz /<br>Sampling time = 20ms |
| Cold junction compensation ( for RTc input) | Disabled |
| Input fail detection: out of range error<br>( if voltage or current or potentiometer input);<br>burn-out error (if Tc or RTD input); fault value measured | Disabled |

## LEDs Signallings

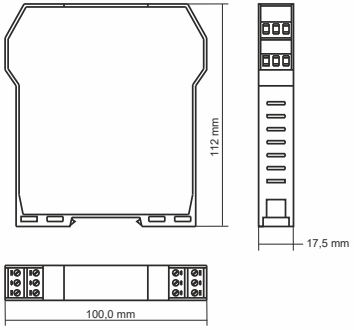
| LED | STATE | *LED Meanings* |
|---|---|---|
| PWR | On | Power supply presence. |
| PWR | Blinking | Out of range or burn out or value error. |
| ALARM1 | On | Alarm1 activated |
| ALARM2 | On | Alarm2 activated |

## PURCHASE ORDER CODE

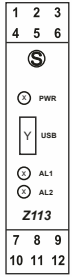
| Order code | Description |
|---|---|
| Z113-1 | Universal analog input dual alarm threshold |
| KIT-USB | USB cable and configuration software |
| CAVO-USB-A-MICRO-B | USB / microUSB cable |

# MODULE LAYOUT

## MODULE DIMENSIONS




## FRONT PANEL




Variations of standard parameters are possible by software (see www.seneca.it).
For more information about a list of all register and their function please read: USER manual.

# DECOMMISSIONING AND DISPOSAL

Disposal of Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collections programs). This symbol, found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical & electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of the product, please contact your local city office, waste disposal service of the retail store where you purchased this product.