

EN **Z109PT2**
THERMORESISTANCE CONVERTER
WITH GALVANIC SEPARATION

GENERAL CHARACTERISTICS

- Thermoresistance input: Ni100, Pt100, Pt500 and PT1000.
- Measurement and re-transmission on isolated analog output, with voltage and current output.
- DIP-switch for selecting: type of input, START-END, output mode (zero elevation, scale inversion), output voltage type (mA or V).
- Front panel indicating: power on, off scale or setting error.
- 3-point insulation: 1500 Vac.

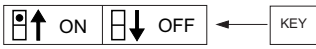
TECHNICAL SPECIFICATIONS

Power supply:	9-40 Vdc, 19-28 Vac 50-60Hz, max 2.5 W; 1.6W @ 24Vdc with 20mA output.
Thermoresistance (RTD) input PT100, PT500, PT1000, Ni100.	2, 3 or 4 wires measurement, energising current 0.56 mA, resolution 0.1 °C, automatic detection of cable interruption or RTD.
Sampling frequency:	15 bits + sign resolution.
Response Time:	140 ms.
Output:	Generated Current 0.20 / 4.20 mA, max load resistance 600 Ω Voltage 0.5 V / 0.10 V / 1.5 V / 2.10 V, min load resistance 2 kΩ Resolution: 2.5 μA / 1.25 mV.
Environmental conditions:	Temperature: -10..60 °C, Humidity min: 30%, max: 90% at 40°C non condensing (also see section Installation instructions).

SELECTION: INPUT / MEASURING SCALE

The type of input is selected by setting the SW1 dip-switch group at the side of the module.
Every type of input is matched to a certain number of scale beginnings and ends values which can be selected with the SW2 group.
The table below lists possible START and END values according to the type of input selected.

N.B.: DIP-switches must be set while the module is powered down, otherwise, the module may be damaged.



SW1: INPUT TYPE

1	2	3	4	TYPE
●	●	●	●	Ni100
●	●	○	○	PT100
●	○	○	○	PT500
●	○	○	○	PT1000

SW2: START and END

START	END	TYPE				
		Ni100	PT100	PT500	PT1000	
1	2	3	4	5	6	(*)
●	○	○	○	○	○	-50 °C -200 °C -200 °C -200 °C
●	○	○	○	○	○	-30 °C -100 °C -100 °C -100 °C
●	○	○	○	○	○	-20 °C -50 °C -50 °C -50 °C
●	○	○	○	○	○	0 °C 0 °C 0 °C 0 °C
●	○	○	○	○	○	20 °C 50 °C 50 °C 50 °C
●	○	○	○	○	○	30 °C 100 °C 100 °C 100 °C
●	○	○	○	○	○	50 °C 200 °C 150 °C 200 °C
○	○	○	○	○	○	(*)
○	○	○	○	○	○	20 °C 50 °C 0 °C 0 °C
○	○	○	○	○	○	40 °C 100 °C 50 °C 50 °C
○	○	○	○	○	○	50 °C 200 °C 100 °C 100 °C
○	○	○	○	○	○	80 °C 300 °C 150 °C 150 °C
○	○	○	○	○	○	100 °C 400 °C 200 °C 200 °C
○	○	○	○	○	○	150 °C 500 °C 300 °C 300 °C
○	○	○	○	○	○	200 °C 600 °C 400 °C 400 °C

(*) START or END are set in the memory with the PC or with the programming push-buttons

Errors referred to max measuring range:	Calibration Error	Thermal Coefficient	Linearity error	Others
Input for thermoresistance (2):	0.1%	0.01%/°K	t > 0°C 0.02% t < 0°C 0.05%	(1)
Voltage output (3):	0.3%	0.01%/°K	0.01%	EMI: <1%
Protection for inputs, outputs/ power supply :	against impulsive over-voltages 400 W/ms.			
Data Memory	EEPROM for all configuration data; storage time: 40 years.			
Standards	EN61000-6-4 / 2002 (electromagnetic emission, industrial environment) EN61000-6-2 / 2005 (electromagnetic immunity, industrial environment) EN61010-1/2001 (safety) All circuits are to be safely isolated from hazardous live by double insulation. The power supply transformer must comply with EN60742: isolating transformers and safety isolating transformers requirements.			
	Notes: • Use with copper conductor. • Use in Pollution Degree 2 Environment. • Power Supply must be class2. • When supplied by an isolated Limited Voltage / Limited Current Current power supply a fuse rated max 2.5 A shall be installed in the filed.			

(1) Influence of cable resistance 0.005%/Ω max 20 Ω.
(2) Values to be added to the errors of the selected input.
(3) All the values have to be calculated on the resistive value.

INSTALLATION INSTRUCTIONS

The module was designed for fitting to guide DIN 46277, in a vertical position.
For optimum operation and long life, make sure adequate ventilation is provided for the module's, avoiding placing raceways or other objects which could obstruct the ventilation grilles. Do not install the modules above appliances generating heat we advise you to install in the lower part of the panel.

SEVERE OPERATING CONDITIONS:

- Severe operating conditions are as follows:
- High power supply voltage (> 30Vcc / > 26 Vac).
 - Power supply of the sensor at input.
 - Use of the output on generated current.
- When modules are installed side by side, it may be necessary to separate them by at least 5 mm in the following cases:
- If panel temperature exceed 45°C and at least one of the severe operating conditions exists.
 - If panel temperature exceed 35°C and at least two of the severe operating conditions exist.

SETTING START AND END AT WILL

The START and END push-buttons under the SW2 DIP-switch group allow to set the beginning and end scale at will within the scale pre-set through the dip-switches.
To obtain this facility it is necessary to use a suitable signal generator, able to furnish the desired values of beginning and end scale.
The procedure is following:

1. Set through dip-switches the type of input, START and END measurement which include the required beginning and end values.
2. Power up the module.
3. Supply a calibrator or simulator of the signal you wish to measure and re-transmit.
4. Set the required START value on the calibrator (or other instrument).
5. Press the START push-button for at least 3 sec. The green LED on the front panel flashes to indicate the value has been stored.
6. Repeat points 4 and 5 for the required END value.
7. Cut power to the module and set to OFF position the dip-switches of group SW2, correspondent to the settings of START and END values.

The module is now configured for the required start and end scale. To re-program it (e.g. for a different type of input) repeat the whole procedure.

SELECTING OUTPUT

DIP-switches numbers 7 and 8 of the SW2 group enable you to set the output with or without zero elevation, or as a normal or reversed output. The SW3 DIP-switch group enables you to select the output type.

N.B.: DIP-switches must be set while the module is powered down, avoiding electrostatic discharges, otherwise the module may be damaged.

SW2: OUTPUT MODE

7	8	OUTPUT MODE
○	○	0 - 20 mA / 0 - 10 V
○	●	4 - 20 mA / 2 - 10 V
○	○	NORMAL
○	○	REVERSE

SW3: OUTPUT TYPE

1	2	OUTPUT TYPE
○	○	VOLTAGE
○	●	CURRENT

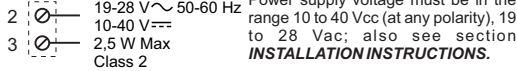
LED Indication on the front

Green LED	Meaning
Flashing (freq: 1 Flash./sec)	Out Range, Burn Out or Internal fault
Flashing (freq ≈ 2 Flash./sec)	Error on dip-switches setting
Steady ON	Indicates the presence of power supply

ELECTRICAL CONNECTIONS

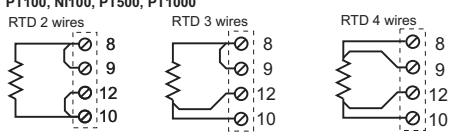
We advise you to use shielded cables for connecting signals. The shield must be connected to an earth wire used specifically for instrumentation. Moreover, it is good practice to avoid routing conductors near power appliances such as inverters, motors, induction ovens, etc.

POWER SUPPLY

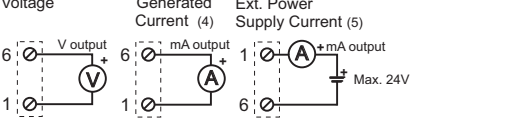


The upper limits must not be exceeded, to avoid serious damage to the module.
Protect the power supply source against possible damage of the module by using a fuse of suitable size.

THERMORESISTANCE INPUT



RE-TRANSMITTED OUTPUT

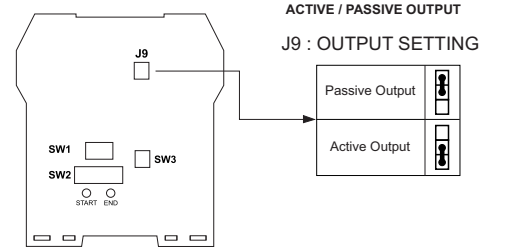


(4) Active Output (powered) to connect to passive inputs.
(5) Unpowered passive output to be connected to active inputs. To enable it, see **SETTINGS THROUGH INTERNAL BRIDGES**.

Electrical ratings for UL:

- Output: 10 V ~, 20 mA
- Input: 20 V ~, 20mA
- Operating Temp.: -20 - +60°C

INTERNAL BRIDGES POSITION SETTINGS THROUGH INTERNAL BRIDGES



The instrument is factory set for a 3 wires temperature measurement, however it's possible to select a 2 or 4 wires reading by programming the module with the PM001601 cable on the front jack and the dedicated Z-SETUP2 software (ATTENTION: it will be possible to change the settings only for the PT100, PT500, PT1000 and Ni100 inputs).

Disposal of Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collection 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 and 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 this product, please contact your local city office, waste disposal service or the retail store where you purchased this product.

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