

CZAKI THERMO-PRODUCT

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Temperature meter

EMT-133

User's manual

Version13.05



CE

1 Safety rules

- read these instructions before use- before turning on the power, make sure that the wires are connected correctly
- ensure operating conditions (power supply, humidity, temperature) according to specifications

2 Characteristics of the device

EMT-133 is a microprocessor-based temperature meter designed to work with thermoresistive sensors (RTD) **Pt100** according to PN-EN 60751, **Ni100** according to PN-83/M53852, thermocouple (TC) **B, J, K, N, R, S, T** according to PN-EN 60584-1 or semiconductor DS18B20. It is designed for installation in a board or control panel. It is characterized by high accuracy, low power consumption and immunity to interference in industrial environment.

It has a digital readout with a display resolution of 0.1°C or 1°C.

3 Technical data

General:

execution	type of sensor	indication range (°C)
EMT-133-Pt100	Pt100	-199 ... 850
EMT-133-Ni100	Ni100	-60 ... 180
EMT-133-J	Fe-CuNi	-199 ... 999(1200)*
EMT-133-K	NiCr-NiAl	-199 ... 999(1370)*
EMT-133-N	NiCrSi-NiSi	-199 ... 999(1300)*
EMT-133-T	Cu-CuNi	-199 ... 300
EMT-133-S	PtRh10-Pt	0 ... 999(1700)*
EMT-133-R	PtRh13-Pt	0 ... 999(1700)*
EMT-133-B	PtRh30-PtRh6	400 ... 999(1800)*
EMT-133-DS	DS18B20	-55 ... 125

** Above 999°C the meter displays only the value above 1000°C (measured value -1000°C) and signals this by including decimal dots after each digit*

- lead resistance for RTD (Pt100/Ni100) < 10 Ω per lead
- Electronic temperature compensation for cold ends of thermocouples

LED digital readout (4 digits):

- display range -199 - 999
- height of digits 13 mm
- LED color Red

Accuracy (for ambient temperature of 23°C±5°C):

- RTD sensors (Pt100/Ni100)..... 0.15% of the indication range ± 1 digit
- TC thermoelectric sensors 0.15% of indication range ± 1 digit
- additional error of compensation of cold ends .. ± 0,4°C
- DS semiconductor sensors ± 0.5°C for the range -10 ... 85°C
± 2°C for range < -10 and > 85°C

Display resolution (automatically switched):

- for range -9.9 ... 99,9 °C 0,1°C
- for range < -10°C and >100°C 1°C

Signaling (message on the display):

- power on Init for 5 sec.
- sensor range exceeded from the bottom or damaged ErLo
- sensor range exceeded from the top or damaged ErHi

Board enclosure 48 x 24 x 90 mm (60g)

- board housing window 44.5 x 21.5 mm
- fixing with handles on the side of the enclosure
- body material self-extinguishing Noryl

Housing IP rating

- front side Ip51
- from connector side Ip30

Power supply:

- mains 230V AC (+10% - 15%), 50Hz, 1VA

- LV low-voltage (optional) 10-30V DC, 500mW

Operating temperature: -25°C...+50°C

Relative humidity: 0 - 90% RH non-condensing

EMC compatibility: industrial environment

- Immunity: according to PN-EN 61000-6-2:2002(U)

-emissivity:.....according to PN-EN 61000-6-4:2002(U)

4 Installation recommendations

General notes:

- mount in the board with mounting brackets

- do not power the device from the same lines as high power devices without appropriate filters

- avoid running sensor cables in the immediate vicinity and parallel to power lines

- avoid the proximity of devices generating high impulse interference

- include a delay

-free 1A fuse in the power supply circuit

Connection of thermoresistive sensors (RTD) Pt100 / Ni100:

- copper connection wires should have equal length and cross section

- it is recommended to connect sensors using the 3-wire method

- if the distance between the meter and the sensor is not large (2-3m), it is acceptable

2-wire connection

- 2-wire method introduces an error of 1°C for each 0.4Ω of resistance cable

Connection of thermoelectric sensors (TC) B, J, K, N, R, S, T:

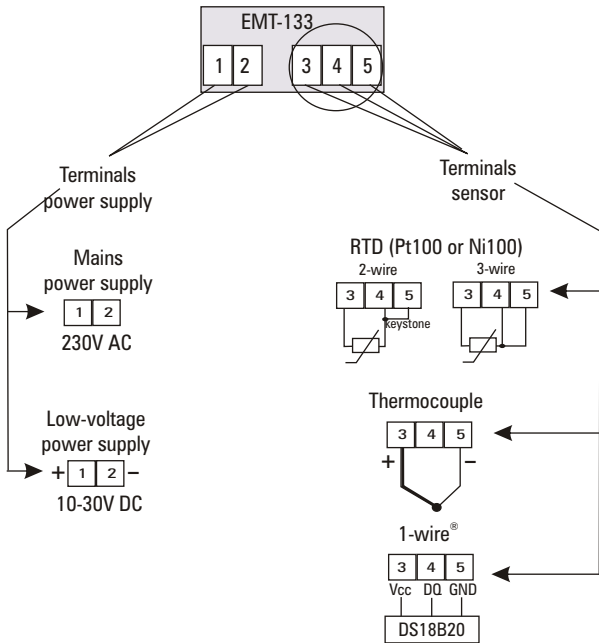
- the thermoelectric sensor should be connected with a suitable wire compensation

- Connecting the sensor with copper wires will introduce a significant measurement error

Connection of 1-wire semiconductor sensors (DS18B20):

- the sensor should be connected using a 3-wire cable with the lowest possible capacitance between the wires

- the sensor should be connected in accordance with the figure below, incorrect connection risks damage to the sensor



Connection of power supply and sensor to the EMT-133 meter.

5. Handling of the meter`

- after proper installation, the meter is ready for operation
- the meter does not require periodic maintenance

Control of the meter working with RTD (Pt100 / Ni100):

- connect a test resistor in place of the sensor (to terminals 6-7-8), the meter should show the temperature corresponding to the resistance of the resistor (the meter is supplied with a control resistor 70...80°C)

Control of the meter working with TC thermocouples:

- shorten the input terminals of the sensor (terminals 6-8), the meter should show the ambient temperature (terminals)

6. Package contents

- meter with two mounting brackets
- test resistor (applies to EMT-133-Pt100 and EMT-133-Ni100)
- instruction manual with warranty card