

User Manual
Firmware version V1.5
14.3.2007

MTR260C

TEMPERATURE TRANSMITTER



Nokeval

DESCRIPTION

MTR260C is a battery powered wireless temperature transmitter that has an internal Pt100 sensor. It is housed in a compact, water tight, plastic enclosure and comes with a metal wall mounting bracket that enables easy fastening. MTR260C has an external antenna for a radio coverage area of up to one kilometer in open space. The wireless concept allows easy implementation, installation and expansion of a measuring system even in difficult locations and installation sites. The transmission interval can be programmed from 5 seconds to 5 minutes.

Manufacturer

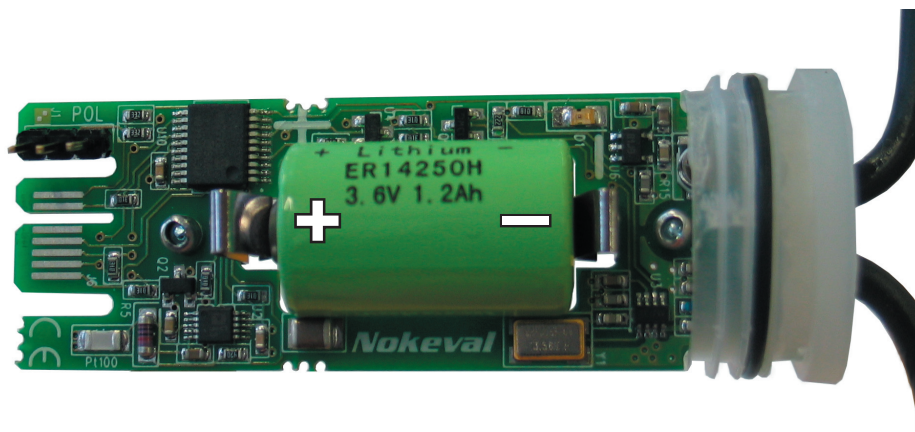
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INSTALLING

Installing/replacing the battery

Detach the device from the metal wall mounting bracket and open the case by pulling the cap part off. Install the battery (ER14250 3.6 V) to the battery slot and close the case. Make sure that the black sealing ring stays in its place when you close the case.



ATTENTION! Turn the battery around before use.

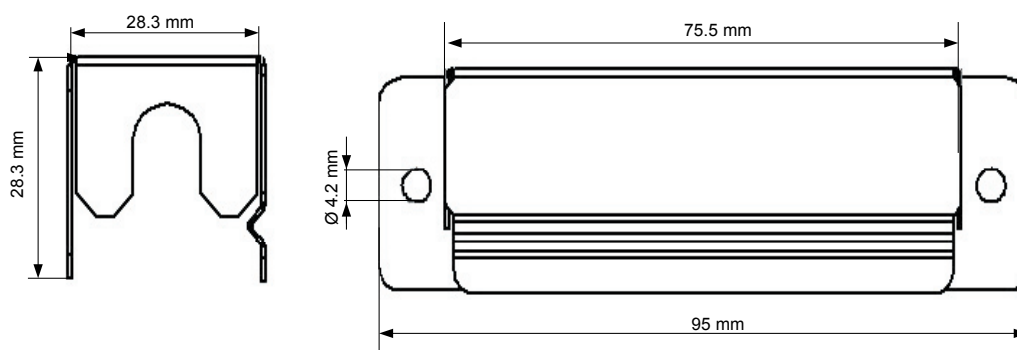
When the device is delivered the battery is reversed on purpose. Install the battery as shown in the picture above.

If the device has been in cold environment wait until the device's temperature has reached the ambient temperature before opening the case to prevent condensation in the device.

The battery voltage will not drop before the battery is almost empty, but then the voltage drop is steep. See the specifications page for more information about battery life time.

Using wall mounting bracket

The wall mounting bracket can be mounted to a wall horizontally or vertically using two screws. MTR260C transmitter locks into its place when it is slid into the bracket.



Transmitter placement

Typical coverage range indoors varies from fifty to one hundred meters depending on the obstacles between the transmitter and receiver. The best signal level is achieved when there is a line of sight between the transmitter and receiver. Walls and obstacles, especially closed metal structures, attenuate the signal and therefore decrease the coverage area. It is recommended to avoid installing transmitters in such places if possible.

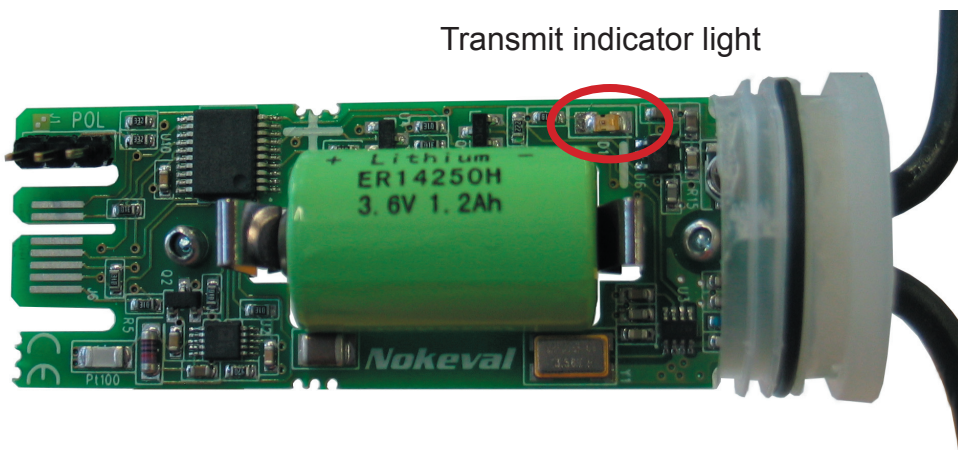
To achieve the best coverage area, place the transmitter so that its antennas are in vertical position. If necessary, you can slightly bend the antennas. It is recommended to bend the antennas outwards especially when the device is installed to a metal wall.

Both the wall mounting bracket and the device have the same ID number attached. This helps placing the transmitter back to its original position if you have temporarily removed the transmitter from the bracket for calibration or configuration.



Indicator lights

The device has a transmit indicator light that flashes every time measurement data is sent.



Connection settings

Use Mekuwin program or Nokeval 6790 hand held programmer to configure the device. You can download Mekuwin from Nokeval's web site for free.

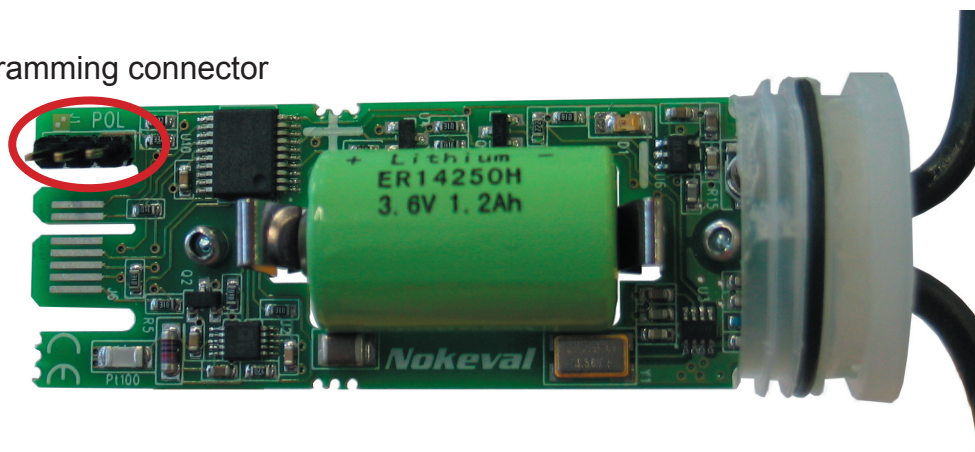
Communication settings for configuration:

Baud rate 9600
 protocol SCL
 address 0

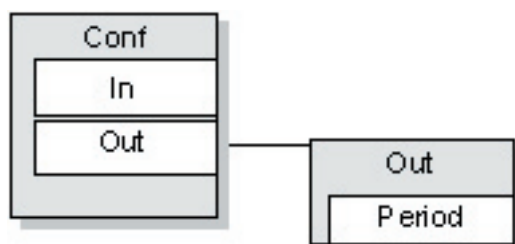
Programming connector

Use RS232-POL or POL cable and POL – pin header adaptor to connect the device to PC's serial port or Nokeval 6790 hand held programmer. When the programming connector is connected the device sends measurement data about three times per second. When the configuration connection is open no measurement data is sent.

Programming connector



Menus



In submenu

Input submenu is reserved for factory settings.

Out submenu

Period

Number of periods between consecutive transmissions. The minimum value for this setting is two and maximum value is 127. One period is approximately 2.7 seconds (25 °C). The duration of a period depends on temperature and varies from 1.5 to 3 seconds. It is not recommended to set the period value smaller than necessary because it has quite a significant effect on battery life.

| Period | Nominal Transmission Interval |
|--------|-------------------------------|
| 2 | 5 s |
| 11 | 30 s |
| 22 | 1 min |
| 67 | 3 min |
| 127 | 5 min 40 s |

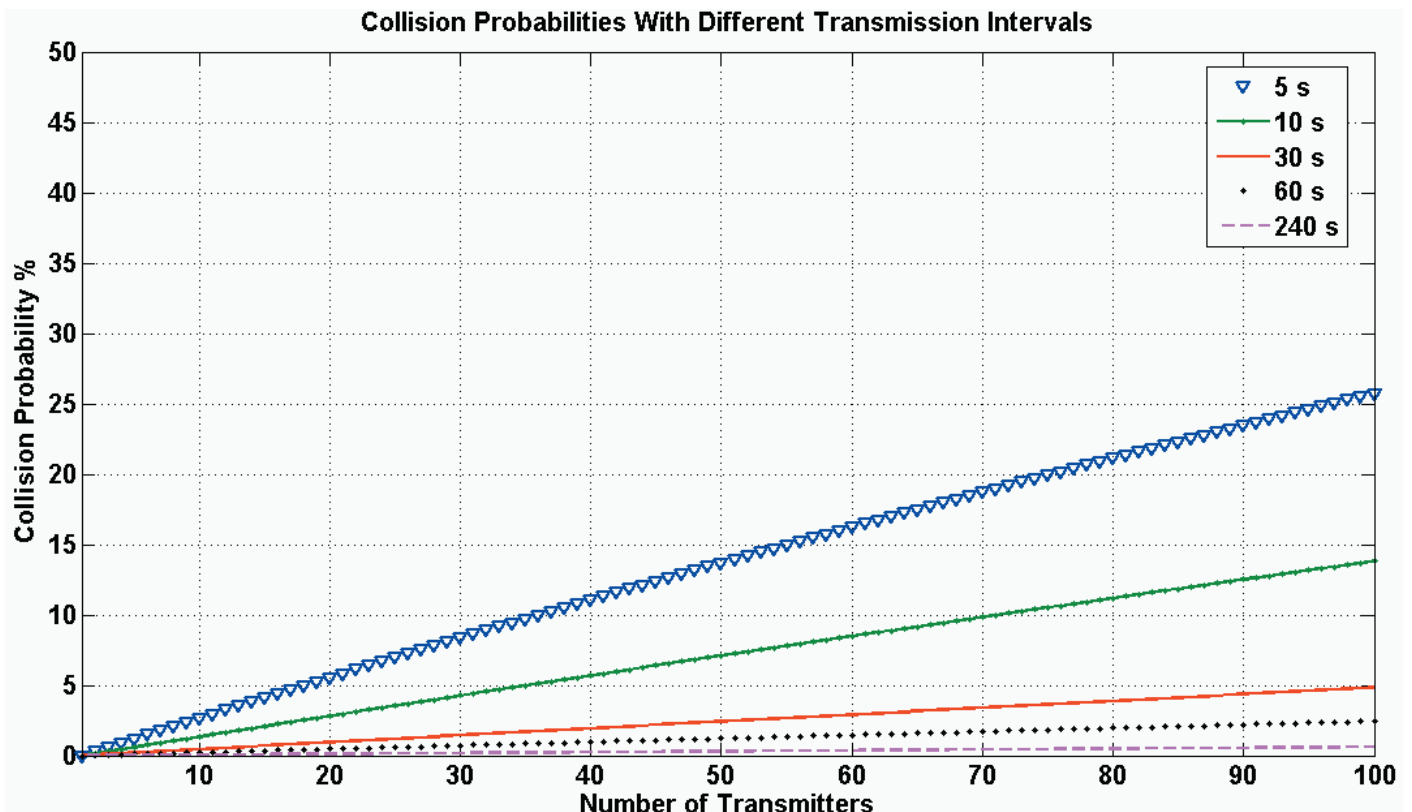
The maximum number of transmitters

The maximum number of radio transmitters in a coverage area is limited by radio standards. The use of repeaters reduces the maximum number of transmitters because repeaters use the same frequency channel as transmitters. The following example table shows the allowed maximum number of MTR260C transmitters in a coverage area.

| Transmission Interval (s) | Receiver | Receiver and 1 repeater | Receiver and 2 repeaters |
|---------------------------|--------------------------------|-------------------------|--------------------------|
| | Maximum number of transmitters | | |
| 5 | 22 | 11 | 7 |
| 10 | 43 | 22 | 14 |
| 20 | 87 | 43* | 29 |
| 30 | 130 | 65 | 43 |
| 40 | 174 | 87 | 58 |
| 50 | 217 | 109 | 72 |
| 60 | 261 | 130 | 87 |
| 70 | 304 | 152 | 101 |
| 80 | 348 | 174 | 116 |
| 90 | 391 | 196 | 130 |
| 120 | 522 | 261 | 174 |
| 240 | 1043 | 522 | 348 |

For example, if you have transmission interval of 20 seconds and one repeater, the maximum number of transmitters is 43*.

The collision probability of radio data packets increases when the number of transmitters in a coverage area increases or the transmission interval decreases. The following picture shows how the collision probability raises as the number of transmitters increases.



SPECIFICATIONS

Input

Pt100

Range -30...+60 °C

Accuracy +/- 1.0°C

Temperature stabilization time is 10 minutes.

Battery

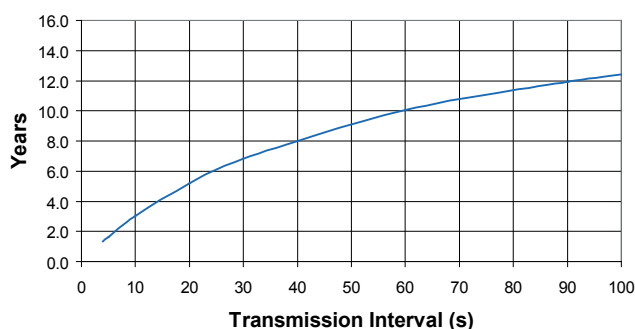
Model ER14250

Voltage 3.6 V

Chemistry type LiSOCl₂ (lithium thionyl chloride)

Size ½AA

Estimated Battery Life Time (25°C)



Battery life time will be shorter in extreme temperature conditions.

Used batteries are hazardous waste. Same battery model must be used to replace a dead battery.

Compatible radio receivers

Nokeval MTR, RTR and FTR series radio receivers.

Environment

Operating temperature -30...+60 °C

Storage temperature -40...+70 °C

Protection class IP67

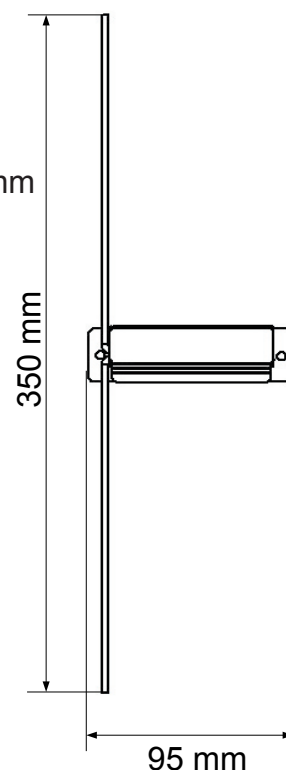
External Dimensions

Transmitter

95 mm x 29 mm x 29 mm

Antenna

175 mm + 175 mm



Weight 65 g
(includes holding bracket)

Radio transmitter

License free 433.92MHz subband f according to ERC/REC/70-03.

Coverage Area

Open space up to 1000 m

Indoors 50-100 m (typically)

Regulations

EMC directive

- EMC immunity EN 61326
- EMC emissions EN 61326, class B

R&TTE directive

- EN 300 220 class 3,
Transmitter power class 8 (10 mW)
- EN 301 489
- EN 300 339

Commission regulation (EC) No 37/2005

- EN 13485
- EN 13486
- EN 12830

