PT100 Temperature Sensor

Measures temperature with a Class A platinum resistance thermometer. This device, belonging to the PRO sensor series, includes Aranet Sub-GHz ISM band radio which wirelessly transmits sensor measurements to the Aranet PRO base station.
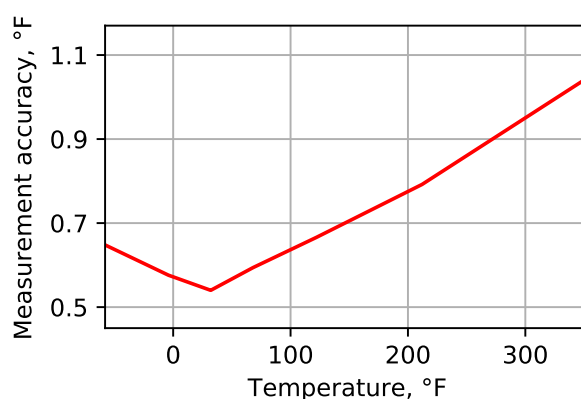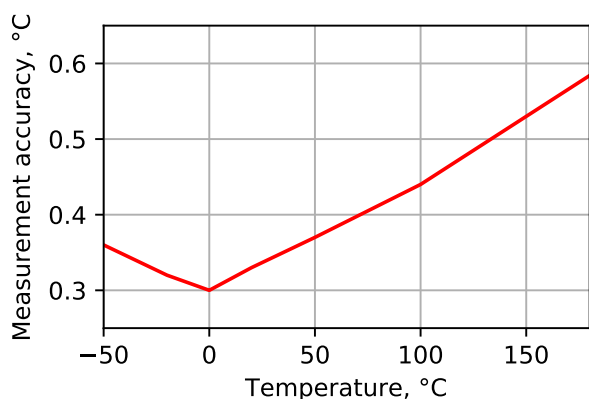
Product numbers

European Union	TDSPT306.010
United States	TDSPT3U6.010
Asia	TDSPT3U6.010
Japan	TDSPT3J6.010

Temperature measurement performance

Range	-50–180 °C	-58–356 °F
Resolution	0.1 °C	0.1 °F
Accuracy at ±0 °C (32 °F)	±0.3 °C	±0.5 °F
Time constant τ	45 s	
Response time 5τ	3.75 min	

• Measurement time constant τ is determined in accordance with standard VDI/VDE 3522 Part 2. This constant refers to the time it takes for the sensor reading to reach 63 % of a new steady-state value in response to a step change in

the environment. Similarly, 5τ corresponds to 99 % of steady-state value. This constant essentially represents the speed at which the sensor adjusts to changes in the measured quantity.

• Temperature measurement accuracy data provided considering temperature of the radio transmitter being constant 25 °C.

Temperature probe specifications

Probe material	Stainless steel	
Cable insulation material	Silicone	
Probe dimensions	$\varnothing 6\times100$ mm	$\varnothing 0.24\times4$ in
Cable length	1 m	3.3 ft

General specifications

Ingress protection rating	IP68	
Operating temperature range	-40–60 °C	-40–140 °F
Dimensions	$\varnothing 35\times120$ mm	$\varnothing 1.4\times4.7$ in
Weight (incl. battery)	100 g	3.5 oz
Enclosure material	ASA plastic	
Power supply	1 pc AA battery	
Packaging includes	1 pc AA alkaline battery, polyester string for hanging the device	

Aranet radio parameters

Line of sight range	3 km	1.9 mi
Transmitter power	14 dBm	25 mW
Data transmission interval	1, 2, 5 or 10 min	
Data protection	XXTEA encryption	

Battery lifetime

Measurement interval	Alkaline battery lifetime	Lithium battery lifetime
1 min	1.3 years	1.7 years
2 min	2.4 years	3.2 years
5 min	5.2 years	7.3 years
10 min	8.4 years	12 years

• Battery lifetime data has been obtained by mathematical extrapolation and is provided for descriptive purposes only and is not intended to make or imply any guarantee or warranty.

• Battery lifetime tests and calculations performed assuming device is at 20 °C (68 °F) and using *Fujitsu Premium*

LR6G07 (alkaline) and *Energizer Ultimate Lithium L91* (lithium) AA batteries as reference.

- The operating temperature range may vary based on the battery type used. Generally, the range for alkaline batteries is between -20–50 °C (-4–122 °F), whereas for lithium batteries, it is -40–60 °C (-40–140 °F).

Pairing process description

As part of the Aranet PRO product series, this device enables wireless sensor reading transmission to the Aranet PRO and PRO Plus base station. Here's how to pair the sensor with the base station:

- Place the sensor within 20 m (60 ft) of the base station during pairing. Once paired, it can communicate over a much greater distance (up to 3 km / 1.9 mi line of sight).

- If the sensor uses a power supply unit, unplug it. Open the sensor casing and remove the battery for at least 20 seconds. Alternatively (for newer hardware revisions), locate the `PAIRING` button on the sensor PCB which can be used to initiate pairing without the removal of battery.

- Access the `SENSORS` menu in the base station Web GUI. Set the measurement interval and select `PAIR SENSOR` to start the pairing process.

- Within a 2-minute window, insert the battery or press the `PAIRING` button on the sensor PCB (for newer hardware revisions) to initiate pairing.

- A successful pairing is indicated by the sensor appearing in the Web GUI and a specific LED blink sequence on the sensor PCB (one to three short blinks followed by a longer fade-out blink of the LED):
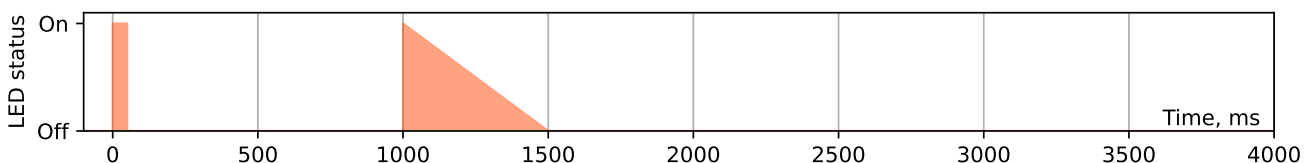
- If pairing fails, the sensor won't appear in the Web GUI, and the LED blink sequence will consist only of three short blinks. In this case, repeat the procedure closer to the base station.
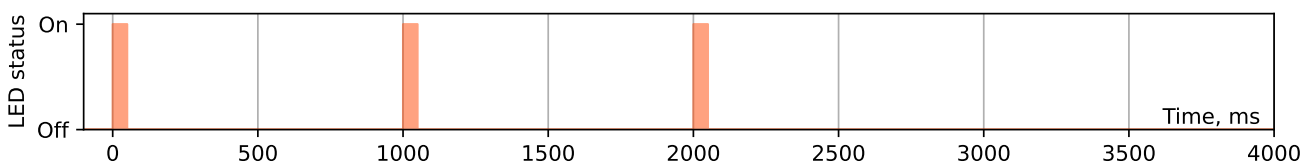
- After successful pairing, customize parameters like name and tags in the Web GUI. Close the sensor casing and install it in the desired location.

Compliance information

CE   Conformité Européenne

FC   Federal Communications Commission (USA)

IC   Innovation, Science and Economic Development Canada