PT100 Transmitter

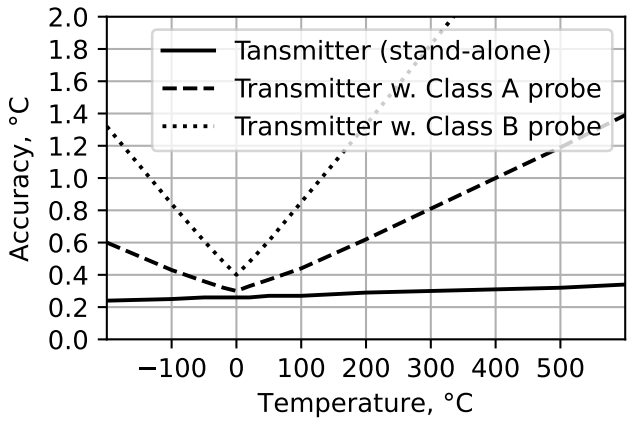
Resistance-to-digital converter for platinum resistance temperature detector. This device, belonging to the PRO sensor series, includes Aranet Sub-GHz ISM band radio which wirelessly transmits sensor measurements to the Aranet PRO base station.

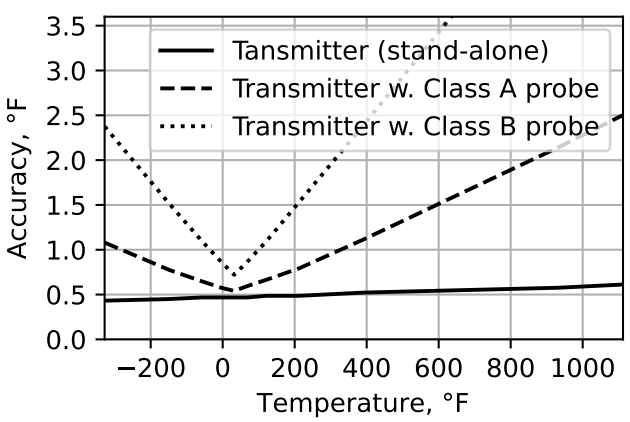
Product numbers

Product number	Radio band	To be used in
TDSPTA06.010	EU868	European Union
TDSPTAU6.010	US920	United States of America, Canada, South America, Australia, New Zealand
TDSPTAU6.010	AS923	BRN, KHM, HKG, IDN, LAO, TWN, THA, VNM, MYS, SGP
Not available	JP923	Japan
Not available	KR923	South Korea

Temperature measurement performance

Probe compatibility	PT100 (any class)	
Range	-200–600 °C	-328–1112 °F
Resolution	0.1 °C	0.1 °F
Accuracy at ±0 °C (32 °F)	±0.26 °C	±0.47 °F





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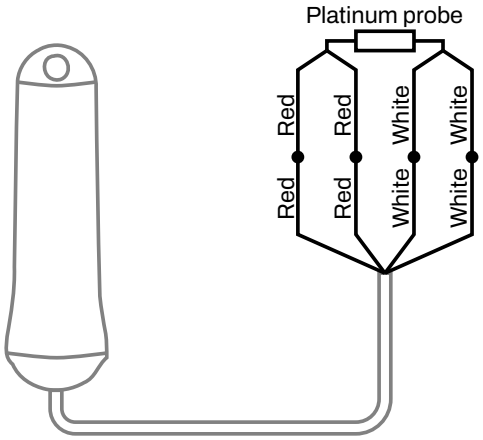
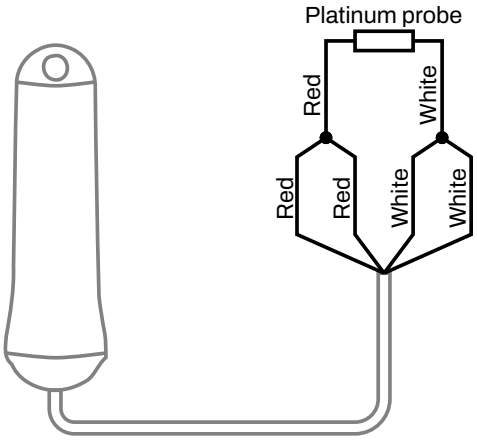
- This transmitter uses 4-wire probe configuration. However, it is compatible also with 2-wire PT100 resistor.
- The table displays the three-sigma (99.7 %) confidence error attributed solely to the transmitter when operating at 25 °C (77 °F). The overall measurement uncertainty depends on the accuracy of the PT100 probe used. Refer to the figures provided above for the calculated total accuracy values of the transmitter when used in combination with standard Class A and Class B platinum sensors.

Probe connection diagram





Connecting 4-wire probe: Connect one pair of leads from the platinum resistor to the red leads on the Aranet transmitter. Connect the other pair of leads from the platinum resistor to the white leads on the Aranet transmitter.

Connecting 2-wire probe: Connect the lead from one side of the platinum resistor to both red leads of the Aranet transmitter. Connect the lead from the other side of the platinum resistor to both white leads of the Aranet transmitter.

- According to IEC 60751, the standard for platinum resistance thermometers, the leads should typically be red and white, as shown in the picture above. However, some manufacturers may use different colors for the leads.
- If you are unsure about the colors of the leads on a particular thermometer, it is recommended to use a multimeter to test their function. On any 4-wire platinum resistance thermometer, there should be electrical continuity between the leads on the same side of the resistor, and a resistance of 100 Ω (for PT100) or 1000 Ω (for PT1000) between the leads on opposite sides of the resistor. Once the function of the leads is confirmed, connect them according to the electrical diagram provided.

Probe cable specifications

Length	1 m	3.3 ft
Cable material	Silicone	
Operating temperature	-40–200 °C	-40–392 °F

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General specifications

Ingress protection rating	IP68	
Operating temperature	-40–60 °C	-40–140 °F
Dimensions	⌀35×120 mm	⌀1.4×4.7 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	

- Specifically for JP923 radio band, reduced transmitter power of 13 dBm (20 mW) is used.

Aranet radio bands and channels

Radio band	Channel 1	Channel 2	Channel 3	Channel 4
EU868	868.1 MHz	868.3 MHz	868.5 MHz	—
US920	917.3 and 922.9 MHz	917.5 and 923.1 MHz	917.7 and 923.3 MHz	917.9 and 923.5 MHz
AS923	923.1 MHz	923.3 MHz	—	—
JP923	923.0 MHz	923.4 MHz	—	—
KR923	923.1 MHz	923.3 MHz	—	—

- This table outlines the radio channels utilized by Aranet Sub-GHz radio technology for transmitting sensor data to the base station, complying with the legislation in various regions. To determine availability of this product in your region and the corresponding channels used, refer to the *Product numbers* table at the beginning of this document.

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.

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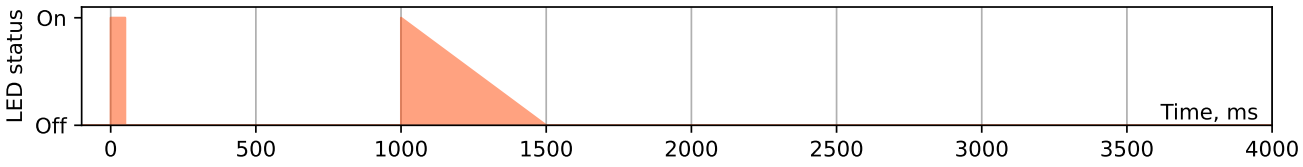
- Battery lifetime tests and calculations performed assuming device is at 20 °C (68 °F) and using *Fujitsu Premium LR6G07* (alkaline) and *Energizer Ultimate Lithium L91* (lithium) AA batteries as reference.
- The operating temperature range may vary based on the battery type used. Generally, the range for alkaline batteries is between -20–50 °C (-4–122 °F), whereas for lithium batteries, it is -40–60 °C (-40–140 °F).

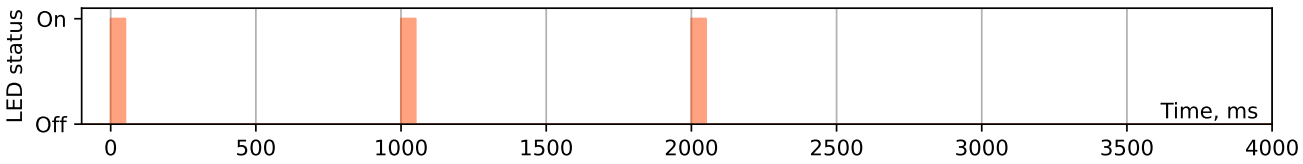
Pairing process description

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:

- **Preparing for pairing:** 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).
- **Power off the sensor:** If the sensor comes with a battery-disconnect pull tab, leave it in place for now. For battery-powered sensors that are already on, open the casing and remove the battery for at least 20 seconds. If the sensor uses a power supply, unplug it. For newer hardware versions, locate the `PAIRING` button on the sensor PCB which can be used to initiate pairing without the removal of battery.
- **Start the pairing process:** Access the `SENSORS` menu in the base station Web GUI. Set the measurement interval and select `PAIR SENSOR` to start the pairing process.
- **Power on the sensor:** Within 2 minutes, pull the battery tab, reinsert the battery, connect the power supply, or press the `PAIRING` button to initiate pairing.
- **Confirm successful 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):



- **Troubleshooting:** 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 process closer to the base station.



- **Final setup:** After successful pairing, customize parameters like name and tags in the Web GUI. Close the sensor casing and install it in the desired location.

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Compliance information

CE Conformité Européenne

FC Federal Communications Commission (USA)

IC Innovation, Science and Economic Development Canada

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