Soil sensor (WET150)

Measures volumetric water content (VWC), electrical conductivity (EC), and temperature of soil. 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	TDSPHW02
United States	TDSPHWU2
Asia	TDSPHWU2
Japan	TDSPHWJ2

Sensor performance

General notes

- 95 % of the sensors perform within the specified accuracy limits at the time of purchase, assuming they are in an equilibrium state.

- Device has been carefully optimized to provide accurate readings in soils and substrates. Readings taken in water or air may not meet the full specification.

Volumetric water content

Range	0–100 %
Resolution	0.1 %
Accuracy	±3 %

- The VWC range is dependent on the media the sensor is calibrated to. A custom calibration will accommodate the necessary ranges for most substrates.

- Given accuracy figure is typical for mineral soils that have solution electrical conductivity of <8 dS/m. The VWC accuracy is dependent on the media the sensor is calibrated to. A custom calibration can improve the accuracy up to 1 % of VWC reading.

Apparent dielectric permittivity

Range	1–80	
Resolution	0.01	
Accuracy	±3 % (in range 1–40)	±5 % (in range 40–80)

Bulk electrical conductivity

Range	0–12 dS/m
Resolution	0.001 dS/m
Accuracy	±(6 % + 0.1 dS/m)

Temperature

Range	-20–60 °C	-4–140 °F
Resolution	0.1 °C	0.1 °F
Accuracy	±0.7 °C	±1.3 °F

General specifications

Ingress protection rating	IP68	
Operating temperature range	-20–60 °C	-4–140 °F
WET150 dimensions (incl. prongs)	⌀40×143 mm	⌀1.6×5.6 in
WET150 prong dimensions	⌀2.5×51 mm	⌀0.1×2.0 in
Aranet transmitter dimensions	⌀35×120 mm	⌀1.4×4.7 in
Cable length	5 m	16.4 ft
Total weight (incl. battery, cable)	409 g	14.4 oz
Power supply	1 pc AA battery	
Packaging includes	1 pc AA alkaline battery	

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	0.8 years	1.0 years
2 min	1.5 years	2.0 years
5 min	3.4 years	4.6 years
10 min	5.8 years	8.2 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):
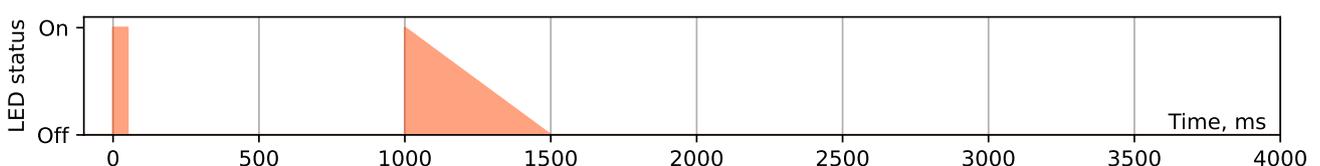
- If pairing fails, the sensor won't appear in the Web GUI, and the LED blink sequence will consist only of three short blinks. In this case, repeat the procedure closer to the base station.
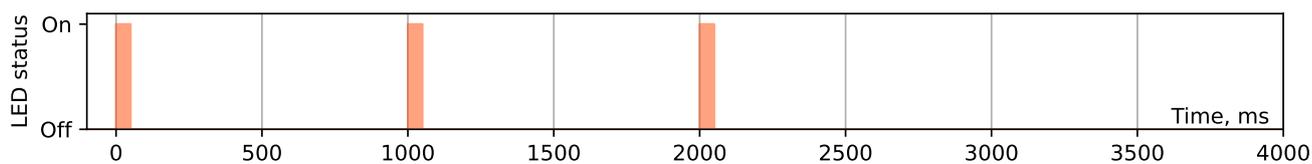
- After successful pairing, customize parameters like name and tags in the Web GUI. Close the sensor casing and install it in the desired location.

Compliance information

CE   Conformité Européenne

FC   Federal Communications Commission (USA)

IC   Innovation, Science and Economic Development Canada