Plant Growth Package

Aranet Horticulture Packages offers a comprehensive, ready-to-use wireless sensor solution tailored for horticultural applications. This package includes the Aranet base station and a selection of wireless sensors designed to monitor key environmental parameters in greenhouses or outdoor cultivation settings. It comes pre-configured, ready to use, and includes 6 months of free Aranet Cloud PRO service.

Product numbers

Product number	Radio band	To be used in
`TDSPHP04`	`EU868`	European Union
`TDSPHPU4`	`US920`	United States of America, Canada, South America, Australia, New Zealand
Not available	`AS923`	BRN, KHM, HKG, IDN, LAO, TWN, THA, VNM, MYS, SGP
Not available	`JP923`	Japan
Not available	`KR923`	South Korea

Package contains

Product number	Quantity	Product name
`TDSBOB*3`	1	PRO Plus LTE base station
`TDAPOE*3`	1	PoE injector for base station power supply
`TDSPT8*2`	4	T/RH IP67 sensor
`TDSPT5*9`	2	T/RH sensor with radiation shield
`TDSKAR*2`	4	PAR sensor with holder
`TDSIR0*1`	2	IR plant temperature sensor

- Package is pre-configured and ready for use, with sensors paired to the base station and labeled for easy identification. Package also includes 6 months of free *Aranet Cloud PRO service*, redeemable via email to Aranet sales support (*sales_support@aranet.com*).
- Product number designations include the symbol "`*`" to signify multiple product numbers, which, depending on the region of use, have either `0` or `U` in place of the asterisk. Refer to the relevant product datasheets for more information.

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Pre-configuration settings

Sensor pre-configuration

Sensor measurement interval	1 min
Sensor labeling pattern	`<type> <number>`, e.g. *T/RH 1*, *T/RH 2*, *VWC 1*

- Sensors are labeled both physically, with tags on the devices themselves, and digitally, with matching names configured in the base station.

Base station pre-configuration

Wi-Fi network settings	Access point mode (for configuration using the WebGUI)
Ethernet network settings	Enabled, with DHCP
Mobile LTE network settings	Disabled, no SIM card inserted
Defined users	Default `root` user only

- To access the base station configuration WebGUI, use the Wi-Fi access point mode with the login credentials (`root` user password) provided on the base station label. For enhanced security, it is strongly recommended to change the default login credentials during the initial setup.
- To enable LTE network connectivity, insert the SIM card and access the WebGUI to activate the LTE network and to enter the required credentials as provided by your mobile network operator.
- If you wish to adjust these pre-configured settings, please refer to the base station user guide. It provides instructions on changing base station settings such as re-pairing sensors to optimize battery life through longer measurement intervals or updating network settings.

Use case

Monitoring key plant growth factors, such as photosynthetically active radiation (PAR), daily light integral (DLI), leaf temperature, air temperature, and humidity, is essential for optimizing plant health, improving yield, and reducing costs.

Light management to maximize photosynthesis

- **Optimal PAR for growth.** Photosynthetically active radiation (PAR) is the spectrum of light that plants use for photosynthesis. By monitoring PAR, growers can ensure their crops receive the right amount of light for healthy growth, avoiding light deficiency or oversupply.

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- **Efficient lighting.** With PAR data, artificial lighting systems can be adjusted to provide the ideal intensity and duration of light, reducing energy costs and preventing plant stress. Monitoring daily light integral (DLI) helps growers optimize light exposure, ensuring plants receive the right amount of light each day to meet their growth requirements.

Plant temperature measurements to track VPD and dew point

- **VPD as transpiration rate indicator.** Higher vapour pressure-deficit (VPD) means the air is drier, leading to increased transpiration rates. This can result in excessive water loss, water stress, wilting, and slow growth. If VPD is too low, plants may not transpire enough, which can lead to slow growth and nutrient uptake problems.
- **Precise dew point evaluation.** Dew point is crucial for controlling humidity, preventing plant stress, and reducing the risk of fungal diseases. It helps manage condensation on plants and fine-tune ventilation.

Measure temperature for optimal growth

- **Optimal temperature conditions.** Monitoring temperature ensures that the greenhouse remains within optimal ranges for each crop. High temperatures can stress plants, while low temperatures may slow growth. Detect hotspots and identify uneven ventilation to promote healthy plant growth.
- **Energy use.** Automated systems that adjust heating and cooling based on real-time temperature data can save energy and reduce operational costs, providing a more sustainable solution for horticultural operations.

Benefits of using the Aranet ecosystem

- All your data in one platform—available anytime, anywhere.
- Easy to add any other Aranet PRO series sensor or use Aranet transmitters to gain data from third-party sensors for the Aranet platform.
- Integrated with third-party control systems using MQTT, Modbus TCP/IP, and BACnet IP protocols, or use the Cloud API to integrate with any web- or cloud-based IT system.

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