Bio Instruments S.R.L.

SENSORS AND SYSTEMS
FOR MONITORING GROWING PLANTS

RTH-3z

Wireless
Solar Radiation, Air Temperature and Air Humidity Sensor

www.phyto-sensor.com

Description

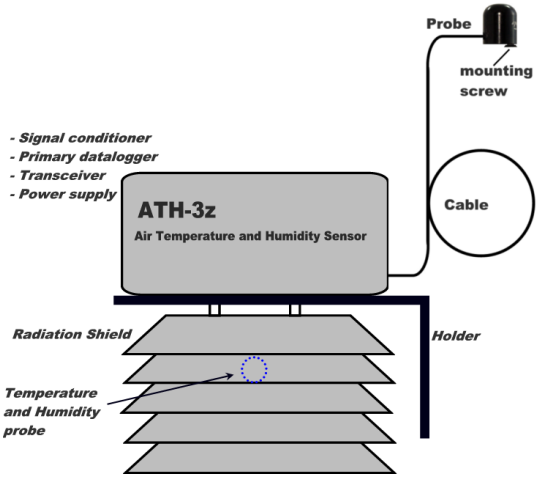
The RTH-3z wireless sensor is an accurate tool for monitoring solar radiation, air temperature and relative humidity (RH) in the open. A micro-processor also calculates vapor pressure deficit and dew point temperature from the RH and temperature measurements. The RTH-3z represents average values of measurements made 10 times evenly during the measurement time interval. For instance, at 30 min time interval, the RTH-3z takes measurements every 3 minutes and, then, calculates and records the average of those ten values measured.

The solar radiation sensor is a silicon-cell photodiode device based on the SP-110 Pyranometer (Apogee Instruments, USA), and calibrated to estimate all of the solar radiation energy in Watts per square meter.

All silicon-cell photodiode pyranometers sub-sample the shortwave radiation spectrum (from 300 to 1000 nm), and are calibrated to predict all of the solar radiation (from 280 to 2800 nm). For this reason, they should only be used to measure unobstructed solar radiation. The solar radiation sensor should not be used to measure electric lights,

under canopies of vegetation or to measure reflected radiation.
This cosine-corrected sensor is designed to maintain its accuracy when radiation comes from low zenith angles.
The solar radiation sensor is connected by a standard 3 meter cable to the waterproof box with electronics, which combines signal conditioner, primary datalogger, RF 2.4 GHz transceiver, and power supply (3xAA Alkaline batteries).

The miniature protected air temperature and humidity probe is placed inside a radiation shield.



Communication

The RTH-3z communicates over the radio 2.4 GHz channel with a network data logging unit. Activation of the sensor and measurement settings are described in the Quick Start Guide of the data logging unit (PM-11z Phytomonitor or PC Phyto-Logger)

Installing the solar radiation sensor

The solar radiation sensor is supplied with the special holder for mounting on a tripod. Keep the sensor at vertical position.

The sensor should be mounted with the cable pointing toward the nearest magnetic pole. For example: in the Northern Hemisphere, point the cable toward the North Pole. In the Southern Hemisphere, point the cable toward the South Pole.

Power

The RTH-3z is powered by 3 AA Alkaline batteries.

Specifications

Solar radiation
Calibration: Natural sunlight
Range of measurement: 0 to 1250 W/m^2
Absolute accuracy: ±5%
Resolution: 1 W/m^2
Power requirements: 4.5 Vdc (3xAA Alkaline batteries)
Operating environment: -25 to +55 °C
Probe dimensions, mm: 24 ∅ × 27.5 H
Cable length: 3m

Temperature
Range: -40 to 60 °C
Resolution: 0.1 °C
Accuracy: ±0.5 (5 to 40 °C)

Humidity
Range: 0 to 100% RH
Resolution: 0.1 %RH
Accuracy: ±2 %RH (5 to 90%RH)
±3 %RH (above 90%RH)

Power Requirements: 4.5 Vdc (3xAA alkaline batteries)

Customer Support

If you ever need assistance with your equipment, or if you just have questions or feedback, please e-mail at support@phyto-sensor.com. Please include as part of your message your name, address, phone, and fax number along with a description of your problem.

Phyto-Sensor Group

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