

1. General description

The smart garden sensor lets you know what's happening in your garden at all times. Whether you're a novice gardener or professional. Inserted in the soil, the Garden Sensor gathers and analyzes data about changing weather and soil conditions. You can always check your garden sensor readings data in a real-time and push a snapshot of conditions in cloud database for future analysis, to check alerts and useful suggestions to maximize plant health. The Smart Garden Sensor tracks light, humidity, air and soil temperatures, soil nutrition and moisture, and then cross-references this information with plant, soil science to recommend which plants will thrive. To test the the state of the soil the microprocessor passes a harmless electrical impulses through it and measures how that signal is altered or attenuated by water and soil additives, such as fertilizer or compost.

The Garden solution includes a BLE mobile app, a cloud-based data warehousing service with aWi-Fi or LoRaWAN™ connectivity, limited edition with direct AP access with WEB based real time settings, monitoring and local data logging. The device is quite user friendly and provides high accuracy results thanks to a powerful microprocessor and high quality sensors.

2. Features and benefits

- System with dual MCU
 - ◆ BlueNRG Cortex-M0 32-bit based architecture core main MCU
 - ◆ 256 kB Flash
 - ◆ 24 kB RAM
 - ◆ Tensilica L106 32-bit RISC processor MCU
 - ◆ 50 kB RAM
 - ◆ External SPI flash up to 16MB

- Communication interfaces
 - ◆ BLE
 - ◆ Compliant with Bluetooth v5.0 BR/EDR and BLE specifications
 - ◆ Class-1, class-2 and class-3 transmitter without external power amplifier
 - ◆ Enhanced Power Control
 - ◆ +12 dBm transmitting power
 - ◆ NZIF receiver with -97 dBm BLE sensitivity
 - ◆ Adaptive Frequency Hopping (AFH)
 - ◆ Bluetooth 5.0 BR/EDR BLE dual mode controller
 - ◆ Multi-connections in Classic BT and BLE
 - ◆ Simultaneous advertising and scanning
 - ◆ Wi-Fi
 - ◆ 802.11 b/g/n
 - ◆ 802.11 n (2.4 GHz), up to 150 Mbps



IoT product series

- ◆ TX/RX A-MPDU, RX A-MSDU
- ◆ Automatic Beacon monitoring (hardware TSF)
- ◆ 4 × virtual Wi-Fi interfaces Power control
- ◆ Simultaneous support for Infrastructure Station, SoftAP, and Promiscuous modes
- ◆ Antenna diversity
- ◆ Integrated Power Management Unit (PMU) for versatile control of power consumption
- ◆ Reduced power modes Sleep, Deep-sleep, Deep power-down

- ◆ LoRaWAN™
- ◆ Type Sub-GHz
- ◆ Output Power 14.00(dBm)
- ◆ Frequency Range 868 MHz ◆ Input Sensitivity 148 (mVpp)
- ◆ Rx Input Sensitivity 48(dB)
- ◆ TX Current Consumption 40 mA (14dBm, 868MHz)
- ◆ RX Current Consumption 14.2 mA
- ◆ Environmentally friendly, RoHS compliant
- ◆ European R&TTE Directive Assessed Radio Module

3. Applications

- ◆ Continuous monitoring: Edyn tracks light, humidity, temperature, soil nutrition and moisture
- ◆ Real-time guidance
- ◆ Garden diagnostic: analyzes your garden to discover which plants best match its conditions and climate
- ◆ Wi-Fi , BLE and LoRaWAN™* connected: Monitor your garden from anywhere

4. Measurement specifications

■ SUN

Luminosity/ irradiance Range: 1 – 65535 lx

■ AIR

Temperature Range: -40 to +120 °C (-30 to 60 °C)

Humidity Range: 0.0 to 100.0% relative humidity %RH

■ SOIL

SOIL Temperature Range: -40 to +120 °C (-30 to 60 °C)

Soil Moisture Range: 0 – 100% relative humidity range %RH] or

Volumetric water content Range: [0 to 55 %] moisture percentage in soil with respect to total mass and capillary saturation

5. Measurement characteristics

- Resolution
 - High rH sensitivity: 0.004% rH/LSB
 - WVC: 0.1% WVC units
 - EC: 0.01 mS/cm
 - Temperature: 0.1 °C
- Accuracy
 - Humidity $\pm 3.5\%$ rH, 20 to +80% rH
 - Temperature accuracy: ± 0.5 °C 15 to +40 °C
 - WVC: $\pm 3.0\%$ volumetric water content
 - With electrical conductivity < 2 mS/cm
 - EC: ± 0.1 mS/cm
- Power
 - 18650 Li-Ion battery charged by PV.
- Weight
 - 0.640 kg. incl. battery
- Logger Capacity
 - 50,000 measurements
- Sample Interval :
 - ◆ Moisture Sample Speed : 240ms ;
 - ◆ Luminosity Speed: 200ms;
 - ◆ Temperature Sample Speed : 100ms ;
 - ◆ Humidity Sample Speed : 100ms ;
- Operation Temperature : -10~50°C
- Storage Temperature : -40~60°C
- Power supply : NCR 18650 PF 3.7v/2.9A

5. Static characteristics

$T_{amb} = 40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$, unless otherwise stated.

Mode	Temperature (°C)	Typical Current (mA)		
		BLE	BLE+Wi-Fi	BLE+LoRaWAN
Idle	-40 to +85	5.1	5.1	5.1
Operate	25	12.5	274.5	144.5
Sleep	-40	0.14	0.14	0.14
	25	0.16	0.16	0.16
	85	0.26	0.26	0.26

5. Dimensions



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