

**BLUETOOTH LOW ENERGY**

# Wireless soil moisture logger

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Soil moisture sensors are used to monitor the amount of water stored in the soil, which acts as a reservoir retaining water available to plants. The soil moisture logger consists of 2 components: a wireless sensor and an external probe which is placed in the soil

You can use a free mobile application to configure the device and read the data from its memory. If you add Efento Gateway, you can build a remote monitoring system.

## Key features

- **Works with Efento Cloud**  
Together with Efento Cloud, the sensors enable constant monitoring, alerting about exceeding safe limits, generating reports and analyzes.
- **Long battery life**  
Loggers have been designed to work for up to 5 years on battery. You can forget about changing the battery frequently or troublesome battery charging.
- **Lower costs**  
Choosing wireless sensors and a cloud platform reduces the installation and maintenance costs.
- **Wide range of sensors**  
Efento sensors can measure various physical and chemical values. If you decide on one sensor today, you can expand your sensors fleet to another types anytime you want.
- **Integration**  
Standard communication protocols allow integration with any cloud platform or mobile application.
- **Easy set up**  
All you need to set up a logger is a smartphone with a free mobile application. The whole configuration takes no more than 15 minutes.

## Technical data

### Moisture sensor

- Measurement range: 0 – 200 cb (kPa)
- Measurement period: configurable from 1 minute to 10 days
- Memory: 60,000 measurements

### Bluetooth Low Energy interface

- Communication: Bluetooth Low Energy (BLE)
- Radio module frequency: 2,4 GHz
- Power: 2,5 mW (4 dBm)
- Range: up to 100 m (LOS)
- Communication standard: Bluetooth Smart (Bluetooth Low Energy, Bluetooth 4.0)
- Transmission period: 1 s

### Mechanical

- The sensor is equipped with a waterproof probe with a length of 1,5m
- Dimensions: 27 x 71 x 71 mm
- Weight: 80 g (including batteries)
- Enclosure: plastic ABS, color white
- Enclosure IP rating: IP30

### Battery

- Battery: 3,6 V, size AA, capacity 2 700 mAh (replaceable)
- Battery operating time: at least 5 years (measurement interval: 15 min)

### Environmental

- Operating
  - ◆ Temperature: -35° to 70°C
  - ◆ Humidity: 0 to 99% non-condensing
- Storage and transportation
  - ◆ Temperature: -40° to 70°C

## Additional information

### How does the soil moisture sensor work?

The external probe which is placed in the soil, is a resistance device that reacts to changes in soil moisture. Inside the probe there is an electrode placed in the granulate, which swells when water is taken from the soil. The granulate is enclosed in a hydrophilic material that provides good conductivity. As the soil dries, the water is removed from the sensor and the resistance measurement increases, and vice versa when the soil moisture increases, the resistance decreases. Reading the measurements allows you to accurately know the soil moisture in the area of the plant root system during irrigation periods and between them.

At any time, the user can check the measurements on the chart that create soil moisture curves, showing how the moisture level changes.

### Data security

Data transmitted wirelessly between the sensor and smartphone / Efento Gateway can be encrypted. Thanks to that, unauthorized persons cannot hijack the communication between sensors and other devices. Efento sensors' software can be updated over the air, which will allow you to easily install any security patch that is released.

### Integration

If you want to integrate Efento loggers with your software, cloud platform or mobile application, we will provide you with the necessary documentation, libraries and / or SDKs.

### Sensor's passport

Sensor's passport documents the entire lifecycle of a device. By accessing the data on Efento Cloud platform, the user can check all information about the sensor: date of sale, warranty status, date of calibration, information on all service activities. In addition, the user can download all documents regarding the device – a duplicate of calibration certificate or service protocols.