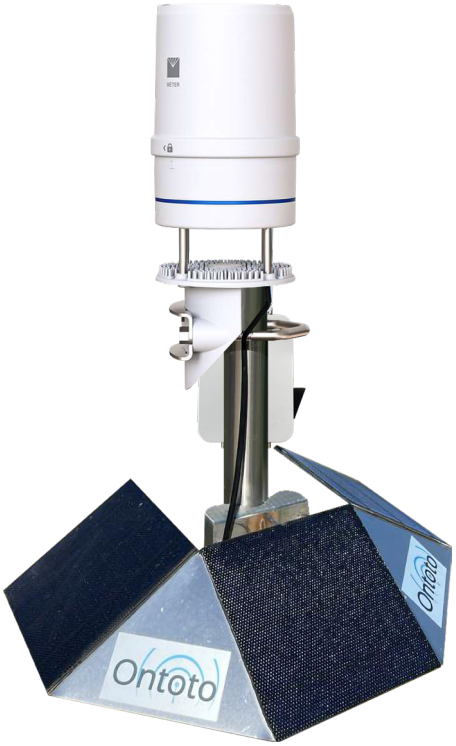
Ontoto

Your data, anywhere

Environmental Monitoring System

Fully integrated NB-IoT telemetry



Overview

Ontoto's Environmental Monitoring System (EMS) is an online, NB-IoT environmental logger designed to support weather station sensors. The data is transmitted and provided in our custom environmental dashboard. The parameters recorded include air temperature, humidity, air pressure, wind direction, wind speed, rainfall, solar radiation and strikes. Dust monitoring is also available.

Special Features

- NB-IoT and BLE connectivity.
- Device configuration with BLE via Ontoto Connect Android or iOS App.
- Sensor data stored in flash memory on board as a backup.
- Sampling and reporting frequencies every 10 minutes.
- Network synchronised utilising universal co-ordinate time (UTC) for all data points.
- Real-time customer support and debugging with the Ontoto Connect App.
- Custom packet to optimise data usage, resulting in significant reduction of transmission costs.
- Strong and durable casing to protect the internal hardware.
- Industrial dust sensor with added external purge system.

Certification

The Ontoto EMS has been designed to comply with the Australian Standards:

- AS/NZS 3820:2009 for low voltage solar powered battery devices

Site Expectations

- The site needs NB-IoT signal to take advantage of the remote telemetry feature of the device.
- The data logger is a scientific instrument that needs to be installed correctly. If the logger is not installed correctly the accuracy of its data cannot be relied upon.

Application Areas

- Traffic
- Agriculture
- Meteorology
- Environmental protection, electricity and water conservancy

Technical Specifications

Power Source	• Solar powered lithium polymer battery
Battery	• Voltage: 3.7 V • Capacity: 10000mAh • Temperature range: 0°C to +50°C
Service life	• 5 years
Solar panel	• 3 x 5 W monocrystalline
Sensor interfaces	• RS485 • SDI-12
Sensor power supply	• Supports 5-12 V sensors • Max 100mA output current @ 12 V
Network communication protocol	• MQTT
Transmission	• LTE NB-IoT-2
Clock accuracy	• ± 2 seconds per day, automatically resynced on a transmission
Memory	• 128MB NAND flash memory, up to 500000 samples of local storage
BLE	• BLE 4.2
Operating temperature	• -20°C to +80°C

Sensor Parameters

- Solar
- Precipitation
- Strikes
- Strike Distance
- Wind Speed
- Min Wind Speed
- Max Wind Speed
- Wind Direction
- Min Wind Direction
- Max Wind Direction
- Gust Wind Speed
- Air Temperature
- Atmospheric Pressure
- Relative Humidity
- Sigma Wind Speed
- Sigma Theta
- Particulate matter measurement with external purge

Software-as-Service
Free Ontoto Web Portal For User

The Ontoto Web Portal is a free and fully integrated cloud platform.

The features of this portal include:

- Remote configuration for all devices, for example configuring sampling and transmission periods, alarm thresholds and firmware updates.
- View raw and derived data in customisable charts.
- Custom charts can be configured to compare data between multiple data loggers.
- Generate and send customised reports according to client requirements.
- Data from grouped devices can be downloaded into a single CSV file.
- Static water level from Australian Height Datum (AHD), Below Top of the Column (BTOC) and custom datum is derived by using the water level above sensor and dip info entered via mobile app.
- Create and manage users.
- Track and notify device health:
  - » Data fault detection.
  - » Missed reporting cycle detection.
  - » Device malfunction detection.
  - » Site wakeup detection.
  - » Device status and battery, signal strength.
- Data forwarding to SCADA systEMS via FTP, SFTP and API.

Software-as-Service
Device Management Portal

Ontoto develops partnerships with all its clients to enhance their experience of managing their data. For clients with a larger number of users and devices, access is provided to Ontoto's free Device Management Portal. This provides all the functionality of the Ontoto Web Portal with additional features to enable advanced management of devices, including:

- Quality assurance.
- Firmware update management.
- Debug log Information.
- SIM and data usage management.
- Device production record.
- User management.
- Support ticket system.
- Billing system.

Ontoto Connect App
(iOS and Android)

The Ontoto Connect mobile app allows onsite management of the data logger to be undertaken wirelessly via BLE. There is no need to connect a laptop directly to the device.

The key features of the Ontoto Connect App are:

- **Data logger configuration**
  Configure the device name, sampling period, transmission period, and alarm threshold.
- **Firmware update**
  Available firmware updates can be downloaded from the Ontoto server and uploaded to the device.
- **Sensor Test**
  The device will scan through each connected sensor. The measurements of each sensor and any detected errors will be displayed.
- **Network Test**
  Tests for NB-IoT connectivity and signal strength and displays any detected faults.
- **Update the device location**
  The location of the device will be updated with the GPS coordinates of the phone and transmitted to the Ontoto Web Portal.
- **Read data log**
  The device stores all recorded data in persistent memory for redundancy and auditing purposes. The data log is processed into a CSV file.
- **Real-time debug log streaming**
  While using the app, the debug log received from the device is automatically streamed to the Ontoto server, allowing for seamless debugging during deployment.

Warranty

Ontoto Pty Ltd will warrant the entire product (excluding the batteries) for 5 years from the date of delivery for parts and labour.