Ontoto
Your data, anywhere

MEERKAT Data Logger

Fully integrated low power NB-IoT telemetry

Overview

The Ontoto Meerkat is a compact, versatile datalogger with ultra-low power consumption and fully integrated cloud solution, ideal for long-term remote telemetry applications. The device has been designed to be easily installed at a greenfield site or as a retrofit. Configuration and deployment are carried out using the Ontoto Connect App. With the capability of over-the-air firmware updates via Bluetooth Low Energy (BLE), the device can be customised to support any SDI-12 or RS485 sensors. All devices can be remotely managed remotely using the Ontoto Web Portal.

Special Features

- Device configuration with BLE via Ontoto Connect Android or iOS App.
- Remote configuration via downlink messages.
- Samples are automatically synced to the hour.
- Local alarming based on configurable thresholds.
- Optimised data usage with custom packet format to significantly reduce transmission costs.
- Customisable firmware for different sensors upon request.
- Real-time customer support and debugging via the Ontoto Connect App.

Certification

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

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

Site Expectations

- The site needs NB-IoT signal to take advantage of the remote telemetry feature of the device.
- The Ontoto Meerkat is a scientific instrument that needs to be installed correctly in a dry secure enclosure.

Power Options

The Ontoto Meerkat has been designed to operate with either lithium-based batteries or an external DC power supply. If the required sampling or transmission frequencies are high, it is recommended to use an external DC power supply. If external power is disconnected the logger will automatically transition to battery source without any power interruption.

Sensor Specifications

The devices are programmed to support a variety of sensors. The specifications for each sensor are available on our website. The device has an on-board barometric pressure sensor for atmospheric correction if required.

Installing 3rd Party Sensors

The Ontoto Meerkat NB-IoT can support 3rd party sensors utilising RS485, SDI-12 interfaces. Once Ontoto has received the sensor and specifications, custom firmware can be generated and a custom adapter manufactured. The datalogger will be pre-programmed allowing easy installation in the field using the Ontoto Connect App.

Technical Specifications

Power Sources	• 12-24 V external DC input • 3×3.6 V D-cell lithium battery pack
Battery	• Voltage: 3.6 V • Capacity: 3 x 14000mAh • Long shelf life: less than 1% self-discharge rate at 25°C per year
Battery life*	• 10 years *sampling level sensor once per hour, transmitting once a day
On-board barometer	• Range: 300-1250 mbar • Resolution: 0.01 mbar • Accuracy: ±0.3 mbar
Sensor interfaces	• RS485 • SDI-12 • 2x pulse inputs • 2x 16-bit 4-20mA channels
Sensor power supply	• Supports 5-12 V sensors • Max 100mA output current @ 12 V

Relay	• Rated Load
	  • 0.3 A at 125 VAC
	  • 1 A at 30 VDC
	• Rated current: 2A
	• Dielectric strength: 1500 VAC
	• Impulse withstand: 1500 V (10 x 160 µs)

Transmission	• LTE Cat NB1
Network communication protocols	• MQTT • CoAP
Memory	• 128MB NAND flash memory, up to 8 million samples of local storage
BLE	• BLE 4.2
Clock accuracy	• +/- 2 seconds per day, automatically resynced on a transmission
Operating temperature	• -40°C to +80°C
Dimensions	• 105 x 85 x 30mm
Weight	• 140 grams

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.

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.

Equipment Configuration

The Ontoto Meerkat data loggers can be installed as a new installation or as a retrofit. All equipment required for the installation is provided.

New installation equipment

Data Logger

Antenna

Steel Post with Flange

Stainless Steel Enclosure

Battery Pack

DIN Rail

Earth Stake and clamp

Earth Clip and Bonding Strap

Retro fit installation equipment

Data Logger

Antenna

DIN Rail

Battery Pack

Warranty

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