
# EFENTO NB-IoT SENSOR

Quick setup over Bluetooth Low Energy Interface, long battery life, seamless integration with IoT platforms

**NB-IoT sensors measure and wirelessly transmit measurements over cellular network using Narrowband-IoT technology. Sensor is powered with batteries which ensure maintenance-free operation for a period of at least two years.**

Since sensors use standard communication protocols, they can be either used with Efento Cloud or be integrated with any third-party IoT platform. Sensors are equipped with Bluetooth Low Energy interface which enables local data readout and quick configuration using a smartphone. Efento NB-IoT sensors can measure temperature, humidity, air pressure. If you require sensors which measure other physical values, please contact us.

## EFENTO CLOUD

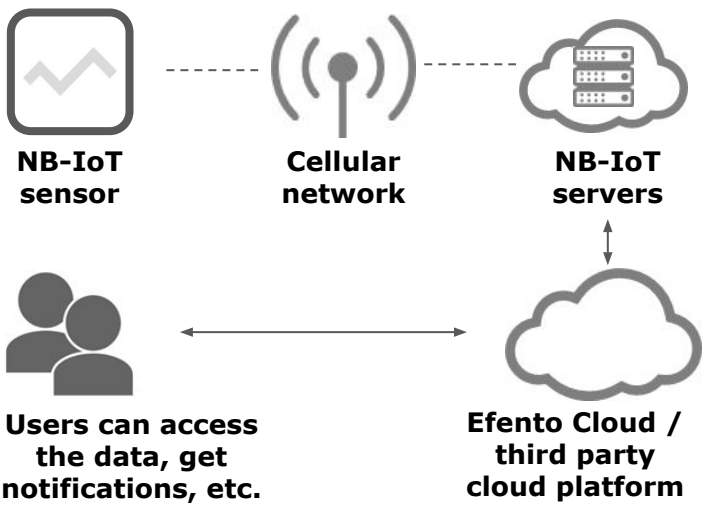
Efento NB-IoT sensors were designed to work with Efento Cloud out of the box. Efento Cloud is a powerful monitoring platform which offers user a wide range of functions.

1. **SMS / E-MAIL NOTIFICATIONS**
   Platform informs users once safe values have been exceeded
2. **STORAGE & PRESENTATION OF DATA**
   Data is presented in a clear way in the form of graphs, tables or on a map
3. **AUTOMATIC REPORTS**
   Measurement data can be automatically sent by e-mail as a PDF or CSV report
4. **LOCATIONS**
   Platform allows user to map the structure of the organization and grant coworkers access to selected locations with required permission levels

## KEY BENEFITS

- ➔ Quick and easy setup remotely or via Bluetooth Low Energy interface
- ➔ Long battery life
- ➔ Sensors measure various physical values (incl. temperature, humidity, air pressure)
- ➔ Dedicated Efento Cloud platform
- ➔ Seamless integration with third party IoT platforms

## HOW DOES IT WORK?




NB-IoT sensors send the data over the cellular network provided by the operators. User only needs to set up an account at a cloud platform and configure the sensor to receive the data from it. This solution allows user to get the information from a sensor without worrying about the infrastructure needed to move the measurements from the sensor to the cloud. Unlike other LPWAN protocols, NB-IoT operates on licensed spectrum what increases network reliability.

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# TECHNICAL SPECIFICATIONS

### Measurements
- Memory size: 65 000 measurements
- Measurement interval: 1 second to 10 days, configurable

### NB-IoT interface
- NB-IoT band:
  - Band 8: UL 880 MHz - 915 MHz, DL 925 MHz - 960 MHz, Duplex mode HD-FDD
  - Band 20: UL 832 MHz - 862 MHz, DL 791 MHz - 821 MHz, Duplex mode HD-FDD
- 3GPP: Release 13
- Power: 20 dBm
- SIM Card: 3FF (Micro SIM)
- Transmission period: configurable, depends on measurement period

### 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)
- Transmision period: 1 s

### Battery
- Battery: 2 x 3,6 V, AA size, capacity 2 600 mAh (replaceable)
- Battery operation time: min. 2 years (measurement period 15 minutes)

### Mechanical
- Dimensions: 27 x 71 x 71 mm
- Weight: 105 g (including batteries)
- Enclosure: plastic ABS, color white
- Enclosure IP rating: IP30, IP42 with a dedicated silicone cover

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

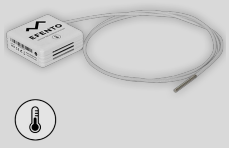
### Software applications
- Efento Cloud
- Efento Logger
- Third party IoT platforms

# SENSOR TYPES

**Temperature**
- Range: -35 ° to 70 °C
- Accuracy: +/- 0,4 ° C in -20 °C to + 70 °C range and +/- 0,5 °C in -35 to -20 °C range
- Accuracy: 0,1 ° C

**Temperature, humidity, air pressure**
- Range: -35° to 70°C / 0 to 99% RH / 330 - 1100 hPa
- Accuracy: +/- 0.4 °C in -20 °C to +70 °C range and +/- 0.5°C in -35 to -20 °C range / 4% in 0 to 80% RH, 7% in 81 to 99% RH / 3 hPa
- Resolution: 0.1°C / 1% RH / 1 hPa

**Temperature and humidity**
- Range: -35° to 70°C / 0 to 99% RH
- Accuracy: +/- 0.4 °C in -20 °C to +70 °C range and +/- 0.5°C in -35 to -20 ° C range / 4% in 0 to 80% RH, 7% in 81 to 99% RH
- Resolution: 0.1°C / 1% RH



**Temperature (external probe)**
- Range: -55° to 120°C
- Accuracy: +/- 0.5 °C in -10 °C to +85 °C range and +/- 2°C in -55 °C to -10 °C and +85 °C to 125 °C range
- Resolution: 0.1°C

**Differential pressure**
- Range: -500 Pa do +500 Pa
- Accuracy: +/- 1 Pa
- Resolution: 1 Pa

**I / O**
- Sensor detects change of state
- Works with both NO / NC types of inputs