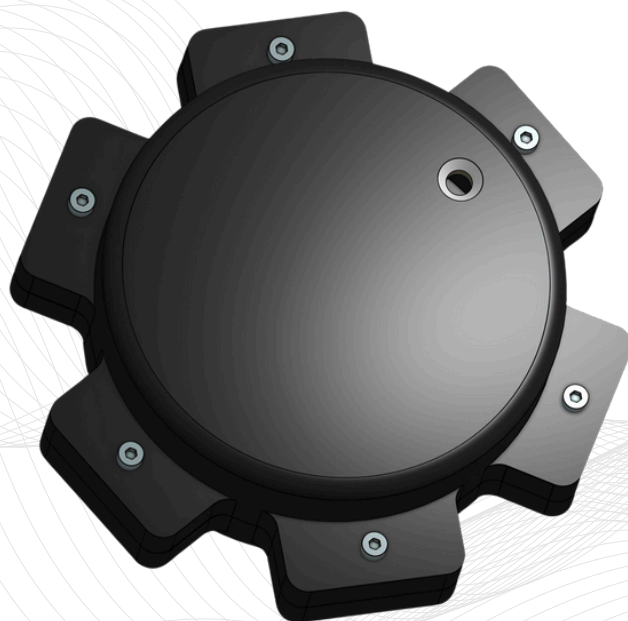




SN10

FILL LEVEL MONITORING SYSTEM



PRODUCT OVERVIEW

The Smart Bin Sensor is a rugged, battery-powered IoT device designed for real-time monitoring of bin fill levels using ultrasonic sensing. It leverages CAT-1 LTE connectivity for reliable, low-latency data transmission and is optimized for a lifespan of 2+ years on a single battery charge. Ideal for waste management, smart cities, and industrial applications.

KEY FEATURES

ULTRASONIC FILL LEVEL DETECTION:

Accurately measures bin fill levels (0– 100%) with ± 2 cm precision.

CAT-1 LTE CONNECTIVITY:

Global LTE bands ensure seamless data transmission even in low-coverage areas.

LONG BATTERY LIFE:

2+ years on a single Li-on battery (rechargeable).

ADAPTIVE REPORTING:

Adjusts data transmission frequency based on fill rate and motion.







TAMPER DETECTION:

Alerts for unauthorized removal or tampering.

WEATHERPROOF DESIGN:

IP67-rated housing for outdoor durability

TECHNICAL SPECIFICATIONS

| CATEGORY | DETAILS |
|--|---|
|  SENSOR | Ultrasonic Sensor: 20–400 cm range, ± 2 cm accuracy |
|  CONNECTIVITY | LTE CAT-1 Module: B1, B3, B5, B8, B20, B28. Fallback: 2G/3G/NB-IoT (configurable). SIM: eSIM/4FF Nano SIM with multi-carrier roaming. |
|  POWER | Battery: 2 x Li-ion(10000 mAh). Sleep Current: $<10 \mu\text{A}$. - Battery Life: 2+ years (1 update/hour). |
|  DATA TRANSFER | Update Interval: Configurable (5 mins–24 hrs). Protocols: MQTT, HTTPS, TCP/UDP |
|  ENVIRONMENTAL | Operating Temp: -20°C to $+70^{\circ}\text{C}$. IP Rating: IP67 (dust/waterproof). |
|  MECHANICAL | Dimensions: 130 x 130 x 50 mm. Weight: 150 g. |

FUNCTIONALITY

FILL LEVEL MONITORING:

Ultrasonic sensor measures bin fill levels and triggers alerts at user-defined thresholds (e.g., 80% full).

Data transmitted to cloud platforms (AWS IoT, Azure) via LTE.

ADAPTIVE POWER MANAGEMENT:

Sleep mode during inactivity; wakes on motion or scheduled intervals.

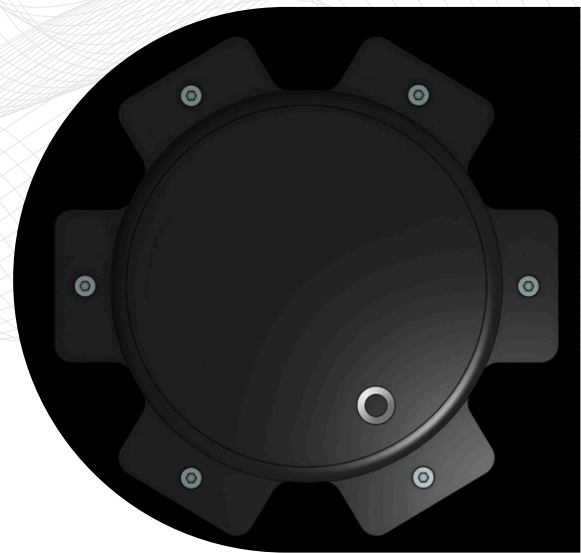
"Battery Low" and "Battery Critical" alerts via SMS/email.

TAMPER DETECTION:

Accelerometer detects unauthorized movement or removal
Instant alerts to administrators.

REMOTE CONFIGURATION:

Over-the-air (OTA) updates for firmware and reporting intervals.



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