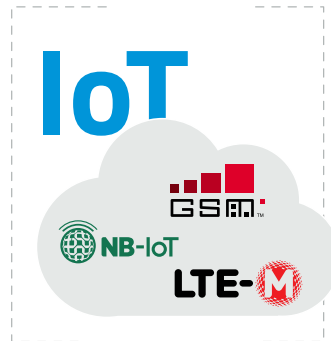
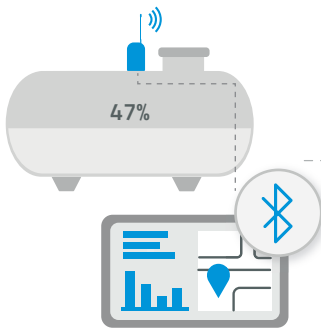




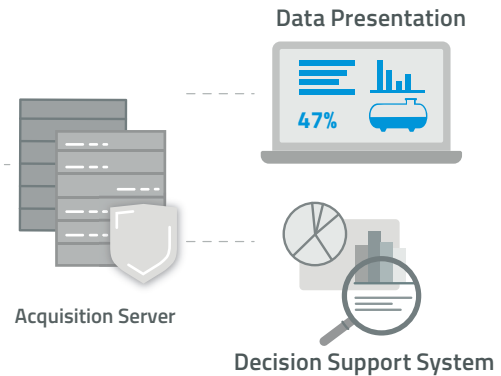
LPG Tank Monitoring

ALEVEL 1x5 Smart Tank Level Sensor for cellular IoT networks

ALEVEL 1x5



IoT Ecosystem



Multi IoT Connectivity



Long life battery (up to 10 years)



Bluetooth Low Energy (BLE)



Easy installation, no tools needed



Robust design for outdoor operation



GPS option



Compatible with click-in dials socket



Certified to work in hazardous locations

ALEVEL 1x5 is an IoT smart tank sensor that clicks in to standard Rochester R3D® mechanical dials* commonly used on float arm level gauges. It provides wireless communication autonomously with IoT (LPWAN) technologies. With a built-in hall sensor, the module detects the magnetic field direction of a gas level indicator. Its Bluetooth LE module enables to collect tank level data and allows easy configuration with dedicated mobile application.

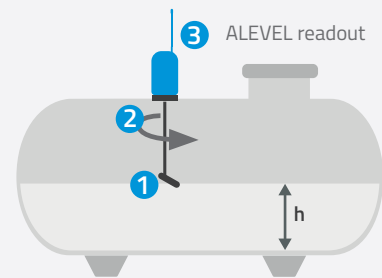
The ALEVEL 1x5 sends LPG levels once per day, through a wide range of IoT networks. Functions include tank fill detection, dial removal, spill detection, and high & low level alerts.

* By default ALEVEL supports most types of R3D gauges. It is also available with freely definable dial programmable for different types of tanks.



Operating Principle

ALEVEL 1x5 reads LPG level in tanks and sends the data at user-designated times. The movement of the arm (1) results in the circular motion of the magnet (2) and the change of magnetic field - ALEVEL reads the magnetic field direction based on the Hall Effect. This value indicates the float arm position, which provides the actual fuel level inside the tank. Additionally, the level indicator provides visual level indication, independent of electronics (3).

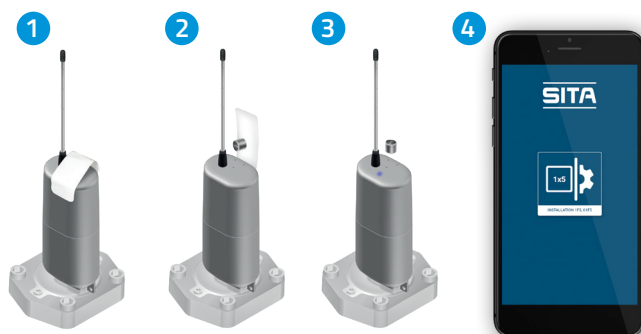


Installation Process

1. Click the ALEVEL into the R3D dial.
2. Remove the label to activate the ALEVEL. LED will blink 6 times.

Optional device function check:

3. Briefly touch the magnet to the top. The LED will start blinking, IMR test starts.
4. Use the mobile application to register the ALEVEL on site and to check signal quality.



Technical specification

Low Power Communication*

- NB-IoT, LTE Cat. M, GSM
- GNSS (GPS + QZSS), accuracy: 5m, positioning on event (installation, command) + every quarter to reconfirm the location
- Remote configuration and firmware upgrade
- Bluetooth Low Energy - range up to 30m

* Depends on target specifications

HMI interface

- Magnetic "button"
- Blue LED, transmission confirmation, commissioning
- Mobile application for configuration/readout by Bluetooth Low Energy (BLE)

Sensor & Measurement

- Tank level hall sensor, sensor scan every 15 minutes: resolution 0,1%, accuracy $\pm 3\%$
- Ambient temperature, sensor scan every 15 minutes: resolution $\pm 1^\circ\text{C}$, accuracy $\pm 3^\circ\text{C}$
- Battery state range: s0-s3 as follows:
(0% < s0 < 10% < s1 < 20% < s2 < 40% < s3 < 100%)
- Timestamp accuracy ± 5 min

Battery

- Non-replaceable, internal lithium battery
- 10 year lifetime (depends on target specifications)

Mechanical

- Dimensions: H (H with antenna) x L x W
78mm (175mm) x 33mm x 23mm
- Weight: 78g
- Connector: Click-in dial socket

Tank level radio frame

- Current tank level and ambient temperature
- Data archive: last 3 days - tank level
- Events: level (high, low), filling, spilling, stuck gauge (generated by system, based on consumption profile)
- Battery state, device status, removed from dial indication

Archive

- 1 month of 6-hour records of tank level and ambient temperature
- Last 10 refills with timestamp
- Last 10 very high level with timestamp
- Last 10 very low level with timestamp
- Last 10 "button" activations with timestamp

ALEVEL versions

- ALEVEL 1A5 - NB-IoT module
- ALEVEL 1G5 - GSM module
- ALEVEL 1M5 - Cat.M module

Environmental Parameters for ALEVEL 1x5

- Operating temperature (data transfer): -27°C to $+60^\circ\text{C}$
Storage temperature (durability, measures stored in device archive): -40°C to $+60^\circ\text{C}$
- IP 68
- UV resistant
- Certified for hazardous locations:
ATEX: II 1G Ex ia IIB T3 Ga, OBAC 19ATEX0273X
QPS: Class I, Div. 1, Groups CD, T3; Class I, Zone 0, AEx ia IIB T3 Ga
- IECEx OBAC 19.0006X
- Contains FCC ID: XMR201912BG77
- Contains IC: 10224A-201912BG77

TM_ALEVEL_1x5_cellular_EV_20210506

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