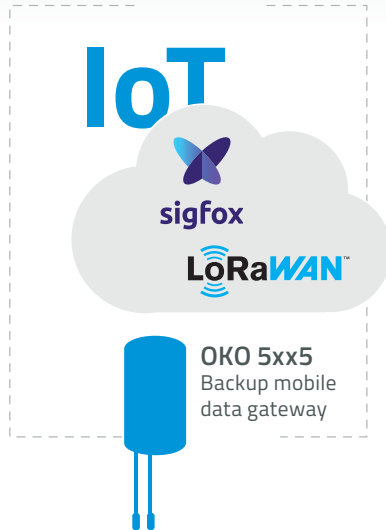
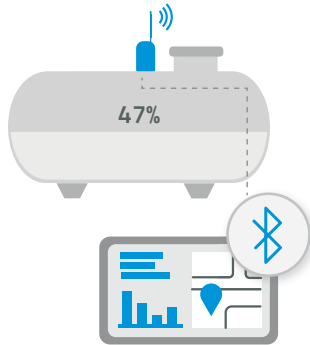




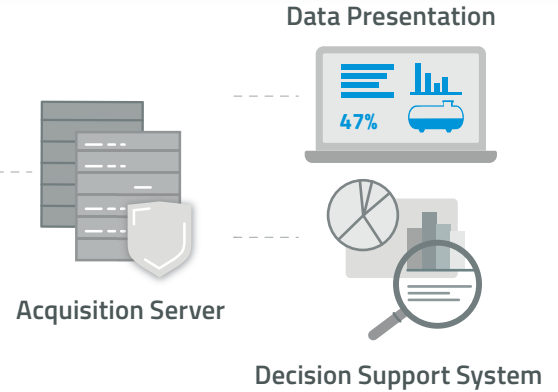
# LPG Tank Monitoring

ALEVEL 1x5 Smart Tank Level Sensor for non-cellular IoT

## ALEVEL 1x5



## IoT Ecosystem



Multi IoT Connectivity



Long life battery (up to 15 years)



Bluetooth Low Energy - BLE (optional)



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 either autonomously with LPWAN technologies or with external gateway. 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.

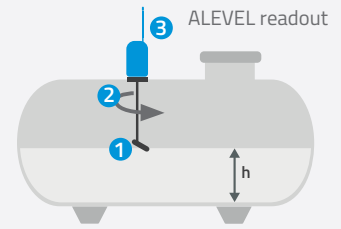
**The ALEVEL 1x5** sends LPG levels once per day, through a wide range of IoT networks. Functions include tank fill detection, dial removal, spill detection, and high & low level alerts.

\* 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).

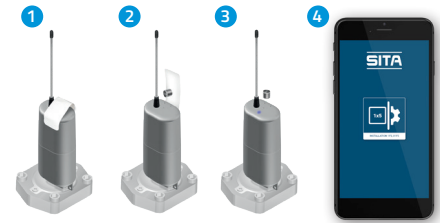


## Installation Process

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

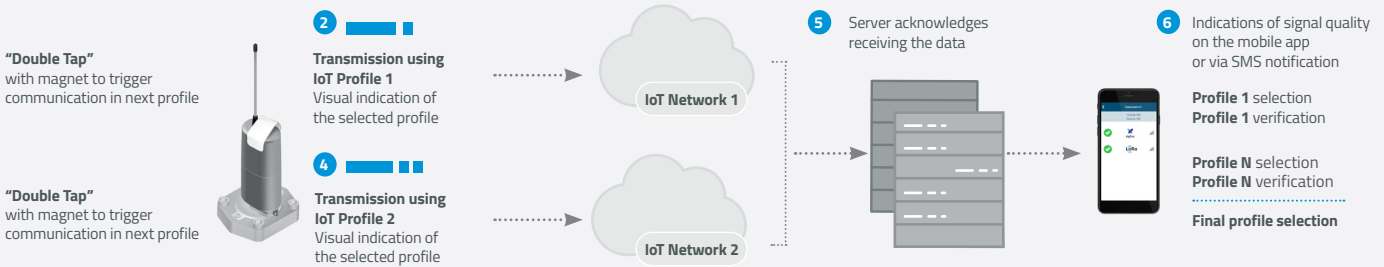
Optional device function check:

3. Briefly touch the magnet to the top. The LED will start blinking and tank level will be transmitted (3 flashes - LoRa, 2 flashes - Sigfox, 1 flash - IMR)
4. Use the mobile application to register the ALEVEL on site and to check signal quality.
5. In the rare event that the ALEVEL is out of range, an OKO 5xx5 can be used as a mobile gateway.



## Operating Principle

Check communication and select the appropriate IoT profile to ensure stable ALEVEL reception. (The functionality is optional and depends on device configuration).



## Technical specification

### Low Power Communication\*

- Sigfox Class 0, Zone: RC1, RC2, RC4
  - LoRa max output power 22 dBm (depending on local regulation)
  - RF radio: 868/915 Mhz, 1mW  
- range: 200 m above the ground tank, 20 m underground tank
  - RF radio: Tank level frame - every 5 min
  - RF radio: bidirectional communication after transmission: data archive, diagnostics, configuration
  - 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

### Sensor & Measurement

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

### ALEVEL versions

- ALEVEL 175 - 868MHz/915MHz FSK IMR
- ALEVEL 1F5 - 868MHz/915MHz, Lora WAN / SIGFOX / FSK IMR

### Global certification

- Sigfox certification - RC1, RC2, RC4

Country	Radio certification	LoRa regional settings	Hazardious Area
Brazil	Anatel	AU915-928	QPS
Europe	RED	EU863-870	ATEX / IECEX
India	WPC	IN865-867	PESO
Turkey	Based on RED	EU868-870	ATEX / IECEX
USA/Canada	FCC/IC	US902-928	QPS

### 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

### HMI interface

- Magnetic “button”
- Blue LED, transmission confirmation, commissioning
- Mobile application for configuration/readout by BLE

### 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

### Environmental Parameters for ALEVEL 1x5

- Operating temperature: -25°C to +60°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
- FCC ID:2AKQSALE1F5

### Battery

- Non-replaceable, internal lithium battery
- Up to 15 year lifetime (depends on target specifications)
- Last 10 “button” activations with timestamp

### Mechanical

- Dimensions: H (H with antenna) x L x W: 78mm (164mm) x 33mm x 23mm
- Weight: 78g
- Connector: Click-in dial socket

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