# LIGO-AIR series datasheet

*Version 1.0.2*

## I. General Introduction

LIGO-AIR Fuel Level Sensor developed and manufactured by SOJI Electronics JSC. The device is designed to measure the level of liquid fuel and other non-conductive liquids in vehicle tanks and stationary fuel storage, applicable in different fields. Equipped with advanced Bluetooth Low Energy technology, LIGO AIR enables seamless, real-time data transmission without the need for complex wiring and easy for installation.

The purpose of creating a new product was to satisfy the increasing demand of the transport telematics market for improved reliability of the design, data, and ease of installation. Unlike its predecessors, the wireless fuel level sensor helps minimize the risk of signal wire tampering.

In addition, the heavy-duty metal structure helps increase protection against environmental factors such as dust, moisture, vibration and high temperature conditions. This ensures that the LIGO AIR sensor maintains stability, durability, and operational lifespan equal to or even greater than that of wired sensors.

## II. Key features

- High accuracy up to 99,5%.
- By utilizing directional antenna technology, the sensor achieves a communication range up to **1.5 times** greater than typical market-available sensors.
- With ultra-low power consumption **(9uA in working mode and 4uA in storage mode)**, the sensor ensures longer battery life and reduced maintenance.
- Can be optionally cut off or prolonged up to 6000mm.
- Wide operating temperature ranges from -40°C to +85°C.
- TX power up to 19.5dBm (LIGO AIR PRO).
- Battery capacity up to 3600mAh (optional) helps to extend battery life of sensor.
- Replaceable battery.
- Built-in accelerometer.
- Built-in 32Mb EEPROM for data logs (Continuously stored for a minimum of 90 days) and setting logs (Maximum 500 logs).
- Built-in Anti-mud oil filter and anti-vibration springs.
- IP69K waterproof standard.
- 8-10 years of battery life.

## III. General applications

- Trucks, excavators, heavy construction machines…
- Marine vessels and electric generators.
- Off-highway machinery including high-temperature & vibration environments.
- Industrial oil storage tanks or stationary storage tanks.

## IV. Technical Specification

| PARAMETER | LIGO AIR | LIGO AIR-PRO |
|---|---|---|
| Standard length (L), mm | 700, 1000, 1500...up to 6000 mm | |
| Measuring error, % | ± 0.5 % | |
| Bluetooth specs | *Bluetooth* 5.4, IEEE 802.15.4-2006, 2.4 GHz, -95 dBm sensitivity | |
| | TX power max: 6dBm | TX power max: ***19dBm*** |
| Advertising Protocol | - SOJI Protocol (default)<br>- Mielta Protocol (setting in mobile app)<br>- Escort Protocol (setting in mobile app) | |
| Power supply:<br>Built-in Battery Li-SOCL2 | 3.6V * 2600mAh(default)<br>3.6V * 3600mAh<br>(optional) | 3.6V * 3600mAh |
| Current consumption in working mode (uA) | 9 | 27 |
| Measurement interval (second) | From 5 to 10 | |
| Advertising message interval (second) | From 5 to 10 | From 10 to 15 |
| Waterproof standard (Ingress protection rating, IP) | IP69K | |
| Operating temperature (°C) | -40...+85 | |
| Resolution (bit) | 12 | |
| Accelerometer | Built-in | |
| Memory | Built-in 32Mb EEPROM | |
| Average sampling period, s | 5 to 60 | |
| Absolute error in temperature measurement within the entire temperature measuring range, °C | ±2 | |
| Average service life, years (expected) | 10 years | |
| Storage condition | 15°C to 30°C, RH < 60% | |

## V. Dimensions

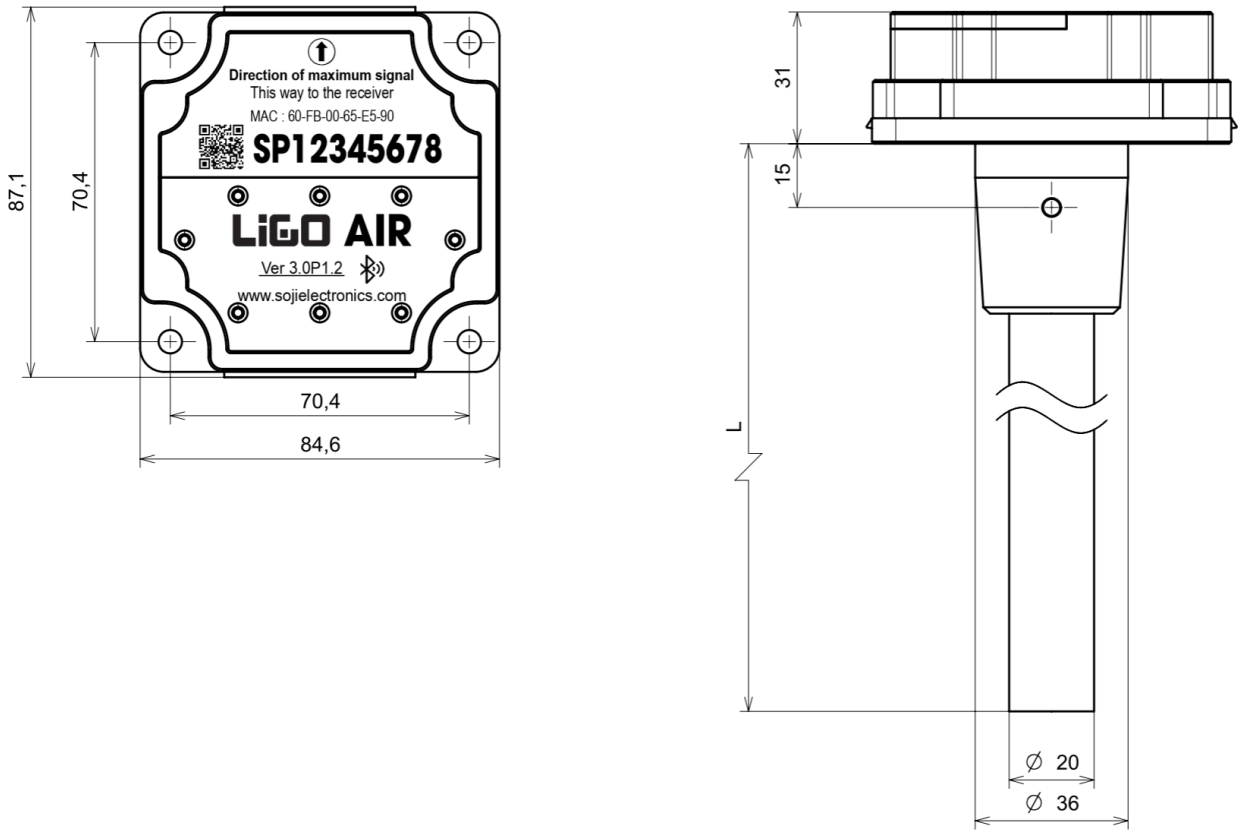


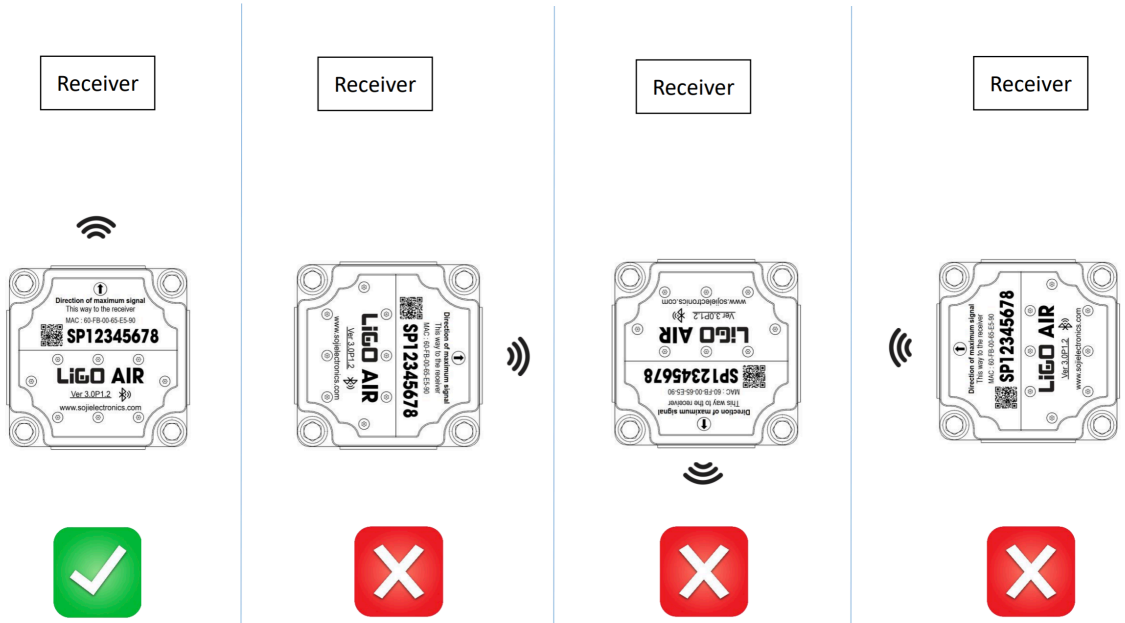

Figure 1. LIGO AIR series' overall dimensions (mm).

| Manufacturer part number | L (mm) |
|---|---|
| LIGO AIR – L7 | 700 ± 3 |
| LIGO AIR – L10 | 1000 ± 3 |
| LIGO AIR – L15 | 1500 ± 3 |
| LIGO AIR PRO – L7 | 700 ± 3 |
| LIGO AIR PRO – L10 | 1000 ± 3 |
| LIGO AIR PRO – L15 | 1500 ± 3 |
| LIGO AIR/LIGO AIR PRO + extended tube | Up to 6000 |

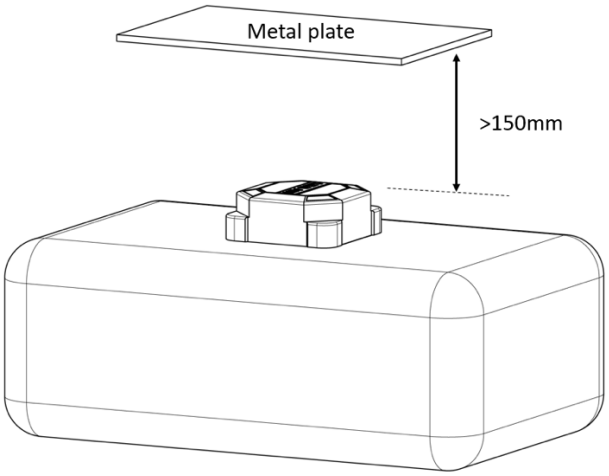
## VI. Installation notes

*This chapter outlines important considerations during the installation of the LIGO AIR sensors. For detailed installation instructions, please refer to the User Guide.*

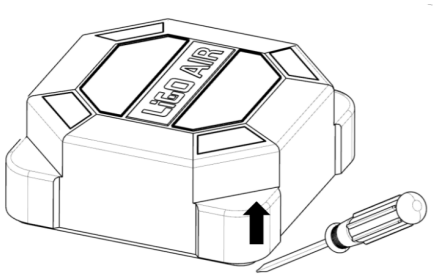
1. Sensor mounting location and direction
   - Install the sensor in the direction of maximum signal transmission (the directional arrow on the sensor cover should point toward the receiving device).

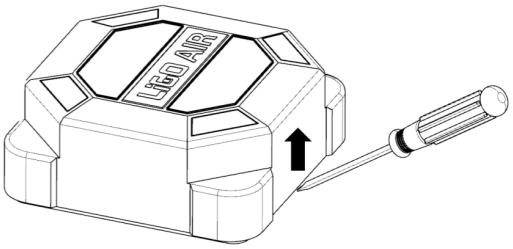



   - Ensure a minimum clearance of 200 mm between the top of the sensor and any overhead metal surface



2. Sensor seal cover removal instructions
   In cases when sensor inspection is required, the protective cap must be removed. Follow the removal procedure as shown as picture bellow:




3. Solutions for long-range or in metal-obstructed environments
   In some cases, when the distance between the sensor and the receiver is long or there are many metal obstacles causing signal attenuation, customers can choose the LIGO AIR PRO to increase transmission power or install the LIGO AIR Adapter at the receiver side to boost the signal received from the sensor.
   Below is a comparison table of transmission distances between different types of sensors and receivers:

| Device | Bluetooth signal range |
|---|---|
| LIGO AIR + Telematics (tracker) device | Standard distance |
| LIGO AIR + LIGO AIR Adapter | 2 x Standard distance |
| LIGO AIR Pro + LIGO AIR Adapter | 4 x Standard distance |

## VII. Products and accessories

| No. | Description | Qty (pcs) |
|---|---|---|
| 1 | LIGO AIR Fuel Level Sensor. Standard lengths: 700, 1000, and 1500mm (for other customized lengths, please contact the manufacturer) | 01 |
| 2 | Oil filter | 01 |
| 3 | Gasoline-resistant rubber gasket | 01 |
| 4 | Bottom-stop and springs | 01 |
| 5 | Self-drilling screw M4.8x32mm | 04 |
| 6 | Rivet and screw M5x20mm | 04 |
| 7 | Plastic seal cover | 01 |
| 8 | Quick installation manual | 01 |

## VIII. Warranty

- The warranty period is 3 years from the date of shipment by the manufacturer.
- The warranty period and service life does not apply to the battery.
- Compliance with the specified operating, transport, and storage conditions is a prerequisite for the manufacturer's guarantee.
- The manufacturer reserves the right to modify the design and composition of the product without prior notice to the customer.

## IX. Revision history

| Date | Version | Description |
|---|---|---|
| 18/06/2025 | 1.0 | Initial Release |
| 19/06/2025 | 1.0.2 | Minor changes |