

# LIGO-AIR series datasheet

*Version 1.1*



## I. General Introduction

LIGO-AIR Fuel Level Sensor is 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. LIGO AIR Product variants

During our discussions with customers and market research, we found that most wireless fuel level sensors on the market suffer from key issues such as **poor durability, short battery life (2-4 years), and unstable connectivity (Bluetooth signal)**.

To address these challenges, the LIGO AIR series was developed — a new generation of wireless fuel level sensors engineered for superior reliability, long battery life, and stable long-range communication in all environments.

The LIGO AIR series offers three specialized versions, each optimized to meet specific operational demands — from cost efficiency to long-range communication and extended battery life as bellow:

**LIGO AIR LxS:** The standard version of the LIGO AIR sensor is designed as a cost-effective solution that fulfills essential monitoring needs while maintaining reliable performance (Trucks, excavators, cement mixer truck, heavy construction machines...)

**LIGO AIR LxT:** The extended-battery version of the LIGO AIR sensor is designed for applications that demand long operational life (**8-12 years**) and reliable performance in harsh environments, including high-temperature conditions.

**LIGO AIR PRO:** The long-range version of the LIGO AIR sensor is designed for applications requiring extended transmission distances or operation in environments with significant obstacles (Marine vessels, electric generators, Industrial oil storage tanks, stationary storage tanks...)

The following table summarizes the performance differences between LIGO AIR models and competitive products in terms of battery life and transmission distance:

|                    | Comparison product                 | Standard version     | Extended battery life             | Extended transmission range |
|--------------------|------------------------------------|----------------------|-----------------------------------|-----------------------------|
| Product            | Competitive products on the market | LIGO AIR LxS         | LIGO AIR LxT                      | LIGO AIR Pro LxS            |
| Battery life       | 0.4 x Standard (2-4 years)         | Standard (6-8 years) | <b>1.5x</b> Standard (8-12 years) | Standard (6-8 years)        |
| Transmission range | 0.6 x Standard                     | Standard             | Standard                          | <b>2x</b> standard          |

## V. Technical Specifications

| PARAMETER                                                                                   | LIGO AIR (LxS, LxT)                                                                                                                                                               | LIGO AIR-PRO                 |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Standard length (L), mm                                                                     | 700, 1000, 1500...up to 6000 mm                                                                                                                                                   |                              |
| Measuring error, %                                                                          | ± 0.5 %                                                                                                                                                                           |                              |
| Bluetooth specs                                                                             | <i>Bluetooth</i> 5.4, IEEE 802.15.4-2006,<br>2.4 GHz, -95 dBm sensitivity                                                                                                         |                              |
|                                                                                             | TX power max: 6dBm                                                                                                                                                                | TX power max: <b>19.5dBm</b> |
| Advertising Protocol                                                                        | <ul style="list-style-type: none"> <li>- SOJI Protocol (default)</li> <li>- Mielta Protocol (setting in mobile app)</li> <li>- Escort Protocol (setting in mobile app)</li> </ul> |                              |
| Power supply:                                                                               | 3.6V * 2600mAh (LxS)<br>3.6V * 2400mAh (LxT)                                                                                                                                      | 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                                                                               | N/A                                                                                                                                                                               | 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                                                                                                                                                                          |                              |

## VI. Dimensions

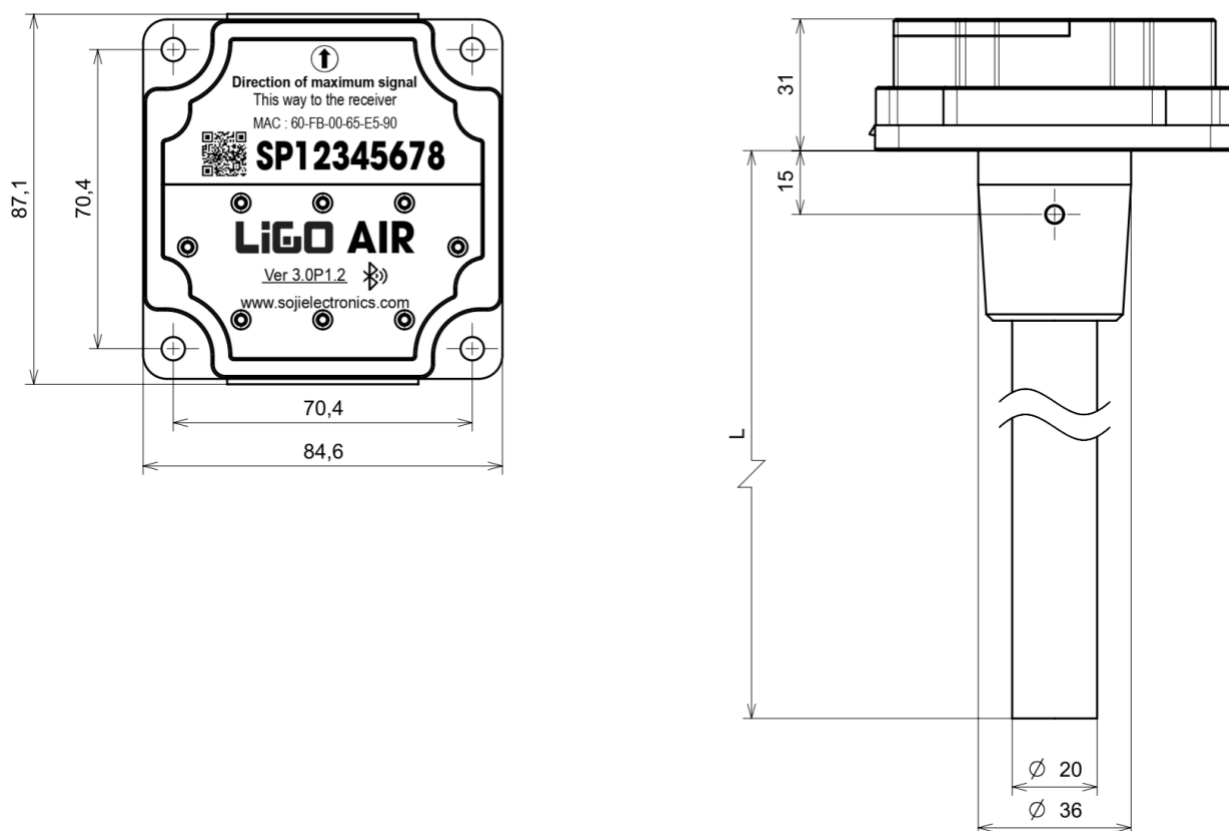


Figure 1. LIGO AIR series' overall dimensions (mm).

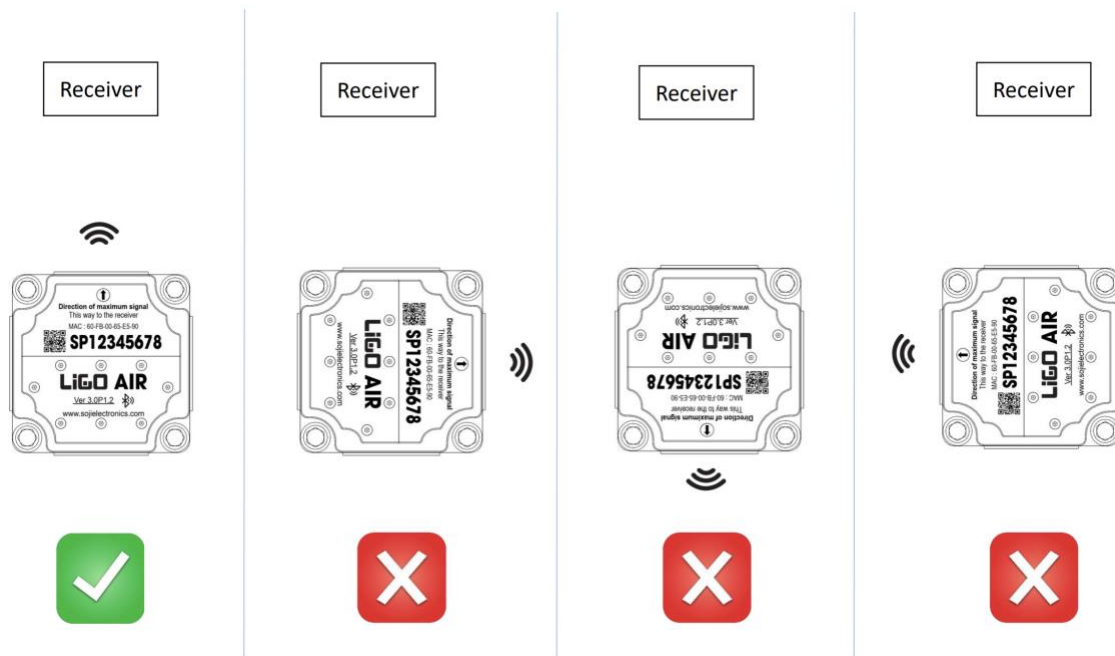
| Manufacturer part number | L (mm)   |
|--------------------------|----------|
| LIGO AIR – L7S           | 700 ± 3  |
| LIGO AIR – L7T           |          |
| LIGO AIR PRO – L7S       |          |
| LIGO AIR – L10S          | 1000 ± 3 |
| LIGO AIR – L10T          |          |
| LIGO AIR PRO – L10S      |          |
| LIGO AIR – L15S          | 1500 ± 3 |
| LIGO AIR – L15T          |          |
| LIGO AIR PRO – L15S      |          |

## VII. Installation notes

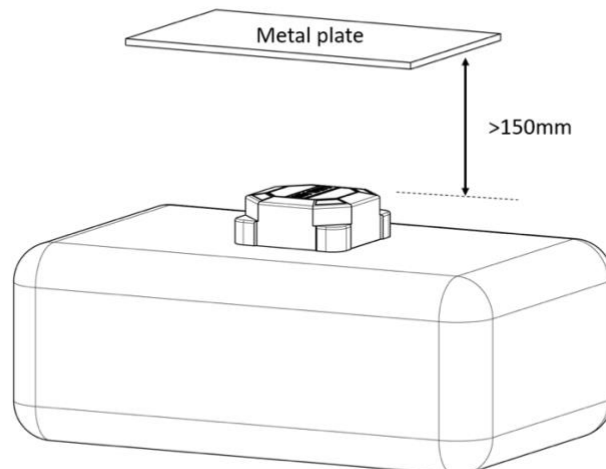
*This chapter outlines important considerations during the installation of the LIGO AIR sensors. For detailed installation instructions, please refer to the User Guide.*

### 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).

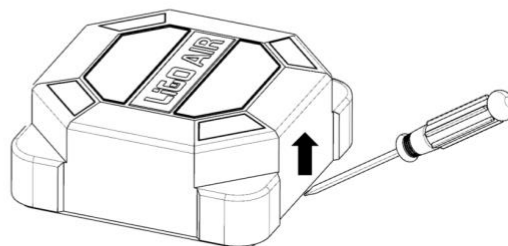
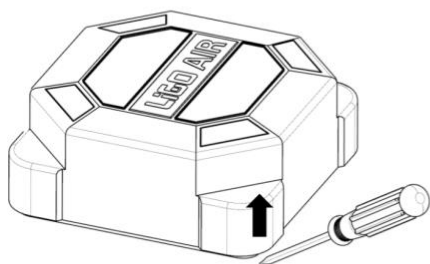


- Ensure a minimum clearance of 200 mm between the top of the sensor and any overhead metal surface



## 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 in the 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  |

### VIII. 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        |

### IX. Warranty

- The warranty period is 3 years from the date of shipment by the manufacturer.
- The warranty period and service life do 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.

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## X. [Revision history](#)

| Date       | Version | Description             |
|------------|---------|-------------------------|
| 18/06/2025 | 1.0     | Initial Release         |
| 14/07/2025 | 1.0.3   | Minor changes           |
| 14/10/2025 | 1.1     | Adding product variants |