LIGO-PRO-BLE Datasheet

Version 1.0.1

I. General Introduction

LIGO-PRO-BLE Fuel Level Sensor is produced and developed 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. The measured values will be transmitted to an external device as an output signal such as Analog, Frequency, RS232, or RS485… to connect to an external device.

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 new sensor is integrated with Bluetooth Low Energy (BLE) making installation more convenient, easier, and faster.

In addition, the new heavy-duty metal structure helps increase protection against electrostatic, electromagnetic and conducted interference. LIGO-PRO-BLE is also designed with IP69K waterproof standards and better shock and vibration resistance.

II. Key features

- High accuracy up to 99,5%.
- Wide range input voltage: 6-40V.
- Galvanic isolation up to 2500V.
- Can be optionally cut off or prolonged up to 6000mm.
- Wide operating temperature range from -40°C to +85°C.
- Built-in Anti-mud oil filter and anti-vibration springs.
- IP69K waterproof standard.
- Integrated BLE technology for configuration via smartphone (*available on App Store and Google Play*).

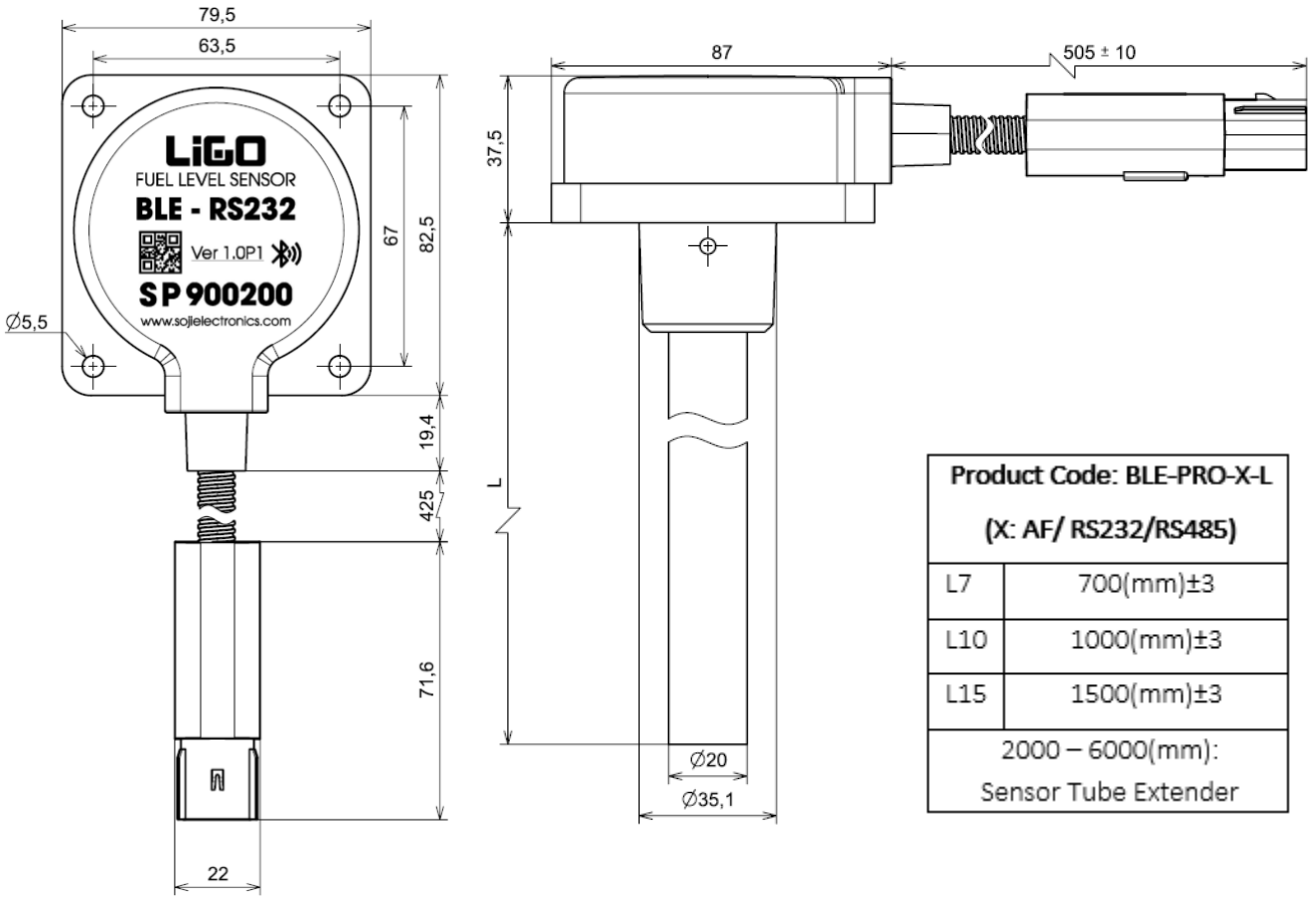
III. General applications

- 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. Specifications

PARAMETER	AF	RS232	RS485
Standard length (L), mm	700, 1000, 1500...up to 6000 mm		
Measuring error, %	± 0.5 %		
Output signal	Analog (0-9V)	RS232	RS485
Baud rate, bit/sec	2400, 4800, 9600, 19200, 38400, 57600, 115200.		
Power supply (DC input voltage, V)	6-40V		
Supply protection (Over-voltage 100 VDC for 2 minutes. Reverse polarity)	Yes		
Maximum power consumption, mA	20		
Waterproof standard (Ingress protection rating, IP)	IP69K		
Operating temperature, °C	-40...+85		
Maximum allowed humidity level,%	100		
Resolution, bit	12		
Digital reading range corresponding to the minimum level measurement value	Analog (0...8V)	0	0
Digital reading range corresponding to the maximum level measurement value	Analog (1...9V)	4095	4095
Average sampling period, s	0...255		
Message interval, s	Continuous	1...255	1...255
Absolute error in temperature measurement within the entire temperature measuring range, °C	±1		
Bluetooth specs	*Bluetooth* 5.1, IEEE 802.15.4-2006, 2.4 GHz, -95 dBm sensitivity, +8 dBm TX Power		
Average service life, years (expected)	10	10	10

V. Dimensions



Product Code: BLE-PRO-X-L (X: AF/ RS232/RS485)	
L7	700(mm)±3
L10	1000(mm)±3
L15	1500(mm)±3
2000 – 6000(mm): Sensor Tube Extender	

Figure 1. LIGO-PRO-BLE's overall dimensions (cm).

VI. Wiring Connection

AF (Analog & Frequency)

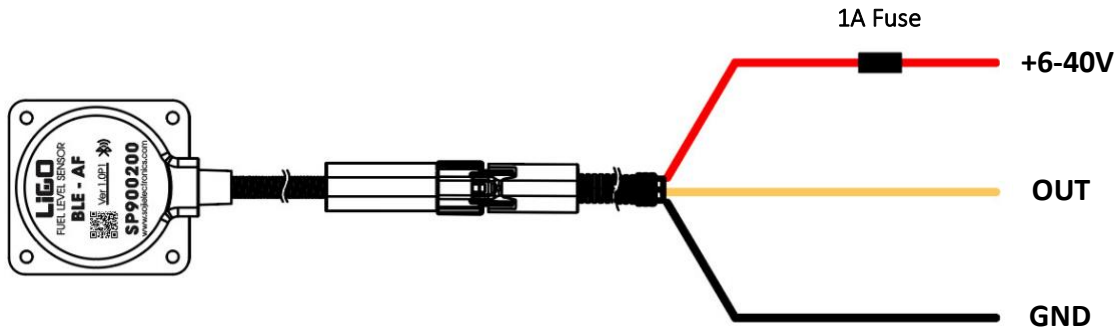


Figure 2. Wiring diagram of Analog and Frequency output signals.

RS232/RS485

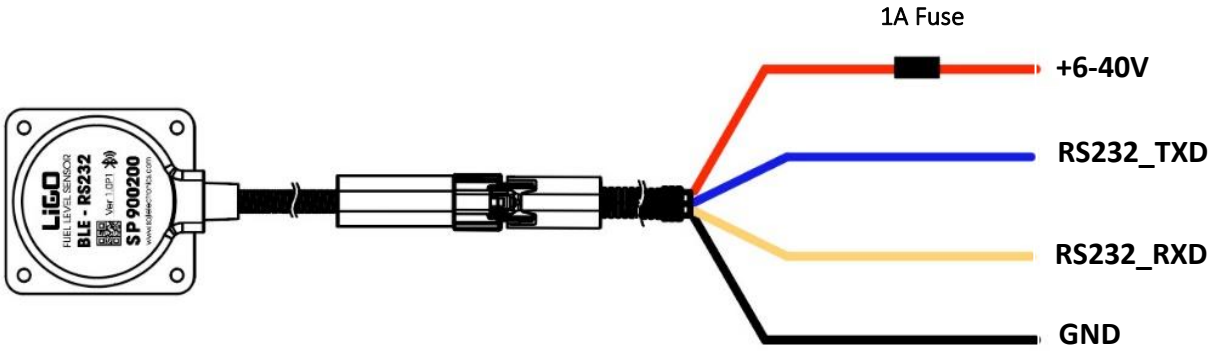


Figure 3. Wiring diagram of RS232 output signals.

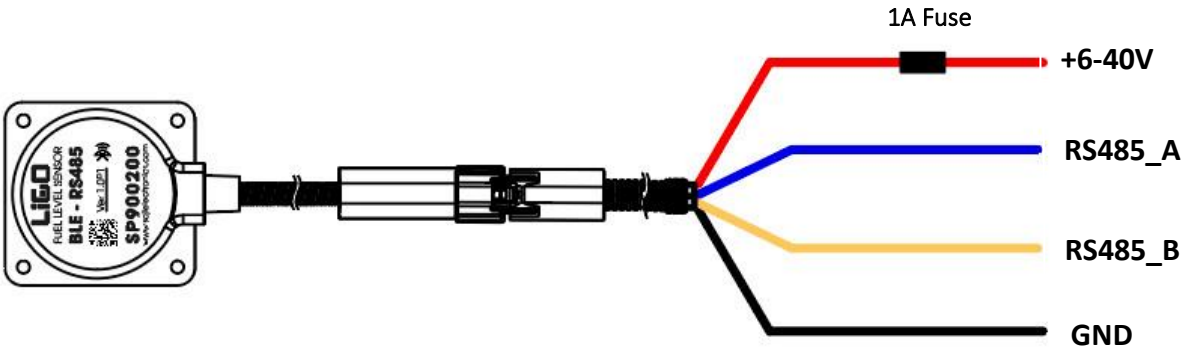


Figure 4. Wiring diagram of RS485 output signals.

VII. Connector

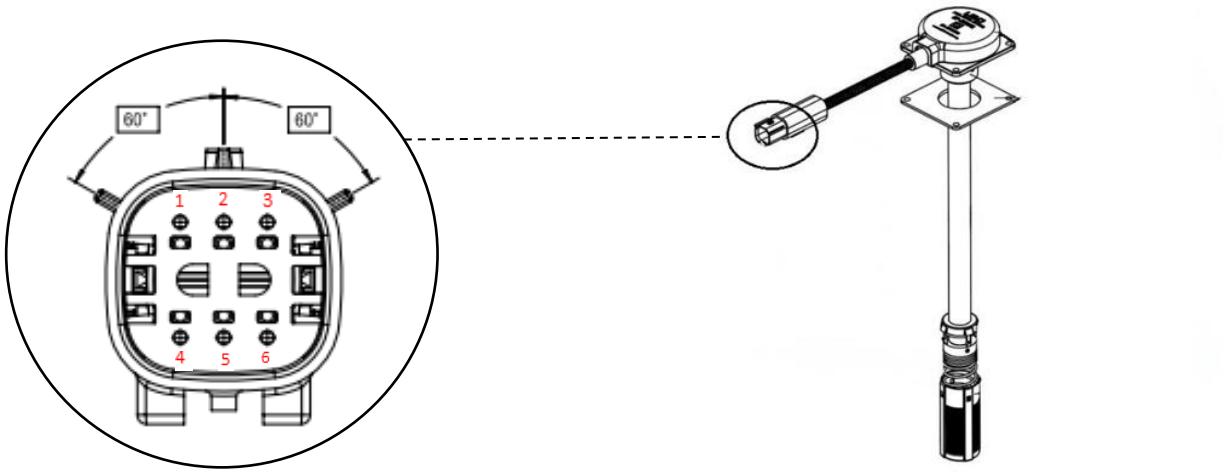


Figure 5. The details of connector pins.

AF/ RS232		
No	Description	Color of the wire
1	GND	Black
2	NC (Not connected)	NC
3	VCC (6-40V)	Red
4	TXD	Blue
5	Analog Output	White
6	RXD	Brown

RS485		
No	Description	Color of the wire
1	GND	Black
2	RS485 (B)	Green
3	VCC (6-40V)	Red
4	TXD	Blue
5	RS485 (A)	Yellow
6	RXD	Brown

VIII. Products and accessories

10 main items with specific quantities are described below:

No.	Description	Qty (pcs)
1	LIGO 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	Anti-vibration spring when moving	01
5	1A Fuse protection	01
6	Self-drilling screw M4.8x32mm	04
7	Rivet and screw M5x20mm	04
8	Sealing wire	02
9	7m signal wire	01
10	Quick installation manual	01

IX. Revision history

Date	Version	Description
07.03.2024	1.0	Initial Release
21.03.2024	1.0.1	Changing descriptions of RS485 pinout