

Product Name	Ultrasonic Water Level Sensor			SPECIFICATION	NO.	JL202540801
					Date	2023-9-11
		Model	JL0150LSW	Revision	A/0	

1. Scope of Application

JL0150LSW series contact ultrasonic continuous liquid level sensor is developed for the home appliance industry. It can output real-time liquid level and temperature data with a liquid level accuracy of $\pm 1\text{mm}$, enabling intelligent applications for home appliances.

This sensor can be applied to water dispensers, coffee machines, humidifiers, fresh air ventilators, dishwashers, washing machines, and dehumidifiers.

The contact ultrasonic sensor is compatible with all water qualities, and can detect liquid levels in water mixed with coffee powder, detergent-containing waste water, purified water, mineral water, and juice.

The probe is made of food-grade stainless steel with a built-in NTC, featuring excellent weather resistance and operability in boiling water. It has the advantages of high precision, small size, short blind zone, and no calibration or maintenance required.

2. Specifications

Probe Model	T02	Control Board Model	JL150YWB01
Measuring Range	10~250mm	Input Voltage	5~12V
Response Speed	500ms	Output Voltage	3.3VPP for ultrasonic probe
Liquid Level Accuracy	$\pm 1\text{mm}$	Power Consumption	75mW@5V
Temperature Accuracy	$\pm 1\%/^{\circ}\text{C}@25^{\circ}\text{C}$	Ambient Temperature	-10~70 $^{\circ}\text{C}$
Waterproof Rating	IP67	Signal Output	TTL UART, Baud Rate 9600
Operating Temperature	0-100 $^{\circ}\text{C}$	Dimensions	30×20×5mm
Probe size	$\Phi 12$	Anti-interference	300mv
Material	304 Stainless Steel, Polyurethane, Teflon	Ultrasonic Frequency	3M
Remarks	Ultrasonic waves are absorbed by bubbles; no liquid level signal output under a large number of bubbles		

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3. Performance Requirements

3-1 Operating characteristics refer to Clause 5-1

3-2 Electrical life: more than 100,000 cycles

3-3 Vibration resistance refers to Clause 5-3 test requirements

3-4 Drop test requirements refer to Clause 5-4 test requirements

3-5 Heat resistance: No abnormality after being placed at $100\pm 2^{\circ}\text{C}$ for 48 hours

3-6 Cold resistance: No abnormality after being placed at $-20\pm 2^{\circ}\text{C}$ for 48 hours

3-7 Humidity resistance: No abnormality after being placed at $93\pm 3\%\text{RH}$ (40°C) for 48 hours

4. Quality Standard [GB2828 Normal Inspection Level II, Single Sampling]

Inspection Item	Specification	Inspection Method	Judgment Standard
Shape & Dimension	According to assembly drawing	Caliper or ruler	AQL2.5
Appearance	Inspection standard	Visual inspection	AQL2.5
Operating Characteristics	According to Clause 3-1	According to Clause 3-1	AQL2.5
※Electrical Life	According to Clause 3-2	According to Clause 3-1	n=5 c=0
※Vibration Resistance	According to Clause 3-3	According to Clause 3-1	n=5 c=0
※Drop Resistance	According to Clause 3-4	According to Clause 3-1	n=5 c=0
※Heat Resistance	According to Clause 3-5	According to Clause 3-1	n=5 c=0
※Cold Resistance	According to Clause 3-6	According to Clause 3-1	n=5 c=0
※Humidity Resistance	According to Clause 3-7	According to Clause 3-1	n=5 c=0

Note: Items marked with ※ are only tested upon design or material changes.

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5. Test & Inspection Methods

5-1 Operating Characteristics (Normal Sensitivity)



5-2 Electrical Life

Test with a special water tank fixture. Water stops filling and the indicator lights up when reaching the upper set level; the indicator turns off when the water level drops to the lower sensor, and the water level rises again. Qualified if no on-off abnormality occurs after more than 100,000 cycles and the on-off distance meets the specified range.

5-3 Vibration Resistance

Vibrate the sensor for 1 hour at frequency 10 - 75Hz, amplitude 1.5mm; results shall meet Clause 2-3 requirements.

5-4 Drop Test

Drop the sensor freely from 0.7m onto a rubber plate three times; results shall meet Clause 2-3 requirements.

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5-5 Heat Resistance

Place the sensor in a $100\pm 2^{\circ}\text{C}$ high-temperature box for 48 hours, take it out and leave at room temperature for 1 hour, then test to meet Clause 2-3 requirements. Place the sensor at 75°C for 1 hour, take it out and test immediately to meet Clause 2-3 requirements.

5-6 Cold Resistance

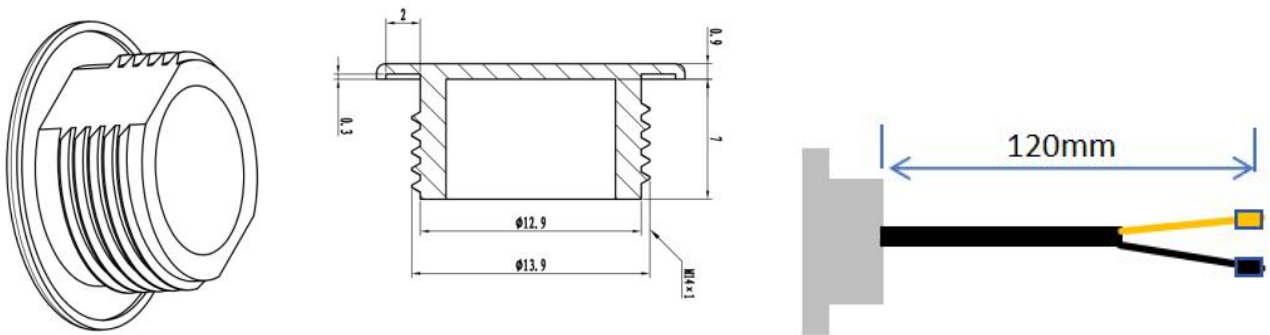
Place the sensor in a $-20\pm 2^{\circ}\text{C}$ low-temperature box for 48 hours, take it out and leave at room temperature for 1 hour, then test to meet Clause 2-3 requirements. Place the sensor at -5°C for 1 hour, take it out and test immediately to meet Clause 2-3 requirements.

5-7 Humidity Resistance

Place the sensor in an environment of $93\pm 3\%RH$ and $40\pm 2^{\circ}\text{C}$ for 48 hours, take it out and leave at room temperature for 1 hour, then test to meet Clause 2-3 requirements.

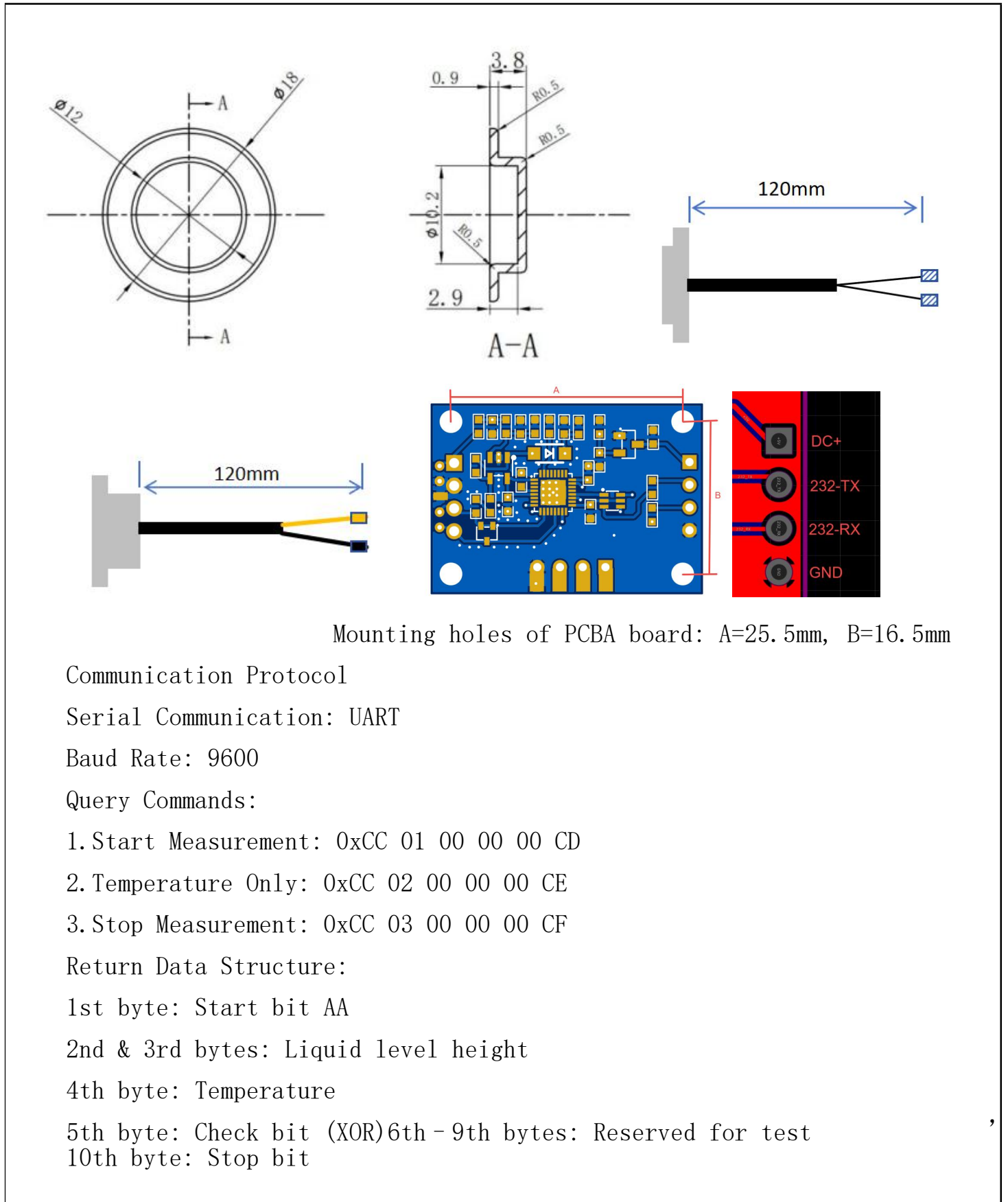
6. General Assembly Drawing

Probe Model: T02



Probe Model: T01

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7. Wiring Diagram & Installation

Product Case 1: Heating Stage Control



Mating Board → Ultrasonic + Temperature Probe → Upper Coupler → Lower Coupler → Signal Processing Board → Control Board in Heating Stage

Note: Pay attention to the wiring sequence of the corresponding leads during installation and testing.

9. Precautions

1. Do not use this ultrasonic liquid level sensor in environments exceeding 150°C or strong magnetic fields, which will severely affect its accuracy and service life.
2. Install horizontally or vertically; attach tightly to the bottom wall of the container, and keep the installation position vertical to the container opening.
3. Do not use to measure corrosive liquids. Ensure the power supply voltage meets requirements, and connect positive/negative poles correctly.