

Product Manual

1. Product introduction:

ISU48-15.5TRAJ-T1 [View Details](#)



1.1 Structure type: waterproof and airtight products;

1.2 Usage type: transceiver integrated;

1.3 Scope of application: ultrasonic ranging and automobile reversing anti-collision device, etc.;

1.4 Product advantages: This product has the advantages of frequency bandwidth, high sensitivity, good signal-to-noise ratio, simple structure, reliable operation and light weight.

2. Performance parameters

2.1 Technical parameter standards:

No.	Inspection items	Test conditions	Test Standards	Note:
1	Center Frequency (KHZ)	Normal temperature 25±3 (°C)	48±1	Frequency scanner
2	Capacitance (PF)	1KHZ ; 25±3°C	1600±15%	LCR digital bridge
3	Angle (°).	The normal temperature is 25±3 (°C), the height of the probe is 60cm from the ground, the distance from the detected object is 60cm, the detected object is Φ 75mm PVC pipe, the height of the tube is 1M, and the test	X-axis direction: 55±10 (°). Y-axis direction: 50±10(°).	Motherboard number: KM/K00648001

Specification

		environment requires that there are no other obstacles within a radius of 2M in front of the probe, according to Fig.1		
4	Aftershock (ms)	The normal temperature is 25 ± 3 ($^{\circ}\text{C}$), and the simulated test motherboard is shown in Fig.2	≤ 2.4	Motherboard number: KM/K00648002
5	Echo sensitivity (MV).	Normal temperature 25 ± 3 ($^{\circ}\text{C}$), distance: 15m, obstacle: Φ 75mm*1000mm PVC pipe, the reading is as Fig.2	Compare the lower limit sample (Reference value ≥ 450)	Motherboard number: KM/K00648002
6	Sensitivity (dB)	Transmitting frequency: (48 ± 1) KHZ $0\text{dB}=10\text{V/pa}$	-81	Reference value
7	Sound pressure (dB)	Distance: 30cm Input voltage: 10Vrms $0\text{db}=2\times 10^5\text{Pa}$	≥ 108	Reference value
8	Maximum Drive Voltage (Vp-p)	Pulse width 0.8ms with 60ms interval	150	Oscilloscope Reference value
9	Operating Temperature ($^{\circ}\text{C}$)	-40 ~ +80($^{\circ}\text{C}$)	Qualified	High and low temperature chambers

10	Storage Temperature (°C)	-40 ~ +85(°C)	Qualified	High and low temperature chambers
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2.2 Environmental characteristics

No.	Test items	Test conditions	Test Standards	frequency
1	Temperature characteristics	The ambient temperature of the product is stable at -40 ± 3 (°C) for 30 minutes, and the temperature is stable for 30 minutes to 25 ± 3 (°C) (normal temperature), and 30 minutes when it rises to $+85\pm 3$ (°C). The tests are completed within 2 minutes of taking out the test chamber	At the center frequency, the aftervibration and echo sensitivity varies by $\leq 30\%$ compared to the standard value over these three temperature ranges	Once a year
2	Damp-heat test	Temperature: 60 ± 2 °C Humidity: RH 90~95% Duration: 100 hours After removal, it was restored at normal atmospheric pressure for 2 hours	At center frequency, the aftershock and echo sensitivity varies by $\leq 30\%$ compared to the standard value	Once a year

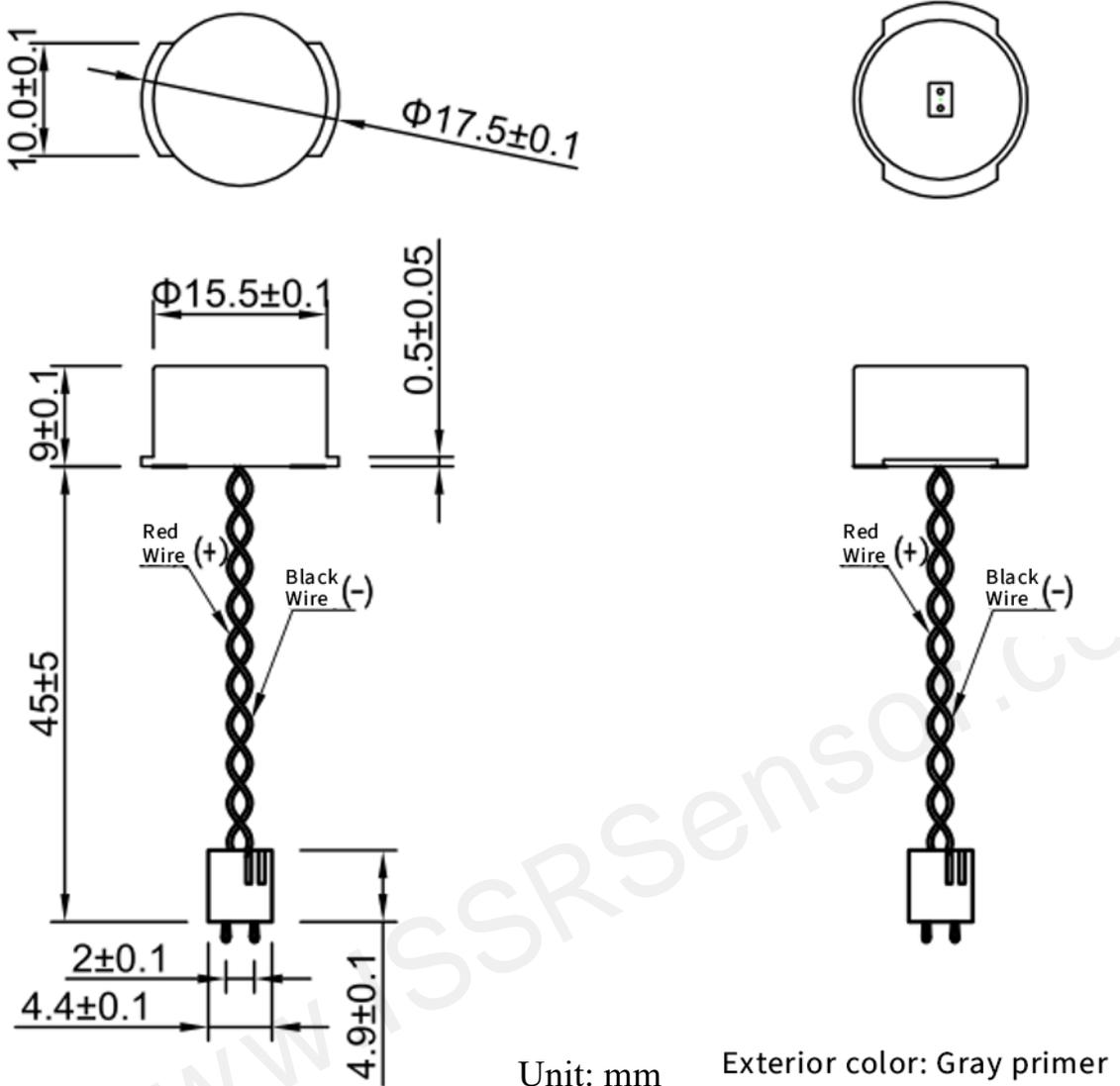
Specification

3	Impact test	Acceleration: Sine 100G (980m/s ²) Directions: 3 directions (X/Y/Z) Number of impacts: 3 times/in each direction	At center frequency, the aftershock and echo sensitivity varies by $\leq 30\%$ compared to the standard value	Once a year
4	Vibration test	Amplitude: 1.5mm, Frequency: 10~70Hz Sweep Period: 5 minutes Time: 3 hours in each of the 3 directions	At center frequency, the aftershock and echo sensitivity varies by $\leq 30\%$ compared to the standard value	Once a year
5	High temperature test	Leave at a high temperature of +85°C for 120 hours; After removal, it was restored at normal atmospheric pressure for 2 hours	At center frequency, the aftershock and echo sensitivity varies by $\leq 30\%$ compared to the standard value	Once a year
6	Low temperature test	Leave at a low temperature of -40°C for 120 hours; After removal, it was restored at normal atmospheric pressure for 2 hours	At center frequency, the aftershock and echo sensitivity varies by $\leq 30\%$ compared to the standard value	Once a year

Specification

7	Temperature cycling	Low temperature: $-40\pm 3^{\circ}\text{C}/1\text{ h}$; High temperature: $+85\pm 3^{\circ}\text{C}/1\text{ H}$; Number of cycles: 50 times; After completion, it was removed and restored at normal atmospheric pressure for 2 hours Note: Low temperature first and then high temperature	At center frequency, the aftershock and echo sensitivity varies by $\leq 30\%$ compared to the standard value	Once a year
8	Drop test	Height: 1m height free fall to the concrete floor, times: 10 times	At center frequency, the aftershock and echo sensitivity varies by $\leq 30\%$ compared to the standard value	Once a year
Note: 1. Each test is a separate test, and the test product is not less than 5PCS. Normal temperature conditions $T=25\pm 3^{\circ}\text{C}$, $H=45\sim 65\%R.H$; 2. When performing high and low temperatures, the product needs to be in a short circuit state.				

3. Overall dimensions



4. Quality assurance

4.1 In order to ensure the quality of the company's products, the company adopts the TS16949 quality management system for management, formulates strict quality purposes and directions, and the company aims to pursue zero defects and endless improvement of the quality policy, and continue to meet the needs and expectations

of customers for the physical quality of products. The quality policy is an action program that all employees of the company must abide by and follow.

4.2 In order to further ensure the quality of our products, MIL-STD-105E General Level II is used as the basis for single sampling level (except for special provisions) to inspect incoming materials and factory products. The criteria for determining it are as follows:

Quality qualification criteria (AQL): CR (fatal) = 0, MA (primary) = 0.65, MI (secondary) = 2.5.

4.3 The Company has received the following honors:

In 2016, it obtained the ISO/TS16949:2009 audit certification issued by the United States for Quality Certification (NSF-ISR). The certification number is: CN TS021706;

In 2013, it obtained the ISO/TS16949:2009 audit certification issued by the American Quality Certification (AQA). The certification number is: CN 00014417;

In 2009, it obtained the utility model patent certificate of "Ultrasonic Sensor with Adjustable Sensitivity and Aftervibration" from the State Intellectual Property Office. Patent No.: ZL 2007 2 0080812.7;

In 2008, it obtained ISO 9001:2008 quality management system certification through Shanghai Daweishi Certification Co., Ltd. The certification number is: Q19110959. In 2008, it became a special supplier of China Automobile Chain.

5. Order specifications

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Company Code Center Frequency Outer Diameter of Probe Transceiver Integral Transceiver Housing Shape Connecting Wire with

Connector Serial Number

6. Packaging

1) Product packaging requirements: carton corners are stacked neatly and neatly, without deformation, damage, or dirt. The sealing tape is pasted flat and firm, without obvious unevenness, warping and other phenomena. The label position is uniform, and there is no dirt, warping, obvious skew and other phenomena.

2) Product Packaging Specifications:

a. Blister box size: 350mm*240mm*27mm

b. Inner packing: 355mm*245mm*220mm

c. Outer packaging: 520mm*380mm*245mm

d. The quantity of products placed in each box is 100pcs, and the quantity of products placed in each box is 1000pcs.

The quantity of products placed in the outer packaging box is 2000pcs.

3) Product storage method:

The stacking method of the product adopts parallel stacking up and down to avoid staggered stacking, and does not allow large boxes to press small boxes or small boxes to press large boxes. Only a maximum of 2 stacks are allowed.

7. Precautions

- 1) The product can only be used in a gas environment, not in liquid.
- 2) In order to prevent accidents caused by work failure, the anti-failure function should be added in the design of secondary products.
- 3) If you want to add a shell to this product, separate the case from the sensor with a soft rubber ring. In order not to affect the vibration of the sensor, the front face of the sensor should be kept free, otherwise the sensor performance will change.
- 4) In order to prevent sensor failure, working failure or performance degradation, this product should be avoided under the following or similar conditions:
 - a. Strong shock or vibration;
 - b. Prolonged exposure to high temperature and high humidity environments;
 - c. In corrosive gases or sea breezes;
 - d. In an environment with dissolved organic matter;
 - e. In a dusty environment;
 - f. Exceeding the allowable input voltage.
- 5) To prevent additional stress on the leads, do not apply external force to the newly soldered leads. If necessary, clamp the root of the lead first.
- 6) The quality guarantee period is within one year after the product is delivered, and defective sensors due to the responsibility of the manufacturer during the warranty

period can be replaced free of charge. The following situations are not covered by the guarantee:

- a. improper use or handling by the user;
- b. changes or repairs made by the user;
- c. Any other circumstances that are not the responsibility of the producer, such as natural disasters, accidents, etc.

This warranty covers product replacement only. Any losses arising from the failure or invalidation of the sensor and the cost of replacing the product are not covered by this warranty.

8. Attached drawings

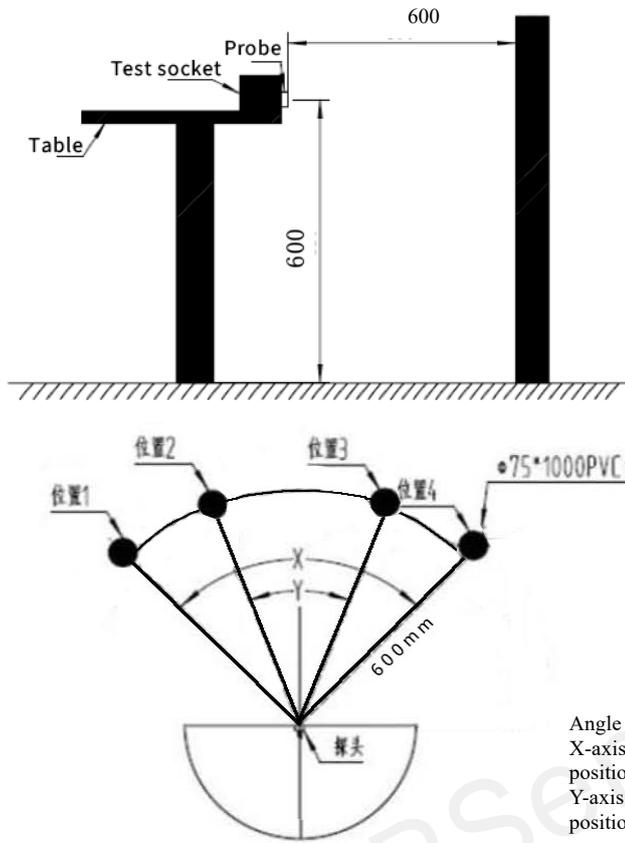
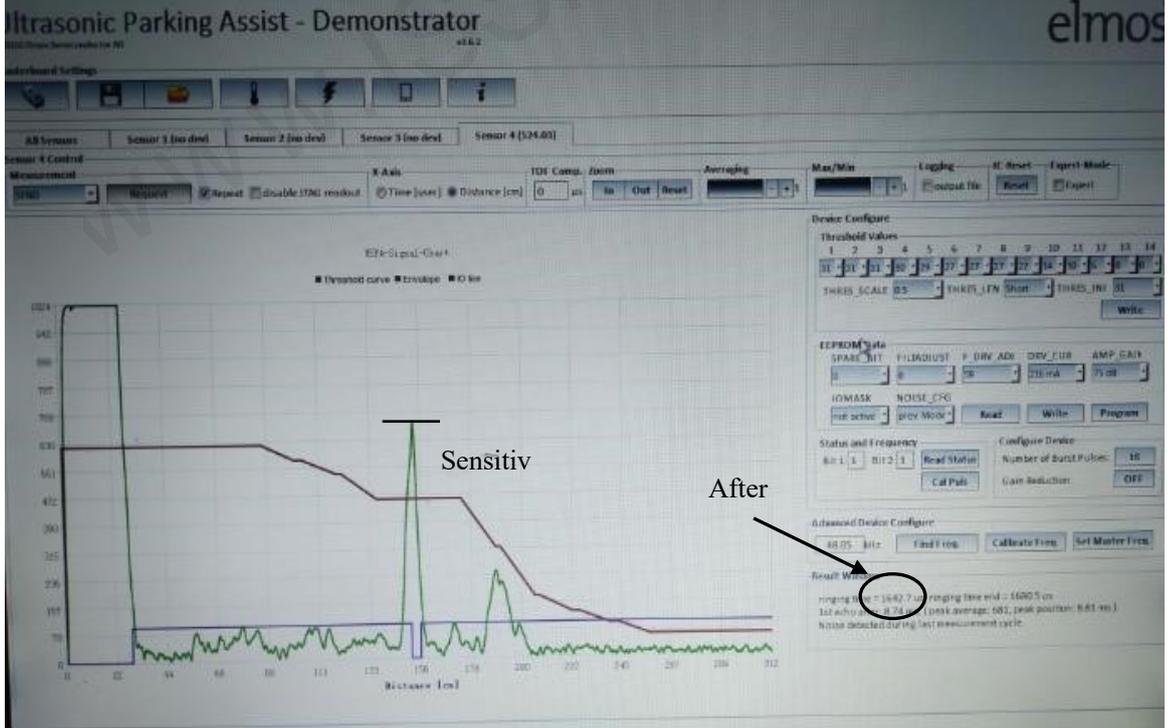


Fig.1

Angle Test:
X-axis direction angle: PVC pipe placed in position 1 or position 4
Y-axis direction angle: PVC pipe is placed in position 2 or position 3



Test waveforms

Fig.2