

# JSN-SR04T-2.0

## 20-600 cm Ultrasonic Waterproof Range Finder

JSN-SR04T-2.0 ultrasonic distance measurement module can provide 20cm-600cm non-contact distance sensing function, ranging accuracy up to 2mm; module includes the transceiver of an integrated ultrasonic sensor and control circuit. Mode one usage and the Division's JSN-SR04T-2.0 module.

This product adopts industrial-grade integrated ultrasonic probe design, waterproof type, stable performance, all the MCU on the market. 1, the module performance is stable, the measurement distance is accurate. And foreign SRF05, SRF02 and other ultrasonic rangefinder module comparable. Module high precision, blind (20cm), stable range is the product successfully to the market a strong basis.

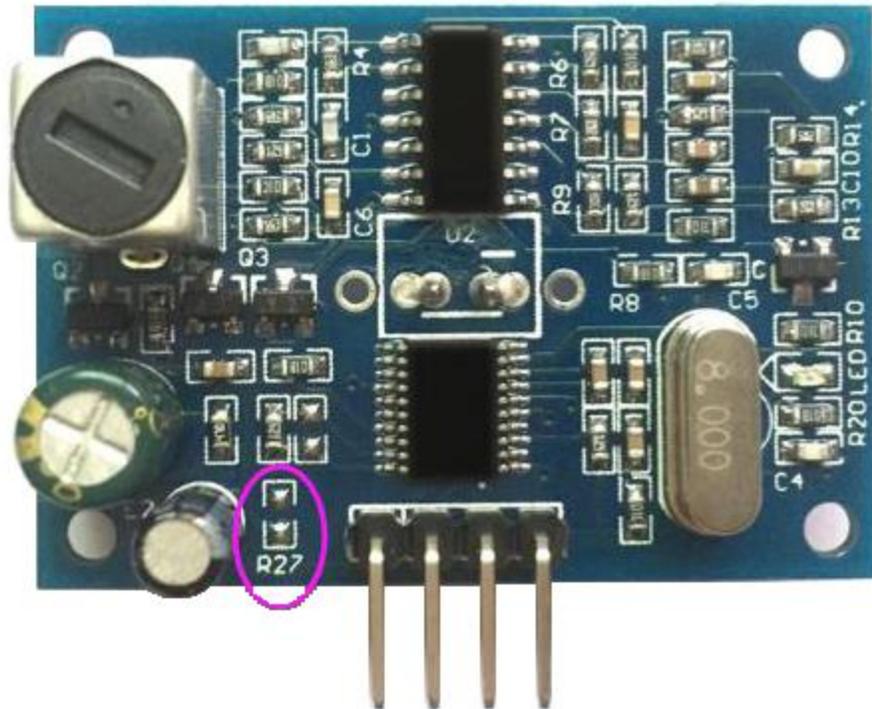
### Features:

1. small size, easy to use;
2. low voltage, low power consumption;
3. high precision measurement;
4. strong anti-interference;
5. integrated closed waterproof cable probe, suitable for wet, bad measurement occasions

### Specifications:

	Pulse width output / Serial Output
Operating Voltage	DC 3.0-5.5V
Working current	Less than 8mA
Probe frequency	40KHz
Farthest range	600cm
Recent range	20cm
Distance accuracy	+ - 1cm
Resolution	1mm
Measuring angle	75 degree
Enter the trigger signal	1,10uS above the TTL pulse 2, the serial port to send instructions 0X55
Output the echo signal	Output pulse width level signal, or TTL
Wiring	3-5.5V (power positive) Trig (RX) RX Echo (output) TX GND (power supply negative)
Product Size	L42 * W29 * H12 mm
Operating temperature	-20 ° C to + 70 ° C
Product color	PCB board is blue

## Function Description:



**Mode 1:** R27 = open that is not welding. The pattern is described below

1. the basic working principle:

(1) using IO port TRIG trigger range, to a minimum of 10us high letter.

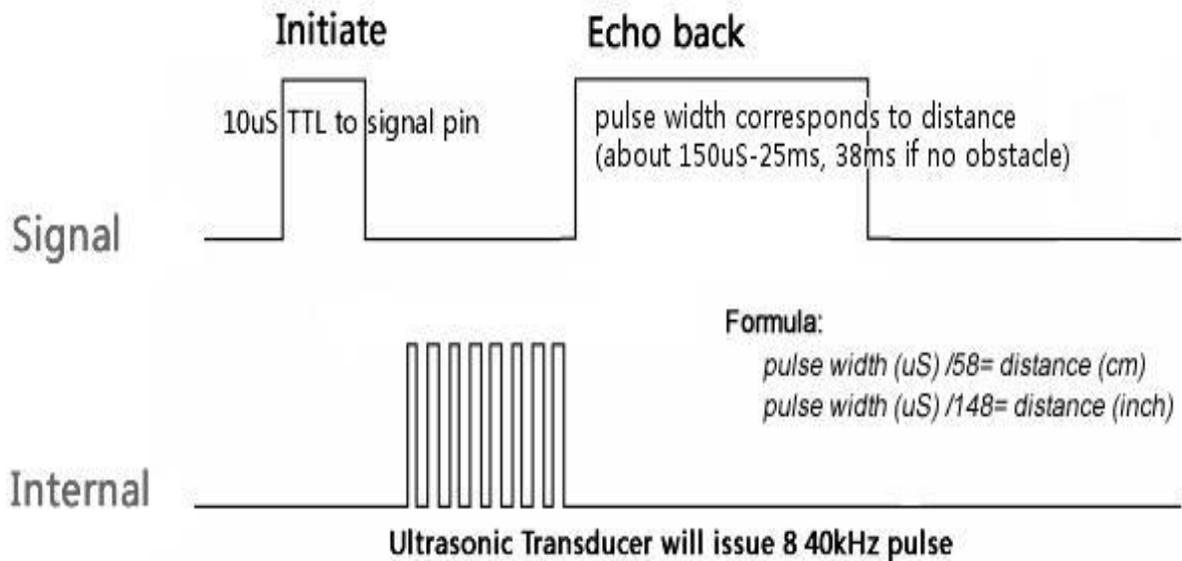
(2) module automatically send 8 40khz square wave, automatically detect whether there is a signal to return;

(3) a signal to return, through the IO port ECHO output a high level, high time is the duration of ultrasound from the launch to the return time. Test distance = (high time \* speed of sound (340M / s)) / 2;

(4) module is triggered after the distance measurement, if you cannot receive the echo (the reason exceeds the measured range or the probe is not on the measured object), ECHO port will automatically become low after 60MS, marking the End of measurement, whether successful or not.

(5) LED indicator, LED non-power indicator, it will receive the signal after the module will be lit, then the module is working.

2. ultrasonic timing diagram:



A short ultrasonic pulse is transmitted at the time 0, reflected by an object. The sensor receives this signal and converts it to an electric signal. The next pulse can be transmitted when the echo fades. This time period is called cycle period. The recommend cycle period should be no less than 50ms. If a 10µs width trigger pulse is sent to the signal pin, the ultrasonic module will output eight 40kHz ultrasonic signals and detect the echo back. The measured distance is proportional to the echo pulse width and can be calculated by the formula above. If no obstacle is detected, the output pin will give a 38ms high level signal.

**Mode 2:** R27 = 47K is the welding 47K resistance. The pattern is described below

Serial **output format for the TTL level**, that: 100MS module for the cycle of automatic output distance value, the unit is mm. Serial baud rate: 9600, n, 8,1.

After the module is powered on, it will enter the working mode directly, and the range will be carried out every 100ms within the module and one frame will be output from the pin TX, including four 8-bit data. The frame format is: 0XFF + H\_DATA + L\_DATA + SUM

- 1.0XFF: for a frame to start the data, used to judge;
- 2.H\_DATA: the upper 8 bits of the distance data;
- 3.L\_DATA: the lower 8 bits of the distance data;
- 4.SUM: data and, for the effect of **its 0XFF + H\_DATA + L\_DATA = SUM (only low 8)**

Note: H\_DATA and L\_DATA synthesize 16-bit data, that is, the distance in millimeters

E.G:

Product response FF 07 A1 A7

Where the check code  $SUM = A7 = (0x07 + 0xA1 + 0Xff) \& 0x00ff$

0x07 is the high data of the distance;

0xA1 is the lower data of the distance;

Distance value is 0x07A1; converted to decimal for 1953; unit: mm

Description: The module outputs the nearest distance value in the dead zone, and outputs 0 if the module does not measure the data or is out of range.

LED indicator, LED non-power indicator, the module connected to work after the light, then the module is working.

**Mode 3:** R27 = 120K that is welding 120K resistance. In the serial port mode

After the module is powered on, [the module enters standby mode](#). The serial output format is TTL level, serial port baud rate: 9600, n, 8,1. When the RX port receives the 0X55 instruction, the module starts a ranging and outputs one frame from the pin TX with four 8-bit data. The frame format is: 0XFF + H\_DATA + L\_DATA + SUM

1.0XFF: for a frame to start the data, used to judge;

2.H\_DATA: the upper 8 bits of the distance data;

3.L\_DATA: the lower 8 bits of the distance data;

4.SUM: data and, for the effect of its  $0XFF + H\_DATA + L\_DATA = SUM$  (only low 8)

Note: H\_DATA and L\_DATA synthesize 16-bit data, that is, the distance in millimeters

Description: The module outputs the nearest distance value in the dead zone, and outputs 0 if the module does not measure the data or is out of range.

LED indicator, LED non-power indicator, it will receive the 0X55 trigger signal after the module will be lit, then the module is working.