JSN-SR04T - All-in-one ultrasonic distance measurement instruction manual

1 - product features:

The ultrasonic distance measurement module JSN-SR04T provides contactless distance sensing from 25 cm to 450 cm, with an accuracy of up to 3 mm. It includes an ultrasonic transmitter, receiver and a control unit. You can use it in the same way as the module HC-SR04 from JSN.

basic working principle:

(1) The IO port TRIG is used to trigger the ranging, giving a high-level signal for at least 10 µs.
(2) The module automatically sends eight square waves of 40 kHz and detects if a signal is returned.
(3) When a signal is returned, a high-level is output through the IO port ECHO, the duration of the high level is the time between the ultrasonic wave transmission an reception.
Test distance = (high level time * speed of sound (340m/s))/2

2 - pin assignment

Wiring as shown on the right
VCC for 5V supply
GND is the ground wire
TRIG is the trigger control signal input
ECHO is the echo signal output

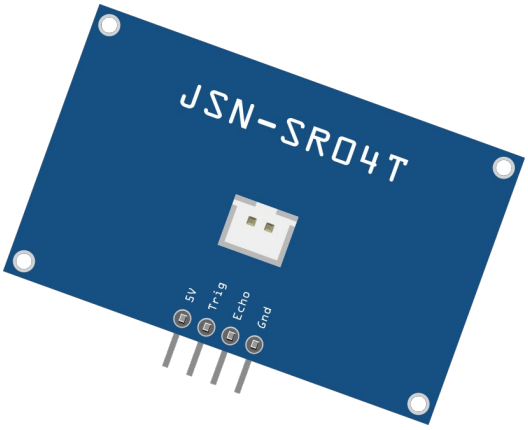

figure 1 - schematic board

3 - electrical parameters

electrical parameter	JSN-SR04T ultrasonic module
working voltage	DC 5 V
working current	40 mA
accoustic emission frequency	40 kHz
longest distance	4.5 m
shortest distance	25 cm
measuring angle	30 degree
input trigger signal	10 µs TTL pulse
output echo signal	output TTL level signal, proportional to range
size	41*29 mm
probe lead length	2.5 m

4 - ultrasonic timing diagram:

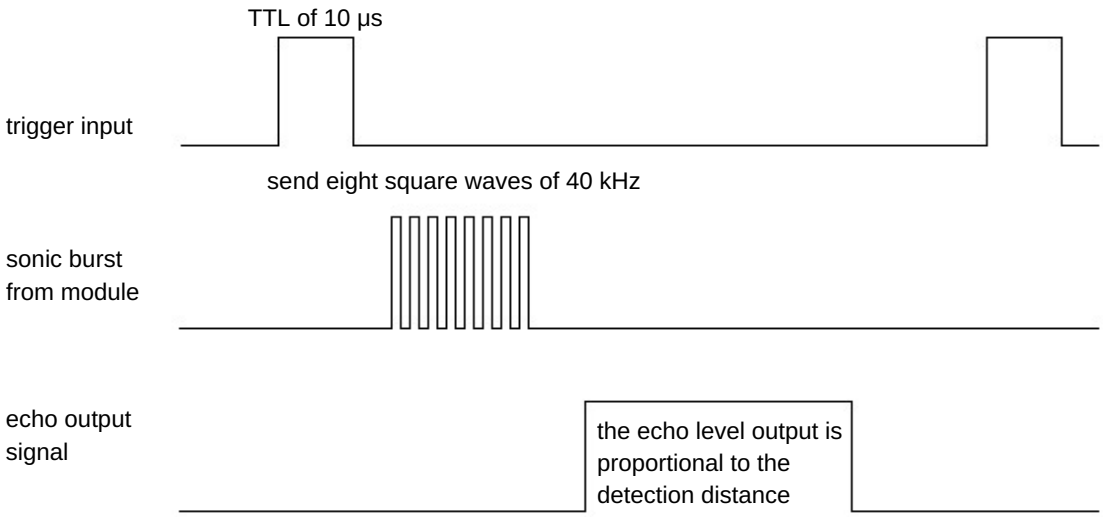

figure 2 - ultrasonic timing diagram

The above sequence diagram shows that you only need to provide a pulse trigger signal of more than 10 μs, and the module will send out eight cycles of 40 kHz and detect the echo. Once an echo signal is detected, an echo output signal is sent. The pulse width of the echo signal is proportional to the measured distance. The distance can be calculated from the duration between the transmitted signal and the received echo signal.
Formula: μs / 58 = cm or μs / 148 = inch; or: distance = high level time * speed of sound (340 m/s) / 2; the recommended measurement period is 60 ms or more to prevent the influence of the transmitted signal on the echo signal.

note: 1. If you connect the module to power, let the GND pin of the module be connected first, otherwise the normal operation of the module will be affected.

2. When measuring distance, the area of the object to be measured must be at least 0.5 square metres and the surface should be as flat as possible, otherwise the results of the measurement will be affected.