Ultrasonic Rangefinder

UM0090

■ Compact design for easy installation

■ Measuring range up to 3M

■ Excellent anti-interference ability

■ Can detect objects of various colors, shapes and materials

Contents

iSweek   www.isweek.com
Add: 16/F, Bldg. #3, Zhongke Mansion, No.1 Hi-Tech S. Rd, Hi-Tech Park South, Shenzhen, Guangdong, 518067 P.R.China
Tel: + 86−755−83289069   Fax: + 86−755−83289052   E-mail: sales@isweek.com

■ **Introduction**

The UM0090 module is based on an ultrasonic sensor that combines transmitter and receiver in a single unit. By measuring the time of flight of ultrasonic wave, it can detect any object within 3 meters and output distance signals via UART interface.

This product features high sensitivity, fast response, and excellent anti-interference ability and stability. It is widely applied in object avoidance systems on robots, drones, and other smart devices.

■ **Applications**

- Robots

- Smart streetlight

- Smart trash bin

- Autonomous delivery vehicle

■ **Technical Parameters**

Properties	
Measuring range	17～300cm (object: flat surface)
Frequency	58kHz
Resolution	<1cm
Response time	<1ms
Power-up delay	≤1s
Blind zone	17cm

Output Format	
Output	Measured distance via serial port (unit: cm)
Trigger mode	Low level pulse, pulse width≥50us
Rated Operating Conditions	
Working environment	indoors/outdoors
Operating temperature	-40~+80 ℃
Storage temperature	-40~+85 ℃
Relative humidity	≤95% (No condensation)
Power Supply	
Power supply voltage	DC 5V
Working current	≤10mA

■ **Appearance & Dimensions (Unit: mm)**
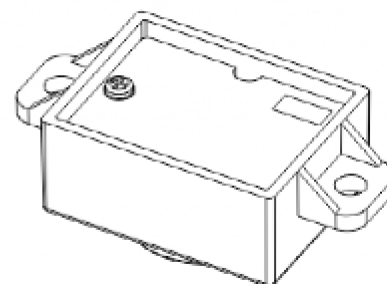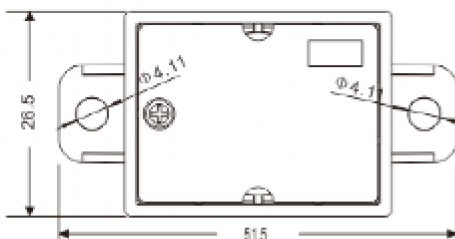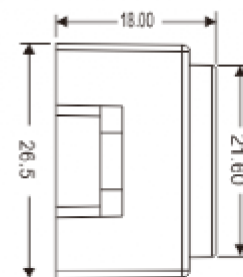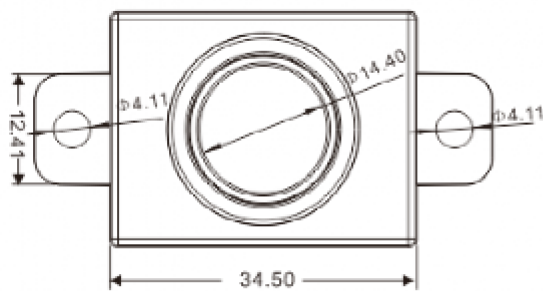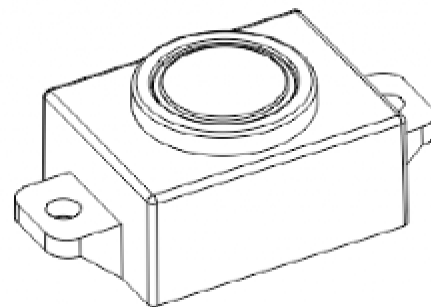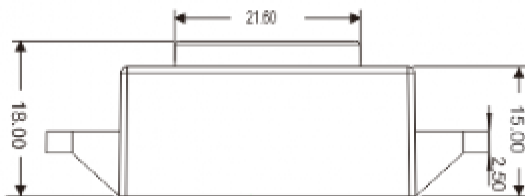
■ Assembly Diagram
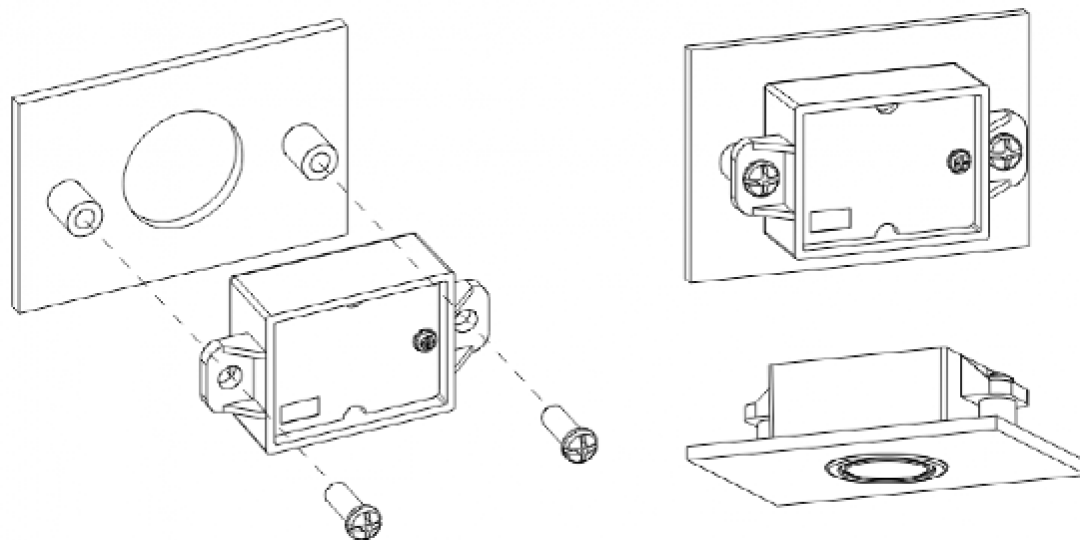
■ Response Curve

in horizontal direction

in vertical direction

单位：cm   曲线：圆棒，7.5cm

测量模组 Module

注:弧线内区域为超声波能够感应到Φ7.5cm圆棒的区域。

单位：cm   曲线：圆棒，7.5cm
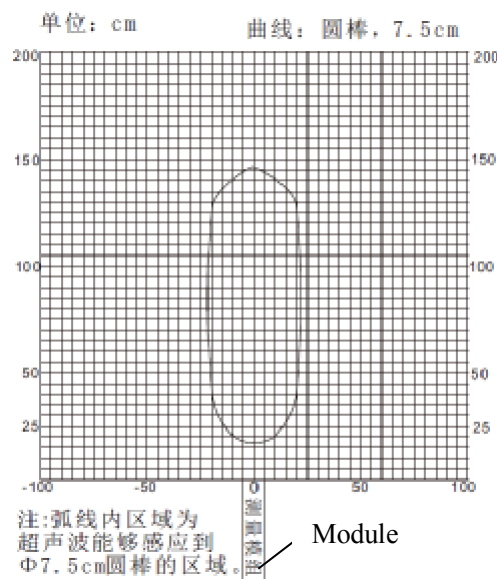
Module

注:弧线内区域为超声波能够感应到Φ7.5cm圆棒的区域。

The arc region is the area where an Φ7.5cm round stick can be detected.

■ Output Protocol

Interface Definition:

An 4PIN XH1.0 terminal is used for output, which is defined in the following diagram. The module goes into dormant state after power up. It can be woken up by a low pulse longer than 50us and output distance value which is in the range of 17-300cm. When the measurement is

completed, the module automatically enters a dormant state until it is woken up again by a low pulse longer than 50us.
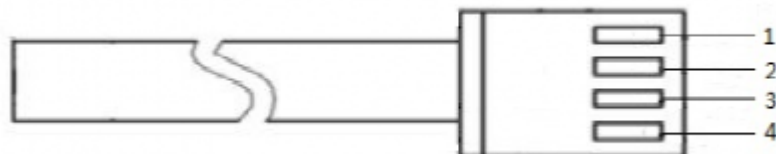
Lead wire No.	Pin function	Lead wire color	Notes
1	VCC	Red	DC 5V
2	GND	Black	GND
3	OUTPUT	White	Level output
4	RX	Yellow	Level output

UART (TTL level) Communication Protocol:

The measurement result is outputted by UART (TTL level), the unit is cm. Every 10bit is a data frame, of which the format is as follows:

bit1	bit2	bit3	bit 4	bit 5	bit 6	bit 7	bit 8	bit 9	bit 10
start bit	data bit								stop bit

Baud rate：9600 bps

Data Format
1. Send character "n" in character mode,1 byte.
2. Send character "1" in character mode,1 byte.
3. Send decimal character "." in character mode,1 byte.
4. Send character "v" in character mode,1 byte.
5. Send character "a" in character mode,1 byte.
6. Send character "1" in character mode,1 byte.
7. Send character "=" in character mode,1 byte.
8. Send the hundreds digit of the measurement result in character mode,1 byte.
9. Send the tens digit of the measurement result in character mode,1 byte.
10. Send the single digit of the measurement result in character mode,1 byte.
11. Send the terminator "0xff".

Example: n1.val=125 means the distance between the module and the object is 125cm