



# SKD-200H Laser Distance Sensor

## USER MANUAL



version 3.1

Getting more info & supports from <http://www.top1sensor.com>

Thank you for your choice for SKD laser distance sensor by SANKOE.LTD

Please read this user manual carefully before using our products

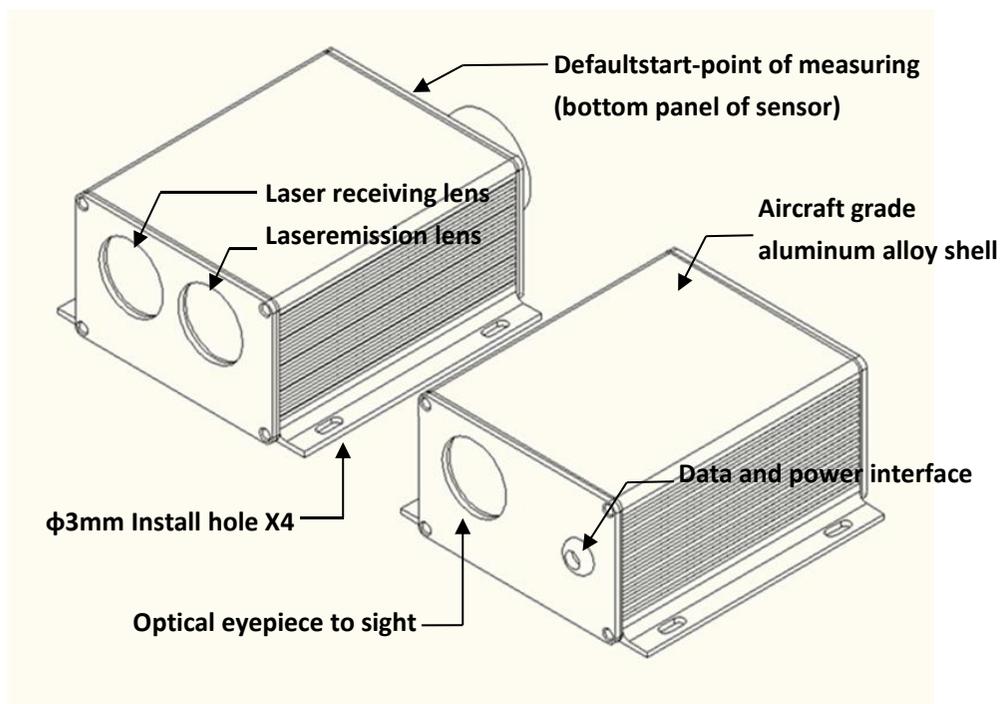
## 1. Overview

SANKOE.LTD is a professional manufacturer from China who provides high performance laser distance sensors and customized service. TOP1SENSOR.COM is our official e-commerce website.

SKD Laser distance sensor is a new kind of un-contact distance measuring equipment. It has many strengths such as high accuracy, long range and fast measuring speed when it's integrated in mine, wharf, bridge, tunnel, buildings, and other industrial measuring and controlled applications.

## 2. Features

### SKD-200H Laser distance sensor



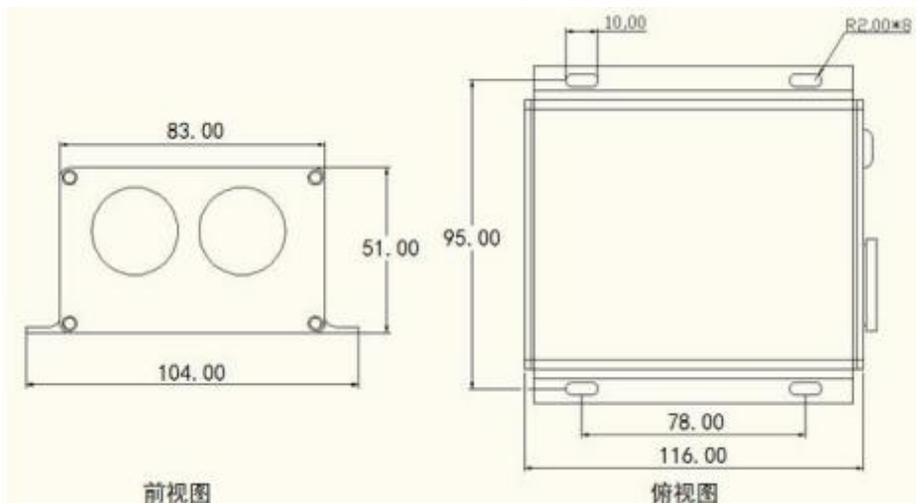
- ① Long detection range (5 to 200m)
  - High measuring accuracy (typical precision:  $\pm 15\text{cm}$ )
  - Very high sampling frequency for fast-moving targets (up to 1K Hz)
- ② Kinds of output types
  - Digital output: RS232, RS485 (Modbus RTU supported)
  - Analog output: 4~20mA, 0~10V (will be supported in the updated version)
  - Switch output: One way or more ways relay switch output (switch threshold can be customized)
- ③ Fast to installing and easy to operating
  - Using 4 screws can be quickly and firmly installed
  - Automatic measurement by simple commands from computer
  - To aim a distant target easily with auxiliary aiming lens or laser pointer (Optional)
- ④ Safety in use Laser class 2, harmless to the human body (avoid direct eye exposure)
- ⑤ Long-life and high reliability with good protection
  - High waterproof and dustproof performance with aircraft grade aluminum alloy shell
- ⑥ Fully customized service based on 15+ years industry experience

### 3. Specifications

Laser Distance Sensor	SKD-200H(RS485)
Measuring Range	5m to 200m①
Measuring accuracy	typ: $\pm 15\text{cm}$
Smallest unit displayed	0.01m
Sampling Frequency	850Hz(up to 1K Hz)
Laser type(Measuring)	905nm,<1mw
Laser type(Pointer②)	N/A
Measuring mode	Automatically continuous measurement after power on
Operation mode	commands by computer
Output type	R485 serial digital output

Power supply	DC 24V/1A
Power consumption	<5W
Temperature range	
-storage	-25℃ to 70℃
-operating	-10℃ to 50℃
Dimension	116 x 104 x 51 mm <sup>③</sup>
Weight	400g

- ① Use a target plate to increase the measurement range during daylight or if the target has poor reflection properties.
- ② Visible laser pointer could be used to help to aim a distant target and shut down by the user.
- ③ The details of dimension are shown in the following image.


**A : Front view**
**B : Top view**

## 4. Using instructions

### 4.1 Cable connecting definitions

Red line	— VCC
Black line	— GND
Yellow line	— 485 A+
Green line	— 485 B-

### 4.2 Operating Steps

4.2.1 Connect the sensor to an RS485 communication port of the host computer (or other device which has RS485 port). Maybe need to add an RS232/USB to RS485 converter into the connection between the sensor and the computer.

4.2.2 Refer to Section 5.1 and configure the communication port.

4.2.3 The sensor will automatically start to do the continuous measurement at a preset sampling frequency after power-on and return the measured data to the host computer in real-time.

4.2.4 Cut off the power supply to shut down the laser and measurement module.

### 4.3 Assistant aiming eyepiece (Optional)

Because the measuring laser of the sensor is a 905 nm infrared laser, which is invisible to the human eyes, we integrated an assistant aiming eyepiece on the sensor to help the user easily find the target that needs to be measured. When aiming, observe the target through the assistant aiming eyepiece on the rear panel of the sensor, and let the crosshairs in the eyepiece meet the target. After aiming complete, please fix the sensor stably.



Figure1



Figure2

## 5. Inputs and outputs

### 5.1 Data format

Baud rate: 115200 bps , Data bits: 8 , Stop bit: 1 , Parity bit: None

### 5.2 Input frame format

The working mode of the current version of the sensor is automatically continuous measurement after power-on and returns the measured data to the host computer in real time. Temporarily does not support the host computer command input.

### 5.3 Output frame format

The output data is displayed by the ASCII code. There are totally 6 bytes in every data frame. The first byte is the frame header (0XFF), the next 5 bytes are the measured distance data. The meanings of each byte are shown in the following table. (Notice: If there is any byte in a data frame which is not used, the sensor will automatically fill 0X20 in that byte.)

Header	A	B	C	D	E
0XFF	Hunders of meters	Tens of meters	Meters	Deci-meters	Centi-meters

For example, if the measured distance data is 145.61m (14561cm), then the sensor will return the data to computer as "14561" (HEX: FF 31 34 35 36 31). Or the measured distance data is 8.70m (870cm), then the sensor will return the data as" 870"(HEX: FF 20 20 38 37 30). If the sensor couldn't get any available data( out of measurement range or measured in blind zone), it will return "0" (HEX: FF 20 20 20 20 30) to computer.

## 6.Troubleshooting

### 6.1 Actual measuring range is different with typical value

Laser distance sensor is a new of un-contact optical measuring equipment. Its measuring range and accuracy will be effect by many external environmental factors. So actual measuring result might be different with typical value which is measured in standard environment.

The following factors will effect actual measuring range:

Effect Factors	Increase measuring range	Decrease measuring range
Surface of target	Bright and smooth surface with good reflection, like target plate	Deep color and rough surface, like green or blue target surface
Air visibility	Clean air	Dust, fog, storm and rain, snow
Ambient light	Dark environment	Target exposure to strong light, like sunlight in midday
Laser emission	Laser emission lens and protection glass keep clean and smooth	Laser emission lens and protection glass get dirty or scratched

In conclusion, the best measuring result will be happen in a dark environment and with a good reflection target. We strongly suggest to use a target plate when laser distance sensor works in a poor environment.

We also suggest to keep laser emission lens and protection glass clean with a soft cloth before start to using.

## Contact us

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