

Instruction Manual of Laser Ranging Sensor
PRO RANGE-KL200-V

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1st. Overview

PRO RANGE-KL200-V is a smart non-contact switch, laser ranging sensor with high and low level drive output. The sensor uses the principle of laser diffuse reflection on objects: when a person or an object enters the sensing area set by the sensor, the sensor outputs a signal and can accurately output the distance; when the person or object leaves the sensing area, the sensor turns off the output.

2nd. Product Features

1. Strong anti-interference ability.
2. Intelligent induction non-contact switch, safe and hygienic.
3. The sensing angle is small.
4. Small size, easy to install.
5. A variety of output methods, easy to use.
6. Not affected by the surface color of the object.
7. In an indoor environment, the real-time measurement distance can reach 2 meters.
8. Multi-layer filter cover, the sensor is more stable.

3rd. Scope of application

1. Intelligent induction sanitary ware.
2. Home security.
3. Intelligent detection and intelligent control.
4. Robot obstacle recognition.
5. Real-time display of distance.
6. Faucet sensor, automatic flushing of toilet and toilet, automatic hand dryer, anti-theft device, automatic doorbell, stairway sensor, TV close-up TV reminder, automatic door, advertising light box, automatic trash can.

4th. Technical Parameters

project name	Parameters
Operating Voltage	DC 5~24V
Sensing distance	In the effective distance (10mm~2000mm), calibration test in various modes, various performance should meet the requirements, and the distance of 1000mm can be measured in the sun.
Sensing accuracy	±4% (Within 10mm~2000mm)
wavelength	940 nm Laser transmitter
Sensing angle	Transmit 35 degrees, receive 25 degrees.
Short circuit protection	When more than 1A, the output is turned off
Specification	24*24 (Main shell)
Load current	300mA

Working current	15mA
Working temperature	-20 ~ 65°C
storage temperature	-20 ~ 85°C
Line length	30cm (±10MM) (Bulk can be customized)
Material	shell: PC-V0 fireproof material
output method	high and low level

User Calibration Guide

The factory default response distance of the laser switch is 2000mm, and the default response distance can be specified according to user requirements.

Or users can calibrate themselves, the calibration steps are as follows:

1. Fix the sensor and set the distance between the measured object and the sensor within the effective distance (10mm~2000mm).
2. Long press the button for 3 seconds, the LED starts to flash slowly (1s/1s), indicating the start of calibration.
3. Wait for about 3 seconds, the calibration will automatically enter the action state after the calibration is completed, and the LED will always be on, indicating that the calibration is successful.
4. If the calibration distance exceeds the range 10-2000mm), it will flash quickly (50ms/50ms) for 2 seconds and then go out.
5. If an object is detected and the calibration is not completed, it will keep flashing.
(The distance changes within 3 seconds, the object has total transmission, all mirror reflection, unstable fixation... all may lead to unsuccessful calibration).
6. If the object is not detected, the calibration has not been completed, and the light will be off after 10 seconds.

High and low level signal output: Provide a high and low level signal, which is suitable for small current control high current, control external circuit, MCU signal identification judgment and so on.

Switch output: The signal sent by the switch sensor is a contact signal, which has two states: open and closed. For example, a sensor switch is a common switch sensor. When an object enters the sensing area set by the sensor, the sensor switch is opened (or closed); when the object leaves the sensor set sensing area, the switch is closed (or opened).

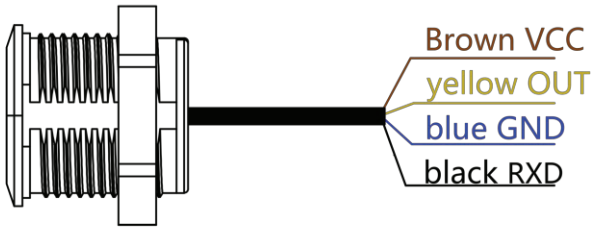
5th. Laser switch LED indicator

Phenomenon	LED indication	Flash parameters (on/off)
Output short circuit	Flash	50ms/50ms
Product failure	Pulse flash	10ms/2S
Calibrating	Slow flashing	1S/1S
Calibration error	Flash	50ms/50ms
Object detected	Chang Liang	
No object detected	Always off	

6th. wiring diagram of various models

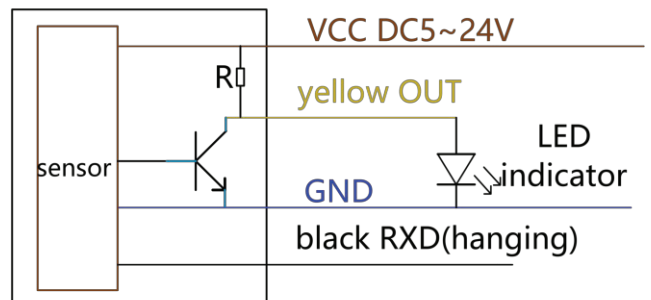
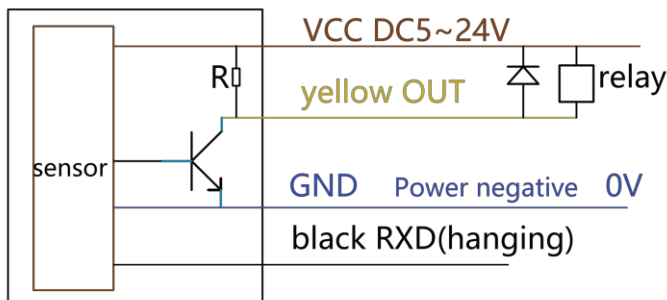
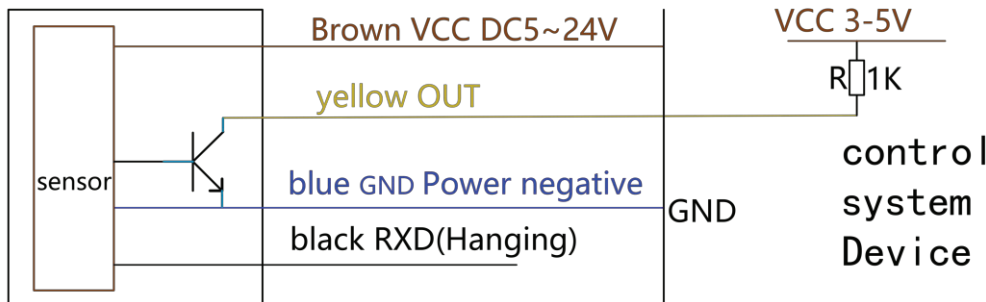
Simplified schematic diagram of high and low level output wiring principle

XKC-KL200-V High and low level signal output principle and wiring method



- 1.Power positive brown
- 2.Signal output yellow
- 3.Power negative blue
- 4.Signal reception black

Terminal wiring sequence



High and low level output drive small relay (coil current $\leq 300\text{mA}$) working principle:

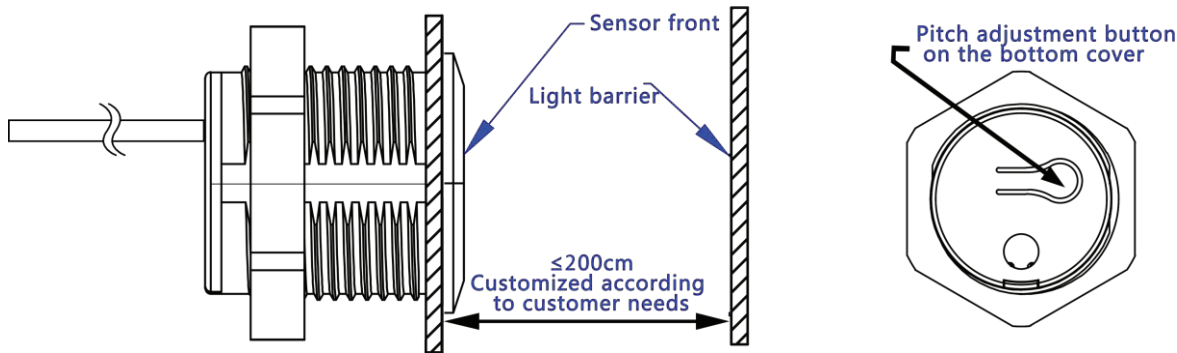
When liquid is sensed, the transistor will cut off and output high level, and the relay will not pull in when the power is turned off;

When no liquid is sensed, the transistor turns on and outputs a low level, and the relay is energized and closed;

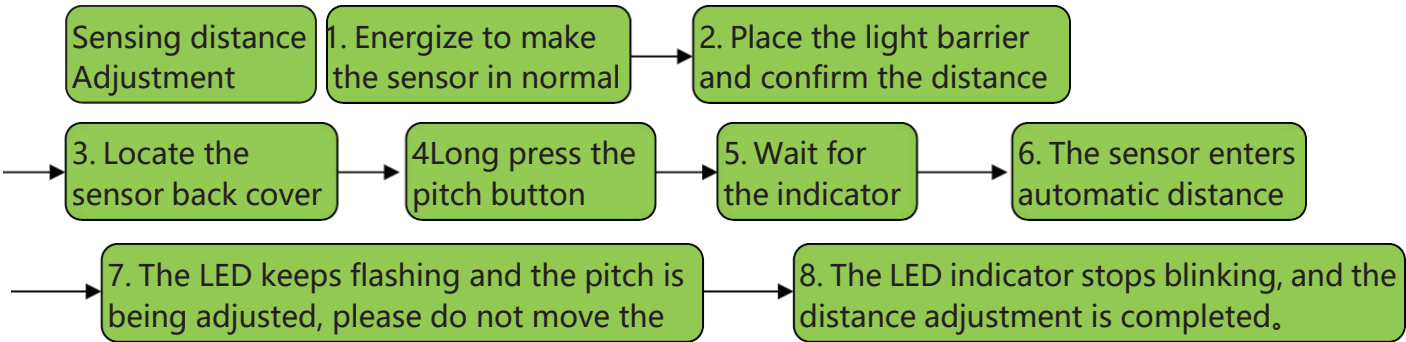
7th. Sensing distance adjustment

1. Place a piece of kraft cardboard about 80cm * 80cm in front of the sensor 200cm (set according to user needs within the range of 10~200cm).
2. The sensor is powered on.
3. Locate the button on the back cover of the sensor, and then press and hold the button.

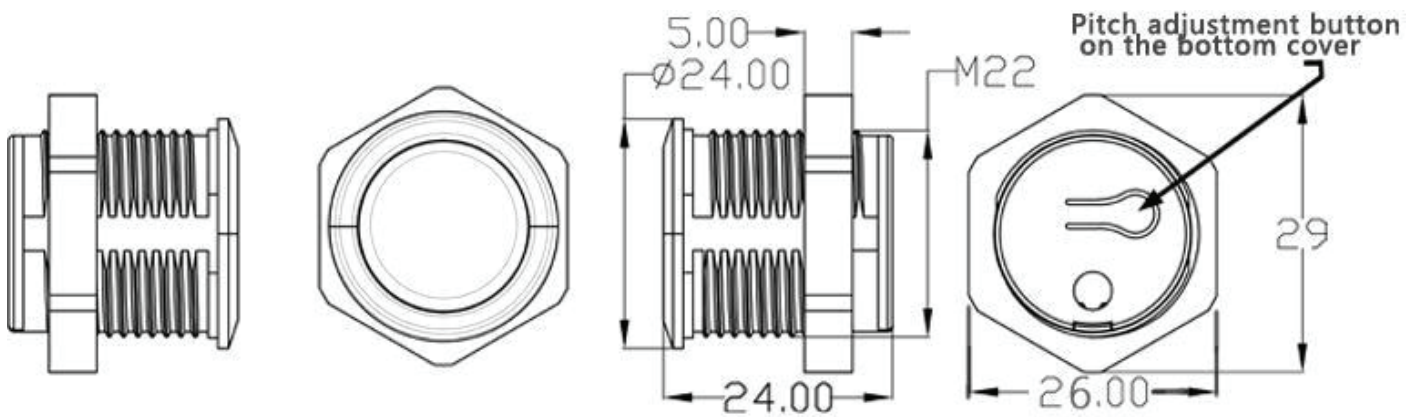
4. After the indicator light is on for about 1 to 2 seconds, release the button to enter the automatic sensing distance adjustment mode. The sensor and the cardboard should not move, and there should be no obstructions between them. After waiting for about 10 seconds, the indicator light stops flashing and automatically saves the data; it automatically returns to the normal working mode. The pitch adjustment is complete.



Sensing distance adjustment process

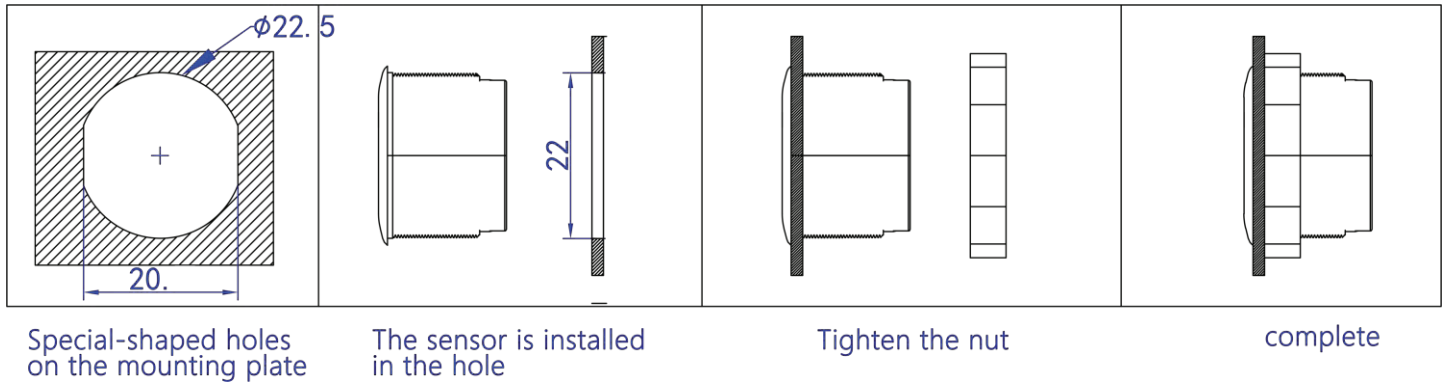


8th. Dimensions and physical objects



9th. installation method

Open a special-shaped hole on the panel where the sensor needs to be installed, install the sensor into the hole from the front of the panel, and tighten the nut behind the sensor. .



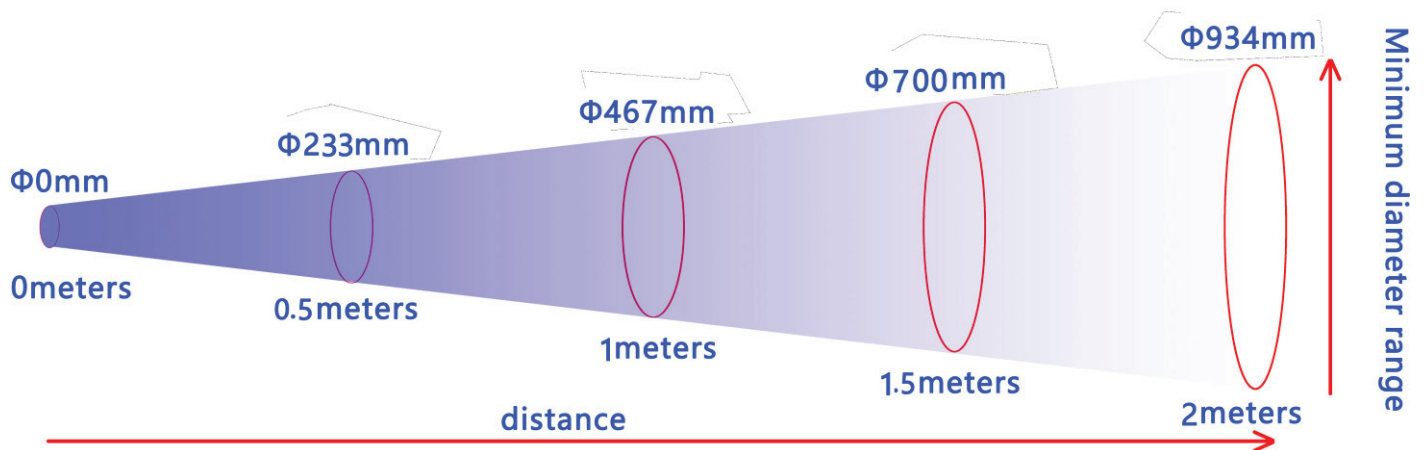
10th. Distance and Object Size Relationship

Minimum diameter range = distance * 0.4666 (mm)

As shown in the figure: when the distance between the sensor and the measured object is 2 meters, Then the size of the object should not be less than 934mm; when the distance between the sensor and the measured object is 1 meters, Then the size of the object should not be lower than 467mm.

Note:

The laser receiving angle is 25 degrees,
and the tangent function value of 25 degrees is 0.4666



11th. Troubleshooting guide

problem	LED indication	handle
Output short circuit	Flash	Check that the output current is not more than 1A
Product failure	Pulse flash	Contact the agent to return
Mode setting error	Always on Always off Output reverse	Check the LED mode and relay mode. If it is not normal after restoring to the factory, please contact the agent to return it.

12th. Precautions for use

1. The receiving device is interfered by strong light (normal indoor light is not affected, when the light is too strong, the sensitivity will be reduced and the distance will become closer). When installing, try to

avoid strong light directly on the probe to make the sensing distance closer and affect the function.

2. When installing, avoid working in an environment with high dust concentration (because high concentration dust is equivalent to sensing objects, which will cause the sensor to malfunction) to avoid misoperation.

134th.Product warranty terms and instructions

(A). Warranty service

1. Warranty period maintenance: from the date of purchase, the product host has a one-year free warranty. The company has the right to decide to repair or replace the faulty part. If it is replaced, the replacement part may be a new device or a repair product of the same category, function, and quality. The replaced faulty part belongs to the company; the product Resale and repair do not affect the warranty period. Products that have been repaired or replaced continue to enjoy the original remaining warranty period service. If the warranty period is less than three months after the repair, the repaired or replaced part shall be shipped from the date of delivery Warranty for three months; all products of the company are guaranteed for repair.

2. Loss upon arrival (DOA) replacement: From the day of purchase, you can enjoy a free replacement service within 7 days. Products with the following problems are defined as DOA equipment: the packing and packing list do not match after the first unpacking of the product; some or all of the components cannot be used normally after the first unpacking of the product (surface scratches or other things that do not affect the function of the device) Defects are not included); other hardware failures identified by our company's engineers remotely or locally.

(B). Applicable limitations of warranty

For the following situations, the company does not assume warranty responsibility:

1. The product is out of warranty; the surface of the product is fragile and damaged; the appearance of the product is seriously damaged, installation/use in abnormal environment, unauthorized disassembly and repair/modification, external power supply damage and other abnormal damage;
2. Damage caused by incorrect installation and use of the product by the user not following the requirements of the manual;
3. Damage caused by natural disasters and human negligence (fire, lightning, flooding, impact, etc.).

(C) . Accessories and consumables are not covered by the warranty.

(D) . Non-free warranty service

Within two years of product purchase, for non-warranty product (including components) failures and damages, you can choose paid maintenance services (free labor costs), and we will charge the transportation cost of repairing parts and accessories according to the actual situation.

(E). Ways to obtain warranty service

It is recommended that you contact the dealer who purchased this product to obtain the warranty service. For the warranty, please present a valid warranty card (the dealer's stamp is required to take effect) or the purchase invoice/receipt: if you can't show it, the product's free warranty period 12 months from the product shipment date, and the latest DOA application deadline is 7 days from the product shipment date.

(F). Statement

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2. Without the written permission of the company, no unit or individual may excerpt or copy part or all of the contents of this manual, and shall not spread it in any form.

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5. Not all models are available in all countries/regions

Please keep this manual properly. Before using the product, please read this manual carefully. When using the product, please be sure to operate in accordance with this manual. The company is not responsible for injuries and accidents caused by operations that do not follow this manual.

(G). Environmental protection This product meets the design requirements for environmental protection. The storage, use and disposal should comply with relevant national laws and regulations. Seek to proceed.

14th. Manual version

Version	Release date
V10	March 28, 2023