

Laser Range Finder Technical Instruction

LRF G905 52



1. Summarize

The ranging module can quickly and accurately provide distance measurement for the main control system; This module uses 905nm semiconductor laser, the ranging resolution is 0.1m. The ranging accuracy is 1m, and the farthest measuring range is 2 km; with TTL interface (can communicate directly with MCU), can also communicate with RS232 serial port through adapter (requires data transfer cable); also provide upper computer test software, instruction set communication protocol, convenient for customer secondary development, build its own range measuring system; it is a high integration, low power consumption, light weight range sensor.

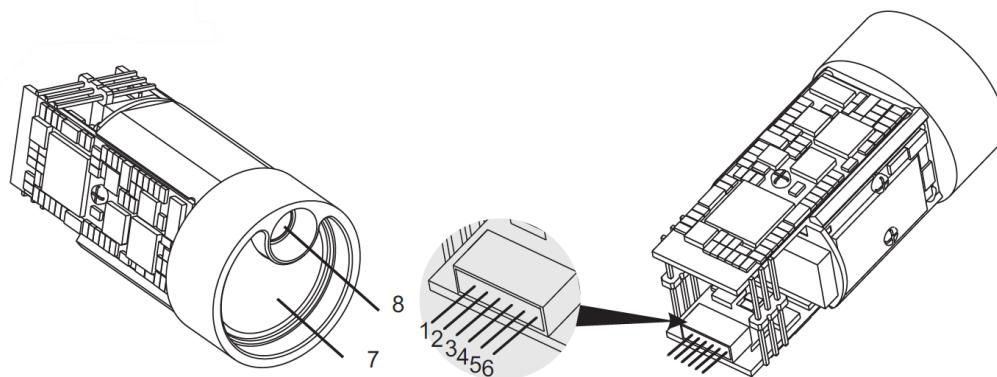
2. Module parameters

2.1 Performance indicators

Technical indicators	Performance parameter	Performance parameter
	D function technical indicators	H/AH/V function technical indicators
Application field	Drone / Security / Sweeper / Traffic Detection	Single cylinder / double cylinder / thermal image / night vision
Emission aperture	6mm	6mm
Receiving aperture	17mm[75%]	17mm[75%]
Ranging range [buildings]	0.15m~ 10/20/30/100/200m	5m ~ 600/800/1000/1200/1500m
Ranging accuracy [building]	±3cm	<400m ±1m >400m ±0.4%
Ranging frequency	10KHz/50KHz/100KHz	≥25Hz~30KHz(Adaptive)
Inclination range	±60°	±60°
Dip accuracy	±0.5°	±0.5°
Laser divergence angle	3mrad	3mrad
Display type	-	OLED/LCD
Laser type	905nm	905nm
Supply voltage	3~5V	3~5V
Communication Interface	Standard as TTL (other customizable)	Standard as TTL (other customizable)
Weight	about20±1	about20±10
Waterproof level	IP67	IP67
Impact resistance	800G/ms (10 times/s)	800G/ms (10 times/s)
Size	Φ 23 x47mm	Φ 23 x47mm
Operating temperature	-20°C~50°C	-20°C~50°C

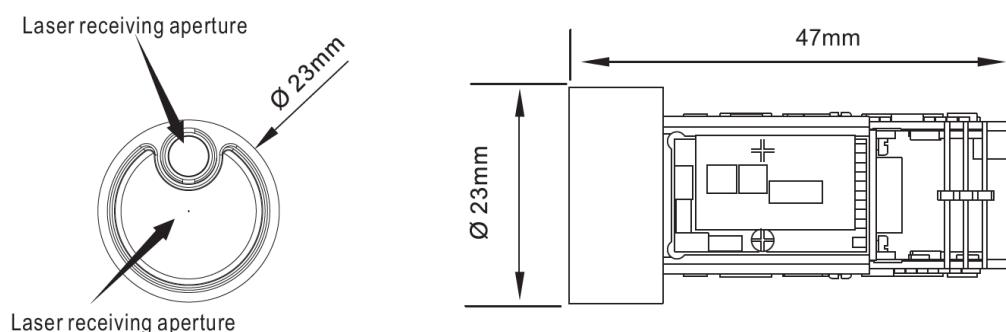
Baud rate	115200bps	9600/115200bps
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2.2 Structure and Pin



- | | |
|--------------------------------|-----------------------------|
| 1: SW-SHOT (low boot is valid) | 5: VCC (3v~5v input, 300mA) |
| 2: RX (communication bit) | 6: GND |
| 3: TX (communication bit) | 7: Laser receiving aperture |
| 4: IO (reserved) | 8: Laser emission aperture |

2.3 Module Size



3. Measurement Considerations

3.1 Factors that influence ranging capability

- 1) Target reflectivity: Generally speaking, the higher the reflectivity of the object, the better the ranging ability. for example, for moderate reflectivity object, the measuring range is 600M, and it can up to 800M for high reflectivity object, but

may be only 300M for low reflectivity one. The ranging ability of other objects can be got the same conclusion. (It may be fail to measure the target that can hardly create diffuse reflection, such as water surface.)

2) Target shape: When a target is too small or uneven, ranging capability and range corresponding speed will decrease.

3) Measuring angle: The ranging ability would be better if the measured object is vertical with laser emission's direction, the higher the speed of ranging response, On the contrary, the ranging ability and response speed will be reduced; It's possible that the measuring range cannot meet the ranging ability specified in the manual under some extreme conditions.

4) Environment factor: the environment factors including sunshine intensity, the concentration of water vapor in the air and suspended particles, deviation from the Angle of sunlight, etc. (such as rain, fog, snow, haze, etc.)

3.2 Suitable measurement target

The product is suitable for measuring high reflectivity objects (such as highway's signpad), moderate reflectivity objects (such as building's wall) and low reflectivity objects (such as tree, golf flag, utility pole, animal etc.) When the reflectance is reduced to a certain extent, the range will be reduced accordingly.

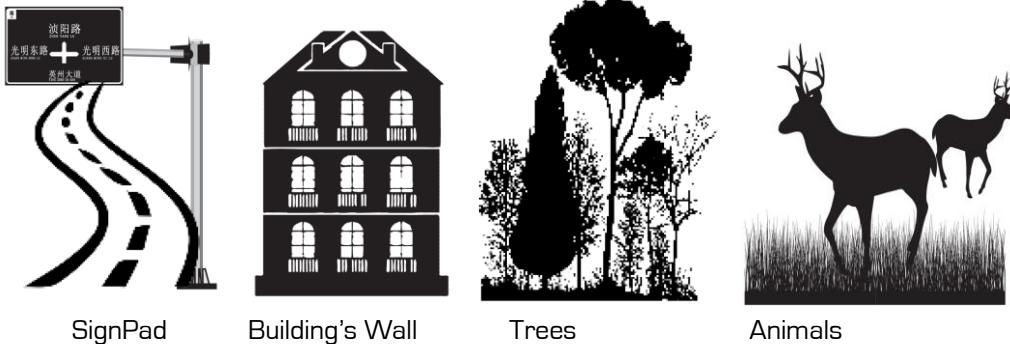


figure 1 Suitable measurement target

3.2 The range ability of the product defined under the following conditions

- 1) The measurement target is with moderate reflectivity, such as building walls.
- 2) The measured object is vertical with laser emission direction.
- 3) The weather condition is sunny but not direct sunlight.

Noted: To get a better measurement, it is suggested to mount the product on a tripod when you targeting the remote objects, so that to reduce the jitter of the machine while measuring.

4. Version record

Version	Date	Illustrate
V1.0.0		
V1.0.1	2022.03.17	Change the model LRS10B-905, to LRF G905 52