

Laser Range Finder Technical Instruction

LRF G905 59



1. Summarize

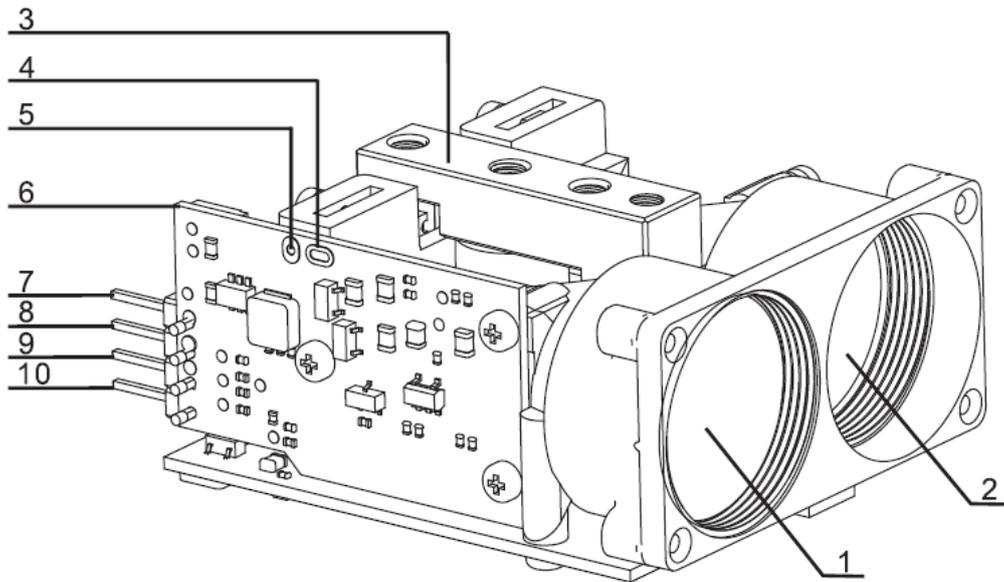
The ranging module is high integration, low power consumption and light weight. It could provide distance measurements quickly and accurately for the main control system; The range accuracy is $\pm 1\text{m}$. It has the TTL interface (could communicate with MCU directly) or by RS 232 serial port through adapter. It facilitate customer's redevelopment work and build their own ranging system.

2. Module parameters

2.1 Performance indicators

Technical indicators	Performance parameter
Application field	Drone / Security / Sweeper / Traffic Detection
Resolution Ratio	0.1m
Ranging range	5m~600m/1000m/1500m
Ranging accuracy (building)	$>5\text{m}\leq 100\text{m}$ $\pm 0.5\text{m}$ $>100\text{m}\leq 400\text{m}$ $\pm 1\text{m}$ $>400\text{m}$ $\pm 0.4\%$
Laser divergence angle	3mrad
Laser type	905nm(class 1 safe laser)
Supply voltage	CR2(3V) Lithium battery TTL Serial Port(5V)
Weight	36.5g
Waterproof level	IP67
Size	57mmx42mmx26mm
Operating temperature	$-30^{\circ}\text{C}\sim 50^{\circ}\text{C}$
Baud rate	9600/115200bps

2.2 Structure and Pin



- | | |
|--------------------------------------------|------------------|
| 1: Laser emission aperture | 6: Power Board |
| 2: Laser receiving aperture | 7: USB (3-5V) |
| 3: Fixed block | 8: RX |
| 4: Positive electrode of battery (CR 2-3V) | 9: TX |
| 5: Negative electrode of battery (CR2-3V) | 10: GND (ground) |

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, fog, 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.

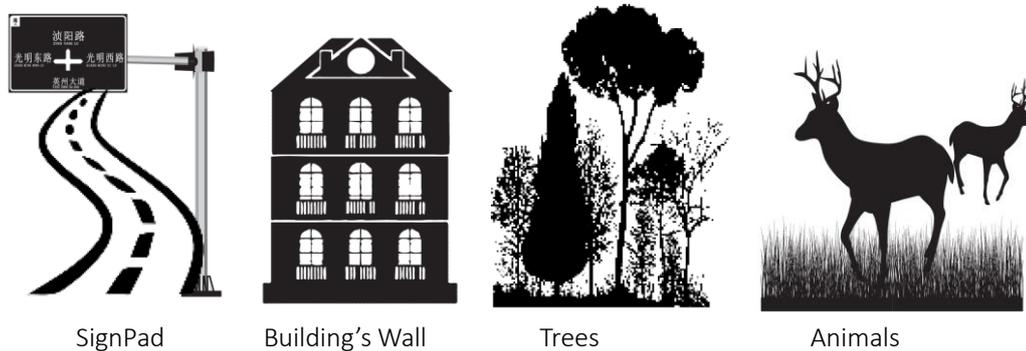


figure 1 Suitable measurement target

3.3 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 LRS11B-905 to LRF G905 59