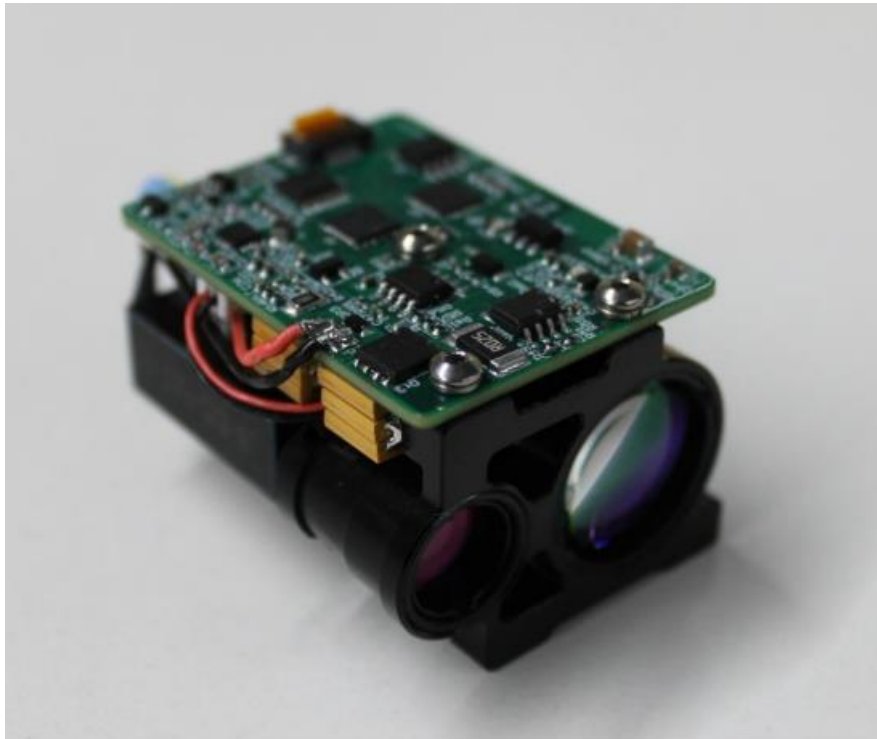


## Laser Range Finder Technical Instruction

### LRF G1535 2S



## 1. Summarize

The laser rangefinder is a safety laser rangefinder in the pod photoelectric system, which can detect the target distance and transmit the measured distance to the host computer through serial communication.

## 2. Structural composition and main functional indicators

The laser rangefinder consists of laser, transmitting optical system, receiving optical system and control circuit. The main performance is as follows:

### 2.1 Working distance

Under normal conditions, visibility should not be less than 5 km, diffuse reflectance  $\geq 0.3$ , humidity  $\leq 80\%$ , for vehicle ( 2.3m  $\times$  2.3m) targets, ranging distance  $\geq 2.5$ km, for human ( 1.75m  $\times$  0.75m) targets, ranging distance  $\geq 1.2$ km.

### 2.2 Main function

The main functions of laser rangefinder are:

- A) Single ranging and continuous ranging;
- B) Range-Gated, front and back target indication;
- C) Self-check function.

### 2.3 Performance

- A) wavelength: 1535nm $\pm$ 5nm
- B) Laser divergence Angle:  $\leq 0.5$ rad
- C) Continuous ranging frequency: adjustable from 1Hz to 10Hz
- D) Ranging accuracy:  $\leq \pm 2$ m (RMS)
- E) Accuracy rate:  $\geq 98\%$

- F) Minimum range:  $\leq 20\text{m}$
- G) Ranging resolution:  $\leq 30\text{m}$
- H) Power supply voltage: DC9V ~ 16V (customizable)
- I) Weight:  $\leq 60\text{g}$
- J) Power: average power consumption  $\leq 1.5\text{W}$  (working at 1Hz), peak power consumption  $\leq 5\text{W}$
- K) Size:  $\leq 55\text{mm} \times 42\text{mm} \times 35\text{mm}$
- L) Operating temperature:  $-40^{\circ}\text{C} \sim +65^{\circ}\text{C}$
- M) Storage temperature:  $-55^{\circ}\text{C} \sim +70^{\circ}\text{C}$

## 2.4 Interface specification

Communication interface: RS422, 115200bps

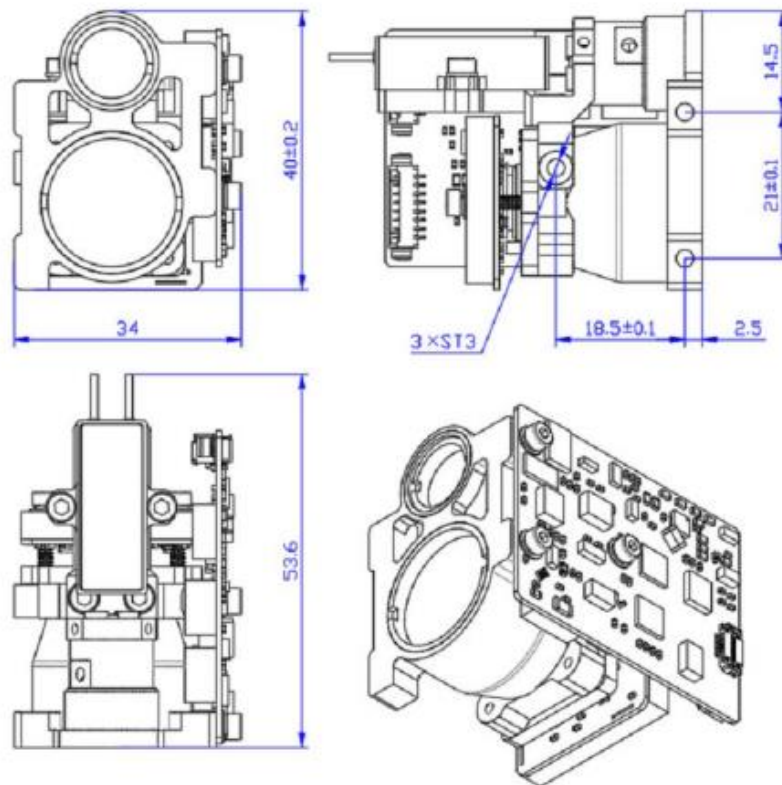
Electrical interface: The interface model is Molex 51021-0800. The interface definition is detailed in the table below

8Pin Socket connection Definition

No	Definition	Color	Remarks
1	RS422 RX+	Brown	RS422 Receive data +
2	RS422 RX-	Blue	RS422 Receive data -
3	RS422 TX-	Yellow	RS422 Transmit data -
4	RS422 TX+	Purple	RS422 Transmit data +
5	GND	White	Communication interface ground

			connection
6	+12V	Red	Power +
7	GND	Black	Power ground
8	Reserved	Null	Reserved

## 2.5 Size



## 3. Precautions for use

- The laser emitted by this rangefinder is a 1535nm laser that is safe for human eyes. Although it is a safe wavelength for human eyes, it is recommended not to look directly at the laser;
- When adjusting the parallelism of the optical axis, be sure to block the

receiving lens, otherwise the detector will be permanently damaged due to the strong echo;

- This distance measuring module is not airtight. Make sure that the relative humidity of the operating environment is less than 80%, and ensure that the operating environment is clean and sanitary to avoid damage to the laser;
- The range of the rangefinder is related to the visibility of the atmosphere and the nature of the target. Range measurement will reduce the range in the presence of fog, rain and sand. Targets such as green leaf clusters, white walls, and exposed limestone have good reflectivity, which can increase the measurement range. In addition, when the inclination angle of the target to the laser beam increases, the measurement range will be reduced;
- It is strictly forbidden to launch lasers on strong reflective targets such as glass and white walls within 20 meters, so as to avoid too strong echoes, which may damage the APD detector;
- It is strictly forbidden to unplug and plug the cable when the power is on;
- Make sure that the polarity of the power supply is connected correctly, otherwise it will cause permanent damage to the equipment

## 4. Version record

Version	Date	Illustrate
V1.0.0	2022.05.06	Original Version
V1.0.1		