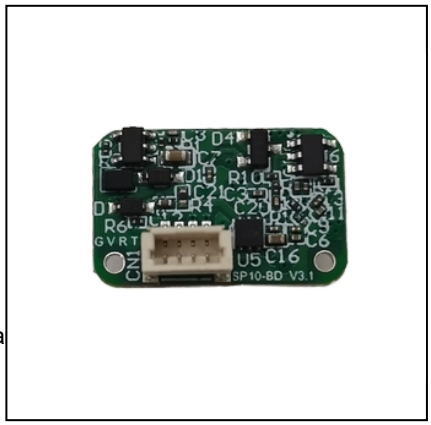
On account of DTOF. The list of technology Spot Lidar LL series

500Hz Measure the speed; Fifty Meter measurement distance; outdoor resistance to ambient light 100 K Lux; Excellent cost performance

Distinguishing feature

- Based on the time-flight algorithm (DimensionIrect Time Of Flight)
- Maximum measuring range:FiftyMedium size
- Measure the blind spot:FiveCm
- Frequency of ranging: 500Hz
- AbsoluteAccuracy:±5cm(<5m), 1%(≥5m)
- Resolution:OneMillimeter
- Working temperature:-Two0℃ ~ + sixZero℃
- Supply electricityVoltage:3.3 ~ 5 VDC
- Small volume:One8.7UnknownOne1.8Unknown13.3 Millimeter
- Weight: Two Generation
- Resistant to ambient light:One hundred thousandLarge sizeUx



Apply

- The drone set the height and avoid obstacles.
- Robot obstacle avoidance
- Industrial-grade light curtain
- AGV. Avoid obstacles
- High-speed measurement and safety monitoring in the field of tra

One,Product overview

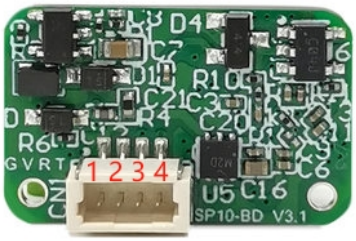
LL series Lidar is a new laser ranging product launched by our company for UAVs, sweeping robots, industrial robots and other fields.This product is based on the principle of DTOF ranging, which has the characteristics of small size, low cost, excellent performance, and strong resistance to ambient light interference. ProductEasy to use, flexible installation, convenient expansion, extremely cost-effective.

Two,Specification parameters

#	Model	LL series
One	Measuring range	0.0Five-Five0m (ULZ 000105 NineNine0% reflectivity),0.0 Five - 20 Medium size(One0% reflectivity)
Two	Frequency of ranging	500Hz
Three	Absolute accuracy	±5cm(<5m), 1%(≥5m)
Four	Repeat accuracy	±10mm
Five	Ability to resist ambient light	10m@100 Klux
6	Measure the wavelength of the	905nm
Seven	Measure the laser level	Class One
Eight	Measure the laser field of view angle	One.7°
Nine	Indicate the wavelength of the	N/A
OneZero	Indicate the laser level	N/A
OneOne	Input voltage	3.3-5VDC
OneTwo	Peak current	OneFiveZero mA
OneThree	Average current	80Master of Arts
OneFour	Average power consumption	<0.4W
OneFive	Output interface ULZ 000171 UART	UART,IIC.
One6	Protection level	N/A
OneSeven	Size (length x width x height)	18.7 x 11.8 x 13.3mm
18	Weight	Two grams
19	Working temperature	-Two0℃ ~ + sixZero℃

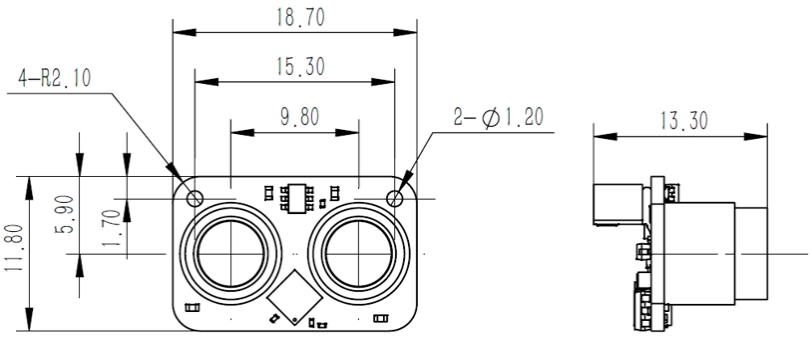
#	Model	LL series
One	Measuring range	0.0Five-Five0m (ULZ 000105 NineNine0% reflectivity),0.0 Five - 20 Medium size(One0% reflectivity)
Two	Frequency of ranging	500Hz
Three	Absolute accuracy	±5cm(<5m), 1%(≥5m)
Four	Repeat accuracy	±10mm
Five	Ability to resist ambient light	10m@100 Klux
TwoZero	Cable specifications ULZ 000199 4pin 1.25mm terminal, 10cm tin-soaked loose wire	4pin 1.25mm terminal, 10cm tin dipped loose wire
TwoOne	Scope of customization	Support shape structure customization, support output protocol customization

3、Pin definition



Pin	Definition/Color of the wire	User interface
One	TX (yellow)	RX
Two	RX (green)	TX
Three	3.3~Five V(Red)	The external power supply is positive
Four	GND.(Black)	External power supply is negative

4、Product size



5、Characteristics of ranging

Due to the existence of a certain divergence angle of the detection light source, in the actual measurement, if you need to obtain an accurate distance value, it is required that the surface area of the measured object is greater than the light spot diameter of the light source at this distance.

At different distancesLL seriesThe diameter of the light spot is shown in the following table:

Distance	One	Two	Five	10 meters	20 meters
Light	ThreeCm	6Cm	15	30	60

Frame head	The distance value is two		Check
5C	02	11	EC.

6、Communication protocol

6.1 Communication interface parameters

UART serial port	
Negotiate	Free agreement
Baud rate	460800 (can be set)
Data bit	Eight
Stop bit	One
Check position	Not have

6.2 Output format

The input and output of this product adopt hexadecimal small terminal mode.

4 bytes output

FiveC: Fixed frame header 1 byte

02 11: The distance value of two bytes means that the measured distance is 4354Mm, small end mode, range 0-65535,Can't measure the output of 50m

EC.: Check bit one byte, from the second byte ULZ 00027902 02Start from the penultimate byte 11End, seek sum and take inverse

6.3 UART Directive

#	Function description	Go up to the capital from other part of the country	Go down line	Remarks
One	Read the serial number of the product	5A 0D 02 0D OD checksum	5A 8D 02 10 01 Checksum	10 01Indicates that the serial number of the product is272: Small terminal mode, the product serial number displayed on the upper computer is: S00272(Add S in front of the 5-digit number)
Two	Read the software version number	5A 16 02 16 16 checksum	5A 96 02 03 02 Checksum	03 02Indicates that the software version number of the product is V.Two.Three: Small terminal mode,02ExpressTwo,03Express Three, add a dot in the middle (.) Express
Three	Modify the baud rate	5A 06 02 80 04 Checksum	5A 86 02 80 04 Checksum	60 00(9,600) C0 00(19200) 80 01(38,400) ULZ 000338 80 04 80 04(115,200) 00 09(230,400)ULZ 000342 00 0A

				00 0A(256,000) 00 12(460,800) Other baud rates are not supported.

6.4 Verification function: The above verification bytes all use this verification function.

From the beginning of the second byte to the end of the penultimate byte, find the sum and take the inverse.

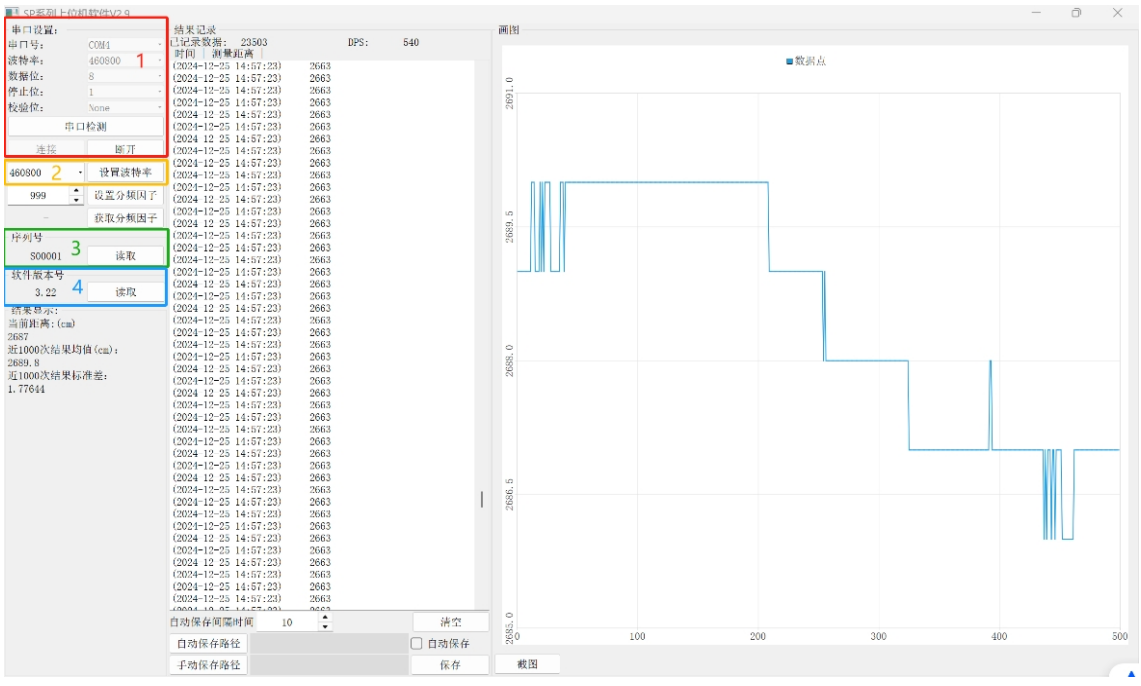
```
Uint8_t Check_Sum(uint8_t *_pbuff, uint16_t _cmdLen)
{
Uint8_t cmd_sum=0;
Uint16_t i;
For(i=0;i<_cmdLen;i++)
{
 Cmd_sum += _pbuff[i];
}
Cmd_sum = (~cmd_sum);
Return cmd_sum;
}
```

7. Quick test

Test material list: TTL to USB adapter board, 5V power supply (battery, power bank, computer USB port are all available), upper computer/serial port assistant.

LL seriesAfter connecting correctly, select the baud rate, click OK, and you can observe the measured data on the upper computer.

The upper computer is displayed as follows:



Area 1: Set the corresponding serial parameters and click to connect ULZ 000367 Area 2: Set the baud rate

Area 2: Set the baud rate

Area 3: Read the product serial number

Area 4: Read the software version number

8. Precautions for use

- The product has no reverse connection and overvoltage protection. Please supply and wire the power and wiring correctly according to the specifications.

- The product laser is Class1. Please do not look directly at the lens after the product is powered.

- When used in a dusty environment, it is recommended to add red glass or acrylic panels on the product lens (905nm band transmittance is not less than 85%) ULZ 000374 - When touching the product, please wear anti-static gloves to avoid product failure.

-Please wear anti-static gloves when touching the product to avoid product failure.

- The product is at risk of failure when measuring high-altitude objects (such as 3M tape), mirrors, etc.

9. Update the resume

File version	Update time	Updated content
V1.0	December 24th and 30th	According to the current design scheme, sort out the first version
V2.0	March 25, 05 ULZ 000385 Modify some parameter data	Corrected some parameter data