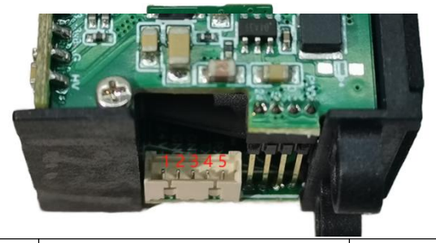
Siman

SDFM50 laser rangefinder module

The SDFM50 is a high-frequency, high-precision mid-range laser rangefinder module based on time-of-flight (ToF) technology. It comes with a built-in coaxial guide light that can be easily turned on or off, making installation straightforward. With strong resistance to ambient light, it supports various complex indoor and outdoor scenarios. For more product details, visit: www.siman.asia

warn	Follow the equipment usage guidelines! This product is not a safety sensor and cannot be used for personnel protection.
	➢ The product features no reverse connection or overvoltage protection. Please follow the specifications for proper power supply and wiring. ➢ The product indicates Class2 laser, and direct viewing of the lens is strictly prohibited. ➢ This product has no explosion-proof structure, and it is forbidden to use in flammable and explosive environments. ➢ Do not remove this product. ➢ Be sure to turn off the power before operating. Do not connect wires while powered on! 1. Avoid use in dust/steam or corrosive gas environment; 2. Avoid use in places where corrosive gases are generated; ➢ Do not use this product in water. ➢ The product may fail when measuring high-reflective objects (such as 3M tape) or mirrors. ➢ When used in dusty environments, it is recommended to add a red-transmitting glass or acrylic panel (with a 905nm transmission rate of at least 85%) to the lens. ➢ Add isolation for sending and receiving (e.g., use black foam to isolate transmission and reception) ➢ Wear anti-static gloves when handling the product to prevent damage.

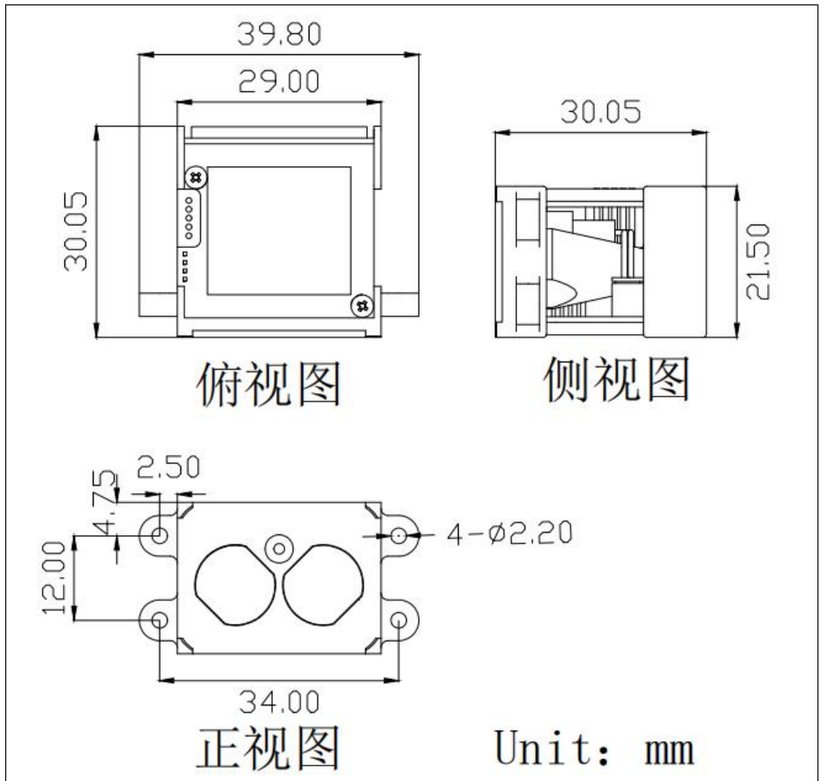
Pin definition



pin	Thread order definition	customer interface
1	9~36V (Red)	External power is on
2	GND(black)	GND
3	GND(yellow)	GND
4	TX(hispid arthraxon)	RX
5	RX(Lan)	TX

Specifications	
model	**SDFM50**
measuring range	0.05m-50m (90% reflectivity) 1 0.05m-15m (10% reflectivity)
absolute accuracy	±10cm (within 10m), 1% (outside 10m)
repeatability precision	±5cm
Measuring frequency	1KHz (adjustable from 20 to 10KHz)
Measure laser wavelength	905nm, Class 1
Indicate laser wavelength	650nm (visible red light)
Indicate laser level	Class 2
Environmental light resistance	100KLux 2
Measure laser field of view	4mrad
communication mode	UART
levels of protection	N/A
working voltage	9~36VDC
working current	100mA (peak current) 34mA (average current)
Average Power Consumption	0.8W
weight	15±2g
size	38 x 20 x 30 mm
working temperature	-20℃ to +60℃ (no freeze, red light off)
Electrical connections	5P 1.25mm spacing crosshair, 50cm length
Customize range	Supports customizing the shape structure and output protocol
explanatory note	1. This parameter was measured at 90% reflector with an outdoor temperature of 25℃. 2. This parameter is measured at 25℃ in indoor environment.

dimensional drawing



Distance measurement characteristics

Because the detection light source has a certain divergence angle, in order to obtain the accurate distance value in the actual measurement, the surface area of the measured object is required to be larger than the diameter of the light spot of the light source at this distance.

The spot diameters of SDFM50 at various distances are shown in the table below:

distance	1m	2m	5m	10m	15m	20m
spot diameter	0.2cm	0.4cm	1cm	2cm	3cm	4cm

Communication interface: UART		
Baud rate	460800bps (default), can be modified	
Data bit 8	Stop position 1	Check bit: None

output format

This product uses little-endian hexadecimal for both input and output.

Frame header	Distance value in two bytes		check bit
5C	02	11	EC

5C: Fixed frame header 1 byte

02 11: The distance value of three bytes indicates a measured distance of 4354cm.
Little-endian mode, range 0-65,535 cm; output 65535cm when not detected

EC: From 02 to 11, perform byte-level XOR operation and verification

Set and read instructions

function	**direction**	**data**	**definition**

<table>
<tr><td rowspan="2">Read product serial number</td><td>transmit by radio</td><td>5A 0D 02 0D 0D</td><td rowspan="2">10 01 indicates product serial number 272 in little-endian mode, while the host computer displays it as S00272 (with S prefixed to the 5-digit number).</td></tr>
<tr><td>return</td><td>5A 8D 02 10 01</td></tr>
<tr><td rowspan="2">UART serial port baud rate settings</td><td>transmit by radio</td><td>5A 06 02 80 04</td><td rowspan="2">80 04 corresponds to decimal 1152 in little-endian mode, indicating a baud rate of 115200 (1152 multiplied by 100).</td></tr>
<tr><td>return</td><td>5A 86 02 80 04</td></tr>
<tr><td rowspan="9">7 baud rates available</td><td colspan="2">Hexadecimal (Little Endian)</td><td>decimal system</td><td>Baud rate</td></tr>
<tr><td colspan="2">60 00</td><td>96</td><td>9600</td></tr>
<tr><td colspan="2">C0 00</td><td>192</td><td>19200</td></tr>
<tr><td colspan="2">80 01</td><td>384</td><td>38400</td></tr>
<tr><td colspan="2">80 04</td><td>1152</td><td>115200</td></tr>
<tr><td colspan="2">00 09</td><td>2340</td><td>230400</td></tr>
<tr><td colspan="2">00 0A</td><td>2560</td><td>256000</td></tr>
<tr><td colspan="2">00 12</td><td>4608</td><td>460800</td></tr>
<tr><td rowspan="2">Read the product software version number</td><td>transmit by radio</td><td>5A 16 02 16 16</td><td rowspan="2">03 02 indicates the product software version V2.3: the lower-end mode, where 02 stands for 2 and 03 for 3, with a dot (.) in between.</td></tr>
<tr><td>return</td><td>5A 96 02 03 02</td></tr>
<tr><td rowspan="3">UART serial port data output frequency setting (division factor)</td><td>transmit by radio</td><td>5A 0B 02 E7 03</td><td rowspan="3">E7 03 indicates a 999 frequency division factor for the serial port data output in little-endian mode, with the set frequency f=1000000/(999+1)=1000Hz.</td></tr>
<tr><td>return</td><td>5A 0B 02 E7 03</td></tr>
<tr><td>return</td><td>5A 8B 02 E7 03</td></tr>
</table>

Check function

All the above check bytes are generated by this check function

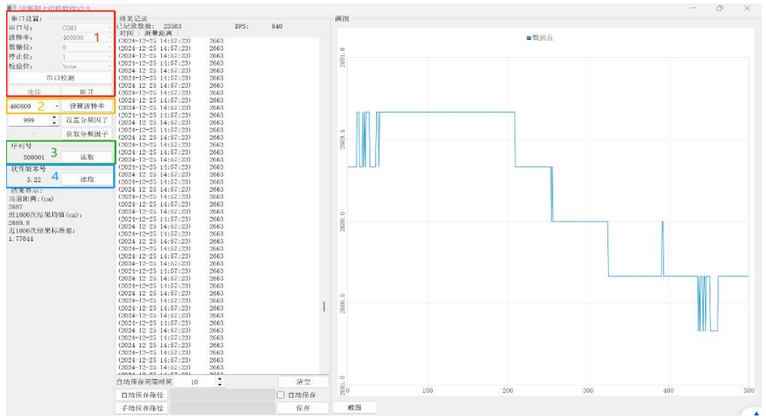
Sum and invert from the second byte to the second-to-last byte

```
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;
    }
```

Quick Test

Test equipment: TTL-to-USB adapter board, 9-36V DC power supply, host computer/serial port adapter.

After properly connecting the SDFM50, select the baud rate and click OK to view the measured data on the host computer. The host computer displays the following:



Area 1: Set the serial port parameters and click Connect

Region 2: Set baud rate

Region 3: Read product serial number

Region 4: Read the software version number

Plug the TTL-to-USB adapter into the computer's serial port. Click' Port Detection 'and wait for the serial port number to appear before clicking' Connect' (default status shown in the image). The laser distance measurement defaults to 1000/50Hz, with a configurable baud rate of 460800. The configuration includes 8 data bits, 1 stop bit, and no parity check. The SDFM series distance measurement module automatically outputs data upon power-on (4-byte frame). If no signal is detected, it outputs 0xFFFF (65535).

contact us

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