




SDM20 laser rangefinder module

SDM20 LiDAR is our latest laser ranging solution for UAV altitude determination and obstacle avoidance, robot navigation, traffic systems, industrial automation with high-speed measurement and safety monitoring, and industrial robotics. Built on the DTOF (Doppler Time of Flight) principle, this compact device delivers cost-effective performance with strong resistance to ambient light interference. Featuring intuitive operation, flexible installation, and easy expansion, it offers exceptional cost-performance. For more product details, visit: [www.siman.asia](http://www.siman.asia)



warn

Follow the equipment usage guidelines! This product is not a safety sensor and cannot be used for personnel protection.

➤

Main measurement laser (905nm): Class 1 laser product. Safe under normal operating conditions.

➤

The product may fail when measuring high-reflective objects (such as 3M tape) or mirrors.

➤

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.

➤

When used outdoors, pay attention to adding a waterproof cover.

hookup

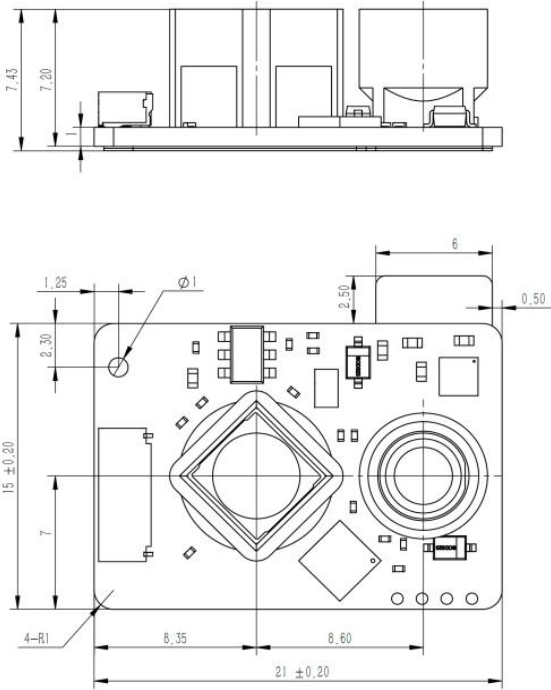


pin	Pin definition	customer interface
1	NC	
2	VCC +3.3V	External power is on
3	TX(SCL)	RX(SCL)
4	RX(SDA)	TX(SDA)
5	NC	
6	GND	External power negative

Specifications

model	SDM20
measuring range	0.05-20m (90% reflectivity), 0.05-10m (10% reflectivity)
repeatability precision	±10mm
accuracy	±5cm( < 5m), 1%(≥5m)
measuring frequency	200Hz
Measure laser light source	905nm, Class 1
Field of View (FOV)	2.8°
Environmental light resistance	9m @70K Lux
Control output	UART TTL,IIC
working voltage	3 ~ 3.6VDC
working current	3.3V@50mA (peak current)
	3.3V@50mA (average current)
Average Power Consumption	< 0.2W
weight	1.4g
size	21x 15 x 7.43 mm
working temperature	-20~60°C
Electrical connections	6-pin 0.8mm terminal with 20cm solderable spread wire (customizable double-ended terminal wire and length available)

dimensional drawing



Distance measurement characteristics

Due to the divergence angle of the detection light source, the measured object's surface area must exceed the light spot diameter at the target distance to obtain accurate measurements. The SDM20 light spot diameters at various distances are shown in the table below.

measured	1m	2m	5m	10m	20m
spot diameter	5cm	10cm	25cm	50cm	100cm

contact us

Ximan Sensing Technology Co., LTD

URL: [www.siman.asia](http://www.siman.asia)

Wanda Mall 1, Qingpu District, Shanghai

11 Changchun Road, High-tech Zone,

Zhengzhou City, Henan Province

Email: [17317261651@163.com](mailto:17317261651@163.com)

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UART TTL

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 two bytes indicates a measured distance of 4354mm.			
Little-endian mode, range 0-65,535, output 20000 when not detected.			
EC: The parity bit is calculated by summing the bytes from 02 to 11 and then taking the bitwise complement.			
Example: The device is this product, and the host is the control receiver.			
function	direction	data	definition
Read product serial number	transmit by radio	5A 0D 02 0D 0D D6	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).
	return	5A 8D 02 10 01 5F	
Read software version number	transmit by radio	5A 16 02 16 16 BB	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.
	return	5A 96 02 03 02 62	
Change baud rate	transmit by radio	5A 06 02 80 04 73	60 00 (9600) C0 00 (19200) 80 01 (38400) 80 04 (115200) 00 09 (230400) 00 0A (256000) 00 12 (460800) Other baud rates are not supported
	return	5A 86 02 80 04 F3	
Switch IIC	transmit	5A 1F 02 1F 1F A0	Return 5A 9F 02 1F 1F 20. Switch

command	by radio		successful
	return	5A 9F 02 1F 1F 20	
	transmit by radio	5A 0A 02 00 00 F3	

Quick test:

Test items: TTL to USB adapter, 3.3V power supply, host computer/serial port adapter.

After properly connecting the SDM20, select the baud rate and click OK to view the required data on the host computer.

The host computer displays the following:

The screenshot shows the SDM20 software interface. On the left, there are settings for model (VB22A), serial port (COM26), baud rate (460800), and other parameters. A real-time distance point line chart is displayed in the center. At the bottom, there are buttons for saving data, clearing data, and other functions. The interface is divided into several regions labeled 1 through 7.

Area 1: Set the serial port baud rate and other parameters for the corresponding model. Click Disconnect, then click Connect.

Region 2: Set baud rate

Region 3: Real-time distance point line chart

Area 4: Read real-time frequency

Region 5: Read real-time distance values

Region 6: Save data to file

Region 7: Clear all displayed data

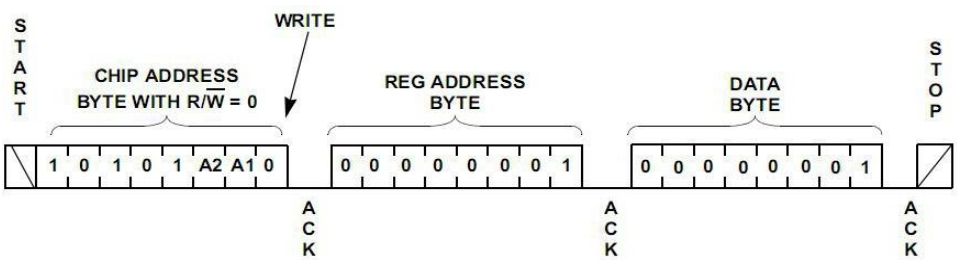
	return	5A 8A 02 00 00 73	
Enable distance measurement	transmit by radio	5A 0A 02 02 00 F1	Return 5A 8A 02 02 00 71 to enable distance measurement
	return	5A 8A 02 02 00 71	

### IIC protocol

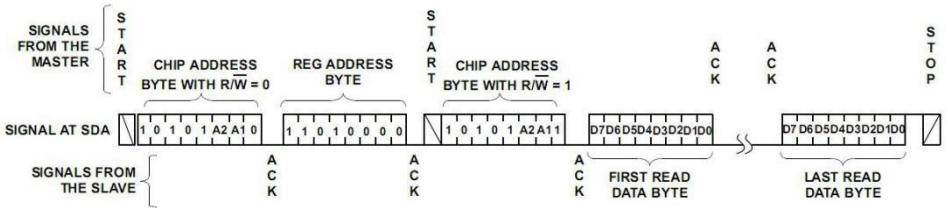
The SDM20 LiDAR IIC slave interface supports clock frequencies up to 400K.

The factory default address is 0x52 (7-bit address mode).

The I2C single-register write timing is as follows:



I2C multi-register read sequence:



Register definition:			
Register address	Register Meaning	Read/Write Properties	remarks
0x00	Distance-High Byte	read only	Distance is represented by 2 bytes
0x01	Distance-Low Byte	read only	Distance is represented by 2 bytes
0x02	Laser-enabled control	write only	0: Off, 1: On
0x03	laser ID	read only	Default 0x4A for communication read/write testing
0x04	IIC to UART	write only	Write 0xA5 to register 0x04 and 0x5A to register 0x05.
0x05		write only	
0x06	Software version number-high byte	read only	The software version number is 2 bytes, with the high byte first and the low byte last.
0x07	Software version number-low byte	read only	
0x08	Serial Number-High Byte	read only	The serial number is 4 bytes, with the high byte first and the low byte last, ranging from 1 to 4294967294.
0x09	Serial number-second byte	read only	
0x0A	Serial number-second-lowest byte	read only	
0x0B	Serial Number-Low Byte	read only	
0x0C	IIC slave address	Read/Write	IIC slave address, 7-bit mode, range 0-127
0x0D	factory data reset	write only	Write 0x01 to restore factory settings