Siman

SDF-04 single-point lidar

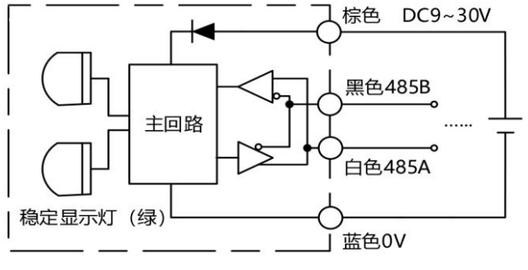
The SDF-04 is a single-point laser sensor utilizing DTOF technology, overcoming the limitations of conventional photoelectric sensors in range detection, object color recognition, and compact design. Its TOF technology enables broader applications, including "multi-object handling production lines" and "assembly lines with limited installation space".

1000Hz measurement frequency; 4-meter measurement range; offers excellent cost-performance. This product is widely used in high-precision measurement scenarios such as warehouse positioning robots, obstacle avoidance, material level detection, and security control. For more product information, please visit: 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 (660nm): Class 1 laser product. Safe under normal operating conditions. ➢ 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. Where corrosive gases are generated; ➢ Do not use this product in water. ➢ When used outdoors, pay attention to adding a waterproof cover.

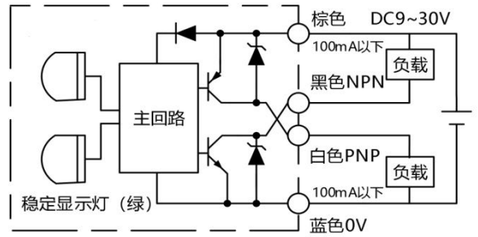
Pin definition:

UART(RS-485)



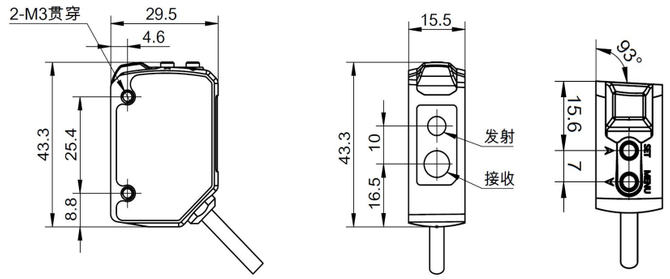
pin	customer interface	Definition / Wire color
1	9-30V (Brown)	External power is on
2	GND(Lan)	External power negative
3	485B (Black)	485B
4	485A (White)	485A

PNP+NPN



pin	customer interface	Definition / Wire color
1	9-30V (Brown)	External power is on
2	GND(Lan)	External power negative
3	NPN(black)	NPN
4	PNP(white)	PNP

product size :



Specifications

#	model	SDF-04D	SDF-04PN
1	range	0.05-4m (80% reflectivity) 0.05-4m (10% reflectivity)	
2	Distance measurement frequency	1Hz~1kHz (default 100Hz)	
3	Distance measurement accuracy	N/A	
4	repeatability precision	5mm	
5	Environmental light resistance	5KLux	
6	Measure laser wavelength	660nm (visible light)	
7	Measure laser level	Class 2	
8	Measure laser field of view	N/A	
9	Indicate laser wavelength	N/A	
10	Indicate laser level	N/A	

11	input voltage	12-30V DC	
12	peak point current	N/A	
13	average current	25mA@24VDC	
14	Average Power Consumption	0.6W	
15	output interface	RS485	NPN+PNP (can be set separately)
16	levels of protection	IP67	
17	Size (length x width x height)	43.3*29.5*15.5mm	
18	weight	60g	
19	working temperature	-20℃~+55℃	
20	Cable Specifications	0.2mm 4-core PVC cable, 2 meters long	
21	Customize range	Supports customized output protocols	

(Note: 1. This parameter is measured at 25℃ in an indoor environment.)

contact us

Siman

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Scan the QR code to follow us

Order Model List:

model	range	communication interface
SDF-04D	0.05...4m	RS485
SDF-04PN		NPN+PNP

Set method SDF-04PN:

The SDF04-PN features two digital interfaces (NPN and PNP), each with its own dedicated button for independent configuration.

The NPN and PNP relays feature two operational modes: fully automatic configuration and two-point configuration, both supporting NO/NC functionality.

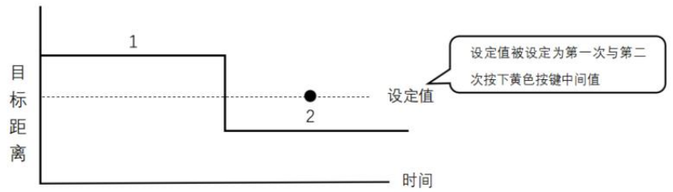
1.1 Automatic setting method:

Always-on mode (NO): Press and hold the NPN/PNP button for 2.5 seconds (more than 2.5 seconds but less than 7 seconds) and release. If successful, the green light will flash rapidly three times.

Normally Closed (NC) mode: Press and hold the NPN/PNP button for 7 seconds (more than 7 seconds but less than 12 seconds) and release. If the setting is successful, the green light will flash rapidly three times.

If the setting fails, the red light will flash three times in rapid succession, returning to its original state.

1.2 Two-point setting method:



1) Set method:

1) Press the NPN/PNP button once when the workpiece is absent

2) Press the NPN/PNP button once while the workpiece is present

3) Simply press the NPN/PNP button once when the workpiece is present and once when it is absent to set the target distance, which is the midpoint between the first and second press values.

4) Step 1) and step 2) can be interchanged

5) The interval between step 1) and step 2) should not exceed 12 seconds, otherwise the setting will restart.

(2) Status indicator

The green light flashes three times in succession when the setting is successful.

If the setting fails, the red light will flash three times in succession and revert to its original state.

1.3 Signal indicator light:

(1) When the NPN switch signal is active, the orange light stays on; when inactive, it stays off.

(2) When the PNP switch signal is active, the green light stays on; when inactive, it remains off.

1.4 Instant response mode and delayed response mode setup:

Press and hold the NPN/PNP setting key for 12 seconds or longer, then release. The green indicator will flash six times rapidly, indicating successful instant response mode setup. Press and hold the key for 12 seconds or longer, then release. The green indicator will flash six times slowly, indicating successful delayed response mode setup (default mode with signal anti-shake function).

1.5 Usage Notes:

Ensure proper power supply and wiring according to the specifications.

The product is Class 2 laser. Do not look directly at the lens when powered on.

When handling the product, please wear anti-static gloves to prevent product failure.

The product may experience reduced distance measurement accuracy when measuring unconventional targets such as high-reflectivity objects (e.g., 3M tape) or mirrors.

SDF-04D-RS485

1.1 Communication Interface:

RS485 serial port	
protocol	MODBUS
Baud rate	115200 (optional)
data bit	8
stop bit	1
check bit	not have

1.2 Data communication protocol:

1. Communication interface: Serial RS485 communication; Default baud rate: 115200; Check bit: none; Data bit: 8-bit; Stop bit: 1-bit

2. Working mode: response-based instruction control

3. Modbus register address list

Register address (16)	function definition (16-bit register)	Notes
00 00	Distance value	Unit: mm. Output 65535 when measurement fails or exceeds the range. Read-only.
00 01	485 slave address	Default 1, value range 1-247, R/W
00 02	obligate	not have
00 03	Baud rate	Default baud rate is 1152. A 100x magnification indicates a baud rate of 115200, with baud rates ranging from 9600/19200/115200/230400/256000/460800. R/W
00 04	Software version number	The 2-byte sequence 01 00 indicates that the module software version is V1.0, read-only.
00 05	Module sequence number (2 bytes)	The module sequence number is 4 bytes in big-endian format and is read-only.
00 06	The module sequence number is 2 bytes lower	Write 0x01, restore the 485 address to 1, restore the baud rate to 115200, and write only.
00 0F	factory data reset	Notes

1.4 Common Modbus Protocol Commands (Write commands take effect immediately upon successful configuration and persist after power loss)

(1) Read the module measurement distance value:

transmit by radio	XX	04	00	00	00	01	CRC_L	CRC_H
return	XX	04	02	03	E8	CRC_L	CRC_H	

The measured distance value = 256*3 (0x03) + 232 (0xE8) =1000 mm

(2) Module 485 address broadcast read (broadcast command, suitable for connecting a single module when the 485 address is unknown):

transmit by radio	FF	03	00	01	00	01	CRC_L	CRC_H
return	FF	03	02	00	XX	CRC_L	CRC_H	

XX is the 485 address of the module. The range of XX is 1 to 247. Values outside this range are invalid.

(3) Module 485 address reading (for use when the module 485 address is known as XX)

transmit by radio	XX	03	00	01	00	01	CRC_L	CRC_H
return	XX	03	02	00	XX	CRC_L	CRC_H	

（4）Module 485 Address Settings

transmit by radio	XX	06	00	01	00	YY	CRC_L	CRC_H
return	XX	06	00	01	00	YY	CRC_L	CRC_H

XX is the original 485 address of the module, and YY is the new 485 address of the module. The range of XX and YY is 1 to 247. Settings outside this range are invalid.

（5）Read the serial port baud rate of the module:

transmit by radio	XX	03	00	03	00	01	CRC_L	CRC_H
return	XX	03	02	04	80	CRC_L	CRC_H	

The serial port baud rate is read as 115200:04 80 (hexadecimal) =1152 (decimal), multiplied by 100. The baud rate range is 9600/19200/115200/230400/256000/460800.

（6）Module serial port baud rate setting:

transmit by radio	XX	06	00	03	00	60	CRC_L	CRC_H
return	XX	06	00	03	00	60	CRC_L	CRC_H

Set the serial port baud rate to 9600:00 60 (hexadecimal) =96 (decimal), multiplied by 100.

The baud rate range is 9600/19200/115200/230400/256000/460800.

（7）Read module software version number:

transmit by radio	XX	03	00	04	00	01	CRC_L	CRC_H
return	XX	03	02	01	00	CRC_L	CRC_H	

01 00 indicates the module software version number V1.0

(8) Read the module serial number (4 bytes):

transmit by radio	XX	03	00	05	00	02	CRC_L	CRC_H
return	XX	03	02	00	13	03	42	CRC_L

00 13 03 42 indicates the module serial number as (0x00) * 16777216 + (0x13) * 65536 + (0x03) * 256 + (0x42) = 0001246018

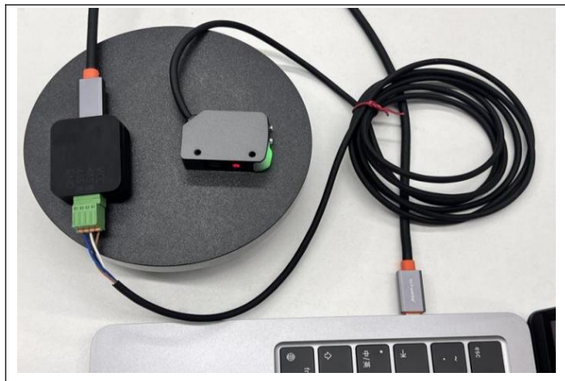
(9) Restore factory settings:

transmit by radio	XX	06	00	0F	00	01	CRC_L	CRC_H
return	XX	06	00	0F	00	01	CRC_L	CRC_H

Restore factory settings: 485 address restored to 1, baud rate restored to 115200

1.5 Quick Test:

Test equipment: RS485 to USB adapter board, 9-30V DC power supply, or our proprietary universal RS485 test kit with Type-C data cable, plus host computer/serial port assistant.

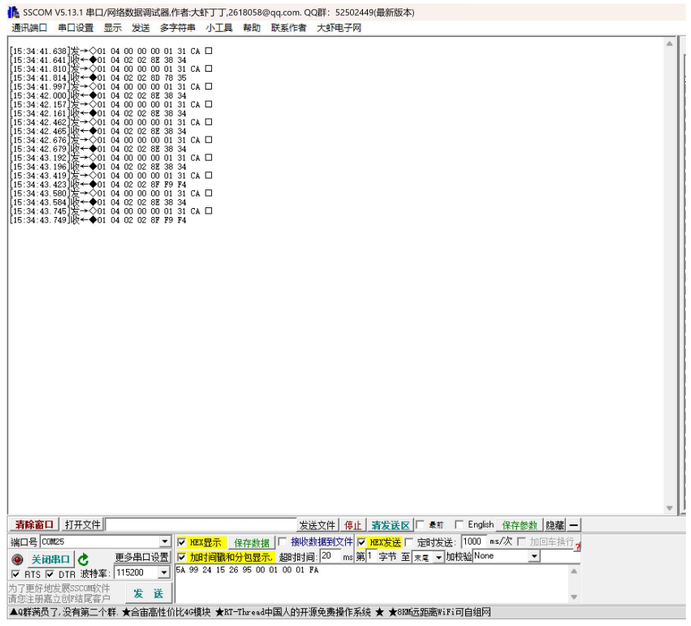


After correctly connecting SDF04, select the appropriate baud rate and click to open the serial port. The serial port assistant will display the following:

Send: 01 04 00 00 00 01 31 CA

Return: 01 04 02 0B DF 60 80

The data frame test command is as follows:



7. Usage Notes

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