

SentiAcu SPL50

Datasheet



SPL50 is a single-point LiDAR of SentiAcu. Features a compact size and lightweight design. Supports UART communication protocol. This product has a visible laser indicator, which facilitates the confirmation of the position measured by the LiDAR.

Technical Specifications

Performance Parameters	
Model	SPL50
Detection range ^①	0.05 ~ 50 m (90% reflectivity) 0.05 ~ 15 m (10% reflectivity)
Accuracy	±5 cm (< 10m), 1% (≥ 10m)
Repeatability accuracy	±5 cm
Default frame rate	1000 Hz (adjustable 20 ~ 10KHz)
Ambient light resistance ^②	45 m @100KLux
Optical Parameters	
Light source	Laser
Central wavelength	905 nm
FoV	Approx. 4mrad
Eye safety	Class1
Alignment pointer	650 nm single point, Class2
Mechanical and Electrical Parameters	
Average power consumption	0.8 W
Peak current	24 V @100 mA
Average current	24 V @34 mA
Power supply	9~36 V DC
Connector	5Pin 1.25 mm terminal, model M1250V-05P, with 50 cm tinned loose wires
Operating temperature	- 20 °C ~ + 60 °C (no freezing, with indicator red light off)
Protection level	NA



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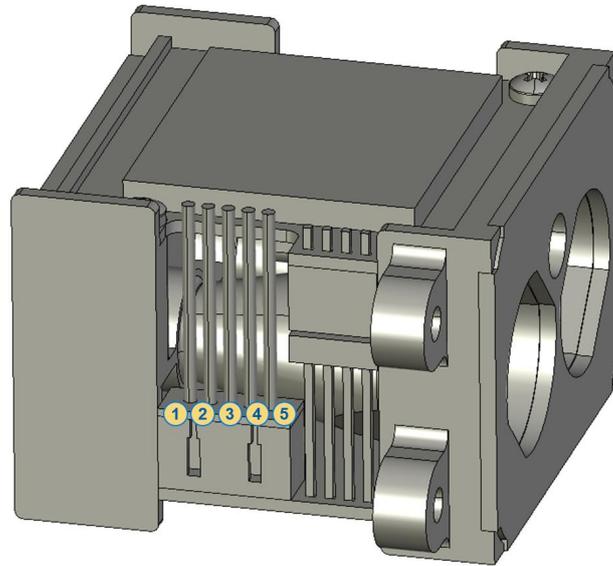
Typ. Dimensions ^③	38 mm × 20 mm × 30 mm
Typ. Weight ^③	<15 ±2g (excluding cables)
Communication Protocol	
Communication Interface	UART
Dimensions (Unit: mm)	

Notes:

1. Measured at 25°C in an indoor environment;
2. Measured with a 90% reflective target at 25°C in an outdoor environment;
3. The weight and size are typical values for reference only.



Pin Diagram



Connector Pitch: 5×1.25mm

Pin	Definition/Wire Color	User Interface
1	9~36V (Red)	External power
2	GND (Black)	GND
3	GND (Yellow)	GND
4	TX (Green)	RX
5	RX (Blue)	TX



Communication Protocol

Communication Interface

UART	
Default baud rate	460800 (adjustable)
Data bits	8
Stop bits	1
Parity	None

Output Format

All data frame commands are in hexadecimal format. The UART serial data output frequency defaults to 1kHz, with each frame consisting of 4 bytes.

Ranging output example: 5C 02 11 EC

- 5C: Fixed header (1 byte)
- 02 11: Distance value (3 bytes, little-endian). Represents a measurement of 4354 cm (range 0 ~ 65535 cm; outputs 65535 cm if no detection).
- EC: Checksum (1 byte), calculated by summing bytes from 02 to 11 and taking the inverse.



UART Commands

Description	Uplink	Downlink	Remarks
Read product serial number	5A0D02 0D 0D D6 (checksum)	5A8D 02 10 01 5F (checksum)	10 01 represents serial number 272 (little-endian). Display as S00272 (add "S" prefix to 5-digit number).
Read software version	5A 16 02 16 16 BB (checksum)	5A96 02 03 02 62 (checksum)	03 02 represents software version V2.3 (little-endian: 02=2, 03=3, displayed with dot separator).
Modify baud rate	5A06 02 80 04 73 (checksum)	5A86 02 80 04 F3 (checksum)	Supported rates: 60 00 (9600), C0 00 (19200), 80 01 (38400), 80 04 (115200), 00 09 (230400), 00 0A (256000), 00 12 (460800). Others not supported.
Modify frequency	5A0B 02 E7 03 08 (checksum)	5A8B 02 E7 03 88 (checksum)	E7 03 is frequency divisor (little-endian). Output frequency $f=1000000/(divisor+1)$ Hz (e.g., 999→1000Hz). Supported range: 20-20KHz.
Read frequency	5A 1B 02 1B 1B AC (checksum)	5A9B 02 E7 03 78 (checksum)	E7 03 is frequency divisor (little-endian). Output frequency calculated as above.
Stop ranging	5A0A02 00 00 F3	5A 8A 02 00 00 73	Returns 5A8A02000073 to confirm stop.
Start ranging	5A0A02 02 00 F1	5A 8A 02 02 00 71	Returns 5A8A0020071 to confirm start.



Checksum Function

Checksum byte is calculated using this function:

Sum all bytes from the second to the second-last, then 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;
}
```

Precautions

- The indicator laser is Class 2—never look directly into the lens.
- No reverse-connection or over-voltage protection—ensure correct power supply and wiring per specifications.
- In dusty environments, add red-transmissive glass or acrylic panel to the lens ($\geq 85\%$ transmittance at 905nm).
- Wear anti-static gloves when handling to prevent failure.
- Risk of failure when measuring highly reflective surfaces (e.g., 3M tape) or mirrors.

