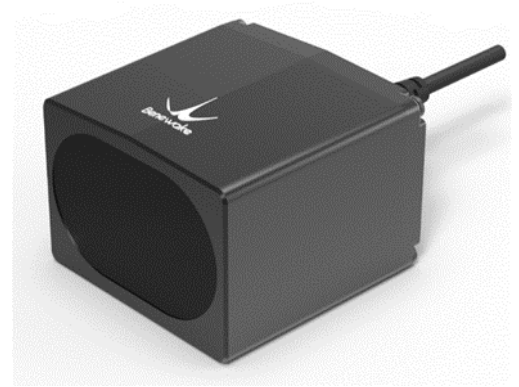


# TF03-180 LiDAR Long-range distance Sensor

## 1 OVERVIEW

TF03-180 is an industrial-grade long-range LiDAR. Its maximum detection range can reach 180m. With integrated compensating algorithm for outdoor glare and other interference, TF03-180 can work under strong light environment and rain, fog and snow conditions<sup>1</sup>. Multiple built-in operating modes let customers to change its parameters and configuration to meet different applications.



## 2 SPECIFICATIONS

TF03-180 contains two versions, standard version and RS485 version:

- 1) Standard version supports UART and CAN interface.
- 2) RS485 version supports RS485 and RS232 interface.

Table 1 Main parameters of TF03-180

Parameters		Standard version	RS485/RS232 version
Product performance	Operating range	0.1-180m@90% reflectivity 0.1-70m@10% reflectivity 0.1-130m@90% reflectivity&100Klux 0.1-50m@10% reflectivity&100Klux	
	Accuracy <sup>2</sup>	±10cm (within 10m), 1% (10m and further)	
	Distance resolution	1cm	
	Frame rate <sup>3</sup>	1Hz~1000Hz adjustable (default 100Hz)	
	Repeatability	1σ: <3cm	
	Ambient light immunity	100Klux	

<sup>1</sup> Rain, snow and fog conditions generally refer to moderate rain, snow and below. Moderate rainfall < 25mm/24h or < 7.9mm/h

<sup>2</sup> The detection range is measured at temperature of 25°C. Accuracy and repeatability are measured with white board (90% reflectivity).

<sup>3</sup> The highest frame rate can be customized to 10KHZ, please contact us for detailed information.



	Operation temperature	-25~60°C	
	Enclosure rating	IP67	
Optical parameters	Light source	LD	
	Central wavelength	905nm	
	Photobiological safety	CLASS 1(EN 60825)	
	FOV <sup>4</sup>	0.5°	
Electrical parameters	Supply voltage	5V-24V	
	Average current	≤150mA @ 5V, ≤80mA @ 12V, ≤50mA @ 24V	
	Power consumption	≤1W	
	Communication interface level	LVTTL (3.3V)	RS485/RS232
	Communication interface	UART/CAN	RS485/RS232
Others	Dimension	44mm*43mm*32mm(L*W*H)	
	Enclosure material	Aluminum alloy	
	Storage temperature	-40~85°C	
	Weight	89g±3g	92g±3g
	Cable length	70cm	

### 3 DIMENSIONS

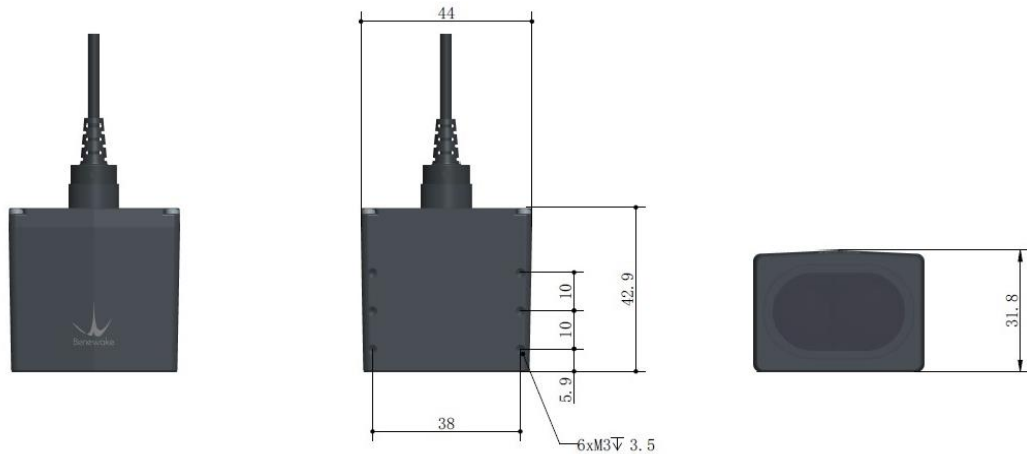


Figure 1 TF03-180 dimensions (Left 1: top view; Left 2: upward view; Left 3: front view) Unit: mm

<sup>4</sup>FOV, field of view, consists of vertical angle and horizontal angle.



## 4 WIRING

▲ Since the product upgrade in Aug. 2020, TF03’s wiring has also been upgraded.

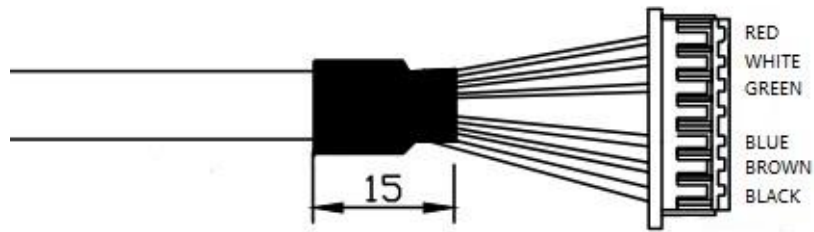


Figure 2 Wiring of new version TF03-180

Below is new version TF03’s pin definition and function description.

Table 1 PIN definition and function description of new version TF03

No.	Color	Standard version		RS485 version	
		PIN definition	Function	PIN definition	Function
1	Red	VCC	Power supply	VCC	Power supply
2	White	CAN_L	CAN_L	RS485-B/RS232-RX	RS485-B/RS232 receive
3	Green	CAN_H	CAN_H	RS485-A/RS232-TX	RS485/RS232 trasport
4	/	/	/	/	/
5	Blue	UART_RX	UART receive	UART_RX	UART receive(debug) <sup>5</sup>
6	Brown	UART_TX	UART transport	UART_TX	UART transport(debug)
7	Black	GND	Ground	GND	Ground

## 5 COMMUNICATION INTERFACE

TF03-180 standard version supports two communication interfaces, UART and CAN. UART is the default communication interface. These two communication interfaces can not work simultaneously. They can be switched with specific command.

TF03-180RS485/RS232 version also supports two communication interfaces, RS485 and RS232. These two communication interfaces share the same two wires. They can also be switched with specific command.

<sup>5</sup> The UART interface of TF03-100 RS485 version is debugging interface. It cannot be used to read detection data.

Table 2 The interface parameters of TF03-180

Interface parameters	UART/RS485/RS232
Baud rate	115200
Data bit	8
Stop bit	1
Checksum bit	N/A

Table 3 The interface parameters of TF03-180 CAN version

Interface parameters	CAN
Baud rate	1000K
Receiving ID	0x3003
Sending ID	0x3
Frame format	Default sending frame is standard frame, receiving frame support standard frame and extended frame

## 6 CONFIGURABLE PARAMETERS

Table 4 Configurable parameters example

Configurable parameters	Description	Default setting
Frame rate	Output frame rate could be configured by related command, range 1~1000Hz	100Hz
Communication interfaces	UART/CAN can be switched with command	UART
	RS485/RS232 can be switched with command	RS485
Baud rate	a) Serial port baud rate could be customized b) CAN port baud rate could be customized, CAN ID could be changed	/
Restore default	TF03-180 can be restored to the factory settings	/

Note: Please refer to 'TF03 Product Manual' for more configuration parameters and commands.

## 7 CERTIFICATIONS



Photobiological Safety  
IEC 62471

