TF03-100 LiDAR (Long-range distance sensor)

Product datasheet V1.2.1

北 醒
Benewake

TF03-100 is an industrial-grade long-range LiDAR. Its maximum detection range can reach 100m. With integrated compensating algorithm for outdoor glare and other interference, TF03-100 can work under strong light environment and rain, fog and snow conditions[1]. Multiple built-in operating modes let customers to change its parameters and configuration to meet different applications.

Main product features

- High frame rate
- IP67 protection
- Small size
- Various interface

Main application scenarios

- Vehicle collision avoidance and safety warning
- Traffic flow statistics
- Camera trigger
- UAV assisted takeoff and landing

SPECIFICATIONS

Parameters		Standard version	RS485/RS232 version
Product performance	Operating range	0.1-100m@90% reflectivity 0.1-40m@10% reflectivity 0.1-80m@90% reflectivity&100Klux 0.1-30m@10% reflectivity&100Klux	
	Accuracy[2]	±10cm (within 10m), 1% (10m and further)	
	Distance resolution	1cm	
	Frame rate[3]	1Hz~1000Hz adjustable (default 100Hz)	
	Repeatability	1σ: <3cm	
	Ambient light immunity	100Klux	
	Operation temperature	-25~60℃	
	Enclosure rating	IP67	
Optical parameters	Light source	LD	

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

[2] The detection range is measured at temperature of 25℃. Accuracy and repeatability are measured with white board (90% reflectivity).

[3] The highest frame rate can be customized to 10KHz, please contact us for detailed information.

	Central wavelength	905nm	
	Photobiological safety	Class1（EN60825）	
	FOV[4]	0.5°	
Electrical parameters	Supply voltage	5V~24V	
	Average current	≤150mA @ 5V，≤80mA @ 12V，≤50mA @ 24V	
	Power consumption	≤1W	
	peak current	150mA	
	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℃	
	Weight	89g±3g	92g±3g
	Cable length	70cm	

■ DIMENSIONS

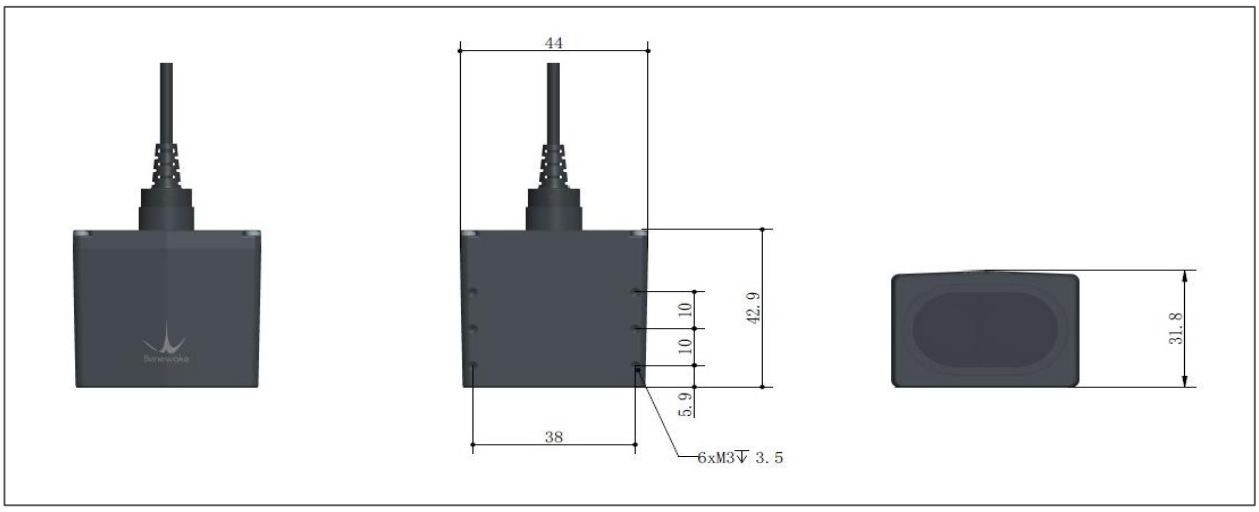

Figure 1 TF03-100 dimensions (Left 1: top view; Left 2: upward view; Left 3: front view) Unit: mm

[4] FOV, field of view, consists of vertical angle and horizontal angle.

COMMUNICATION INTERFACE

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

Parameters	CAN
Baud rate	1000kbps
Data bit	0x3003
Stop bit	0x3
Frame format	Standard frame[5]

CONFIGURABLE PARAMETERS

Table 1 Configurable parameters example

Configurable parameters	Description	Default setting
Frame rate	Output frame rate could be configured by related command, range 1~1000Hz[6]	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 modified	/
Restore default	TF03-100 can be restored to the factory settings	/
Save configuration	After defining the configuration parameters, you can send the corresponding command to choose to save the configuration permanently	/

Note: for more configurable parameters and instructions, please refer to the user manual.

[5] Please check Product manual for detailed information.

[6] The highest frame rate can be customized to 10KHz, please contact us for detailed information.

■ WIRING

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

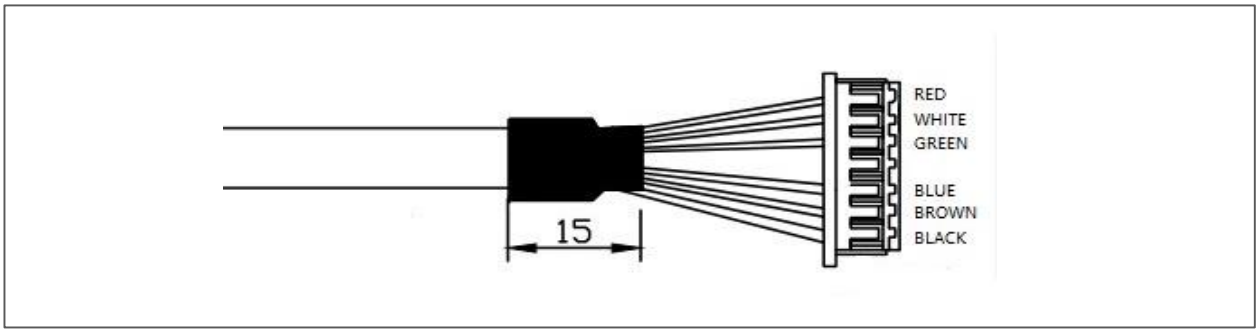

Figure 2 Wiring of new version TF03-100

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

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-A/RS232 transport
4	/	/	/	/	/
5	Blue	UART_RX	UART receive	UART_RX	UART receive(debug)[7]
6	Brown	UART_TX	UART transport	UART_TX	UART transport(debug)
7	Black	GND	Ground	GND	Ground

■ CERTIFICATIONS

EN60825

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[7] The UART interface of TF03-100 RS485 version is debugging interface. It cannot be used to read detection data.