

# Benewake TF-UW500

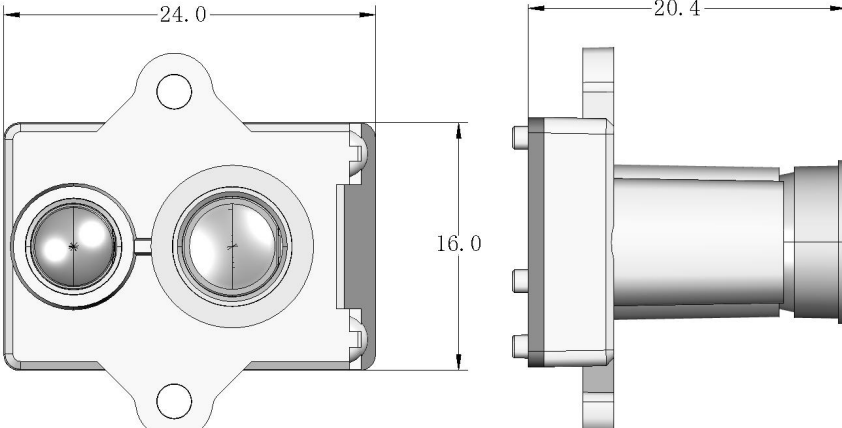
## Datasheet



TF-UW500 is a single-point LiDAR based on the Time of Flight (ToF) principle, utilizing a red laser light source. With its unique optical and electrical design, it achieves stable, precise, and highly sensitive underwater distance measurement. The product is equipped with multiple adaptive algorithms for various application environments and targets, and it offers a lot of adjustable configurations and parameters. It is particularly suitable for various applications on pool cleaning robots used outdoors under strong sunlight.

## Technical Specifications

Performance Parameters	
Model	TF-UW500
Detection range under water	> 5 m Indoor, NTU < 0.5, 30% reflectivity, the light beam is perpendicular to the target surface
Blind zone	≤ 0.1 m
Accuracy <sup>①</sup>	< 3 cm (0.1 ~ 2m)
Repeatability <sup>①</sup>	< 1 cm @ 1σ (0.1 ~ 2m)
Distance resolution	1 mm
Default frame rate	Default 20 Hz
Ambient light resistance	100 KLux
Optical Parameters	
Light source	Laser
Central wavelength	Red
FoV	< 0.5°
Eye safety	Class1 (IEC 60825-1:2014; EN 60825-1:2014+A11:2021)
Mechanical and Electrical Parameters	
Average power consumption <sup>②</sup>	< 5V × 100mA
Peak current at start up <sup>②</sup>	< 700mA
Power supply	DC 5±0.2 V

Logical voltage	3.3 V TTL
Connector	1.0mm-4P, model is HC-1.0-4PWT
Operating temperature	0 °C ~ + 50 °C
Storage temperature	- 20 °C ~ +70 °C
Protection level	NA
Typ. Dimensions <sup>③</sup>	24.0 mm × 16.0 mm × 20.4 mm
Typ. Weight <sup>③</sup>	< 5 g (excluding cables)
Communication Protocol	
Communication Interface	UART / I <sup>2</sup> C (Can be switched by command)
Baud rate	Default 115200 (Configurable)
Data bit	8
Stop bit	1
Parity	None
Dimensions (Unit: mm)	
	

**Notes:**

1. 100 KLux, NTU < 0.5, 30% reflectivity (Common materials such as white tiles, blue and white tiles, marble, cement, etc), vertical incidence, water depth greater than 1m;
2. Measured indoors at 0 Klux, 25 °C, for reference only, parameters may change due to environmental changes;
3. The weight and size are typical values for reference only. For detailed tolerance parameters, please consult the technical personnel of Benewake.