GRF-500 laser rangefinder

Preliminary specifications

The LightWare GRF-500 is a compact and ultralight 500 meter / 1640 ft laser rangefinder optimised for low power consumption and easy integration with EO/IR gimbals and ranging measuring systems.
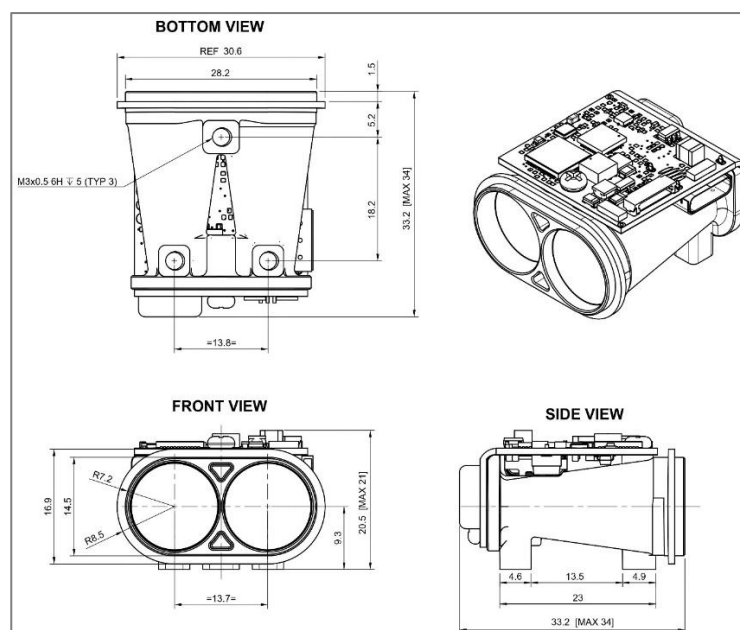
GRF-500

The GRF-500 utilizes the time-of-flight principle to measure distance to objects. The system emits a rapid succession of laser pulses that reflect off the targeted object until the receiver reaches the designated lasing time. LightWare's GRF-series rangefinders utilize 905nm laser technology, ensuring optimized performance at an affordable price while meeting class 1M eye safety standards. LightWare is a pioneer in microLiDAR® distance sensors, drawing upon four decades of expertise in LiDAR technology to develop application-specific products known for their reliability and durability.

The assembly process involves meticulous handling of sensors and optics, coupled with precision tool work. LightWare's production methods benchmark ISO9001 standards at scale, with assembly capabilities reaching up to 45,000 units annually, each meticulously crafted to the same exacting standards. It's no surprise that renowned companies worldwide trust us as their preferred LiDAR partner.

Mechanical Interface

GRF-500 laser rangefinder key technical specifications

Performance

Range	0.2 m to 500 m / 0.6 to 1640 ft. (at 5 Hz update rate, 40% albedo, 23 km visibility, 4x4m target size)
Update rate	0.5 to 10 readings per second (customizable to suit application)
Resolution	10cm / 3.93"
Accuracy	± 50 cm / ± 19.6" (1 sigma)
False alarm rate	<1%
Target discrimination	20 m on same type targets
Multiple targets	Max 5

Connections

Power supply voltage	4.5 to 5.5 V
Power supply current	120 mA (typical) 250 mA (surge at startup)
Outputs and interfaces	Serial UART and I^{2}C (3.3 V TTL, 5 V tolerant)

Form factor

Dimensions	32 mm x 34 mm x 21 mm / 1.3 in x 1.4 in x 0.8 in
Weight	10.7 g / 0.377 oz (excluding cables)

Optical

Approvals	FDA Accession: 2422320-000 (2024/12) ROHS3 Compliant REACH unaffected CE (designed for, scheduled for testing) NDAA Section 848 compliant Blue UAS ready
Laser safety	Class 1M (Please refer to the eye safety section of this user guide, above)
Optical aperture	12.7 mm / 0.5 in
Beam divergence	< 0.5°
Mechanical boresight	±1.5° with respect to mechanical interface

Environmental

Operating temperature	-20 to 60°C / -4 to 140°F
Storage temperature	-40 to 80°C / -40 to 176°F
Enclosure rating	Unit has no rating (IP00 full unit). Front face is IP67
Vibration resistance	TBD
Shock resistance	TBD

Accessories

USB cable	USB2.0_C_M/M
Communication cable	A08SUR08SUR32W102A
Pixhawk adapter	SKU: ACC_PX_08SUR-32S
Breakout board	SKU: ACC_BOB_08SUR-32S

Default settings

Serial port settings	Baud rate 115200, 1 start bit, 1 stop bit, no parity
I^{2}C address	0x66 (Hex), 102 (Dec)
Update rate	5 readings per second

Notice: The information provided in this preliminary specifications document it to LightWare's best and current knowledge and subject to change without notice during the final development stages of the product. Specifications are based on certain operating conditions and may vary under different circumstances or use cases.