

Optical ranging module



Summary of Content

Optical ranging modules are sensors that measure distance by detecting the time it takes for light to travel to a target and back, commonly using Time-of-Flight (ToF) technology.

Overview

Optical ranging modules use light-based distance measurement rather than relying on reflected intensity like traditional IR sensors. They typically employ Time-of-Flight (ToF) methods, where a light pulse is emitted, reflected by the target, and the return time is measured to calculate distance. These modules often operate in the infrared spectrum, making them largely invisible to the human eye and resistant to ambient light interference .

Common Modules

- VL6180 / VL6180X: Measures distances from 0 to 100 mm with millimeter resolution via I²C interface. It includes an ambient light sensor and is suitable for Arduino projects, proximity detection, and gesture recognition. Unlike IR sensors, it provides target-color-independent readings .
- VL53L0X: A compact ToF laser-ranging module capable of measuring distances up to 2 meters. It uses a 940 nm VCSEL emitter and a SPAD array for high accuracy, robustness to ambient light, and minimal optical crosstalk. Ideal for applications requiring longer-range, precise distance measurement .
- MTF-02P: Designed for drones and flight controllers, it connects via serial ports and integrates with systems like Pixhawk for optical flow and range data. It supports EKF sensor fusion for indoor and outdoor navigation.

Article Content

Laser Rangefinder Modules

Compact eye safe laser rangefinder modules featuring ranging capability from several kilometers beyond 30 km for various

China Laser Rangefinder Module, Zoom MWIR Camera, 905nm Laser

High-performance OEM/ODM laser rangefinder sensor solutions help you innovate the future. JIOPTICS laser rangefinder module

China Laser Rangefinder Module, Zoom MWIR

High-performance OEM/ODM laser rangefinder sensor solutions help you innovate the future. JIOPTICS

LDJ 120m Laser Optical Ranging Module

This Laser optical ranging module measures 120m with $\pm (3\text{mm} + D/10000)$ accuracy. Featuring a Class II laser, 3Hz ~20Hz

QRF-4500™

Equipped with a built-in GPS module, compass, laser pointer, and add-on IR illuminator, the QRF-4500™ offers unmatched

Laser signal processing technology: a coaxial laser ranging module of ...

In this study, we successfully developed an engineering prototype of a coaxial laser ranging module that utilizes the

MTF-01 Optical Flow Ranging Sensor 0.01–8 Meters With ...

*Integrated Optical Flow and Ranging: The MTF-01 module combines advanced optical flow sensing with ranging

VL6180 / VL6180X Optical Ranging Sensor Module — I²C, 0–100mm,

The VL6180 / VL6180X module is based on ST Microelectronics' Time-of-Flight (ToF) ranging sensor, providing absolute distance

WO2023028970A1

At least part of the first optical component is located in the first light-transmitting channel, and at least part of the first

ERDI Laser Rangefinders, LiDAR Sensors & OEM Laser Modules

ERDI TECH develops laser sources, compact rangefinder modules and 1064 nm ranging and designation hardware for OEM

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://benniedesignstudio.co.za>

Email: sales@benniedesignstudio.co.za

Phone: +27 82 391 4765

Address: The Towers, 1 St Georges Mall, Cape Town, 8001, South Africa

This document is for informational purposes only. Specifications subject to change without notice.

