

LamaPLC: VL53Lnn STMicroelectronics time-of-flight (ToF) laser-ranging sensors with I²C communication

The STMicroelectronics VL53L1X is the successor to the STMicroelectronics VL53L0X, offering significant enhancements in range, speed, and functionality, while maintaining pin-to-pin compatibility. The most notable difference is the maximum distance measurement: the VL53L1X supports up to 4 meters, compared with 2 meters for its predecessor.



Feature Comparison:

Feature	STMicroelectronics VL53L0X	STMicroelectronics VL53L1X
Max Range (Optimal)	Up to 2 meters	Up to 4 meters
Max Ranging Frequency	Typically around 20 Hz (50 ms per measurement)	Up to 50 Hz
Field of View (FoV)	25° fixed	27° typical full FoV, but programmable (15° to 27°)
Multi-zone Capability	No	Yes, via programmable Region of Interest (ROI)
Ambient Light Immunity	Good (uses 940nm VCSEL and physical IR filters)	Improved (better performance in high ambient light)
Pin-to-Pin Compatibility	N/A	Pin-to-pin compatible with the VL53L0X sensor
Responsive time	50ms	50ms
Package Size	4.4 x 2.4 x 1.0 mm	4.9 x 2.5 x 1.56 mm (slightly larger)
Interface	I ² C, default addr.: 0x29	I ² C, default addr.: 0x29

In summary, while the VL53L0X is a cost-effective choice for short-range applications, the VL53L1X offers enhanced performance and versatility for more demanding tasks, such as drone navigation, industrial automation, and gesture recognition, that require longer range and spatial awareness.



If you'd like to support the development of the site with the price of a coffee — or a few — [please do so here](#).

Here's a handy tip: you can quickly save this page as a PDF by clicking "export to PDF" in the menu on the right side of the screen.

Arduino & VL53L1X

- **VIN:** Power input (**2.8V - 5V**)
- **GND:** Ground
- **SCL:** I²C clock line
- **SDA:** I²C data line
- **XSHUT:** Shutdown pin, low-level shutdown, high-level normal operation
- **GPIO1:** Programmable interrupt output

The VL53L1X typically operates at 3.3V. Ensure your module includes a voltage regulator and level shifters when connecting to a 5V board, such as an Arduino Uno.

Arduino code

To interface the VL53L1X Time-of-Flight (ToF) sensor with an Arduino, the **Pololu VL53L1X** library is widely recommended for its simplicity and small memory footprint.

```
#include <Wire.h>
#include <VL53L1X.h>

VL53L1X sensor;

void setup() {
  Serial.begin(115200);
  Wire.begin();
  Wire.setClock(400000); // Use 400 kHz I2C for faster readings

  sensor.setTimeout(500);
  if (!sensor.init()) {
    Serial.println("Failed to detect and initialize sensor!");
    while (1);
  }

  // Set distance mode: Long (up to 4m) or Short (up to 1.3m)
  sensor.setDistanceMode(VL53L1X::Long);

  // Timing budget is the time spent taking one measurement (min 20ms short,
  33ms long)
  sensor.setMeasurementTimingBudget(50000); // 50ms

  // Start continuous readings every 50ms
  sensor.startContinuous(50);
}

void loop() {
  // Read distance in millimeters
  uint16_t distance = sensor.read();
```

```

Serial.print("Distance (mm): ");
Serial.println(distance);

if (sensor.timeoutOccurred()) {
  Serial.print(" TIMEOUT");
}
}

```

I²C topics on lamaPLC

Page	Date	Tags
• lamaPLC Communication: 1-Wire	2026/04/23 21:51	1-wire, communication, bus, microlan, i2c, uart, usart, ds18b20
• lamaPLC Communication: I²C	2025/09/23 21:25	i2c, i c, smbus, philips, bus, communication, arduino
• lamaPLC project: Sension SCD CO² measurement module	2026/04/15 19:34	scd30, scd40, scd41, iaq, ndir, sensor, i2c, arduino code
• LamaPLC: AHT10 Modul	2026/03/22 03:14	communication, i2c, temperature, humidity, sensor, aht, aht 10, modul
• LamaPLC: AHT20 / BMP280 Modul	2026/04/23 21:52	bmp280, aht20, adafruit, temperature, humidity, pressure, sensor, arduino, code, i2c
• LamaPLC: APDS - Avago ALS and proximity detection sensors with I²C communication	2026/04/23 21:52	avago, apds-9900, apds-9930, apds-9960, als, proximity, detection, gesture recognition, gesture, i2c, communication, sensor, arduino, code
• lamaPLC: Arduino Modul: BME680	2026/05/12 18:40	code, c, 2026, arduino, bme680, sensor, i2c, comunication
• lamaPLC: AS5600 Magnetic Induction Angle Measurement Sensor Module	2026/05/13 00:06	communication, i2c, as5600, as-5600, magnetic, induction, angle, sensor
• lamaPLC: Bi-Directional Logic Level Converter 3.3V ↔ 5V	2026/04/12 00:34	bi-directional, logic level converter, i2c, uart, spi
• LamaPLC: BMP/BME Bosch Temperature/Humidity/Pressure sensors with I²C communication	2026/04/23 21:52	bme280, bme680, bme688, bmp180, bmp280, hw-611, hw611, bosch, temperature, humidity, pressure, sensor, arduino, i2c, communication, ai, cjmcu, volatile organic compounds, vocs, volatile sulfur compounds, vscs, iaq
• LamaPLC: CJMCU-219/INA-219 breakout board/IC with I²C communication	2026/04/23 21:52	cjmcu-219, ina-219, ina219, breakout board, i2c, communication, sensor, voltage, current, arduino, code, cjmcu
• LamaPLC: CJMCU-3216 / AP-3216 integrated digital ambient light and proximity sensor module/IC with I²C communication	2026/04/23 21:52	cjmcu-3216, cjmcu, ap-3216, ap3216, ambient light, proximity, sensor, arduino, code, i2c, communication
• lamaPLC: CJMCU-811 CCS811 Gas Sensor (VOCs TVOC CO₂)	2026/04/23 21:52	cjmcu-811, ccs811, gas, sensor, vocs, tvoc, eco2, co2, arduino, air quality metal oxide, mox, i2c, micropython, rp2040-eth

- [LamaPLC: D6T Omron Non-Contact Thermal Sensors with I²C communication](#) 2026/04/23 21:52 [d6t, d6t-32l, d6t-44l, d6t-8l, d6t-1a, omron, non-contact, thermal, sensor, i2c, arduino, code](#)
- [LamaPLC: DPS Infineon Temperature/Pressure sensors with I2C communication](#) 2026/04/23 21:52 [dps310, infineon, temperature, pressure, sensor, arduino, i2c, communication, code](#)
- [lamaPLC: Energy, power, current, and voltage](#) 2025/05/31 23:32 [i2c, i c, communication, arduino, energy, power, current, sensor, ina226](#)
- [LamaPLC: ENS ScioSense Multi-gas sensors with I²C communication](#) 2026/04/23 21:52 [ens160, sciosense, gas-quality, i2c, communication, sensor, arduino, code, eco₂, tvoc, aqi, indoor air quality, iaq, co₂, voc](#)
- [lamaPLC: ESP32 / ESP8266](#) 2025/11/22 00:07 [esp8266, esp32, esp32-c2, esp32-c3, esp32-c5, esp32-c6, esp32-c61, esp32-h2, esp32-s2, esp32-s3, esp32-p4, espressif systems, communication, ethernet, ip, wi-fi, thread, zigbee, matter, homekit, bluetooth, mqtt, adc, spi, uart, i2c, i2s, rmt, pwm, usb, usb otg, twai](#)
- [LamaPLC: Gas sensors](#) 2023/07/01 17:29 [gas, sensor, i2c, onewire, communication, mq-3, mq-4, mq-5, mq-6, mq-7, mq-8, mq-9, mq-135, gm-102b, gm-302b, gm-502b, gm-702b, alcohol, ch4, natural gas, smoke, lng, co, co2, lpg, h2, iso-butane, nox, nh3, benzene, town gas, formaldehyde, propane, humidity, temperature, voc, grv gas sens v2](#)
- [lamaPLC: GY-511 6DOF sensor module](#) 2026/04/23 21:52 [stmicroelectronics, lsm303dlhc, i2c, lsm303, sensor, gy-511, 6dof, pololu, module, arduino](#)
- [LamaPLC: GY-9250 MPU-9250/6500 9-axis Attitude Sensor Board](#) 2026/04/23 21:52 [ak8963, gy-9250, mpu-9250, 9-axis, motion detection, magnetometer, communication, i c, i2c, spi](#)
- [LamaPLC: HDC Texas Instruments Temperature/humidity sensors with I²C communication](#) 2026/04/23 21:52 [sht21, htu21, si7021, gy-21, gy-213v, hdc1080, gy-213v-hdc1080, cjmcu, cjmcu-1080, texas instruments, temperature, humidity, sensor, i2c, communication, arduino, code](#)
- [lamaPLC: HT16K33 display controller](#) 2026/04/23 21:51 [i2c, 7-segment display, display, ht16k33, arduino](#)
- [LamaPLC: HTU TE Connectivity temperature/humidity sensors with I²C communication](#) 2026/04/23 21:52 [htu, htu31d, htu21d, htu20d, sht20, htu20, sht21, htu21, si7021, gy-21, gy-213v, hdc1080, si702, gy-20, sht31, htu31, si7031, gy-31, te connectivity, temperature, humidity, i2c, communication, sensor, arduino, code](#)
- [lamaPLC: INA modules with Arduino libraries](#) 2026/04/23 21:52 [i2c, i c, communication, arduino, energy, power, current, monitor, sensor, ina219, gy-219, ina226, gy-216, ina228, gy-228, ina237, ina238, ina260, ina3221, ina](#)

• lamaPLC: INA226 - current/voltage/power monitor with I ² C communication	2026/04/23 21:52	i2c, i c, communication, arduino, energy, power, current, monitor, sensor, ina226, ina219, ina
• lamaPLC: LCD 1602/2004 with I ² C communication	2026/02/14 18:27	communication, i2c, display, lcd, 1602, 2004, hd44780, pcf8574, pcf8574t, pcf8574at, arduino
• LamaPLC: MAX30100/MAX30102 Heart Rate Click Sensor Module	2026/04/23 21:52	max30102, max30100, heart rate click, sensor, communication, i2c, arduino, code
• lamaPLC: MCP23017 / MCP23S17 16-Bit I/O Expander with Serial Interface I ² C / SPI	2026/04/23 21:52	communication, i2c, mcp23017, mcp23s17, spi, i o expander, serial, cjmcu-2317, cjmcu
• lamaPLC: MLX90614 (GY-906) infrared non-contact thermometer	2026/05/08 00:03	communication, i2c, temperature, mlx90614, gy-906, modul, infrared, non-contact thermometer, dsp, pwm, smbus, hailege
• lamaPLC: PCF857x I/O Expander chip/modul with I ² C communication	2026/05/15 01:03	communication, i2c, pcf857x, pcf8574, pcf8574a, pcf8575, i o expander, i o extension, nxp, texas instruments
• LamaPLC: Pixart PAJ7620U2 Gesture recognition sensors/module with I ² C communication	2026/04/23 21:52	paj7620u2, gy-paj7620, pixart, gesture recognition, i2c, communication, sensor, arduino, code
• lamaPLC: RP2040_ETH_Modul: I ² C scanner	2026/05/12 16:20	code, micropython, 2026, rp2040 eth, i2c, comunication
• lamaPLC: RP2040_ETH_Modul: MLX90614 simple	2026/05/12 17:06	code, micropython, 2026, rp2040 eth, i2c, communication, mlx90614
• lamaPLC: RP2040_ETH_Modul: Read BME 680/688 sensor data	2026/05/12 21:06	code, micropython, 2026, rp2040 eth, bme680, i2c, sensor, communication
• lamaPLC: RP2040_ETH_Modul: Read BME 680/688 sensor data and store in Modbus input registers	2026/05/12 18:58	code, micropython, 2026, rp2040 eth, bme680, i2c, sensor, communication
• LamaPLC: SC16IS750 / SC16IS752: One or two serial (UART) ports from microcontroller via I ² C or SPI communication	2026/04/23 21:52	cjmcu-750, cjmcu-752, cjmcu, nxp, sc16is750, sc16is752, uart, serial, i2c, spi, modul, converter, arduino, code
• LamaPLC: SGP Sensirion TVOC/VOC sensors with I ² C communication	2026/04/15 19:41	sgp30, sgp40, sgp41, sensirion, gas-sensor, i2c, communication, sensor, arduino, code, eco2, voc, tvoc, indoor air quality, iaq, nox, hydrogen
• LamaPLC: SHT Sensirion Temperature/humidity sensor with I ² C communication	2026/04/23 21:52	sht20, sht21, sht25, sht30, sht31, sht35, sht40, gy21, temperature, humidity, i2c, communication, sensor, arduino, code
• lamaPLC: Signal level converters	2026/02/14 23:47	pca9306, i2c, voltage, level, converter
• lamaPLC: st756x display drivers	2026/05/20 16:17	display, driver, i2c, spi, lcd, cog, oled, st7565, st7567, gm12864, gm12864-59n, gm12864-03a, gm12864-01a, gme12864-41
• lamaPLC: TCA9548A (HW617); Low-Voltage 8-Channel I ² C Switch Module	2026/02/14 23:51	tca9548a, hw617, i2c, switch, communication, expansion board, arduino

- [lamaPLC: TM1637 7-segment display](#) 2026/02/14 18:26 [i2c](#), [7-segment display](#), [display](#), [tm1637](#), [arduino](#)
- [LamaPLC: TOFnnnC STMicroelectronics Time-of-Flight \(ToF\) sensors with I²C communication](#) 2026/04/23 21:52 [tof050c](#), [vl6180](#), [tof200c](#), [vl53l0x](#), [tof400c](#), [vl53l1x](#), [stmicroelectronics](#), [time-of-flight](#), [tof](#), [i2c](#), [communication](#), [sensor](#), [arduino](#), [code](#)
- [LamaPLC: VL53L1n STMicroelectronics time-of-flight \(ToF\) laser-ranging sensors with I²C communication](#) 2026/04/23 21:52 [vl53l0x](#), [vl53l1x](#), [vl53l0 1xv2](#), [gy-530](#), [time-of-flight](#), [tof](#), [laser-ranging](#), [i2c](#), [communication](#), [sensor](#), [arduino](#), [code](#)
- [LamaPLC: VL6180X STMicroelectronics Time-of-Flight \(ToF\) sensor with I²C communication](#) 2026/04/23 21:52 [vl6180x](#), [stmicroelectronics](#), [time-of-flight](#), [tof](#), [i2c](#), [communication](#), [sensor](#), [arduino](#), [code](#)
[communication](#), [i2c](#), [sensor](#), [modul](#), [pressure](#), [cfsensor](#), [xgzp68xx](#), [xgzp6810d](#), [xgzp6857d](#), [xgzp6859d](#), [xgzp6887d](#), [xgzp6897d](#), [xgzp6899a](#), [piezoresistive](#), [capacitive](#)
[magnetic angle sensor](#), [magnetic flux](#), [sensor](#), [spi](#), [i2c](#), [pwm](#), [communication](#), [modul](#), [as5047p](#), [as5600](#), [mt6701](#), [mt6816](#), [mt6835](#), [tle5012b](#), [amr](#), [gmr](#), [tmr](#), [anisotropic magnetoresistive](#)
- [lamaPLC: XGZP68xx: Silicon Pressure Sensors/Module](#) 2026/05/15 15:17
- [Magnetic angle sensors](#) 2026/04/23 21:52
- [SSH1106/SSD1306 OLED Display with I²C communication](#) 2026/02/14 18:27 [i2c](#), [oled](#), [display](#), [ssd1306](#), [sh1106](#), [ssh1106](#), [arduino](#), [cmos](#)

[VL53L0X](#), [VL53L1X](#), [VL53L0/1XV2](#), [GY-530](#), [time-of-flight](#), [ToF](#), [laser-ranging](#), [i2c](#), [communication](#), [sensor](#), [arduino](#), [code](#)

This page has been accessed for: Today: 1, Until now: 222

From: <https://lamaplc.de/> - **lamaPLC**

Permanent link: <https://lamaplc.de/doku.php?id=sensor:vl53l1n>

Last update: **2026/04/21 20:47**

