

# LamaPLC: TOFnnnC STMicroelectronics Time-of-Flight (ToF) sensors with I<sup>2</sup>C communication

The TOF050C, TOF200C, and TOF400C are a series of laser ranging sensor modules that use Time-of-Flight (ToF) technology to measure distances. They are designed for easy integration with microcontrollers such as Arduino and STM32 via the I<sup>2</sup>C interface.



These modules are based on different underlying STMicroelectronics chips, which determine their maximum measuring distances. They are commonly used in applications such as robot obstacle avoidance, altitude measurement for drones, and gesture recognition.

Model	Ranging Chip	Max. Measuring Distance	Field of View (FoV)	Infrared Wavelength
<b>TOF050C</b>	VL6180	50 cm	25°	850 nm
<b>TOF200C</b>	VL53L0X	2 meters	25°	940 nm
<b>TOF400C</b>	VL53L1X	4 meters	27°	940 nm

## Common Specifications:

- **Communication Mode:** I<sup>2</sup>C digital interface, default address: **0x52**
- **Operating Voltage:** **3.0V to 5.0V DC**
- **Typical Current Consumption:** ~40mA (max)
- **Operating Temperature:** -20°C to 70°C.
- **Key Features:**
  - Measure absolute range independent of object color and reflectance
  - Equipped with a dedicated optical cover for dust protection and ambient light resistance
  - Feature M2 mounting holes for easy installation
  - Compatible with Arduino, STM32, ESP32, and other microcontroller platforms



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.

2026/02/14 23:38

## Pinout

Pin Name	Type	Description
VIN	Power	Power supply input, typically 3.0V to 5.0V
GND	Power	Ground connection

Pin Name	Type	Description
SCL	I <sup>2</sup> C	Serial Clock line for I <sup>2</sup> C communication
SDA	I <sup>2</sup> C	Serial Data line for I <sup>2</sup> C communication
INT	Output	Interrupt output; can signal the MCU when data is ready (often labeled GPIO1 on the chip)
SHUT	Input	Shutdown control (Active Low); pull low to enter standby, high to enable (often labeled XSHUT)

Most TOF400C modules include an onboard voltage regulator that supports 3.3V or 5V.

## Arduino Example Code

The **Pololu VL53L1X** library is recommended for its lightweight footprint and ease of use.

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

VL53L1X sensor;

void setup() {
  Serial.begin(115200);
  Wire.begin();
  Wire.setClock(400000); // 400 kHz I2C for better performance

  sensor.setTimeout(500);
  if (!sensor.init()) {
    Serial.println("Failed to detect TOF400C sensor!");
    while (1);
  }

  // TOF400C supports three modes: Short (1.3m), Medium (3m), Long (4m)
  sensor.setDistanceMode(VL53L1X::Long);

  // Timing budget: more time = higher accuracy (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: ");
  Serial.print(distance);
  Serial.println(" mm");
}
```

```

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

```

## I<sup>2</sup>C topics on lamaPLC

Page	Date	Tags
• <a href="#">lamaPLC Communication: 1-Wire</a>	2026/04/23 21:51	1-wire, communication, bus, microlan, i2c, uart, usart, ds18b20
• <a href="#">lamaPLC Communication: I<sup>2</sup>C</a>	2025/09/23 21:25	i2c, i c, smbus, philips, bus, communication, arduino
• <a href="#">lamaPLC project: Sension SCD CO<sup>2</sup> measurement module</a>	2026/04/15 19:34	scd30, scd40, scd41, iaq, ndir, sensor, i2c, arduino code
• <a href="#">LamaPLC: AHT10 Modul</a>	2026/03/22 03:14	communication, i2c, temperature, humidity, sensor, aht, aht 10, modul
• <a href="#">LamaPLC: AHT20 / BMP280 Modul</a>	2026/04/23 21:52	bmp280, aht20, adafruit, temperature, humidity, pressure, sensor, arduino, code, i2c
• <a href="#">LamaPLC: APDS - Avago ALS and proximity detection sensors with I<sup>2</sup>C communication</a>	2026/04/23 21:52	avago, apds-9900, apds-9930, apds-9960, als, proximity, detection, gesture recognition, gesture, i2c, communication, sensor, arduino, code
• <a href="#">lamaPLC: Arduino Modul: BME680</a>	2026/05/12 18:40	code, c, 2026, arduino, bme680, sensor, i2c, comunication
• <a href="#">lamaPLC: AS5600 Magnetic Induction Angle Measurement Sensor Module</a>	2026/05/13 00:06	communication, i2c, as5600, as-5600, magnetic, induction, angle, sensor
• <a href="#">lamaPLC: Bi-Directional Logic Level Converter 3.3V ↔ 5V</a>	2026/04/12 00:34	bi-directional, logic level converter, i2c, uart, spi
• <a href="#">LamaPLC: BMP/BME Bosch Temperature/Humidity/Pressure sensors with I<sup>2</sup>C communication</a>	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, vsocs, iaq
• <a href="#">LamaPLC: CJMCU-219/INA-219 breakout board/IC with I<sup>2</sup>C communication</a>	2026/04/23 21:52	cjmcu-219, ina-219, ina219, breakout board, i2c, communication, sensor, voltage, current, arduino, code, cjmcu
• <a href="#">LamaPLC: CJMCU-3216 / AP-3216 integrated digital ambient light and proximity sensor module/IC with I<sup>2</sup>C communication</a>	2026/04/23 21:52	cjmcu-3216, cjmcu, ap-3216, ap3216, ambient light, proximity, sensor, arduino, code, i2c, communication
• <a href="#">lamaPLC: CJMCU-811 CCS811 Gas Sensor (VOCs TVOC CO<sub>2</sub>)</a>	2026/04/23 21:52	cjmcu-811, ccs811, gas, sensor, vocs, tvoc, eco2, co2, arduino, air quality metal oxide, mox, i2c, micropython, rp2040-eth
• <a href="#">LamaPLC: D6T Omron Non-Contact Thermal Sensors with I<sup>2</sup>C communication</a>	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 ens160, sciosense, gas-quality, i2c, communication, sensor, arduino, code, eco2, tvoc, aqi, indoor air quality, iaq, co2, voc](#)
- [LamaPLC: ENS ScioSense Multi-gas sensors with I<sup>2</sup>C communication](#) 2026/04/23 21:52 [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: ESP32 / ESP8266](#) 2025/11/22 00:07 [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: Gas sensors](#) 2023/07/01 17:29 [stmicroelectronics, lsm303dlhc, i2c, lsm303, sensor, gy-511, 6dof, pololu, module, arduino](#)
- [lamaPLC: GY-511 6DOF sensor module](#) 2026/03/22 01:44 [ak8963, gy-9250, mpu-9250, 9-axis, motion detection, magnetometer, communication, i c, i2c, spi](#)
- [LamaPLC: GY-9250 MPU-9250/6500 9-axis Attitude Sensor Board](#) 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: HDC Texas Instruments Temperature/humidity sensors with I<sup>2</sup>C communication](#) 2026/04/23 21:52 [i2c, 7-segment display, display, ht16k33, arduino](#)
- [lamaPLC: HT16K33 display controller](#) 2026/04/23 21:51 [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: HTU TE Connectivity temperature/humidity sensors with I<sup>2</sup>C communication](#) 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: INA modules with Arduino libraries](#) 2026/04/23 21:52 [i2c, i c, communication, arduino, energy, power, current, monitor, sensor, ina226, ina219, ina](#)
- [lamaPLC: INA226 - current/voltage/power monitor with I<sup>2</sup>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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> C communication	2026/05/14 15:21	communication, i2c, pcf857x, pcf8574, pcf8574a, pcf8575, i o expander, i o extension, nxp, texas instruments
• LamaPLC: Pixart PAJ7620U2 Gesture recognition sensors/module with I <sup>2</sup> C communication	2026/04/23 21:52	paj7620u2, gy-paj7620, pixart, gesture recognition, i2c, communication, sensor, arduino, code
• lamaPLC: RP2040_ETH_Modul: I <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> 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 I<sup>2</sup>C communication](#) 2026/04/23 21:52 [tof050c, vl6180, tof200c, vl53l0x, tof400c, vl53l1x, stmicroelectronics, time-of-flight, tof, i2c, communication, sensor, arduino, code](#)
- [LamaPLC: VL53Lnn STMicroelectronics time-of-flight \(ToF\) laser-ranging sensors with I<sup>2</sup>C 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 I<sup>2</sup>C communication](#) 2026/04/23 21:52 [vl6180x, stmicroelectronics, time-of-flight, tof, i2c, communication, sensor, arduino, code](#)
- [lamaPLC: XGZP68xx: Silicon Pressure Sensors/Module](#) 2026/05/15 15:17 [communication, i2c, sensor, modul, pressure, cfsensor, xgzp68xx, xgzp6810d, xgzp6857d, xgzp6859d, xgzp6887d, xgzp6897d, xgzp6899a, piezoresistive, capacitive](#)
- [Magnetic angle sensors](#) 2026/03/05 21:19 [magnetic angle sensor, magnetic flux, sensor, spi, i2c, pwm, communication, modul, as5047p, as5600, mt6701, mt6816, mt6835, tle5012b, amr, gmr, tmr, anisotropic magnetoresistive](#)
- [SSH1106/SSD1306 OLED Display with I<sup>2</sup>C communication](#) 2026/02/14 18:27 [i2c, oled, display, ssd1306, sh1106, ssh1106, arduino, cmos](#)

[TOF050C](#), [VL6180](#), [TOF200C](#), [VL53L0X](#), [TOF400C](#), [VL53L1X](#), [STMicroelectronics](#), [Time-of-Flight](#), [ToF](#), [i2c](#), [communication](#), [sensor](#), [arduino](#), [code](#)

This page has been accessed for: Today: 5, Until now: 255

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

Permanent link: <https://lamaplc.com/doku.php?id=sensor:tofnnnc>

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

