

lamaPLC: MLX90614 (GY-906) infrared non-contact thermometer

The Hailege **MLX90614** is an *infrared thermometer for non-contact temperature measurements*. Both the IR-sensitive thermopile detector chip and the signal conditioning ASIC are integrated in the same TO-39 can. Integrated into the MLX90614 are a low-noise amplifier, a 17-bit ADC, and a powerful DSP unit, thus achieving high accuracy and resolution for the thermometer.



The thermometer comes factory-calibrated with a digital SMBus output, providing full access to the measured temperature across the complete temperature range(s) with a resolution of 0.02°C.

The user can configure the digital output to use *pulse-width modulation (PWM)*. By default, the 10-bit PWM continuously transmits the measured temperature in the range of -20 to 120°C, with an output resolution of 0.14°C.

MLX90614 Features

- Factory calibrated in a wide temperature range: -40 to 125°C for sensor temperature and -70 to 380°C for object temperature
- High accuracy of 0.5°C over a wide temperature range (0..+50 C for both Ta and To)
- Medical accuracy of 0.1°C in a limited temperature range available on request
- Measurement resolution of 0.02°C
- Single and dual zone versions
- SMBus-compatible digital interface for rapid temperature readings and building sensor networks
- Customizable PWM output for continuous reading
- Available in 3.3V and 5V versions
- Simple adaptation for 8 to 16V applications
- Power saving mode
- Different package options for applications and measurement versatility
- Automotive grade



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MLX90614 (GY-906) Module Pinout

If you are using the blue breakout board, the pins are typically labelled on the back:

- **VIN / VCC:** Power supply. Most modules support 3.3V to 5V because they include a voltage

regulator.

- **GND:** Ground reference.
- **SCL:** Serial Clock for I²C communication.
- **SDA:** Serial Data for I²C communication.

Important Wiring Notes

- **Logic Levels:** The RP2040-ETH uses 3.3V logic. Ensure your sensor's VIN is connected to the RP2040's 3V3 pin to avoid damaging the GPIOs.
- **Pull-up Resistors:** I²C communication requires pull-up resistors (typically 4.7 kΩ or 10 kΩ) on the SDA and SCL lines. Most GY-906 modules have these built-in.
- **I²C Address:** The default factory address for the MLX90614 is **0x5A**

Source code

Read MLX90614 sensor values to RP2040_ETH over Micropython to serial: [CODE](#).

I²C topics on lamaPLC

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| • lamaPLC project: Sension SCD CO² measurement module | 2026/04/15 19:34 | scd30 , scd40 , scd41 , iaq , ndir , sensor , i2c , arduino code |
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| • 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 |
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| • LamaPLC: CJMCU-219/INA-219 breakout board/IC with I ² C 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 I ² C 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 I ² C communication | 2026/04/23 21:52 | d6t, d6t-32l, d6t-44l, d6t-8l, d6t-1a, omron, non-contact, thermal, sensor, i2c, arduino, code |
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| • 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 I ² C 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 | 2026/03/22 01:44 | 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 I ² C 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 |

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| • 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 I²C communication | 2026/04/23 21:52 | i2c, i c, communication, arduino, energy, power, current, monitor, sensor, ina226, ina219, ina |
| • lamaPLC: LCD 1602/2004 with I²C 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 I²C / 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 I²C 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 I²C communication | 2026/04/23 21:52 | paj7620u2, gy-paj7620, pixart, gesture recognition, i2c, communication, sensor, arduino, code |
| • lamaPLC: RP2040_ETH_Modul: I²C 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 I²C 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 I²C 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 |

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- [lamaPLC: TM1637 7-segment display](#) 2026/02/14 18:26 [i2c, 7-segment display, display, tm1637, arduino](#)
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- [LamaPLC: VL53Lnn 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](#)
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- [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 I²C communication](#) 2026/02/14 18:27 [i2c, oled, display, ssd1306, sh1106, ssh1106, arduino, cmos](#)

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