

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: 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
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• 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 , vsocs , iaq

<ul style="list-style-type: none"> • 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
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<ul style="list-style-type: none"> • lamaPLC: GY-511 6DOF sensor module 	2026/04/23 21:52	stmicroelectronics , lsm303dlhc , i2c , lsm303 , sensor , gy-511 , 6dof , pololu , module , 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
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• 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
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• 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
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