

LamaPLC: CJMCU-219/INA-219 breakout board/IC with I2C communication

The CJMCU-219 is a breakout board featuring the INA219 IC, a zero-drift, bidirectional current and power monitor with an I2C interface.

Core Technical Specifications

Voltage Measurement: Can detect bus voltages from 0V to +26V DC. **Current Range:** Measures up to $\pm 3.2\text{A}$ bidirectionally using its built-in 0.1 ohm shunt resistor. **Supply Voltage:** Operates on +3.0V to +5.5V. **Precision:** Features a 12-bit ADC with a maximum error accuracy of 1% over -40°C to +85°C. **Interface:** Uses I2C communication (standard 100kHz or high-speed 400kHz/3.4MHz) with a default address of 0x40.

Key Features

High-Side Sensing: Unlike many sensors, it can measure current on the high side (between the power source and the load), which prevents ground reference issues. **Multi-Function Reporting:** It calculates and reports bus voltage, shunt voltage drop, current, and total power (W) directly. **Programmability:** Supports software-programmable calibration, filtering (averaging up to 128 samples), and conversion times. **Daisy-Chaining:** Supports up to 16 programmable I2C addresses, allowing multiple modules to run on the same bus.

Safety & Limitations

Voltage Limit: The chip may be damaged if bus voltage exceeds its absolute hardware limit of 26V. **Inductive Loads:** Users should be cautious with large motors, as “flyback” voltage spikes can exceed the 26V threshold and destroy the sensor.

Arduino

Arduino wiring

- SCL: A5
- GND: GND
- SDA: A4
- Vdd: 5V

Arduino code

```
sample
```

Example codes

none

I²C topics on lamaPLC

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• lamaPLC Communication: 1-Wire	2025/05/31 21:56	1-wire, communication, bus, microlan, i2c, uart, usart, ds18b20
• lamaPLC Communication: I²C	2025/09/23 19:25	i2c, i c, smbus, philips, bus, communication, arduino
• LamaPLC: AHT20 / BMP280 Modul	2026/02/08 21:15	bmp280, aht20, adafruit, temperature, humidity, pressure, sensor, arduino, code, i2c
• LamaPLC: APDS - Avago ALS and proximity detection sensors with I²C communication	2026/02/10 16:04	avago, apds-9900, apds-9930, apds-9960, als, proximity, detection, gesture recognition, gesture, i2c, communication, sensor, arduino, code
• LamaPLC: BMP/BME Bosch Temperature/Humidity/Pressure sensors with I²C communication	2026/02/09 13:15	bme280, bme680, bmp180, bmp280, bosch, temperature, humidity, pressure, sensor, arduino, i2c, communication, cjmcu
• LamaPLC: CJMCU-219/INA-219 breakout board/IC with I²C communication	2026/02/13 15:19	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	2026/02/13 21:22	cjmcu-3216, cjmcu, ap-3216, ap3216, ambient light, proximity, sensor, arduino, code, i2c, communication
• LamaPLC: DHT Temperature /Humidity sensors with 1-wire / I²C communication	2026/02/09 13:17	dht11, dht20, dht22, temperature, humidity, pressure, sensor, 1-wire, i2c, arduino, code
• LamaPLC: DPS Infineon Temperature/Pressure sensors with I²C communication	2026/02/08 22:23	dps310, infineon, temperature, pressure, sensor, arduino, i2c, communication, code
• lamaPLC: Energy, power, current, and voltage	2025/05/31 21:32	i2c, i c, communication, arduino, energy, power, current, sensor, ina226
• LamaPLC: ENS ScioSense Multi-gas sensors with I²C communication	2026/02/09 13:34	ens160, sciosense, gas-quality, i2c, communication, sensor, arduino, code
• lamaPLC: ESP32 / ESP8266	2025/11/21 23:07	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 15:29	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-9250 MPU-9250/6500 9-axis Attitude Sensor Board	2026/02/11 18:09	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	2026/02/09 13:55	hdc1080, texas instruments, temperature, humidity, sensor, i2c, communication, arduino, code
• lamaPLC: HT16K33 display controller	2026/02/11 21:07	i2c, 7-segment display, display, ht16k33, arduino
• LamaPLC: HTU21 TE Connectivity temperature/humidity sensors with I ² C communication	2026/02/09 13:39	htu21, te connectivity, temperature, humidity, i2c, communication, sensor, arduino, code
• lamaPLC: INA226 - current/voltage/power monitor with I ² C communication	2026/02/11 19:34	i2c, i c, communication, arduino, energy, power, current, monitor, sensor, ina226, ina219, ina
• lamaPLC: LCD 1602/2004 with I ² C communication	2026/02/11 21:07	communication, i2c, display, lcd, 1602, 2004, hd44780, pcf8574, pcf8574t, pcf8574at, arduino
• LamaPLC: MAX30100/MAX30102 Heart Rate Click Sensor Module	2026/02/12 19:34	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	2025/12/04 00:34	communication, i2c, mcp23017, mcp23s17, spi, i o expander, serial, cjmcu-2317, cjmcu
• LamaPLC: Pixart PAJ7620U2 Gesture recognition sensors/module with I ² C communication	2026/02/10 18:52	paj7620u2, gy-paj7620, pixart, gesture recognition, i2c, communication, sensor, arduino, code
• LamaPLC: SGP Sensirion Gas-sensors with I ² C communication	2026/02/08 23:27	sgp30, sgp40, sgp41, sensirion, gas-sensor, i2c, communication, sensor, arduino, code
• LamaPLC: SHT Sensirion Temperature/humidity sensor with I ² C communication	2026/02/09 13:48	sht20, sht21, sht25, sht30, sht31, sht35, sht40, gy21, temperature, humidity, i2c, communication, sensor, arduino, code
• lamaPLC: Signal level converters	2025/11/22 19:12	pca9306, i2c, voltage, level, converter
• lamaPLC: TCA9548A (HW617); Low-Voltage 8-Channel I ² C Switch Module	2025/11/22 18:48	tca9548a, hw617, i2c, switch, communication, expansion board, arduino
• lamaPLC: TM1637 7-segment display	2026/02/11 21:07	i2c, 7-segment display, display, tm1637, arduino

• LamaPLC: TOFnnnC STMicroelectronics Time-of-Flight (ToF) sensors with I²C communication	2026/02/09 16:09	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 I²C communication	2026/02/09 15:44	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	2026/02/09 15:56	vl6180x , stmicroelectronics , time-of-flight , tof , i2c , communication , sensor , arduino , code
• SSH1106/SSD1306 OLED Display with I²C communication	2026/02/11 21:07	i2c , oled , display , ssd1306 , sh1106 , ssh1106 , arduino , cmos

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