

lamaPLC project: Sension SCD CO² measurement module



The main distinction between these Sension sensors lies in their measurement technology, which affects their size and power use. The **SCD30** employs conventional **NDIR** (*Non-Dispersive Infrared*) technology, whereas the **SCD40/41** series utilises a more recent, compact Photoacoustic principle.

Feature	SCD30	SCD40	SCD41
		-	
Technology	NDIR (Dual-Channel)	Photoacoustic	Photoacoustic
Size	35 x 23 x 7 mm	10.1 x 10.1 x 6.5 mm	10.1 x 10.1 x 6.5 mm
CO ² Range	0 - 40,000 ppm	400 - 2,000 ppm	400 - 5,000 ppm
Accuracy	±(30 ppm + 3% MV)	±(50 ppm + 5% MV)	±(40 ppm + 5% MV)
Voltage	3.3V - 5.5V	2.4V - 5.5V	2.4V - 5.5V
Power (avg)	~19 mA	~15 mA	~0.5 mA (Low Power Mode)
Interface	I ² C (Address 0x61), UART, PWM	I ² C	I ² C
Operating Temperature	0°C to 50°C		

Key Differences

- **Form Factor:** The SCD40/41 is approximately ten times smaller than the SCD30, making it well-suited for compact wearables or integrated smart home devices.
- **Precision vs Size:** The SCD30 generally offers slightly better accuracy and stability over extended periods, thanks to its dual-channel NDIR design, which naturally compensates for sensor drift.
- **Power Efficiency:** For battery-powered devices, the SCD41 is the preferred choice, featuring a “Single Shot” mode that significantly reduces power consumption compared to the SCD30 or SCD40.
- **Mounting:** The SCD40/41 is an SMD (Surface-Mount Device) component suitable for reflow soldering and mass production. In contrast, the SCD30 is usually hand-soldered or connected via pins.



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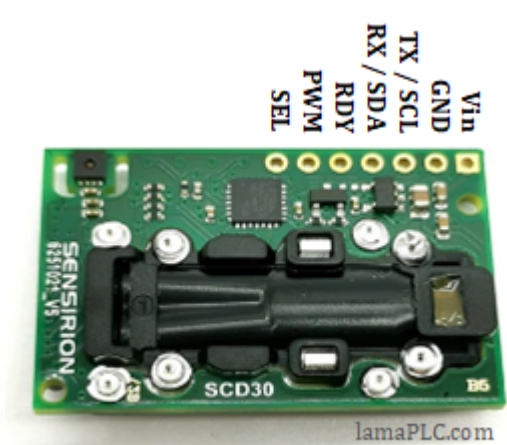
SCD30

The SCD30 is a high-precision, 3-in-1 sensor module from Sensirion that measures Carbon Dioxide (CO²), Temperature, and Relative Humidity. It is considered a “true” CO² sensor because it uses Non-Dispersive Infrared (NDIR) technology to directly measure CO² molecules, rather than approximating levels from other gases.

Key Features & Technology

- **Dual-Channel Detection:** It uses a dedicated reference channel to compensate for long-term drift, ensuring superior stability over its 15-year lifetime.
- **Integrated Compensation:** The module uses its built-in temperature and humidity data to internally calibrate and normalise the CO2 readings.
- **Self-Calibration Options:** Supports Automatic Self-Calibration (ASC), which resets the sensor's baseline when exposed to fresh air (~400 ppm) regularly, or Forced Recalibration (FRC) for manual setup.
- **Adjustable Sampling:** While the default interval is 2 seconds, it can be set to 1-1800 seconds to reduce power consumption in battery-powered projects.

SCD30 Pinout



Pin	Name	Description	Logic Level
1	VDD	Supply Voltage (3.3V - 5.5V)	—
2	GND	Ground	—
3	TX / SCL	Modbus Transmit / I ² C Clock	3.0V (internal pull-up)
4	RX / SDA	Modbus Receive / I ² C Data	3.0V (internal pull-up)
5	RDY	Data Ready (High when new data is available)	3.0V
6	PWM	Pulse Width Modulation output	3.0V
7	SEL	Interface Select (Floating/GND = I ² C; High = Modbus)	< 4.0V

Key Wiring Notes

- **Internal Pull-ups:** The module has internal 45 kΩ resistors connected to a 3V supply for the I²C lines.
- **Voltage Warning:** The module can be powered with 5V, but the SCL/SDA logic pins operate at 3V. When using a 5V microcontroller like an Arduino Uno, a level shifter is strongly advised to prevent damage to the sensor.
- **Interface Selection:** For I²C (the standard mode), leave the SEL pin floating or connect it to Ground. To use Modbus, connect the SEL pin to VDD via a voltage divider, ensuring the voltage does not exceed 4V.

SCD30 Arduino example code

To use the SCD30 with an Arduino, the **SparkFun SCD30** Arduino Library and the Adafruit SCD30 Library are the most common choices.

```
#include <Wire.h>
#include "SparkFun_SCD30_Arduino_Library.h" //

SCD30 airSensor;

void setup() {
  Wire.begin();
  Serial.begin(9600);

  if (airSensor.begin() == false) {
    Serial.println("Sensor not detected. Check wiring!");
    while (1);
  }
  Serial.println("SCD30 detected!");
}

void loop() {
  if (airSensor.dataAvailable()) {
    Serial.print("CO2(ppm): ");
    Serial.print(airSensor.getCO2());
    Serial.print(" Temp(C): ");
    Serial.print(airSensor.getTemperature(), 1);
    Serial.print(" Humidity(%): ");
    Serial.println(airSensor.getHumidity(), 1);
  }
  delay(2000); // Sensor updates every 2 seconds by default
}
```

SCD41

The SCD41, developed by Sensirion, is a compact, highly precise sensor for measuring CO₂, temperature, and humidity. As the second generation of their optical CO₂ sensors, it employs photoacoustic NDIR (Non-Dispersive Infrared) technology. This approach enables the sensor to be much smaller than conventional CO₂ sensors while maintaining high accuracy, making it perfect for indoor air quality (IAQ) monitoring.



Key Features

- 3-in-1 Sensing: Measures CO2 concentration, relative humidity, and temperature simultaneously.
- Miniature Form Factor: Its extremely small size (10.1 x 10.1 x 6.5 mm³) enables easy integration into compact devices.
- High Accuracy: Offers a precision of $\pm(40\text{ ppm} + 5\% \text{ of reading})$ across the range 400 to 5,000 ppm.
- Low Power Modes: Includes a “single-shot” mode that reduces average current consumption to <0.4 mA for battery-operated applications.
- Standard Interface: Communicates via I2C, making it compatible with microcontrollers such as Arduino, ESP32, and Raspberry Pi.

Technical Specifications

Parameter	Range / Value	Accuracy (Typical)
CO ² Concentration	400 – 5,000 ppm (up to 40,000 ppm output)	$\pm(40\text{ ppm} + 5\%)$
Relative Humidity	0 – 100% RH	$\pm 6\% \text{ RH}$
Temperature	-10°C to 60°C	$\pm 0.8\text{ }^{\circ}\text{C}$ (at 15-35°C)
Supply Voltage	2.4V – 5.5V	N/A
I ² C Address	0x62	N/A

SCD41 Pinout

Most breakout boards use a standard 4-pin or 5-pin arrangement for easy connection to microcontrollers like Arduino or ESP32.



Pin Name	Type	Description
VIN / VCC	Power	Connect to (2.4V – 5.5V) (depending on your board's logic level).
GND	Ground	Common ground for power and logic.
SCL	I ² C Clock	Serial clock line for I ² C communication. Usually has a 10k pull-up.
SDA	I ² C Data	Serial data line for I ² C communication. Usually has a 10k pull-up.
3Vo	Output	(Adafruit boards only) 3.3V output from the onboard regulator.

SCD41 Arduino example

Search for “Sensirion I2C SCD4x” and install it. The example below initialises the sensor and outputs CO₂, Temperature, and Humidity readings every 5 seconds.

```
#include <Arduino.h>
#include <SensirionI2cScd4x.h>
#include <Wire.h>

SensirionI2cScd4x scd4x;

void setup() {
  Serial.begin(115200);
  while (!Serial); // Wait for serial monitor

  Wire.begin();
  scd4x.begin(Wire);

  // Stop potentially running measurement
  uint16_t error = scd4x.stopPeriodicMeasurement();
  if (error) {
    Serial.print("Error stopping measurement: ");
    Serial.println(error);
  }

  // Start periodic measurement (updates every 5 seconds)
  error = scd4x.startPeriodicMeasurement();
  if (error) {
    Serial.print("Error starting measurement: ");
    Serial.println(error);
  }

  Serial.println("Waiting for first measurement... (5 sec)");
}

void loop() {
  uint16_t co2 = 0;
  float temperature = 0.0f;
  float humidity = 0.0f;
  bool dataReady = false;

  // Check if data is ready to be read
  uint16_t error = scd4x.getDataReadyStatus(dataReady);

  if (dataReady) {
    error = scd4x.readMeasurement(co2, temperature, humidity);
    if (!error) {
      Serial.print("CO2: ");
      Serial.print(co2);
    }
  }
}
```

```
Serial.print(" ppm\t");
Serial.print("Temp: ");
Serial.print(temperature);
Serial.print(" °C\t");
Serial.print("Humidity: ");
Serial.print(humidity);
Serial.println(" %");
}
}
delay(1000); // Check status every second
}
```

Key Functions to Note

- **startPeriodicMeasurement():** Sets the sensor to measure every 5 seconds.
- **getDataReadyStatus():** Use this to avoid reading “stale” data until the next 5-second interval.
- **measureSingleShot():** Available only on the SCD41 (not the SCD40). It allows manual measurement to save power, making it ideal for battery-powered projects.

Communication topics on lamaPLC

Page	Date	Tags
• ISM Band	2026/04/23 21:51	ism , ism band , rfid , nfc , dash7 , hc-12 , arduino , zigbee , z-wave , bluetooth , wi-fi , thread , miwi , nrf24 , starlink , wiegand , rf , communication , bus , radio , ku band , ka band , k band , x band
• lamaPLC Communication: 1-Wire	2026/04/23 21:51	1-wire , communication , bus , microlan , i2c , uart , usart , ds18b20
• lamaPLC Communication: AS-i	2026/04/23 21:51	bus , communication , as-i , basic , industrial ethernet , devicenet , interbus , manchester-ii , apm
• lamaPLC Communication: Bluetooth basic	2026/04/23 21:51	communication , bus , bluetooth , ism , ieee , 802.15.1 , ble , lmp , l2cap , rfcomm , iot , arduino , hc-05 , hc-06
• lamaPLC Communication: CAN	2026/04/23 21:51	communication , bus , can , canopen , most , automotive ethernet , sent sae-j2716 , flexray , lin bus
• lamaPLC Communication: ControlNet	2026/04/23 21:51	bus , communication , devicenet , cip , can , ethernet ip , ethernet , controlnet , mac , peer-to-peer , allen-bradley , rockwell automation , fieldbus , rg-6 , coaxial cable
• lamaPLC Communication: DALI	2024/11/16 21:08	communication , rs-232 , dali , light technic , diia , selv , manchester , asynchronous , half-duplex , serial , iec 62386 , d4i , dali-2 , dt6 , dt8
• lamaPLC Communication: DASH7	2026/04/23 21:51	bus , communication , dash7 , ism , srd , aes 128 , d7a , blast , iot , rfid

• lamaPLC Communication: DeviceNet	2024/11/16 20:43	bus, communication, devicenet, 62026-3, cip, can, ethernet ip, ethernet, controlnet, mac, peer-to-peer, canopen, allen-bradley, rockwell automation, bosch
• lamaPLC Communication: DMX512	2024/11/16 01:16	bus, communication, dmx512, dmx512-a, rs-485, xlr3, xlr5
• lamaPLC Communication: EtherNet/IP	2026/04/23 21:51	communication, ethernet, bus, ip, cip, ethernet ip, udp, industrial ethernet, ie, tcp, unicast, devicenet, controlnet, ieee 802.3
• lamaPLC Communication: GPS	2024/11/15 21:15	communication, satellite, navigation, gps, ocx, cdma, glonass, beidou, galileo, qzss, uart, arduino
• lamaPLC Communication: IEC 61850 basic	2026/04/23 21:51	1-wire, communication, bus, xml, iec 61850, iec, ethernet, scl, goose, ied
• lamaPLC Communication: InterBus	2024/11/16 01:46	bus, communication, interbus, phoenix contact, en 50254, iec 61158
• lamaPLC Communication: IoT	2026/04/23 21:51	communication, iot, internet, iomt, 6lowpan, ipv4, ipv6, bluetooth, ble, li-fi, nfc, rfid, wi-fi, zigbee, z-wave, lte-advanced, 5g, lora, dash7, lpwan, lorawan, sigfox, nb-iot, weightless, rpma, mioty, vsat, ethernet, thread, matter
• lamaPLC Communication: I²C	2025/09/23 21:25	i2c, i c, smbus, philips, bus, communication, arduino
• lamaPLC Communication: KNX / EIB	2026/04/23 21:51	communication, bus, knx, knx tp, knx pl, knx rf, knx ip, eib, ehs, batibus, ethernet, ets
• lamaPLC communication: Matter	2026/04/23 21:51	communication, iot, matter, ethernet, tcp, udp, ipv6, thread, ble, cellular, wifi, pki, ip
• lamaPLC Communication: Modbus	2026/04/23 21:51	modbus, communication, bus, modicon, standard, rtu, tcp, multimaster, coil, register
• lamaPLC Communication: MQTT	2024/11/15 21:28	communication, mqtt, iot, tcp, udp, bluetooth, tcp ip, quic, mqtt-sn, oasis, message broker, mosquitto, qos, arduino, iso iec 20922
• lamaPLC Communication: NFC	2026/04/23 21:51	communication, nfc, rfid, bluetooth, ble, manchester, ask, iso iec 18092
• lamaPLC Communication: NRF24	2024/11/16 02:26	bus, communication, nrf24, ism, ism band, gfsk, rpd, arduino
• lamaPLC Communication: OPC	2024/11/15 21:33	communication, opc, scada, ole, net, xml, tcp, hmi, server, opc ua, opc ua client, mqtt, json, dcom, simatic, erp
• lamaPLC Communication: PowerLink	2026/04/23 21:51	communication, bus, ethernet, tcp, udp, http, powerlink, fast ethernet, opensafety
• lamaPLC Communication: Profibus	2026/04/23 21:51	profibus, profibus pa, profibus dp, communication, fieldbus, bus, iec 61158, iec 61784-1, profinet, rs-485

• lamaPLC Communication: RFID	2026/04/23 21:51	communication , rfid , radio , rf , aidc , prat , arpt , arat , bap , uhf , nfc , em4100 , t5557 , tag , manchester , fsk , psk , biphase , nrz
• lamaPLC Communication: RS-232	2026/04/23 21:51	bus , communication , rs-232 , rs , basic
• lamaPLC Communication: RS-422	2026/04/23 21:51	bus , communication , rs-422 , rs , basic
• lamaPLC Communication: RS-485	2026/04/23 21:51	bus , communication , rs-485 , rs , basic , profibus
• lamaPLC Communication: SCADA	2026/04/23 21:51	communication , scada , industry , industrial , hmi
• lamaPLC Communication: Sinec H1	2026/04/23 21:51	communication , bus , fieldbus , sinec-h1 , s5 , s7 , simatic , siemens , industrial , ethernet , ie , iec 8073
• lamaPLC Communication: SPI	2026/04/23 21:51	bus , communication , spi , basic , arduino , ssi , sdi , miso , sdo
• lamaPLC Communication: TCP / UDP Basic	2025/11/20 22:49	communication , bus , tcp , udp , tcp ip , darpa , ietf , smtp , http , https , ftp , ftps , ssh , pop3 , imap , mysql , cpanel , whm , ssl , webmail , mqtt , ethernet , ip
• lamaPLC communication: Thread	2024/11/15 23:07	bus , communication , matter , thread , matter over thread , zigbee , aes , ipv6 , iot , 6lowpan , ethernet , wifi
• lamaPLC Communication: UART / USART basic	2026/04/23 21:51	bus , communication , uart , rs-232 , rs-422 , rs-485
• lamaPLC Communication: USB	2026/04/23 21:51	usb , usb otg , otg , msc , ums , mtp , dfu , uac , adc , communication , bus , basic
• lamaPLC Communication: Wi-Fi	2026/04/23 21:51	communication , iot , internet , wi-fi , wifi , ieee 802.11
• lamaPLC Communication: Wiegand	2026/04/23 21:51	wiegand , communication , interface , cr80 , iec 7810 , h10301 , hid , wiegand 26 , wiegand 32 , wiegand 34 , wiegand 35 , wiegand 37 , wiegand 38 , wiegand 42
• lamaPLC Communication: WS2812	2024/11/16 00:36	bus , communication , ws2812 , ws2812b , ws 2812 , ws 2812 b , 5050smd , 4020 , 2020 , 3535 , 5050 , nzt , rgb chip , led , arduino , rgb
• lamaPLC Communication: Z-Wave	2026/04/23 21:51	communication , ethernet , bus , ip , z-wave , ism
• lamaPLC Communication: Zigbee	2026/04/23 21:51	communication , ethernet , bus , ip , zigbee , wpan , bluetooth , wi-fi , ism , ieee 802.15.4 , zdo , zigbee pro , zc , zr , zed , smart energy , homegrid , homeplug , powerline , ipso , sunspec , 6lowpan , ipv6 , rf4ce
• LamaPLC: AHT10 Modul	2026/03/22 03:14	communication , i2c , temperature , humidity , sensor , aht , aht 10 , modul
• lamaPLC: AI-Thinker LoRA products	2026/04/23 21:51	ai-thinker , lora manufacturer , communication , lora , modul , ra-01 , ra-02 , spi , arduino

• LamaPLC: APDS - Avago ALS and proximity detection sensors with I ² C 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: AS5600 Magnetic Induction Angle Measurement Sensor Module	2026/05/13 00:06	communication, i2c, as5600, as-5600, magnetic, induction, angle, sensor
• lamaPLC: B+G E-Tech DS100 Energy Meter with Modbus	2026/06/05 15:59	communication, modbus, b g, e-tech, ds100, energy meter, em
• LamaPLC: BMP/BME Bosch Temperature/Humidity/Pressure sensors with I ² C communication	2026/04/23 21:52	bme280, bme680, bme688, bmp180, bmp280, hw-611, hw611, bosch, temperature, humidity, pressure, sensor, arduino, i2c, communication, ai, cjmdu, volatile organic compounds, vocs, volatile sulfur compounds, vscs, iaq
• lamaPLC: CJMCU-164; SN74HC164D 8-bit Shift Register Module	2026/03/06 01:19	cjmdu-164, sn74hc164d, 8-bit shift register, communication, 7-segment, cjmdu, arduino
• LamaPLC: CJMCU-219/INA-219 breakout board/IC with I ² C communication	2026/04/23 21:52	cjmdu-219, ina-219, ina219, breakout board, i2c, communication, sensor, voltage, current, arduino, code, cjmdu
• LamaPLC: CJMCU-3216 / AP-3216 integrated digital ambient light and proximity sensor module/IC with I ² C communication	2026/04/23 21:52	cjmdu-3216, cjmdu, ap-3216, ap3216, ambient light, proximity, sensor, arduino, code, i2c, communication
• LamaPLC: CJMCU-3901/PMW-3901 compact optical flow sensor module/IC by PixArt with SPI communication	2026/04/23 21:52	cjmdu-3901, cjmdu, pmw3901, pmw-3901, optical flow, sensor, pixart, spi, communication, arduino, code, pmw3901mb-txqt
• LamaPLC: CJMCU-6701: Biosensor for measuring Galvanic Skin Response (GSR) with SPI communication	2026/04/23 21:52	cjmdu, cjmdu-6701, acs758, acs-758, galvanic skin response, gsr, electrodermal activity, eda, spi, communication, arduino, code, sensor, healthcare
• lamaPLC: Communication with Eastron Smart X96	2026/06/05 15:59	communication, modbus, energy meter, em, easton, smart, x96
• LamaPLC: DPS Infineon Temperature/Pressure sensors with I ² C communication	2026/04/23 21:52	dps310, infineon, temperature, pressure, sensor, arduino, i2c, communication, code
• lamaPLC: DS18B20 1-Wire Digital Thermometer	2026/04/23 21:52	ds18b20, sensor, 1-wire, communication, arduino, thermometer, parasitic mode
• lamaPLC: Ebyte LoRA products	2026/04/23 21:51	ebyte, lora manufacturer, communication, lora, modul
• 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, eco ₂ , tvoc, aqi, indoor air quality, iaq, co ₂ , 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-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: 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: HX711 24-bit analog-to-digital converter (ADC)	2026/04/11 18:28	hx711 , hx-711 , analog-to-digital , adc , converter , load cell , wheatstone bridge , weight , sensor , communication , 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 I²C communication	2026/04/23 21:52	i2c , i c , communication , arduino , energy , power , current , monitor , sensor , ina226 , ina219 , ina
• lamaPlc: Industrial Ethernet (IE) Basic	2026/04/23 21:51	communication , bus , ethernet , industrial ethernet , ie , ethernet , ethercat , ethernet ip , profinet , powerlink , sercos , iii , cc-link , modbus tcp , ieee , rstp , stp
• lamaPLC: LCD 1602/2004 with I²C communication	2026/02/14 18:27	communication , i2c , display , lcd , 1602 , 2004 , hd44780 , pcf8574 , pcf8574t , pcf8574at , arduino
• lamaPLC: LTC3588 - Nanopower energy harvesting power supply IC	2026/04/23 21:52	communication , arduino , sensor , energy harvesting , eh , energy , ambient power
• 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: Measurement	2026/06/05 15:43	energy meter, em, communication, modbus, easton, sdm120, xtm35sc, sdm230, ds100-00b, b g e-tech, sdm54, sdm72, sdm630, smart, x96-5, x96-5fj
• LamaPLC: MH-Z19 series of NDIR CO₂ sensors	2026/04/23 21:52	mh-z19, mh-z19d, mh-z19c, mh-z19b, mh-z19e, ndir, co₂, sensor, winsen, uart, pwm, communication, non-dispersive infrared, infrared, ir, temperature, arduino, code, tasmota
• 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	2026/05/15 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 I²C communication	2026/04/23 21:52	paj7620u2, gy-paj7620, pixart, gesture recognition, i2c, communication, sensor, arduino, code
• lamaPlc: Profinet	2026/04/23 21:51	communication, bus, profinet, mrp, rstp, gsddl, xml, profibus, ethernet, tcp
• lamaPLC: PTA8C04 4-channel PT100 Modbus Modul	2026/02/14 18:42	pta8c04, sensor, modbus, rtu, rs-485, communication, platine, um72
• lamaPLC: RadiationD Geiger counter module and tubes	2026/05/15 16:47	communication, j305, j321, m4011, sbm-20, sts-5, lnd-712, radiation, miller, geiger-mueller, tube, saturation, radiationd, module, usv h, cpm, cajoe
• 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 21:04	code, micropython, 2026, rp2040 eth, bme680, i2c, sensor, communication
• LamaPLC: S7-1500 and Metrawatt EM2389 Modbus TCP communication	2026/04/23 21:52	simatic, s7, modbus, communication, metrawatt, em2389, source code, scl, mid
• LamaPLC: S7-1500 and Sicam Q200 Modbus TCP communication	2026/04/23 21:52	simatic, s7, modbus, tia portal, communication, sicam, q200, sicam q200, source code, scl, class a
• lamaPLC: S7-1500 and UICPAL Temp.humi.sensor Modbus TCP communication	2026/04/23 21:52	bus, communication, s7, simatic, s7 1500, s7 1200, scl, uicpal, temperature, humidity, modbus, example, download, tia portal
• 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

• LamaPLC: SHT Sensirion Temperature/humidity sensor with I²C communication	2026/04/23 21:52	sht20, sht21, sht25, sht30, sht31, sht35, sht40, gy21, temperature, humidity, i2c, communication, sensor, arduino, code
• LamaPLC: ST7789 driver / TFT-LCD screen	2026/05/19 21:37	communication, spi, st7789, tft, lcd, screen, ips
• lamaPLC: TCA9548A (HW617); Low-Voltage 8-Channel I²C Switch Module	2026/02/14 23:51	tca9548a, hw617, i2c, switch, communication, expansion board, arduino
• LamaPLC: Texas Instruments ADCs: Standard multi-channel Analog Converters using I²C or SPI interfaces	2026/04/23 21:52	ads111x, ads12xx, delta-sigma, converter, texas instruments, adc, spi, communication, sensor, arduino, code, ads1110, ads1112, ads1113, ads1114, ads1115, ads1118, ads1119, ads1220, ads1232, ads1234, ads1256, ads1261, ads1263, multi channel
• 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: TWAI basics	2026/04/23 21:51	bus, communication, as-i, basic, can, twai, espressif, esp32
• LamaPLC: UICPAL Temp.humi.sensor	2023/06/25 00:43	simatic, s7, modbus, communication, temperature, humidity, sensor
• 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
• 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
• lamaPLC: Waveshare LoRA products	2026/03/07 01:46	waveshare, lora manufacturer, communication, lora, modul, usb-to-lora-xf02, core 1262, 1262, spi, arduino, rp2040-lora, rp2040
• 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
• LamaPLC: XTM35SC Energy meter with Modbus communication	2026/06/05 15:59	xtm35sc, modbus, modbus rtu, measuring, power, communication, current meter, voltmeter
• lamaPLC: YR-3180 - Weight sensor module with UART or Modbus communication	2026/02/15 00:00	communication, modbus, rtu, sensor, weight, yr-3180, hx710b, arduino, ttl, rs-485
• LM393: Dual differential comparator (flame, light, sound sensors)	2026/05/12 22:18	communication, analog, lm393, lm-393, flame, ir, sound, hall, sensor, ky-026, hw-484, ky-037, ky-038, fc-03, hc-89, ky-024, modul

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- [NT18B07: 7 Kanal RS485 Temperatur Sensor with Modbus RTU](#) 2026/02/14 18:49 [nt18b07](#), [sensor](#), [modbus](#), [rtu](#), [rs-485](#), [communication](#), [platine](#)
- [Simatic Modbus S7 error- and statuscodes](#) 2026/04/23 21:52 [communication](#), [bus](#), [modbus](#), [error](#), [modbus error code](#), [7000](#), [7001](#), [7002](#), [7003](#), [7004](#), [7005](#), [7006](#), [80a1](#), [simatic](#), [s7](#), [siemens](#), [tia](#)
- [Waveshare](#) 2026/04/23 21:52 [waveshare](#), [converter](#), [modbus](#), [modbus rtu](#), [modbus tcp](#), [communication](#)
- [XTM35SC current / voltage meter](#) 2026/04/23 21:52 [xtm35sc](#), [modbus](#), [modbus rtu](#), [measuring](#), [power](#), [communication](#), [current meter](#), [voltmeter](#)

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