

# lamaPLC project: Digitales Potentiometer Board Moduls

A digital potentiometer (or “digipot”), such as the **Renesas X9C** series, is a semiconductor device that replicates the function of a mechanical potentiometer—varying resistance—but replaces the manual knob with digital control signals.

## Renesas X9C series

The X9C102, X9C103, X9C104, and X9C503 are digitally controlled (XDCCP) potentiometers. The device consists of a resistor array, wiper switches, a control section, and nonvolatile memory. The wiper position is controlled by a three-wire interface.

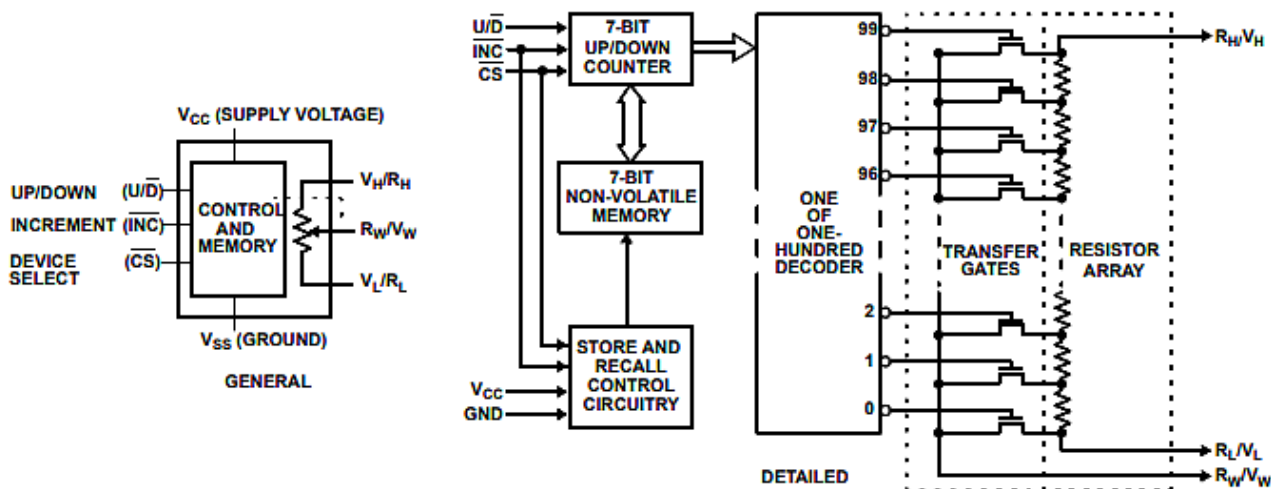


The potentiometer is implemented using a resistor array composed of 99 resistive elements and a wiper-switching network. Between each element and at either end are tap points accessible to the wiper terminal. The position of the wiper element is controlled by the CS, U/D, and INC inputs. The wiper position can be stored in non-volatile memory and recalled upon subsequent power-up.

The device can be used as a three-terminal potentiometer or a two-terminal variable resistor in a wide variety of applications, from control to signal processing to parameter adjustment.

Model	Total Resistance (R <sup>total</sup> )	Step Size (approx.)	Temp.Coefficient	Max Terminal Voltage Differential (ΔV)
X9C102	1 KΩ	10.1 Ω	+600 ppm/°C	4 V
X9C103	10 KΩ	101 Ω	+300 ppm/°C	10 V
X9C104	100 KΩ	505 Ω	+300 ppm/°C	10 V
X9C503	50 KΩ	1010 Ω	+300 ppm/°C	10 V

- **Resolution:** 100 Wiper Tap Points (0–99).
- **Interface:** 3-wire serial (CS, U/D, INC).
- **Memory:** Non-volatile EEPROM (retains position for 100 years).
- **Supply Voltage (Vcc):** 5V
- **Resistance Tolerance:** ±20% end-to-end.
- **Typical Wiper Resistance:** 40 Ω at 1 mA



Full datasheet: <https://www.renesas.com/en/document/dst/x9c102-x9c103-x9c104-x9c503-datasheet>

### Pinout for the Renesas X9C series module board

The Renesas X9C series module board, commonly known as the X9C103S module, organizes the chip's pins into two separate header rows, making it more convenient to connect with breadboards and microcontrollers such as Arduino. Usually, it includes a 5-pin control header on one side and a 3-pin potentiometer header on the opposite side.

Header	Pin Label	Name	Function
Control	VCC	Power	Connects to +5V supply.
Control	GND	Ground	Circuit common ground.
Control	CS	Chip Select	Active LOW. Must be pulled low to enable control.
Control	INC	Increment	Negative-edge triggered. Pulses move the wiper.
Control	U/D	Up/Down	Direction: HIGH to increase, LOW to decrease.
Potentiometer	VH (or H)	High	High-end terminal of the pot (max +5V).
Potentiometer	VW (or W)	Wiper	The adjustable "middle" output pin.
Potentiometer	VL (or L)	Low	Low-end terminal of the pot (min -5V).

### Communication topics on lamaPLC

Page	Date	Tags
<ul style="list-style-type: none"> <li><a href="#">ISM Band</a></li> </ul>	2025/11/10 18:53	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
<ul style="list-style-type: none"> <li><a href="#">lamaPLC Communication: 1-Wire</a></li> </ul>	2025/05/31 21:56	1-wire, communication, bus, microlan, i2c, uart, usart, ds18b20

• lamaPLC Communication: AS-i	2025/05/31 22:51	bus, communication, as-i, basic, industrial ethernet, devicenet, interbus, manchester-ii, apm
• lamaPLC Communication: Bluetooth basic	2025/11/19 21:52	communication, bus, bluetooth, ism, ieee, 802.15.1, ble, lmp, l2cap, rfcomm, iot, arduino, hc-05, hc-06
• lamaPLC Communication: CAN	2025/11/20 20:43	communication, bus, can, canopen, most, automotive ethernet, sent sae-j2716, flexray, lin bus
• lamaPLC Communication: ControlNet	2025/05/31 22:58	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 20:08	communication, rs-232, dali, light technic, diia, selv, manchester, asynchronous, half-duplex, serial, iec 62386, d4i, dali-2, dt6, dt8
• lamaPLC Communication: DASH7	2024/11/16 20:21	bus, communication, dash7, ism, srd, aes 128, d7a, blast, iot, rfid
• lamaPLC Communication: DeviceNet	2024/11/16 19:43	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 00:16	bus, communication, dmx512, dmx512-a, rs-485, xlr3, xlr5
• lamaPLC Communication: EtherNet/IP	2024/11/17 00:26	communication, ethernet, bus, ip, cip, ethernet ip, udp, industrial ethernet, ie, tcp, unicast, devicenet, controlnet, ieee 802.3
• lamaPLC Communication: GPS	2024/11/15 20:15	communication, satellite, navigation, gps, oxc, cdma, glonass, beidou, galileo, qzss, uart, arduino
• lamaPLC Communication: IEC 61850 basic	2025/09/23 21:03	1-wire, communication, bus, xml, iec 61850, iec, ethernet, scl, goose, ied
• lamaPLC Communication: InterBus	2024/11/16 00:46	bus, communication, interbus, phoenix contact, en 50254, iec 61158
• lamaPLC Communication: IoT	2025/05/31 22:50	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: I <sup>2</sup> C	2025/09/23 19:25	i2c, i c, smbus, philips, bus, communication, arduino
• lamaPLC Communication: KNX / EIB	2024/11/15 20:18	communication, bus, knx, knx tp, knx pl, knx rf, knx ip, eib, ehs, batibus, ethernet, ets

• <a href="#">lamaPLC Communication: LoRa, LoRaWAN and LoRa Mesh</a>	2026/03/05 15:43	<a href="#">communication, bus, lora, lorawan, loramesh, mesh, ism, the things network, ttn, aloha, beaconing, csma, csma-ca, mac, adaptive data rate, adr, spreading factor, sf, transmission power, eu863, eu863-870, eu433, us902-928, au915-928, as923, in865-867, cn433, cn470, cn779, cn920, semtech, sx1261, sx1262, sx1276, sx1272, sx1278, encoding rate, er, time on air, toa, iot, netid, listen before talk, lbt</a>
• <a href="#">lamaPLC communication: Matter</a>	2024/11/15 20:21	<a href="#">communication, iot, matter, ethernet, tcp, udp, ipv6, thread, ble, cellular, wifi, pki, ip</a>
• <a href="#">lamaPLC Communication: Modbus</a>	2025/11/19 21:42	<a href="#">modbus, communication, bus, modicon, standard, rtu, tcp, multimaster, coil, register</a>
• <a href="#">lamaPLC Communication: MQTT</a>	2024/11/15 20:28	<a href="#">communication, mqtt, iot, tcp, udp, bluetooth, tcp ip, quic, mqtt-sn, oasis, message broker, mosquitto, qos, arduino, iso iec 20922</a>
• <a href="#">lamaPLC Communication: NFC</a>	2025/05/31 22:16	<a href="#">communication, nfc, rfid, bluetooth, ble, manchester, ask, iso iec 18092</a>
• <a href="#">lamaPLC Communication: NRF24</a>	2024/11/16 01:26	<a href="#">bus, communication, nrf24, ism, ism band, gfsk, rpd, arduino</a>
• <a href="#">lamaPLC Communication: OPC</a>	2024/11/15 20:33	<a href="#">communication, opc, scada, ole, net, xml, tcp, hmi, server, opc ua, opc ua client, mqtt, json, dcom, simatic, erp</a>
• <a href="#">lamaPLC Communication: PowerLink</a>	2024/11/15 21:15	<a href="#">communication, bus, ethernet, tcp, udp, http, powerlink, fast ethernet, opensafety</a>
• <a href="#">lamaPLC Communication: Profibus</a>	2024/11/16 19:09	<a href="#">profibus, profibus pa, profibus dp, communication, fieldbus, bus, iec 61158, iec 61784-1, profinet, rs-485</a>
• <a href="#">lamaPLC Communication: RFID</a>	2025/05/31 21:52	<a href="#">communication, rfid, radio, rf, aidc, prat, arpt, arat, bap, uhf, nfc, em4100, t5557, tag, manchester, fsk, psk, biphas, nrz</a>
• <a href="#">lamaPLC Communication: RS-232</a>	2024/11/15 21:51	<a href="#">bus, communication, rs-232, rs, basic</a>
• <a href="#">lamaPLC Communication: RS-422</a>	2024/11/15 21:50	<a href="#">bus, communication, rs-422, rs, basic</a>
• <a href="#">lamaPLC Communication: RS-485</a>	2024/11/15 21:52	<a href="#">bus, communication, rs-485, rs, basic, profibus</a>
• <a href="#">lamaPLC Communication: SCADA</a>	2024/11/17 00:33	<a href="#">communication, scada, industry, industrial, hmi</a>
• <a href="#">lamaPLC Communication: Sinec H1</a>	2024/11/16 20:44	<a href="#">communication, bus, fieldbus, sinec-h1, s5, s7, simatic, siemens, industrial ethernet, ie, iec 8073</a>
• <a href="#">lamaPLC Communication: SPI</a>	2024/11/15 21:58	<a href="#">bus, communication, spi, basic, arduino, ssi, sdi, miso, sdo</a>

• lamaPLC Communication: TCP / UDP Basic	2025/11/20 21:49	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 22:07	bus, communication, matter, thread, matter over thread, zigbee, aes, ipv6, iot, 6lowpan, ethernet, wifi
• lamaPLC Communication: UART / USART basic	2025/02/11 20:21	bus, communication, uart, rs-232, rs-422, rs-485
• lamaPLC Communication: USB	2025/11/20 23:07	usb, usb otg, otg, msc, ums, mtp, dfu, uac, adc, communication, bus, basic
• lamaPLC Communication: Wi-Fi	2024/11/16 18:46	communication, iot, internet, wi-fi, wifi, ieee 802.11
• lamaPLC Communication: Wiegand	2024/11/16 23:39	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	2024/11/15 23:36	bus, communication, ws2812, ws2812b, ws 2812, ws 2812 b, 5050smd, 4020, 2020, 3535, 5050, nzt, rgb chip, led, arduino, rgb
• lamaPLC Communication: Z-Wave	2024/11/17 21:25	communication, ethernet, bus, ip, z-wave, ism
• lamaPLC Communication: Zigbee	2024/11/17 21:43	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	2026/03/21 19:20	communication, i2c, temperature, humidity, sensor, aht, aht 10, modul
• lamaPLC: AI-Thinker LoRA products	2026/03/05 15:40	ai-thinker, lora manufacturer, communication, lora, modul, ra-01, ra-02, spi, arduino
• LamaPLC: APDS - Avago ALS and proximity detection sensors with I <sup>2</sup> C communication	2026/02/14 22:24	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	2026/03/28 22:07	communication, i2c, as5600, as-5600, magnetic, induction, angle, sensor
• LamaPLC: BMP/BME Bosch Temperature/Humidity/Pressure sensors with I <sup>2</sup> C communication	2026/02/15 20:40	bme280, bme680, bmp180, bmp280, hw-611, hw611, bosch, temperature, humidity, pressure, sensor, arduino, i2c, communication, cjmcu
• lamaPLC: CJMCU-164; SN74HC164D 8-bit Shift Register Module	2026/02/14 22:48	cjmcu-164, sn74hc164d, 8-bit shift register, communication, 7-segment, cjmcu, arduino
• LamaPLC: CJMCU-219/INA-219 breakout board/IC with I <sup>2</sup> C communication	2026/02/14 23:37	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>	2026/02/14 22:40	<a href="#">cjmcu-3216</a> , <a href="#">cjmcu</a> , <a href="#">ap-3216</a> , <a href="#">ap3216</a> , <a href="#">ambient light</a> , <a href="#">proximity</a> , <a href="#">sensor</a> , <a href="#">arduino</a> , <a href="#">code</a> , <a href="#">i2c</a> , <a href="#">communication</a>
• <a href="#">LamaPLC: CJMCU-3901/PMW-3901 compact optical flow sensor module/IC by PixArt with SPI communication</a>	2026/02/14 22:39	<a href="#">cjmcu-3901</a> , <a href="#">cjmcu</a> , <a href="#">pmw3901</a> , <a href="#">pmw-3901</a> , <a href="#">optical flow</a> , <a href="#">sensor</a> , <a href="#">pixart</a> , <a href="#">spi</a> , <a href="#">communication</a> , <a href="#">arduino</a> , <a href="#">code</a> , <a href="#">pmw3901mb-txqt</a>
• <a href="#">LamaPLC: CJMCU-6701: Biosensor for measuring Galvanic Skin Response (GSR) with SPI communication</a>	2026/02/14 23:39	<a href="#">cjmcu</a> , <a href="#">cjmcu-6701</a> , <a href="#">acs758</a> , <a href="#">acs-758</a> , <a href="#">galvanic skin response</a> , <a href="#">gsr</a> , <a href="#">electrodermal activity</a> , <a href="#">eda</a> , <a href="#">spi</a> , <a href="#">communication</a> , <a href="#">arduino</a> , <a href="#">code</a> , <a href="#">sensor</a> , <a href="#">healthcare</a>
• <a href="#">LamaPLC: DPS Infineon Temperature/Pressure sensors with I2C communication</a>	2026/02/14 18:11	<a href="#">dps310</a> , <a href="#">infineon</a> , <a href="#">temperature</a> , <a href="#">pressure</a> , <a href="#">sensor</a> , <a href="#">arduino</a> , <a href="#">i2c</a> , <a href="#">communication</a> , <a href="#">code</a>
• <a href="#">lamaPLC: DS18B20 1-Wire Digital Thermometer</a>	2026/02/15 20:44	<a href="#">ds18b20</a> , <a href="#">sensor</a> , <a href="#">1-wire</a> , <a href="#">communication</a> , <a href="#">arduino</a> , <a href="#">thermometer</a> , <a href="#">parasitic mode</a>
• <a href="#">lamaPLC: Ebyte LoRA products</a>	2026/03/05 15:20	<a href="#">ebyte</a> , <a href="#">lora manufacturer</a> , <a href="#">communication</a> , <a href="#">lora</a> , <a href="#">modul</a>
• <a href="#">lamaPLC: Energy, power, current, and voltage</a>	2025/05/31 21:32	<a href="#">i2c</a> , <a href="#">i c</a> , <a href="#">communication</a> , <a href="#">arduino</a> , <a href="#">energy</a> , <a href="#">power</a> , <a href="#">current</a> , <a href="#">sensor</a> , <a href="#">ina226</a>
• <a href="#">LamaPLC: ENS ScioSense Multi-gas sensors with I<sup>2</sup>C communication</a>	2026/02/14 19:29	<a href="#">ens160</a> , <a href="#">sciosense</a> , <a href="#">gas-quality</a> , <a href="#">i2c</a> , <a href="#">communication</a> , <a href="#">sensor</a> , <a href="#">arduino</a> , <a href="#">code</a> , <a href="#">eco2</a> , <a href="#">tvoc</a> , <a href="#">aqi</a> , <a href="#">indoor air quality</a> , <a href="#">iaq</a> , <a href="#">co2</a> , <a href="#">voc</a>
• <a href="#">lamaPLC: ESP32 / ESP8266</a>	2025/11/21 23:07	<a href="#">esp8266</a> , <a href="#">esp32</a> , <a href="#">esp32-c2</a> , <a href="#">esp32-c3</a> , <a href="#">esp32-c5</a> , <a href="#">esp32-c6</a> , <a href="#">esp32-c61</a> , <a href="#">esp32-h2</a> , <a href="#">esp32-s2</a> , <a href="#">esp32-s3</a> , <a href="#">esp32-p4</a> , <a href="#">espressif systems</a> , <a href="#">communication</a> , <a href="#">ethernet</a> , <a href="#">ip</a> , <a href="#">wi-fi</a> , <a href="#">thread</a> , <a href="#">zigbee</a> , <a href="#">matter</a> , <a href="#">homekit</a> , <a href="#">bluetooth</a> , <a href="#">mqtt</a> , <a href="#">adc</a> , <a href="#">spi</a> , <a href="#">uart</a> , <a href="#">i2c</a> , <a href="#">i2s</a> , <a href="#">rmt</a> , <a href="#">pwm</a> , <a href="#">usb</a> , <a href="#">usb otg</a> , <a href="#">twai</a>
• <a href="#">LamaPLC: Gas sensors</a>	2023/07/01 15:29	<a href="#">gas</a> , <a href="#">sensor</a> , <a href="#">i2c</a> , <a href="#">onewire</a> , <a href="#">communication</a> , <a href="#">mq-3</a> , <a href="#">mq-4</a> , <a href="#">mq-5</a> , <a href="#">mq-6</a> , <a href="#">mq-7</a> , <a href="#">mq-8</a> , <a href="#">mq-9</a> , <a href="#">mq-135</a> , <a href="#">gm-102b</a> , <a href="#">gm-302b</a> , <a href="#">gm-502b</a> , <a href="#">gm-702b</a> , <a href="#">alcohol</a> , <a href="#">ch4</a> , <a href="#">natural gas</a> , <a href="#">smoke</a> , <a href="#">lng</a> , <a href="#">co</a> , <a href="#">co2</a> , <a href="#">lpg</a> , <a href="#">h2</a> , <a href="#">iso-butane</a> , <a href="#">nox</a> , <a href="#">nh3</a> , <a href="#">benzene</a> , <a href="#">town gas</a> , <a href="#">formaldehyde</a> , <a href="#">propane</a> , <a href="#">humidity</a> , <a href="#">temperature</a> , <a href="#">voc</a> , <a href="#">grv gas sens v2</a>
• <a href="#">LamaPLC: GY-9250 MPU-9250/6500 9-axis Attitude Sensor Board</a>	2026/02/14 22:45	<a href="#">ak8963</a> , <a href="#">gy-9250</a> , <a href="#">mpu-9250</a> , <a href="#">9-axis</a> , <a href="#">motion detection</a> , <a href="#">magnetometer</a> , <a href="#">communication</a> , <a href="#">i c</a> , <a href="#">i2c</a> , <a href="#">spi</a>
• <a href="#">LamaPLC: HDC Texas Instruments Temperature/humidity sensors with I<sup>2</sup>C communication</a>	2026/02/14 22:09	<a href="#">sht21</a> , <a href="#">htu21</a> , <a href="#">si7021</a> , <a href="#">gy-21</a> , <a href="#">gy-213v</a> , <a href="#">hdc1080</a> , <a href="#">gy-213v-hdc1080</a> , <a href="#">cjmcu</a> , <a href="#">cjmcu-1080</a> , <a href="#">texas instruments</a> , <a href="#">temperature</a> , <a href="#">humidity</a> , <a href="#">sensor</a> , <a href="#">i2c</a> , <a href="#">communication</a> , <a href="#">arduino</a> , <a href="#">code</a>

• LamaPLC: HTU TE Connectivity temperature/humidity sensors with I <sup>2</sup> C communication	2026/02/14 21:54	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)	2026/02/15 23:59	hx711, hx-711, analog-to-digital, adc, converter, load cell, wheatstone bridge, weight, sensor, communication, arduino, code
• lamaPLC: INA modules with Arduino libraries	2026/03/28 18:02	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 I <sup>2</sup> C communication	2026/02/14 23:58	i2c, i c, communication, arduino, energy, power, current, monitor, sensor, ina226, ina219, ina
• lamaPlc: Industrial Ethernet (IE) Basic	2024/11/15 20:17	communication, bus, ethernet, industrial ethernet, ie, ethercat, ethernet ip, profinet, powerlink, sercos, iii, cc-link, modbus tcp, ieee, rstp, stp
• lamaPLC: LCD 1602/2004 with I <sup>2</sup> C communication	2026/02/14 17:27	communication, i2c, display, lcd, 1602, 2004, hd44780, pcf8574, pcf8574t, pcf8574at, arduino
• lamaPLC: LTC3588 - Nanopower energy harvesting power supply IC	2026/02/14 23:35	communication, arduino, sensor, energy harvesting, energy, ambient power
• LamaPLC: MAX30100/MAX30102 Heart Rate Click Sensor Module	2026/02/14 23:38	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	2026/02/14 22:52	communication, i2c, mcp23017, mcp23s17, spi, i o expander, serial, cjmcu-2317, cjmcu
• LamaPLC: MH-Z19 series of NDIR CO <sub>2</sub> sensors	2026/02/15 20:20	mh-z19, mh-z19d, mh-z19c, mh-z19b, mh-z19e, ndir, co <sub>2</sub> , sensor, winsen, uart, pwm, communication, non-dispersive infrared, infrared, ir, temperature, arduino, code, tasmota
• LamaPLC: Pixart PAJ7620U2 Gesture recognition sensors/module with I <sup>2</sup> C communication	2026/02/14 22:23	paj7620u2, gy-paj7620, pixart, gesture recognition, i2c, communication, sensor, arduino, code
• lamaPlc: Profinet	2024/11/15 20:39	communication, bus, profinet, mrp, rstp, gsddl, xml, profibus, ethernet, tcp
• lamaPLC: PTA8C04 4-channel PT100 Modbus Modul	2026/02/14 17:42	pta8c04, sensor, modbus, rtu, rs-485, communication, platine, um72
• LamaPLC: S7-1500 and Metrawatt EM2389 Modbus TCP communication	2024/11/18 17:55	simatic, s7, modbus, communication, metrawatt, em2389, source code, scl, mid
• LamaPLC: S7-1500 and Sicam Q200 Modbus TCP communication	2023/06/24 22:42	simatic, s7, modbus, tia portal, communication, sicam, q200, sicam q200, source code, scl, class a

• <a href="#">lamaPLC: S7-1500 and UICPAL Temp.humi.sensor Modbus TCP communication</a>	2023/06/19 21:24	<a href="#">bus, communication, s7, simatic, s7 1500, s7 1200, scl, uicpal, temperature, humidity, modbus, example, download, tia portal</a>
• <a href="#">LamaPLC: SGP Sensirion Gas-sensors with I<sup>2</sup>C communication</a>	2026/02/15 20:27	<a href="#">sgp30, sgp40, sgp41, sensirion, gas-sensor, i2c, communication, sensor, arduino, code, eco<sub>2</sub>, voc, tvoc, indoor air quality, iaq, nox, hydrogen</a>
• <a href="#">LamaPLC: SHT Sensirion Temperature/humidity sensor with I<sup>2</sup>C communication</a>	2026/02/15 20:29	<a href="#">sht20, sht21, sht25, sht30, sht31, sht35, sht40, gy21, temperature, humidity, i2c, communication, sensor, arduino, code</a>
• <a href="#">lamaPLC: TCA9548A (HW617); Low-Voltage 8-Channel I<sup>2</sup>C Switch Module</a>	2026/02/14 22:51	<a href="#">tca9548a, hw617, i2c, switch, communication, expansion board, arduino</a>
• <a href="#">LamaPLC: Texas Instruments ADCs: Delta-sigma multi-channel Analog Converters with SPI communication</a>	2026/02/15 22:34	<a href="#">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</a>
• <a href="#">LamaPLC: TOFnnnC STMicroelectronics Time-of-Flight (ToF) sensors with I<sup>2</sup>C communication</a>	2026/02/14 22:22	<a href="#">tof050c, vl6180, tof200c, vl53l0x, tof400c, vl53l1x, stmicroelectronics, time-of-flight, tof, i2c, communication, sensor, arduino, code</a>
• <a href="#">lamaPLC: TWAI basics</a>	2025/11/20 21:41	<a href="#">bus, communication, as-i, basic, can, twai, espressif, esp32</a>
• <a href="#">LamaPLC: UICPAL Temp.humi.sensor</a>	2023/06/24 22:43	<a href="#">simatic, s7, modbus, communication, temperature, humidity, sensor</a>
• <a href="#">LamaPLC: VL53Lnn STMicroelectronics time-of-flight (ToF) laser-ranging sensors with I<sup>2</sup>C communication</a>	2026/02/14 22:21	<a href="#">vl53l0x, vl53l1x, vl53l0 1xv2, gy-530, time-of-flight, tof, laser-ranging, i2c, communication, sensor, arduino, code</a>
• <a href="#">LamaPLC: VL6180X STMicroelectronics Time-of-Flight (ToF) sensor with I<sup>2</sup>C communication</a>	2026/02/14 22:22	<a href="#">vl6180x, stmicroelectronics, time-of-flight, tof, i2c, communication, sensor, arduino, code</a>
• <a href="#">lamaPLC: Waveshare LoRA products</a>	2026/03/05 15:20	<a href="#">waveshare, lora manufacturer, communication, lora, modul, usb-to-lora-xf02, core 1262, 1262, spi, arduino, rp2040-lora, rp2040</a>
• <a href="#">LamaPLC: XTM35SC Modbus communication</a>	2024/08/18 14:52	<a href="#">xtm35sc, modbus, modbus rtu, measuring, power, communication, current meter, voltmeter</a>
• <a href="#">lamaPLC: YR-3180 - Weight sensor module with UART or Modbus communication</a>	2026/02/14 23:00	<a href="#">communication, modbus, rtu, sensor, weight, yr-3180, hx710b, arduino, ttl, rs-485</a>
• <a href="#">Magnetic angle sensors</a>	2026/03/05 20:19	<a href="#">magnetic angle sensor, magnetic flux, sensor, spi, i2c, pwm, communication, modul, as5047p, as5600, mt6701, mt6816, mt6835, tle5012b, amr, gmr, tmr, anisotropic magnetoresistive</a>
• <a href="#">NT18B07: 7 Kanal RS485 Temperatur Sensor with Modbus RTU</a>	2026/02/14 17:49	<a href="#">nt18b07, sensor, modbus, rtu, rs-485, communication, platine</a>

- [Simatic Modbus S7 error- and statuscodes](#) 2025/11/13 22:59 [communication, bus, modbus, error, modbus error code, 7000, 7001, 7002, 7003, 7004, 7005, 7006, 80a1, simatic, s7, siemens, tia](#)
  - [Waveshare](#) 2023/06/17 19:43 [waveshare, converter, modbus, modbus rtu, modbus tcp, communication](#)
  - [XTM35SC current / voltage meter](#) 2023/06/01 11:45 [xtm35sc, modbus, modbus rtu, measuring, power, communication, current meter, voltmeter](#)
- [BMP280, AHT20, temperature, humidity, pressure, sensor, arduino, oled, SH1106, arduino code](#)

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