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# lamaPLC: Ebyte LoRA products

Model Series	Chip Solution	Frequency Range	Power	Distance	Key Features
<b>E220 Series</b>	LLCC68	410-493 / 850-930 MHz	22-30 dBm	5-10 km	New generation, lower power, faster speed than SX127x
<b>E22 Series</b>	SX1262 / SX1268	170 / 230 / 433 / 868 / 915 MHz	22-33 dBm	5-16 km	High efficiency, supports air wake-up and deep sleep
<b>E30 Series</b>	SI4463 / SI4438	148-173.5 / 433 MHz	20-27 dBm	~2-5 km	Industrial-grade stability for specific narrow bands
<b>E32 Series</b>	SX1276 / SX1278	170 / 433 / 868 / 915 MHz	20-37 dBm	5-25 km	Classic "workhorse" series; TTL level, widely compatible

## Key Technical Specifications

- **Operating Voltage:** Most modules are compatible with 3.3V to 5V for the IO port.
- **Transmission Modes:** These modules typically feature four operating modes (Normal, Wake-up, Power-saving, and Sleep) controlled via M0 and M1 pins.
- **Interface:** Primarily uses UART (Serial Port) for transparent transmission, making it easy to interface with Arduino or Raspberry Pi.
- **Antenna Options:** Available in SMD (stamp hole) or DIP (pin header) packages with IPEX or SMA antenna connectors.

## E32 Series Comparison Table

The E32 series is based on the Semtech SX1276 and SX1278 chips, utilizing LoRa spread-spectrum technology for long-range, interference-resistant communication.

Model	Chip	Frequency	Power	Distance	Interface
<b>E32-868T30D</b>	SX1276	868 MHz	30 dBm	8.0 km	UART (TTL)
<b>E32-868T20D</b>	SX1276	868 MHz	20 dBm	3.0 km	UART (TTL)
<b>E32-433T30D</b>	SX1278	433 MHz	30 dBm	8.0 km	UART (TTL)
<b>E32-433T20D</b>	SX1278	433 MHz	20 dBm	3.0 km	UART (TTL)
<b>E32-170T30D</b>	SX1278	170 MHz	30 dBm	8.0 km	UART (TTL)
<b>E32-900T20D</b>	SX1276	862-931 MHz	20 dBm	3.0 km	UART (TTL)

## E32 DIP Series Pinout

The Ebyte E32 series LoRa modules usually have either a 7-pin or 22-pin configuration, depending on the model (DIP or SMD). For the standard E32-433T20D and E32-TTL-100 (DIP models), the pinout is listed below:

Pin No.	Item	Direction	Description
<b>1</b>	M0	Input	Operating mode control (with M1). Must not float
<b>2</b>	M1	Input	Operating mode control (with M0). Must not float
<b>3</b>	RXD	Input	UART TTL input. Connects to external TXD. 3.3V Logic

Pin No.	Item	Direction	Description
4	TXD	Output	UART TTL output. Connects to external RXD. 3.3V Logic
5	AUX	Output	Indicates status (Busy/Idle) or self-check initialization (3.3V when HIGH)
6	VCC	Power	Power supply: 2.3V to 5.5V DC
7	GND	Power	Ground

### Configuration and Pins (M0, M1)

Mode	M1	M0	Description
<b>Normal</b>	0 (GND)	0 (GND)	UART and wireless channel are open; transparent transmission
<b>Wake-up</b>	0 (GND)	1 (VCC*)	Same as normal, but adds a preamble to wake up the receiver
<b>Power-saving</b>	1 (VCC*)	0 (GND)	WOR (Wake On Radio) mode; receiving only
<b>Sleep</b>	1 (VCC*)	1 (VCC*)	Used for parameter configuration via AT commands or Ebyte software

\*Note: VCC for logic pins must be 3.3V, even if the main module VCC is 5V.

**Power Supply (VCC):** Most E32 modules can be powered directly from a 5V supply, and some models require at least 5V to ensure maximum performance at high transmit power (e.g., 30dBm/1W versions).

**Logic Level:** The UART interface operates at 3.3V TTL. **Using 5V logic from an MCU like an Arduino Uno without a level shifter can damage the module.**

- **Level Shifting:** Use a level shifter or a voltage divider (such as 2kΩ and 1kΩ resistors) on the RX, M0, and M1 pins.
- **Pull-up Resistors:** For 5V MCUs, it is recommended to add 4.7kΩ to 10kΩ pull-up resistors to the TXD and AUX pins to enhance stability.

### E32 module "AT" commands

In Sleep Mode ( $M1=1, M0=1$ ), the E32 module does not use standard text-based "AT" commands (like AT+VER). Instead, it uses Hexadecimal Control Commands sent at a fixed baud rate of 9600bps (**9600, 8N1**).

All commands must be sent as a sequence of bytes. The module *will not respond if the format is incorrect*.

Command (HEX)	Purpose	Response from Module
<b>C0 + 5 bytes</b>	Set & Save: Configures parameters and saves to EEPROM (persists after power-off)	C0 + 5 bytes (Current config)
<b>C2 + 5 bytes</b>	Set Temporary: Configures parameters for current session only (lost after power-off)	C0 + 5 bytes (Current config)
<b>C1 C1 C1</b>	Read Config: Requests the current working parameters	C0 + 5 bytes (Current config) Default: 192- <b>0-0-26-6-68</b> , <b>Default Address :00</b> <b>Default channel: 6</b>

Command (HEX)	Purpose	Response from Module
<b>C3 C3 C3</b>	Read Version: Requests the hardware and firmware version info	C3 + Frequency code + Version + Features Example 192- <b>69</b> -12-30 Frequency code: Hex 46, dec 70: 170 MHz <b>Hex 45, dec 69: 868 MHz</b> Hex 44, dec 68: 915 MHz Hex 38, dec 56: 470 MHz Hex 32, dec 50: 433 MHz
<b>C4 C4 C4</b>	Reset: Performs a software reset of the module	None (AUX pin goes LOW then HIGH)

### Parameter Byte Format (for C0/C2)

When configuring, send a total of 6 bytes: 1 Command Byte and 5 Parameter Bytes:

1. **HEAD:** *0xC0* (Save) or *0xC2* (Temporary).
2. **ADDH:** High byte of module address (00-FF).
3. **ADDL:** Low byte of module address (00-FF).
4. **SPED:** UART parity, UART baud rate, and Air data rate.
5. **CHAN:** Communication channel ( $Frequency = 410M + CHAN * 1M$ ).
6. **OPTION:** Transmission mode (Fixed/Transparent), IO drive mode, Wake-up time, FEC, and Transmit power.

### Example: Reading the Version

To check your module version, send these three bytes in HEX via your serial monitor: *C3 C3 C3*

The module will return 4 bytes, with the second byte typically indicating the frequency (e.g., *0x32* for 433 MHz).

**Operational Tip:** Monitor the AUX pin; it will go LOW while the module processes a command and return HIGH when it is ready for the next one.

### Another Example: High-Performance Configuration (Fixed Transmission)

If you want to use Fixed Transmission (sending to specific addresses) at 115.2kbps UART speed and maximum power (20dBm), send:

Command: *C0 00 01 3F 17 C0*

Byte Breakdown:

- **C0:** Save to EEPROM.
- **00 01:** Sets Module Address to 1.
- **3F:** UART 115200bps, 8N1, Air Data Rate 19.2kbps.
- **17:** Channel 23 (433MHz for 433 series).
- **C0:** Fixed transmission mode, Pull-up enabled, FEC on, 20dBm power.

### Another Example: Change Frequency/Channel

To change the module to a different frequency (e.g., 430MHz on a 433MHz module), adjust the 5th byte:

Command: *C0 00 00 1A 14 44*

**Calculation:** 410M + Channel \* 1M. Here, 14 (Hex) = 20 (Dec). So, 410 + 20 = 430MHz

## Communication topics on lamaPLC

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• <a href="#">ISM Band</a>	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
• <a href="#">lamaPLC Communication: 1-Wire</a>	2026/04/23 21:51	1-wire, communication, bus, microlan, i2c, uart, usart, ds18b20
• <a href="#">lamaPLC Communication: AS-i</a>	2026/04/23 21:51	bus, communication, as-i, basic, industrial ethernet, devicenet, interbus, manchester-ii, apm
• <a href="#">lamaPLC Communication: Bluetooth basic</a>	2026/04/23 21:51	communication, bus, bluetooth, ism, ieee, 802.15.1, ble, lmp, l2cap, rfcomm, iot, arduino, hc-05, hc-06
• <a href="#">lamaPLC Communication: CAN</a>	2026/04/23 21:51	communication, bus, can, canopen, most, automotive ethernet, sent sae-j2716, flexray, lin bus
• <a href="#">lamaPLC Communication: ControlNet</a>	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
• <a href="#">lamaPLC Communication: DALI</a>	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
• <a href="#">lamaPLC Communication: DASH7</a>	2026/04/23 21:51	bus, communication, dash7, ism, srd, aes 128, d7a, blast, iot, rfid
• <a href="#">lamaPLC Communication: DeviceNet</a>	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
• <a href="#">lamaPLC Communication: DMX512</a>	2024/11/16 01:16	bus, communication, dmx512, dmx512-a, rs-485, xlr3, xlr5
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• <a href="#">lamaPLC Communication: GPS</a>	2024/11/15 21:15	communication, satellite, navigation, gps, ocx, cdma, glonass, beidou, galileo, qzss, uart, arduino
• <a href="#">lamaPLC Communication: IEC 61850 basic</a>	2026/04/23 21:51	1-wire, communication, bus, xml, iec 61850, iec, ethernet, scl, goose, ied

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• lamaPLC Communication: I <sup>2</sup> C	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
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• 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, biphasse, nrz
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• 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

• <a href="#">lamaPLC Communication: TCP / UDP Basic</a>	2025/11/20 22:49	<a href="#">communication</a> , <a href="#">bus</a> , <a href="#">tcp</a> , <a href="#">udp</a> , <a href="#">tcp ip</a> , <a href="#">darpa</a> , <a href="#">ietf</a> , <a href="#">smtp</a> , <a href="#">http</a> , <a href="#">https</a> , <a href="#">ftp</a> , <a href="#">ftps</a> , <a href="#">ssh</a> , <a href="#">pop3</a> , <a href="#">imap</a> , <a href="#">mysql</a> , <a href="#">cpanel</a> , <a href="#">whm</a> , <a href="#">ssl</a> , <a href="#">webmail</a> , <a href="#">mqtt</a> , <a href="#">ethernet</a> , <a href="#">ip</a>
• <a href="#">lamaPLC communication: Thread</a>	2024/11/15 23:07	<a href="#">bus</a> , <a href="#">communication</a> , <a href="#">matter</a> , <a href="#">thread</a> , <a href="#">matter over thread</a> , <a href="#">zigbee</a> , <a href="#">aes</a> , <a href="#">ipv6</a> , <a href="#">iot</a> , <a href="#">6lowpan</a> , <a href="#">ethernet</a> , <a href="#">wifi</a>
• <a href="#">lamaPLC Communication: UART / USART basic</a>	2026/04/23 21:51	<a href="#">bus</a> , <a href="#">communication</a> , <a href="#">uart</a> , <a href="#">rs-232</a> , <a href="#">rs-422</a> , <a href="#">rs-485</a>
• <a href="#">lamaPLC Communication: USB</a>	2026/04/23 21:51	<a href="#">usb</a> , <a href="#">usb otg</a> , <a href="#">otg</a> , <a href="#">msc</a> , <a href="#">ums</a> , <a href="#">mtp</a> , <a href="#">dfu</a> , <a href="#">uac</a> , <a href="#">adc</a> , <a href="#">communication</a> , <a href="#">bus</a> , <a href="#">basic</a>
• <a href="#">lamaPLC Communication: Wi-Fi</a>	2026/04/23 21:51	<a href="#">communication</a> , <a href="#">iot</a> , <a href="#">internet</a> , <a href="#">wi-fi</a> , <a href="#">wifi</a> , <a href="#">ieee 802.11</a>
• <a href="#">lamaPLC Communication: Wiegand</a>	2026/04/23 21:51	<a href="#">wiegand</a> , <a href="#">communication</a> , <a href="#">interface</a> , <a href="#">cr80</a> , <a href="#">iec 7810</a> , <a href="#">h10301</a> , <a href="#">hid</a> , <a href="#">wiegand 26</a> , <a href="#">wiegand 32</a> , <a href="#">wiegand 34</a> , <a href="#">wiegand 35</a> , <a href="#">wiegand 37</a> , <a href="#">wiegand 38</a> , <a href="#">wiegand 42</a>
• <a href="#">lamaPLC Communication: WS2812</a>	2024/11/16 00:36	<a href="#">bus</a> , <a href="#">communication</a> , <a href="#">ws2812</a> , <a href="#">ws2812b</a> , <a href="#">ws 2812</a> , <a href="#">ws 2812 b</a> , <a href="#">5050smd</a> , <a href="#">4020</a> , <a href="#">2020</a> , <a href="#">3535</a> , <a href="#">5050</a> , <a href="#">nzt</a> , <a href="#">rgb chip</a> , <a href="#">led</a> , <a href="#">arduino</a> , <a href="#">rgb</a>
• <a href="#">lamaPLC Communication: Z-Wave</a>	2026/04/23 21:51	<a href="#">communication</a> , <a href="#">ethernet</a> , <a href="#">bus</a> , <a href="#">ip</a> , <a href="#">z-wave</a> , <a href="#">ism</a>
• <a href="#">lamaPLC Communication: Zigbee</a>	2026/04/23 21:51	<a href="#">communication</a> , <a href="#">ethernet</a> , <a href="#">bus</a> , <a href="#">ip</a> , <a href="#">zigbee</a> , <a href="#">wpan</a> , <a href="#">bluetooth</a> , <a href="#">wi-fi</a> , <a href="#">ism</a> , <a href="#">ieee 802.15.4</a> , <a href="#">zdo</a> , <a href="#">zigbee pro</a> , <a href="#">zc</a> , <a href="#">zr</a> , <a href="#">zed</a> , <a href="#">smart energy</a> , <a href="#">homegrid</a> , <a href="#">homeplug</a> , <a href="#">powerline</a> , <a href="#">ipso</a> , <a href="#">sunspec</a> , <a href="#">6lowpan</a> , <a href="#">ipv6</a> , <a href="#">rf4ce</a>
• <a href="#">LamaPLC: AHT10 Modul</a>	2026/03/22 03:14	<a href="#">communication</a> , <a href="#">i2c</a> , <a href="#">temperature</a> , <a href="#">humidity</a> , <a href="#">sensor</a> , <a href="#">aht</a> , <a href="#">aht 10</a> , <a href="#">modul</a>
• <a href="#">lamaPLC: AI-Thinker LoRA products</a>	2026/04/23 21:51	<a href="#">ai-thinker</a> , <a href="#">lora manufacturer</a> , <a href="#">communication</a> , <a href="#">lora</a> , <a href="#">modul</a> , <a href="#">ra-01</a> , <a href="#">ra-02</a> , <a href="#">spi</a> , <a href="#">arduino</a>
• <a href="#">LamaPLC: APDS - Avago ALS and proximity detection sensors with I<sup>2</sup>C communication</a>	2026/04/23 21:52	<a href="#">avago</a> , <a href="#">apds-9900</a> , <a href="#">apds-9930</a> , <a href="#">apds-9960</a> , <a href="#">als</a> , <a href="#">proximity</a> , <a href="#">detection</a> , <a href="#">gesture recognition</a> , <a href="#">gesture</a> , <a href="#">i2c</a> , <a href="#">communication</a> , <a href="#">sensor</a> , <a href="#">arduino</a> , <a href="#">code</a>
• <a href="#">lamaPLC: AS5600 Magnetic Induction Angle Measurement Sensor Module</a>	2026/03/28 23:50	<a href="#">communication</a> , <a href="#">i2c</a> , <a href="#">as5600</a> , <a href="#">as-5600</a> , <a href="#">magnetic</a> , <a href="#">induction</a> , <a href="#">angle</a> , <a href="#">sensor</a>
• <a href="#">LamaPLC: BMP/BME Bosch Temperature/Humidity/Pressure sensors with I<sup>2</sup>C communication</a>	2026/04/23 21:52	<a href="#">bme280</a> , <a href="#">bme680</a> , <a href="#">bmp180</a> , <a href="#">bmp280</a> , <a href="#">hw-611</a> , <a href="#">hw611</a> , <a href="#">bosch</a> , <a href="#">temperature</a> , <a href="#">humidity</a> , <a href="#">pressure</a> , <a href="#">sensor</a> , <a href="#">arduino</a> , <a href="#">i2c</a> , <a href="#">communication</a> , <a href="#">cjmcu</a>
• <a href="#">lamaPLC: CJMCU-164; SN74HC164D 8-bit Shift Register Module</a>	2026/03/06 01:19	<a href="#">cjmcu-164</a> , <a href="#">sn74hc164d</a> , <a href="#">8-bit shift register</a> , <a href="#">communication</a> , <a href="#">7-segment</a> , <a href="#">cjmcu</a> , <a href="#">arduino</a>
• <a href="#">LamaPLC: CJMCU-219/INA-219 breakout board/IC with I<sup>2</sup>C communication</a>	2026/04/23 21:52	<a href="#">cjmcu-219</a> , <a href="#">ina-219</a> , <a href="#">ina219</a> , <a href="#">breakout board</a> , <a href="#">i2c</a> , <a href="#">communication</a> , <a href="#">sensor</a> , <a href="#">voltage</a> , <a href="#">current</a> , <a href="#">arduino</a> , <a href="#">code</a> , <a href="#">cjmcu</a>

<ul style="list-style-type: none"> <li>• LamaPLC: CJMCU-3216 / AP-3216 integrated digital ambient light and proximity sensor module/IC with I<sup>2</sup>C communication</li> </ul>	2026/04/23 21:52	cjmcu-3216, cjmcu, ap-3216, ap3216, ambient light, proximity, sensor, arduino, code, i2c, communication
<ul style="list-style-type: none"> <li>• LamaPLC: CJMCU-3901/PMW-3901 compact optical flow sensor module/IC by PixArt with SPI communication</li> </ul>	2026/04/23 21:52	cjmcu-3901, cjmcu, pmw3901, pmw-3901, optical flow, sensor, pixart, spi, communication, arduino, code, pmw3901mb-txqt
<ul style="list-style-type: none"> <li>• LamaPLC: CJMCU-6701: Biosensor for measuring Galvanic Skin Response (GSR) with SPI communication</li> </ul>	2026/04/23 21:52	cjmcu, cjmcu-6701, acs758, acs-758, galvanic skin response, gsr, electrodermal activity, eda, spi, communication, arduino, code, sensor, healthcare
<ul style="list-style-type: none"> <li>• LamaPLC: DPS Infineon Temperature/Pressure sensors with I2C communication</li> </ul>	2026/04/23 21:52	dps310, infineon, temperature, pressure, sensor, arduino, i2c, communication, code
<ul style="list-style-type: none"> <li>• lamaPLC: DS18B20 1-Wire Digital Thermometer</li> </ul>	2026/04/23 21:52	ds18b20, sensor, 1-wire, communication, arduino, thermometer, parasitic mode
<ul style="list-style-type: none"> <li>• lamaPLC: Ebyte LoRA products</li> </ul>	2026/04/23 21:51	ebyte, lora manufacturer, communication, lora, modul
<ul style="list-style-type: none"> <li>• lamaPLC: Energy, power, current, and voltage</li> </ul>	2025/05/31 23:32	i2c, i c, communication, arduino, energy, power, current, sensor, ina226
<ul style="list-style-type: none"> <li>• LamaPLC: ENS ScioSense Multi-gas sensors with I<sup>2</sup>C communication</li> </ul>	2026/04/23 21:52	ens160, sciosense, gas-quality, i2c, communication, sensor, arduino, code, eco2, tvoc, aqi, indoor air quality, iaq, co2, voc
<ul style="list-style-type: none"> <li>• lamaPLC: ESP32 / ESP8266</li> </ul>	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
<ul style="list-style-type: none"> <li>• LamaPLC: Gas sensors</li> </ul>	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
<ul style="list-style-type: none"> <li>• LamaPLC: GY-9250 MPU-9250/6500 9-axis Attitude Sensor Board</li> </ul>	2026/04/23 21:52	ak8963, gy-9250, mpu-9250, 9-axis, motion detection, magnetometer, communication, i c, i2c, spi
<ul style="list-style-type: none"> <li>• LamaPLC: HDC Texas Instruments Temperature/humidity sensors with I<sup>2</sup>C communication</li> </ul>	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

• <a href="#">LamaPLC: HTU TE Connectivity temperature/humidity sensors with I<sup>2</sup>C communication</a>	2026/04/23 21:52	<a href="#">htu</a> , <a href="#">htu31d</a> , <a href="#">htu21d</a> , <a href="#">htu20d</a> , <a href="#">sht20</a> , <a href="#">htu20</a> , <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="#">si702</a> , <a href="#">gy-20</a> , <a href="#">sht31</a> , <a href="#">htu31</a> , <a href="#">si7031</a> , <a href="#">gy-31</a> , <a href="#">te connectivity</a> , <a href="#">temperature</a> , <a href="#">humidity</a> , <a href="#">i2c</a> , <a href="#">communication</a> , <a href="#">sensor</a> , <a href="#">arduino</a> , <a href="#">code</a>
• <a href="#">LamaPLC: HX711 24-bit analog-to-digital converter (ADC)</a>	2026/04/11 18:28	<a href="#">hx711</a> , <a href="#">hx-711</a> , <a href="#">analog-to-digital</a> , <a href="#">adc</a> , <a href="#">converter</a> , <a href="#">load cell</a> , <a href="#">wheatstone bridge</a> , <a href="#">weight</a> , <a href="#">sensor</a> , <a href="#">communication</a> , <a href="#">arduino</a> , <a href="#">code</a>
• <a href="#">lamaPLC: INA modules with Arduino libraries</a>	2026/04/11 19:54	<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="#">monitor</a> , <a href="#">sensor</a> , <a href="#">ina219</a> , <a href="#">gy-219</a> , <a href="#">ina226</a> , <a href="#">gy-216</a> , <a href="#">ina228</a> , <a href="#">gy-228</a> , <a href="#">ina237</a> , <a href="#">ina238</a> , <a href="#">ina260</a> , <a href="#">ina3221</a> , <a href="#">ina</a>
• <a href="#">lamaPLC: INA226 - current/voltage/power monitor with I<sup>2</sup>C communication</a>	2026/04/23 21:52	<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="#">monitor</a> , <a href="#">sensor</a> , <a href="#">ina226</a> , <a href="#">ina219</a> , <a href="#">ina</a>
• <a href="#">lamaPlc: Industrial Ethernet (IE) Basic</a>	2026/04/23 21:51	<a href="#">communication</a> , <a href="#">bus</a> , <a href="#">ethernet</a> , <a href="#">industrial ethernet</a> , <a href="#">ie</a> , <a href="#">ethercat</a> , <a href="#">ethernet ip</a> , <a href="#">profinet</a> , <a href="#">powerlink</a> , <a href="#">sercos</a> , <a href="#">iii</a> , <a href="#">cc-link</a> , <a href="#">modbus tcp</a> , <a href="#">ieee</a> , <a href="#">rstp</a> , <a href="#">stp</a>
• <a href="#">lamaPLC: LCD 1602/2004 with I<sup>2</sup>C communication</a>	2026/02/14 18:27	<a href="#">communication</a> , <a href="#">i2c</a> , <a href="#">display</a> , <a href="#">lcd</a> , <a href="#">1602</a> , <a href="#">2004</a> , <a href="#">hd44780</a> , <a href="#">pcf8574</a> , <a href="#">pcf8574t</a> , <a href="#">pcf8574at</a> , <a href="#">arduino</a>
• <a href="#">lamaPLC: LTC3588 - Nanopower energy harvesting power supply IC</a>	2026/04/23 21:52	<a href="#">communication</a> , <a href="#">arduino</a> , <a href="#">sensor</a> , <a href="#">energy harvesting</a> , <a href="#">energy</a> , <a href="#">ambient power</a>
• <a href="#">LamaPLC: MAX30100/MAX30102 Heart Rate Click Sensor Module</a>	2026/04/23 21:52	<a href="#">max30102</a> , <a href="#">max30100</a> , <a href="#">heart rate click</a> , <a href="#">sensor</a> , <a href="#">communication</a> , <a href="#">i2c</a> , <a href="#">arduino</a> , <a href="#">code</a>
• <a href="#">lamaPLC: MCP23017 / MCP23S17 16-Bit I/O Expander with Serial Interface I<sup>2</sup>C / SPI</a>	2026/04/23 21:52	<a href="#">communication</a> , <a href="#">i2c</a> , <a href="#">mcp23017</a> , <a href="#">mcp23s17</a> , <a href="#">spi</a> , <a href="#">i o expander</a> , <a href="#">serial</a> , <a href="#">cjmcu-2317</a> , <a href="#">cjmcu</a>
• <a href="#">LamaPLC: MH-Z19 series of NDIR CO<sub>2</sub> sensors</a>	2026/04/23 21:52	<a href="#">mh-z19</a> , <a href="#">mh-z19d</a> , <a href="#">mh-z19c</a> , <a href="#">mh-z19b</a> , <a href="#">mh-z19e</a> , <a href="#">ndir</a> , <a href="#">co<sub>2</sub></a> , <a href="#">sensor</a> , <a href="#">winsen</a> , <a href="#">uart</a> , <a href="#">pwm</a> , <a href="#">communication</a> , <a href="#">non-dispersive infrared</a> , <a href="#">infrared</a> , <a href="#">ir</a> , <a href="#">temperature</a> , <a href="#">arduino</a> , <a href="#">code</a> , <a href="#">tasmota</a>
• <a href="#">LamaPLC: Pixart PAJ7620U2 Gesture recognition sensors/module with I<sup>2</sup>C communication</a>	2026/04/23 21:52	<a href="#">paj7620u2</a> , <a href="#">gy-paj7620</a> , <a href="#">pixart</a> , <a href="#">gesture recognition</a> , <a href="#">i2c</a> , <a href="#">communication</a> , <a href="#">sensor</a> , <a href="#">arduino</a> , <a href="#">code</a>
• <a href="#">lamaPlc: Profinet</a>	2026/04/23 21:51	<a href="#">communication</a> , <a href="#">bus</a> , <a href="#">profinet</a> , <a href="#">mrp</a> , <a href="#">rstp</a> , <a href="#">gsdml</a> , <a href="#">xml</a> , <a href="#">profibus</a> , <a href="#">ethernet</a> , <a href="#">tcp</a>
• <a href="#">lamaPLC: PTA8C04 4-channel PT100 Modbus Modul</a>	2026/02/14 18:42	<a href="#">pta8c04</a> , <a href="#">sensor</a> , <a href="#">modbus</a> , <a href="#">rtu</a> , <a href="#">rs-485</a> , <a href="#">communication</a> , <a href="#">platine</a> , <a href="#">um72</a>
• <a href="#">LamaPLC: S7-1500 and Metrawatt EM2389 Modbus TCP communication</a>	2026/04/23 21:52	<a href="#">simatic</a> , <a href="#">s7</a> , <a href="#">modbus</a> , <a href="#">communication</a> , <a href="#">metrawatt</a> , <a href="#">em2389</a> , <a href="#">source code</a> , <a href="#">scl</a> , <a href="#">mid</a>
• <a href="#">LamaPLC: S7-1500 and Sicam Q200 Modbus TCP communication</a>	2026/04/23 21:52	<a href="#">simatic</a> , <a href="#">s7</a> , <a href="#">modbus</a> , <a href="#">tia portal</a> , <a href="#">communication</a> , <a href="#">sicam</a> , <a href="#">q200</a> , <a href="#">sicam q200</a> , <a href="#">source code</a> , <a href="#">scl</a> , <a href="#">class a</a>

• lamaPLC: S7-1500 and UICPAL Temp.humi.sensor Modbus TCP communication	2023/06/19 23:24	bus, communication, s7, simatic, s7 1500, s7 1200, scl, uicpal, temperature, humidity, modbus, example, download, tia portal
• LamaPLC: SGP Sensirion TVOC/VOC sensors with I <sup>2</sup> C 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 I <sup>2</sup> C communication	2026/04/23 21:52	sht20, sht21, sht25, sht30, sht31, sht35, sht40, gy21, temperature, humidity, i2c, communication, sensor, arduino, code
• lamaPLC: TCA9548A (HW617); Low-Voltage 8-Channel I <sup>2</sup> C Switch Module	2026/02/14 23:51	tca9548a, hw617, i2c, switch, communication, expansion board, arduino
• LamaPLC: Texas Instruments ADCs: Delta-sigma multi-channel Analog Converters with SPI communication	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 I <sup>2</sup> C 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 I <sup>2</sup> C 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 I <sup>2</sup> C 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: XTM35SC Modbus communication	2024/08/18 16:52	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
• 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
• 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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