



Online professional books

Simatic S7- TIA Portal programming: [Automation!](#)

lamaPLC Simatic know-how contents

Simatic S7-1500 / S7-1200: [Simatic S7-1500 / S7-1200](#)

Simatic TIA portal (and classic) type-definitions: [TIA Data-types](#)

Simatic TIA SCL commands: [SCL commands](#)

Simatic TIA Basic know-hows: [TIA Portal know-how](#)

Simatic (TIA and classic) Modbus error- and statuscodes: [Simatic Modbus S7 error- and statuscodes](#)

Simatic S7 PLC types: [S7 PLC types](#)

Simatic TIA lamaLibrary: [Simatic LamaLibrary](#)

Simatic TIA Diagnose generator: [TIA Diagnose generator](#)

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lamaPLC Arduino know-how contents

[Arduino basics](#)

[Arduino display](#)

[Arduino wiring](#)

[Arduino MKR family](#)

[Espressif ESP family](#)

[STM32F10: ARM STM32 Minimum System Development Module Board](#)



Software

[Arduino code collection](#)

[Arduino - OLED SH1106 with AHT20/BMP280 Sensor](#)

lamaPLC Communication basic contents

1-Wire basics **AS-i basics** Bluetooth basics **CAN basics** ControlNet basics **DALI basics** DASH7 basics **deviceNet basics** DMX512 basics **EtherNet/IP basics** GPS basics **I²C basics** IE basics **Interbus** IoT basics **KNX / EIB basics** LoRa / LoRaWan basics **Matter basics** Modbus basics **MQTT basics** NFC basics **nRF24 basics** OPC basics **PowerLink basics** ProfiBus basics **ProfiNet basics** RS-232 basics **RS-422 basics** RS-485 basics **Sinec H1 basics** SPI basics **TCP / UDP basics** Thread basics **UART basics** USB basics **Wifi basics** Wiegand basics **WS2812 basics** Z-Wave basics **Zigbee basics** IEC 61850

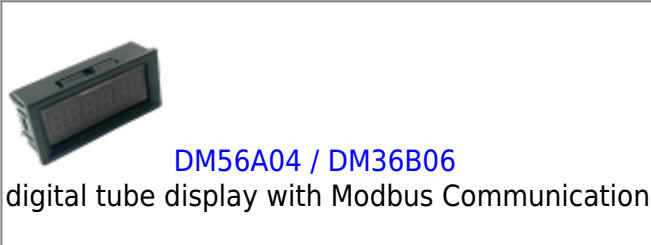
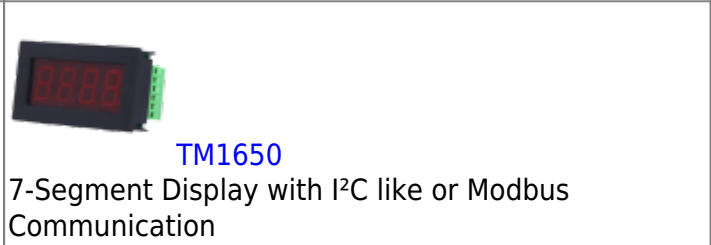
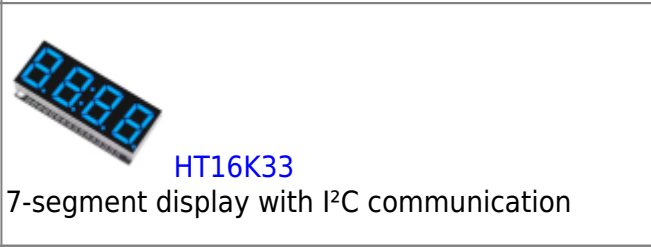
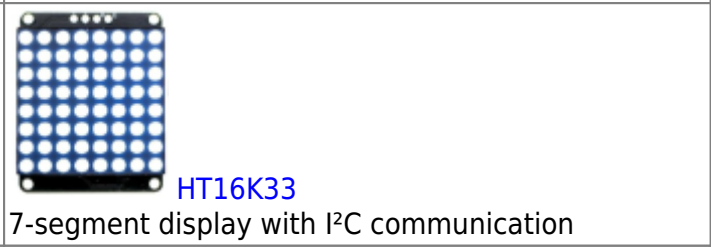
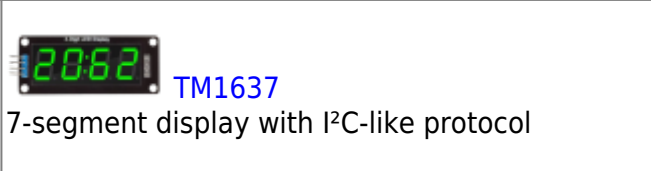
Communication subtopics

LORA: [LoRa AT commands](#)

LamaPLC Sensoric / Actoric / Display Content

Display Module

Display moduls

 DM56A04 / DM36B06 digital tube display with Modbus Communication	 TM1650 7-Segment Display with I²C like or Modbus Communication
 HT16K33 7-segment display with I²C communication	 HT16K33 7-segment display with I²C communication
 TM1637 7-segment display with I²C-like protocol	 LCD 1602/2004 with I²C communication
 SSH1106/SSD1306 OLED Display with I²C communication	

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Actors

TEC / Peltier Elements



LED controllers / addressable LEDs

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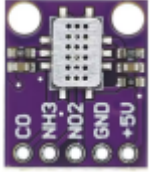
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Sensors

The search is easier in the [summarized abbreviation index](#), depending on the type designation.

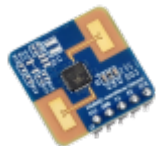
Temperature, Humidity, Air-pressure, Gas, Air-quality Sensors and Module

 AHT20/BMP280 Modul Temperature, Humidity, Air pressure + Arduino example code	 MAX31865 RTD to Digital Converter - PT100/PT1000 Platine
 PTA8C04 4-channel PT100 Modbus Modul with Modbus RTU + Holding Registers Description	 NT18B07 7 Kanal RS485 Temperature Sensors with Modbus RTU + Holding Registers Description
 DS18B20 1-Wire Digital Thermometer	 BMP/BME Bosch Temperature/Humidity/Pressure sensors with I²C communication (BME280, BME680, BMP180, BMP280, ...)
 DHT Temperature / Humidity sensors with 1-wire / I²C communication (DHT11, DHT20, DHT22/AM2302, ...)	 DPS Infineon Temperature/Pressure sensors with I²C communication (DPS310)

 D6T Omron Non-Contact Thermal Sensors with I²C communication (D6T-32L, D6T-44L, D6T-8L, D6T-1A, ...)	 GM MEMS Gas-sensors (GM-102b, GM-302b, GM-502b, GM-702b, ...)
 ENS ScioSense Multi-gas sensors with I²C communication (ENS-160)	 HTU TE Connectivity temperature/humidity sensors with I²C communication (HTU-21)
 MQ Winsen Gas-sensors (MQ-2, MQ-3, MQ-4, MQ-5, MQ-6, MQ-7, MQ-8, MQ-9, MQ-131, MQ-135, MQ-137, ...)	 SGP Sensirion Gas-sensors with I²C communication (SGP30, SGP40, SGP41, ...)
 SHT Sensirion Temperature/humidity sensor with I²C communication (SHT20, SHT21, SHT25, SHT30, SHT31, SHT35, SHT40, GY21, ...)	 HDC Texas Instruments Temperature/humidity sensors with I²C communication (HDC-1080)
 CJMCU-6814 combined gas sensor module for CO, NO₂, NH₃ (MICS-6814)	 MH-Z19 series of NDIR CO₂ sensors (MH-Z19B, MH-Z19C, MH-Z19D, MH-Z19E)

Distance measurement, Gesture Recognition, Optical flow, Motion

 HC-SR04 Ultrasonic Sensor Module	 VL53Lnn STMicroelectronics time-of-flight (ToF) laser-ranging sensors with I²C communication (VL53L0X, VL53L1X, VL53L0/1XV2, GY-530, ...)
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 VL6180X STMicroelectronics Time-of-Flight (ToF) sensor with I²C communication	 TOFnnnC STMicroelectronics Time-of-Flight (ToF) sensors with I²C communication (TOF050C, TOF200C, TOF400C, ...)
 PAJ Pixart gesture recognition sensors/module with I²C communication (PAJ7620U2, GY-PAJ7620)	 APDS Avago ALS and proximity detection sensors with I²C communication (APDS-9900, APDS-9930, APDS-9960)
 M01 V0.4 Laser ranging sensor with UART communication	 A0221AU/A02YYUW Waterproof Ultrasonic Distance Sensor with UART communication
 Waveshare TOF Laser Range Sensor with UART / I²C communication	 RD-XX Ai-Thinker Radar Module with UART communication (RD-01, RD-03, RD-03D, ...)
 RCWL Microwave radar sensor (RCWL-0516)	 CJMCU-3901/PMW-3901 compact optical flow sensor module/IC by PixArt with SPI communication
 PIR sensors (HC-SR501, HC-SR505, AM-312, EKMB/EKMC)	

Light, Ambient light, Proximity

 CJMCU-3216 / AP-3216 integrated digital ambient light and proximity sensor module/IC with I²C communication
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Motion detection, magnetometer

 MPU-9250/6500 9-axis motion detection module
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Signal Converters, Shift Registers

 PCA9306 I²C Voltage Level Translator	 CJMCU-164 SN74HC164D 8-bit Shift Register Module
 TTL to RS485 Module MAX485	 TCA9548A (HW617); Low-Voltage 8-Channel I²C Switch Module
 MCP23017 / MCP23S17 (CJMCU-2317) 16-Bit I/O Expander with Serial Interface I²C / SPI	 SC16IS750 / SC16IS752 One or two serial (UART) ports from microcontroller via I²C or SPI communication (CJMCU-750, CJMCU-752)
 Texas Instruments ADCs Delta-sigma multi-channel Analog Converters with SPI communication (ADS111x, ADS12xx)	

Amplifiers, DC-DC converters, PWM signal converters

 XY_MOS MOS FET Drive Module 400W Support PWM Controller	 CJMCU-8221 Analog Devices Precision instrumentation amplifier module
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Weight sensors

 YR-3180 YR-3180 - Weight sensor module with UART or Modbus communication + Modbus map

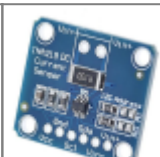
Energy meters (EM)

 Eastron SDM 630 3-phase Energy Meter with Modbus communication + Modbus map	 Eastron SDM 230 1-phase Energy Meter with Modbus communication + Modbus map
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Energy harvesting (EH)

 LTC-3588 Nanopower energy harvesting power supply IC	 BQ25570 / CJMCU-2557 Texas Instruments nano-power management IC and module
 LTC-3108-1 Ultra Low Voltage Boost Converter Power Manager Breakout Board	

Energy, power, current, voltage

 INA-226 current/voltage/power monitor with I²C communication	 CJMCU-219/INA-219 breakout board/IC with I²C communication
 Allegro ACS758 Hall-effect linear current sensors (CJMCU-758)	

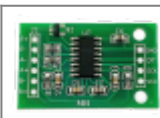
Healthcare sensoric

 MAX30100/MAX30102 Heart Rate Click Sensor Module	 CJMCU-6701 Biosensor for measuring Galvanic Skin Response (GSR) with SPI communication
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Audio, Microphone

 MAX4466/MAX9814 Low-noise Microphone Preamplifiers

Weight

 HX711 24-bit analog-to-digital converter (ADC)

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