

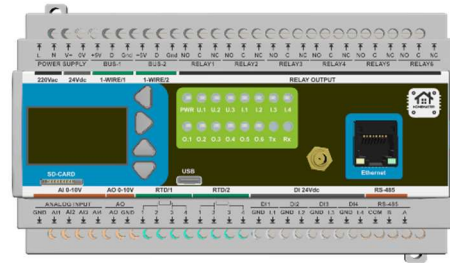


Datasheet

ESP32 MiniPLC

Part No. 0000001

About the product



MicroPLC is an advanced home automation solution built on the ESP32 platform, featuring seamless integration with Home Assistant via pre-installed ESPHome firmware.

With diverse onboard hardware resources, it enables automation tasks like pump and fan control, temperature control and measurement, light control and lighting scenes.

The device comes with a user display and control buttons on the front panel.

MicroPLC functionality can be expanded with extension modules via a wired RS-485 Modbus system.

Additionally, it allows for programming through the Arduino IDE via a USB interface, providing developers with significant flexibility and customization options.

Electrical Data

Power supply	24VDC, 120VDC - 370VDC, 85VAC - 265VAC/47 - 63Hz, USB-C female (5V DC via USB-C) for programming
Power consumption	typ. 1.85W, max. 3W
ESP32	ESP32-WROOM-32U
Digital Inputs	4 isolated, surge protected digital sourcing inputs logic 0: 0 ... 9.2VDC undefined: 9.2 ... 15.8VDC logic 1: 15.8 ... 24VDC
Outputs	6 digital outputs (relays with optocoupler and varistor surge protection), dry contact 250VAC 16A at $\cos\varphi = 1$, 250VAC 9A at $\cos\varphi = 0.4$ 30VDC 10A
Analogue inputs	4 analogue inputs 0 ... 10VDC, resolution 16 Bit, sample rate (max) 0.86 ksps ESD (2kV HBM and 1.5kV CDM), integrated EMI and RF filters
Analogue output	1 analogue output 0 ... 10VDC, resolution 12 Bit
RTD inputs	Handles 100 Ω to 1k Ω (at 0°C) Platinum RTDs (PT100 to PT1000)

	<p>Compatible with 2-, 3-, and 4-Wire Sensor Connections</p> <p>15-Bit ADC Resolution; Nominal Temperature Resolution 0.03125NC (Varies Due to RTD Nonlinearity)</p> <p>Total Accuracy Over All Operating Conditions: 0.5NC (0.05% of Full Scale) max</p> <p>Fully Differential VREF Inputs</p> <p>21ms (max) Conversion Time</p> <p>±45V Input Protection</p> <p>Fault Detection (Open RTD Element, RTD Shorted to Out-of-Range Voltage, or Short Across RTD Element)</p>
1-WIRE	2-separate 1-WIRE bus, 5VDC bus power supply, ESD Protected
LAN	10/100Mbps Ethernet Compliant with IEEE802.3/802.3u (Fast Ethernet), Compliant with ISO 802-3/IEEE 802.3 (10BASE-T) via LAN8720A
Wi-Fi	Reliability HTOL/HTSL/uHAST/TCT/ESD, Protocols 802.11 b/g/n (802.11n up to 150 Mbps), A-MPDU and A-MSDU aggregation and 0.4 µs guard interval support, Frequency range 2.4 GHz ~ 2.5 GHz
Bluetooth	Protocols Bluetooth v4.2 BR/EDR and BLE specification, Radio NZIF receiver with –97 dBm sensitivity, Class-1, class-2 and class-3 transmitter, AFH
RS-485	Half-duplex, data rate 115,2 kbps, short-circuit current limited and protected against excessive power dissipation, fail-safe for open circuit, surge protected
USB	USB type-C USB Specification 2.0 compliant, ESD protected, Silicon Labs CP2102N USB-to-UART bridge controller, Virtual COM Port Device Drivers, Works with existing COM port Applications, Supported on Windows, Mac, and Linux
Real-time clock	PCF8563
OLED Display	Display passive matrix,

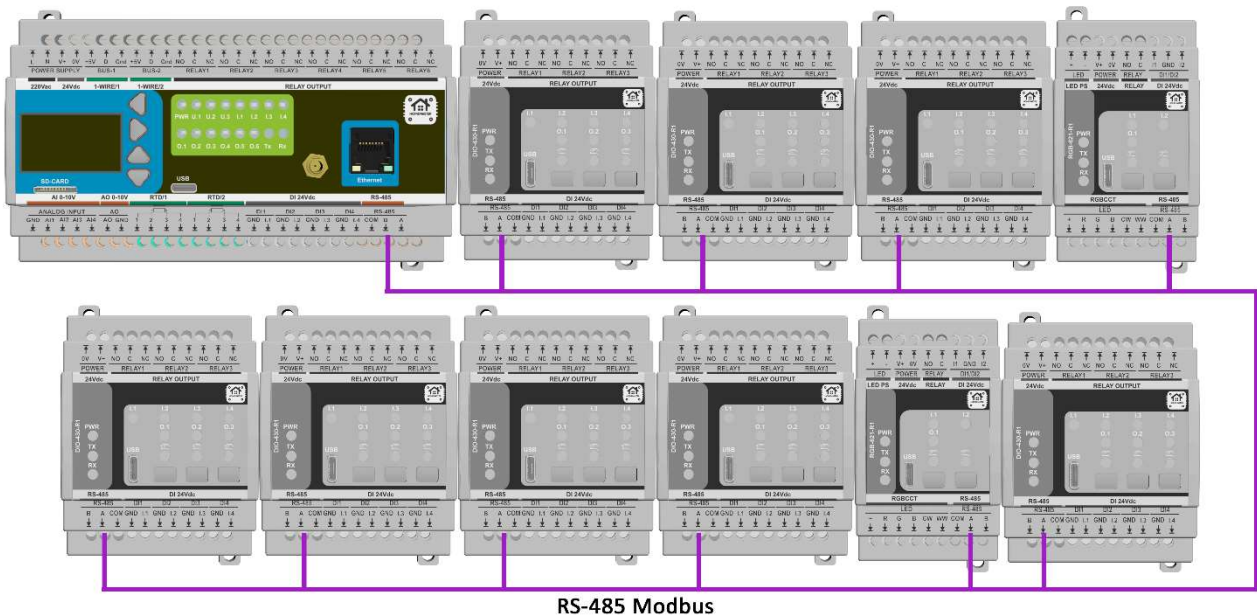
	Display color black/white Drive duty 1/64 duty Number of pixels 128x64 Active area 29.42mmx14.7mm Pixel pitch 0.23mmx0.23mm Pixel size 0.21mmx0.21mm
Buzzer	85dB Passive (external drive) Electromagnetic Type 2.7kHz
Ambient temperature	0 ... 50°C / 32 ... 122°F
Humidity	max. 95% r.H. (non condensing)

Information: *

High loads at the digital outputs result in heat development, which can influence the lifetime in the long run. We recommend using coupling relays with loads greater than 5A.

Connections

Terminals	300V 20A 26-12 AWG 2.5mm ² , Torque of terminal blocks 0.5 ... 0.6Nm / 0.37 ... 0.44 lbf ft, Pitch: /5.08mm(.200")
WiFi antenna	SMA male
LAN	RJ45



120 Ohm resistor

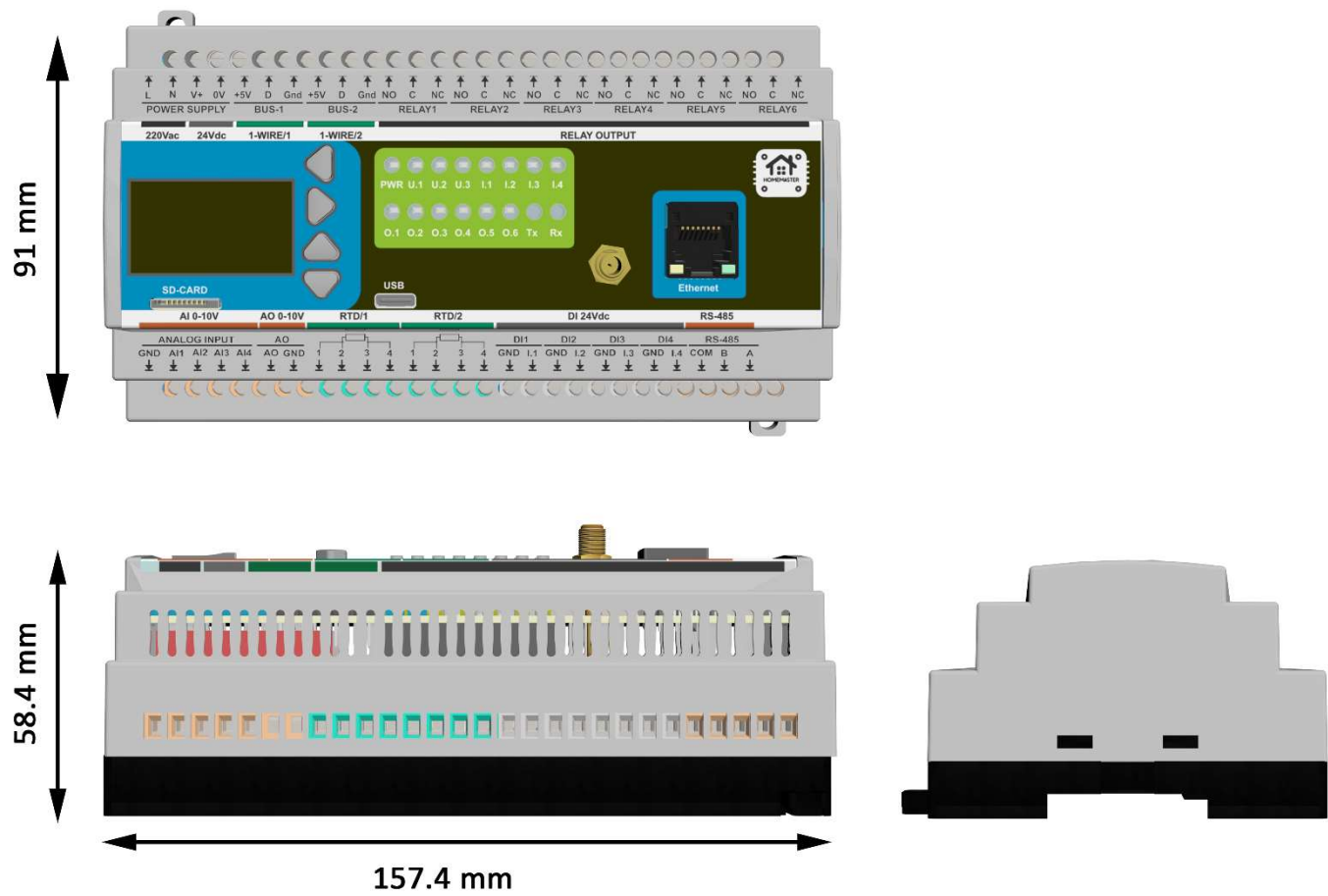
Please use the 120 Ohm resistor at the last Extension which is connected to the RS485 Modbus.

Product Characteristics

Mounting type	DIN rail according to EN50022, 35mm
Colours	Light Gray/Black, Smoke Panel
Finish	Matte

Weight & Dimensions

Net weight	300g
Total weight	320g
Product dimensions	157.4 x 91 x 58.4 mm (6.2 x 3.58 x 2.3 in) (LxWxH), 9 division units
Pack size	230x140x87mm (9 x 5.5 x 3.4 in) (LxWxH),



Certifications & Standards

Safety rating	IP20
Operation	Type 1 (UL60730-1, CSA E60730-1)
Rated impulse voltage for digital output	2.5kV (UL60730-1, max. Altitude 2000m)
Degree of pollution	2
Certifications	CE, UL60730-1, CSA E60730-1, ESPHome

The ESP32 MiniPLC enables a variety of connected devices to work with HOMEMASTER technology.
See <https://www.home-master.eu> for more details.

Communication between iPhone, iPad, Apple Watch, HomePod, or Mac and the HomeKit- enabled ESP32 MiniPLC is secured by ESPHome and Home Assistant technology.

Installation must be carried out by a qualified electrician in accordance with the relevant regulations.

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Deligintei 18

Ploiesti

Romania

Tel: +40721389963

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