



# Datasheet

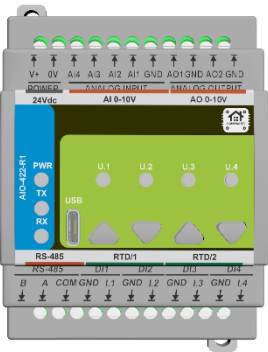
## AIO-422-R1 Module

Part No. 0000007

### About the product

The AIO-422-R1 is a high-precision analog I/O expansion module designed for home automation, HVAC, environmental monitoring, applications. It connects to MicroPLC or MiniPLC controllers via RS-485 (Modbus RTU) and seamlessly integrates with ESPHome and Home Assistant for analog sensing and control in smart automation systems.

With ESPHome support, the module is fully compatible with Home Assistant, enabling advanced lighting scenes, automation, and responsive control.



### Electrical Data

Power supply	24VDC, USB-C female (5V DC via USB-C) for programming
Power consumption	typ. 1.85W, max. 3W
Raspberry PI	RP2350A
Analog Outputs	<ul style="list-style-type: none"><li>2× Analog Outputs (0–10 V)<ul style="list-style-type: none"><li>12-bit DAC (MCP4725) with stable output</li><li>For actuators, dimmers, speed control</li></ul></li></ul>
Analog Inputs	<ul style="list-style-type: none"><li>4× Analog Inputs (0–10 V)<ul style="list-style-type: none"><li>High-resolution 16-bit ADC (ADS1115)</li><li>Ideal for sensors, potentiometers, control signals</li></ul></li></ul>
RS485	Half-duplex, data rate 115,2 kbps, short-circuit current limited and protected against excessive power dissipation, fail-safe for open circuit, surge protected
RTD	<ul style="list-style-type: none"><li>2× RTD Inputs (PT100/PT1000)</li></ul>

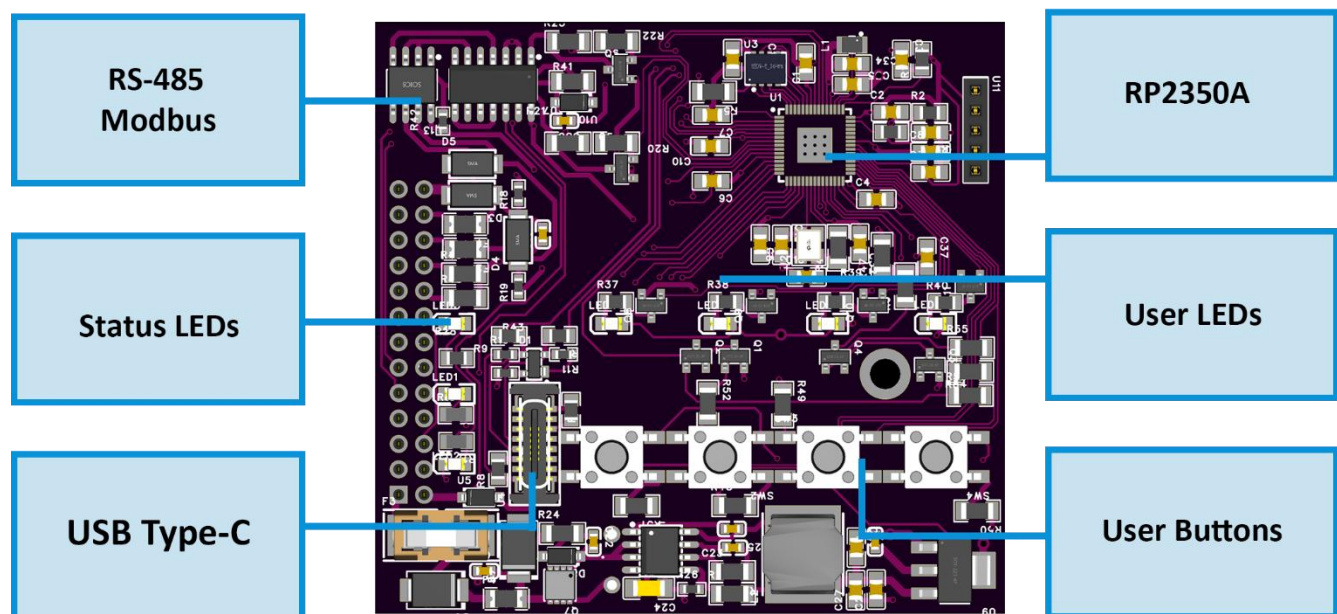
	<ul style="list-style-type: none"> <li>Based on MAX31865</li> <li>Supports 2-, 3-, or 4-wire sensors</li> <li>Accurate temperature readings with fault detection</li> </ul>
USB	USB type-C USB Specification 2.0 compliant, ESD protected, Silicon Labs CP2102N USB-to-UART bridge controller, Virtual COM Port Device Drivers, Works with existing COM port Applications, Supported on Windows, Mac, and Linux
Real-time clock	PCF8563
Ambient temperature	0 ... 40°C / 32 ... 104°F
Humidity	max. 95% r.H. (non condensing)

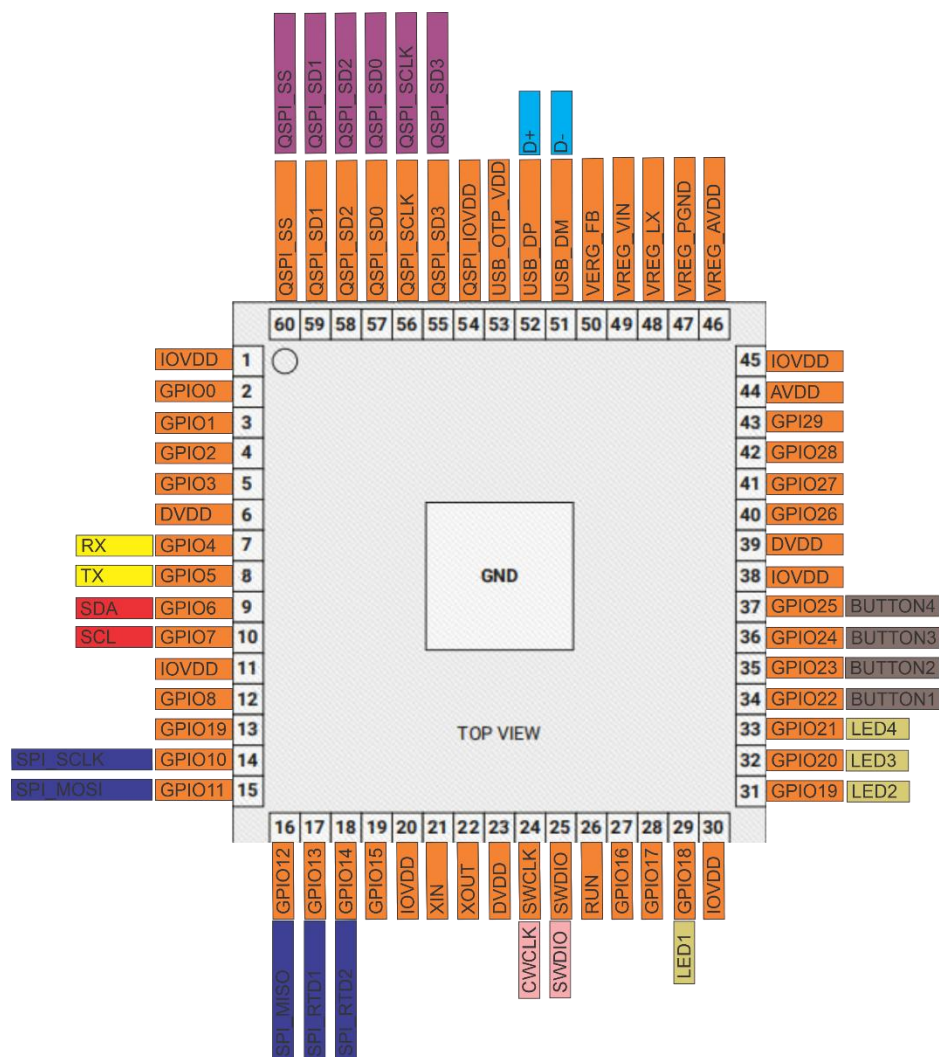
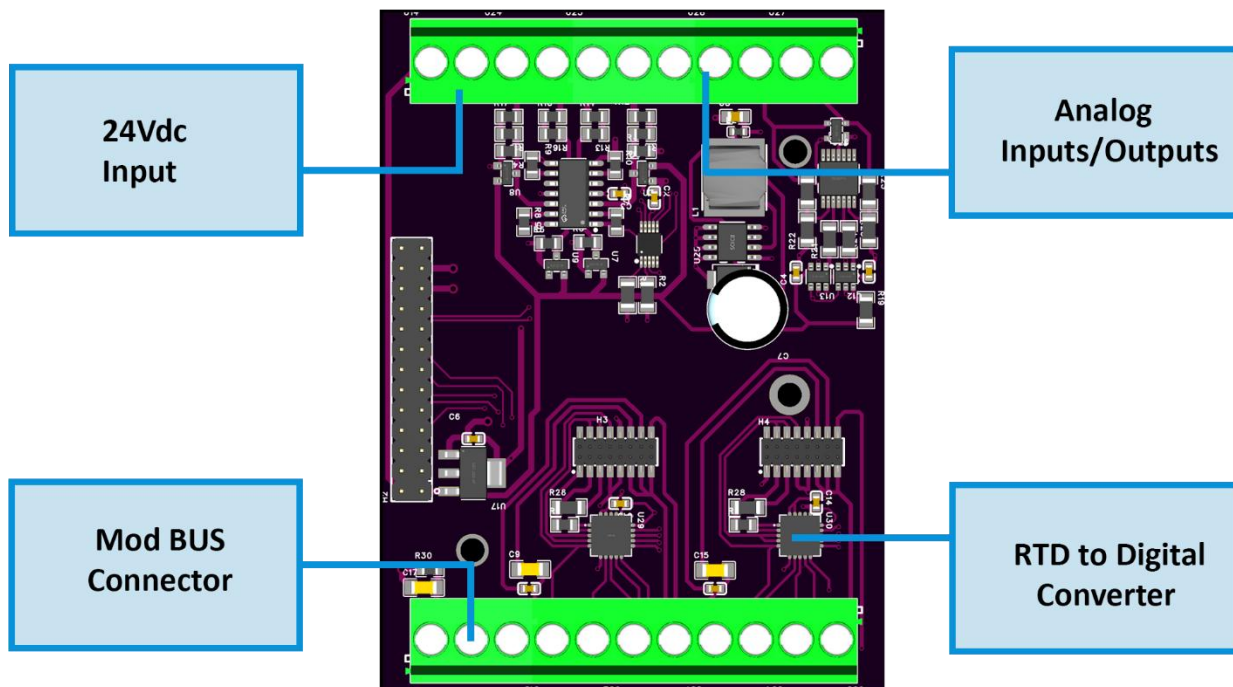
#### Information: \*

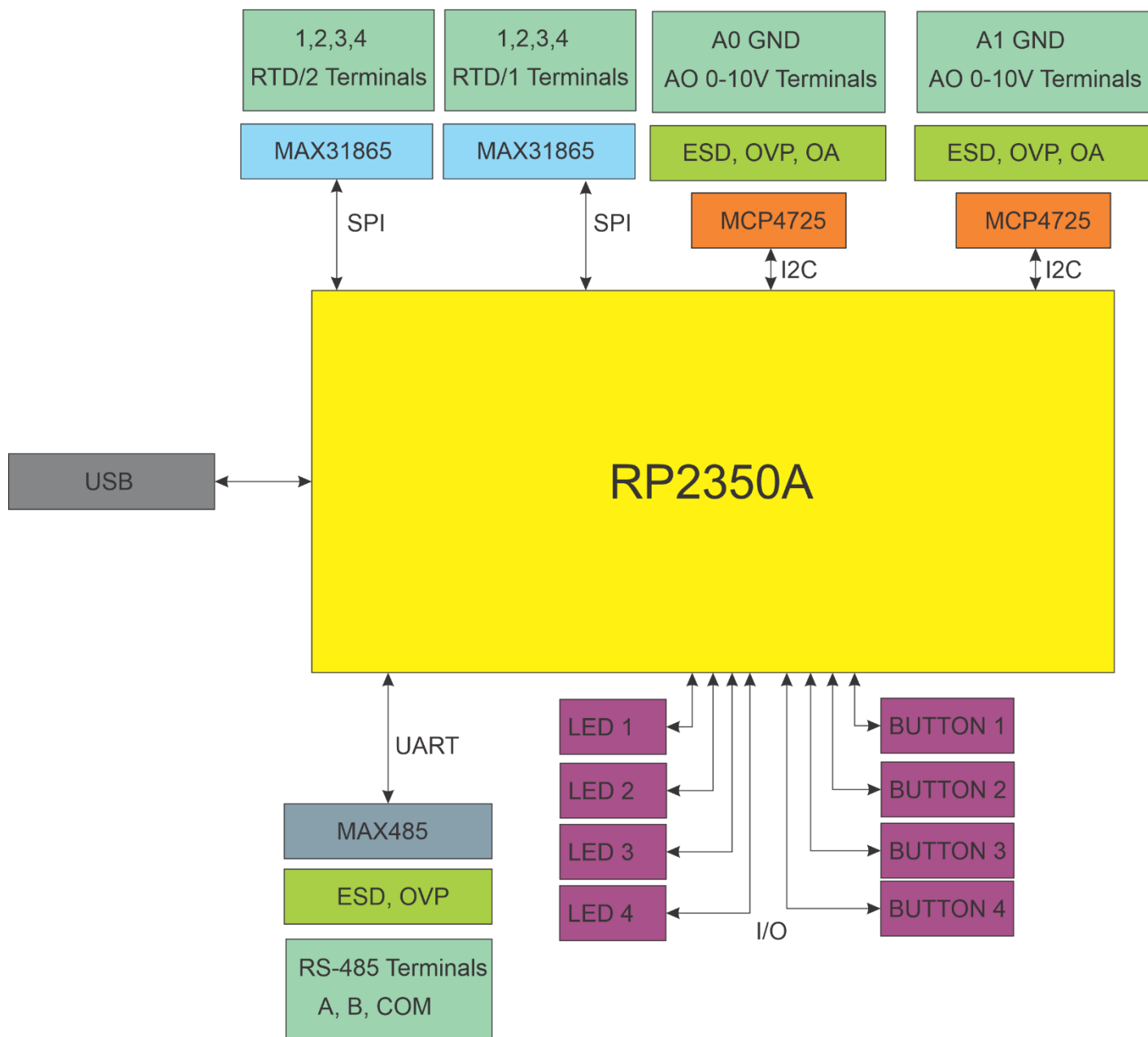
High loads at the digital outputs result in heat development, which can influence the lifetime in the long run. We recommend using coupling relays with loads greater than 5A.

## Connections

Terminals	300V 20A 26-12 AWG 2.5mm2, Torque of terminal blocks 0.5 ... 0.6Nm /0.37 ... 0.44 lbf ft, Pitch: 5.08mm(.200")
WiFi antenna	SMA male
USB	USB type-C





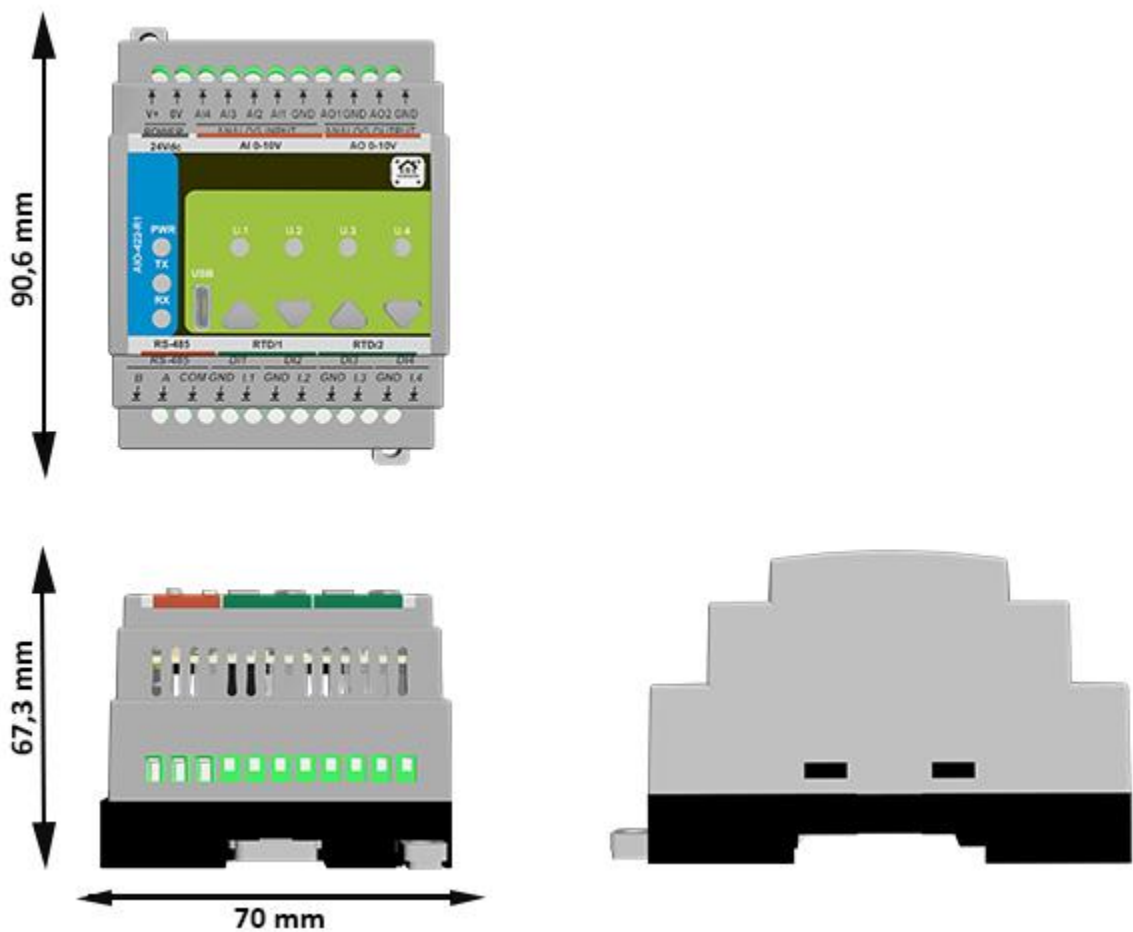


## Product Characteristics

Mounting type	DIN rail according to EN50022, 35mm
Colors	Light Gray/Black, Smoke Panel
Material	PC/ABS/V0
Finish	Matte

Weight & Dimensions

Net weight	000g
Total weight	000g
Product dimensions	52.5 x 90 x 59 (2.07 x 3.54 x 2.32 in) (LxWxH), 9 division units
Pack size	0x0x0mm (0 x 0 x 0 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

The AIO-422-R1 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 AIO-422-R1 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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