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**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**

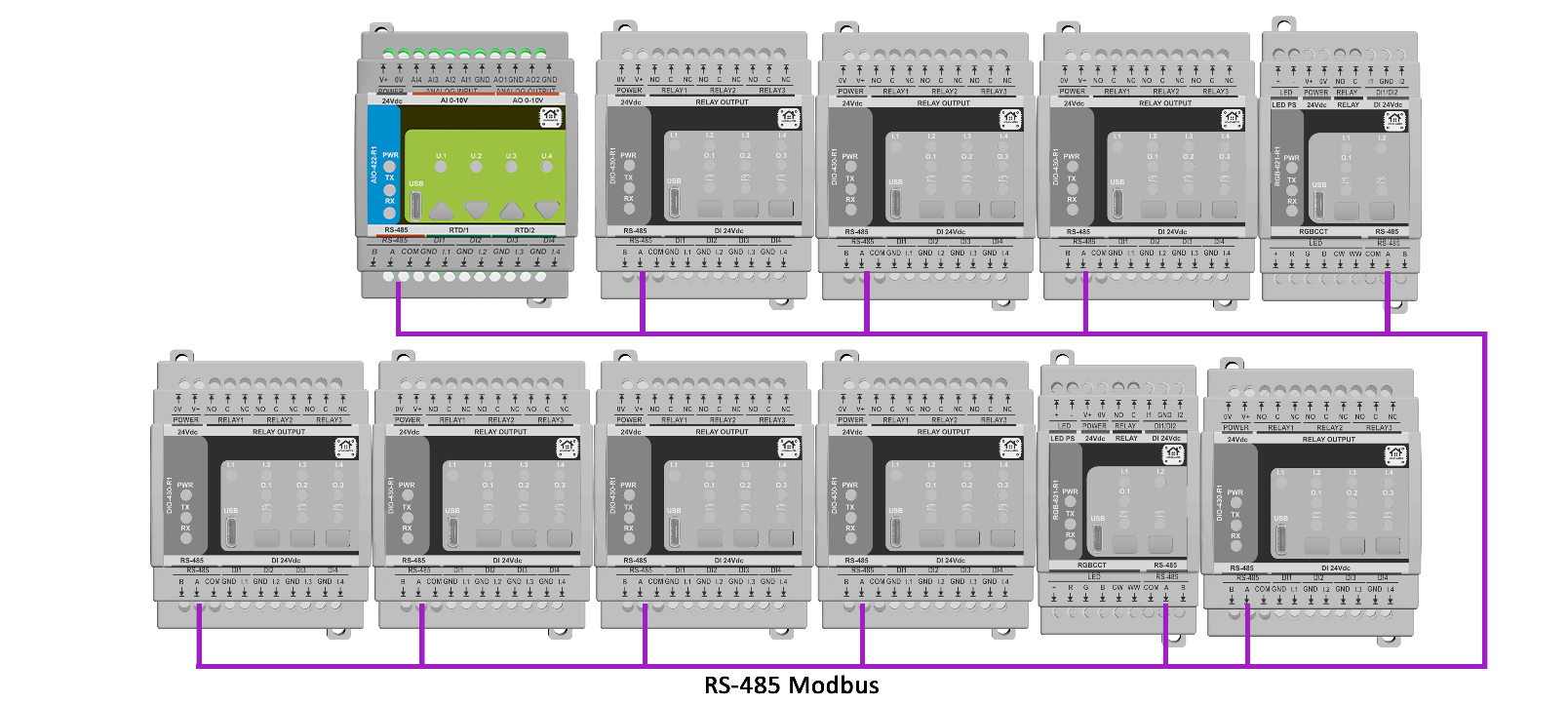
|  |  |
| --- | --- |
| Power supply | 24VDC,  USB-C female (5V DC via USB-C) for programming |
| Power consumption | typ. 1.85W, max. 3W |
| Raspberry PI | RP2350A |
| Analog Outputs | * 2× Analog Outputs (0–10 V)   + 12-bit DAC (MCP4725) with stable output   + For actuators, dimmers, speed control |
| Analog Inputs | * 4× Analog Inputs (0–10 V)   + High-resolution 16-bit ADC (ADS1115)   + Ideal for sensors, potentiometers, control signals |
| 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 | * 2× RTD Inputs (PT100/PT1000)   + Based on MAX31865   + Supports 2-, 3-, or 4-wire sensors   + Accurate temperature readings with fault detection |
| 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 |

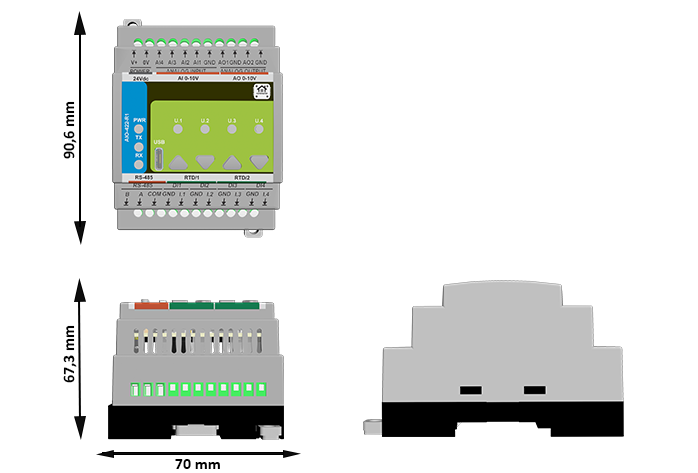
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**Product Characteristics**

|  |  |
| --- | --- |
| 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), |

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**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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