

SFAR-1M Series of I/O modules

The **SFAR-1M** series of I/O modules is the generation of devices for the industrial automation and robotics.

These devices are one of the smallest I/O modules available on the market with **1M enclosure** size.

There are 7 different types with the range of built-in I/O from 2 to 4, which makes these modules perfect solution for measuring a small number of signals at one point.

Built-in **RS485** interface allows to easy connection over **Modbus RTU/ASCII** protocol with a PLC makes the modules an external I/O. The use of **32-bit ARM** core processor provides fast processing and communication with the baud rate from 2400 to 115200 bps.

All the modules are equipped with a set of **LEDs** used to indicate the status of inputs and outputs useful for diagnostic purposes and helping to find errors.

Built-in mini **USB** allows for initial configuration of the unit without power supply.

Key Features

- 7 different types
- Digital Inputs work as fast counters up to 1 kHz
- Version with FRAM memory for counters
- Digital Inputs supports encoders
- Analog Inputs measuring current or voltage
- Temperature Inputs support the most popular sensor types: PT100, PT500, PT1000, NI100, KTY81-110 (2 and 3- wire)
- Temperature Inputs support the most popular thermocouples types: J, K, T, N, S, R, B
- Relay outputs up to 10 A
- Analog Outputs operating as current or voltage
- Modbus RTU/ASCII communication
- Up to 128 modules on the bus
- 1 kV galvanic isolated I/O
- Built-in mini USB type B port for configuration



SFAR-1M

Specification

Digital Inputs (DI)

- Input type: PNP or NPN
- Fast pulse counter up to 1 kHz save to FRAM memory
- Time counting in ms for active input
- DI1-DI4- encoders support

Analog Inputs (AI)

All Analog Inputs have 16-bit ADC resolution which support the following types of inputs:

- Voltage input: 0-1 V DC, resolution 0,1875 mV
- Voltage input: -1-1 V DC, resolution 0,1875 mV
- Voltage input: 0-10 V DC, resolution 1,5 mV
- Voltage input: -10-10 V DC, resolution 1,5 mV
- Current input: 0-20 mA, resolution 3,75 μ A
- Current input: 4-20 mA, resolution 3,75 μ A
- Current input: -20-20 mA, resolution 3,75 μ A
- Voltage measurement accuracy $\pm 0,2\%$
- Current measurement accuracy $\pm 0,1\%$
- ADC processing time:70 ms/channel

Temperature Inputs (TE)

All Temperature Inputs have 16-bit ADC resolution which support the following types of inputs:

- Resistance temperature sensors input:
PT100, PT500, PT1000, NI100, KTY81-110
(2 and 3- wire), resolution 0,1 $^{\circ}$ C
- Thermocouples sensors input: J, K, T, N, S, R, B, resolution 0.1 $^{\circ}$ C, cold junction temperature measurement
- Resistive input: 0-8000 Ω , resolution 1 Ω
- Voltage input: 0-256 mV, resolution 10 μ V
- Voltage input: 0-2048 mV, resolution 100 μ V
- ADC processing time:150 ms/channel

Digital Outputs (DO)

- Transistor output (PNP) max. 250 mA, 55 V DC
- Open collector output (NPN) max. 250 mA, 55 V DC

Analog Outputs (AO)

All Analog Outputs have 12-bit DAC resolution which support the following types of outputs:

- Voltage output: 0-10 V DC, resolution 1,5 mV
- Current output: 0-20 mA, resolution 5 μ A
- Current output: 4-20 mA, resolution 16 μ A
- Voltage measurement accuracy $\pm 0,5\%$
- Current measurement accuracy $\pm 0,5\%$
- DAC processing time:16 ms/channel

Platform

- ARM Cortex-M3

Communication

- Interface RS485 half duplex
- Up to 128 devices on the bus
- Protocol: Modbus RTU/ASCII
- Baud rate: 2400 to 115200 bps
- Interface mini USB type B

Power supply

- 10-36 V DC $\pm 20\%$

Housing

- Dimension HxWxD: 90x17x56 mm
- Construction: plastic, self-extinguishing (PC/ABS)
- DIN rail mounting DIN (DIN EN 50022 norm)
- Cooling: internal air circulation

Environment

- Operating temperature: -10 $^{\circ}$ C to 50 $^{\circ}$ C
- Storage temperature: -40 $^{\circ}$ C to 85 $^{\circ}$ C
- Relative humidity: 5% to 95%, no condensation
- Ingress Protection Rating: IP40 – for indoor installation

SFAR-1M

Specification

Codes of orders

| Product code | DI | AI | TE | DO | AO | Modbus RS485 RTU/ASCII |
|----------------|-----|----|----|----|----|------------------------|
| SFAR-1M-4DI | 4* | | | | | ✓ |
| SFAR-1M-4DI-M | 4** | | | | | ✓ |
| SFAR-1M-4DO | | | | 4 | | ✓ |
| SFAR-1M-2DI2DO | 2* | | | 2 | | ✓ |
| SFAR-1M-1AI1DO | | 1 | | 1 | | ✓ |
| SFAR-1M-2DI1AO | 2* | | | | 1 | ✓ |
| SFAR-1M-1TE1DO | | | 1 | 1 | | ✓ |

*32 bit counters without memory. **version with FRAM memory for counters.

Dimensions

