

SFAR-S Series of I/O modules

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

The characteristic feature of these modules is **slim** type of enclosure which needs very small space in the cabinet while offering up to **16 I/O**.

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.

Dedicated IP module **SFAR-S-ETH** with Modbus TCP/IP to RS485 gateway, enabling use of SFAR-S series modules in the applications where the IP connectivity is required.

Key Features

- 12 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
- Dedicated TCP/IP gateway device SFAR-S-ETH
- 1 kV galvanic isolated I/O
- Built-in mini USB type B port for configuration



SFAR-S

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- 2x encoders support

Analog Inputs (AI)

All Analog Inputs have 14-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 $\pm 0.1\%$
- Current measurement accuracy $\pm 0.1\%$
- ADC processing time:16 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. 500 mA, 30 V DC
- Open collector output (NPN) max. 500 mA, 55 V DC

Triac Outputs (TR)

- Triac Outputs: 500 mA @ 24 V AC, 500 mA @ 230 V AC

Relay Outputs (RO)

- Relay Output (NC/NO) max. 10 A @ 24 V DC, 5 A @ 250 V AC
- Relay Output (NO) max. 3 A @ 30 V DC, 3 A @ 230 V AC

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: 120x22,5x101 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-S

Specification

Codes of orders

Product code	DI	AI	TE	DO	AO	TR	RO	Modbus RS485 RTU/ASCII	Modbus TCP/IP Gateway
SFAR-S-16DI	16*							✓	
SFAR-S-16DI-M	16**							✓	
SFAR-S-16DO				16				✓	
SFAR-S-8DI8DO	8*			8				✓	
SFAR-S-8DI8RO	8*						8 (10 A @ 24 V DC, 5 A @ 250 V AC)	✓	
SFAR-S-16RO							16 (10 A @ 24 V DC, 5 A @ 250 V AC)	✓	
SFAR-S-6RO							6 (10 A @ 24 V DC, 5 A @ 250 V AC)	✓	
SFAR-S-8AI2DO		2		2				✓	
SFAR-S-8AO					8			✓	
SFAR-S-8TR						8		✓	
SFAR-S-6TE			6	2				✓	
SFAR-S-ETH	4*						3 (3 A @ 24 V DC, 3 A @ 230 V AC)	✓ Master	✓

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

Dimensions

