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Distributed I/O device in 6 DIN module box
8 inputs for mA over RS-485

SS 10017-I

FEATURES

- **Modbus Slave device on RS-485**
- **Modbus RTU/ Modbus ASCII protocol**
- **8 input channels dedicated to ± 20 mA**
- **Communication parameters configurable by dip-switches**
- **Watch-Dog Alarm**
- **Remotely Configurable**
- **1500 Vac 3-ways Galvanic Isolation**
- **LEDs of signalling on front side for power supply and communication**
- **Connection by removable screw terminals**
- **High Accuracy**
- **CE mark**
- **DIN rail mounting in compliance with EN-50022**

GENERAL DESCRIPTION

The device SS10017-I converts up to 8 analogue input signals into engineering units in digital format. The data are transmitted with MODBUS RTU/ASCII protocol over the RS-485 network.
It is possible to connect on input 8 current signals up to ± 20 mA. By programming, it is possible to execute the scaling of the measure of input up to ± 32768 points obtaining in the dedicated registers the measure of the channel in the desired format.
The device guarantees high accuracy and stable measure versus time and temperature.
To ensure the plant safety, a Watch-Dog timer alarm is provided.
The isolation between the parts of circuit removes eventual ground-loop effects, allowing the use of the device even in the heavy environmental conditions.
The device is housed in a 6 module DIN rough self-extinguishing plastic box for mounting on EN-50022 standard DIN rail.

COMMUNICATION PROTOCOLS

The device is designed to work with the MODBUS RTU/ASCII protocol: standard protocol in field-bus; allows to directly interface SS10000 series devices to the larger part of PLCs and SCADA applications available on the market.

USER INSTRUCTIONS

Before to install the device, please read the “Installation Instruction” section.
It is possible to configure the device in two modes: by the dip-switches located on the front of the device or via software using the INIT modality.
Connect the terminal INIT to the terminal REF; at the power-on the device will be automatically set in the configuration set-up.
Connect power supply, serial bus and analogue inputs as shown in the “Wiring” section.
The LEDs state depends on the working condition of the device: see the "Light Signalling" section to verify the device working state.
To simplify handling or replacing of the device, it is possible to remove the wired terminals even with the device powered.

TECHNICAL SPECIFICATIONS (Typical @ 25 °C and in the nominal conditions)

INPUT

Input type	Min	Max
Current 20 mA	-20 mA	+20 mA

(1) referred to the input Span (difference between max. and min.)

Input Accuracy (1)	
Current	± 20 uA
Linearity (1)	± 0.1 % f.s.
Input impedance	
Current	<= 50 Ω
Thermal drift (1)	
Full scale	± 0.005 % / °C
Sample time	0.5 ÷ 1 sec.
Data Transmission (RS-485 asynchronous serial)	
Baud Rate	115.2 Kbps
Max. distance	1.2 Km – 4000 ft

POWER SUPPLY

Power supply voltage	10 .. 30 Vdc
Reverse polarity protection	60 Vdc max
Current consumption	
(operative)	35 mA max@24Vdc 45 mA max@10Vdc

ISOLATION

Between all the ways	1500 Vac, 50 Hz, 1 min

ENVIRONMENTAL CONDITIONS

Operative Temperature	-10°C .. +60°C
Storage Temperature	-40°C.. +85°C
Humidity (not condensed)	0 .. 90 %
Maximum Altitude	2000 m
Installation	Indoor
Category of installation	II
Pollution Degree	2

MECHANICAL SPECIFICATIONS

Material	Self-extinguish plastic
IP Code	IP20
Wiring	wires with diameter 0.8÷2.1 mm^2 /AWG 14-18
Tightening Torque	0.5 N m
Mounting	in compliance to DIN rail standard EN-50022
Weight	about 200 g.

CERTIFICATIONS

EMC (for industrial environments)

Immunity	EN 61000-6-2
Emission	EN 61000-6-4

INSTALLATION INSTRUCTIONS

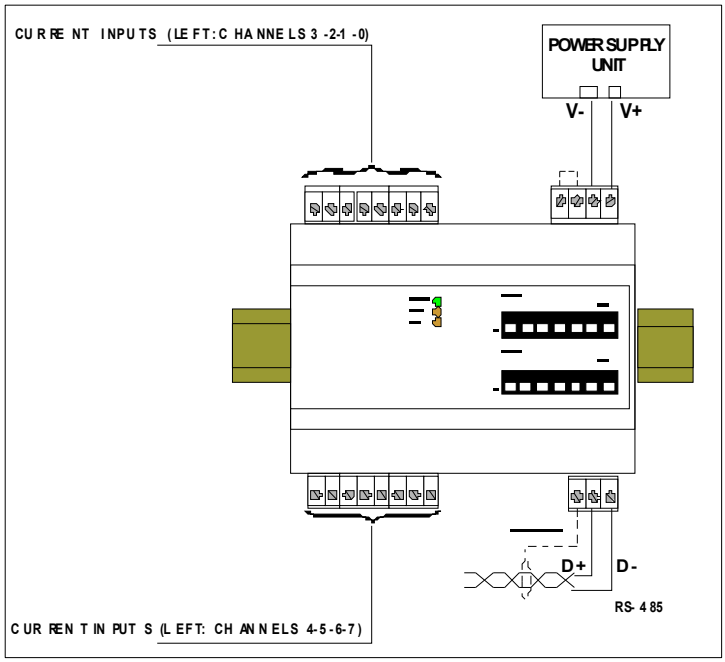
The SS10017-I is suitable for fitting to DIN rails in the vertical position.
For optimum operation and long life follow these instructions:

When the devices are installed side by side it may be necessary to separate them by at least 5 mm in the following case:
- If panel temperature exceeds 45°C and power supply voltage 10 Vdc.

Make sure that sufficient air flow is provided for the device avoiding to place raceways or other objects which could obstruct the ventilation slits. Moreover it is suggested to avoid that devices are mounted above appliances generating heat; their ideal place should be in the lower part of the panel.
Install the device in a place without vibrations.

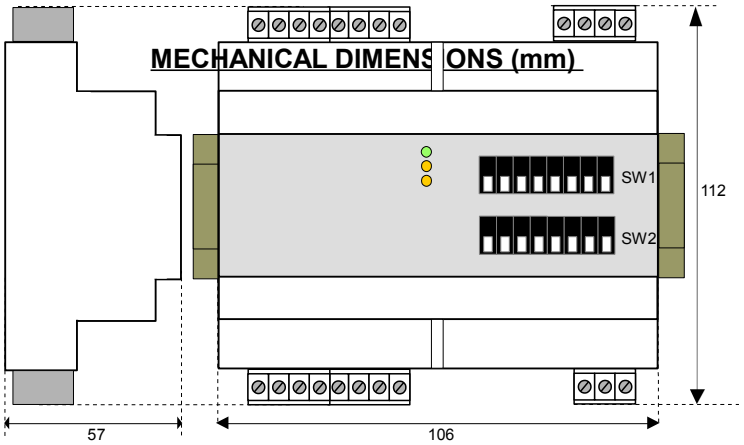
Moreover it is suggested to avoid routing conductors near power signal cables (motors, induction ovens, inverters etc...) and to use shielded cable for connecting signals.

WIRING



LIGHT SIGNALLING

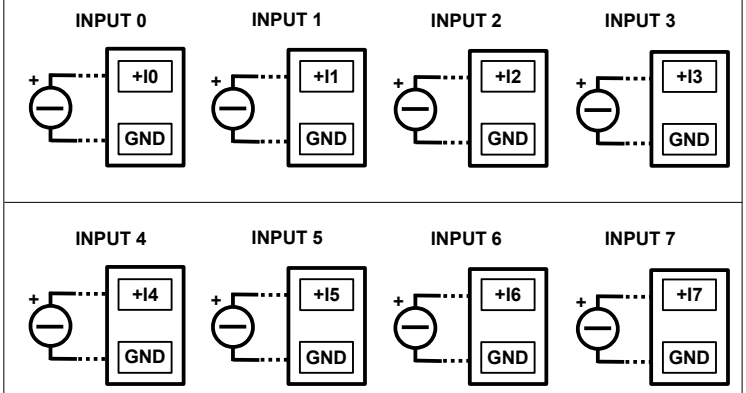
LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINK	~1 sec. - Watch-Dog alarm condition occurred
RX	ORANGE	BLINK	Stream of data over receiving line of RS-485
		OFF	No data over receiving line of RS-485
TX	ORANGE	BLINK	Stream of data over transmission line of RS-485
		OFF	No data over transmission line of RS-485



CONNECTIONS

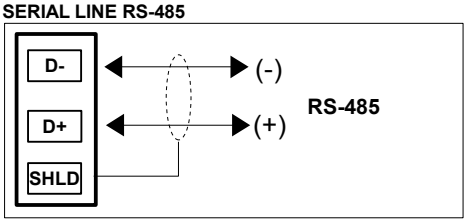
ANALOGUE INPUTS

CURRENT (Passive inputs: to connect to active current loops)

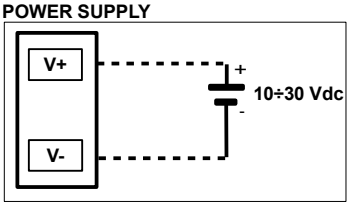


NOTE: the input channels are not isolated between them (terminal GND is common)

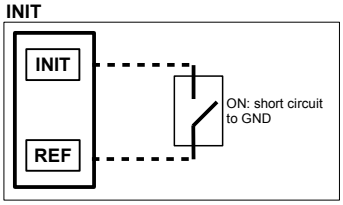
SERIAL LINE RS-485



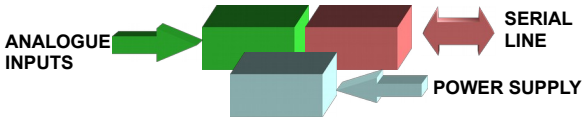
POWER SUPPLY



INIT



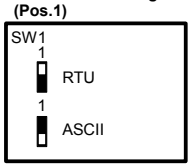
ISOLATION STRUCTURE



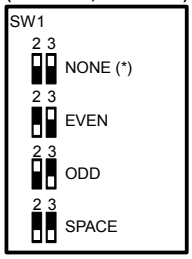
DIP-SWITCHES : TABLES OF CONFIGURATION

Warning: set all the dip-switches in OFF position to access to the device in EEPROM modality (the device will follow all the communication parameters set by software) or INIT. Power-off the device before to change the set of the dip-switches.

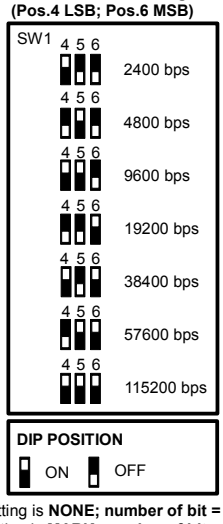
TAB.1 Mode settings (Pos.1)



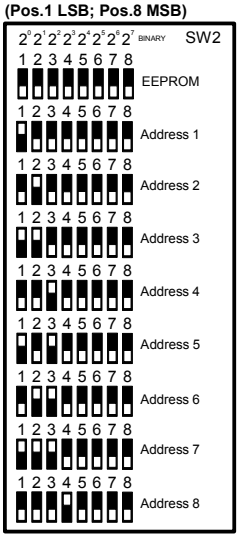
TAB.2 Parity settings (Pos.2 LSB; Pos.3 MSB)



TAB.3 Baud rate settings (Pos.4 LSB; Pos.6 MSB)



TAB.4 Address Selection 1÷247 (Pos.1 LSB; Pos.8 MSB)



Note (*):
- in **Modbus RTU** Mode the setting is **NONE; number of bit = 8**
- in **Modbus ASCII** Mode the setting is **MARK; number of bit = 7**

HOW TO ORDER
SS10017-I