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Distributed I/O device in 6 DIN module box
8 digital inputs, 4 relay outputs over RS-485

SS 10130

FEATURES

- **Modbus Slave device on RS-485**
- **Modbus RTU/ Modbus ASCII protocol**
- **8 digital inputs and 4 relay outputs (2 format SPDT + 2 format SPST)**
- **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**
- **LEDs of signalling on front side for digital inputs and outputs state**
- **Connection by removable screw terminals**
- **High Accuracy**
- **CE mark**
- **DIN rail mounting in compliance with EN-50022**

GENERAL DESCRIPTION

The device SS10130 is able to acquire up to 8 digital inputs with connection NPN or PNP and to drive up to 4 relay outputs of which 2 format SPDT and 2 in format SPST. The data are transmitted with MODBUS RTU/ASCII protocol over the RS-485 network.
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.
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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, digital inputs and outputs 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		
Channels	8	
Voltage input (bipolar)		
OFF State	0 ÷ 3 V	
ON State	10 ÷ 30 V	
Impedance	4.7 KΩ	
Sample time	5 ms	

OUTPUT		
Channels	4	
Type	N° 2 relay SPDT	
	N° 2 relay SPST	
Maximum Switching Power Resistive load - per contact		
	2 A @ 250 Vac	
	2 A @ 30 Vdc	
Minimum load	5Vdc , 10mA	
Max. voltage	250Vac (50 / 60 Hz)	
	30Vdc	
Dielectric strength between contacts		
	1000 Vac, 50 Hz, 1 min.	
Dielectric strength between coil and contacts		
	4000 Vac, 50 Hz, 1 min.	
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	
(stand-by)	35 mA @ 24 Vdc
(relays operative)	80 mA max@ 24Vdc
	180 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 SS10130 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
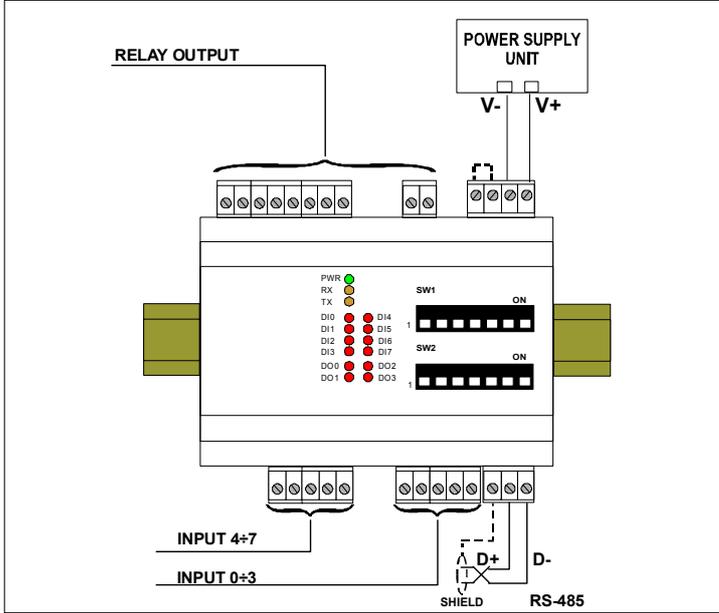
LIGHT SIGNALLING

| 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
DI*n*	RED	ON	Digital input ON state
		OFF	Digital input OFF state
DO*n*	RED	ON	Digital output ON state
		OFF	Digital output OFF state

ISOLATION STRUCTURE
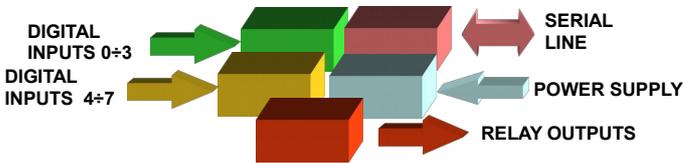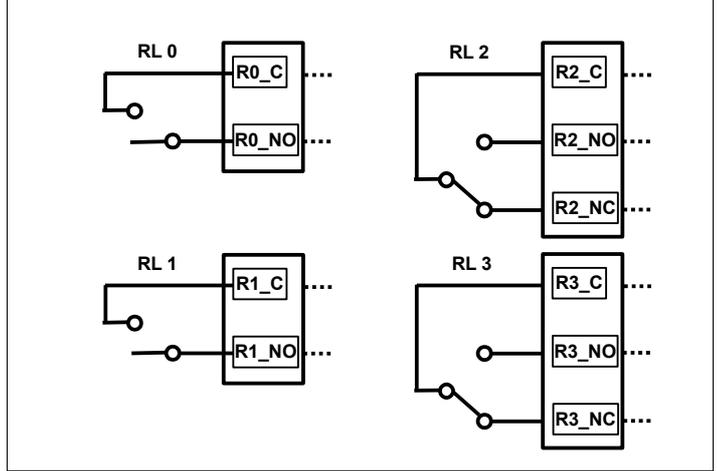

MECHANICAL DIMENSIONS (mm)
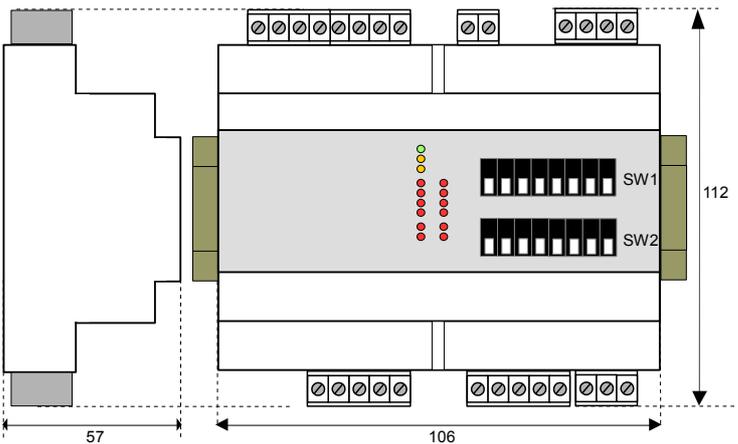
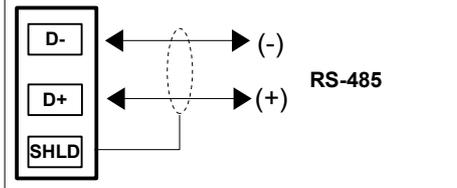

CONNECTIONS

DIGITAL INPUTS
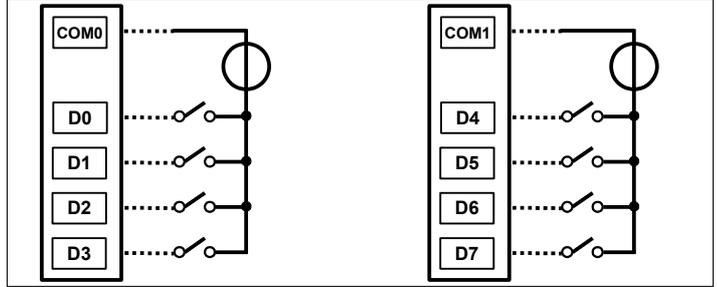
NOTE: the channels DO÷D3 and D4÷D7 are not isolated between them.
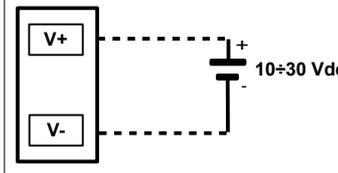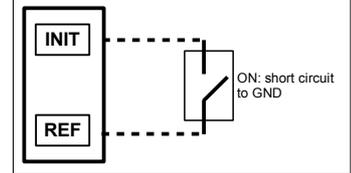**NOTE:** the groups DO÷D3 and D4÷D7 are isolated between them.

RELAY OUTPUTS

SERIAL LINE RS-485

POWER SUPPLY


INIT

ON: short circuit to GND

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.
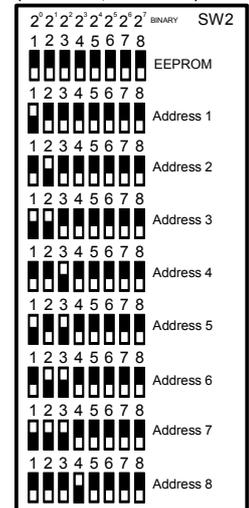Power-off the device before to change the set of the dip-switches.
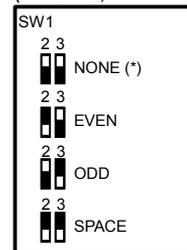
TAB.1 Mode settings (Pos.1)

TAB.2 Parity settings (Pos.2 LSB; Pos.3 MSB)
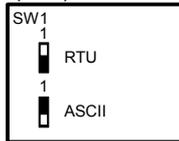
TAB.3 Baud rate settings (Pos.4 LSB; Pos.6 MSB)
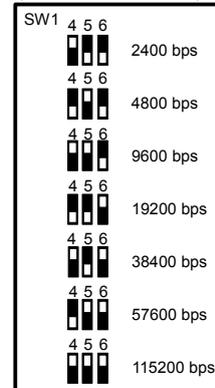
TAB.4 Address Selection 1÷247 (Pos.1 LSB; Pos.8 MSB)

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
SS 10130

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