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Modbus TCP/IP server
8 isolated in pairs inputs for mV and TC

SS 8018

FEATURES

- **Interface Ethernet 10/100 Base-T, Modbus TCP Server**
- **8 isolated input channels in pairs**
- **Input configurable for mV e TC**
- **Integrated web server for acquiring the status of the analog inputs via browser**
- **Remotely programmable**
- **Connection by removable screw-terminals**
- **LED signalling for Link/Act Ethernet, power supply**
- **Galvanic isolation on all the ways**
- **EMC compliant – CE mark**
- **In compliance to EN-50022 DIN rail mounting**

GENERAL DESCRIPTION

The SS8018 module is a Modbus TCP server unit that can convert up to 8 analog signals applied to the input in engineering units in digital format.
The inputs can be connected to sensors with mV output or thermocouple.
The input channels are electrically isolated in pairs.

The device guarantees high accuracy and a stable measure versus time and temperature.
In order to ensure the safety plant, the device is provided with a Watch-Dog Timer system.
The Ethernet interface allows reading and writing in real time the values of the internal registers of the device.
The LEDs of signalling of Ethernet activity and power supply allow a direct monitoring of the system functionality.
The built-in Web Server of SS8018 allows the remote visualization, acquisition of the analog inputs and the access to the main Ethernet programming parameters.
The connection is made by removable screw-terminals (inputs and power supply) and RJ45 plug (Ethernet).
The device SS8018 realizes a full electrical isolation between the lines, introducing a valid protection against the effects of all ground loops eventually existing in industrial applications.
The device is housed in a rough self-extinguishing plastic enclosure which, thanks to its thin profile of 22.5 mm only, allows a high density mounting on EN-50022 standard DIN rail.

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

In compliance with Ethernet IEEE 802.3

Network interface	Ethernet 10/100Base-T
Protocol	Modbus TCP
Max. cable length	100 meters
Number of socket	16

INPUT

Input Type	Min	Max
Voltage		
250 mV	-250 mV	+250 mV
Thermocouple		
J	-210 °C	+1200 °C
K	-210 °C	+1372 °C
R	-50 °C	+1767 °C
S	-50 °C	+1767 °C
B	+400 °C	+1825 °C
E	-210 °C	+1000 °C
T	-210 °C	+400 °C
N	-210 °C	+1300 °C

(1) Referred to input Span (difference between max. and min. values)

Input Accuracy (1)	The greater than ± 0.05% f.s. and ± 5uV
Linearity (1)	
mV	± 0,1 % f.s.
TC	± 0,2 % f.s.
Cold junction compensation error (CJC)	± 1°C
Input impedance	
mV, Tc	≥ 1 MΩ
Lead wire resistance influence (1)	
mV, Tc	< 0,8 uV/Ohm
Thermal drift (1)	
Full Scale	± 0,005 %/°C
Thermal drift CJC	
Full Scale	± 0,02 %/°C
Sampling time (8 channels)	150 ms
Warm-up time	3 min.

POWER SUPPLY	
Power supply voltage	14 .. 30 Vdc
Reverse polarity protection	60 Vdc max
Consumption (standby)	60 mA tip@ 24Vdc
Consumption (operative)	75 mA max@24Vdc
Consumption (operative)	115 mA max@14Vdc

ISOLATION	
Power Supply / Ethernet	1500 Vac, 50 Hz, 1 min
Inputs / Power supply	1500 Vac, 50 Hz, 1 min
Inputs / Ethernet	1500 Vac, 50 Hz, 1 min
Input / Input	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

CONNENCTIONS	
Ethernet	RJ-45 (on terminals side)
Inputs	Removable screw-terminals
Power Supply	Removable screw-terminals

MECHANICAL SPECIFICATIONS	
Material	Self-extinguish plastic
IP Code	IP20
Wiring	wires with diameter 0.8÷2.1 mm2 /AWG 14-18
Tightening Torque	0.8 N m
Mounting	in compliance to DIN rail standard EN-50022 and EN-50035
Weight	about 160g

EMC (for industrial environments)	
Immunity	EN 61000-6-2
Emission	EN 61000-6-4

INSTALLATION INSTRUCTIONS

The device is suitable for fitting to DIN rails in the vertical position.
It is always a good thing to space the devices together 5mm. Make sure that sufficient air 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. Install the device in a place without vibrations. It is also suggested to avoid routing conductors near power signal cables and to use shielded cables for connecting signals.

MODULE CONFIGURATION

To configure the SS8000 series devices, it is necessary to enable the **INIT** mode. This mode allows you to access the device with the following default parameters :

IP Address:192.168.1.174 (DHCP disabled), or IP provided by DHCP (if enabled)
Modbus Address: 245

To enter the INIT mode follow these steps:
- Turn off the device;
- Connect the INIT terminal to the -V terminal as shown in figure.
- Turn on the device and connect with an internet browser to the device using the default parameters listed above and using the default login credentials:

Username: admin
Password: admin

To exit INIT mode follow these steps:
- Turn off the device;
- Remove the INIT connection;
- Turn on the device and connect with the new parameters.

RESET FUNCTION- “P” BUTTON

If it is necessary to restore the default device parameters, with device powered and not in INIT condition, push the front located “P” button for at least 5 seconds.
The green led PWR will switch-off, the yellow led STS will become orange and the reset of the device will occur. When the reset procedure will be finished, both the leds will set back to the default condition and the following parameters will be loaded :

Ethernet:
- IP Address: 192.168.1.100
- Subnet Mask : 255.255.255.0
- Gateway Mask: 192.168.1.1

Username: admin
Password: admin

Modbus Address: 1

MAPPING MODBUS REGISTERS

Register Position	Winlog Syntax	Description	Access
40007	3:06	Node ID	R/W
40011	3:10	System Flags	R/W
40013	3:12	Watchdog timer	R/W
40031	3:30	Input type Ch (1-0) *	R/W
40032	3:31	Input type Ch (3-2) *	R/W
40033	3:32	Input type Ch (5-4) *	R/W
40034	3:33	Input type Ch (7-6) *	R/W
40036	3:35	Break Status	RO
40041	3:40	Analog Input (0) - Ch0	RO
40042	3:41	Analog Input (1) - Ch1	RO
40043	3:42	Analog Input (2) - Ch2	RO
40044	3:43	Analog Input (3) - Ch3	RO
40045	3:44	Analog Input (4) - Ch4	RO
40046	3:45	Analog Input (5) - Ch5	RO
40047	3:46	Analog Input (6) - Ch6	RO
40048	3:47	Analog Input (7) - Ch7	RO

* Input type Ch(BIT)	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Description									Input type Ch(n)**							

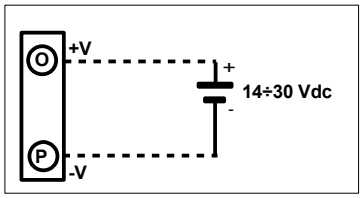
** Input type Ch	Dec
Disabled	0
250 mV	1
TC J	4
TC K	5
TC R	6
TC S	7
TC T	8
TC B	9
TC E	10
TC N	11

LIGHT SIGNALLING

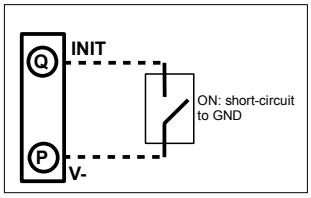
LED	COLOR	STATUS	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINK	Watchdog alarm
STS	YELLOW	OFF	Device in RUN mode
		BLINK	Device in INIT mode

CONNECTIONS

POWER SUPPLY

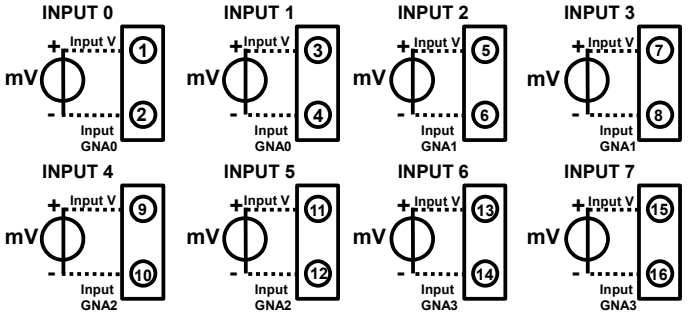


INIT

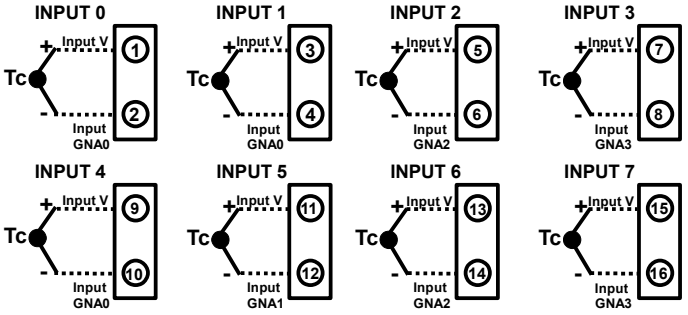


ANALOG INPUTS

VOLTAGE



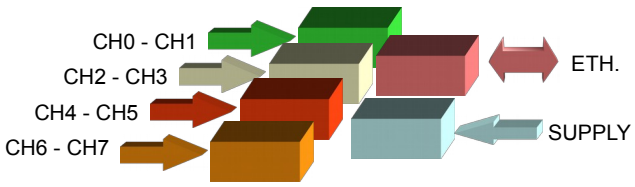
THERMOCOUPLE



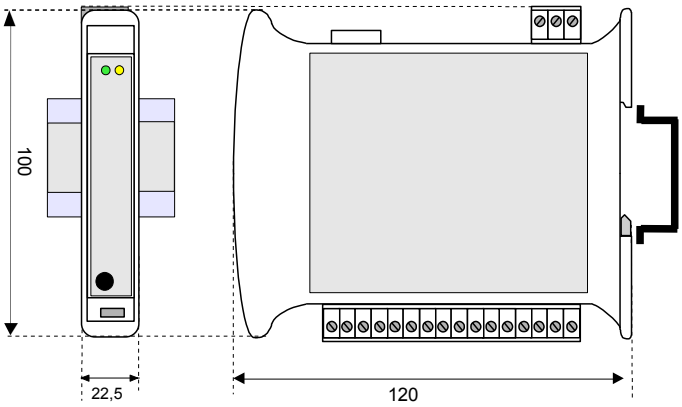
NOTES:
Terminals "2" and "4" connected internally between them (neg. reference "GNA0").
Terminals "6" and "8" connected internally between them (neg. reference "GNA1").
Terminals "10" and "12" connected internally between them (neg. reference "GNA2").
Terminals "14" and "16" connected internally between them (neg. reference "GNA3").

The references "GNA0", "GNA1", "GNA2" and "GNA3" are isolated from each other.

ISOLATIONS STRUCTURE



MECHANICAL DIMENSIONS (mm)



HOW TO ORDER

“ SS 8018 “
Note: the device is provided with default configuration as:
IP address : 192.168.1.100
Modbus address: 1