

FEATURES

- Interface Ethernet 10/100 Base-T, Modbus TCP Server
- 4 isolated input channels
- 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 SS8016 module is a Modbus TCP server unit that can convert up to 4 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 from each other.

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 SS8016 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 SS8016 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 Accuracy (1) The greater than $\pm 0.05\%$ f.s. and $\pm 5\mu V$	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																																	
INPUT <table border="1"> <thead> <tr> <th>Input Type</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>Voltage 250 mV</td> <td>-250 mV</td> <td>+250 mV</td> </tr> <tr> <td>Thermocouple</td> <td></td> <td></td> </tr> <tr> <td>J</td> <td>-210 °C</td> <td>+1200 °C</td> </tr> <tr> <td>K</td> <td>-210 °C</td> <td>+1372 °C</td> </tr> <tr> <td>R</td> <td>-50 °C</td> <td>+1767 °C</td> </tr> <tr> <td>S</td> <td>-50 °C</td> <td>+1767 °C</td> </tr> <tr> <td>B</td> <td>+400 °C</td> <td>+1825 °C</td> </tr> <tr> <td>E</td> <td>-210 °C</td> <td>+1000 °C</td> </tr> <tr> <td>T</td> <td>-210 °C</td> <td>+400 °C</td> </tr> <tr> <td>N</td> <td>-210 °C</td> <td>+1300 °C</td> </tr> </tbody> </table>			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	Linearity (1) mV $\pm 0,1\%$ f.s. TC $\pm 0,2\%$ f.s.	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
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			Cold junction compensation error (CJC) $\pm 1^\circ C$	ENVIRONMENTAL CONDITIONS Operative Temperature $-10^\circ C \dots +60^\circ C$ Storage Temperature $-40^\circ C \dots +85^\circ C$ Humidity (not condensed) 0 .. 90 % Maximum Altitude 2000 m Installation Indoor Category of installation II Pollution Degree 2																																	
			Input impedance mV, Tc $\geq 1 M\Omega$	CONNECTIONS Ethernet RJ-45 (on terminals side) Inputs Removable screw-terminals Power Supply Removable screw-terminals																																	
			Lead wire resistance influence (1) mV, Tc $< 0,8 \mu V/Ohm$	MECHANICAL SPECIFICATIONS Material Self-extinguish plastic IP Code IP20 Wiring wires with diameter $0.8 \div 2.1 \text{ mm}^2 / AWG 14-18$ Tightening Torque 0.8 N m Mounting in compliance to DIN rail standard EN-50022 and EN-50035 Weight about 160g																																	
			Thermal drift (1) Full Scale $\pm 0,005\% / ^\circ C$	EMC (for industrial environments) Immunity EN 61000-6-2 Emission EN 61000-6-4																																	
			Thermal drift CJC Full Scale $\pm 0,02\% / ^\circ C$																																		
			Sampling time (4 channels) 150 ms																																		
			Warm-up time 3 min.																																		

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

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 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 0 *	R/W
40032	3:31	Input type Ch 1 *	R/W
40033	3:32	Input type Ch 2 *	R/W
40034	3:33	Input type Ch 3 *	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

* 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)**															

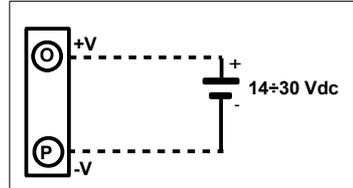
** Input type Ch	Dec
Disabled	0
250 mV	1
TC J	4
TC K	5
TC R	6
TC S	7
TC T	8
TC B	9
TC E	10
TC N	11

LIGHT SIGNALLING

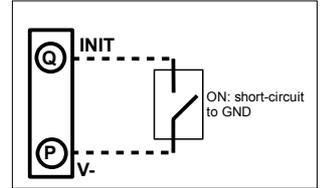
LED	COLOR	STATUS	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINK	Watchdog alarm
STS	YELLOW	OFF	Device in RUN mode
		BLINK	Device in INIT mode

CONNECTIONS

POWER SUPPLY

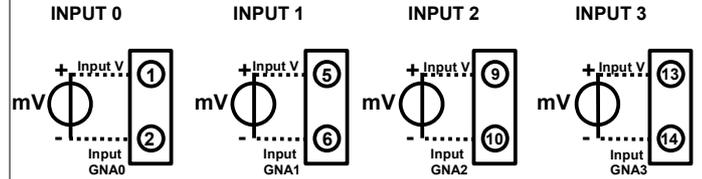


INIT

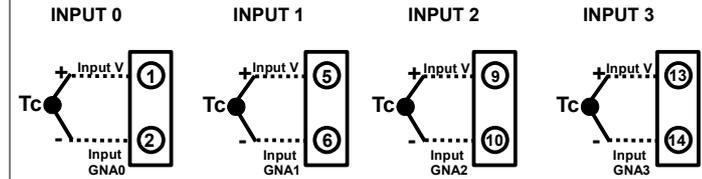


ANALOG INPUTS

VOLTAGE



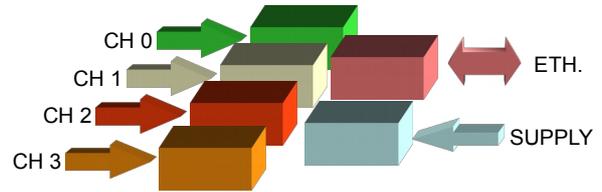
THERMOCOUPLE



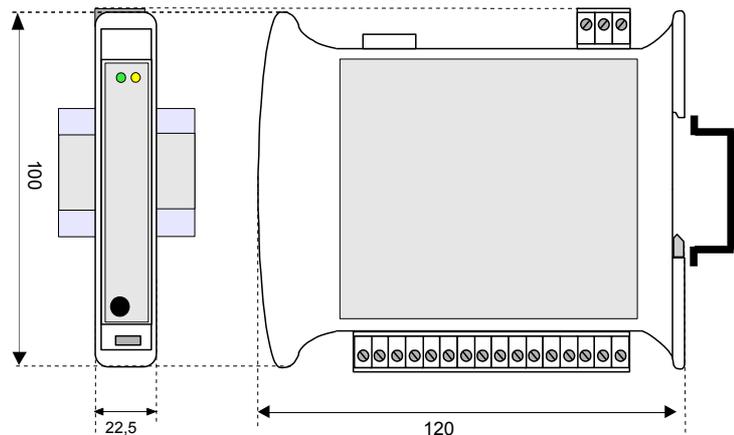
NOTES:

"GNA0", "GNA1", "GNA2" and "GNA3" are isolated between them.

ISOLATIONS STRUCTURE



MECHANICAL DIMENSIONS (mm)



HOW TO ORDER

" SS 8016 "

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