

# LAN 4 RTD /1

MODBUS TCP/IP SERVER 4 ISOLATED INPUT CHANNELS FOR RTD, RESISTANCE AND POTENTIOMETER

## FEATURES

- › Interface Ethernet 10/100 Base-T, Modbus TCP Server
- › 4 isolated input channels
- › Input configurable for RTD, Resistance and Potentiometer
- › Integrated web server for acquiring the status of the analogue inputs via browser
- › Remotely programmable
- › Connection by removable screw-terminals
- › LED signalling for Link/Act Ethernet, power supply
- › Galvanic isolation on all the ways
- › CE mark
- › In compliance to EN-50022 DIN rail mounting



## GENERAL DESCRIPTION

- › The device LAN 4 RTD /1 is a Modbus TCP server unit that can convert up to 4 analogue signals applied to the input in engineering units in digital format.
- › The inputs can be connected to two or three wires RTD or resistance sensors.
- › 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 equipped 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 allows the remote visualization, acquisition of the analogue 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 realizes a full electrical isolation between the lines, introducing a valid protection against the effects of all ground loops eventually existing in industria 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.

## USER INSTRUCTIONS

- › Before to install the device, please read the "Installation Instruction" section.
- › To configure the device use the INIT modality (refer to the User Guide of the device). Connect power supply, Ethernet 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 perform configuration and calibration operations, read the instructions in the User Guide of the device.
- › To simplify handling or replacing of the device, it is possible to remove the wired terminals even with the device powered.



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# 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.
<i>RTD 2 or 3 wires</i>		
Pt100	-200 °C	850 °C
Pt1000	-200 °C	200 °C
Ni100	-60 °C	180 °C
Ni1000	-60 °C	150 °C
<i>RES 2 or 3 wires</i>		
Low	0 Ω	500 Ω
High	0 Ω	2000 Ω
POT. (nom. value)	20 Ω	50 kΩ

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

## INPUT ACCURACY (1)

RTD	±0.05 % f.s.
Resistance	±0.05 % f.s.
Potentiometer	±0.05 % f.s.

## LINEARITY (1)

RTD	±0.1 % f.s.
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## LEAD WIRE RESISTANCE INFLUENCE (1)

RTD/res.3 wires (50 Ω max balanced)	0.05% f.s./Ω
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## RTD EXCITATION CURRENT

Typical	0.370 mA
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## THERMAL DRIFT (1)

Full Scale	± 0.01 %/°C
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## SAMPLING TIME (4 CHANNELS)

Sampling time (4 channels)	150 ms
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## EMC ( FOR INDUSTRIAL ENVIRONMENTS )

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

## WARMING-UP TIME

Warming-up time	3 min
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## POWER SUPPLY

Power supply voltage	14 .. 30 Vdc
Reverse polarity protection	60 Vdc max
Current Consumption	115 mA max

## 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

## CONNECTIONS

Ethernet	RJ-45 (on terminals side)
Inputs/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	0.5 N m
Mounting	in compliance with DIN rail standard EN-50022
Weight	about 160g

## MAPPING MODBUS REGISTERS

REGISTER	DESCRIPTION	ACCESS
40002	Firmware [0]	RO
40003	Firmware [1]	RO
40004	Name [0]	R/W
40005	Name [1]	R/W
40007	Node ID	R/W
40011	System Flags	R/W
40013	Watchdog timer	R/W
40031	Input type Ch 0	R/W
40032	Input type Ch 1	R/W
40033	Input type Ch 2	R/W
40034	Input type Ch 3	R/W
40041	Analog Input (0) - Ch0	RO
40042	Analog Input (1) - Ch1	RO
40043	Analog Input (2) - Ch2	RO
40044	Analog Input (3) - Ch3	RO
40050	Break Status	RO
40051	Live Word	RO
41241	Offset Input 0	R/W
41242	Offset Input 1	R/W
41243	Offset Input 2	R/W
41244	Offset Input 3	R/W

## INSTALLATION INSTRUCTIONS

The device is suitable for fitting to DIN rails in vertical position.

For optimum operation and long life follow these instructions: When the devices are installed side by side it is necessary to separate them by at least 5 mm.

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.

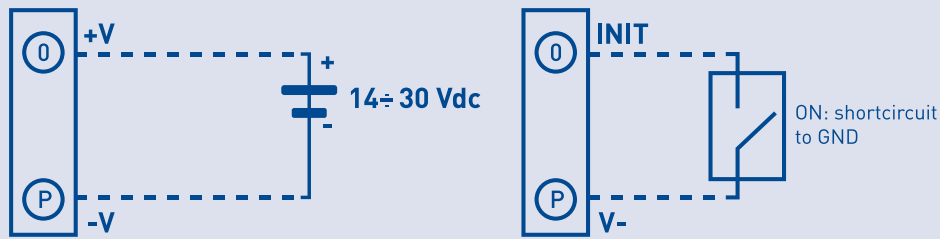
Moreover it is suggested to avoid routing conductors near power signal cables (motors, induction ovens, inverters, etc...) and to use shielded cable for connecting signals.

## LIGHT SIGNALLING

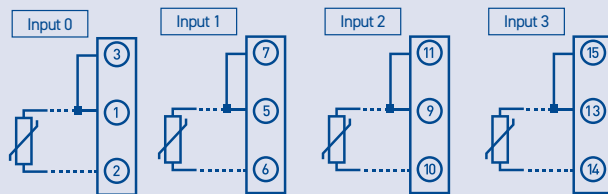
LED	COLOUR	STATE	DESCRIPTION
		On	Device powered
PWR	Green	Off	Device not powered
		Blink	Watchdog Alarm
		Off	Device in RUN modality
STS	Yellow	Blink	Device in INIT modality

## CONNECTIONS

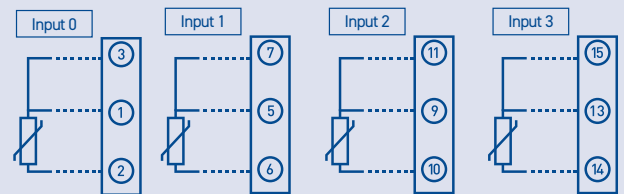
### POWER SUPPLY



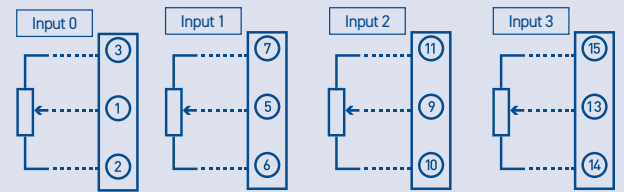
### RTD/RES 2 WIRES



### RTD/RES 3 WIRES

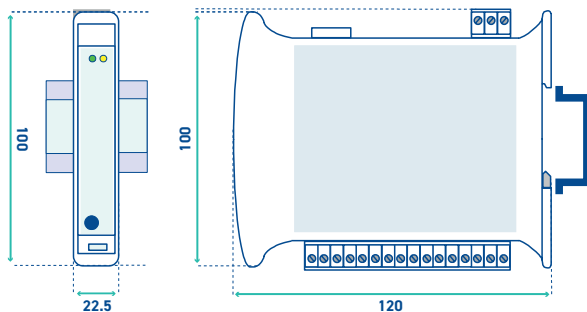


### POTENTIOMETER

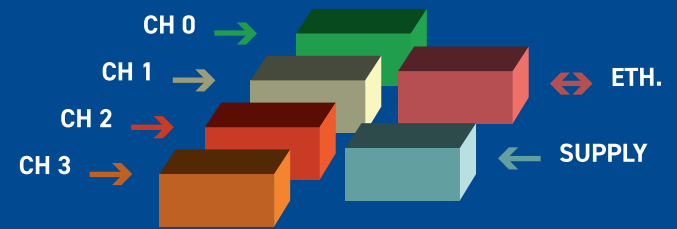


NOTES: All input channels are isolated between them.

## MECHANICAL DIMENSIONS (mm)



## ISOLATIONS STRUCTURE



## HOW TO ORDER

LAN 4 RTD /1 TN: 00732295

Note: the device is provided with default configuration as:

IP address: 192.168.1.100

Modbus address: 1

The symbol reported on the product indicates that the product itself must not be considered as a domestic waste.



It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city, the service for the waste treatment or the supplier from which the product has been purchased.



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