

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 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 DAT8014 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 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 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 DAT8014 allows the remote visualization, acquisition of the analog inputs and the access to the main Ethernet programming parameters. The device is also configurable by the software *Dev9K*, a free IDE developed by DATEXEL.

The connection is made by removable screw-terminals (inputs and power supply) and RJ45 plug (Ethernet).

The device DAT8014 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.

USER INSTRUCTIONS

Before to install the device, please read the "Installation Instruction" section.

To configure the device use the INIT modality. Connect the terminal INIT to the terminal -V; at the power-on the device will be automatically set in the configuration set-up (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.

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) RTD ±0,05 % f.s. Resistance ±0,05 % f.s. Potentiometer ±0,05 % f.s.		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			Linearity (1) RTD ±0,1 % 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																													
<table border="1"> <thead> <tr> <th>Input Type</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>RTD 2 or 3 wires</td> <td></td> <td></td> </tr> <tr> <td>Pt100</td> <td>-200 °C</td> <td>850 °C</td> </tr> <tr> <td>Pt1000</td> <td>-200 °C</td> <td>200 °C</td> </tr> <tr> <td>Ni100</td> <td>-60 °C</td> <td>180 °C</td> </tr> <tr> <td>Ni1000</td> <td>-60 °C</td> <td>150 °C</td> </tr> <tr> <td>RES 2 or 3 wires</td> <td></td> <td></td> </tr> <tr> <td>Low</td> <td>0 Ω</td> <td>500 Ω</td> </tr> <tr> <td>High</td> <td>0 Ω</td> <td>2000 Ω</td> </tr> <tr> <td>POT. (nom. value)</td> <td>20 Ω</td> <td>50 kΩ</td> </tr> </tbody> </table>	Input Type	Min	Max	RTD 2 or 3 wires			Pt100	-200 °C	850 °C	Pt1000	-200 °C	200 °C	Ni100	-60 °C	180 °C	Ni1000	-60 °C	150 °C	RES 2 or 3 wires			Low	0 Ω	500 Ω	High	0 Ω	2000 Ω	POT. (nom. value)	20 Ω	50 kΩ	Lead wire resistance influence (1) RTD/res.3 wires (50 Ω max balanced) 0,05% f.s./Ω		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	
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			RTD excitation current Typical 0,370 mA		CONNECTIONS Ethernet RJ-45 (on terminals side) Inputs Removable screw-terminals Power Supply Removable screw-terminals																													
			Thermal drift (1) Full Scale ± 0,01 %/°C		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 with DIN rail standard EN-50022 Weight about 160g																													
			Sampling time (4 channels) 150 ms		EMC (for industrial environments) Immunity EN 61000-6-2 Emission EN 61000-6-4																													
			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 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 in the following case:

- If panel temperature exceeds 45°C and power supply value < 20 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.

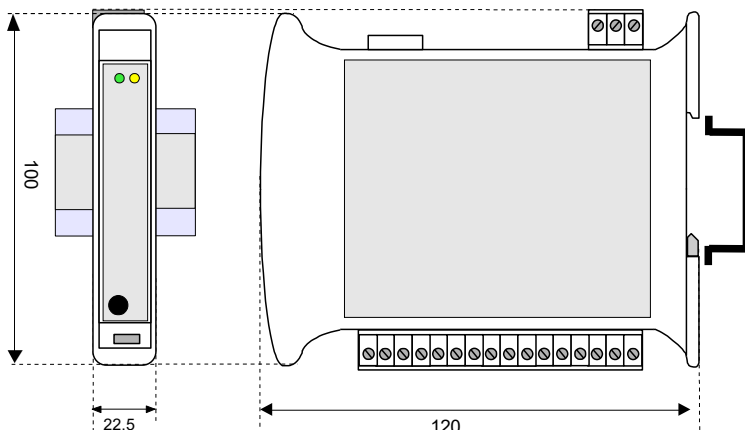
MAPPING MODBUS REGISTERS

Register Position	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

LIGHT SIGNALLING

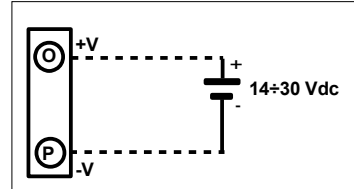
LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINK	Watchdog alarm
STS	YELLOW	OFF	Device in RUN modality
		BLINK	Device in INIT modality

MECHANICAL DIMENSIONS (mm)

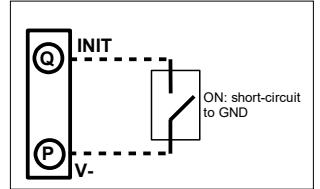


CONNECTIONS

POWER SUPPLY

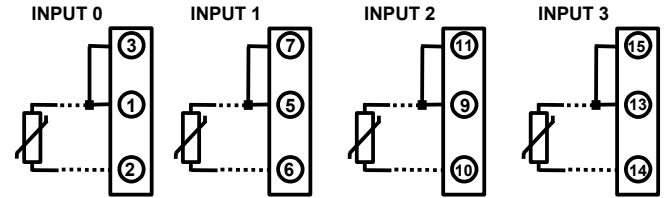


INIT

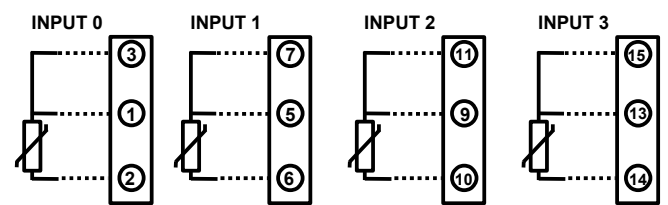


ANALOG INPUTS

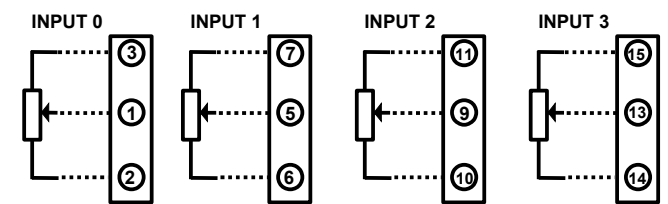
RTD/RES 2 WIRES



RTD/RES 3 WIRES



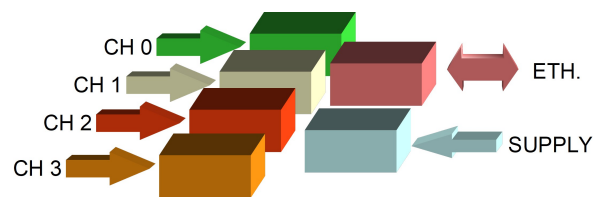
POTENZIOMETR



NOTES:

All input channels are isolated between them.

ISOLATIONS STRUCTURE



HOW TO ORDER

“ DAT 8014 “

Note: the device is provided with default configuration as:

IP address : 192.168.1.100

Modbus address: 1