

## FEATURES

- Field-Bus remote data acquisition
- Modbus Slave device on RS-485
- Modbus RTU/ Modbus ASCII protocol
- 2 channel output
- Outputs configurable as Voltage or Current
- Watch-Dog Alarm
- Remotely Configurable
- 2000 Vac 3-ways Galvanic Isolation
- High Accuracy
- UL / CE mark
- DIN rail mounting in compliance with EN-50022



## GENERAL DESCRIPTION

The DAT 3022 device generates 2 output analog signals from digital commands. The data are transmitted with MODBUS RTU/MODBUS ASCII protocol on the RS-485 network (RS-232 interface is available).

It is possible to generate voltage signals up to 10V and current signals up to 20mA, both active or passive loops.

The device guarantees high accuracy and stable measure versus time and temperature.

To ensure the plant safety, two Watch-Dog timer alarms are 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 DAT 3022 is in compliance with the Directive UL 61010-1 for US market and with the Directive CSA C22.2 No 61010-1 for the Canadian market.

The device is housed in a rough self-extinguishing plastic container which, thanks to its thin profile of 17.5mm only, allows a high density mounting on EN-50022 standard DIN rail.

## COMMUNICATION PROTOCOLS

The DAT3022 is designed to work with the MODBUS RTU/MODBUS ASCII protocol: standard protocol in field-bus; allows to directly interface DAT3000 series devices to the larger part of PLCs and SCADA applications available on the market.

For the protocol instructions, refer to the User Guide of the device.

## USER INSTRUCTIONS

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

If the module configuration is unknown, with device powered off, connect the INIT terminal to the GND terminal (ground), at the next power on the device will be auto-configured in the default settings (refer to the User Guide of the device).

Connect power supply, serial bus and analogue outputs as shown in the "Wiring" section.

The "PWR" LED 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)

OUTPUT (2 channels)			Output Accuracy		POWER SUPPLY																																											
Output type	Min	Max	Current	Voltage	Power supply voltage	Reverse polarity protection																																										
Current mA	0 mA	+20 mA	± 20 uA	± 10 mV	18 .. 30 Vdc	60 Vdc max																																										
Voltage Volt	0 V	+10 V	<b>Thermal drift</b> Full scale ± 0.01 % / °C		<b>Current consumption</b>	60 mA max.																																										
<b>Load resistance</b> Voltage ≥ 5 KΩ Current ≤ 500 Ω  <b>Auxiliary Voltage (2 channels)</b> > 12V @ 20mA  <b>Response time</b> Slew-rate analogue output (with dedicated setting for each channel)			<b>ISOLATION</b> On all the ways 2000 Vac, 50 Hz, 1 min		<b>ENVIRONMENTAL CONDITIONS</b>																																											
					Operative Temperature -10°C .. +60°C UL Operative Temperature -10°C .. +40°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																																											
					<b>MECHANICAL SPECIFICATIONS</b>																																											
					Material Self-extinguish plastic IP Code IP20 Wiring wires with diameter 0.8+2.1 mm <sup>2</sup> /AWG 14-18 Tightening Torque 0.5 N m Mounting in compliance with DIN rail standard EN-50022 Weight about 150 g.																																											
					<b>CERTIFICATIONS</b>																																											
					<b>EMC ( for industrial environments)</b> Immunity EN 61000-6-2 Emission EN 61000-6-4 <b>UL</b> US Standard UL 61010-1 Canadian Standard CSA C22.2 No 61010-1 CCN NRAQ/NRAQ7 Typology Open Type device Classification Industrial Control Equipment File Number E352854																																											
					<b>Data Transmission</b> Baud Rate 115.2 Kbps Max. distance 1.2 Km – 4000 ft																																											
					<table border="1"> <thead> <tr> <th>Value</th> <th>V/s</th> <th>mA/s</th> </tr> </thead> <tbody> <tr><td>00h</td><td>Disabled</td><td></td></tr> <tr><td>01h</td><td>0.15</td><td>0.30</td></tr> <tr><td>02h</td><td>0.30</td><td>0.60</td></tr> <tr><td>03h</td><td>0.60</td><td>1.20</td></tr> <tr><td>04h</td><td>1.20</td><td>2.40</td></tr> <tr><td>05h</td><td>2.40</td><td>4.80</td></tr> <tr><td>06h</td><td>4.80</td><td>9.60</td></tr> <tr><td>07h</td><td>9.60</td><td>19.2</td></tr> <tr><td>08h</td><td>19.2</td><td>38.4</td></tr> <tr><td>09h</td><td>38.4</td><td>76.8</td></tr> <tr><td>0Ah</td><td>76.8</td><td>153</td></tr> <tr><td>0Bh</td><td>153</td><td>306</td></tr> <tr><td>0Ch</td><td>Immediate</td><td></td></tr> </tbody> </table>		Value	V/s	mA/s	00h	Disabled		01h	0.15	0.30	02h	0.30	0.60	03h	0.60	1.20	04h	1.20	2.40	05h	2.40	4.80	06h	4.80	9.60	07h	9.60	19.2	08h	19.2	38.4	09h	38.4	76.8	0Ah	76.8	153	0Bh	153	306	0Ch	Immediate	
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## INSTALLATION INSTRUCTIONS

The DAT 3022 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 at least one of the overload conditions exist.
- If panel temperature exceeds 35°C and at least two of the overload conditions exist.

The overload conditions are the following:

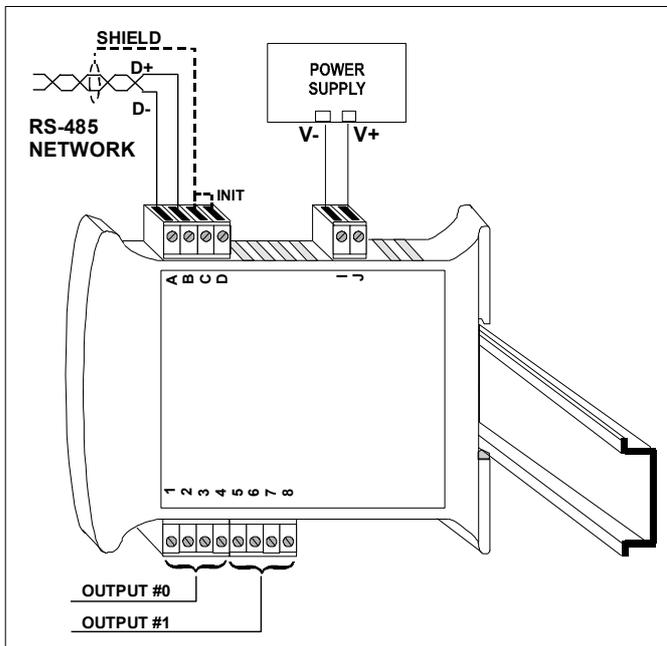
- High supply voltage: >27Vdc
- Use of the auxiliary power supply

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.

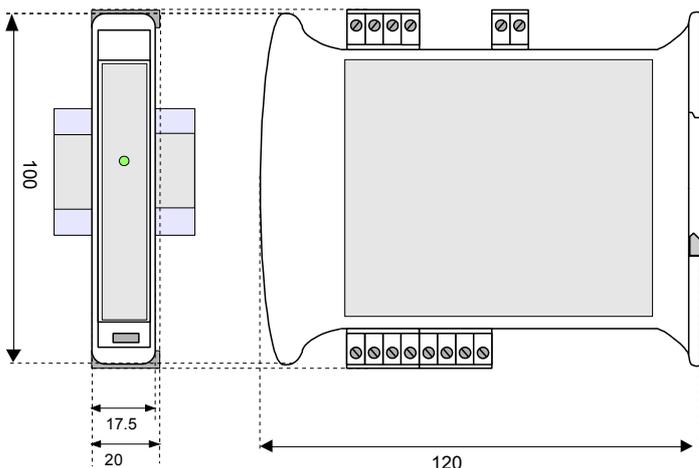
## CABLING



## LIGHT SIGNALLING

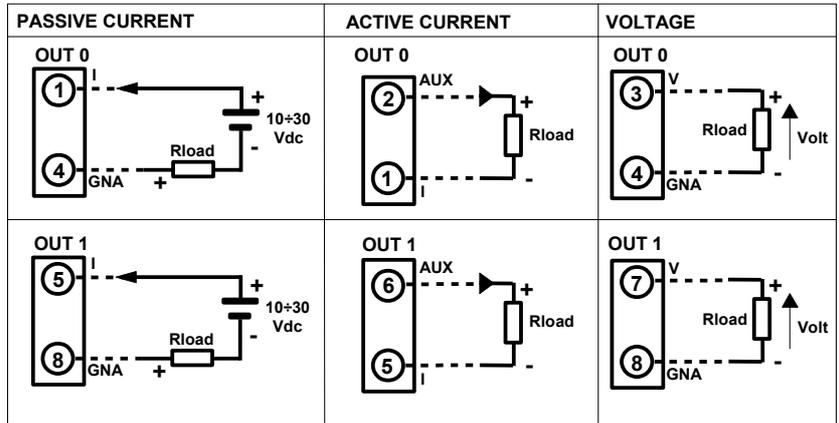
LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered / Wrong RS-485 cabling.
		FAST BLINK	Communication in progress (blink frequency depends to baud-rate)
		1 second BLINK	Watch-Dog Alarm condition

## MECHANICAL DIMENSIONS (mm)



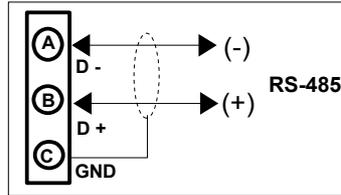
## WIRING

### ANALOGUE OUTPUTS

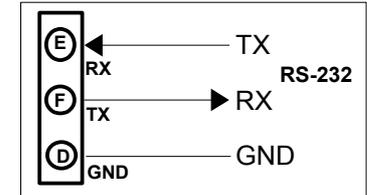


Note: the output channels are not isolated between them.  
 Terminals AUX of channels connected between them.  
 Terminals GNA of channels connected between them

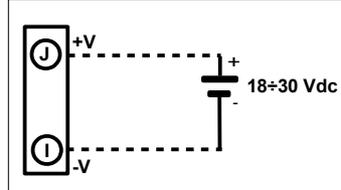
### RS-485 NETWORK



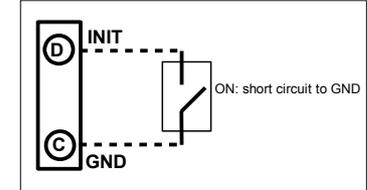
### RS-232 NETWORK



### POWER SUPPLY (\*)



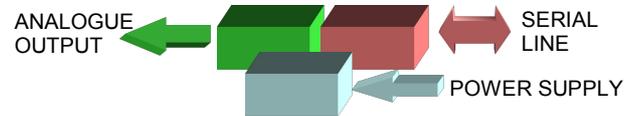
### INIT(\*\*)



(\*) Note: for UL installation the device must be powered using a power supply unit classified NEC class 2 or SELV

(\*\*) Note: for RS232 version INIT and GND are inverted between them

## ISOLATION STRUCTURE



### HOW TO ORDER

In the order phase, it is mandatory to specify the interface type (RS485 or RS232). DAT3022 can be supplied with the configuration specified by the customer.

### ORDER CODE:

DAT 3022 / 485 / mA

Interface type  
 485 : RS-485  
 232 : RS-232

Output type

■ = Requested  
 □ = Optional