

Distributed I/O device for Strain Gauge communicating over RS-485

DAT 3025

FEATURES

- Modbus Server device on RS-485
- Modbus RTU / Modbus ASCII protocol
- 4 or 6 wires Strain Gauge Input
- Configurable Bridge Power Supply 5V or 10V
- SSR Configurable Alarm Trip
- Remotely Configurable
- 1500 Vac 3-ways Galvanic Isolation
- LED of signalling on front side for power supply, communication and alarm trip status
- Connection by removable screw terminals
- High accuracy
- CE / UKCA mark
- DIN rail mounting in compliance with EN-50022



GENERAL DESCRIPTION

The DAT3025 device is capable of acquiring an analog voltage signal coming from a 4 or 6 wire bridge transducer connected to its input. An excitation voltage configurable at 5 V or 10 V is available. The data is transmitted with MODBUS RTU/MODBUS ASCII protocol on an RS-485 network (the model with RS-232 interface is available on request).

The device has a programmable SSR type alarm threshold to provide a maximum or minimum alarm.

A digital input is also available to TARE the weight by the PLC.

The module is configurable via the *Modbus_3000_10000* software.

The modules of the DAT3000 series are designed to be assembled on the DIN rail in a simple way and with maximum use of space.

The 1500 Vac isolation between input, power supply and RS485 line eliminates all the effects due to any ground loops present, allowing the use of the device even in the most severe environmental conditions.

The communication activity signaling LEDs allow convenient monitoring of system functionality.

Removable screw terminals are used to connect the output, input, power and RS485 line signals to allow the user to simplify maintenance.

The DAT3025 complies with the current directive on electromagnetic compatibility.

It is housed in a rough self-extinguishing plastic container which, thanks to its thin profile of 22.5mm only, allows a high density mounting on EN-50022 standard DIN rail.

USER INSTRUCTIONS

Before installing the device, carefully read the "Installation Instructions" section.

Connect the power supply, the bus, the digital input and output contacts as shown in the "Connections" section.

Refer to the "LED Signaling" section to verify correct device operation.

To facilitate the maintenance or replacement of a device, it is possible to remove the already wired terminals even with the system functioning.

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

INPUT			ALARM TRIP AMPLIFIER – OUTPUT		GENERAL SPECIFICATION	
Input Range	Zero	Span	Output Type	SSR (solid state relay)	Power supply voltage	20.. 30 Vdc
±30 mV	-30 mV	+30 mV	Output Contact	SPST – N.A.	Reverse polarity protection	60 Vdc max
±200 mV	-200 mV	+200 mV	Max Load (resistive):		Consumption @24 Vdc	90 mA typ (2)
			Max Voltage	48 Vdc / 30 Vac	Max. Consumption @20 Vdc	100 mA (2)
			Max Current	0.4 A		
Bridge excitation voltage (Vexc)			COMMUNICATION		ISOLATION	
Vexc	R cell min	R cell max	Data transmission (asynchronous serial)		Among all the ways 1500 Vac, 50 Hz, 1 min	
5 V ± 10%	150 Ω	10 kΩ	Max Baud Rate	115.2 Kbps	ENVIRONMENTAL CONDITIONS	
10 V ± 5%	300 Ω	10 kΩ	Max distance	1,2 km	Operative temperature -10°C .. +60°C	
			Protocol	Modbus RTU / Modbus ASCII	Storage temperature -40°C .. +85°C	
Max Bridge excitation current	50 mA		Interface	RS485 (2 wire) or RS232 (optional)	Humidity (not condensing) 0 .. 90 %	
Sampling Time	200 ms				Maximum Altitude 2000 m slm	
Resolution	16 bit				Installation Indoor	
Input Accuracy (1)	the > of ± 0,1% f.s. or 5uV				Category of Installation II	
Linearity (1)	± 0,1% f.s.				Pollution Degree 2	
Thermal Drift	< 50 ppm/°C				MECHANICAL SPECIFICATIONS	
Warm-up Time	3 min				Material Self-extinguish plastic	
(1) f.s. → difference between Val max (Span) and Val min (Zero)					IP Code IP20	
DIGITAL INPUT - TARE					Wiring wires with diameter 0.8±2.1 mm ² AWG 14-18	
Input Voltage (bipolar)	OFF status: 0+3 V ON status: 10+30 V				Tightening Torque 0.5 N m	
Input Impedance	4,7 Kohm				Mounting in compliance with DIN rail standard EN-50022	
					Weight about 145 g	
					CERTIFICATIONS	
					EMC (for the Industrial Environments)	
					Immunity EN 61000-6-2	
					Emission EN 61000-6-4	
					UKCA (ref S.I. 2016 N°1091)	
					Immunity BS EN 61000-6-2	
					Emission BS EN 61000-6-4	

INSTALLATION INSTRUCTIONS

The device is suitable for DIN rail mounting in a vertical position. For reliable and long-lasting operation of the device, follow the instructions below.

When the devices are mounted side by side, space them at least:
 - 10 mm if UL certification is required
 - 5 mm if UL certification is not required

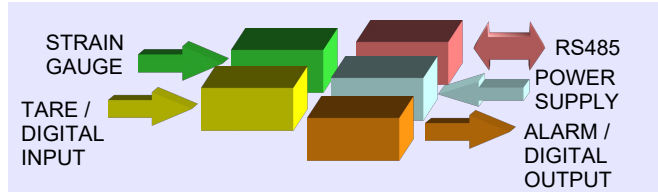
Avoid that the special ventilation slots are blocked by ducts or other objects near them.

Avoid mounting the devices above heat-generating equipment; it is recommended to mount the device in the lower part of the installation, whether it is a panel or cabinet.

Install the device in a place not subjected to vibrations.

Furthermore, it is recommended not to pass the wiring near power signal cables and that the connection is carried out using shielded cables.

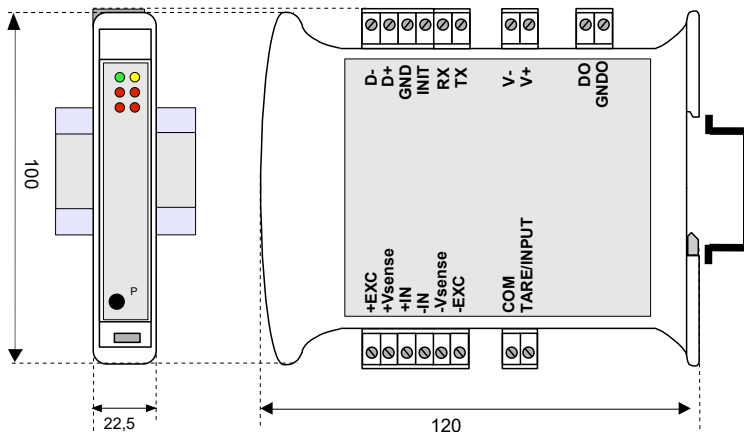
ISOLATION STRUCTURE



LIGHT SIGNALLING

LED	COLOR	STATUS	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINK	Watch-Dog Alarm
STS	YELLOW	OFF	The Device works correctly
		BLINK	INIT Mode
RX	RED	BLINK	Received data (blink frequency depends on Baud-rate)
		OFF	No reception in progress
TX	RED	BLINK	Transmitted data (blink frequency depends on Baud-rate)
		OFF	No transmission in progress
Tare/ Input	RED	ON	Tare in progress / Digital Input ON
		OFF	Tare not active / Digital Input OFF
Alarm/ Output	RED	ON	Threshold alarm active / Digital Output ON
		OFF	Threshold alarm not active / Digital Output OFF

MECHANICAL DIMENSIONS (mm)



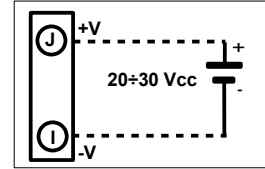
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city, the service for the waste treatment or the supplier from which the product has been purchased.

HOW TO ORDER

“DAT3025” → Standard version RS485
 “DAT3025 RS232” → Version with RS232 interface

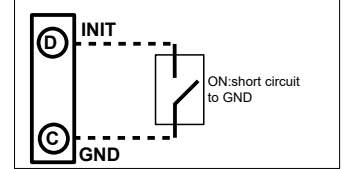
WIRING

POWER SUPPLY (*)

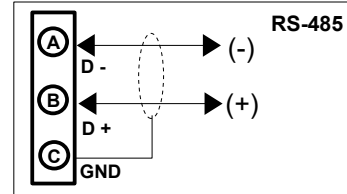


(*) NOTE: the device must be powered using a power supply unit classified NEC class 2 or SELV

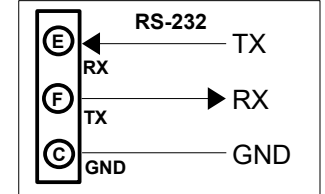
INIT



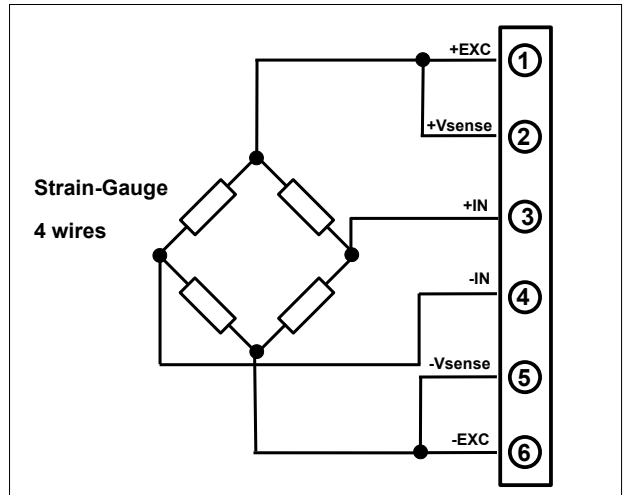
RS-485 SERIAL PORT



RS-232 SERIAL PORT (OPTIONAL)

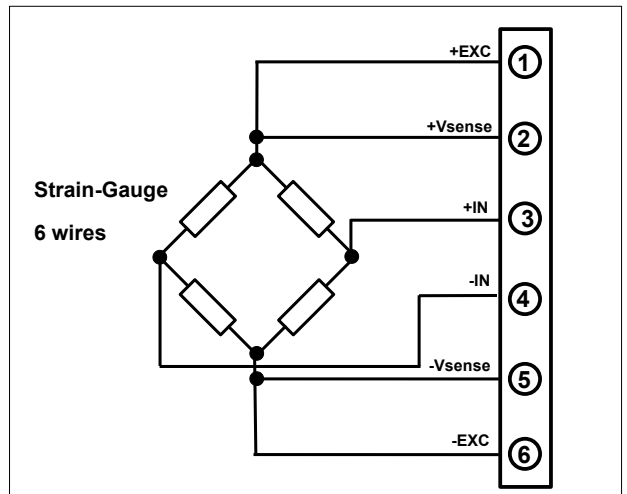


INPUT STRAIN GAUGE 4 WIRES (**)

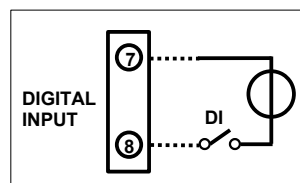


(**) NOTE: in the 4-wires connection, connect a jumper between terminals “1” and “2” and between terminals “5” and “6”

INPUT STRAIN GAUGE 6 WIRES



TARE – DIGITAL INPUT



ALARM - DIGITAL OUTPUT

