

FEATURES

- Configurable input for Tc, RTD, Res, mV, V, mA and Potentiometer
- Configurable output as 0 to 10V, 0 to 20mA
- 2 Configurable trip alarms on SPDT relay outputs
- PC configurable
- Galvanic isolation between all of the ways
- EMC compliance – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022



GENERAL DESCRIPTION

The converter DAT 4520 is able to execute many functions such as : measure and linearisation of the temperature characteristic of RTDs sensors, conversion of a linear resistance variation, conversion of a standard active current signal, conversion of a voltage signal even coming from a potentiometer connected on its input. The DAT4520 is also able to measure and linearise the standard thermocouples with internal cold junction compensation. In function of programming, the measured values are converted in a current or voltage signal. For the current output it is possible to connect both output and passive loops. The device guarantees high accuracy and performances stability both in time and in temperature. Moreover, the device is able to control two trip alarm relay outputs. The programming is made by a Personal Computer using the software PROSOFT, developed by DATEXEL, that runs under the operative system "Windows™". By use of PROSOFT, it is possible to configure the converter to interface it with the most used sensors. In case of sensors with a no-standard output characteristic, it is possible to execute, via software, a "Custom" linearisation (per step) to obtain an output linearised signal. For Resistance and RTDs sensors it is possible to program the cable compensation with 3 or 4 wires; for Thermocouples it is possible to program the Cold Junction Compensation (CJC) as internal or external. It is possible to set the minimum and maximum values of input and output ranges in any point of the scale, keeping the minimum span shown in the table below. Moreover it is available the option of alarm for signal interruption (burn-out) that allows to set the output value as high or low out of scale. **The terminals of the current signal on input side must be only connected to active current loop.** The isolation between all of the ways eliminates the effects of all ground loops eventually existing and allows the use of the converter in heavy environmental conditions found in industrial applications. It is housed in a plastic enclosure of 22.5 mm thickness suitable for DIN rail mounting in compliance with EN-50022 standard.

USER INSTRUCTIONS

The device must be powered by a direct voltage between 20 to 30 V as shown in the section "Power supply connections". the "PWR" green led turned on indicate the correct power supply; the "RL1" and "RL2" red led indicates the trip alarm status. The output signal, in voltage or current, is provided as shown in the section "Output connections". The input connections must be made as shown in the section "Input connections". To configure, calibrate and install the converter, refer to sections " DAT4520: configuration and calibration" and "Installation Instructions".

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

Input type	Min	Max	Min. span	Input calibration (1)		POWER SUPPLY	
TC(*) CJC int./ext. J K S R B E T N	-200°C	1200°C	100 °C	RTD	> of ±0.1% f.s. or ±0.2°C	Supply voltage	20 .. 30 Vdc
	-200°C	1370°C	100 °C	Low res.	> of ±0.1% f.s. or ±0.15 Ω	Reverse polarity protection	60 Vdc max
	-50°C	1760°C	400 °C	High res.	> of ±0.2% f.s. or ±1 Ω	Current consumption	
	-50°C	1760°C	400 °C	mV, TC	> of ±0.1% f.s. or ±10 uV	Voltage output	60 mA @ 24V (65 mA max.)
	400°C	1820°C	400 °C	Volt	> of ±0.1% f.s. or ± 2 mV	Current output	85 mA @ 24V (90 mA max.)
	-200°C	1000°C	100 °C	mA	> of ±0.1% f.s. or ± 6 uA	Trip alarms	
	-200°C	400°C	100 °C	Output calibration		Output type	n° 2 SPDT Relays
-200°C	1300°C	100 °C	Current	± 7 uA	Contact rating	2A , 250 Vac/ 2A , 30 Vdc	
RTD(*) 2,3,4 wires Pt100 Pt1000 Ni100 Ni1000	-200°C	850°C	50°C	Voltage	± 10 mV	Load	resistive
	-200°C	200°C	50°C	Input impedance		Minimum load	5Vdc, 10mA
	-60°C	180°C	50°C	TC, mV	>= 10 MΩ	Max Voltage	250 Vac (50/60 Hz)/110 Vdc
	-60°C	150°C	50°C	Volt	>= 1 MΩ	Isolation	coil-to-contacts: 2000Vac between contacts: 1000Vac
	-60°C	150°C	50°C	Current	~ 50 Ω	Output Load Resistance (Rload)	
Voltage mV mV Volt	-400 mV	+400 mV	2 mV	Linearity (1)		Current output	≤ 650 Ω
	-100 mV	+700 mV	2 mV	TC	± 0.2 % f.s.	Voltage output	≥ 4.7 KΩ
	0 V	+10 V	500 mV	RTD	± 0.1 % f.s.	Limitation current	about 25 mA
Potentiometer (Nominal value)	0 Ω	200 Ω	10%	Line resistance influence		ISOLATION	
	200 Ω	500 Ω	10%	TC, mV	≤0.8 uV/Ohm	Input/Output	2000 Vac, 50 Hz, 1min.
	0.5 KΩ	2 KΩ	10%	RTD 3 wires	0.05%/Ω (50 Ω balanced max.)	Input/Supply	2000 Vac, 50 Hz, 1min.
RES. 2,3,4 wires Low High	0 Ω	300 Ω	10 Ω	RTD 4 wires	0.005%/Ω (100 Ω balanced max.)	Supply/Output	1500 Vac, 50 Hz, 1min.
	0 Ω	2000 Ω	200 Ω	RTD excitation current		ENVIRONMENTAL CONDITIONS	
Current mA	0 mA	+24 mA	2 mA	Typical	0.350 mA	Operative Temperature	-20°C .. +60°C
				CJC comp.		Storage Temperature	-40°C.. +85°C
Output type Direct current Direct voltage	0 mA	20 mA	4 mA	Thermal drift (1)		Humidity (not condensed)	0 .. 90 %
	0 V	10 V	1 V	Full scale	± 0.01% / °C	Maximum Altitude	2000 m
				CJC	± 0.01% / °C	Installation	Indoor
				Burn-out values		Category of installation	II
				Max. values	about 23 mA or 10.8 Vdc	Pollution Degree	2
				Min. values	about 0 mA or 0 Vdc	MECHANICAL SPECIFICATIONS	
				Response time (10÷ 90%)		Material	Self-extinguish plastic
				about 400 ms		IP Code	IP20
						Wiring	wires with diameter 0.8÷2.1 mm ² /AWG 14-18
						Tightening Torque	0.8 N m
						Mounting	in compliance with DIN rail standard EN-50022
						Weight	about 150 g.
						EMC (for industrial environments)	
						Immunity	EN 61000-6-2
						Emission	EN 61000-6-4

(1) referred to input Span (difference between max. and min. values)
(*) For temperature sensors it is possible to set the input range also in °F; to made the conversion use the formula: °F = (°C*9/5)+32)

CONFIGURATION & CALIBRATION

Note: during these phase the device must be always powered.

- CONFIGURATION

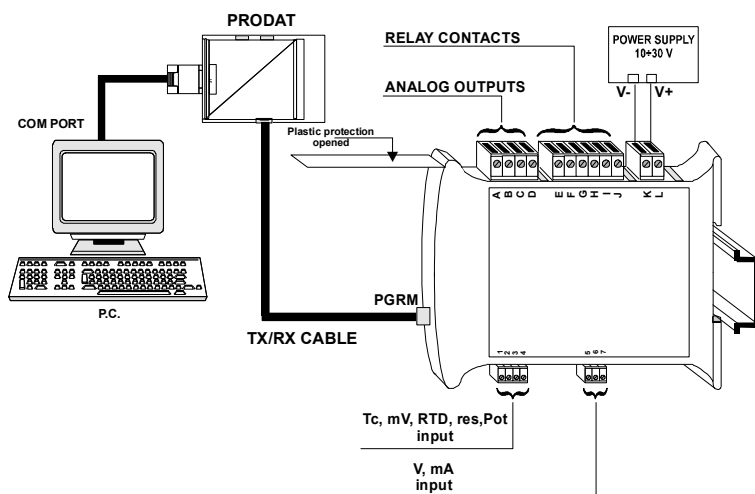
- 1) Open the plastic protection on the front of the enclosure.
- 2) Connect the PRODAT interface to the Personal Computer and to the device on the PGRM connector, as show below.
- 3) Open the PROSOFT configuration program.
- 4) Set the programming data *.
- 5) Send the programming data to the device *.

- CALIBRATION CONTROL

With software PROSOFT running:

- 1) Connect on the input a calibrator setted with minimum and maximum values referred to the electric signal or to the temperature sensor to measure.
- 2) Set the calibrator at the minimum value.
- 3) Verify that the device provides on output the minimum setted value.
- 4) Set the calibrator at the maximum value.
- 5) Verify that the device provides on output the maximum setted value.
- 6) In case of regulation of value obtained in the step 3 and 5, use the ZERO and SPAN regulators of software PROSOFT. The variation introduced from these regulators must be calculated as percentage of the input range .
- 7) Program the device with the new parameters (*).

* = refer to the Prosoft user guide.



INSTALLATION INSTRUCTIONS

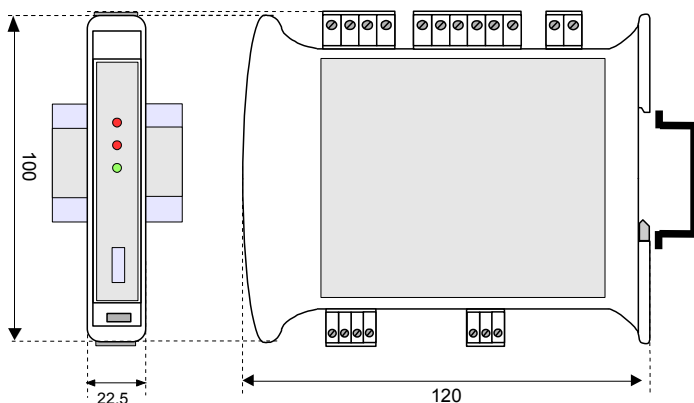
The DAT 4520 device is suitable for fitting to DIN rails in the vertical position. For optimum operation and long life, follow the instructions above.

When devices are installed side by side, it may be necessary to separate them by at least 5mm in the following case:

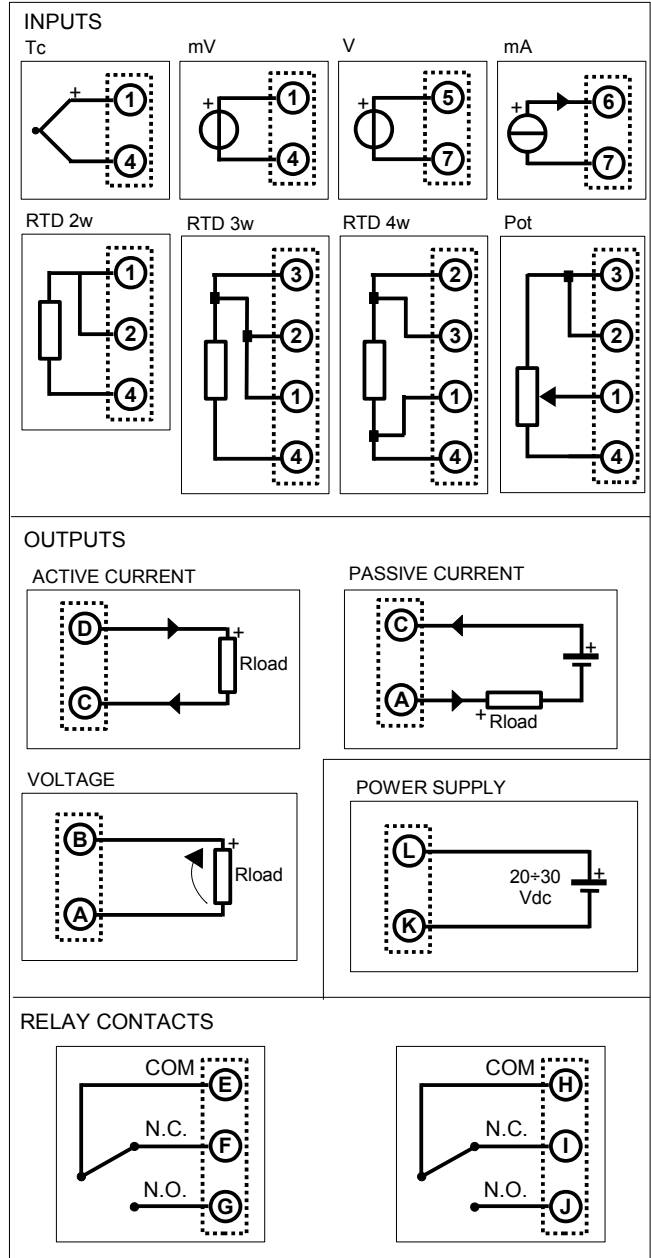
- If panel temperature exceeds 45°C and at least one of the overload conditions exist.
 - If panel temperature exceeds 35°C and at least two of the overload conditions exists.
- The overload conditions are the following:
- High supply voltage: >27Vdc
 - Use of the auxiliary power supply (terminal D)

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. It is recommended to use shielded cable for connecting signals. The shield must be connected to an earth wire provided for this purpose. Moreover it is suggested to avoid routing conductors near power signal cables (motors, induction ovens, inverters etc...).

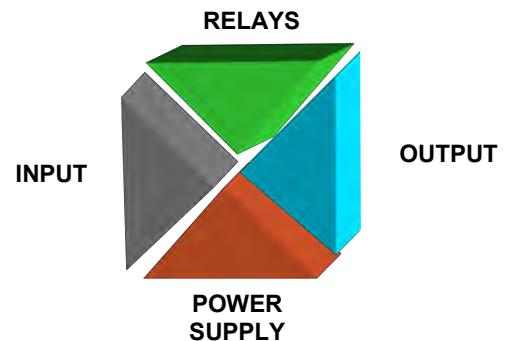
MECHANICAL DIMENSIONS (mm.)



WIRING



ISOLATION STRUCTURE



HOW TO ORDER

DAT 4520 can be supplied in the configuration requested by the customer in the order phase. In case of the configuration is not specified, the parameters must be set by the user.

ORDER CODE EXAMPLE:

DAT 4520 - Input - Output - Options

■ = Request
□ = Optional