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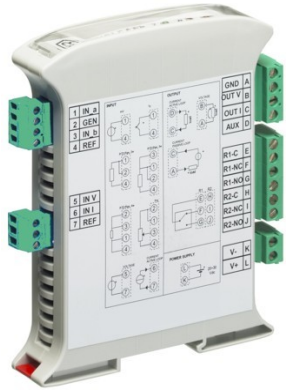
UNI EN ISO 9001:2008

# PC programmable signal converter Trip Amplifier

# DAT 4520



## FEATURES

- Tc, RTD, Res, mV, V, mA, Potentiometer configurable input
- 0 to 10V, 0 to 20mA configurable output
- PC configurable
- 2000 Vac galvanic isolation between input, output
- EMC compliance – CE mark
- Suitable for DIN rail mounting

## GENERAL DESCRIPTION

The DAT 4520 device measures mV, V, mA or resistance signals, and can be directly connected to Thermocouple, RTD or potentiometer sensors.
The input signal is filtered, linearised, amplified and transfered to the output circuit, that converts it in a 0-10V range or 0-20mA range signal. Auxiliary power supply allows to supply the output current loop. Moreover, the device is able to control two trip alarm relay outputs.
DAT 4520 has a 3 way isolation: input is 2000 Vac isolated from power supply and output; power supply and output are 1500 Vac isolated between them.
Programmation and configuration is made by means of personal computer through the PRODAT interface.
The device must be powered with a voltage between 20 and 30 Vdc; the “PWR” green led turned on indicate the correct power supply; the "RL1" and "RL2" red led indicates the trip alarm status.
The DAT 4520 is in compliance with the Directive 2004/108/EC on the electromagnetic compatibility. The device is housed in a rough self-extinguish plastic enclosure of 22.5 mm thickness suitable for DIN rail mounting .

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

| Input type | Min | Max | Span min |
|---|---|---|---|
| Tc(*) | | | |
| J | -200°C | 1200°C | 2mV |
| K | -200°C | 1370°C | 2mV |
| S | -50°C | 1760°C | 2mV |
| R | -50°C | 1760°C | 2mV |
| B | 400°C | 1820°C | 2mV |
| E | -200°C | 1000°C | 2mV |
| T | -200°C | 400°C | 2mV |
| N | -200°C | 1300°C | 2mV |
| RTD(*) | | | |
| Pt100 | -200°C | 850°C | 50°C |
| Pt1000 | -200°C | 200°C | 50°C |
| Ni100 | -60°C | 180°C | 50°C |
| Ni1000 | -60°C | 150°C | 50°C |
| Voltage | | | |
| mV | -100mV | +700mV | 2mV |
| V | 0 V | 10 V | 500mV |
| Current | | | |
| mA | 0 mA | 20 mA | 2 mA |
| Potentiometer | | | |
| (nominal value) | 0 Ω | 200 Ω | 10% |
| | 200 Ω | 500 Ω | 10% |
| | 0.5 KΩ | 2 KΩ | 10% |
| Resistance | | | |
| Ohm | 0 Ω | 300 Ω | 10 Ω |
| KOhm | 0 Ω | 2000 Ω | 200 Ω |

| Output type | Min | Max | Span min |
|---|---|---|---|
| Voltage | 0 V | 10 V | 1 V |
| Current | 0 mA | 20 mA | 4 mA |

**Input Calibration**

| | |
|---|---|
| RTD | > of ±0.1% fs or ±0.2°C |
| Res. Ohm | > of ±0.1% fs or ±0.15 Ω |
| Res. KOhm | > of ±0.2% fs or ±1 Ω |
| mV, Tc | > of ±0.1% fs or ±10 uV |
| V | > of ±0.1% fs or ±2 mV |
| mA | > of ±0.1% fs or ±6 uA |

**Output Calibration**

| | |
|---|---|
| Current | ± 7 uA |
| Voltage | ± 10 mV |

**Output Load Resistance**

| | |
|---|---|
| Current | < 650 Ω |
| Voltage | > 4.7 KΩ |

**Input Impedance**

| | |
|---|---|
| Tc, mV | >= 10 MΩ |
| V | >= 1 MΩ |
| mA | ~ 50 Ω |

**Linearity**

| | |
|---|---|
| Tc | ± 0.2 %fs |
| RTD | ± 0.1 %fs |

**Lead wire resistance influence**

| | |
|---|---|
| Tc, mV | <=0.8 uV/Ohm |
| RTD 3-wires | 0.05%/Ω (50 Ω max balanced) |
| RTD 4-wires | 0.005%/Ω (100 Ω max balanced) |

**Thermal drift**

| | |
|---|---|
| Full Scale | ± 0.01%/°C |
| CJC | ± 0.01%/°C |

**RTD excitation current**

| | |
|---|---|
| Typical | 0.350 mA |

**CJC Comp.** ± 0.5°C

**Response time** ~ 0.4 sec.

**Trip alarms**

| | |
|---|---|
| Output type | n° 2 SPDT Relays |
| Contact rating | 2A , 250 Vac |
| | 2A , 30 Vdc |
| Load | resistive |
| Minimum load | 5Vdc, 10mA |
| Max Voltage | 250 Vac (50/60 Hz) |
| | 110 Vdc |
| Isolation | coil-to-contacts: 2000Vac |
| | between contacts: 1000Vac |

**Power Supply**

| | |
|---|---|
| Supply Voltage | 20 ÷ 30 Vdc |
| Polarity inverted protection | 60 Vdc max |

**Current consumption**

| | |
|---|---|
| Voltage output | 60 mA @ 24V (65 mA max.) |
| Current output | 85 mA @ 24V (90 mA max.) |

**Isolation**

| | |
|---|---|
| Input/Output | 2000 Vac, 50 Hz, 1min. |
| Input/Supply | 2000 Vac, 50 Hz, 1min. |
| Supply/Output | 1500 Vac, 50 Hz, 1min. |

**Temperature & Humidity**

| | |
|---|---|
| Operating Temperature | -20°C .. +60°C |
| Humidity (non condensing) | 0 .. 90 % |

**Housing**

| | |
|---|---|
| Material | Self-extinguish plastic |
| Mounting | DIN Rail |
| Weight | ~ 150 g. |
| Dimensions (mm) : | 120 x 100 x 22.5 |

**EMC ( for industrial environments )**

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

(*) For temperature sensors it is possible to set the input range also in F degrees; 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**

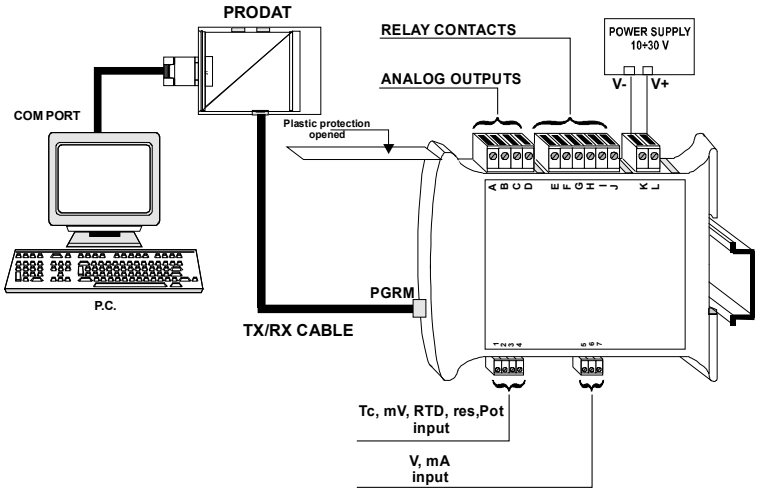
1) Open the plastic protection on the front of the enclosure.
2) Connect the PRODAT interface to the Personal Computer and to the device on the PGRM connector, as show below.
3) Open the PROSOFT configuration program.
4) Set the programming data *.
5) Send the programming data to the device *.

**- 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**

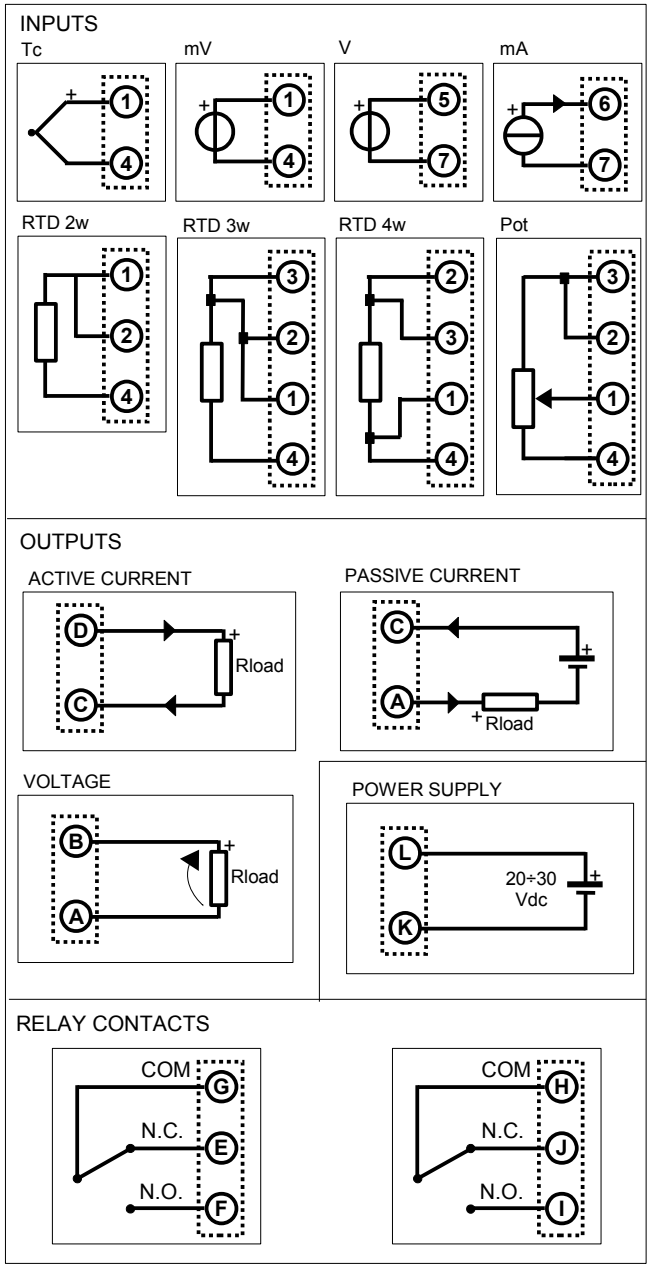
The DAT 4520 device is suitable for fitting to DIN rails in the vertical position.
For optimum operation and long life, follow the instrunctions above.

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.

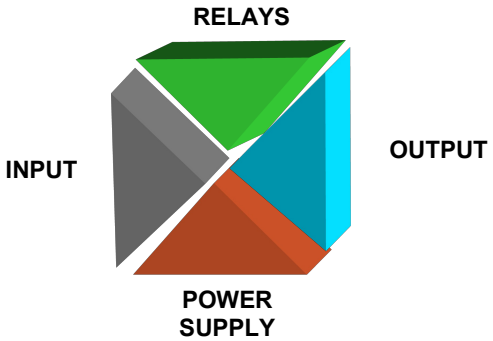
The overload conditions are the following:
- High supply voltage: >27Vdc
- Use of the auxiliary power supply (terminal D)

Make sure that sufficient air flow is provided for the device avoiding to place racewais 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...).

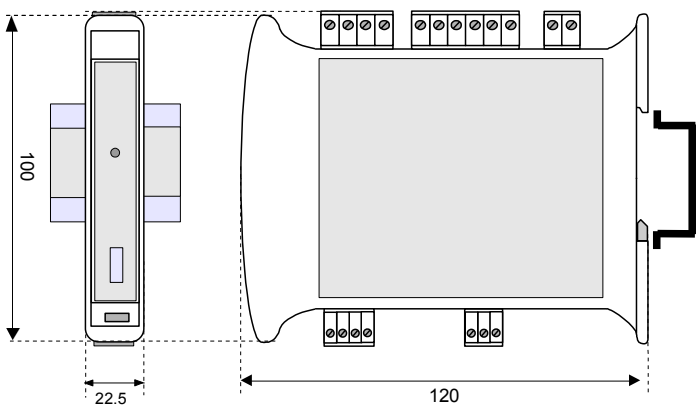
## WIRING




## ISOLATION STRUCTURE




## MECHANICAL DIMENSIONS (mm.)




**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