



FEATURES

- Configurable input for RTD, TC, mV, V, mA, Resistance and Potentiometer
- Galvanic isolation at 1500 Vac on the 3 ways
- Configurable output in current or voltage
- Damping function on output
- Selection enable / disable output (SEL) available on request
- Configurable by Personal Computer by cable CVPROG
- High accuracy
- On-field reconfigurable
- Device configurable via micro-USB without power supply
- LED of signalling for the state of correct power supply
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN50035



GENERAL DESCRIPTION

The converter DAT 4235 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. Moreover the DAT 4235 is 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. The device guarantees high accuracy and performances stability both in time and in temperature. On the front side of the device there is the led PWR to signal the correct state of the power supply.

The programming of the device can be performed also without power supply by means of the proper cable connected to the micro USB connector on the front side of the device. With cable connected, the led PWR will be lighted on signalling the connection to the USB port.

The programming of the DAT 4235 is made by a Personal Computer using the software **DATAPRO** or later versions, developed by DATEXEL, that runs under the operative system "Windows™". By use of it, 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.

For the device it is foreseen the damping function that allows to set a programmable filter up to 30 seconds to reduce eventual fast variations on the input signals. **The terminals of the current signal on input side must be only connected to active current loop.**

The input SEL is available on request and allows to enable / disable the output by the application of a voltage included between 4 and 30 Vdc.

The 1500 Vac isolation between input, power supply and output 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 12.5 mm thickness suitable for DIN rail mounting in compliance with EN-50022 and EN-50035 standards.

USER INSTRUCTIONS

The connection of power supply, input and output must be done as indicated in the section "Wiring".

It is possible to set the converter on field as indicated in the section "Programming"; this operation can be done both with device powered on and powered off.

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.				RTD > of ±0.1% f.s. or ±0.2°C	Supply voltage 18 .. 30 Vdc
J	-200°C	1200°C	50 °C	Low res. > of ±0.1% f.s. or ±0.15 Ω	Reverse polarity protection 60 Vdc max
K	-200°C	1370°C	50 °C	High res. > of ±0.2% f.s. or ±1 Ω	Current consumption
S	-50°C	1760°C	400 °C	mV, TC > of ±0.1% f.s. or ±18 uV	Current output 55 mA max.
R	-50°C	1760°C	400 °C	Volt > of ±0.1% f.s. or ± 2 mV	Voltage output 35 mA max.
B	400°C	1820°C	400 °C	mA > of ±0.1% f.s. or ± 6 uA	Output Load Resistance (Rload)
E	-200°C	1000°C	50 °C	Output calibration	Current output ≤ 600 Ω
T	-200°C	400°C	50 °C	Current ± 7 uA or ± 15 uA (2)	Voltage output ≥ 600 Ω
N	-200°C	1300°C	50 °C	Voltage ± 5 mV	Limitation current about 30 mA
RTD(*) 2,3,4 wires				Input impedance	ISOLATION
Pt100	-200°C	850°C	20°C	TC, mV ≥= 10 MΩ	On all the ways 1500 Vac, 50 Hz, 1 min.
Pt1000	-200°C	200°C	50°C	Volt ≥= 1 MΩ	ENVIRONMENTAL CONDITIONS
Ni100	-60°C	180°C	20°C	Current ~ 50 Ω	Operative Temperature -40°C .. +85°C
Ni1000	-60°C	150°C	50°C	Linearity (1)	Storage Temperature -40°C.. +85°C
Voltage				TC ± 0.2 % f.s.	Humidity (not condensed) 0 .. 90 %
mV	-400 mV	+400 mV	2 mV	RTD ± 0.1 % f.s.	Maximum Altitude 2000 m
mV	-100 mV	+700 mV	2 mV	Line resistance influence	Installation Indoor
Volt	- 10 V	+10 V	500 mV	TC, mV ≤=0.8 uV/Ohm	Category of installation II
Potentiometer				RTD 3 wires 0.05%/Ω (50 Ω balanced max.)	Pollution Degree 2
(Nominal value)	0 Ω	200 Ω	10%	RTD 4 wires 0.005%/Ω (100 Ω balanced max.)	MECHANICAL SPECIFICATIONS
	200 Ω	500 Ω	10%	RTD excitation current	Material Self-extinguish plastic
	0.5 KΩ	50 KΩ	10%	Typical 0.350 mA	IP Code IP20
RES. 2,3,4 wires				CJC comp. ± 0.5°C	Wiring wires with diameter 0.8±2.1 mm ² /AWG 14-18
Low	0 Ω	300 Ω	10 Ω	Thermal drift (1)	Tightening Torque 0.8 N m
High	0 Ω	2000 Ω	200 Ω	Full scale ± 0.01% / °C	Mounting in compliance with DIN rail standard EN-50022 and EN-50035
Current				CJC ± 0.01% / °C	Weight about 90 g.
mA	-20 mA	+20 mA	2 mA	Response time (10± 90%) about 50 ms	EMC (for industrial environments)
Output type	Min	Max	Min. span	Burn-out values	Immunity EN 61000-6-2
Direct current	-20 mA	20 mA	4 mA	Max. values about 21.5 mA or 10.5 Vdc	Emission EN 61000-6-4
Reverse current	20 mA	-20 mA	4 mA	Min. values about -21.5 mA or -10.5 Vdc	(1) referred to input Span (difference between max. and min. values)
Direct voltage	-10 V	10 V	1 V	Damping	(2) referred to the output ± 20 mA.
Reverse voltage	10 V	-10 V	1 V	Selectable from 0.1 to 30 seconds.	(*) 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
				Value 0: function not active.	

DAT 4235: CONFIGURATION AND CALIBRATION

Notice: before to execute the next operations, check that the drivers of the cable CVPROG in use have been previously installed in the Personal Computer.

- CONFIGURATION

- 1) Open the plastic label protection on front side of the device.
- 2) If not previously done install the drivers of the CVPROG cable.
- 3) Connect the two plugs of cable CVPROG to the Personal Computer (USB plug) and to the device (uUSB plug).
- 4) Run the software DATAPRO or later versions.
- 5) Set the parameters of configuration.
- 6) Program the device.

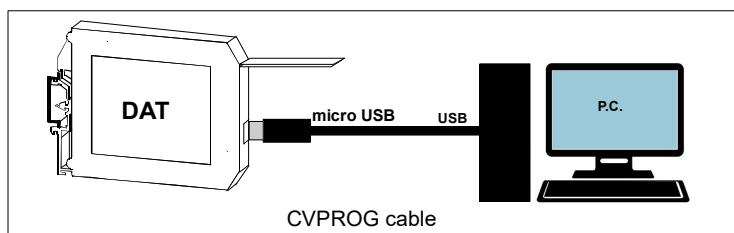
- CALIBRATION CONTROL

Notice: during this operation the device must be always powered.

With software 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 DAT 4235 provides on output the minimum setted value.
- 4) Set the calibrator at the maximum value.
- 5) Verify that the DAT 4235 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. The variation introduced from these regulators must be calculated as percentage of the input range.
- 7) Program the device with the new parameters.

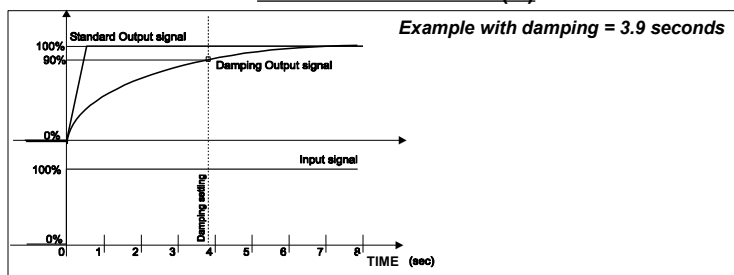
DAT4235 PROGRAMMING



LIGHT SIGNALLING

LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered / Usb connected
		OFF	Device not powered

DAMPING FUNCTION()**

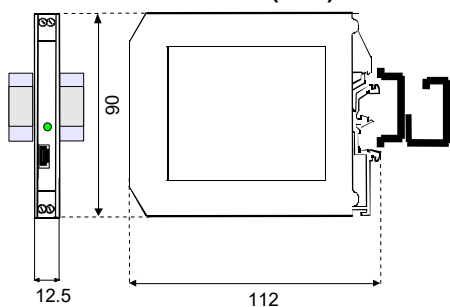


(**)For RTD input with span lower than 50°C (122°F) and for Thermocouple input with span lower than 100°C (212°F) the damping must be set as at least 0.5 s

ISOLATION STRUCTURE



DIMENSIONS (mm)



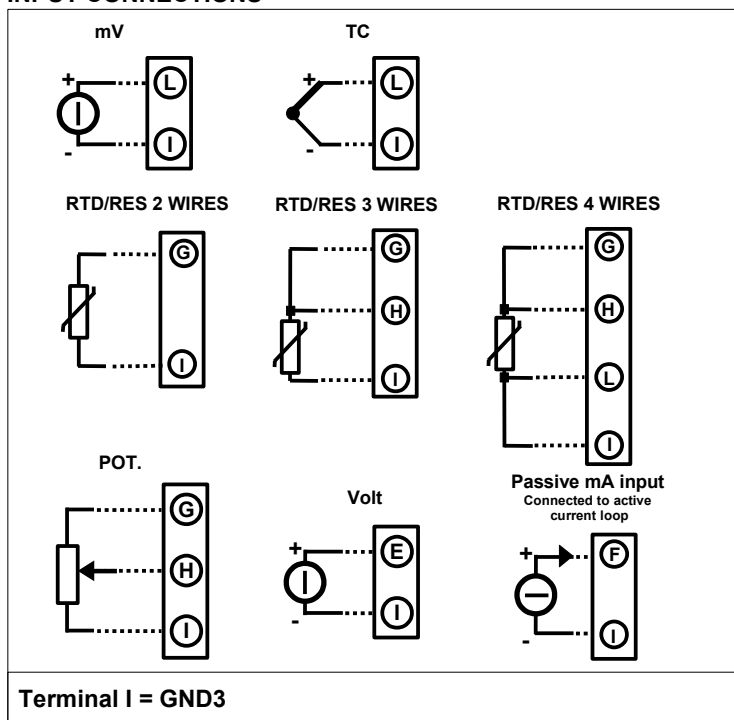
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city, the service for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

INSTALLATION INSTRUCTIONS

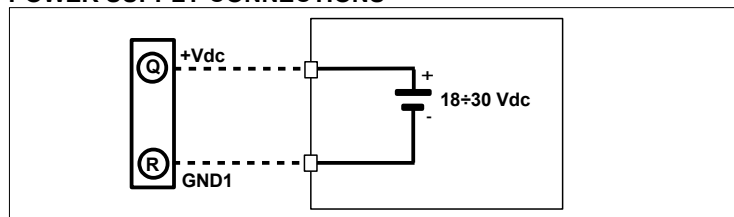
The device DAT 4235 is suitable for DIN rail mounting. It is necessary to install the device in a place without vibrations; avoid to routing conductors near power signal cables.

DAT4235: WIRING

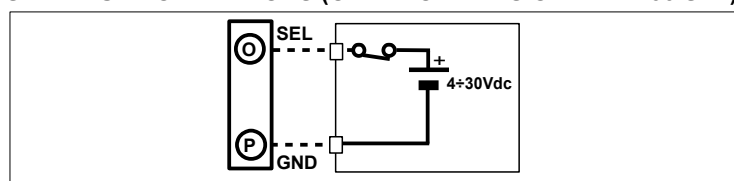
INPUT CONNECTIONS



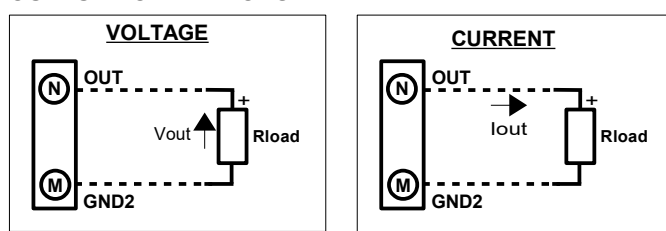
POWER SUPPLY CONNECTIONS



SEL INPUT CONNECTIONS (ONLY FOR VERSION DAT4235/SEL)



OUTPUT CONNECTIONS



Note: terminal P = M = GND2

HOW TO ORDER

The DAT4235 is provided as requested on the Customer's order. Refer to the section "Technical specification" to determine input and output ranges. In case of the configuration is not specified, the parameters must be set by the user.

ORDER CODE EXAMPLE:

DAT 4235 / Pt100 / 3 wires / 0 ÷ 200 °C / S.L. / 4 ÷ 20 mA / Burn-out up

Input type: Pt100, 3 wires, 0 ÷ 200 °C, S.L., 4 ÷ 20 mA, Burn-out up

Sensor options: RTD/RES:2,3,4 wires; TC: CJC int. or ext.

Input range: 0 ÷ 200 °C

Output range: 4 ÷ 20 mA

(*) Linearisation options:
 S.L.: standard linearisation.
 N.L.: no linearisation.
 C.L.: linearisation by step (Custom): specify input curve