



**FEATURES**

- Configurable input for RTD, TC, mV, V, mA, Resistance and Potentiometer
- Galvanic isolation at 2000 Vac
- Configurable output in current or voltage
- Configurable by Personal Computer
- High accuracy
- On-field reconfigurable
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN50035

**GENERAL DESCRIPTION**

The converter DAT 4135/SEL 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 4135/SEL 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.

The DAT4135/SEL is a special version of the standard device; using it, is possible to disable the output by the SEL digital command; this operation is made applying a positive voltage signal to the terminal O (SEL). The output of the device is setted in a high impedance state; this condition allows the connection in parallel of other similar devices, measuring the output signal of the desired device.

The programming of the DAT 4135/SEL 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 2000 Vac isolation between input and power supply/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. The DAT 4135/SEL is in compliance with the Directive 2004/108/EC on the Electromagnetic Compatibility. 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 converter DAT 4135/SEL must be powered by a direct voltage between 18 to 30 V applied to the terminals R(+Vdc) and Q (GND2) as shown in the section "Power supply connections". The output signal, in voltage or current, is provided to the terminals N(OUT) and M (GND2), as shown in the section "Output connections". The SEL input command (signal 4+30 Vdc) must be applied to the terminals O (SEL) and M (GND2) as shown in the section "SEL input connections"; if this function is not used, the terminal O will be not connected or connected to the terminal M (GND2); in these conditions the device remains in the measure condition. The input connections must be made as shown in the section "Input connections".

To configure, calibrate and install the converter, refer to sections " DAT4135/SEL: 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)	Response time (10÷ 90%)
<b>TC(*) CJC int./ext.</b>				RTD > of ±0.1% f.s. or ±0.2°C	about 400 ms
J	-200°C	1200°C	2 mV	Low res. > of ±0.1% f.s. or ±0.15 Ω	<b>Power supply</b> Power supply voltage 18 .. 30 Vdc Reverse polarity protection 60 Vdc max
K	-200°C	1370°C	2 mV	High res. > of ±0.2% f.s. or ±1 Ω	
S	-50°C	1760°C	2 mV	mV, TC > of ±0.1% f.s. or ±18 uV	<b>Isolation voltage</b> Input/Power supply-Output 2000 Vac,50 Hz, 1 min
R	-50°C	1760°C	2 mV	Volt > of ±0.1% f.s. or ± 2 mV	
B	400°C	1820°C	2 mV	mA > of ±0.1% f.s. or ± 6 uA	<b>Current consumption</b> Current output 40 mA max. Voltage output 20 mA max.
E	-200°C	1000°C	2 mV	<b>Output calibration</b> Current ± 7 uA Voltage ± 5 mV	
T	-200°C	400°C	2 mV	<b>Input impedance</b> TC, mV >= 10 MΩ Volt >= 1 MΩ Current ~ 50 Ω	<b>Output Load Resistance (Rload)</b> Current output </= 650 Ω Voltage output >/= 3.5 KΩ Limitation current about 25 mA
N	-200°C	1300°C	2 mV	<b>Linearity (1)</b> TC ± 0.2 % f.s. RTD ± 0.1 % f.s.	
<b>RTD(*) 2,3,4 wires</b>				<b>Line resistance influence</b> TC, mV <=0.8 uV/Ohm RTD 3 wires 0.05%/Ω (50 Ω balanced max.) RTD 4 wires 0.005%/Ω (100 Ω balanced max.)	<b>SEL input command</b> Disable output 4+30 Vdc Enable output 0 Vdc or not connected
Pt100	-200°C	850°C	50°C	<b>RTD excitation current</b> Typical 0.350 mA	
Pt1000	-200°C	200°C	50°C	<b>CJC comp.</b> ± 0.5°C	<b>Temperature &amp; humidity</b> Operative temperature -20°C .. +70°C Storage temperature -40°C .. +85°C Humidity (not condensed) 0 .. 90 %
Ni100	-60°C	180°C	50°C	<b>Thermal drift (1)</b> Full scale ± 0.01% / °C CJC ± 0.01% / °C	
Ni1000	-60°C	150°C	50°C	<b>Burn-out values</b> Max. values about 23 mA or 10.8 Vdc Min. values about 0 mA or 0 Vdc	<b>Housing</b> Material Self-extinguish plastic Mounting DIN rail in compliance with EN-50022 and EN-50035 Weight about 90 g.
<b>Voltage</b>				<b>EMC ( for industrial environments )</b> Immunity EN 61000-6-2 Emission EN 61000-6-4	
mV	-400 mV	+400 mV	2 mV	(1) referred to input Span (difference between max. and min. values)	
mV	-100 mV	+700 mV	2 mV		
Volt	- 10 V	+10 V	500 mV		
<b>Potentiometer</b> (Nominal value)					
	0 Ω	200 Ω	10%		
	200 Ω	500 Ω	10%		
	0.5 KΩ	50 KΩ	10%		
<b>RES. 2,3,4 wires</b>					
Low	0 Ω	300 Ω	10 Ω		
High	0 Ω	2000 Ω	200 Ω		
<b>Current</b>					
mA	-10 mA	+24 mA	2 mA		
<b>Output type</b>	<b>Min</b>	<b>Max</b>	<b>Min. span</b>		
Direct current	0 mA	20 mA	4 mA		
Reverse current	20 mA	0 mA	4 mA		
Direct voltage	0 V	10 V	1 V		
Reverse voltage	10 V	0 V	1 V		

(\*) 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)

**DAT 4135/SEL: CONFIGURATION AND CALIBRATION**

**Warning: during these operations the device must always be powered.**

**- CONFIGURATION**

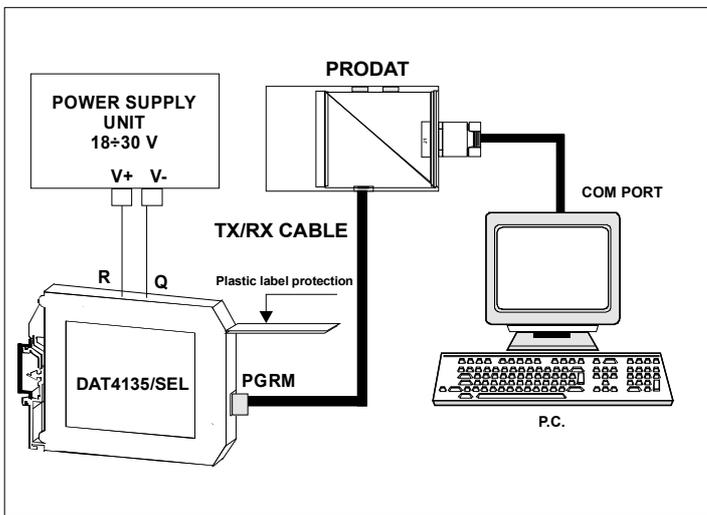
- 1) Power-on the DAT 4135/SEL by a direct voltage between  $18 \pm 30$  V .
- 2) Open the plastic label protection on front side of DAT 4135/SEL.
- 3) Connect the interface PRODAT to the Personal Computer and to device (connector PGRM - see section " DAT 4135/SEL: PROGRAMMING" ).
- 4) Run the software PROSOFT.
- 5) Set the parameters of configuration .
- 6) Program the device.

**- CALIBRATION CONTROL**

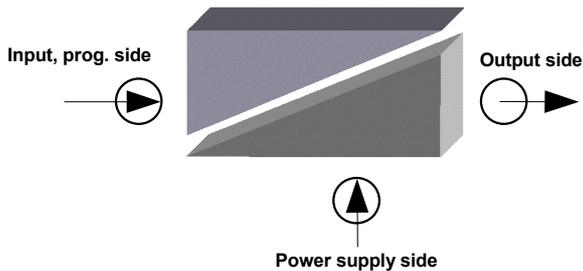
**With software PROSOFT running:**

- 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 DAT 4135/SEL provides on output the minimum setted value.
- 4) Set the calibrator at the maximum value.
- 5) Verify that the DAT 4135/SEL 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 .

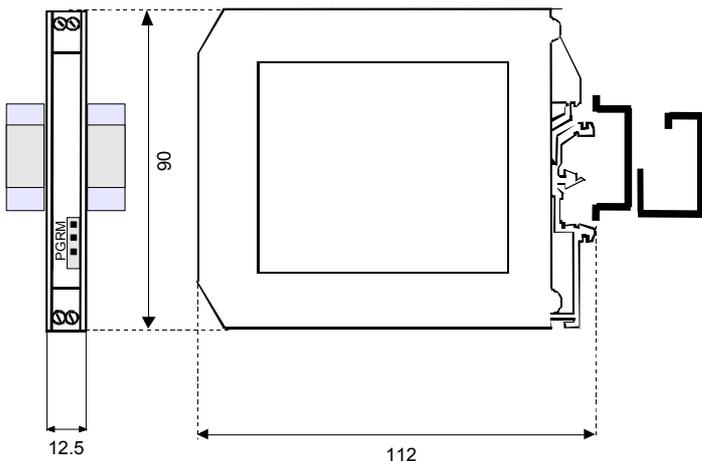
**DAT 4135/SEL: PROGRAMMING**



**ISOLATION STRUCTURE**



**DIMENSIONS (mm) & CONNECTOR PGRM**



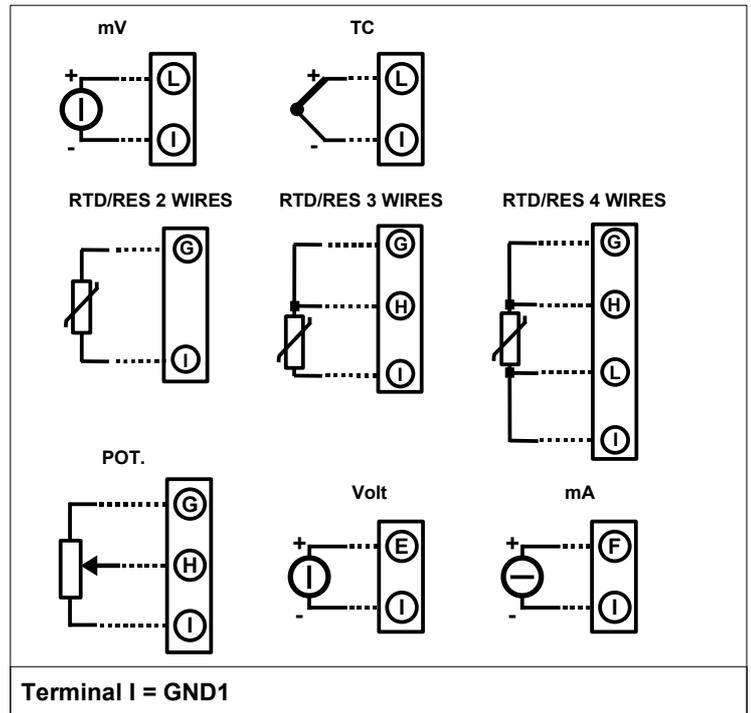
**INSTALLATION INSTRUCTIONS**

The device DAT 4135/SEL is suitable for DIN rail mounting.

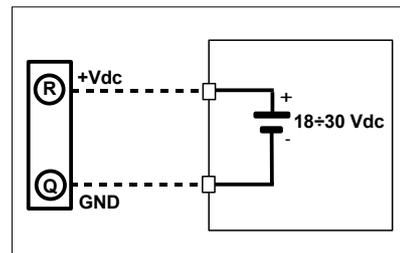
It is necessary to install the device in a place without vibrations; avoid to routing conductors near power signal cables .

**DAT 4135/SEL: CONNECTIONS**

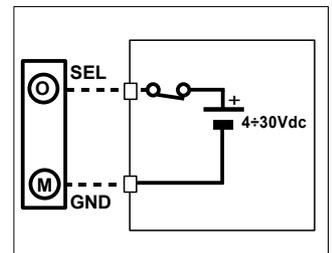
**INPUT CONNECTIONS**



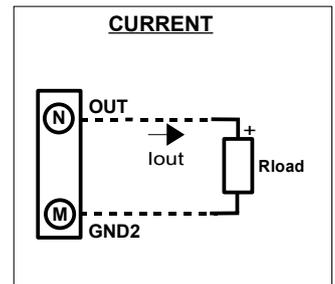
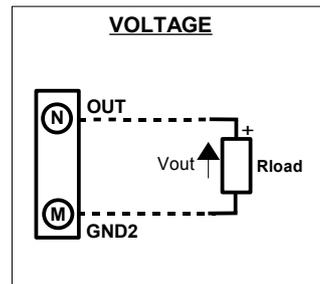
**POWER SUPPLY CONNECTIONS**



**SEL INPUT CONNECTIONS**



**OUTPUT CONNECTIONS**



**Note: terminal P = GND2**

**HOW TO ORDER**

The DAT4135/SEL 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:**

