

Isolated converter with Output 0÷10 V programmable by PC

DAT1135



FEATURES

- Configurable input for RTD, TC, mV, Resistance and Potentiometer
- Galvanic isolation at 1500 Vac
- Voltage output configurable from 0 up to 10 Vdc
- Configurable by Personal Computer
- Configurable by interface PRODAT05 or PRODAT06 without power supply connected
- High accuracy
- On-field reconfigurable
- EMC compliant – CE mark
- Suitable for DIN B in-head mounting
- Option for DIN rail mounting in compliance with EN 50022 (DIN RAIL Option)

GENERAL DESCRIPTION

The isolated converter DAT1135 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 voltage signal even coming from a potentiometer connected on its input. The DAT1135 is able to measure and linearise the standard thermocouples with internal cold junction compensation. The measured values are converted in a 0+10 V signal. The device guarantees high accuracy and performances stability both in time and in temperature. The programming of the DAT1135 is made by a Personal Computer using the software DATESOFT, developed by DATEXEL, that runs under the operative system "Windows™". By use of DATESOFT, it is possible to configure the device in order to interface it with the most used sensors. 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. 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. On the device is provided a function that allows the user to set a programmable filter up to 30 seconds to reduce eventual sudden variations of the input signal. The programming of the device can be executed without the power supply connected using the interface PRODAT05 or PRODAT06. The 1500 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. It is housed in a self-extinguish plastic enclosure suitable for DIN B in-head mounting. Moreover (by proper mounting kit) it is possible to mount the DAT1135 on DIN rail.

USER INSTRUCTIONS

The converter DAT1135 must be powered by a direct voltage from 18 up to 30V applied to the terminals +V and -V. The output signal 0+10 V is measurable between the terminals O(OUT) and -V. The input connections must be made as shown in the section "Input connections". To configure, calibrate and install the converter refer to sections "DAT1135: 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)	Output Load resistance – Rload	
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	Voltage output ≥ 5 KΩ	
	-200°C	1300°C	100°C	Low res. > of ±0.1% f.s. or ±0.15 Ω	Short-circuit current 26 mA max	
	0°C	1750°C	400°C	High res. > of ±0.2% f.s. or ±1 Ω	Response time (10÷ 90%) about 200 ms	
	0°C	1750°C	400°C	mV, TC > of ±0.1% f.s. or ±10 μV		
	0°C	1800°C	400°C	Output calibration Voltage ± 5 mV	Output filter programmability Selectable from 0.2 to 30 s.	
	-200°C	1000°C	100°C			
	-200°C	400°C	100°C	Input impedance TC, mV ≥ 10 MΩ	Power supply Power supply voltage 18 .. 30 Vdc Current consumption 10 mA max. Reverse polarity protection 60 Vdc max	
	-200°C	1300°C	100°C			
	RTD(*) 2,3,4 wires Pt100 Pt1000 Ni100 Ni1000	-200°C	850°C	50°C	Linearity (1) TC ± 0.2 % f.s. RTD ± 0.1 % f.s.	Isolation voltage Input – Pow. supply/Output 1500 Vac, 50 Hz, 1min.
		-200°C	185°C	30°C		
-60°C		180°C	50°C	Line resistance influence TC, mV ≤ 0.8 μV/Ohm RTD 3 wires 0.05%/Ω (50 Ω balanced max.) RTD 4 wires 0.005%/Ω (100 Ω balanced max.)	Temperature & humidity Operative temperature -40°C .. +85°C Storage temperature -40°C .. +85°C Humidity (not condensed) 0 .. 90 %	
-60°C		150°C	30°C			
Voltage mV mV mV		-100mV	+90mV	5 mV	RTD excitation current Typical 0.350 mA	Housing Material PC + ABS V0 Mounting DIN B head or bigger Weight about 50 g. Dimensions ∅ = 43 mm ; H = 24 mm
	-100mV	+200mV	10 mV	CJC comp. ± 0.5°C		
	-100mV	+800mV	20 mV			
Potentiometer (R nom. < 50 KΩ)	0%	100%	5%	Thermal drift (1) Full scale ± 0.01% / °C CJC ± 0.01% / °C	EMC (for industrial environments) Immunity EN 61000-6-2 Emission EN 61000-6-4	
	0 Ω	500 Ω	50 Ω			
RES. 2,3,4 wires	0 Ω	2000 Ω	500 Ω	Burn-out values Max. Fault value about 11.1 V Min. Fault value about -0.65 V		
	0 Ω	2000 Ω	500 Ω			
Output type	Min	Max	Min. span			
	Direct voltage 0 V	10 V	1 V			
Reverse voltage	10 V	0 V	1 V			

(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 degrees; to made the conversion use the formula: °F = (°C*9/5)+32)

DAT1135: CONFIGURATION AND CALIBRATION

- CONFIGURATION WITH POWER SUPPLY CONNECTED

- 1) Power-on the DAT1135 by a direct voltage between 18 ± 30 Vdc.
- 2) Remove the protection plastic cap.
- 3) Connect the interface PRODAT to the Personal Computer and to device. (see section "DAT1135: PROGRAMMING WITH POWER SUPPLY CONNECTED").
- 4) Run the software DATESOFT from version 2.7.
- 5) Set the parameters of configuration.
- 6) Program the device.

- CONFIGURATION BY PRODAT05 OR PRODAT06

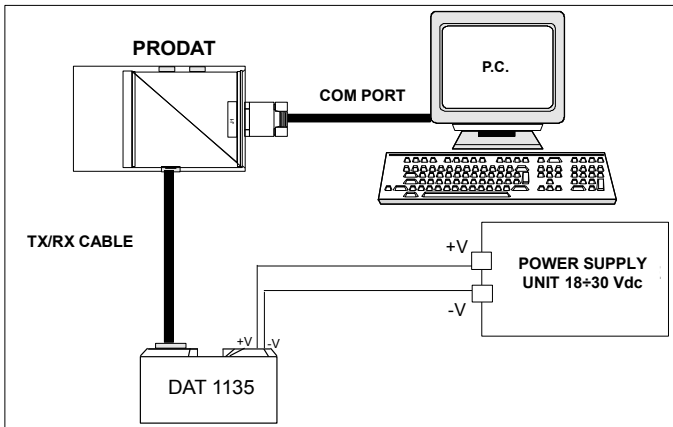
- 1) Remove the protection plastic cap.
- 2) Connect the interface PRODAT05 or PRODAT06 to the Personal Computer and to device keeping the polarized pin to the centre of the device (see section DAT1135: PROGRAMMING BY PRODAT).
- 3) Run the software DATESOFT from version 2.7.
- 4) Set the parameters of configuration.
- 5) Program the device.

- CALIBRATION CONTROL

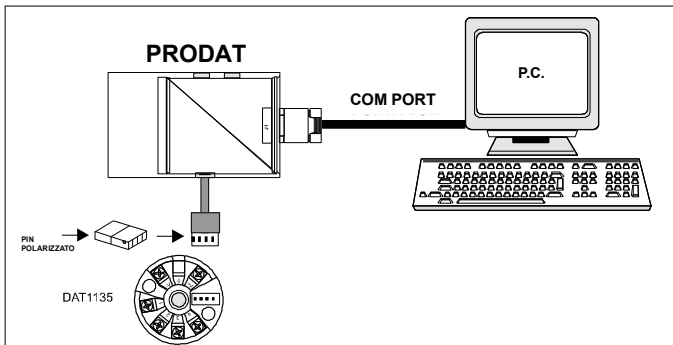
With software DATESOFT running and device powered:

- 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.

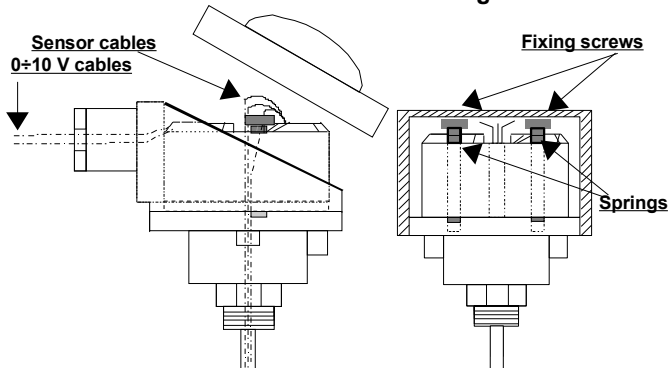
DAT1135: PROGRAMMING WITH POWER SUPPLY CONNECTED



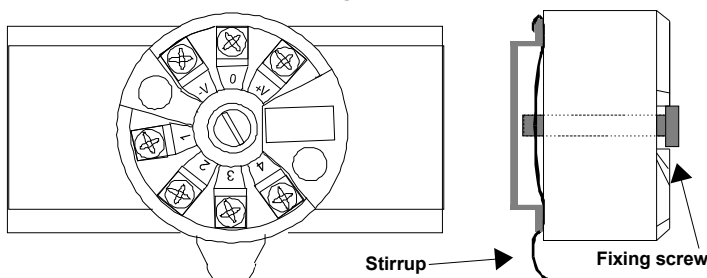
DAT1135: PROGRAMMING BY PRODAT



DIN B in-head mounting



DIN rail mounting (DIN RAIL Option)

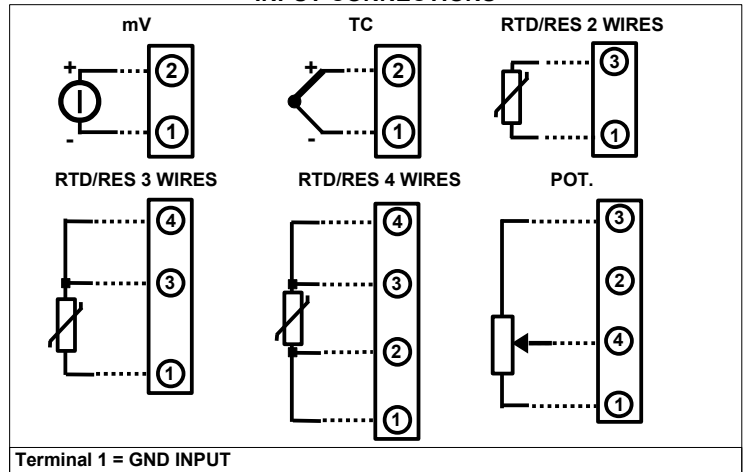


INSTALLATION INSTRUCTIONS

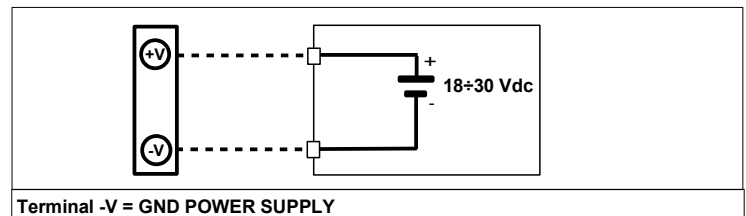
The device DAT1135 is suitable for direct DIN B in-head mounting. The converter must be fixed inside the probe by the proper kit. By apposite stirrup, provided on request, it is possible to mount the device on DIN rail in compliance with EN-50022. It is necessary to install the device in a place without vibrations; avoid to routing conductors near power signal cables.

DAT1135 CONNECTIONS

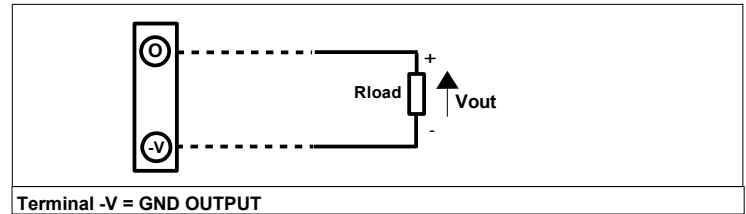
INPUT CONNECTIONS



POWER SUPPLY CONNECTIONS



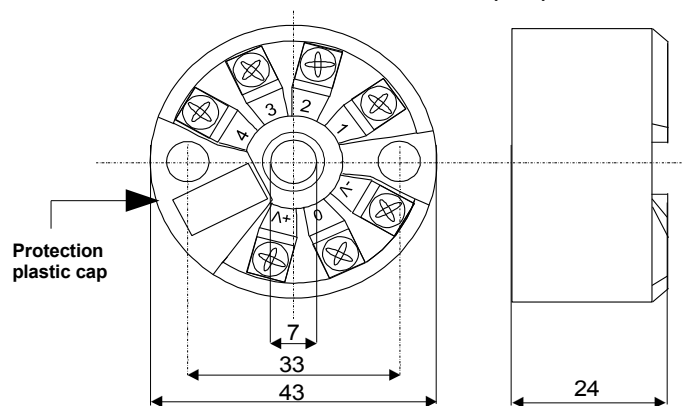
OUTPUT CONNECTIONS



ISOLATIONS STRUCTURE



MECHANICAL DIMENSIONS (mm)



HOW TO ORDER

The DAT1135 is provided as requested on the Customer's order. Refer to the section "Technical specification" to determine input and output ranges. The mounting kit for DIN rail is provided **only on request** with code DIN RAIL. In case of the configuration is not specified, the parameters must be set by the user.

ORDER CODE EXAMPLE:

