

FEATURES

- PROTECTION MODE: II 1 G Ex ia IIC T6,T5,T4 Ga certified in according to the Directive ATEX 94/9/EC
- Applicable in zones with explosion risk (ZONE 0)
- Configurable input for RTD, mV, Tc, Resistance and Potentiometer
- 4 ÷ 20 mA configurable output on current loop
- Configurable by Personal Computer, on-field reconfigurable
- High accuracy
- EMC compliant – CE mark
- Suitable for DIN B in-head mounting

Intrinsically safe two wire transmitter
**DAT 1015 IS
DAT 1015 IS / HT**

GENERAL DESCRIPTION

The transmitter DAT 1015 IS 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. Moreover the DAT 1015 IS is able to measure and linearise the standard thermocouples with internal cold junction compensation. The measured values are converted in a 4÷20 mA current signal . The device guarantees high accuracy and performances stability both in time and in temperature.

The programming of the DAT 1015 IS 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 transmitter 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 DAT 1015 IS is in compliance with the Directive 2004/108/EC on the Electromagnetic Compatibility.

It is housed in a self-extinguish plastic enclosure suitable for DIN B in-head mounting.

Ex Data

Output / supply	Input
Ui = 30 V	Uo = 6.2 V
Il = 100 mA	Io = 100 mA
Pi = 0.75 W	Po = 500 mW
Li = 0.1 mH	Lo = 3.6 mH
Ci = 10 nF	Co = 5 uF
T6 : -20 ÷ +55°C	
T5 : -20 ÷ +70°C	
T4 : -20 ÷ +85°C ('HT' vers.)	

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

Input type	Min	Max	Min. span	Input calibration (1)	Response time (10÷ 90%)	about 400 ms
TC(*) CJC int/ext. J K S R B E T N	-200°C -200°C -50°C -50°C 400°C -200°C -200°C -200°C	1200°C 1370°C 1760°C 1760°C 1820°C 1000°C 400°C 1300°C	2 mV 2 mV 2 mV 2 mV 2 mV 2 mV 2 mV 2 mV	RTD > of ±0.1% f.s. or ±0.2°C Low res. > of ±0.1% f.s. or ±0.15 Ω High res. > of ±0.2% f.s. or ±1 Ω mV, Tc > of ±0.1% f.s. or ±18 uV	Power supply	
RTD(*) 2,3,4 wires Pt100 Pt1000 Ni100 Ni1000	-200°C -200°C -60°C -60°C	850°C 200°C 180°C 150°C	50°C 50°C 50°C 50°C	Output calibration Current ± 7 uA	Power supply voltage	11 .. 30 Vdc
Voltage mV	-100mV	+700mV	2 mV	Input impedance mV, Tc >= 10 MΩ	Reverse polarity protection	60 Vdc max
Potentiometer (Nominal value)	0 Ω 200 Ω 0.5 KΩ	200 Ω 500 Ω 2 KΩ	10% 10% 10%	Linearity (1) Tc ± 0.2 % f.s. RTD ± 0.1 % f.s.	Load characteristic - Rload (maximum load value on current loop per power supply value)	
RES. 2,3,4 wires Low High	0 Ω 0 Ω	300 Ω 2000 Ω	10 Ω 200 Ω	Linearity influence mV, Tc <=0.8 uV/Ohm RTD 3 wires 0.05%/Ω (50 Ω balanced max.) RTD 4 wires 0.005%/Ω (100 Ω balanced max.)	Work Area	
RTD excitation current	Typical	0.350 mA		RTD excitation current	Operative temperature	-20°C .. +70°C
CJC comp.		± 0.5°C			'HT' vers:	-20°C .. +85°C
Thermal drift (1)	Full scale CJC	± 0.01% / °C ± 0.01% / °C			Storage temperature	-40°C .. +85°C
Burn-out values	Max. value Min. value	about 22.5 mA about 3.6 mA			Humidity (not condensed)	0 .. 90 %
Output type	Min	Max	Min. span		Housing	
Direct current Reverse current	4 mA 20 mA	20 mA 4 mA	4 mA 4 mA		Material	Self-extinguish plastic
					Mounting	DIN B head or bigger
					Weight	about 50 g.
					Dimensions	Ø = 43 mm ; H = 24 mm
					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 degrees; to made the conversion use the formula: °F = (°C*9/5)+32)

DAT 1015 IS: CONFIGURATION AND CALIBRATION

Warning: during these operations the device must always be powered by a safety barrier; to connect the interface PRODAT, use the protection cable CVPR-03.

- CONFIGURATION

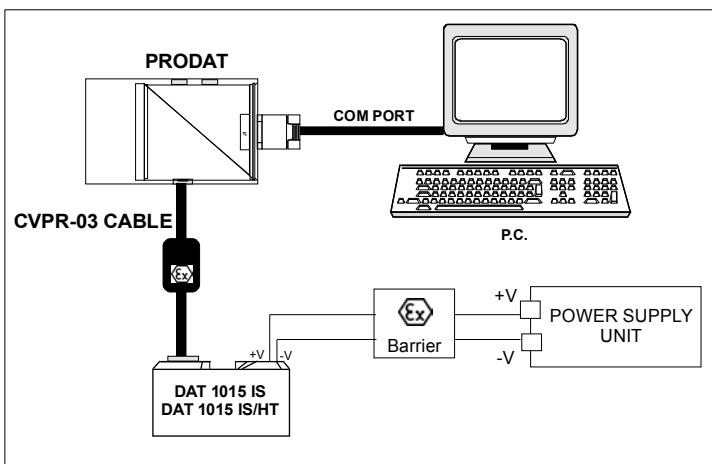
- 1) Power-on the DAT 1015 IS by a safety barrier (see Ex data).
- 2) Remove the protection plastic cap on DAT 1015 IS.
- 3) Connect the interface PRODAT to the Personal Computer and to device, using the protection cable CVPR-03. (see section "DAT 1015 IS: PROGRAMMING").
- 4) Run the software PROSOFT.
- 5) Set the parameters of configuration.
- 6) Program the device.

- CALIBRATION CONTROL

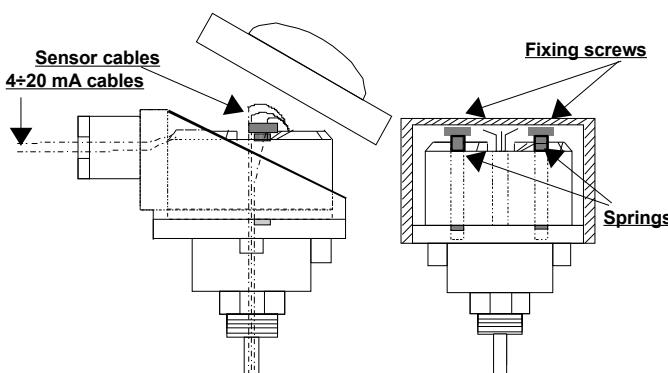
With software PROSOFT running:

- 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 1015 IS provides on output the minimum setted value.
- 4) Set the calibrator at the maximum value.
- 5) Verify that the DAT 1015 IS 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 .

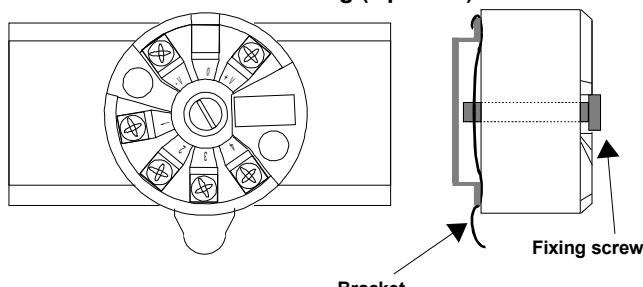
DAT 1015 IS: PROGRAMMING



DIN B in-head mounting



DIN rail mounting (Optional)



INSTALLATION INSTRUCTIONS

In order to guarantee the safety requirements, before to install the device, refer to the "Safety Instructions" provided with the device.

The transmitter must be mounted in order to guarantee to it an IP54 protection grade or more for external environments and an IP4X protection grade or more for internal environments or protected area.

The device DAT 1015 IS is suitable for direct DIN B in-head mounting. The transmitter must be fixed inside the probe by the proper kit. Using the bracket, provided on request, it is possible to install the device on the DIN 50022 rail.

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

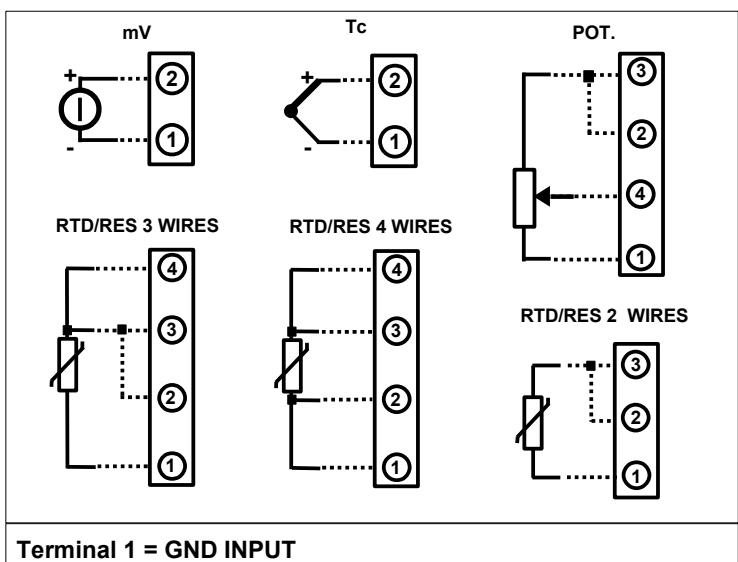
The protection enclosure type for DAT 1015 IS must be selected according to the installation Zone:

- **Zone 0:** enclosure exclusively in stainless;
- **Zone 1 or 2:** enclosure in aluminium or plastic; if plastic, apply on the enclosure the following warning:

"Electrostatic discharge: Clean only with a damp cloth or anti-static products."

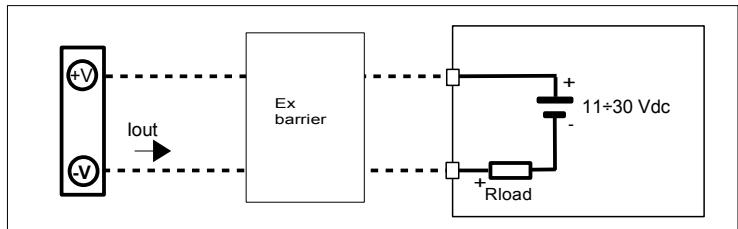
DAT 1015 IS: CONNECTIONS

INPUT CONNECTIONS

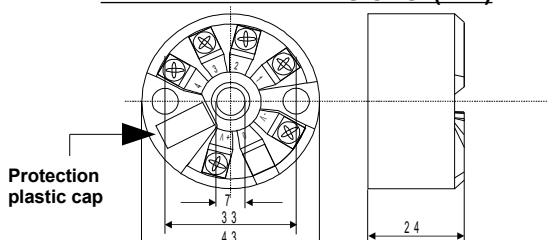


Terminal 1 = GND INPUT

OUTPUT/POWER SUPPLY CONNECTIONS



MECHANICAL DIMENSIONS (mm)



HOW TO ORDER

The DAT 1015 IS 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.

Please refer to the "Technical Specifications" section for available input and output ranges.

The DIN rail bracket must be requested with the code DIN RAIL.

ORDER CODE EXAMPLE:

DAT 1015 IS / Pt100 / 3 wires / 0 ÷ 200 °C / S.L. / 4 ÷ 20 mA / Burn-out up	High or low Out of scale
Input type	Output range
Sensor options : RTD/RES:2,3,4 wires Tc: CJC int. or ext	(* Linearisation options: S.L.: standard linearisation. N.L.: no linearisation. C.L.: linearisation by step (Custom): specify input curve
Input range	