OEM RTD Temperature Transmitter

DAT1010-OEM

FEATURES
- **Configurable input for RTD, mV and Resistance**
- **4 ÷ 20 mA configurable output on current loop with damping function**
- **Configurable by Personal Computer by PRODAT and cable CVPR_OEM**
- **High accuracy**
- **On-field reconfigurable**
- **EMC compliant – CE and UKCA mark**

GENERAL DESCRIPTION
The compact transmitter DAT1010-OEM is able to execute many functions such as : measure and linearisation of the temperature characteristic of RTDs sensors, conversion of a linear resistance variation and conversion of a voltage signal. 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 DAT1010-OEM is made by a Personal Computer using the software DATAPRO, developed by DATEXEL, that runs under the operative system "Windows™". By use of DATAPRO, 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.

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 .

On the device is provided the function "Damping" that allows the user to set a programmable filter up to 30 seconds to reduce eventual sudden variations of the input signal.
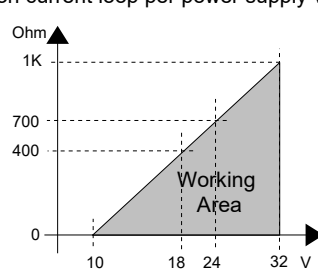
The transmitter is designed to be mounted inside a cylindrical probe sensor.

USER INSTRUCTIONS
The input connections must be made as shown in the sections "Output/Power supply connections" and "Input connections".

To configure, calibrate and install the transmitter refer to sections "Configuration DAT1010-OEM" and "Installation Instructions".

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

INPUT				OUTPUT				GENERAL SPECIFICATIONS	
Input type	Min	Max	Min Span	Output type	Min	Max	Min Span	Power supply voltage	10 .. 32 Vdc
Voltage				Direct current	4 mA	20 mA	4 mA	Reverse polarity protection	60 Vdc max
mV	-100 mV	+700 mV	2 mV	Reverse current	20 mA	4 mA	4 mA	**ENVIRONMENTAL CONDITIONS**	
RTD(*) 2,3,4 wires				**Output calibration**				Operative temperature	-40°C .. +85°C
Pt100	-200°C	850°C	50°C	Current		± 7 uA		Storage temperature	-40°C .. +85°C
Pt1000	-200°C	200°C	50°C					Humidity (not condensing)	0 .. 90 %
Ni100	-60°C	180°C	50°C	**Thermal drift (1)**				Maximum Altitude	2000 m slm
Ni1000	-60°C	150°C	50°C	Full scale		± 0.01% / °C		Installation	Sensor Probe
RES. 2,3,4 wires								Category of Installation	II
Low	0 Ω	300 Ω	10 Ω	**Burn-out values**				Pollution Degree	2
High	0 Ω	2000 Ω	200 Ω	Max. output value		about 20.5 mA		**MECHANICAL SPECIFICATIONS**	
				Min. output value		about 3.8 mA		Dimensions	L = 40 mm
				Max. fault value		about 21.6 mA			H = 15.8 mm
				Min. fault value		about 3.5 mA		Weight	about 5 g.

Damping time constant
Selectable — from 0.3 to 30 s.
Value 0: — function not active.

Response time (10÷ 90%) — about 400 ms

Load characteristic - Rload (maximum load value on current loop per power supply value)

CERTIFICATIONS
EMC (for the Industrial Environments)
Immunity — EN 61000-6-2
Emission — EN 61000-6-4
UKCA (ref S.I. 2016 N°1091)
Immunity — BS EN 61000-6-2
Emission — BS EN 61000-6-4

Input calibration (1)
RTD — the higher of ±0.1% f.s. & ±0.2°C
Res. Low — the higher of ±0.1% f.s. & ±0.15 Ω
Res. High — the higher of ±0.2% f.s. & ±1 Ω
mV — the higher of ±0.1% f.s. & ±10 uV
Input Impedance
mV — >= 10 MΩ
Linearity (1)
RTD — ± 0.1 % f.s.
Line resistance influence (1)
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)
RTD excitation current
Typical — 0.350 mA

(1) referred to input Span (difference between max. and min. values)
(*) For the temperature sensors it is possible to set the measurement also in °F

CONFIGURATION DAT1010OEM

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

- CONFIGURATION
1) Power-on the device by a direct voltage between 10 ÷ 32 V or (only to configure) by a 9 V battery .
2) Connect the interface PRODAT to the Personal Computer and to device. (see section " DAT1010OEM: PROGRAMMING").
3) Run the software DATAPRO.
4) Set the parameters of configuration .
5) Program the device.

- CALIBRATION CONTROL
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 value.
4) Set the calibrator at the maximum value.
5) Verify that the device provides on output the maximum value.
6) In case of regulation of value obtained in the step 3 and 5, use the ZERO and SPAN regulators of software DATAPRO.
The variation introduced from these regulators must be calculated as percentage of the input range .
7) Program the device with the new parameters .

DAT 1010OEM: PROGRAMMING
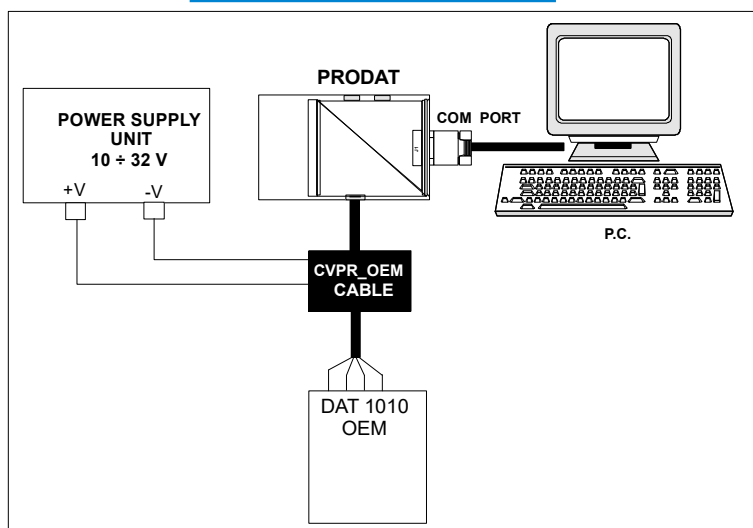
### TERMINAL ASSIGNMENT

TOP VIEW

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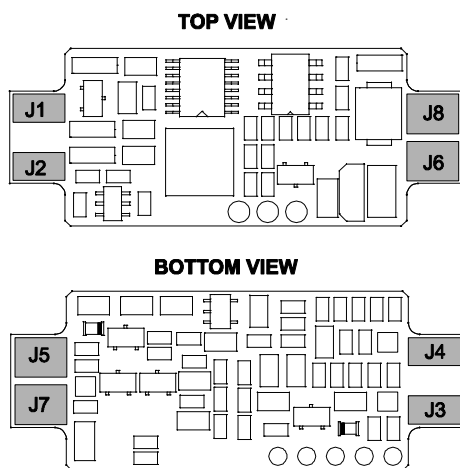
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste.
It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste.
For more information contact the proper office in the user's city , the service for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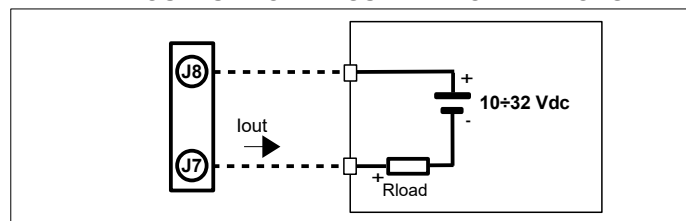
INSTALLATION INSTRUCTIONS

The device DAT1010-OEM is designed to be mounted inside the probe.
The pins must be soldered in function of the section "Terminal assignment "
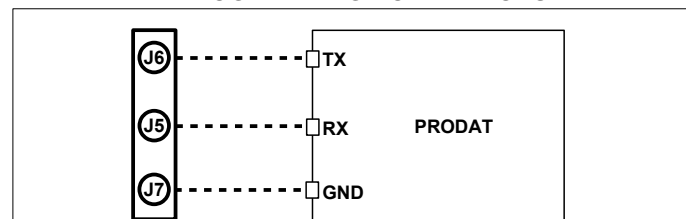
DAT1010-OEM WIRING

INPUT CONNECTIONS

Terminal J1 = GND INPUT
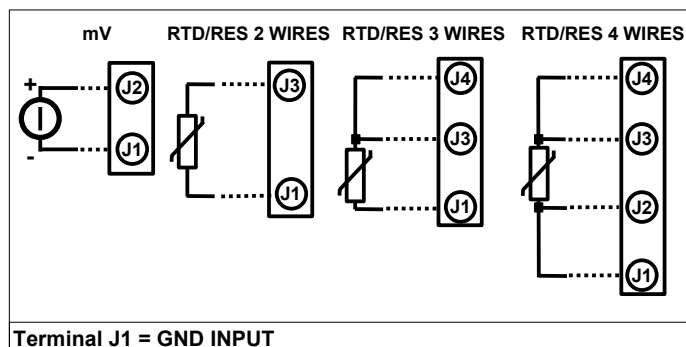
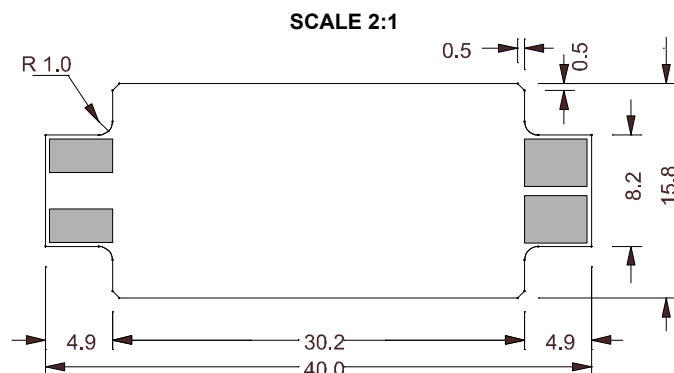#### OUTPUT/POWER SUPPLY CONNECTIONS

PROGRAMMING CONNECTIONS

NOTE: PRODAT connected involves an output current error.

Disconnect it to obtain a correct measure on output.

MECHANICAL DIMENSIONS (mm)

SCALE 2:1

HOW TO ORDER

The DAT1010-OEM 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:

DAT1010-OEM/ Pt100 / 3 wires / 0÷200 °C / S.L. / 4÷20 mA / Burn-out up

- Input type
- Sensor options : RTD/RES:2,3,4 wires
- Input range
- High or low Out of scale
- Output range
- (*) Linearisation options:
  S.L.: standard linearisation.
  N.L.: no linearisation.
  C.L.: linearisation by step (Custom): specify input curve