DATEXEL

OEM Temperature Transmitter
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UNI EN ISO 9001:2008

Two wire compact transmitter for RTD
Programmable by PC

DAT 1010-OEM

CE

FEATURES
- Configurable input for RTD, mV and Resistance
- 4 ÷ 20 mA configurable output on current loop
- Configurable by Personal Computer
- High accuracy
- On-field reconfigurable
- EMC compliant – CE 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 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.
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 DAT1010-OEM is in compliance with the Directive 2004/108/EC on the Electromagnetic Compatibility.
The transmitter is designed to be mounted inside a cylindrical probe sensor.
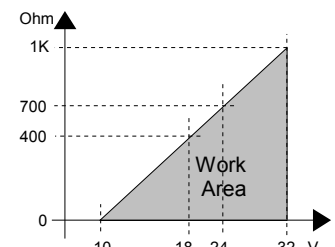
USER INSTRUCTIONS
The transmitter DAT1010-OEM must be powered by a direct voltage between 10 to 32 V and applied to the terminals J8 (+V) and J7 (-V).
The 4÷20 mA output signal is measurable in the power loop as shown in the section "Output/Power supply connections"; Rload is the input impedance of instruments on the current loop; to obtain a correct measure, the value of Rload will be calculated as function of the power supply value (see section "Technical specification – Load characteristic").
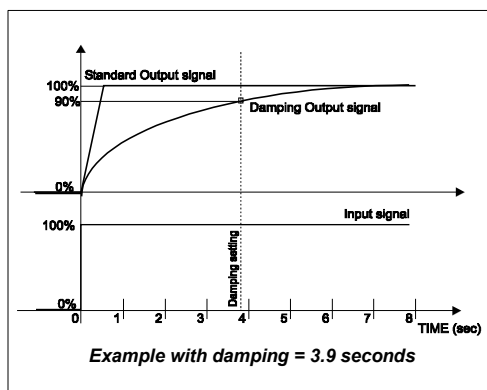The input connections must be made as shown in the section "Input connections".
To configure, calibrate and install the transmitter refer to sections " DAT1010-OEM: configuration and calibration" and "Installation Instructions".

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

Input type	Min	Max	Min. span
RTD(*) 2,3,4 wires			
Pt100	-200°C	850°C	50°C
Pt1000	-200°C	200°C	50°C
Ni100	-60°C	180°C	50°C
Ni1000	-60°C	150°C	50°C
Voltage			
mV	-100mV	+700mV	2 mV
RES. 2,3,4 wires			
Low	0 Ω	300 Ω	10 Ω
High	0 Ω	2000 Ω	200 Ω
Output type	**Min**	**Max**	**Min. span**
Direct current	4 mA	20 mA	4 mA
Reverse current	20 mA	4 mA	4 mA

DAMPING FUNCTION

Example with damping = 3.9 seconds

Input calibration (1)
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   > of ±0.1% f.s. or ±18 uV

Output calibration
Current   ± 7 uA

Input impedance
mV   >= 10 MΩ

Linearity (1)
RTD   ± 0.1 % f.s.

Line resistance influence
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.)

RTD excitation current
Typical   0.350 mA

Thermal drift (1)
Full scale   ± 0.02% / °C

Burn-out values
Max. output value about 20.5 mA
Min. output value   about 3.8 mA
Max. fault value   about 21.6 mA
Min. fault value   about 3.5 mA

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

(1) referred to input Span (difference between max. and min. values)

Response time (10÷ 90%)   about 400 ms

Power supply
Power supply voltage   10 .. 32 Vdc
Reverse polarity protection   60 Vdc max

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

Temperature & humidity
Operative temperature   -40°C .. +85°C
Storage temperature   -40°C .. +85°C
Humidity (not condensed)   0 .. 90 %

Size and weight

Dimensions   L = 40 mm ; H = 15.8 mm
Weight   about 5 g.

EMC (for industrial environments)
Immunity   EN 61000-6-2
Emission   EN 61000-6-4

(*) 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

## DAT1010OEM: CONFIGURATION AND CALIBRATION
Warning: during these operations the device must always be powered.
- CONFIGURATION
1) Power-on the DAT1010 by a direct voltage between 10 ÷ 32 V or (only to configure) by a 9 V battery .
3) Connect the interface PRODAT to the Personal Computer and to device. (see section " DAT1010OEM: PROGRAMMING").
4) Run the software PROSOFT.
5) Set the parameters of configuration .
6) 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 DAT1010OEM provides on output the minimum setted value.
4) Set the calibrator at the maximum value.
5) Verify that the DAT1010OEM 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 .
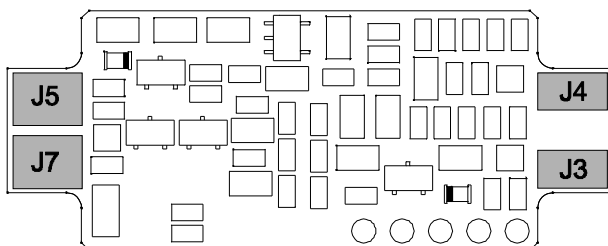7) Program the device with the new parameters .

DAT 1010OEM: PROGRAMMING
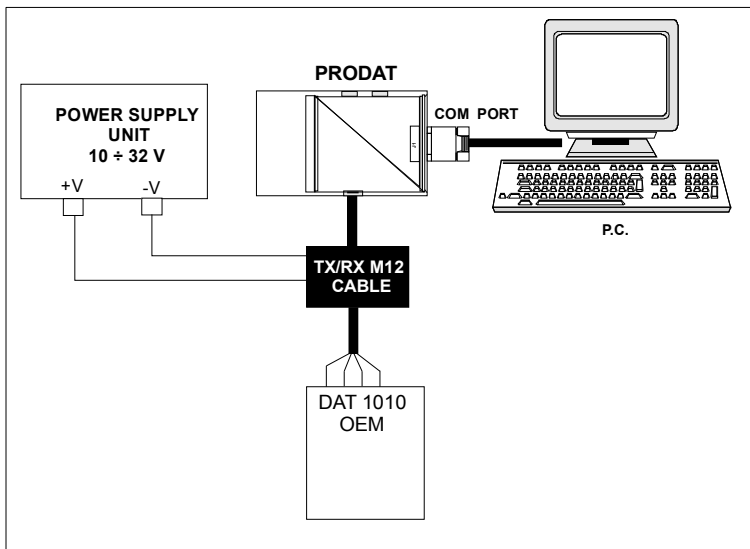
TERMINAL ASSIGNMENT

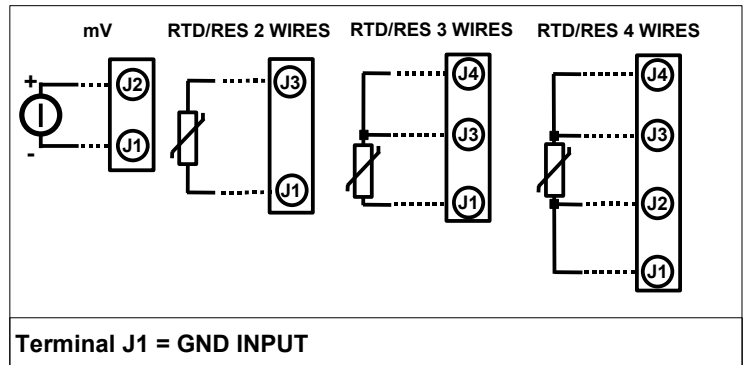#### TOP VIEW
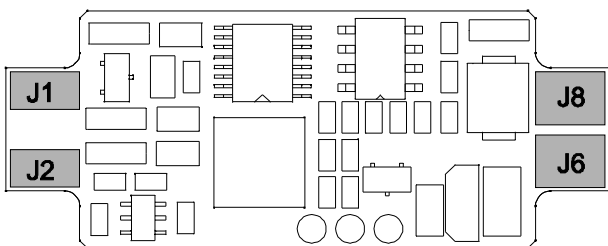
BOTTOM VIEW

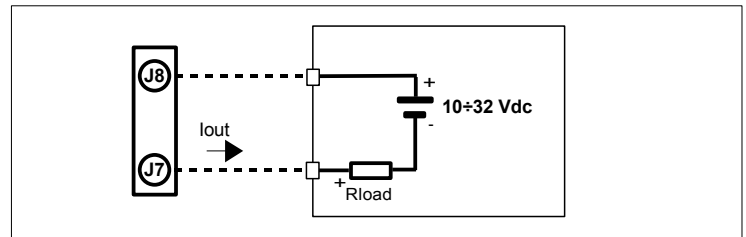

INSTALLATION INSTRUCTIONS
The device DAT1010-OEM is designed to be mounted inside the probe.
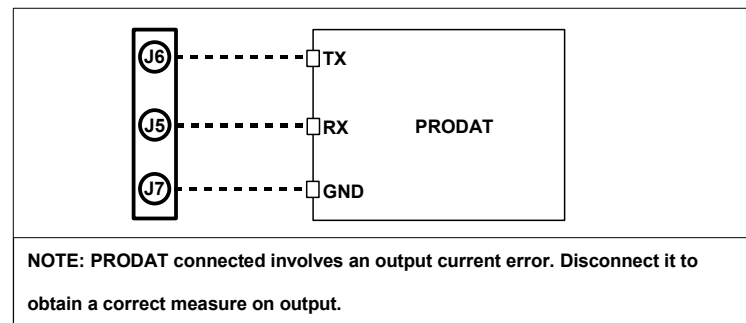The pins must be soldered in function of the section "Terminal assignment "

CONNECTIONS
INPUT CONNECTIONS

Terminal J1 = GND INPUT

OUTPUT/POWER SUPPLY CONNECTIONS

PROGRAMMING CONNECTIONS

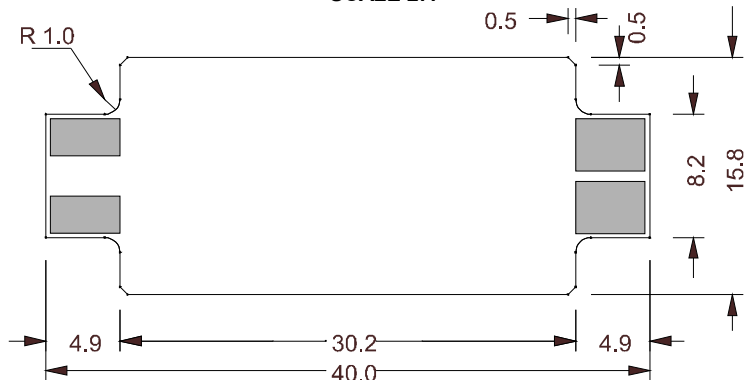**NOTE: PRODAT connected involves an output current error. Disconnect it to obtain a correct measure on output.**

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