DATEXEL

**Two wire
universal transmitter
programmable by PC**

DAT 1015

FEATURES

- **Configurable input for RTD, TC, mV, Resistance and Potentiometer**
- **Damping function on output**
- **4 ÷ 20 mA configurable output on current loop**
- **Configurable by Personal Computer by cable CVPROG**
- **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 transmitter DAT 1015 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 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 device is made by a Personal Computer using the software DATAPRO and the cable CVPROG, both developed and provided by DATEXEL.
By DATAPRO, that runs under the operative system "Windows™", 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.
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.
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 DAT 1015 on DIN rail.
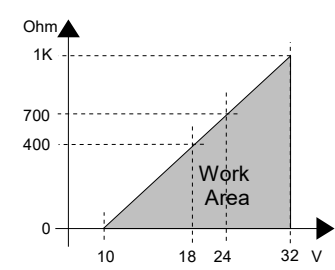
USER INSTRUCTIONS

The transmitter DAT 1015 must be powered by a direct voltage between 10 to 32 V and applied to the terminals 5 and 7.
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 " DAT1015: configuration and calibration" and "Installation Instructions".

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

Input type	Min	Max	Min. span
TC(*) CJC int./ext.			
J	-200°C	1200°C	100 °C
K	-200°C	1370°C	100 °C
S	-50°C	1760°C	400 °C
R	-50°C	1760°C	400 °C
B	400°C	1820°C	400 °C
E	-200°C	1000°C	100 °C
T	-200°C	400°C	100 °C
N	-200°C	1300°C	100 °C
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
Potentiometer (Nominal value)	0 Ω	200 Ω	10%
	200 Ω	500 Ω	10%
	0.5 KΩ	50 KΩ	10%
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

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, TC	> of ±0.1% f.s. or ±18 uV

Output calibration
Current   ± 7 uA

Input impedance
TC, mV   >= 10 MΩ

Linearity (1)
TC	± 0.2 % f.s.
RTD	± 0.1 % f.s.

Line resistance influence
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.)

RTD excitation current
Typical   0.350 mA

CJC comp.   ± 0.5°C

Thermal drift (1)
Full scale	± 0.01% / °C
CJC	± 0.01% / °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 %

Housing
Material	PC + ABSV0
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

(*) 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: CONFIGURATION

Notice: before to execute the next operations, check that the drivers of the cable CVPROG in use have been previously installed in the Personal Computer.

1) Remove the protection plastic cap on DAT 1015.
2) Connect the two plugs of cable CVPROG to the Personal Computer (USB plug) and to the device (uUSB plug) .
3) Run the software DATAPRO. Set the COM port assigned to the CVPROG cable by the Operative System.
4) Set the parameters of configuration .
5) Program the device.

CONFIGURATION BY CABLE CVPROG

⚠️ **Notice, during this operation don't power on the device .**

DAMPING FUNCTION

Example with damping = 3.9 seconds
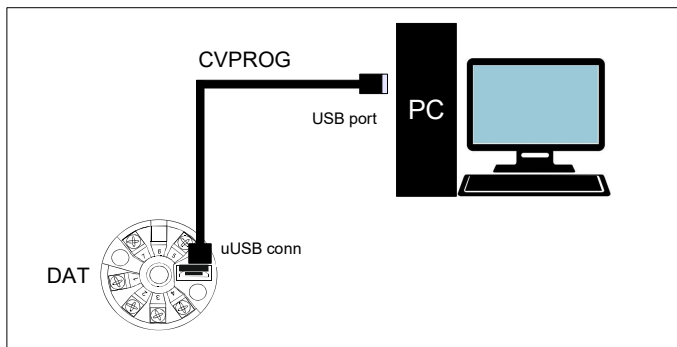
DIN B in-head mounting
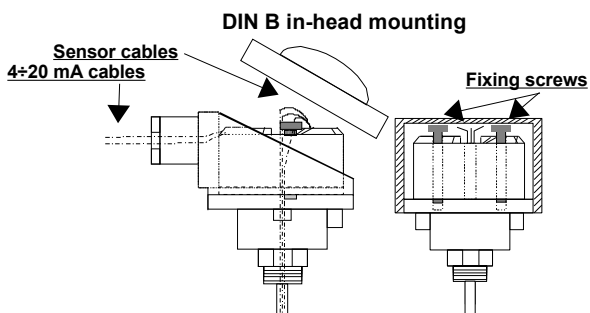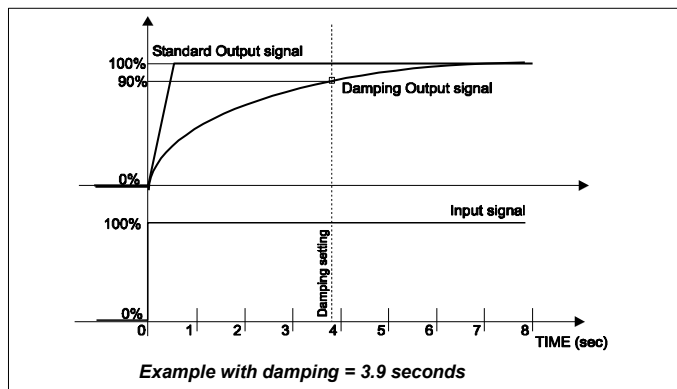
INSTALLATION INSTRUCTIONS

The device DAT 1015 is suitable for direct DIN B in-head mounting. The transmitter must be fixed inside the probe by the proper kit.
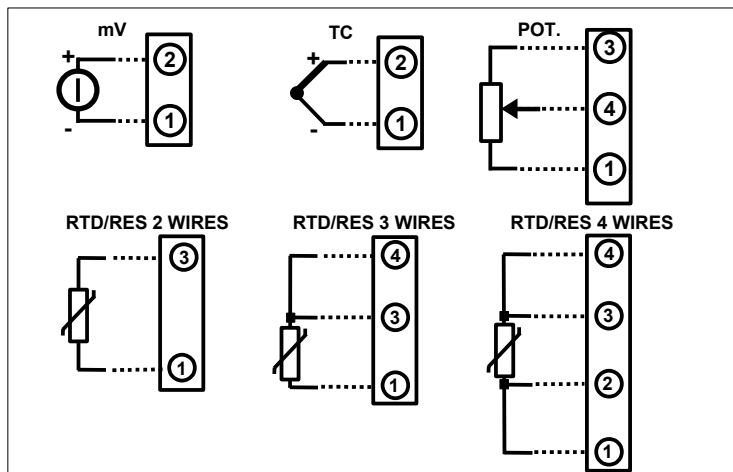
By apposite stirrup, provided on request, it is possible to mount the device on DIN rail in compliance with EN-50022. It is necessary to install the device in a place without vibrations; avoid to routing conductors near power signal cables .
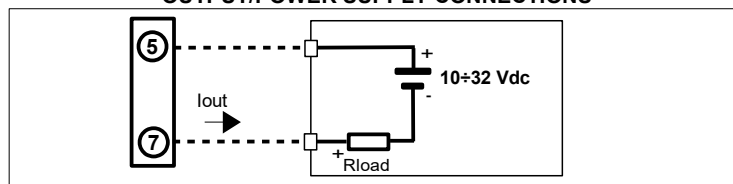
DIN rail mounting (DIN RAIL Option)
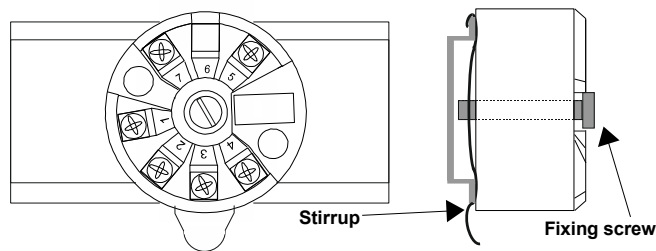
DAT1015: CONNECTIONS
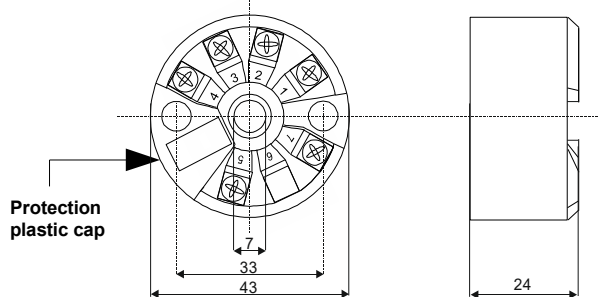
INPUT CONNECTIONS

Terminal 1 = GND INPUT

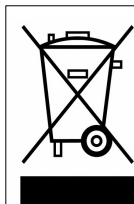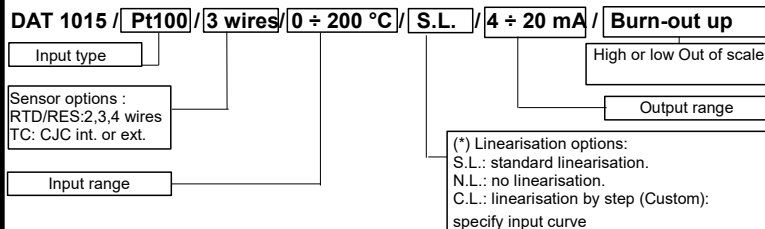### OUTPUT/POWER SUPPLY CONNECTIONS

MECHANICAL DIMENSIONS (mm)

HOW TO ORDER

The DAT1015 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:

DAT 1015 / Pt100 / 3 wires / 0 ÷ 200 °C / S.L. / 4 ÷ 20 mA / Burn-out up

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

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