DATEXEL

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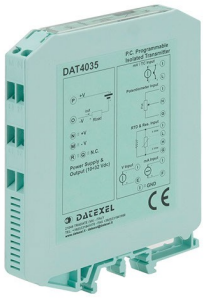
PC programmable Two wire isolated universal transmitter

DAT 4035



FEATURES

- **Configurable input for RTD, TC, mV, V, mA, Resistance and Potentiometer**
- **Galvanic isolation at 2000 Vac**
- **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 rail mounting in compliance with EN-50022 and EN50035**

GENERAL DESCRIPTION

The transmitter DAT 4035 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 standard active current signal , conversion of a voltage signal even coming from a potentiometer connected on its input. Moreover the DAT 4035 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 4035 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 terminals of the current signal on input side must be only connected to active current loop.
The 2000 Vac isolation between input and power supply/output eliminates the effects of all ground loops eventually existing and allows the use of the transmitter in heavy environmental conditions found in industrial applications.
It is housed in a plastic enclosure of 12.5 mm thickness suitable for DIN rail mounting in compliance with EN-50022 and EN-50035 standards.

USER INSTRUCTIONS

The DAT 4035 must be powered by a direct voltage between 10 to 32 V and applied to the terminals P(+V) and O (-V) or to the terminals N(+V) and M (-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 " DAT4035: 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	-400 mV	+400 mV	2 mV
mV	-100 mV	+700 mV	2 mV
Volt	- 10 V	+10 V	500 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
Current			
mA	-10 mA	+24 mA	2 mA
Output type	**Min**	**Max**	**Min. span**
Direct current	4 mA	20 mA	4 mA
Reverse current	20 mA	4 mA	4 mA

(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)

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
Volt	> of ±0.1% f.s. or ± 2 mV
mA	> of ±0.1% f.s. or ± 6 uA

Output calibration

Current	± 7 uA

Input impedance

TC, mV	>= 10 MΩ
Volt	>= 1 MΩ
Current	~ 50 Ω

Linearity (1)

TC	± 0.2 % f.s.
RTD	± 0.1 % f.s.

Line resistance influence

TC, mV	<=0.4 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

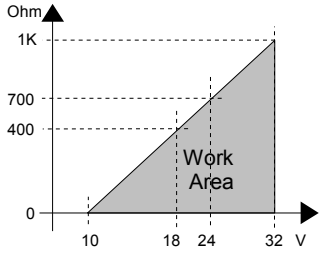
Max. value	about 22.5 mA
Min. value	about 3.6 mA

Response time (10÷ 90%) about 400 ms

POWER SUPPLY

Supply voltage	10 .. 32 Vdc
Reverse polarity protection	60 Vdc max

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



ISOLATION

Input – Power supply/Out 2000 Vac, 50 Hz,1 min.

ENVIRONMENTAL CONDITIONS

Operative Temperature	-40°C .. +85°C
Storage Temperature	-40°C.. +85°C
Humidity (not condensed)	0 .. 90 %
Maximum Altitude	2000 m
Installation	Indoor
Category of installation	II
Pollution Degree	2

MECHANICAL SPECIFICATIONS

Material	Self-extinguish plastic
IP Code	IP20
Wiring	wires with diameter 0.8÷2.1 mm² /AWG 14-18
Tightening Torque	0.8 N m
Mounting	in compliance with DIN rail standard EN-50022 and EN-50035
Weight	about 90 g.

EMC (for industrial environments)

Immunity	EN 61000-6-2
Emission	EN 61000-6-4

DAT 4035: CONFIGURATION AND CALIBRATION

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.

- CONFIGURATION

1) Open the plastic label protection on front side of the device.
2) If not previously done install the drivers of the CVPROG cable.
3) Connect the two plugs of cable CVPROG to the Personal Computer (USB plug) and to the device (uUSB plug) .
4) Power-on the device
5) Run the software PROSOFT or later versions.
6) Set the parameters of configuration .
7) Program the device.

- CALIBRATION CONTROL

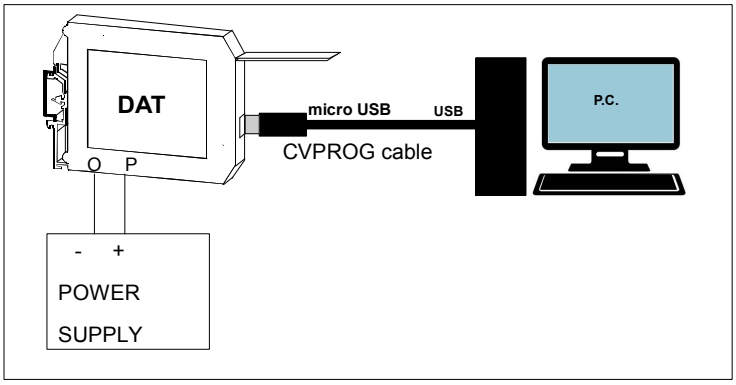
Notice: during this operation the device must be always powered.
With software PROSOFT running:

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 4035 provides on output the minimum setted value.
4) Set the calibrator at the maximum value.
5) Verify that the DAT 4035 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 3.05 or later versions.

The variation introduced from these regulators must be calculated as percentage of the input range .

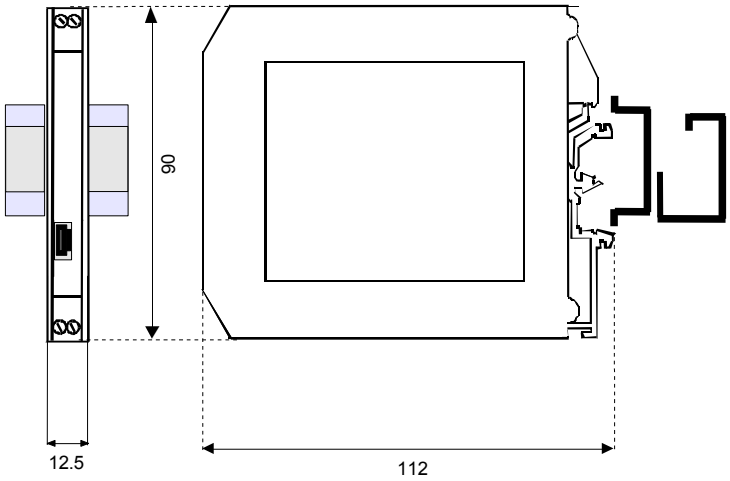
7) Program the device with the new parameters .

DAT4035 PROGRAMMING



ISOLATION STRUCTURE

DIMENSIONS (mm)

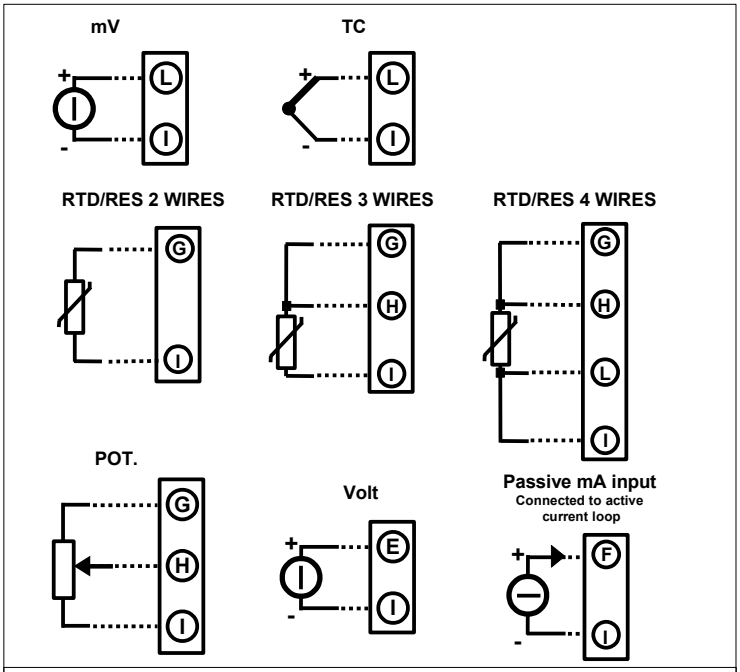


INSTALLATION INSTRUCTIONS

The device DAT 4035 is suitable for DIN rail mounting.
It is necessary to install the device in a place without vibrations; avoid to routing conductors near power signal cables .

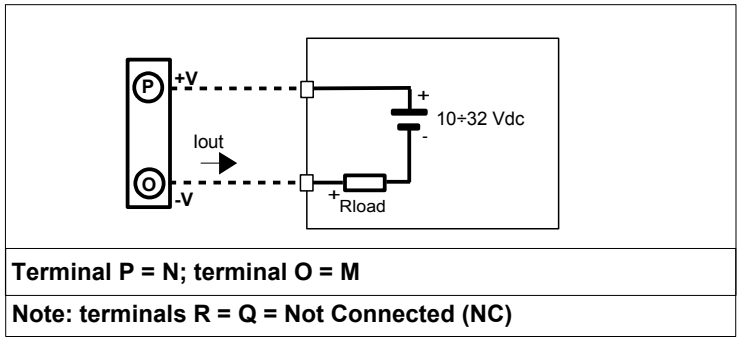
DAT4035: CONNECTIONS

INPUT CONNECTIONS



Terminal I = GND INPUT

OUTPUT / POWER SUPPLY CONNECTIONS



Terminal P = N; terminal O = M

Note: terminals R = Q = Not Connected (NC)

HOW TO ORDER

The DAT4035 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:

DAT 4035 / 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

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.