DATEXEL

UNI EN ISO 9001:2008

Via monte Nero, 40/B – 21049 TRADATE (VA) ITALY
Phone: +39 (0)331841070 Fax:+39 (0)331841950 - e-mail:datexel@datexel.it - www.datexel.it

Isolated two wire universal transmitter programmable by PC

DAT 1066



FEATURES

- **Configurable input for RTD, mV, TC, Resistance and Potentiometer**
- **Galvanic isolation at 1500 Vac**
- **4 ÷ 20 mA configurable output on current loop**
- **Configurable by Personal Computer**
- **Configurable by interface PRODAT05 or PRODAT06 without power loop connected**
- **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 isolated transmitter DAT 1066 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 1066 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 1066 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 .
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 programming of the device can be executed without the power loop connected using the interface PRODAT05 or PRODAT06.
The 1500 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 self-extinguish plastic enclosure suitable for DIN B in-head mounting.
Moreover (by proper mounting kit) it is possible to mount the DAT 1066 on DIN rail.

USER INSTRUCTIONS

The transmitter DAT 1066 must be powered by a direct voltage between 7 to 32 V and applied to the terminals +V and -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 " DAT1066: 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 ±10 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)

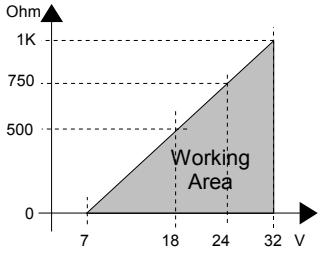
Response time (10÷ 90%) about 400 ms

Power supply

Power supply voltage	7 .. 32 Vdc
Reverse polarity protection	60 Vdc max

Isolation voltage
Input – Power supply 1500 Vac, 50 Hz,1 min.

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 + ABS V0
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 1066: CONFIGURATION AND CALIBRATION

- CONFIGURATION WITH POWER LOOP CONNECTED

1) Power-on the DAT1066 by a direct voltage between 7 ÷ 32 V.
2) Remove the protection plastic cap on DAT 1066.
3) Connect the interface PRODAT to the Personal Computer and to device. (see section " DAT1066: PROGRAMMING WITH POWER LOOP CONNECTED").
4) Run the software PROSOFT.
5) Set the parameters of configuration .
6) Program the device.

- CONFIGURATION BY PRODAT05 OR PRODAT06

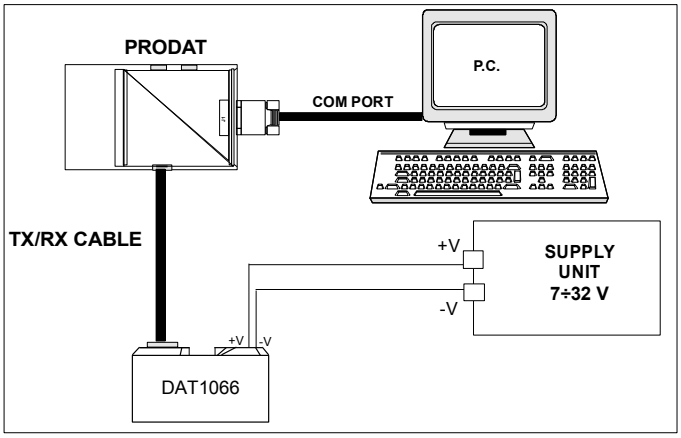
1) Remove the protection plastic cap on DAT 1066.
2) Connect the interface PRODAT to the Personal Computer and to device. (see section " DAT1066: PROGRAMMING BY PRODAT ").
3) Run the software PROSOFT.
4) Set the parameters of configuration .
5) Program the device.

- CALIBRATION CONTROL

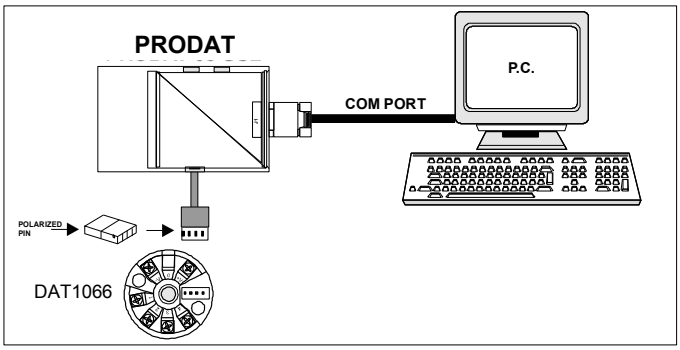
With software PROSOFT running:

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 1066 provides on output the minimum setted value.
4) Set the calibrator at the maximum value.
5) Verify that the DAT 1066 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 .

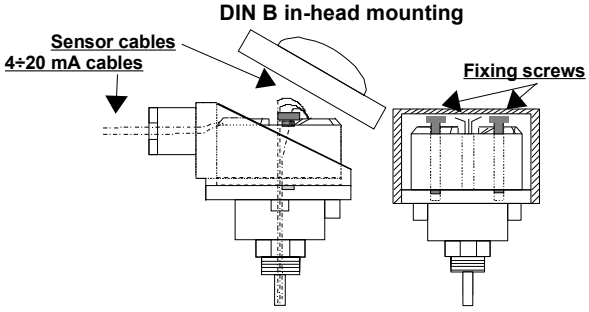
DAT1066: PROGRAMMING WITH POWER LOOP CONNECTED



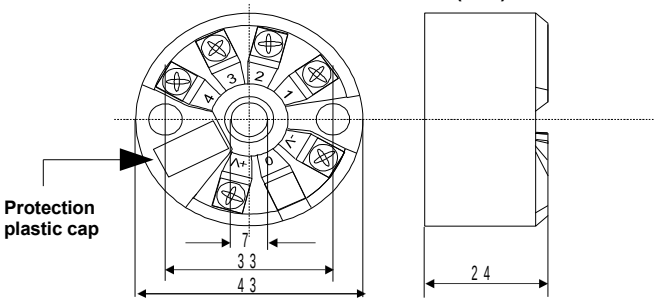
DAT1066: PROGRAMMING BY PRODAT



DIN B in-head mounting



MECHANICAL DIMENSIONS (mm)

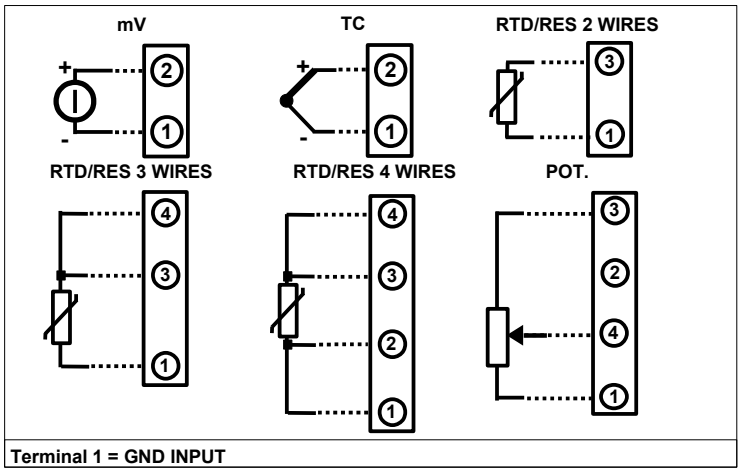


INSTALLATION INSTRUCTIONS

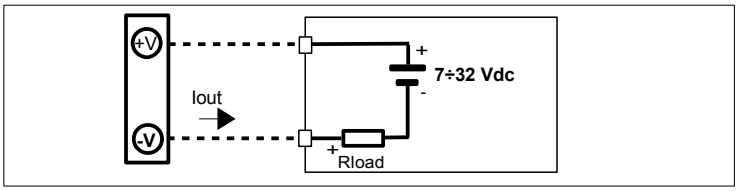
The device DAT 1066 is suitable for direct DIN B in-head mounting. The transmitter must be fixed inside the probe by the proper kit. By apposite stirrup, provided on request, it is possible to mount the device on DIN rail in compliance with EN-50022. It is necessary to install the device in a place without vibrations; avoid to routing conductors near power signal cables .

DAT1066: CONNECTIONS

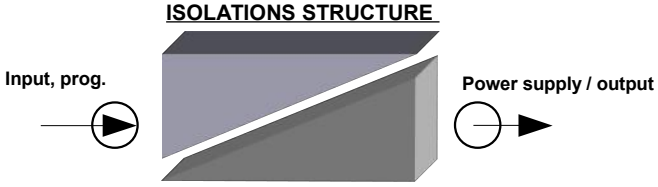
INPUT CONNECTIONS



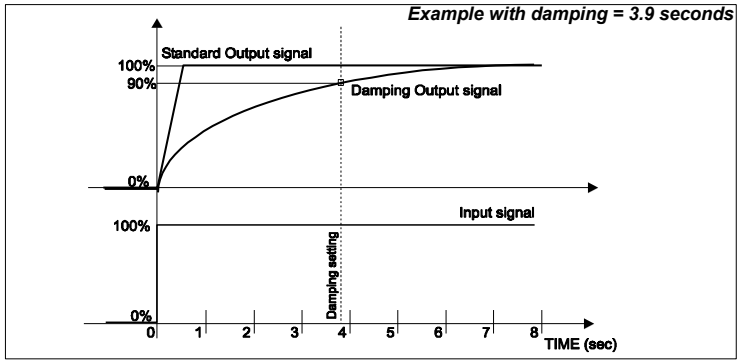
OUTPUT/POWER SUPPLY CONNECTIONS



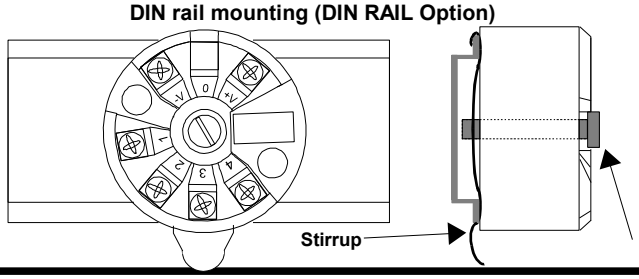
ISOLATIONS STRUCTURE



DAMPING FUNCTION



DIN rail mounting (DIN RAIL Option)



HOW TO ORDER

The DAT1066 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 1066 / 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

Datexel reserves its rights to modify totally or in part the characteristics of its products without notice at any time .