

#### **FEATURES**

**CENELEC EEX ia IIC T4,T5,T6 approvals**  
**Certified according to ATEX 94/9/EC:**  
**CESI Ex-02 ATEX 115**  
**Production Notification Certificate:**  
**CESI 02 ATEX 116Q**  
**Applicable in zones with explosion risk ( ZONE 0 )**  
**RTD, TC, mV, Resistor and Potentiometer input**  
**Configurable by Personal Computer**  
**High accuracy and performance's stability**  
**In compliance with EMC standards - CE Mark**  
**DIN B head type mounting**  
**Available as configured device on user specifications**

#### **APPLICATIONS**

**Temperature Monitoring and Control for:**

- **Process Controls**
- **Automation Systems**
- **Energy Sources Management**



#### **GENERAL INFORMATION**

##### **Introduction**

The DAT 1015 IS is a "smart" in -head transmitter capable to perform many functions such as: Linearized temperature measurement with thermocouple or RTD sensors; conversion of a linear resistance variation to a standard analog current of 4-20 mA; conversion of a voltage signal, even coming from a potentiometer connected to its input, to a 4-20 mA linearised signal. Its small mechanical dimension allows the mounting of a "smart" transmitter even in a little space.

##### **General**

The device is built around a microprocessor core which controls any device function in a continuous and reliable mode by an efficient program developed by DATEXEL. The unit can be configured to accept input from a wide range of sensors and electrical parameters. Thanks to its versatility of use, it greatly reduces the warehouse stock satisfying a wide variety of needs; thus it offers immediate and evident economical advantages. By means of its continuous self calibrating operation, controlled by the microprocessor, the device guarantees an excellent accuracy and very stable measurement, both in time and in the operating temperature. Moreover, with this operating mode, the device is not longer subject to the usual variations of the circuit parameters. The units are manufactured by using high quality and high precision electronic components which are assembled by the SMT technology; both of these elements are the indispensable tools to realize a very reliable device. The DAT 1015 IS, developed, manufactured and tested in strict accordance with the quality assurance standard ISO 9001 / EN 29001, is in compliance with the directive 89/336/CEE on the electromagnetic compatibility and the CE mark confirms the compliance of the product. The device is housed in a rough self extinguish plastic case suitable for mounting on DIN B head. A version of this device for mounting on DIN rails is also available.

##### **Input types**

The DAT 1015 IS is configurable for any of the following input types:

- **RTD** input for PT100, PT1000, Ni100 and Ni1000. The cable compensation is possible by 3 or 4 wire connection.
- **Thermocouple** input for 8 different types. The Cold Junction Compensation is selectable as internal or external.
- **Voltage** input up to -100/+700 mV.
- **Resistance** input for linear resistance measurement from 20 Ohm to 2 KOhm with 3 or 4 wire compensation.
- **Potentiometer** input from 20 Ohm to 2 KOhm.

##### **Output**

Programmable or standard 4 - 20 mA current output. Programmable Sensor Burnout as "Upscale" or "Downscale". Protection against polarity reversal is provided.

##### **Set-Up**

All the configurable functions and parameters are easily programmed by means of a PC with a software package, named PROSOFT, developed by DATEXEL. This "guide lines menu" type program operates under "Windows9x/NT™" on a PC which communicates, via an interface adapter, with the DAT 1015 IS. The adapter is connected through a cable to an apposite connector situated on the transmitter ( for more detailed information, see the figure in the next page).

**IMPORTANT:** On request the transmitter can be supplied configured for the desired sensor type and calibrated for the specific range as defined in the order ( see "HOW TO ORDER " ).

##### **Application advices**

In order to guarantee a correct and safe operation of the transmitter the following requirements must be strictly satisfied:

- 1)The power supply voltage (intrinsically safe) applied between -V e +V terminals must be included between 11 V and 30 V values .**
- 2)The maximum power supplied by the safety barrier must be not higher then 0.75 W.**

Moreover transmitter must be mounted so as to have environmental protection of IP54 grade in external and IP4x grade or better for the application in closed or protected area.

Configuration options for DAT 1015 IS Transmitter (use this checklist when ordering configured units):

INPUT

A	<b>RTD type:</b> <input type="radio"/> Pt100 <input type="radio"/> Ni100 <input type="radio"/> Pt1000 <input type="radio"/> Ni1000  Range:	<b>TC type:</b> <input type="radio"/> type J <input type="radio"/> type K <input type="radio"/> type S <input type="radio"/> type R <input type="radio"/> type B <input type="radio"/> type E <input type="radio"/> type T <input type="radio"/> type N  Range:	<b>Resistance range:</b> 20 Ohm to 2000 Ohm  Range:	<b>Potentiometer range:</b> <input type="radio"/> 20 Ohm to 200 Ohm <input type="radio"/> 200 Ohm to 500 Ohm <input type="radio"/> 0.5 Kohm to 2 Kohm ZERO: SPAN:	<b>Voltage input range:</b> -100 mV to 700 mV  Range:
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Linearization:

☐ Standard linearization RTD, TC

Linearization:

☐ No linearization  
☐ Customer linearization (specify):

C	<b>RTD options:</b> <input type="radio"/> 2-wire <input type="radio"/> 3-wire <input type="radio"/> 4-wire	<b>TC options:</b> <input type="radio"/> Intern. CJC <input type="radio"/> Extern. CJC	<b>Res. Options:</b> <input type="radio"/> 2-wire <input type="radio"/> 3-wire <input type="radio"/> 4-wire
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OUTPUT

D

**Output current range:**  
☐ 4 - 20 mA  
☐ 20 - 4 mA  
☐ Special (specify):

E

**Sensor Burnout:**  
☐ Upscale  
☐ Downscale

F

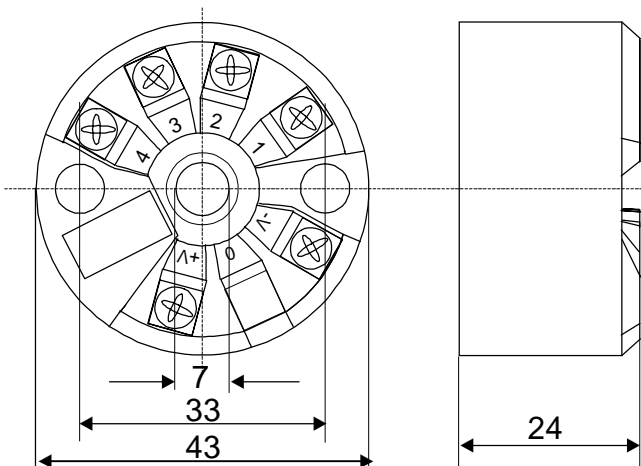
**Temperature Range:**  
☐ T6, T5  
☐ T6, T5, T4 ( HT )

HOW TO ORDER:

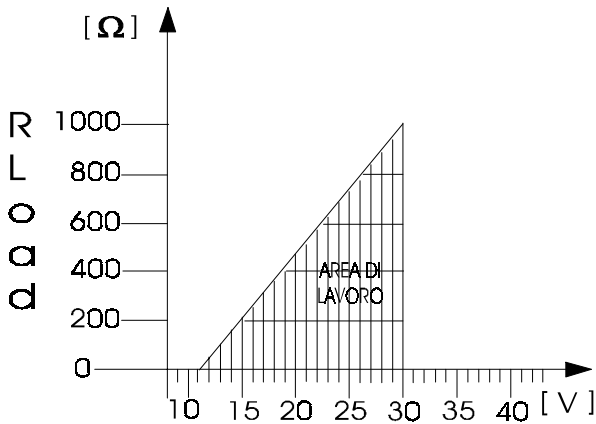
A-Not configured device: DAT 1015 IS  
Code: A B C D E F  
B-Configured device: DAT 1015 IS / Ni1000-0..250°C / S.L. / 3-wire / 20..4 / Downscale/ HT \*

(\*)That above is an example of how to order a transmitter for Ni1000 sensor, operating in the 0 to 250°C range, with standard linearization, connected to input in the 3-wire connection, with an output of 20 to 4 mA and with downscale sensor burnout.The "HT" option indicates the model which can be used whit an operating temperature of 85 °C ( T4 ).

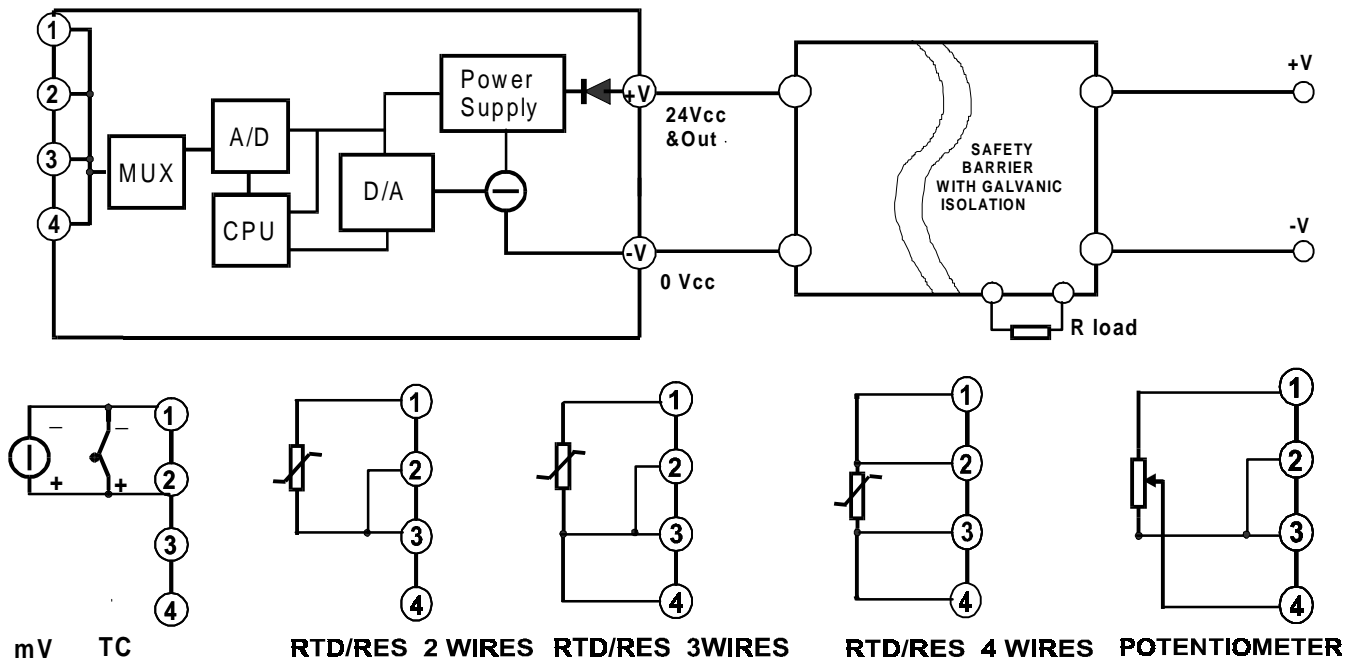
MECHANICAL DIMENSIONS ( mm. )



LOAD CHARACTERISTIC



## DAT 1015 IS: BLOCK AND WIRING DIAGRAM



### CONFIGURATION

This operation is carried out, using a Personal Computer with "Windows9x/NT™" operating system, by the software PROSOFT, specifically developed by DATEXEL, and by the interfacing adapter PRODAT-03 and protection cable CVPR-03.

The software includes a window-type program by which the operator is guided through the operations to be executed. Once the data are inputted, a few seconds is the time necessary to complete a configuration cycle.

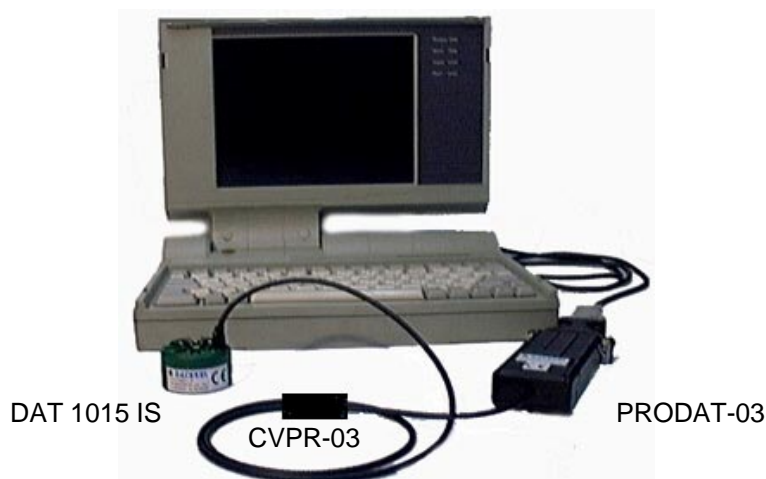
The parameters which is possible to configure are illustrated in the "Configuration options" in the page here at side. Furthermore it is possible, in the same phase, to program the "zero" and the "full scale" values. The calibration of the device is made automatically, with the maximum accuracy, without the need of any mechanical regulation. The configuration is normally made at the factory in conformity of the customer's order or, alternatively, in one of the most used configuration:

DAT 1015 IS / Pt100-0..200°C / S.L. / 3-wire / 4..20mA / Upscale.

The device can be reconfigured for any number of times. This operation is possible also when the device is operating in the plant or in the field because it is possible, by software, to interrupt momentarily the normal operation which restarts automatically after the configuration.

The complete configuration system (which includes: interface module PRODAT-03, protection cable CVPR-03 and software) is supplied from DATEXEL at convenient price.

**ATTENTION! The connection between transmitter and interface adapter PRODAT-03 must be made ONLY IN SAFE ZONE and using the protection cable CVPR-03.**



# **DAT 1015 IS Technical Specifications**

( typical @ 25°C and in the nominal conditions )

## **Input**

### **RTD**

Input	Min	Max	Span Min
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

### **TC**

Input	Min	Max	Span Min
J	-200°C	1200°C	2 mV
K	-200°C	1370°C	2 mV
S	-50°C	1760°C	2 mV
R	-50°C	1760°C	2 mV
B	400°C	1820°C	2 mV
E	-200°C	1000°C	2 mV
T	-200°C	400°C	2 mV
N	-200°C	1300°C	2 mV

### **Voltage**

Input	Min	Max	Span Min
mV	-100mV	+700mV	2 mV

### **Potentiometer**

Input	Min	Max	Span Min
Ohm	0÷20	0÷200	10%
Ohm	0÷200	0÷500	10%
KOhm	0÷0.50	0÷2.00	10%

### **Resistance**

Input	Min	Max	Span Min
Low	20 Ohm	300 Ohm	10 Ohm
High	300 Ohm	2000 Ohm	200 Ohm

### **Input impedance**

TC, mV  $\geq 10$  MOhm

### **Lead wire resistance influence**

TC, mV  $\leq 0.8$  uV/Ohm  
 RTD 3-wire 0.05%/Ohm (50 Ohm max.)(2)  
 RTD 4-wire 0.005%/Ohm (100 Ohm max.)

### **RTD excitation current**

Typical 0.350 mA

### **Ex data**

Output /Supply	Input
U <sub>i</sub> = 30V	U <sub>o</sub> = 6,2V
I <sub>i</sub> = 100mA	I <sub>o</sub> = 100mA
P <sub>i</sub> = 0,75W	P <sub>o</sub> = 500mW
L <sub>i</sub> = 0,1mH	L <sub>o</sub> = 3,6mH
C <sub>i</sub> = 10nF	C <sub>o</sub> = 5uF

## **Output**

### **Current Output**

Signal range (4 - 20 mA) or (20 - 4 mA)  
 Load Resistance (see Load Characteristic)

### **Accuracy**

**Linearity** TC  $\pm 0.2$  % (1)  
 RTD  $\pm 0.1$  % (1)

### **Calibration**

RTD The larger of  $\pm 0.1\%$ (1) and  $\pm 0,2$  °C  
 Res. Low The larger of  $\pm 0.1\%$ (1) and  $\pm 0,15$  Ohm  
 Res. High The larger of  $\pm 0.2\%$ (1) and  $\pm 1$  Ohm  
 mV, TC The larger of  $\pm 0.1\%$ (1) and  $\pm 10$  uV  
 Cold junction comp.  $\pm 0.5$  °C  
 Output current  $\pm 7$  uA

### **Thermal Drift**

Full Scale  $\pm 0.01\%$ /°C  
 Cold junction Compensation  $\pm 0.01\%$ /°C

### **Common data**

### **Supply**

Supply Voltage 11 - 30 Vdc  
 P<sub>max</sub> = 0.75 W  
 I<sub>max</sub> = 100 mA

Polarity protected 60 Vdc

### **Temperature & Humidity**

Operating temperature T4: -20 °C to +85 °C ('HT' vers. only)  
 T5: -20 °C to +70 °C  
 T6: -20 °C to +55 °C  
 Storage Temperature -40 °C to +100 °C  
 Humidity (non-condensig) 0 to 90%

### **EMC**

Emission EN50081-2  
 Immunity EN50082-2  
 RF Immunity tested for 10V/m up to 1000MHz

### **Response time**

Rise time(10 - 90 %) 0,4 sec. approx.

### **Housing**

Material Selfextinguish plastic  
 Mounting DINB head or bigger  
 Weight Approx. 50 g

Note:(1) of input span  
 (2) Balancing required

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