DATEXEL

UNI EN ISO 9001:2008

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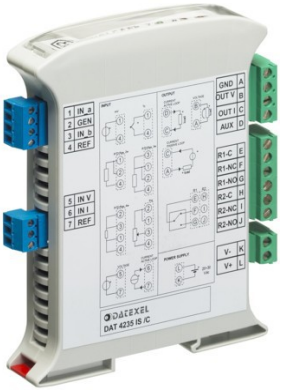
Signal Converter with Trip Amplifier

for hazardous area sensors

DAT 4235 IS



ATEX

CE

RoHS Compliant

lead-free

FEATURES

- **Protection mode:**
  II (1) G [Ex ia Ga] IIC
  II (1) D [Ex ia Da] IIIC
  according to the Directive ATEX 2014/34/EU
- **Tc, RTD, Res, mV, V, mA, Potentiometer configurable input**
- **0 to 10V , 0 to 20mA configurable output**
- **PC configurable**
- **2000 Vac galvanic isolation between input and output**
- **EMC compliance – CE mark**
- **Suitable for DIN rail mounting**

GENERAL DESCRIPTION

The DAT 4235 IS device is a galvanic isolated Intrinsically Safety Barrier, defined as “Associated Apparatus”
The input measures mV, V, mA or resistance signals, and can be directly connected to Thermocouple, RTD or potentiometer sensors.
The input signal is filtered, linearised, amplified and transferred to the output circuit, that converts it in a 0-10V range or 0-20mA range signal. Auxiliary power supply allows to supply the output current loop. Moreover, the device is able to control two trip alarm relay outputs.
DAT 4235 IS has a 3 way isolation: input (connected to hazardous area devices) is 2000 Vac isolated from power supply and output (connected to safe area); power supply and output are 1500 Vac isolated between them.
The “ **DAT 4235 IS /A** ” model converts the input signal in analogue output, the “ **DAT 4235 IS /B** ” model controls two output trip alarms. The “ **DAT 4235 IS /C** ” model is able both to converts the input signal in analogue output and to control two output trip alarms.
Configuration and configuration is made by means of personal computer through the PRODAT-IS interface.
The device must be powered with a voltage between 20 and 30 Vdc; the “PWR” green led turned on indicate the correct power supply; the "THR1" and "THR2" red led indicates the trip alarm status.
The device is housed in a rough self-extinguish plastic enclosure of 22.5 mm thickness suitable for DIN rail mounting .

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

Input type	Min	Max	Span min
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(*)			
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	2mV
V	0 V	10 V	500mV
Current			
mA	0 mA	20 mA	2 mA
Potentiometer			
(nominal value)	0 Ω	200 Ω	10%
	200 Ω	500 Ω	10%
	0.5 KΩ	2 KΩ	10%
Resistance			
Ohm	0 Ω	300 Ω	10 Ω
KOhm	0 Ω	2000 Ω	200 Ω
Output type	**Min**	**Max**	**Span min**
Voltage	0 V	10 V	1 V
Current	0 mA	20 mA	4 mA

Input Calibration

RTD	> of ±0.1% fs or ±0.2°C
Res. Ohm	> of ±0.1% fs or ±0.15 Ω
Res. KOhm	> of ±0.2% fs or ±1 Ω
mV, Tc	> of ±0.1% fs or ±10 uV
V	> of ±0.1% fs or ±2 mV
mA	> of ±0.1% fs or ±6 uA

Output Calibration

Current	± 7 uA
Voltage	± 10 mV

Output Load Resistance

Current	< 650 Ω
Voltage	> 4.7 KΩ

Input Impedance

Tc, mV	>= 10 MΩ
V	>= 1 MΩ
mA	~ 50 Ω

Linearity

Tc	± 0.2 %fs
RTD	± 0.1 %fs

Lead wire resistance influence

Tc, mV	<=0.8 uV/Ohm
RTD 3-wires	0.05%/Ω (50 Ω max balanced)
RTD 4-wires	0.005%/Ω (100 Ω max balanced)

Thermal drift

Full Scale	± 0.01%/°C
CJC	± 0.01%/°C

RTD excitation current

Typical	0.350 mA

CJC Comp. ± 0.5°C

Response time ~ 0.4 sec.

Trip alarms

Output type	n° 2 SPDT Relays
Contact rating	2A , 250 Vac
	2A , 30 Vdc
Load	resistive
Minimum load	5Vdc, 10mA
Max Voltage	250 Vac (50/60 Hz)
	110 Vdc
Isolation	coil-to-contacts: 2000Vac
	between contacts: 1000Vac

Power Supply

Supply Voltage	20 ÷ 30 Vdc
Polarity inverted protection	60 Vdc max

Isolation

Input/Output	2000 Vac, 50 Hz, 1min.
Input/Supply	2000 Vac, 50 Hz, 1min.
Supply/Output	1500 Vac, 50 Hz, 1min.

Temperature & Humidity

Operating Temperature	-20°C .. +60°C
Humidity (non condensing)	0 .. 90 %

Housing

Material	Self-extinguish plastic
Mounting	DIN Rail
Weight	~ 150 g.
Dimensions (mm) :	120 x 100 x 22.5

EMC (for industrial environments)

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

Ex Data:

Terminals A-B-C-D; E-F-G-H-I-J; K-L : Um = 250 V

Terminals 1-2-3-4-5-6-7 :	Terminals 5-6-7:
Uo = 7.8 V	Ui = 30 V
Io = 32 mA	Ii = 100 mA
Po = 140 mW	Pi = 0.75 W
Lo = 20 mH	Li = ~ 0 mH
Co = 2 uF	Ci = 24 nF

Ta : -20 ÷ +60 °C

(*) 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

CONFIGURATION & CALIBRATION

Note: during these phase the device must be always powered.

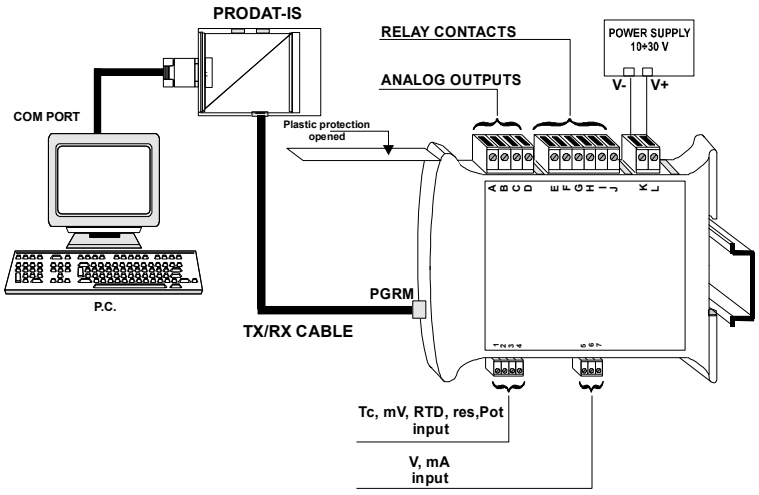
- CONFIGURATION

1) Open the plastic protection on the front of the enclosure.
2) Connect the PRODAT-IS interface to the Personal Computer and to the device on the PGRM connector, as show below.
3) Open the PROSOFT configuration program.
4) Set the programming data (refer to the Prosoft user guide.).
5) Send the programming data to the device (refer to the Prosoft user guide.).

- 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 device provides on output the minimum setted value.
4) Set the calibrator at the maximum value.
5) Verify that the device 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 (refer to the Prosoft user guide.) .



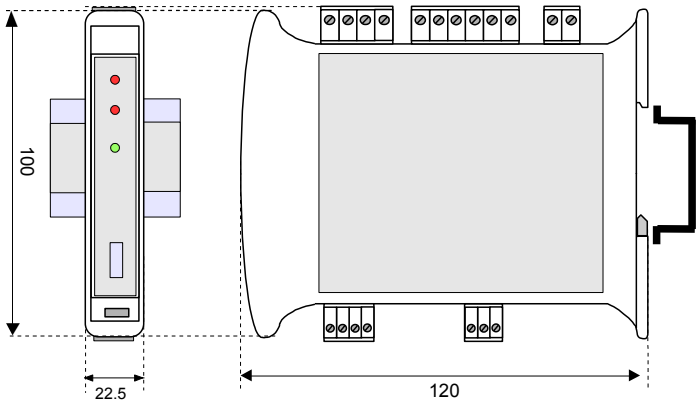
INSTALLATION INSTRUCTIONS

To guarantee the Safety characteristics, before to install the device read the relative "Safety Instructions" supplied with them.
The DAT 4235 IS device is suitable for fitting to DIN rails in the vertical position.
For optimum operation and long life, follow the instructions above.
When devices are installed side by side, it may be necessary to separate them by at least 5mm in the following case:
- If panel temperature exceeds 45°C and at least one of the overload conditions exist.
- If panel temperature exceeds 35°C and at least two of the overload conditions exists.

The overload conditions are the following:
- High supply voltage: >27Vdc
- Use of the auxiliary power supply (terminal D)

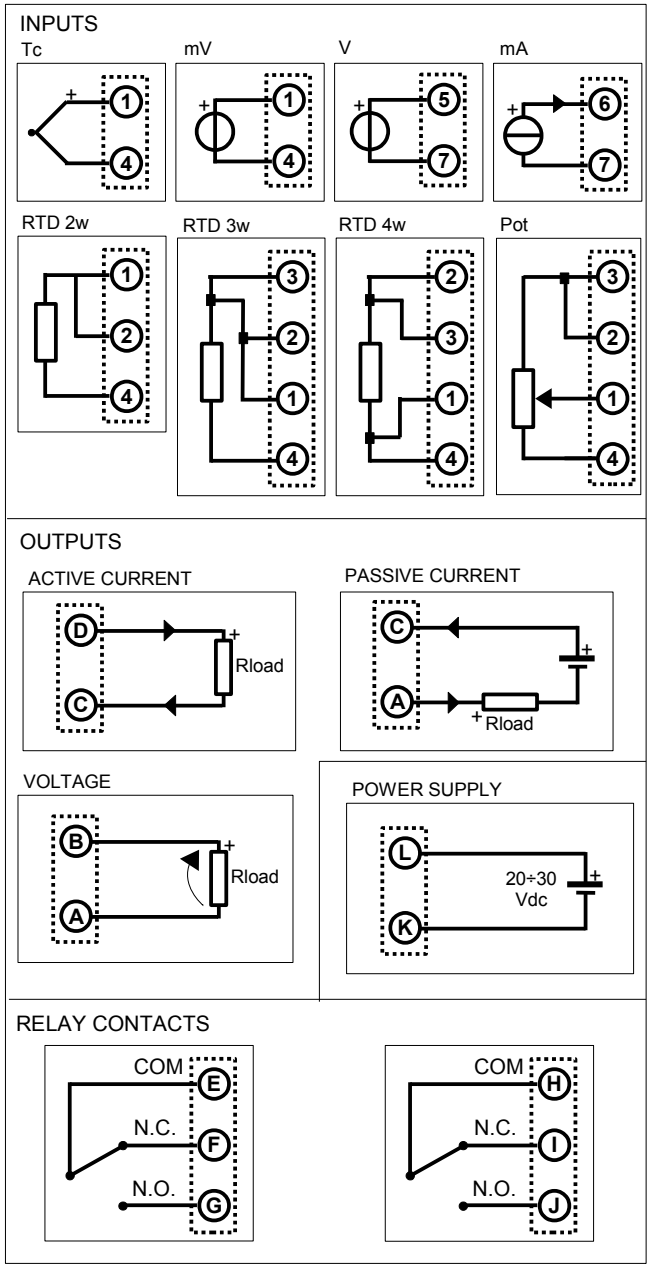
Make sure that sufficient air flow is provided for the device avoiding to place raceways or other objects which could obstruct the ventilation slits. Moreover it is suggested to avoid that devices are mounted above appliances generating heat; their ideal place should be in the lower part of the panel.
It is recommended to use shielded cable for connecting signals. The shield must be connected to an earth wire provided for this purpose. Moreover it is suggested to avoid routing conductors near power signal cables (motors, induction ovens, inverters etc...).

MECHANICAL DIMENSIONS (mm.)

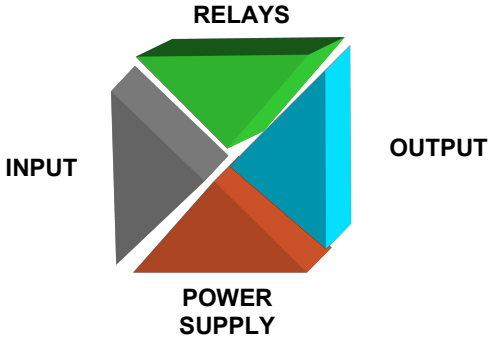


The symbol reported on the product indicates that the product itself must not be considered as a domestic waste.
It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste.
For more information contact the proper office in the user's city, the service for the waste treatment or the supplier from which the product has been purchased.

WIRING



ISOLATION STRUCTURE



HOW TO ORDER

DAT 4235 IS can be supplied in the configuration requested by the customer in the order phase. In case of the configuration is not specified, the parameters must be set by the user.

ORDER CODE EXAMPLE:

DAT 4235 IS / A - Input – Output - Options (optional)

Model :
'A' = Signal Converter
'B' = Trip Amplifier
'C' = Signal Converter + Trip Amplifier

= Request
= Optional