DATEXEL

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UNI EN ISO 9001:2008

Isolated converter for PTC/NTC/ Pot configurable by Dip-Switch or PC
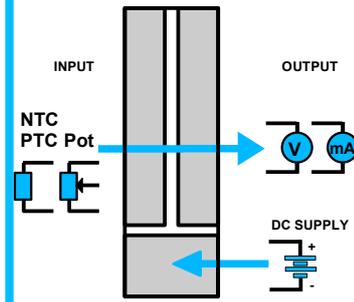
DAT 4531 C

FEATURES
- Configurable input for PTC, NTC and Pot.
- Configurable output in current or voltage
- Configurable by dip-switch or PC
- High accuracy
- On-field reconfigurable
- Galvanic isolation among the ways
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035

INPUT

OUTPUT

NTC
PTC Pot

V   mA

DC SUPPLY

GENERAL DESCRIPTION
The isolated converter DAT 4531 C is able to measure and linearise the standard PTC and NTC sensors and potentiometers. In function of programming, the measured values are converted in a current or voltage signal. The device guarantees high accuracy and performances stability both versus time and temperature.
The programming is made by the dip-switch located in the window on the side of the enclosure. By means of dip-switches it is possible to select the input type and range and the output type without recalibrate the device.
Moreover, by Personal Computer the user can program all of the device's parameters for his own necessity.
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 1500 Vac galvanic isolation on all ways (input, output and power supply) eliminates the effects of all ground loops eventually existing and allows the use of the converter in heavy environmental conditions found in industrial applications.
The DAT 4531 C is in compliance with the Directive 2004/108/EC on the Electromagnetic Compatibility.
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 converter must be powered by a direct voltage applied to the terminals Q and R.
The input channel measures the value from the sensor connected to the terminals I, L and G and transmits the output measure on the terminals N and M.
The input and output connections must be made as shown in the section "Connections".
It is possible to configure the converter on field by dip-switch or Personal Computer as shown in the section " Programming ". The configuration by
 dip-switches can be made also if the device is powered (note: after the configuration the device takes some seconds to provide the right output measure).

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

INPUT			
Input type	**Min**	**Max**	**Min.Span**
PTC			
KTY81-210	-55°C	150°C	50°C
KTY81-220	-55°C	150°C	50°C
KTY84-130	-40°C	300°C	50°C
KTY84-150	-40°C	300°C	50°C
NTC			
Coster 10K	-10°C	100°C	50°C
Coster 1K	-30°C	40°C	25°C
Pot. (Rnom.< 50KΩ)	0 %	100 %	10 %

Input Calibration (1)
PTC, NTC   the higher of ±0.1% and ±0.2°C
Potentiometer   ± 0.05 % f.s.

Linearity (1)
PTC, NTC   ± 0.1 % f.s.

Sensor excitation current
PTC, NTC   500 uA

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

(1)referred to the input Span (difference between max. and min.)

OUTPUT			
Output type	**Min**	**Max**	**Min Span**
Current	0 mA	20 mA	4 mA
Voltage	0 V	10 V	1 V

Output calibration
Current   ± 7 uA
Voltage   ± 5 mV

Burn-out values
Max. output value   22 mA or 10.6 V
Min. output value   0 mA or -0.6 V

Output load Resistance - Rload
Current output   < 500 Ω
Voltage output   > 10 KΩ
Short circuit current   26 mA max.

Response time (10÷ 90%)   about 500 ms

| POWER SUPPLY	
Power supply voltage	18 .. 30 Vdc
Reverse polarity protection	60 Vdc max
Current consumption	
Current output	35 mA max.
Voltage output	20 mA max.
ISOLATION	
Among all ways	1500 Vac, 50 Hz, 1 min
TEMPERATURE AND HUMIDITY	
Operative temperature	-20°C .. +60°C
Storage temperature	-40°C.. +85°C
Humidity (not condensed)	0 .. 90 %
HOUSING	
Material	Self-extinguishing plastic
Mounting	DIN rail in compliance with EN-50022 and EN-50035
Weight	about 90 g.
EMC (for industrial environments)	
Immunity	EN 61000-6-2
Emission	EN 61000-6-4

PROGRAMMING

CONFIGURATION BY PC

By software DATESOFT it is possible to:
- set the default programming of the device;
- program the options not available with the dip-switch;
  (burn-out level, etc...);
- read, in real time, the input and output measures;
- follow the dip-switches configuration wizard.

To configure the device follow the next steps:
1) Power-on the device.
2) Open the protection plastic label on the front of the device.
3) Connect the interface PRODAT to the PC (COM port)
   and to the device (PGRM connector).
4) Open DATESOFT.
5) Select the COM port in use.
6) Click on "Open COM".
7) Click on "Program".
8) Set the programming data.
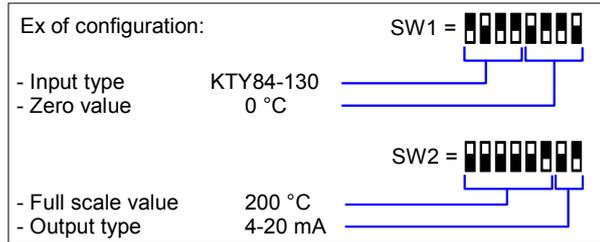9) Click on "Write" to send the programming data to the device.
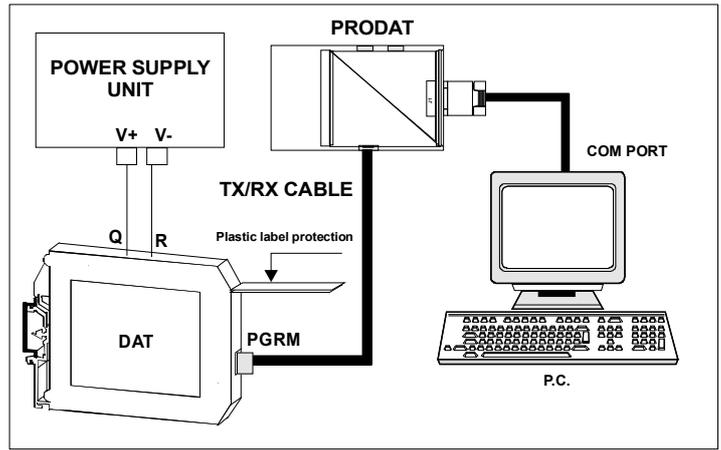
Warning: during these operations the device must always be powered and the TX/RX cable always connected.
For information about DATESOFT refer to the software's user guide.

CONFIGURATION BY DIP-SWITCHES
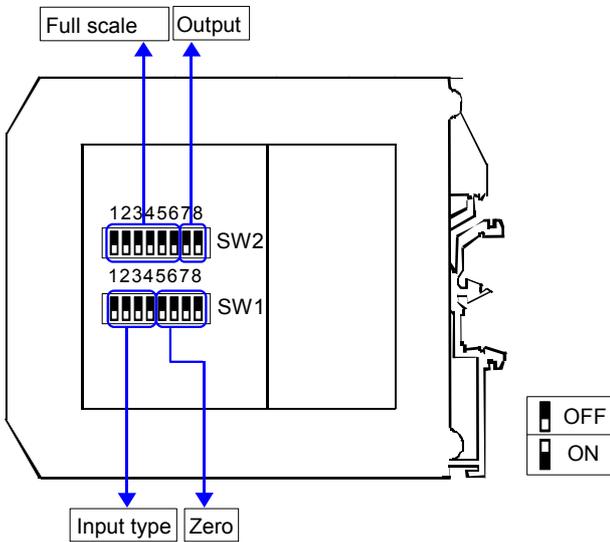
1) Open the suitable door on the side of the device.

2) Set the input type by the dip-switch SW1 [1..4] (see TAB.1)

3) Set the minimum input scale value (Zero) by the dip-switch SW1 [5..8] (see TAB.3)

4) Set the maximum input value (Full scale) by the dip-switch SW2 [1..6] (see TAB.3)

5) Set the output type by the dip-switch SW2 [7..8] (see TAB.2)

Ex of configuration:

- Input type   KTY84-130
- Zero value   0 °C
- Full scale value 200 °C
- Output type   4-20 mA

NOTE:
- It is also possible to set the dip-switches using the wizard of the configuration software following the procedure described in the section "Configuration by PC" until the step 6 and clicking on "Switch".

DIP-SWITCH CONFIGURATION TABLES

TAB.1
Input type settings

	EPROM *
	Pot
	KTY81-210 KTY81-220
	KTY84-130 KTY84-150
	Coster 10K
	Coster 1K

TAB.2
Output type settings

	0-20 mA
	4-20 mA
	0-10 V
	0-5 V

NOTES:

* To configure the range for the input type selected (TAB.1) refer to the section of the TAB.3 on next page relative to it (ex: for Potentiometer use the table TAB.3b).

* If the dip-switches SW1 [1..4] are all set in the position 0 ("EPROM"), the device will follow the configuration programmed by PC (input type and range, output type and range and options).

* If the dip-switches SW1 [5..8] are all set in the position 0 ("Default"), the device will follow the input scale programmed by PC for the input type selected by the dip-switches SW1 [1..4]

* Eventual wrong dip-switches settings will be signalled by the blinking of the led "PWR".

TAB.3a – Settings for PTC, NTC

Zero		Full scale							
SW1 5 6 7 8	°C	SW2 1 2 3 4 5 6	°C	SW2 1 2 3 4 5 6	°C	SW2 1 2 3 4 5 6	°C	SW2 1 2 3 4 5 6	°C
	Default		Default		75		210		370
	-200		0		80		220		380
	-150		5		85		230		390
	-100		10		90		240		400
	-50		15		95		250		425
	-40		20		100		260		450
	-30		25		110		270		475
	-20		30		120		280		500
	-10		35		130		290		525
	0		40		140		300		550
	5		45		150		310		600
	10		50		160		320		650
	20		55		170		330		700
	30		60		180		340		750
	50		65		190		350		800
	100		70		200		360		850

TAB.3b –Settings for Potentiometer

Zero		Full scale							
SW1 5 6 7 8	%	SW2 1 2 3 4 5 6	%	SW2 1 2 3 4 5 6	%	SW2 1 2 3 4 5 6	%	SW2 1 2 3 4 5 6	%
	Default		Default		34		66		98
	0		5		36		68		100
	15		6		38		70		100
	20		8		40		72		100
	25		10		42		74		100
	30		12		44		76		100
	35		14		46		78		100
	40		16		48		80		100
	45		18		50		82		100
	50		20		52		84		100
	55		22		54		86		100
	60		24		56		88		100
	65		26		58		90		100
	70		28		60		92		100
	75		30		62		94		100
	80		32		64		96		100

INSTALLATION INSTRUCTIONS

The device is suitable for fitting to DIN rails in the vertical position.
For optimum operation and long life follow these instructions:

When the devices are installed side by side it may be necessary to separate them by at least 5 mm in the following cases:
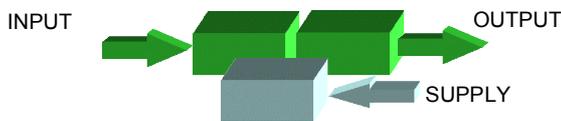- If panel temperature exceeds 45°C.
- Use of high power supply value (> 27 Vdc).
- Use of output current.

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.
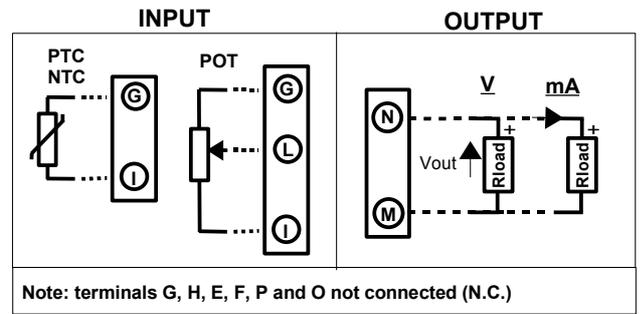Install the device in a place without vibrations.
Moreover it is suggested to avoid routing conductors near power signal cables (motors, induction ovens, inverters etc...) and to use shielded cable for connecting signals.
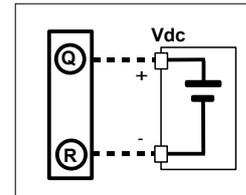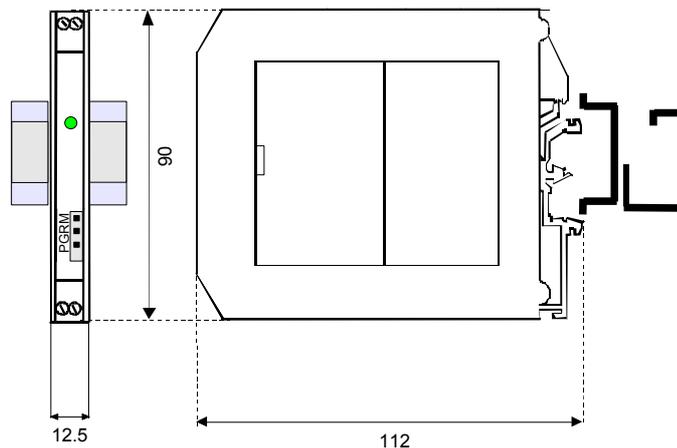
ISOLATION STRUCTURE

INPUT → OUTPUT
SUPPLY

CONNECTIONS

INPUT

PTC NTC   POT

G
I

G
L
I

OUTPUT

V   mA

N
Vout
M

Note: terminals G, H, E, F, P and O not connected (N.C.)

POWER SUPPLY

Vdc

Q +
R -

LIGHT SIGNALLING

LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINKING	Wrong dip-switches setting

DIMENSIONS (mm)

PGRM

90

12.5

112

HOW TO ORDER

The device is provided as requested on the Customer's order.
Refer to the section "Programming" to determine the input and output ranges.
In case of the configuration is not specified, the parameters must be set by the user.

ORDER CODE EXAMPLE:

DAT 4531C / KTY84-130 / 0 ÷ 200 °C / 4 ÷ 20 mA

Input type
Input range
Output range