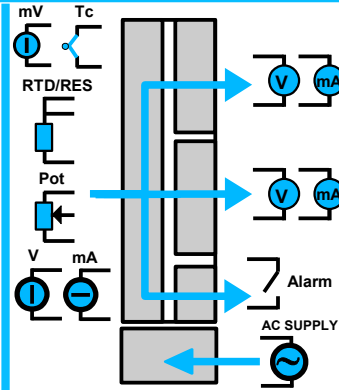


Universal isolated converter configurable by Dip-Switch or PC double output & trip amplifier **DAT4530/AC**



FEATURES

- Universal configurable input for:
mV, Tc, RTD, Res, Potentiometer, V and mA
- Two outputs configurable in current or voltage
- Trip alarm
- Configurable by dip-switch or PC
- High accuracy
- On-field reconfigurable
- Galvanic isolation among all the ways
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035



GENERAL DESCRIPTION

The universal isolated converter DAT4530/AC is able to measure and linearise voltage, current and resistance signals, potentiometers and the standard thermocouples and RTDs with, if required, the cold junction compensation, the wires compensation, the CJC compensation. For mV, V and mA input it is possible to set an option for the fast sampling (option HS) or to extract the square root of the measured signal (option SQRT). In function of programming, the measured values are converted in a current or voltage signal on the two outputs. Moreover an output contact is available as trip alarm.

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 and the trip alarm 's settings.

The 1500 Vac galvanic isolation on all ways (input, outputs 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.

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 an alternate voltage applied to the terminals U and V.

The analogue channel measures the value from the sensor connected to the terminals C-D-E-F-G-H-I-L and transmits the output measures on the terminals M-N-O-P (OUT A) and the terminals Q-R-S-T (OUT B). A contact for the trip alarm is available on the terminals A-B.

The input and output connections must be made as shown in the section "Connections".

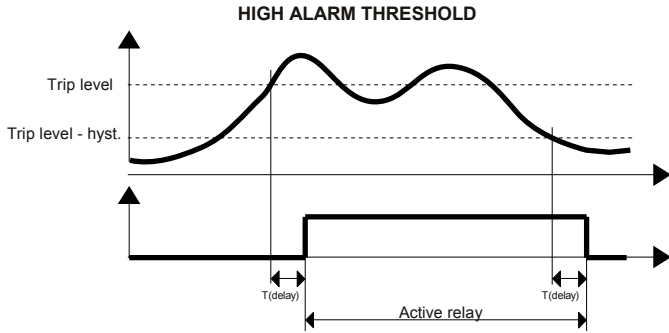
It is possible to configure the converter on field by dip-switch or Personal Computer as shown in the section "Programming". The configuration by dip-switches can be made also if the device is powered (note: after the configuration the device takes some seconds to provide the right output measure).

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

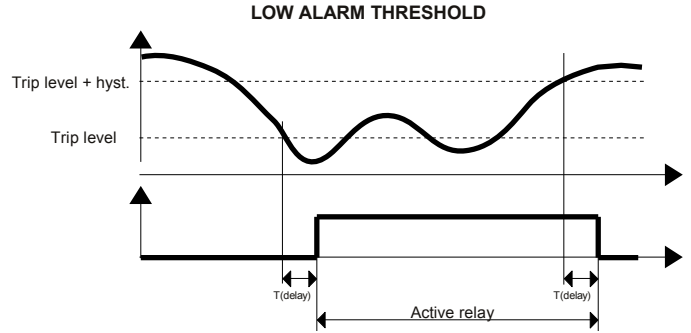
INPUT				Input impedance		POWER SUPPLY	
Input type	Min	Max	Span min	TC, mV	>= 10 MΩ	Power supply voltage	20 .. 28 Vac
TC (CJC int./ext.)				mA	~22 Ω	Current consumption	
J	-200°C	1200°C	100°C	RTD excitation current		Current output	90 mA max.
K	-200°C	1300°C	100°C	RTD, Res	400 uA	Voltage output	30 mA max.
S	0°C	1750°C	400°C	Aux. Voltage	>18V @ 20mA	ISOLATION	
R	0°C	1750°C	400°C	Line resistance influence (1)		Among all the ways	1500 Vac, 50 Hz, 1 min
B	0°C	1820°C	400°C	TC, mV	<=0.8 uV/Ohm	ENVIRONMENTAL CONDITIONS	
E	-200°C	1000°C	100°C	RTD 3w (50Ω max balanced)	0.05%/Ω	Operative Temperature	-20°C .. +60°C
T	-200°C	400°C	100°C	RTD 4w (100Ω max balanced)	0.005%/Ω	Storage Temperature	-40°C.. +85°C
N	-200°C	1300°C	100°C	Thermal drift (1)		Humidity (not condensed)	0 .. 90 %
Voltage				Full scale	± 0.01% / °C	Maximum Altitude	2000 m
mV	-100 mV	+90 mV	5 mV	CJC	± 0.01% / °C	Installation	Indoor
mV	-100 mV	+200 mV	10 mV	CJC Comp.	± 0.5°C	Category of installation	II
mV	-100 mV	+800 mV	20 mV			Pollution Degree	2
RTD (2, 3, 4 wires)				OUTPUT (2 CHANNELS)			
Pt100	-200°C	850°C	50°C	Output type	Min	Max	Min Span
Pt1000	-85°C	185°C	30°C	Current	0 mA	20 mA	4 mA
Ni100	-60°C	180°C	50°C	Voltage	0 V	10 V	1 V
Ni1000	-60°C	150°C	30°C	Output resolution			
RES. (2, 3, 4 wires)				Current	7 uA		
0 Ω	0 Ω	500 Ω	50 Ω	Voltage output	4 mV		
0 Ω	0 Ω	2000 Ω	50 Ω	Aux. Voltage	>12V @ 20mA		
Pot. (Rnom.< 50KΩ)				Burn-out values			
0 %	0 %	100 %	10 %	Max. output value	22 mA or 11 V		
Voltage				Min. output value	0 mA or -0.6 V		
-10 V	10 V	1 V		Output load Resistance - Rload			
Current				Current output	< 500 Ω		
0 mA	20 mA	1 mA		Voltage output	> 10 KΩ		
Accuracy (1)				Short circuit current	30 mA max.		
mV, TC	the higher of ±0.1% and ±12 uV			Response time (10÷ 90%)	about 400 ms		
RTD	the higher of ±0.1% and ±0.2°C				100 ms (option HS)		
Res.	the higher of ±0.1% and ±0.15			ALARM TRIP (SSR)			
Potentiometer	± 0.05 % f.s.			Contact	SPST		
Voltage	the higher of ±0.1% and ± 2 mV			Max Load (resistive) :			
mA	the higher of ±0.1% and ± 6 uA			Voltage	48 Vdc / 30 Vac		
mV, V, mA	± 0.5 % f.s (opt. HS)			Current	0.4 A		
Linearity (1)				CERTIFICATIONS			
TC, RTD	± 0.1 % f.s.			EMC (for industrial environments)			
mV, V, mA	± 0.05 % f.s.			Immunity			
				EN 61000-6-2			
				Emission			
				EN 61000-6-4			

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

THRESHOLD OPERATION



For the high alarm the relay goes on when the input signal is higher than the trip level and after the delay time. The relay goes off only when the input signal is lower than the trip level minus the hysteresis value or when reaches the minimum value of the input scale and after the delay time.



For the low alarm the relay goes on when the input signal is lower than the trip level and after the delay time. The relay goes off only when the input signal is higher than the trip level plus the hysteresis value or when reaches the maximum value of the input scale and after the delay time.

PROGRAMMING

CONFIGURATION BY PC

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.

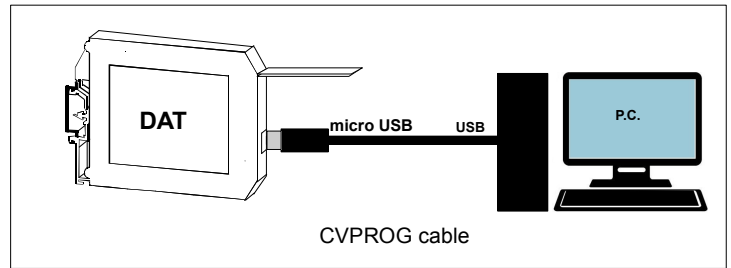
By software DATAPRO it is possible to:

- set the default programming of the device;
- program the options not available with the dip-switch;
(burn-out level, CJC offset, trip alarm settings, delay on output, etc...);
- read, in real time, the input and output measures;
- follow the dip-switches configuration wizard.

To configure the device follow the next steps:

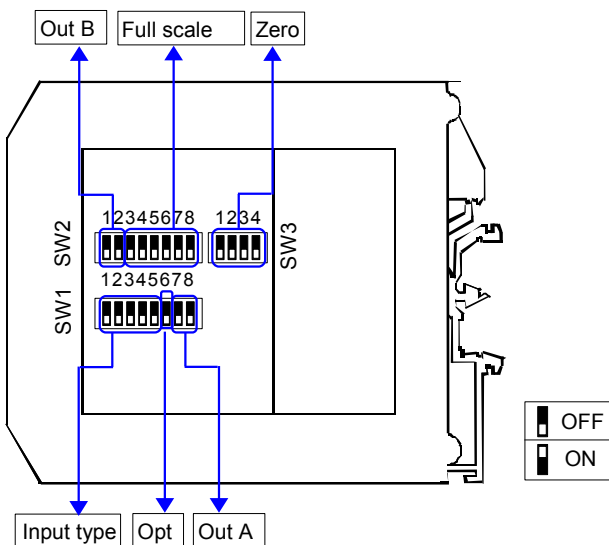
- 1) Open the protection plastic label on the front of the device.
- 2) Connect the two plugs of cable CVPROG to the Personal Computer (USB plug) and to the device (uUSB plug).
- 3) Run the software
- 4) Select the COM port in use and click on "Open COM".
- 5) Select the device and connect to it.
- 6) Set the programming data.
- 7) Click "Write" to send the programming data to the device.

For information about the software refer to the its user guide.



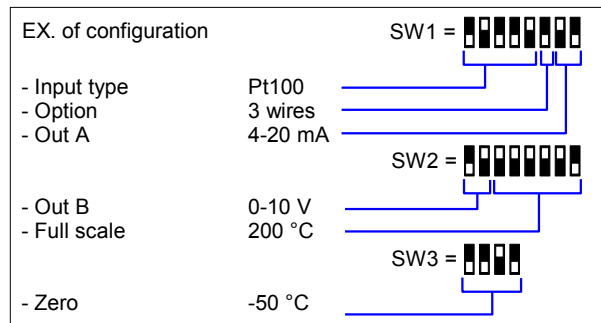
CONFIGURATION BY DIP-SWITCHES

- 1) Open the suitable door on the side of the device.
- 2) Set the input type by the dip-switch SW1 [1..5] (see TAB.1)
- 3) Set the output A type by the dip-switch SW1 [7..8] (see TAB.2)
- 4) Set the output B type by the dip-switch SW2 [1..2] (see TAB.2)
- 5) Set, if available, the input option by the dip-switch SW1 [6] (see TAB.3)
- 6) Set the maximum input value (Full scale) by the dip-switch SW2 [3..8] (see TAB.4)
- 7) Set the minimum input scale value (Zero) by the dip-switch SW3 [1..4] (see TAB.4)



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 icon "Switch".



DIP-SWITCH CONFIGURATION TABLES

TAB.1 – Input type settings

SW1 1 2 3 4 5		SW1 1 2 3 4 5		SW1 1 2 3 4 5	
□□□□□	EPROM *	□□□□□	Tc J	□□□□□	Res. 2KΩ
□□□□□	90 mV	□□□□□	Tc K	□□□□□	Res. 500Ω
□□□□□	200 mV	□□□□□	Tc R	□□□□□	Pt100
□□□□□	800 mV	□□□□□	Tc S	□□□□□	Ni100
□□□□□	10 V	□□□□□	Tc T	□□□□□	Pt 1K
□□□□□	20 mA	□□□□□	Tc B	□□□□□	Ni 1K
		□□□□□	Tc E	□□□□□	Pot. <500Ω
		□□□□□	Tc N	□□□□□	Pot. <50KΩ

NOTES:

* To set the input range refer to the TAB.4 (next pages) referred to the input type selected by the TAB.1.

* If the dip-switches SW1 [1..5] 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, trip alarm 's settings and options).

* If the dip-switches SW2 [3..8] and SW3 [1..4] 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..5]

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

* If the dip-switch SW1 [6] is set in the ON position and is in progress a measure by Resistance or RTD 2 wires sensor, it is necessary to connect the terminal I to the terminal L and the terminal G to the terminal H.

TAB.2
Out A

SW1 7 8	
□□	0-20 mA
□□	4-20 mA
□□	0-10 V
□□	0-5 V

Out B

SW2 1 2	
□□	0-20 mA
□□	4-20 mA
□□	0-10 V
□□	0-5 V

TAB.3
Options

SW1 6		CJC	
□	External	RTD/RES	3 wires
□	Internal		2/4 wires

TAB.4a – mV, Tc input scale settings

Zero		Full scale					
SW3 1 2 3 4	mV-°C	SW2 3 4 5 6 7 8	mV-°C	SW2 3 4 5 6 7 8	mV-°C	SW2 3 4 5 6 7 8	mV-°C
□□□□	Default	□□□□□□	Default	□□□□□□	75	□□□□□□	225
□□□□	-200	□□□□□□	0	□□□□□□	80	□□□□□□	250
□□□□	-100	□□□□□□	5	□□□□□□	85	□□□□□□	255
□□□□	-80	□□□□□□	10	□□□□□□	90	□□□□□□	275
□□□□	-60	□□□□□□	15	□□□□□□	95	□□□□□□	300
□□□□	-50	□□□□□□	20	□□□□□□	100	□□□□□□	325
□□□□	-40	□□□□□□	25	□□□□□□	110	□□□□□□	350
□□□□	-30	□□□□□□	30	□□□□□□	120	□□□□□□	375
□□□□	-20	□□□□□□	35	□□□□□□	130	□□□□□□	400
□□□□	-10	□□□□□□	40	□□□□□□	140	□□□□□□	425
□□□□	0	□□□□□□	45	□□□□□□	150	□□□□□□	450
□□□□	10	□□□□□□	50	□□□□□□	160	□□□□□□	475
□□□□	20	□□□□□□	55	□□□□□□	170	□□□□□□	500
□□□□	50	□□□□□□	60	□□□□□□	180	□□□□□□	550
□□□□	100	□□□□□□	65	□□□□□□	190	□□□□□□	600
□□□□	150	□□□□□□	70	□□□□□□	200	□□□□□□	650
□□□□	150	□□□□□□	70	□□□□□□	200	□□□□□□	1850

TAB.4b – Pt100, Pt1K, Ni100, Ni1K input scale settings

Zero		Full scale					
SW3 1 2 3 4	°C	SW2 3 4 5 6 7 8	°C	SW2 3 4 5 6 7 8	°C	SW2 3 4 5 6 7 8	°C
□□□□	Default	□□□□□□	Default	□□□□□□	75	□□□□□□	210
□□□□	-200	□□□□□□	0	□□□□□□	80	□□□□□□	220
□□□□	-150	□□□□□□	5	□□□□□□	85	□□□□□□	230
□□□□	-100	□□□□□□	10	□□□□□□	90	□□□□□□	240
□□□□	-50	□□□□□□	15	□□□□□□	95	□□□□□□	250
□□□□	-40	□□□□□□	20	□□□□□□	100	□□□□□□	260
□□□□	-30	□□□□□□	25	□□□□□□	110	□□□□□□	270
□□□□	-20	□□□□□□	30	□□□□□□	120	□□□□□□	280
□□□□	-10	□□□□□□	35	□□□□□□	130	□□□□□□	290
□□□□	0	□□□□□□	40	□□□□□□	140	□□□□□□	300
□□□□	5	□□□□□□	45	□□□□□□	150	□□□□□□	310
□□□□	10	□□□□□□	50	□□□□□□	160	□□□□□□	320
□□□□	20	□□□□□□	55	□□□□□□	170	□□□□□□	330
□□□□	30	□□□□□□	60	□□□□□□	180	□□□□□□	340
□□□□	50	□□□□□□	65	□□□□□□	190	□□□□□□	350
□□□□	100	□□□□□□	70	□□□□□□	200	□□□□□□	360

TAB.4c – Resistance < 2 Kohm input scale settings.

Zero		Full Scale					
SW3 1 2 3 4	Ω	SW2 3 4 5 6 7 8	Ω	SW2 3 4 5 6 7 8	Ω	SW2 3 4 5 6 7 8	Ω
Default	0	Default	500	800	1150	1600	
0	150	500	520	820	1175	1650	
150	200	520	540	840	1200	1700	
200	250	540	560	860	1225	1750	
250	300	560	580	880	1250	1800	
300	350	580	600	900	1275	1850	
350	400	600	620	920	1300	1900	
400	450	620	640	940	1325	1950	
450	500	640	660	960	1350	2000	
500	550	660	680	980	1375	2000	
550	600	680	700	1000	1400	2000	
600	650	700	720	1025	1425	2000	
650	700	720	740	1050	1450	2000	
700	750	740	760	1075	1475	2000	
750	800	760	780	1100	1500	2000	
800		780		1125	1550	2000	

TAB.4d – Resistance < 500 ohm input scale settings

Zero		Full Scale					
SW3 1 2 3 4	Ω	SW2 3 4 5 6 7 8	Ω	SW2 3 4 5 6 7 8	Ω	SW2 3 4 5 6 7 8	Ω
Default	0	Default	50	125	210	370	
0	10	50	55	130	220	380	
10	20	55	60	135	230	390	
20	30	60	65	140	240	400	
30	40	65	70	145	250	410	
40	50	70	75	150	260	420	
50	75	75	80	155	270	430	
75	100	80	85	160	280	440	
100	125	85	90	165	290	450	
125	150	90	95	170	300	460	
150	175	95	100	175	310	470	
175	200	100	105	180	320	480	
200	225	105	110	185	330	490	
225	250	110	115	190	340	500	
250	300	115	120	195	350	500	
300		120		200	360	500	

TAB.4e – Potentiometer input scale settings

Zero		Full Scale					
SW3 1 2 3 4	%	SW2 3 4 5 6 7 8	%	SW2 3 4 5 6 7 8	%	SW2 3 4 5 6 7 8	%
Default	0	Default	5	34	66	98	
0	15	5	6	36	68	100	
15	20	6	8	38	70	100	
20	25	8	10	40	72	100	
25	30	10	12	42	74	100	
30	35	12	14	44	76	100	
35	40	14	16	46	78	100	
40	45	16	18	48	80	100	
45	50	18	20	50	82	100	
50	55	20	22	52	84	100	
55	60	22	24	54	86	100	
60	65	24	26	56	88	100	
65	70	26	28	58	90	100	
70	75	28	30	60	92	100	
75	80	30	32	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:

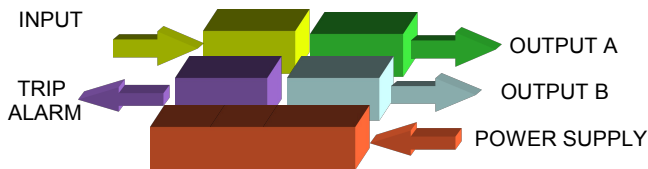
- If panel temperature exceeds 45°C.
- Use of one or both current outputs.
- Use of active current input.

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.

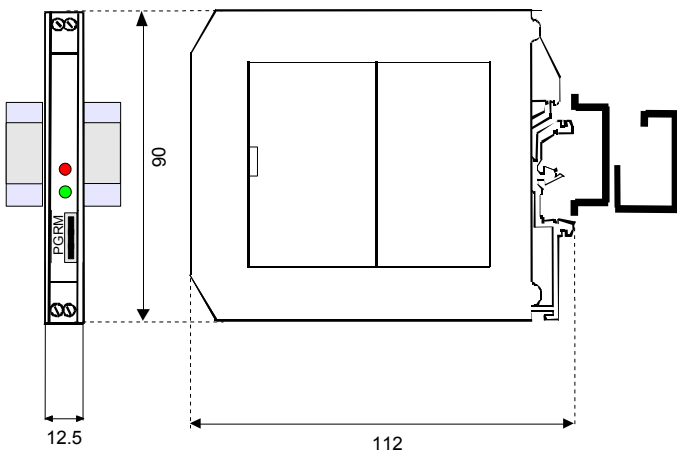
Install the device in a place without vibrations.

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.

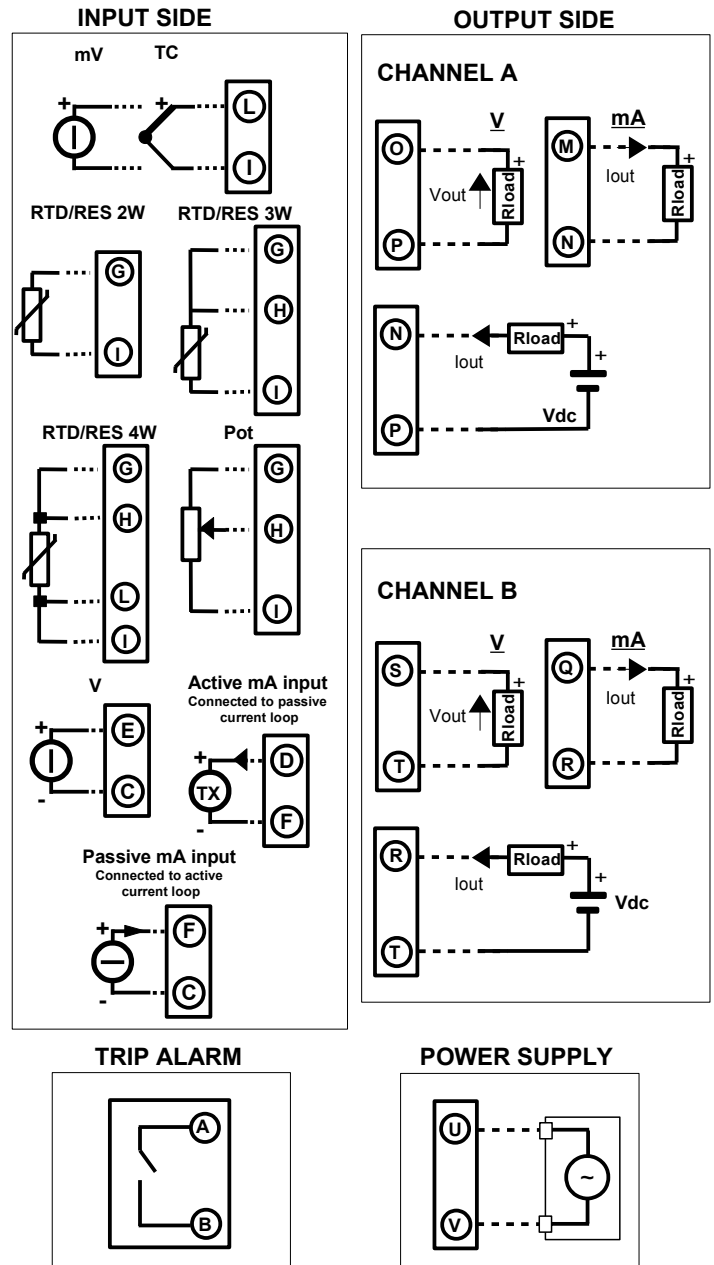
ISOLATION STRUCTURE



DIMENSIONS (mm)



CONNECTIONS



LIGHT SIGNALLING

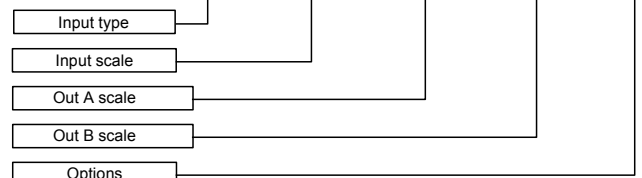
LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINKING	Wrong dip-switches settings
ALARM	RED	ON	Trip alarm active
		OFF	Trip alarm not active

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 4530/AC /Pt100 /0 ÷ 200 °C /4 ÷ 20 mA /4 ÷ 20 mA /3wires



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.