

Isolated doubler/converter for PTC/Pot configurable by Dip-Switch or PC

DAT 4631 C

FEATURES

- Configurable input for PTC and Potentiometer
- Configurable input for NTC Coster 1K and Coster 10K
- Double output configurable in current or voltage
- Configurable by dip-switch or PC
- High accuracy
- On-field reconfigurable
- Galvanic isolation among the ways
- UL / CE / UKCA mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035



GENERAL DESCRIPTION

The isolated doubler/converter DAT 4631 C is able to measure and linearise the PTC type KTY81 and KTY84, NTC sensors **exclusively** type Coster 1K and 10K 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; the configuration by PC allows to program the two outputs with two independent settings. 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, 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. The DAT 4631 C is in compliance with the Directive UL 61010-1 for US market and with the Directive CSA C22.2 No 61010-1 for the Canadian market. 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 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) .

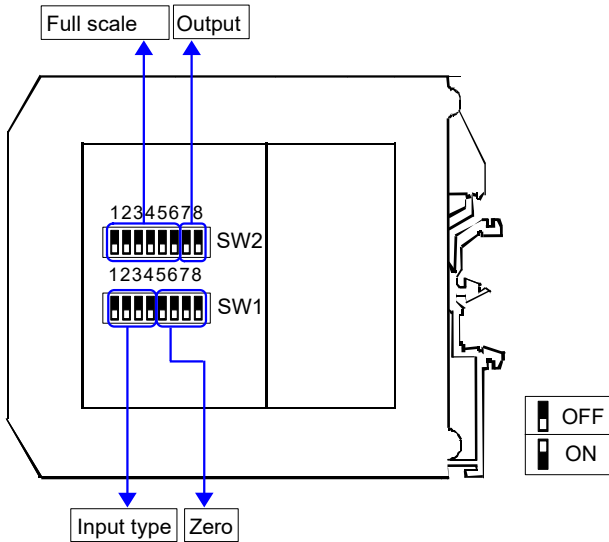
TECHNICAL SPECIFICATIONS (Typical at 25 °C and in nominal conditions)

INPUT				OUTPUT (2 CHANNELS)				GENERAL SPECIFICATIONS		
Input type	Min	Max	Span min	Output type	Min	Max	Span min			
PTC(*)				Current	0 mA	20 mA	4 mA	Power supply voltage	18 .. 30 Vdc	
KTY81-210	-55°C	150°C	50°C	Voltage	0 V	10 V	1 V	Reverse polarity protection	60 Vdc max	
KTY81-220	-55°C	150°C	50°C	Output resolution				Current consumption		
KTY84-130	-40°C	300°C	50°C					Current		± 7 uA
KTY84-150	-40°C	300°C	50°C	Voltage		± 4 mV	Voltage output		25 mA max.	
NTC(*)				Burn-out values				ISOLATION		
Coster 10K	-10°C	100°C	50°C					Max. output value		22 mA or 10.6 V
Coster 1K	-30°C	40°C	25°C	Min. output value		0 mA or -0.6 V	ENVIRONMENTAL CONDITIONS			
Pot. (Rnom.< 50KΩ)	0 %	100 %	10 %	Output load Resistance - Rload				Operative Temperature		-20°C .. +60°C
								Current output		< 500 Ω
Accuracy (1)	the higher of ±0.1% and ±0.2°C			Voltage output		> 10 KΩ	Storage Temperature		-40°C.. +85°C	
PTC, NTC				Short circuit current		26 mA max.	Humidity (not condensed)		0 .. 90 %	
Potentiometer	± 0.05 % f.s.			Response time (10÷ 90%)				Maximum Altitude		2000 m
Linearity (1)	± 0.1 % f.s.							Weight		about 90 g.
Sensor excitation current	500 uA			MECHANICAL SPECIFICATIONS						
Line resistance influence (1)	0.05%/Ω (50 Ω max balanced)			Material						Self-extinguish plastic
Thermal drift (1)	± 0.01% / °C			IP Code						IP20
Full scale				Wiring						wires with diameter 0.8±2.1 mm ² /AWG 14-18 0.8 N m
				Tightening Torque						in compliance with DIN rail standard EN-50022 and EN-50035
				Mounting						
				Weight						about 90 g.
				CERTIFICATIONS						
				EMC (for the Industrial Environments)						
				Immunity						EN 61000-6-2
				Emission						EN 61000-6-4
				UKCA (ref S.I. 2016 N°1091)						
				Immunity						BS EN 61000-6-2
				Emission						BS EN 61000-6-4
				UL						
				US Standard						UL 61010-1
				Canadian Standard						CSA C22.2 No 61010-1
				CCN						NRAQ/NRAQ7
				Typology						Open Type device
				Classification						Industrial Control Equipment
				File Number						E352854

(*) if the NTC or PTC sensor used does not match to the types indicated, verify that the characteristic ohm / °C of such sensor corresponds to the characteristic ohm / °C of the sensors listed above. If it does not, the device won't be suitable to measure the specific sensor.

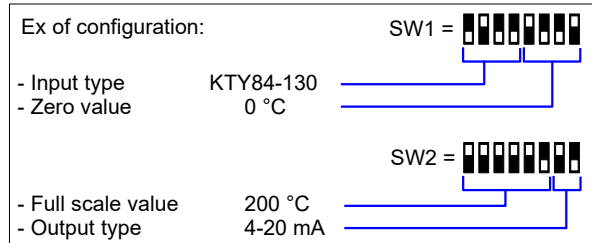
(1)referred to the input Span (difference between max. and min.)

CONFIGURATION BY DIP-SWITCHES



PROGRAMMING

- 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)



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

SW1	1	2	3	4	
					EPROM *
					Pot
					KTY81-210 KTY81-220
					KTY84-130 KTY84-150
					Coster 10K
					Coster 1K

TAB.2
Output setting

SW2	7	8	
			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".

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.

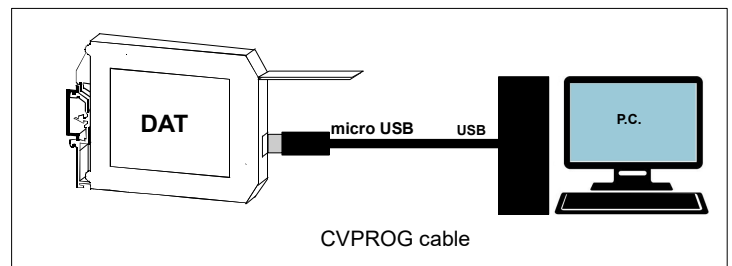
By software DATAPRO it is possible to:

- 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 its user guide.



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	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	%	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:

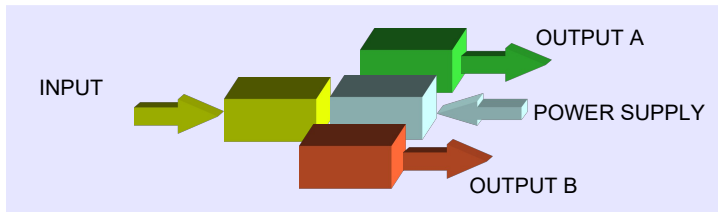
- If panel temperature exceeds 45°C.
- Use of high power supply value (> 27 Vdc).
- Use of output current.

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.

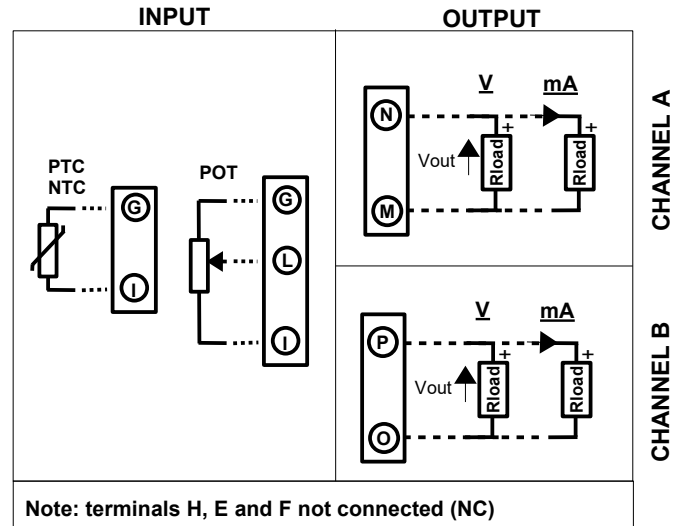
ISOLATION STRUCTURE



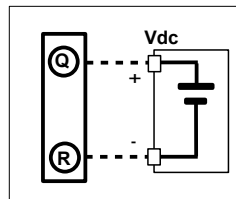
LIGHT SIGNALLING

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

CONNECTIONS

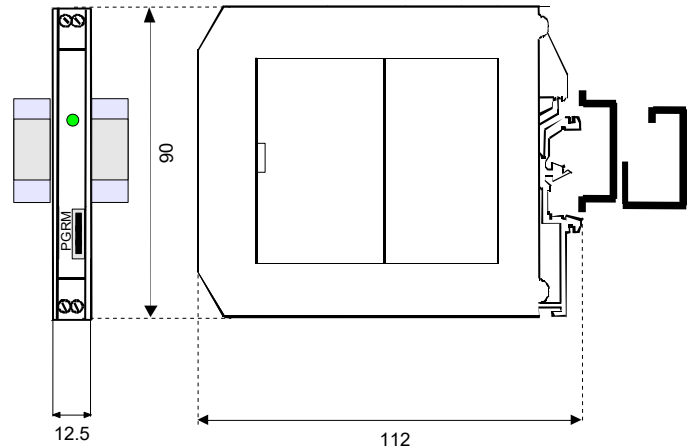


POWER SUPPLY(*)



(*) Note: for UL installation the device must be powered using a power supply unit classified NEC class 2 or SELV

DIMENSIONS (mm)

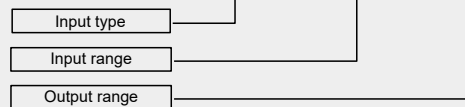


HOW TO ORDER

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 4631C / KTY84-130 / 0 ÷ 200 °C / 4 ÷ 20 mA



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.