

AC Voltage Converter

DAT 5023/V

FEATURES

- Input for AC/DC voltage signal
- Dedicated measure inputs
- Input type of measure (AC / DC) configurable by DIP-switches
- True Root Mean Square (TRMS) measure
- Isolated power supply source for passive loads on output
- Voltage or current output configurable by DIP-switches
- Galvanic isolation at 1500 Vac between input, power supply and output
- Good accuracy and performance stability
- EMC compliant – CE / UKCA mark
- DIN rail mounting in according to EN-50022 and EN-50035 standards



GENERAL DESCRIPTION

The converter DAT 5023/V is designed to measure the TRMS value of the AC voltage signal or to convert the DC voltage signal applied on its input in a voltage or current output signal.

The user can program the input type and output ranges by the proper DIP-switches available after opening the suitable door located on the side of device (see "Input type table" and "Output ranges table" sections).

The regulation of Zero and Span values is made by the ZERO and SPAN potentiometers located on the top of device.

The 1500 Vac isolation between input, power supply and output 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 5023/V provides on the output side an auxiliary supply source to connect both active and passive loads.

It is housed in a plastic enclosure of 12.5 mm thickness suitable for DIN rail mounting in according to EN-50022 and EN-50035 standards .

OPERATIVE INSTRUCTIONS

The connections must be made as shown in the section "Wiring".

The configuration of the input and output ranges values is made by DIP-switches (refer to the section "Input range tables" and "Output ranges table").

After the converter configuration, it is necessary to calibrate it using the ZERO and SPAN regulations; this operation is illustrated in the section

"Configuration and calibration". To install the device refer to the section "Installation instructions".

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

INPUT		OUTPUT			GENERAL SPECIFICATIONS	
Signal type	Voltage	Signal Type (configurable)	Min	Max	Power supply voltage	18 .. 30 Vdc
AC	0÷36 Vac 0÷80 Vac 0÷170 Vac 0÷370 Vac 0÷550 Vac	Voltage	0 V	10 V	Reverse polarity protection	60 Vdc max
			2 V	10 V	Current consumption max.	Current: 80 mA Voltage: 50 mA
DC	0÷36 Vdc 0÷80 Vdc 0÷170 Vdc 0÷370 Vdc 0÷550 Vdc	Current	0 V	5 V	ISOLATION	
			1 V	5 V	Among all the ways	2000 Vac, 50 Hz, 1 min
Type of measure Configurable	Alternate or Direct	Output Adjustment	0 mA	20 mA	ENVIRONMENTAL CONDITIONS	
			4 mA	20 mA	Operative temperature	-20°C .. +60°C
Bandwidth (-3dB)	40 Hz + 1KHz	Zero	± 40 % of f.s. maximum		Storage temperature	-40°C .. +85°C
			Span	± 40 % of f.s. maximum		Humidity (not condensing)
Input impedance	36 KΩ 80 KΩ 170 KΩ 370 KΩ 550 KΩ.	Load resistance - Rload			Maximum Altitude	2000 m slm
		Current:	≤ 500 Ω		Installation	Indoor
0÷36 Vac, 0÷36 Vdc:	36 KΩ	Auxiliary power supply(Aux. Supply out)			Category of Installation	II
		0÷80 Vac, 0÷80 Vdc:	12 Vdc min @ 20 mA		Pollution Degree	2
0÷170 Vac, 0÷170 Vdc:	170 KΩ	Accuracy	± 0.1 % del f.s.		MECHANICAL SPECIFICATIONS	
0÷370 Vac, 0÷370 Vdc:	370 KΩ		Linearity Error (*)	AC: ± 1 % del f.s. DC: ± 0.1 % del f.s.		Material
0÷550 Vac, 0÷550 Vdc:	550 KΩ.	Thermal Drift		± 0.02 % del f.s./°C		IP Code
(*)inclusive of hysteresis and variations of power supply voltage			Response Time(10÷90%)	AC: 250 ms DC: 20 ms		Wiring
						Tightening Torque
					Mounting	in compliance with DIN rail standard EN-50022 and EN-50035
					Weight	and EN-50035 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

CONFIGURATION & CALIBRATION

- 1) Refer to the "Input type table", determine in the column " Input " the type of the input voltage value(AC or DC). Refer to the " Output ranges table " and determine in the column " Output " the position of the output value.
In the correspondent lines is shown how to set the DIP-switches .
- 2) Set the DIP-switches as indicated .
- 3) Connect the input in function of the amplitude of the signal.
- 4) Set the minimum value of the input range.
- 5) By the ZERO potentiometer calibrate the output at the minimum value .
- 6) Set the maximum value of the input range.
- 7) By the SPAN potentiometer calibrate the output at the maximum value .
- 8) Repeat the operation from the step 4 to the step 7 until the output value will be correct (3 attempts typically required).

Configuration ex. : in: 0÷170 Vac out 0÷10 Vdc
 Input switches configuration (SW1): On, Off, Off, Off.
 Output switches configuration (SW2): Off, Off, On, Off, Off.
 Signal connected between the terminal G and F.

INPUT TYPE TABLE

INPUT	SW1			
	1	2	3	4
Vac	●			
Vdc			●	

OUTPUT RANGE TABLE

OUTPUT	SW2				
	1	2	3	4	5
0 ÷ 20 mA				●	
4 ÷ 20 mA	●			●	●
1 ÷ 5 V	●	●	●		●
0 ÷ 5 V		●	●		
2 ÷ 10 V	●		●		●
0 ÷ 10 V			●		

● = DIP SWITCHES " ON "

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 case:

- If panel temperature exceeds 45°C and at least one of the overload conditions exists.
- If panel temperature exceeds 35°C and at least two of the the overload conditions exist.

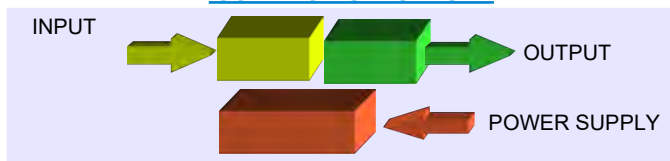
Overload conditions:

- High power supply values (> 27 Vdc).
- Use of current output (terminal P).
- Use of output auxiliary supply (terminal O).

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.

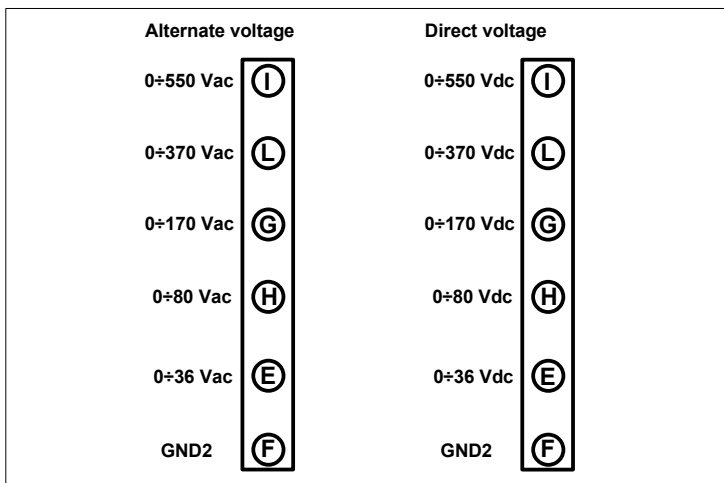
ISOLATION STRUCTURE



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.

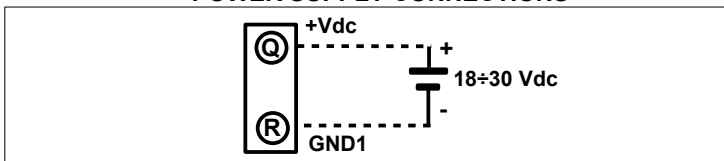
WIRING

INPUT CONNECTIONS

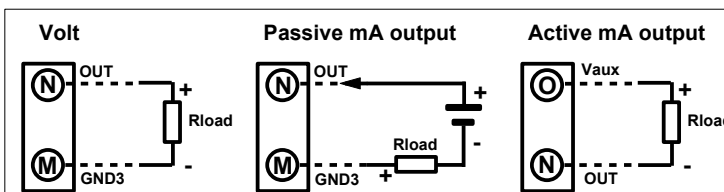


Note: the signal is always referred to the terminal F(GND2)

POWER SUPPLY CONNECTIONS

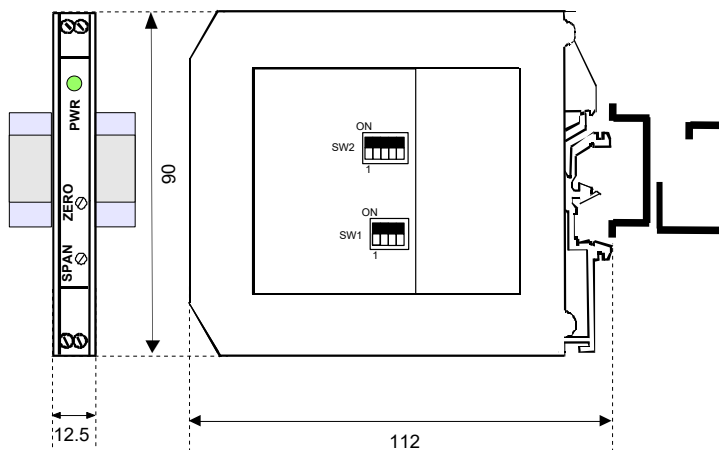


OUTPUT CONNECTIONS



Note: terminal P = not connected (N.C.)

DIMENSIONS (mm) & REGULATIONS



HOW TO ORDER

The DAT 5023/V is supplied as requested on the order. In case of the configuration is not specified, the parameters must be set by the user.

ORDER CODE EXAMPLE: DAT5023/V 0÷170 Vac - 0÷10 V

Input range
 Output range