Programmable AC/DC Voltage signals converter

DAT 5023/V

FEATURES
Input for alternate or direct voltage signals
Dedicated measurement inputs
Input measure type configurable by means of DIP-switches
True Root Mean Square (TRMS) measure
Output signal in voltage or current configurable by means of DIP-switches
1500 Vac galvanic isolation on the 3 ways
Independent zero and full scale regulations
EMC compliant - CE mark
Good accuracy and performances stability
DIN rail mounting

APPLICATIONS
Control and monitoring of signals for:
- Process controls
- Automation systems
- Energy sources managements

GENERAL INFORMATION

The DAT 5023/V signal converter is able to accept on its input the True RMS value of alternate voltage signals variable from 0÷36 Vac up to 0÷550 Vac, or direct voltage signals variable from 0÷36 Vdc up to 0÷550 Vdc. The input signal must be applied on dedicated measurement terminals in function of its amplitude (See table "Input signals") and it is processed and converted on the output in the normalized analogue signal previously programmed.
The input signal type, the output signal type and value are configurable in a wide range of combinations (See table "Configurability"). They are selected by means of suitable DIP-switches named SW1 ed SW2.The Zero and Full scale values are calibrated using the suitable potentiometers.
On the front side of the device there is the PWR indicator that shows the correct power supply condition of the device. The device operates at 1500 Vac full isolation among the input, the output and the power supply. This permits to avoid the problems coming from the reciprocal influence of the various circuits, or those originated from the induced noise through the ground loops. It is possible to connect a current transmitter to the output thanks to the Auxiliary power source (Vaux) provided for its supply. The DAT 5023/V unit, developed, manufactured and tested in strict accordance with the quality assurance standard UNI EN ISO9001:2000, is in compliance with the directive 89/336/CEE on the electromagnetic compatibility. It is housed into a strong plastic enclosure of only 12.5 mm thickness, allowing an high density mounting on DIN rail.

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

INPUT

Voltage input (AC)	0÷36 Vac, 0÷80 Vac, 0÷170 Vac, 0÷370 Vac, 0÷550 Vac
Voltage input (DC)	0÷36 Vdc, 0÷80 Vdc, 0÷170 Vdc, 0÷370 Vdc, 0÷550 Vdc
Measure type	Configurable: Direct or Alternate
Bandwidth (- 3 dB)	40 Hz ÷ 1 KHz

OUTPUT

Output signal	Configurable: 0-10 V, 2-10 V, 0-5 V, 1-5 V, 0-20 mA, 4-20 mA
Zero regulation	± 40 % max.
Span regulation	± 40 % max.
Auxiliary power supply	12 Vdc min. @ 20mA
Load resistance	>/=5 KOhm for Voltage Output </=500 Ohm for Current Output

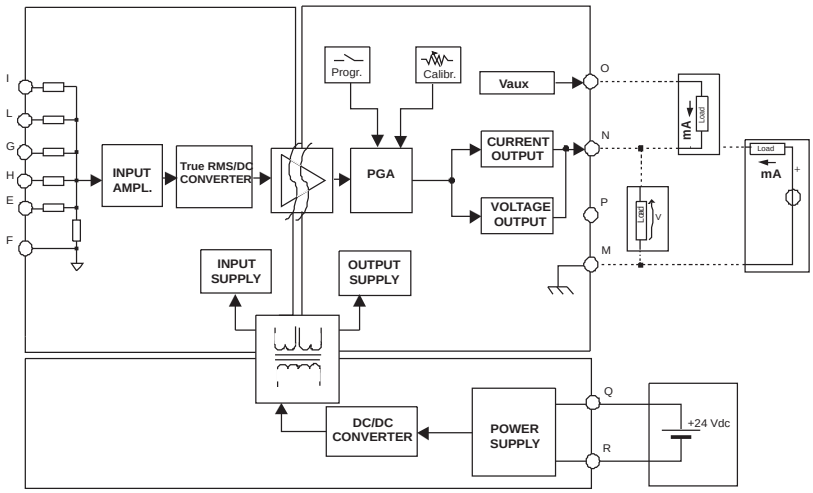
POWER SUPPLY

Power supply voltage	18 ÷ 30 Vdc
Current consumption	50 mA max (Voltage Output) 80 mA max (Current Output)
Polarity reversal protection	60 Vdc reversal max.

CHARACTERISTICS AND PERFORMANCES

Linearity error	± 1 % of f.s.
Calibration error	± 0.1% of f. s.
Thermal drift	0.02% of f.s./°C
Response time (10 % to 90% of F.S.)	AC inputs : 250 ms DC inputs : 20 ms
Warm-up time	3 min.
Electromagnetic Compatibility (EMC)	Immunity: EN 61000-6-2 Emission: EN 61000-6-4
Isolation among the 3 ways	1500 Vac, 50 Hz, 1 min.
Operating temperature	- 20 ÷ 60 °C
Storage temperature	- 40 ÷ 100 °C
Relative humidity (not condensing)	0 ÷ 90 %
Weight	approx. 90 g.

BLOCK DIAGRAM



OPERATIVE INSTRUCTIONS

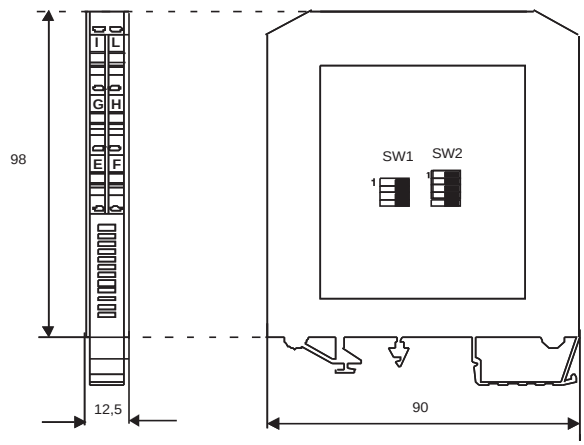
The converter must be powered with a direct voltage included in the 18÷30 Vdc range applied between the terminals Q (+Vdc) and R (GND1). The input signal must be referred to the terminal F(GND2) while it is possible to connect the measure cable on the terminals I,L,G,H,E in function of the amplitude of the same signal(See table " Input signals ").The output voltage signal is supplied between the terminals N (OUT V/I) and M (GND3);the output current signal can be measured in the following way: between the terminals O (Vaux) and N (OUT V/I) for the source current, between the terminals N (OUT V/I) and M (GND3) for the sink current.

CONFIGURATION

The configuration of the input type signal and the output is performed by means of the DIP switches available opening the suitable window located on the side of the enclosure. The table "Configurability" shows the list of possible input and output signals toghether with the relative DIP switch positions corresponding to the desired configuration. After the device's configuration, it is necessary to perform its calibration by means of the ZERO and SPAN regulations located on the top of the enclosure.
The DAT 5023/V is supplied conforming the configuration requested at the moment of the order. In case of order with no specification, the unit is supplied with a standard setting: IN= 0÷170 Vac , OUT= 0-10V

TERMINAL ASSIGNEMENT			
I	IN Vac/Vdc	M	GND3
L	IN Vac/Vdc	N	OUT V/I
G	IN Vac/Vdc	O	Vaux
H	IN Vac/Vdc	P	N.C.
E	IN Vac/Vdc	R	GND1
F	GND2	Q	+Vdc

DIMENSIONS (mm.)



CONFIGURATION TABLE

CONFIGURABILITY

INPUT

IN \ SW1	1	2	3	4
Vac	●			
Vdc			●	

OUTPUT

OUT \ 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

INPUT SIGNALS TABLE

	Input ranges		Input resistance	
	IN Vac	IN Vdc	IN Vac	IN Vdc
I	0÷550	0÷550	550 kΩ	550 kΩ
L	0÷370	0÷370	370 kΩ	370 kΩ
G	0÷170	0÷170	170 kΩ	170 kΩ
H	0÷80	0÷80	80 kΩ	80 kΩ
E	0÷36	0÷36	36 kΩ	36 kΩ

Note: the signal is alwais referred to the terminal F

INSTALLATION INSTRUCTIONS

The DAT 5023/V device is suitable for fitting to DIN rails in the vertical position. For optimum operation and long life, make sure that sufficient air flow is provided for the device avoiding to place racewais 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.
When 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 **both** the overload conditions exist.

The overload conditions are the following:
- Use of the input auxiliary power supply (terminal O)
- Use of the output auxiliary power supply (terminal N)

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...).

HOW TO ORDER:
DAT 5023/V 0 ÷ 170 Vac, 0 ÷ 10 V

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