

3 ways isolated programmable signal converter **DAT 5021**



FEATURES

- Input for voltage and current signal
- Input range configurable by DIP-switches
- Isolated power supply source for passive current transmitter on input
- Isolated power supply source for passive loads on output
- Voltage or current output configurable by DIP-switches
- Galvanic isolation at 2000 Vac between input, power supply and output
- Good accuracy and performance stability
- EMC compliant – CE mark
- DIN rail mounting in compliance with EN-50022 and EN-50035

GENERAL DESCRIPTION

The converter DAT 5021 is designed to provide on its output a voltage or current signal proportional with the value of the normalised signal applied on its input. The user can program the input and output ranges by the proper DIP-switches available after opening the suitable door located on the side of device (see "Input ranges 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 2000 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 5021 provides on the input side an auxiliary supply source to connect both active and passive current loops.

Moreover it provides on the output side an auxiliary supply source to connect both active and passive loads.

It has been made 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 according to EN-50022 and EN-50035 standards .

OPERATIVE INSTRUCTIONS

The converter DAT 5021 must be powered by a direct voltage included in the 18 V to 32 V range. The power supply must be applied between the terminals Q (+Vdc) and R (GND).

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

Voltage output: between the terminals L (Out) and G (Out GND); **passive current output:** between the terminals L (Out) and G (Out GND) for the sink currents; **active current output :** between the terminals I (Aux supply out) and L (Out) for the source currents.

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

Voltage input: between the terminals N (Input V) and P (Input GND); **passive current input:** between the terminals O (Input I) and P (Input GND) for the sink currents; **active current input** for the source current (for example coming from a passive transmitter) : between the terminals M (Aux supply) and O (Input I).

The configuration of input and output ranges values is made by DIP-switches (refer to the section "Input ranges table" 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 "DAT 5021: Configuration and calibration".

To install the device refer to the section "Installation instructions".

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

Input	
Signal type (configurable)	Current: 4 ÷ 20 mA, 0 ÷ 20 mA, Voltage: 0÷10 V, 2÷10 V, 0÷5 V, 1÷5 V
Input impedance	Voltage: >/= 1 MΩ, Current: ~ 50 Ω
Auxiliary supply (Aux. supply)	18 Vdc min @ 20 mA
Output	
Signal type (configurable)	Current: 4 ÷ 20 mA, 0 ÷ 20 mA, Voltage: 0÷10 V, 2÷10 V, 0÷5 V, 1÷5 V
Zero regulation	± 5 % min.
Span regulation	± 5 % min.
Load resistance (Rload)	Current output: </= 500 Ω, Voltage output: >/= 5 KΩ
Auxiliary supply (Aux. Supply out)	12 Vdc min @ 20 mA
Performances	
Calibration error	± 0.1 % of f.s.
Linearity error (*)	± 0.05 % of f.s.
Thermal drift	0.02 % of f.s./°C
Response time (from 10 to 90 % of f.s.)	< 10 ms
Power supply voltage (**)	18÷32 Vdc
Current consumption(***)	Current output: 90 mA max. Voltage output: 60 mA max.
Electromagnetic Compatibility (EMC) (for industrial environments)	Immunity: EN 61000-6-2; Emission : EN 61000-6-4
Isolation voltage	2000 Vac, 50 Hz, 1 min.
Operating temperature	-20 ÷ 60 °C
Storage temperature	- 40 ÷ 85 °C
Relative humidity (not cond.)	0 ÷ 90%
Weight	approx. 90 g

(*) inclusive of hysteresis and power supply variation.

(**) internally protected against polarity reversion.

(***)Current: with both input and output Auxiliary supplies operative; Voltage: with input Auxiliary supply operative.

DAT 5021: CONFIGURATION & CALIBRATION

- 1) Refer to the "Input ranges table", determine in the column "Input" the position of the input value.
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 on input a voltage or current simulator programmed to supply the maximum and minimum values of the input range.
- 4) Set the simulator at the minimum value of the input range or regulate the potentiometer at the minimum value.
- 5) By the ZERO potentiometer calibrate the output at the minimum value.
- 6) Set the simulator at the maximum value of the input range or regulate the potentiometer at the maximum value.
- 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: 4÷20 mA out 0÷10 Vdc
 Input switches configuration (SW1): On, Off, On, Off.
 Output switches configuration (SW2): Off, On, Off, Off, Off.

INPUT RANGES TABLE

INPUT	SW1			
	1	2	3	4
0 ÷ 10 V		●		
2 ÷ 10 V	●			
0 ÷ 5 V		●		●
1 ÷ 5 V	●			●
0 ÷ 20 mA		●	●	
4 ÷ 20 mA	●		●	

OUTPUT RANGE TABLE

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

● = DIP SWITCHES " ON "

INSTALLATION INSTRUCTIONS

The DAT 5021 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 **both** the overload conditions exist.

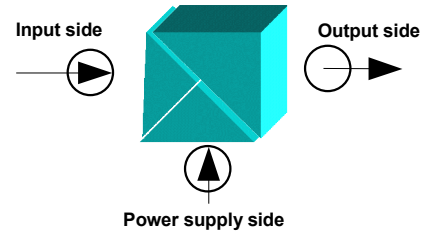
Overload conditions:

- Use of input auxiliary supply (terminal M).
- Use of output auxiliary supply (terminal I).

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.

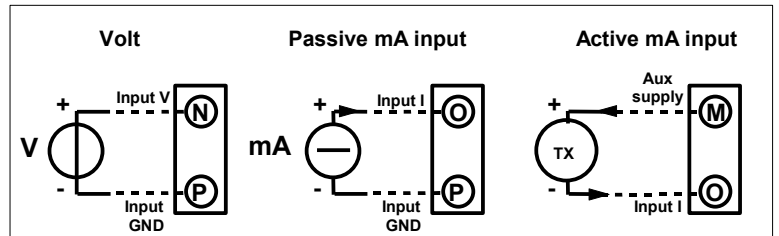
Warning: when the voltage input (terminal N) is not used, it is suggested to not connect cable to it or connect the terminal N to the terminal P.

ISOLATIONS STRUCTURE

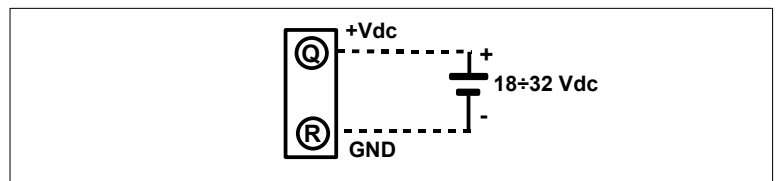


DAT 5021: CONNECTIONS

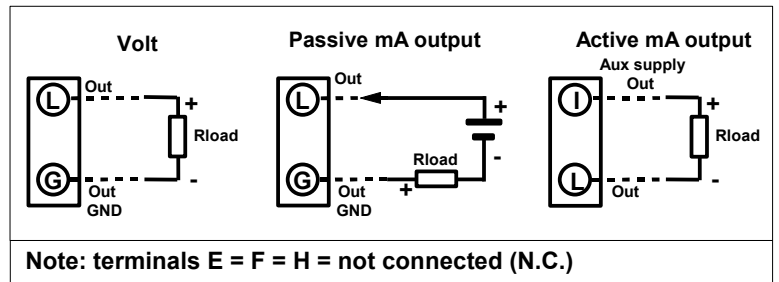
INPUT CONNECTIONS



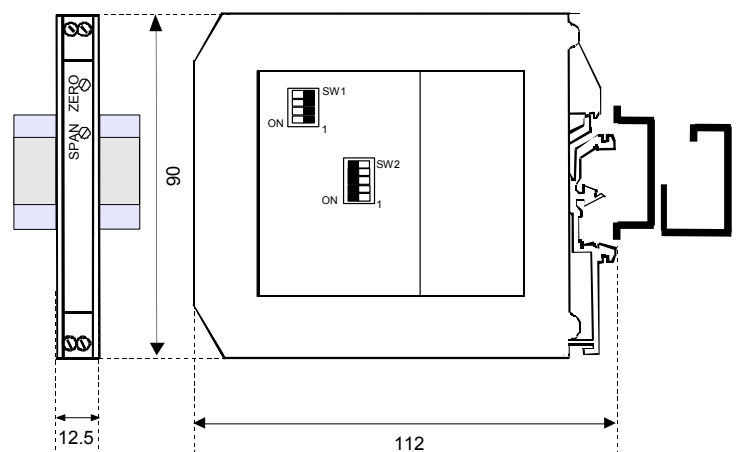
POWER SUPPLY CONNECTIONS



OUTPUT CONNECTIONS



DIMENSIONS (mm) & REGULATIONS



HOW TO ORDER

The DAT 5021 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: DAT 5021 **0÷10 V** - **0÷10 V**

