

Isolated programmable converter for DC current signal DAT 5023Idc



FEATURES

- Input for DC current signal
- Build-in pluggable cross connector
- Measure by Hall effect transducer
- Isolated power supply source for passive loads on output
- Voltage or current output configurable by DIP-switches
- Galvanic isolation at 2000 Vac
- 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 5023Idc is designed to convert the DC current signal from 0÷5 A to 0÷60 A applied on its input in a voltage or current output signal. The device is available in three versions (A, B and D) in function of the input current value (refer to "Technical specification" section). The user can program the output ranges by the proper DIP-switches available after opening the suitable door located on the side of device (see "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 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 measure of the input signal is executed by a cross connector and a Hall effect transducer; this allows to isolate the input side from the output and power supply.
The DAT 5023Idc provides on the output side an auxiliary supply source to connect both active and passive loads.
It has been made in compliance with the EEC/336/89 standard on the Electromagnetic Compatibility.
It is housed in a plastic enclosure of 27.5 mm thickness suitable for DIN rail mounting in according to EN-50022 and EN-50035 standards .

OPERATIVE INSTRUCTIONS

The converter DAT 5023Idc must be powered by a direct voltage included in the 18 V to 30 V range. The power supply must be applied between the terminals Q (+Vdc) and R (GND1). The green led PWR switched on shows the right state of supply of the device.
The output connections must be made as shown in the section "Output connections".
Voltage output: between the terminals N (Out) and M (GND2); **passive current output:** between the terminals P (Out) and M (GND2) for the sink currents; **active current output :** between the terminals O (Vaux) and P (Out) for the source currents.
Connect the input cable inside the cross connector as shown in the section "Input connections".
The configuration of the output ranges values is made by DIP-switches (refer to the section "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 5023Idc: Configuration and calibration".
To install the device refer to the section "Installation instructions".

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

| | |
|--|--|
| Input (Fixed) DAT5023Iac/A DAT5023Iac/B DAT5023Iac/D Type of measure Cross connector | 0÷5 A, 0÷10 A 0÷20 A, 0÷25 A, 0÷30 A 0÷40 A, 0÷50 A, 0÷60 A Direct Diameter: 8 mm |
| Output Signal type (configurable) Zero regulation Span regulation Load resistance (Rload) Auxiliary supply (Vaux) | Current: 4 ÷ 20 mA, 0 ÷ 20 mA, Voltage: 0÷10 V, 2÷10 V, 0÷5 V, 1÷5 V ± 40 % max. ± 40 % max. Current output: $\leq 500 \Omega$, Voltage output: >math>\geq 5 K\Omega</math> 12 Vdc min @ 20 mA |
| Performances Calibration error Linearity error (*) Thermal drift Response time (from 10 to 90 % of f.s.) Power supply voltage (**) Current consumption(***) Electromagnetic Compatibility (EMC) (for industrial environments) Isolation voltage Operating temperature Storage temperature Relative humidity (non cond.) Weight | ± 0.1 % of f.s. ± 1 % of f.s 0.02 % of f.s./°C 400 ms 18÷30 Vdc Current output: 90 mA max. Voltage output: 60 mA max. Immunity: EN 61000-6-2; Emission : EN 61000-6-4 2000 Vac, 50 Hz, 1 min. -20 ÷ 60 °C - 40 ÷ 85 °C 0 ÷ 90% approx. 170 g |
| (*) inclusive of hysteresis and power supply variation. (**) internally protected against polarity reversion. (***)Current: with Auxiliary supply operative. | |

DAT 5023Idc: CONFIGURATION & CALIBRATION

- 1) 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 cable in the cross connector.
- 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.(DAT 5023Idc/A) : out 0÷10 Vdc

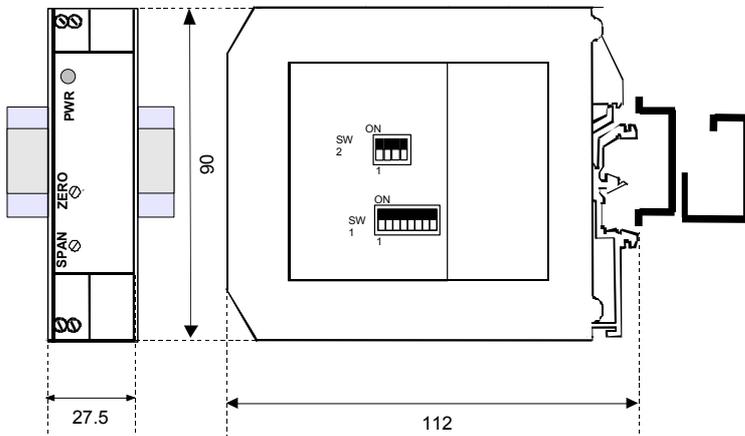
Output switches configuration (SW2):Off, Off, Off, Off.

OUTPUT RANGE TABLE

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

● = DIP SWITCHES " ON"

DIMENSIONS (mm) & REGULATIONS



INSTALLATION INSTRUCTIONS

The DAT 5023Idc 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 overload conditions exist.

Overload conditions:

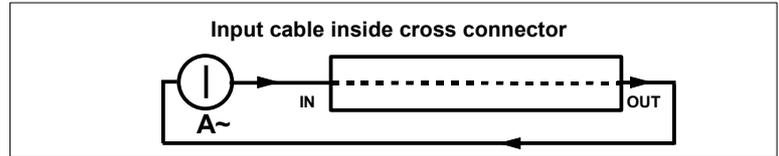
- High power supply values (> 27 Vdc).
- Use of current output (terminal P).
- Use of output auxiliary supply (terminal O).

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.

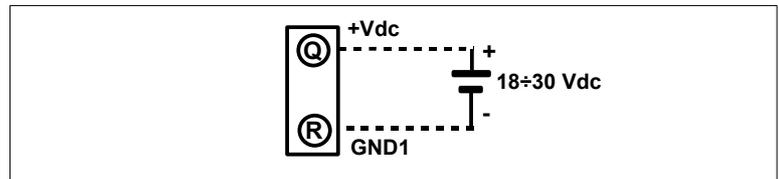
Moreover it is suggested to avoid routing conductors near power signal cables (motors, induction ovens, inverters, etc...) and to use shielded cable for connecting signals.

DAT 5023Idc: CONNECTIONS

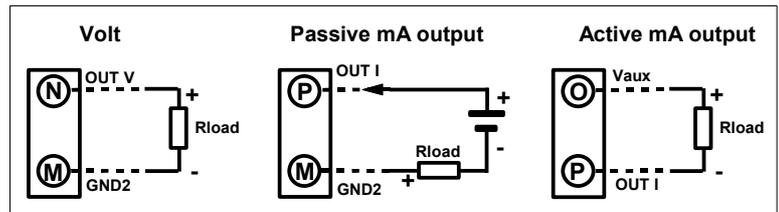
INPUT CONNECTION



POWER SUPPLY CONNECTIONS

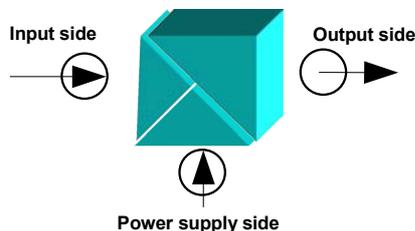


OUTPUT CONNECTIONS



Note: terminals I = L = G = H = E = F not connected (N.C.)

ISOLATIONS STRUCTURE



HOW TO ORDER

The DAT 5023Idc is supplied as requested on the order.

ORDER CODE EXAMPLE: DAT 5023Idc/A **0÷5 A** - **0÷10 V**

Device version
Input range
Output range