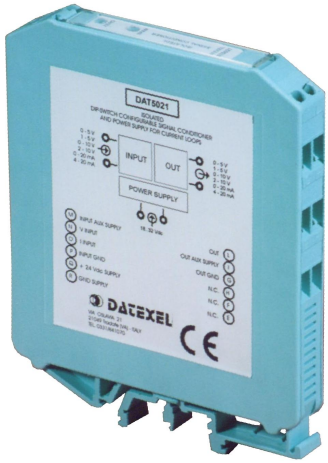
Isolated & configurable Signal Conditioner/ Power Supply for current loops

DAT 5021

FEATURES
- 2000 Vac galvanic isolation on the 3 ways
- Configurable by means of DIP switches
- More than 200 Input & Output configurations
- Isolated power supply sources for external transmitters on input and output
- High speed operation: 10 ms Response Time
- Independent zero and full scale regulations
- EMC compliant - CE mark
- 12.5mm only enclosure thickness
- DIN rail mounting

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



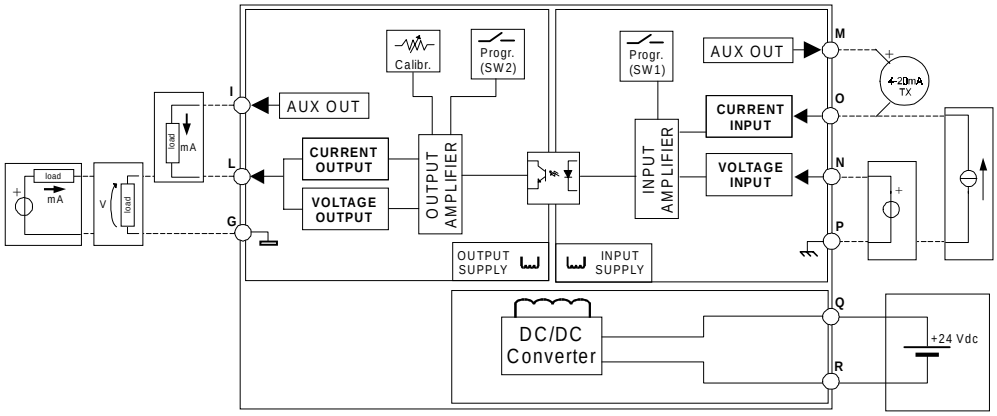
GENERAL INFORMATION

The DAT 5021 signal conditioner is able to accept at its input a large range of normalized analog signals. The input signal is processed and converted on the output into the corresponding normalized analog signals previously programmed. The signal type configuration and the calibration of the output are made separately. The type and value of the input and output signals are configurable in a wide range of combinations (see table "Configurability"). They are selected by means of suitable DIP switches.
The device operates at 2000 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. Auxiliary power sources (Vaux) are provided for the input and the output, allowing to connect both active and passive sensors or transmitters. These power sources respect the isolation value above mentioned.
Consequently DAT 5021 find important applications as isolated power supply unit in current loops. In fact it may be used to power the input and output current loop at the same time.
The DAT 5021 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 elecromagnetic compatibility. It is housed into a strong plastic enclosure of only 12.5mm thickness, allowing an high density mounting on DIN rail.

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

INPUT	
Input Signal	configurable: 0-10V, 2-10V, 0-5V, 1-5V, 0-20mA, 4-20mA
Auxiliary power supply	18V min. @ 20mA
Input impedance	> 1MOhm for voltage input, < 50 Ohm for current input
OUPUT	
Output signal	configurable: 0-10V, 2-10V, 0-5V, 1-5V, 0-20mA, 4-20mA
Zero regulation	± 5% min.
Span regulation	± 5% min.
Auxiliary power supply	12V min. @ 20mA
Load resistance	>/=5 KOhm for voltage and </=500 Ohm for current
POWER SUPPLY	
Power supply voltage	18 ÷ 32 Vdc
Current consumption	30 mA max or 80 mA max. with all Vaux operating (2 channels @ 20mA)
Polarity reversal protection	60 Vcc reversal max.
CHARACTERISTIC PERFORMANCES	
Calibration error	± 0.1% of f. s.
Linearization error	± 0.05% of f. s.
Thermal drift	0.02% of f.s./°C
Response time (10 % to 90% of F.S.)	< 10ms
Warm-up time	3 min.
Electromagnetic compatibility (EMC)	In compliance with EN50081-2 and EN50082-2
Isolation among the 3 ways	2000Vac, 50 Hz, 1 min.
Operating temperature	- 20 ÷ 60 °C
Storage temperature	- 40 ÷ 100 °C
Relative humidity (non condensing)	0 ÷ 90 %
Weight	approx. 90 g.

BLOCK DIAGRAM



OPERATING INSTRUCTIONS

The converter must be powered with a voltage, included in the 18-32Vdc value range, which must be applied between the terminal Q(+) and R(-).

The **input** signal must be applied in the following way:
- VOLTAGE INPUT : between terminals N and P;
- PASSIVE INPUT : between terminals O and P for sink current;
- ACTIVE INPUT : between terminals M and O for source current, such as for a two-wire loop powered transmitter.

WARNING!: When the voltage input (N terminal) is not used, it is recommended to not connect anything to it or, better, to shortcircuit it to P terminal if possible.

The **output** signal must be measured in the following way:
- PASSIVE OUTPUT : between terminals L and G for voltage and sink current;
- ACTIVE OUTPUT : between terminals I and L for source current.

CONFIGURATION

The configuration of input and output is performed by means of the DIP switches availables 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 5021 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= 0-10V , OUT= 0-10V

CONFIGURABILITY

INPUT

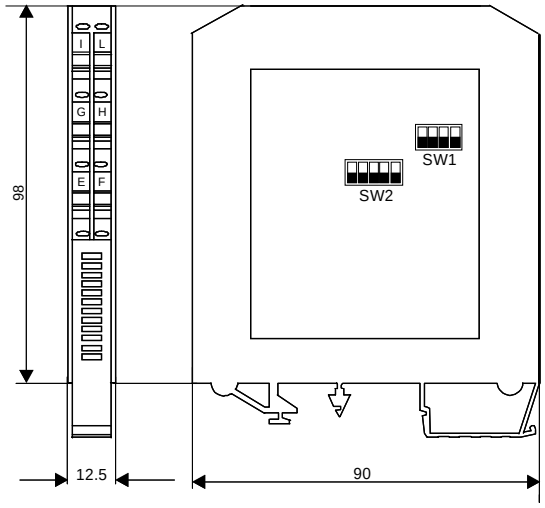
IN \ SW1	1	2	3	4
0-10 V		●		
2-10 V	●			
0-5 V		●		●
1-5 V	●			●
0-20 mA		●	●	
4-20 mA	●		●	

OUTPUT

OUT \ 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 SWITCH ON

DIMENSIONS (mm.)



INSTALLATION INSTRUCTIONS

The DAT 5021 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 5mm** in the following case:
- If panel temperature exceeds 45°C and at least one of the overload conditions exist.
- If panel temperature exceeds 35°C and at least two of the overload conditions exists.

The overload conditions are the following:
- High supply voltage: >27Vdc
- Use of the input auxiliary power supply (terminal M)
- Use of the output1 auxiliary power supply (terminal I)

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 5021 / 0÷10V / 4÷20mA

INPUT / OUTPUT

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