

Hazardous area Current Loop Repeater / Supply DAT 5030 IS

FEATURES

- Protection mode: II (1) G D [Ex ia] IIC - [Ex iaD] according to the Directive ATEX 94/9/EC
- Power supply for current loop in hazardous area (ZONE 0)
- 0-20mA or 4-20mA active or passive configurable input
- 0-10V, 2-10V, 0-20mA, 4-20mA configurable output
- DIP – switch configurable
- Single or Double Channel
- HART Compatible on request
- 2000 Vac galvanic isolation between input and output
- EMC compliance – CE mark
- DIN rail mounting suitable



GENERAL DESCRIPTION

The DAT 5030 IS device is a galvanic isolated Intrinsically Safety Barrier, defined as “Associated Apparatus”

The input can measure 0-20 mA or 4-20 mA current loops, both active or passive mode; auxiliary power supply is available to supply the current loop through the hazardous area (ZONE 0).

The measure is converted in output as voltage signal (0-10V or 2-10V) or current signal (0-20mA or 4-20mA). auxiliary power supply is available to supply the current loop connected to the output.

The input and output range can be set by means of the dip-switch available on the side of the enclosure (see configuration table). The calibration of the device can be made by means of trimmer (ZERO and SPAN) available on the side of the enclosure.

DAT 5030 IS has a 3 way isolation: input (connected to hazardous area devices) is 2000 Vac isolated from power supply and output (connected to safe area); power supply and output are 1500 Vac isolated between them.

The device must be powered with a voltage between 20 and 30 Vdc; the “PWR” green led turned on indicate the correct power supply.

The DAT 5030 IS /A model is single channel, when the DAT 5030 IS /B model has two channels isolated between then and with independent setting and calibration; with this model, connecting in serial loop the two inputs, it can obtain a signal duplicator.

The DAT 5030 IS /AH and DAT 5030 IS /BH models (single and double channel) are capable to transfer the bidirectional HART signal between input and output (the input must be active, that is the current loop must be powered by the auxiliary supply).

The DAT 5030 IS is in compliance with the Directive 2004/108/EC on the electromagnetic compatibility. The device is housed in a rough self-extinguish plastic enclosure of 22.5 mm thickness suitable for DIN rail mounting .

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

Input	
Input signal	Active or passive current loop
Range	0÷20 mA or 4÷20 mA configurable
Zero regulation	± 5 %
Span regulation	± 5 %
Auxiliary Supply	> 15V @ 20mA
Input impedance	< 25 Ω
Output	
Output signal	4÷20 mA, 0÷20 mA, 0÷10 V or 2÷10 V configurable
Load resistance	Voltage: > 5 KΩ Current: < 500 Ω
Auxiliary Supply	> 12V @ 20mA
Power Supply	
Supply Voltage	20 ÷ 30 Vdc
Current consumption	80 mA per channel with Vaux operating
Polarity inverted protection	60 Vdc max.
Performances	
Calibration error	± 0.1 % f.s.
Linearity error (*)	± 0.2 % f.s.
Thermal drift	0.02 % f.s./°C
Response time	< 0.2 sec.
Frequency response (HART Protocol)	bidirectional 0.5 ÷ 4 Khz @ 3dB
Isolation voltage input/output	2000 Vac @ 50 Hz, 1 min.
Isolation voltage input/supply	2000 Vac @ 50 Hz, 1 min.
Isolation voltage supply/output	1500 Vac @ 50 Hz, 1 min.
Isolation voltage between channels	2000 Vac @ 50 Hz, 1 min.
Electromagnetic Compatibility (EMC) (for industrial environments)	Immunity: EN 61000-6-2; Emission : EN 61000-6-4
Operating temperature	-20 ÷ 60 °C
Storage temperature	-40 ÷ 85 °C
Relative humidity (non condensing)	0 ÷ 90%
Weight	Single channel: ~ 100 g Double channel: ~ 160 g

* inclusive of hysteresis, power supply variation and linearisation error.

Ex Data:

Terminals J-I; A-B-C-D; O-P-Q-R : Um = 250 V
Terminals 4-6; 14-16: Uo = 26.4 V Ui = 30 V Io = 93 mA Ii = 100 mA Po = 615 mW Pi = 0.75 W Lo = 4.2 mH Li = ~ 0 mH Co = 75 nF Ci = 12 nF
Terminals 6-5; 16-15: Uo = 1.2 V Ui = 30 V Io = 46 mA Ii = 100 mA Po = 14 mW Pi = 0.75 W Li = ~ 0 mH Ci = 12 nF
Ta : -20 ÷ +60 °C

CONFIGURATION & CALIBRATION

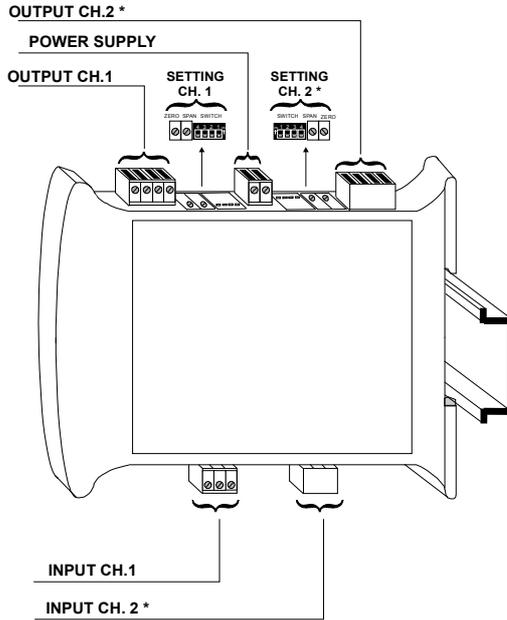
Input and output configuration is made by means of DIP switch available on the side of the enclosure. The configuration table show the available signal configurations indicating the proper dip-switch configuration. After the configuration of the device, it must be calibrated by means of ZERO and SPAN regulation available near the dip-switch.

The two channels of DAT 5030 IS /B and DAT 5030 IS /BH models have independent configuration and calibration.

CONFIGURATION TABLE

Channels 1 & 2		SWITCH			
INPUT	OUTPUT	1	2	3	4
0÷20 mA	0÷20 mA	●			
	4÷20 mA		●	●	●
	0÷10 V		●		
	2÷10 V		●	●	●
4÷20 mA	0÷20 mA	●			
	4÷20 mA		●		
	0÷10 V	●			
	2÷10 V		●		

● = DIP SWITCH " ON"



INSTALLATION INSTRUCTIONS

To guarantee the Safety characteristics, before to install the device read the relative "Safety Instructions" supplied with them.

The DAT 5030 IS device is suitable for fitting to DIN rails in the vertical position. For optimum operation and long life, follow the instructions above.

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.

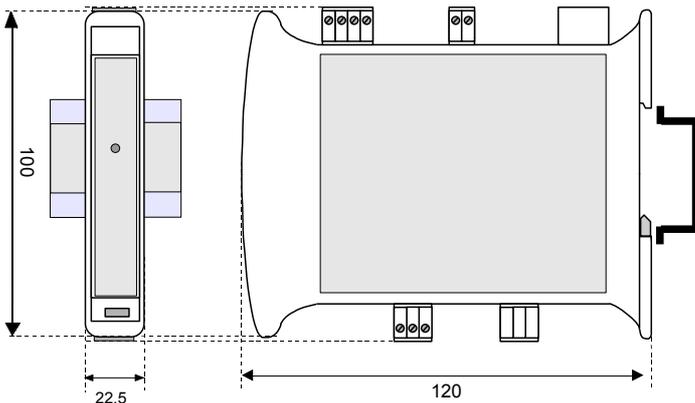
The overload conditions are the following:

- High supply voltage: >27Vdc
- Use of the auxiliary power supply (terminal 4-14-D-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.

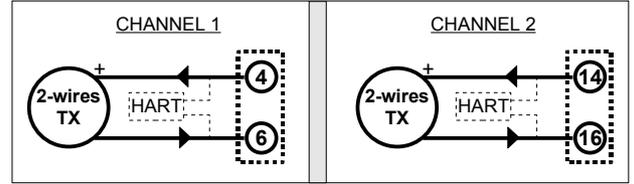
It is recommended to use shielded cable for connecting signals. The shield must be connected to an earth wire provided for this purpose. Moreover it is suggested to avoid routing conductors near power signal cables (motors, induction ovens, inverters etc...).

MECHANICAL DIMENSIONS (mm.)

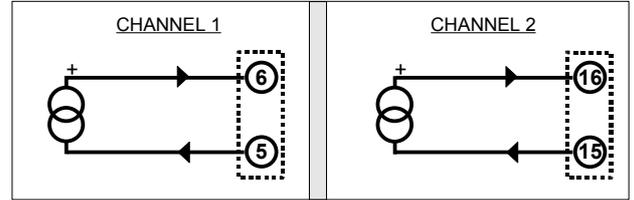


WIRING

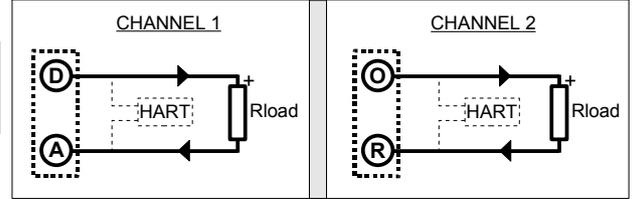
PASSIVE INPUT (2 WIRES TRANSMITTER)



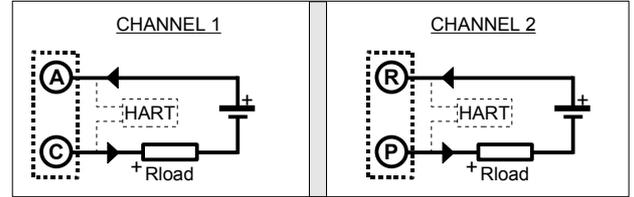
ACTIVE INPUT (CONVERTER / CURRENT GENERATOR)



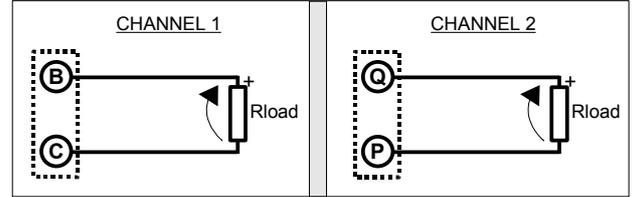
ACTIVE CURRENT OUTPUT



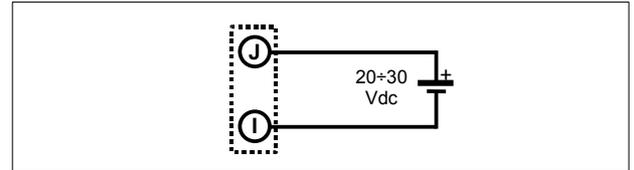
PASSIVE CURRENT OUTPUT



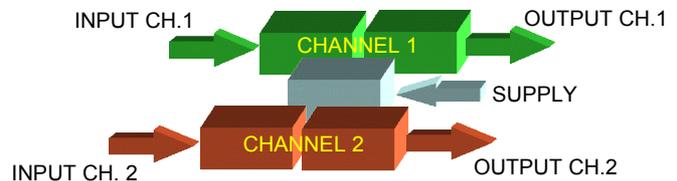
VOLTAGE OUTPUT



POWER SUPPLY



ISOLATION DIAGRAM



HOW TO ORDER

DAT 5030 IS can be supplied in the configuration requested by the customer in the order phase. In case of the configuration is not specified, the parameters must be set by the user.

ORDER CODE EXAMPLE:

DAT 5030 IS / **A** - **In / Out ch. 1** - **In / Out ch. 2**
(optional) (optional)

Model:

- 'A' = 1 channel
- 'AH' = 1 channel HART compatible
- 'B' = 2 channels
- 'BH' = 2 channels HART compatible

■ = Requested
□ = Optional