

# Hazardous area Current Loop Repeater / Supply DAT 5030 IS

## FEATURES

- Protection mode:
  - II (1) G [ Ex ia Ga] IIC
  - II (1) D [ Ex ia Da] IIIC
 according to the Directive ATEX 2014/34/EU
- 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 them 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 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)

|  |  |
|--|--|
| <b>Input</b>   |  |
| 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   |
| <b>Output</b>  |  |
| 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                                       |
| <b>Power Supply</b>  |  |
| Supply Voltage   | 20 ÷ 30 Vdc  |
| Current consumption  | 80 mA per channel with Vaux operating              |
| Polarity inverted protection   | 60 Vdc max.  |
| <b>Performances</b>  |  |
| 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)<br>( 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<br>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<br>Io = 93 mA    Ii = 100 mA<br>Po = 615 mW    Pi = 0.75 W<br>Lo = 4.2 mH    Li = ~ 0 mH<br>Co = 75 nF    Ci = 12 nF |
| Terminals 6-5; 16-15:             | Uo = 1.2 V    Ui = 30 V<br>Io = 46 mA    Ii = 100 mA<br>Po = 14 mW    Pi = 0.75 W<br>Li = ~ 0 mH<br>Ci = 12 nF                                |
| Ta : -20 ÷ +60 °C                 |   |

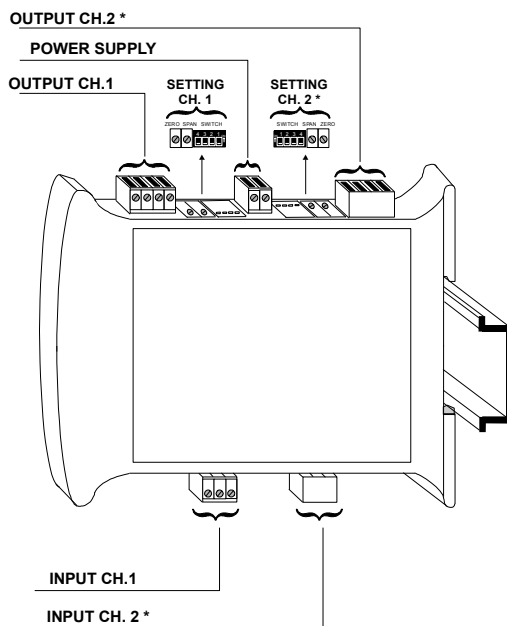
## CONFIGURATION & CALIBRATION

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 exist.

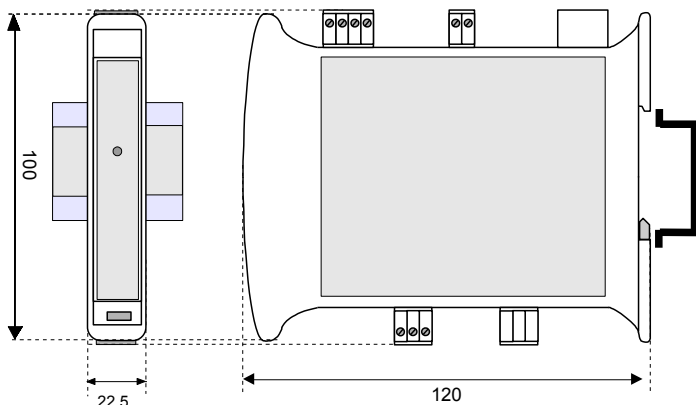
The overload conditions are the following:

- 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...).

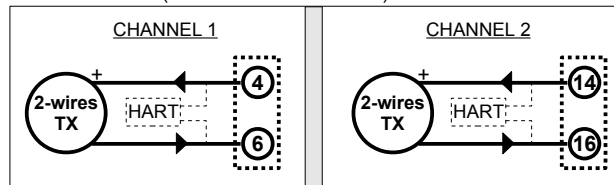
## MECHANICAL DIMENSIONS (mm.)



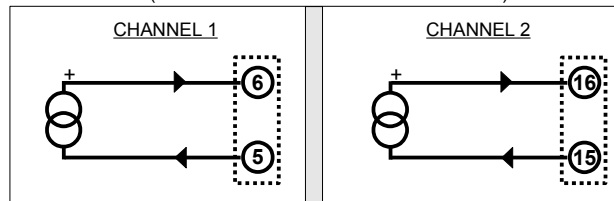
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city, the service for the waste treatment or the supplier from which the product has been purchased.

## WIRING

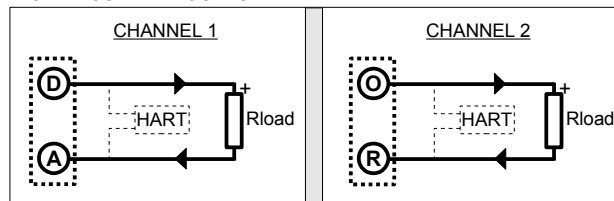
### PASSIVE INPUT (2 WIRES TRANSMITTER)



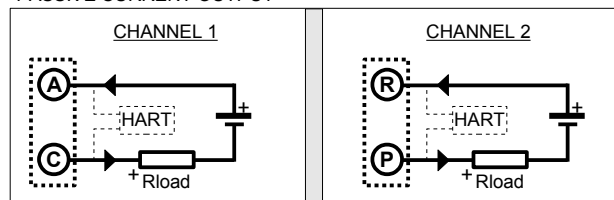
### ACTIVE INPUT (CONVERTER / CURRENT GENERATOR)



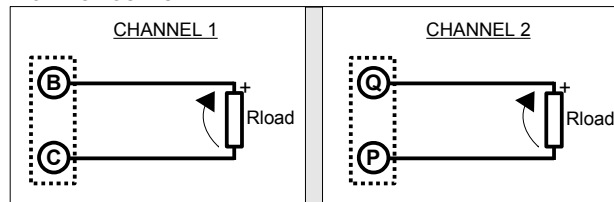
### ACTIVE CURRENT OUTPUT



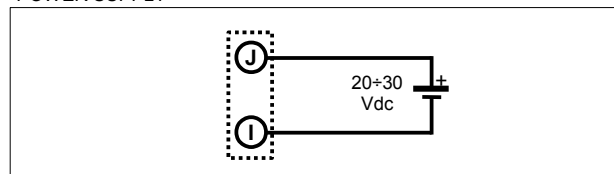
### PASSIVE CURRENT OUTPUT



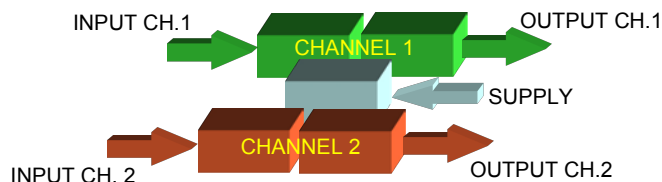
### VOLTAGE OUTPUT



### 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