DATEXEL

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CSQ UNI EN ISO 9001:2008

Isolated mathematical module for voltage and current input configurable by Dip-Switch or PC

DAT 4632 D

FEATURES
- Configurable input for voltage and current
- Configurable output in current or voltage
- Calculation function (two independent outputs)
- Configurable by dip-switch or PC
- High accuracy
- On-field reconfigurable
- Galvanic isolation among all the ways
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035

CE
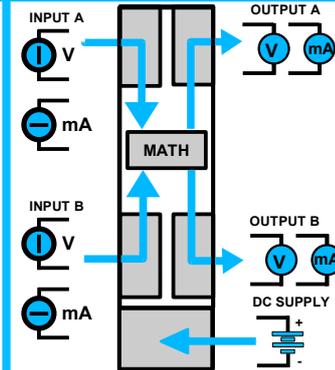
GENERAL DESCRIPTION
The isolated converter DAT 4632 D is able to measure voltage and current signals, execute a programmable mathematical function and provide on output a normalized current or voltage signal. The device guarantees high accuracy and performances stability both versus time and temperature.
The programming is made by the dip-switch located in the window on the side of the enclosure. By means of dip-switches it is possible to select the input type and range and the output type without recalibrate the device.
Moreover, by Personal Computer the user can program all the device's parameters, the type of mathematical function and the relative constant. It is possible to set the two output channels to calculate two independent functions.
The 1500 Vac galvanic isolation on all ways (inputs, outputs and power supply) 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 4632 D is 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 compliance with EN-50022 and EN-50035 standards.

USER INSTRUCTIONS
The converter must be powered by a direct voltage applied to the terminals Q and R.
The channel A measures the value from the sensor connected to the terminals I, L and G and transmits the output measure on the terminals N and M.
The channel B measures the value from the sensor connected to the terminals E, F and H and transmits the output measure on the terminals P and O.
The input and output connections must be made as shown in the section "Connections".
It is possible to configure the converter on field by dip-switch or Personal Computer as shown in the section " Programming ". The configuration by
 dip-switches can be made also if the device is powered (note: after the configuration the device takes some seconds to provide the right output measure).

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

INPUT (2 CHANNELS)				OUTPUT (2 CHANNELS)			
Input type	Min	Max	Min.Span	Output type	Min	Max	Span min
Voltage	0 V	10 V	1 V	Current	0 mA	20 mA	4 mA
Current	0 mA	20 mA	1 mA	Voltage	0 V	10 V	1 V

Input Calibration (1)
Volt: the higher of ±0.1% f.s. and ± 2 mV
mA: the higher of ±0.1% f.s. and ± 6 uA

Linearity (1)
Volt, mA: ± 0.05 % f.s.

Input impedance
Voltage: >= 1 MΩ
Current: <= 50 Ω

Thermal drift (1)
Full scale: ± 0.01% / °C

(1)referred to the input Span (difference between max. and min.)

Output calibration
Current: ± 7 uA
Voltage: ± 5 mV

Burn-out values
Max. output value: 22 mA or 10.6 V
Min. output value: 0 mA or -0.6 V

Output load Resistance - Rload
Current output: < 500 Ω
Voltage output: > 10 KΩ
Short circuit current: 26 mA max.

Response time (10÷ 90%): about 100 ms

POWER SUPPLY
Power supply voltage: 18 .. 30 Vdc
Reverse polarity protection: 60 Vdc max

Current consumption
Current output: 55 mA max.
Voltage output: 25 mA max.

ISOLATION
Among all ways: 1500 Vac, 50 Hz, 1 min

TEMPERATURE AND HUMIDITY
Operative temperature: -20°C .. +60°C
Storage temperature: -40°C.. +85°C
Humidity (not condensed): 0 .. 90 %

HOUSING
Material: Self-extinguishing plastic
Mounting: DIN rail in compliance with EN-50022 and EN-50035
Weight: about 90 g.

EMC (for industrial environments)
Immunity: EN 61000-6-2
Emission: EN 61000-6-4

PROGRAMMING

CONFIGURATION BY DIP-SWITCHES

Input | Opt. | Output CHANNEL B

12345678 SW2
12345678 SW1

OFF
ON

Input | Opt. | Output CHANNEL A

1) Open the suitable door on the side of the device.

Configuration of Channel A (see TAB.1)

2) Set the input type by the dip-switch SW1 [1..4]

3) Set the output type by the dip-switch SW1 [6..8]

4) Set the options by the dip-switch SW1 [5]

Configuration of Channel B (see TAB.2)

2) Set the input type by the dip-switch SW2 [1..4]

3) Set the output type by the dip-switch SW2 [6..8]

4) Set the options by the dip-switch SW2 [5]

NOTE:
- It is also possible to set the dip-switches using the wizard of the configuration software following the procedure described in the section "Configuration by PC".

Ex of configuration: SW1 =
CHANNEL A:
- Input   0-10 V
- Options   Direct
- Output   4-20 mA

                   SW2 =
CHANNEL B:
- Input   0-20 mA
- Options   Reverse
- Output   1-5 V
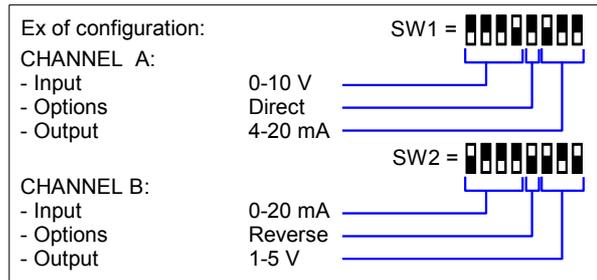
DIP-SWITCH CONFIGURATION TABLES

TAB.1 – Channel A settings

Input	Output	Options
SW1 1 2 3 4	SW1 6 7 8	SW1 5 Out:
Default *	0÷20 mA	Direct
0÷20 mA	4÷20 mA	Reverse
4÷20 mA	0÷10 V	
0÷10 V	2÷10 V	
2÷10 V	0÷5 V	
0÷5 V	1÷5 V	
1÷5 V		

TAB.2 – Channel B settings

Input	Output	Options
SW2 1 2 3 4	SW2 6 7 8	SW2 5 Out:
Default *	0÷20 mA	Direct
0÷20 mA	4÷20 mA	Reverse
4÷20 mA	0÷10 V	
0÷10 V	2÷10 V	
2÷10 V	0÷5 V	
0÷5 V	1÷5 V	
1÷5 V		

NOTES:

* If the dip-switches SWx [1..4] are all set in the position 0 ("Default"), the device will follow the configuration programmed by PC (Input and output type and options).

* Eventual wrong dip-switches settings will be signalled by the blinking of the led "PWR".

CONFIGURATION BY PC
By software DATESOFT it is possible to:
- set the default programming of the device;
- program the options not available with the dip-switch;
- read, in real time, the input and output measures;
- follow the dip-switches configuration wizard.

To configure the device follow the next steps:
1) Power-on the device.
2) Open the protection plastic label on the front of the device.
3) Connect the interface PRODAT to the PC (COM port) and to the device (PGRM connector).
4) Open DATESOFT.
5) Select the COM port in use.
6) Click on "Open COM".
7) Click on "Program".
8) Set the programming data.
9) Click on "Write" to send the programming data to the device.

PRODAT

POWER SUPPLY UNIT

V+ V-

TX/RX CABLE

Plastic label protection

COM PORT

Q R

DAT   PGRM

P.C.
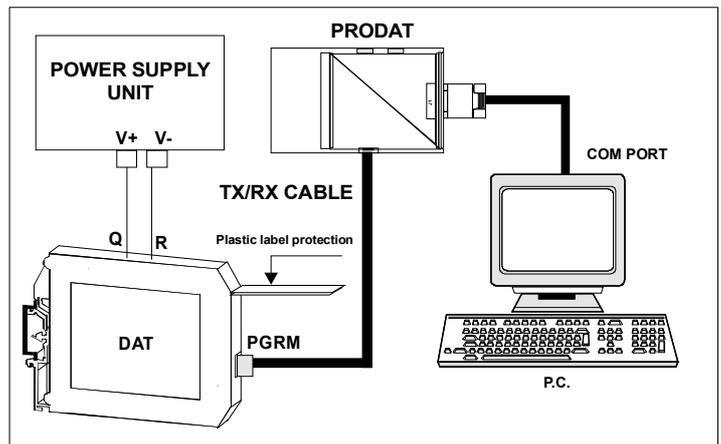
__Warning: during these operations the device must always be powered and the TX/RX cable always connected.__
__For information about DATESOFT refer to the software's user guide.__

CALCULATION FUNCTIONS

By the configuration software, it is possible to program the logic / mathematical functions listed below. For each function it is possible to program the proportionality factors of the input and output signals to adapt the analogue signal to the physical value of the actual application requested.
The two output channels can be programmed with two independent functions.

Available functions:
- **= A**   The output is proportional to the value measured on the input A.
- **= B**   The output is proportional to the value measured on the input B.
- **A + B**   The output is proportional to the sum between the value measured on the input A and the value measured on input B .
- **A – B**   The output is proportional to the difference between the value measured on the input A and the value measured on input B .
- **A * B**   The output is proportional to the multiplication between the value measured on the input A and the value measured on input B .
- **A / B**   The output is proportional to the division between the value measured on the input A and the value measured on input B .
- **MAX (A,B)**   The output is proportional to the higher value between the measures on the input A and which on input B .
- **MIN (A,B)**   The output is proportional to the lower value between the measures on the input A and which on input B .

Examples:

CONNECTIONS

INPUT | OUTPUT

CHANNEL A

| V | mA | **V** | **mA** |

CHANNEL B

| V | mA | **V** | **mA** |
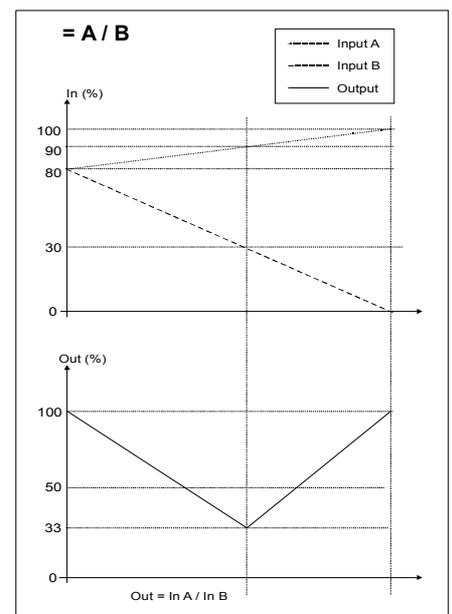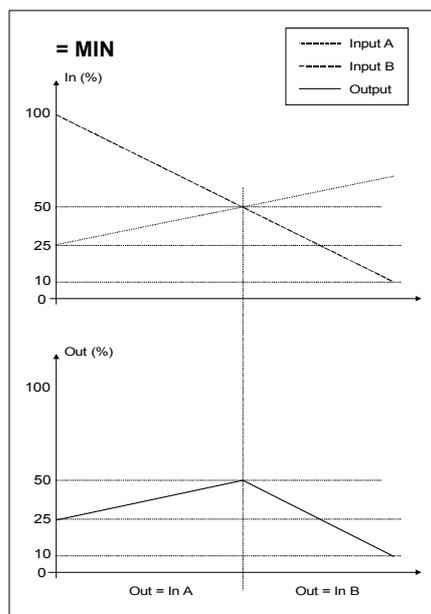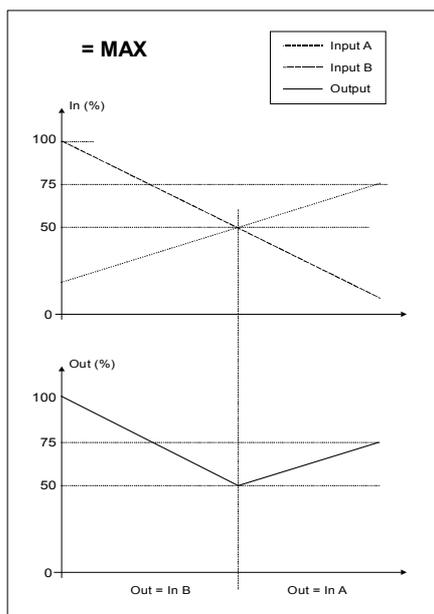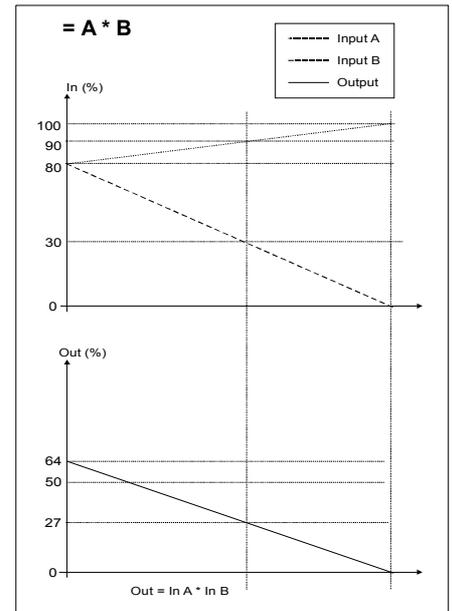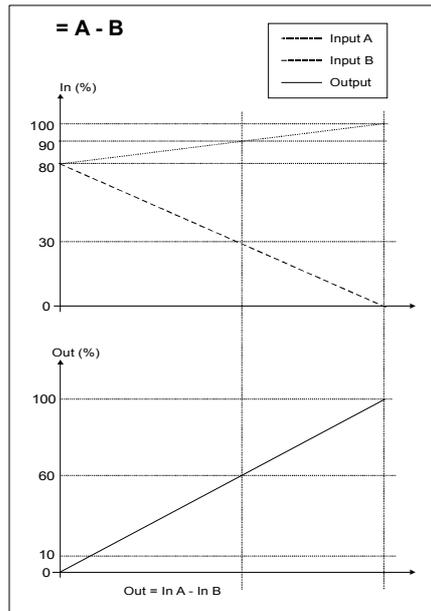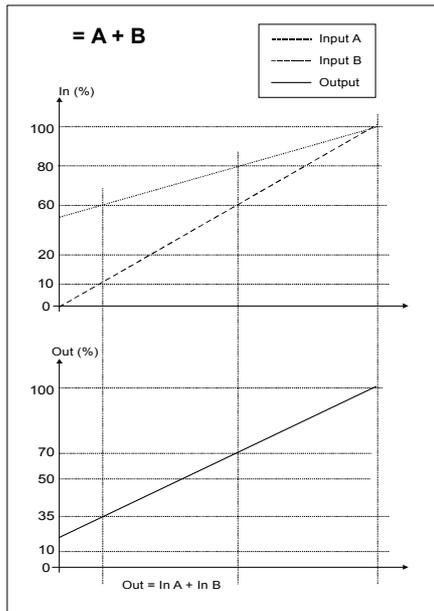
## INSTALLATION INSTRUCTIONS

The 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 cases:
- If panel temperature exceeds 45°C.
- Use of high power supply value (> 27 Vdc).
- Use of output current.

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.

ISOLATION STRUCTURE

INPUT A → CHANNEL A → OUTPUT A

POWER SUPPLY

INPUT B → CHANNEL B → OUTPUT B

POWER SUPPLY

Vdc

DIMENSIONS (mm)

90

12.5

112
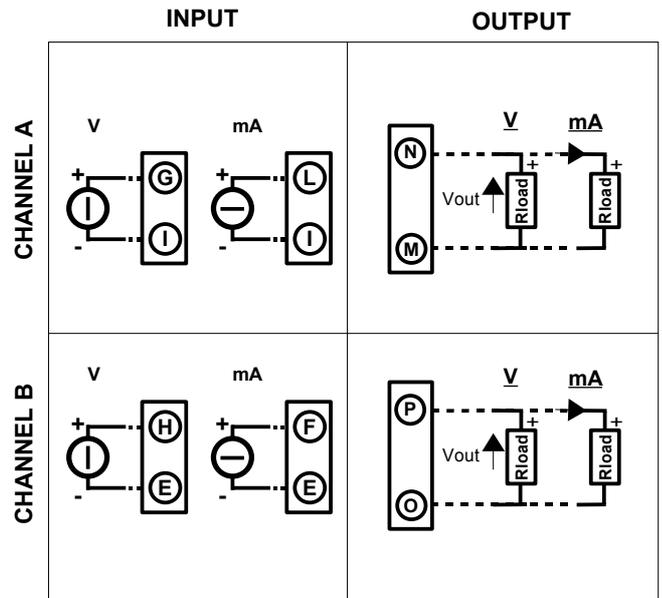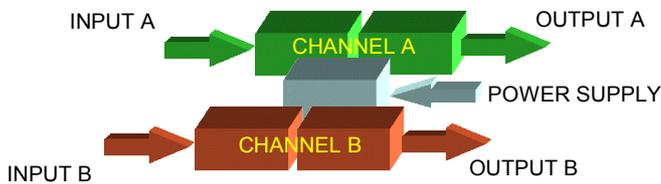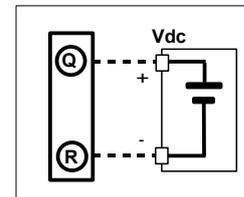
LIGHT SIGNALLING

LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINKING	Wrong dip-switches setting
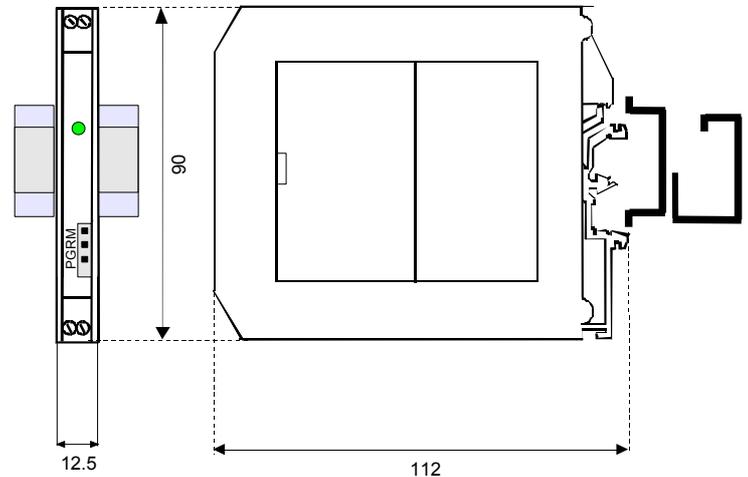
HOW TO ORDER

The device is provided as requested on the Customer's order.
Refer to the section "Programming" to determine the input and output ranges.
In case of the configuration is not specified, the parameters must be set by the user.

ORDER CODE EXAMPLE:

DAT 4632D / A= 4 ÷ 20 mA / 4 ÷ 20 mA / A+B
B= 4 ÷ 20 mA / 4 ÷ 20 mA / MAX

Campo scala ingresso
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Opzioni