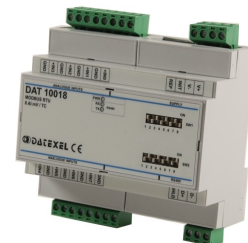


**Distributed I/O device in 6 DIN module box  
4 isolated output channels for Volt/mA communicating over RS-485**

**DAT 10024**

**FEATURES**

- Modbus Server device on RS-485
- Modbus RTU/ Modbus ASCII protocol
- 4 output channels configurable for voltage and current
- Communication parameters configurable by dip-switches
- Watch-Dog Alarm
- Remotely Configurable
- 1500 Vac 3-ways Galvanic Isolation
- LEDs of signalling on front side for power supply and communication
- Connection by removable screw terminals
- High Accuracy
- CE/UKCA mark
- DIN rail mounting in compliance with EN-50022



**GENERAL DESCRIPTION**

The device drives up to 4 voltage signals up to 10V or current up to 20mA connected both in active and passive loop in digital format.

The data are transmitted with MODBUS RTU / MODBUS ASCII protocol over the RS-485 network.

To ensure the plant safety, a Watch-Dog timer alarm is provided. The output channels are configurable independently.

For each channel it is possible to set:

Type and output value;

preset of the value at the power up (Power-up) separated for output voltage and current;

preset of safety value (Safe) separated for output voltage and current.

It is possible to generate voltage signals up to 10V and current signals up to 20mA, both active or passive loops.

The device guarantees high accuracy and stable measure versus time and temperature.

The isolation between the parts of circuit removes eventual ground-loop effects, allowing the use of the device even in the heavy environmental conditions. The device is housed in a 6 module DIN rough self-extinguishing plastic box for mounting on EN-50022 standard DIN rail.

**USER INSTRUCTIONS**

Before to install the device, please read the "Installation Instruction" section.

It is possible to configure the device in two modes: by the dip-switches located on the front of the device or via software using the INIT modality.

Connect the terminal INIT to the terminal REF; at the power-on the device will be automatically set in the configuration set-up (refer to the User Guide of the device).

Connect power supply, serial bus and analogue outputs as shown in the "Wiring" section.

The LEDs state depends on the working condition of the device: see the "Light Signalling" section to verify the device working state.

To perform configuration and calibration operations, read the instructions in the User Guide of the device.

To simplify handling or replacing of the device, it is possible to remove the wired terminals even with the device powered.

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

ANALOGUE OUTPUT (4 CHANNELS)			SERIAL OUTPUT		GENERAL SPECIFICATIONS	
Output Type	Min	Max	Data Transmission			
<b>Current</b> mA	0 mA	+20 mA	<b>RS-485 asynchronous serial</b>		Power supply voltage	20 .. 30 Vdc
<b>Voltage</b> Volt	0 V	+10 V	<b>Baud Rate</b>	<b>115.2 Kbps</b>	Reverse polarity protection	60 Vdc max
<b>Output Accuracy</b>			<b>Max. distance</b>	<b>1.2 Km – 4000 ft</b>	<b>Current consumption @ 24 Vdc</b>	125 mA max.
Current	± 10 uA		<b>Max. Current consumption</b> 150 mA			
Voltage	± 5 mV		<b>ISOLATION</b>			
<b>Thermal drift</b>			Among all the ways 1500 Vac, 50 Hz, 1 min			
Full scale	± 0.01 % / °C		<b>ENVIRONMENTAL CONDITIONS</b>			
<b>Load resistance</b>			Operative temperature -20°C .. +60°C			
Voltage	≥ 5 KΩ		Storage temperature -40°C .. +85°C			
Current	≤ 500 Ω		Humidity (not condensing) 0 .. 90 %			
<b>Auxiliary Voltage (4 channels)</b>			Maximum Altitude 2000 m slm			
	≥ 13Vdc @ 20mA		Installation Indoor			
<b>Response time</b> (from 10 % to 90 %)	15 ms		Category of Installation II			
<b>Sample time</b>	50 ms		Pollution Degree 2			
			<b>MECHANICAL SPECIFICATIONS</b>			
			Material Self-extinguish plastic			
			IP Code IP20			
			Wiring wires with diameter 0.8÷2.1 mm <sup>2</sup> AWG 14-18			
			Tightening Torque 0.8 N m			
			Mounting in compliance with DIN rail standard EN-50022			
			Weight about 200 g.			
			<b>CERTIFICATIONS</b>			
			<b>EMC ( for the Industrial Environments )</b>			
			Immunity EN 61000-6-2			
			Emission EN 61000-6-4			
			<b>UKCA ( ref S.I. 2016 N°1091 )</b>			
			Immunity BS EN 61000-6-2			
			Emission BS EN 61000-6-4			

## INSTALLATION INSTRUCTIONS

The device is suitable for fitting to DIN rails in the vertical position. For optimum operation and long life follow these instructions:

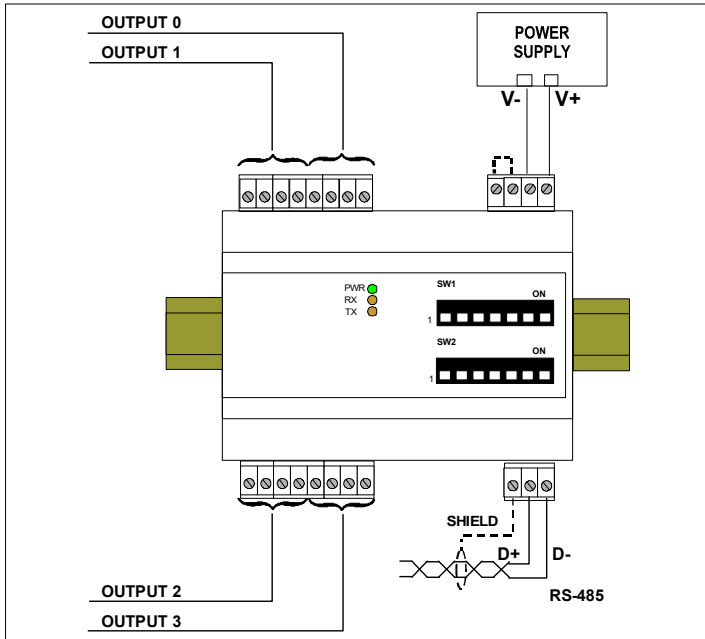
**When the devices are installed side by side it may be necessary to separate them by at least 5 mm in the following case:**  
- If panel temperature exceeds 45°C and power supply voltage 18 Vdc.

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.

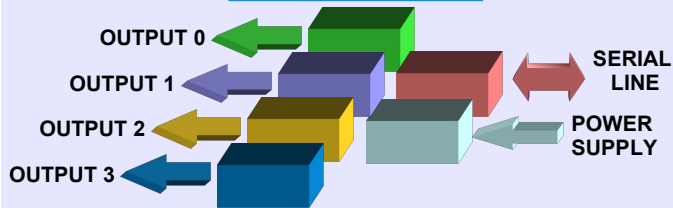
## TERMINALS OVERVIEW



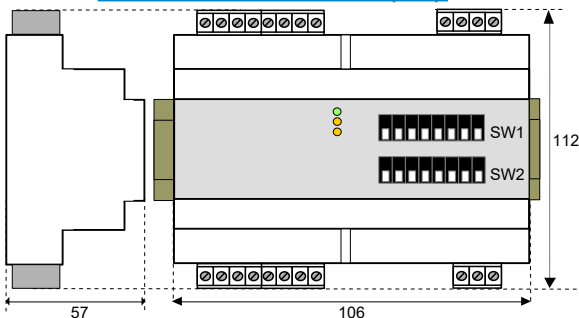
## LIGHT SIGNALLING

LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINK	~1 sec. - Watch-Dog alarm condition occurred
RX	ORANGE	BLINK	Stream of data over receiving line of RS-485
TX	ORANGE	OFF	No data over receiving line of RS-485
		BLINK	Stream of data over transmission line of RS-485
		OFF	No data over transmission line of RS-485

## ISOLATION STRUCTURE



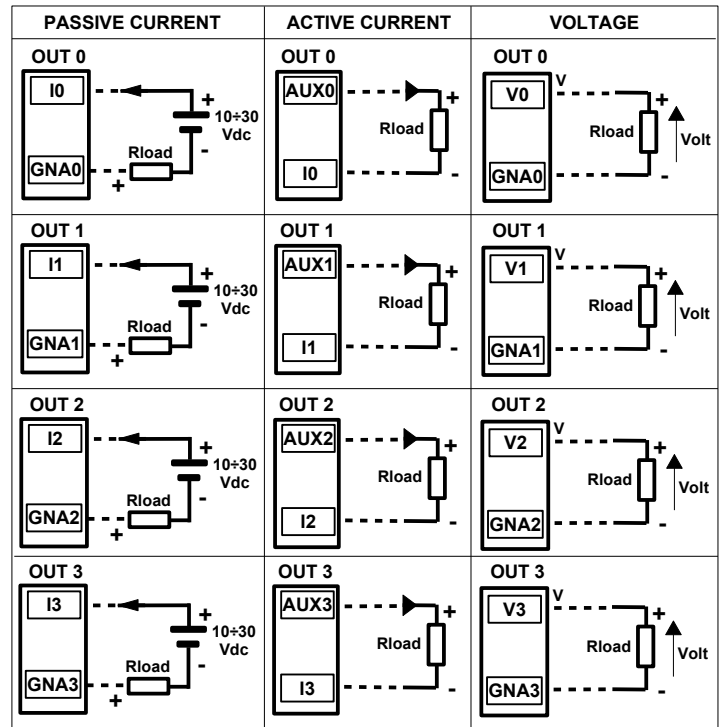
## MECHANICAL DIMENSIONS (mm)



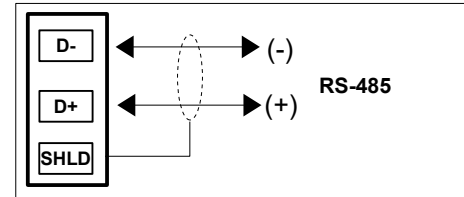
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city, the service for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

## WIRING

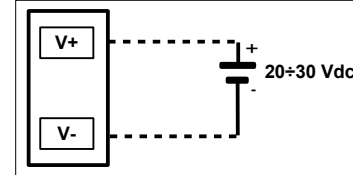
### ANALOGUE OUTPUTS



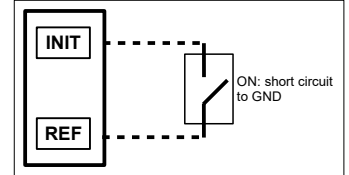
### SERIAL LINE RS-485



### POWER SUPPLY



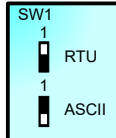
### INIT



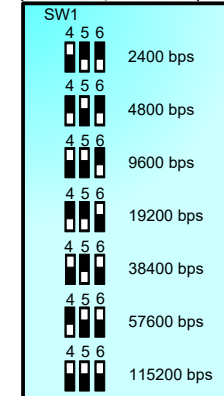
## DIP-SWITCHES : TABLES OF CONFIGURATION

Warning: set all the dip-switches in OFF position to access to the device in EEPROM modality (the device will follow all the communication parameters set by software) or INIT. Power-off the device before to change the set of the dip-switches.

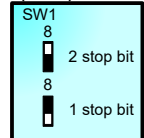
TAB.1 Modality settings (Pos.1)



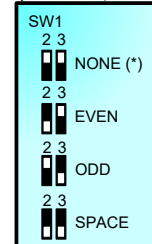
TAB.3 Baud rate settings (Pos.4 LSB; Pos.6 MSB)



TAB.4 Stop Bit settings (Pos.8)



TAB.2 Parity settings (Pos.2 LSB; Pos.3 MSB)



Note (\*):

- in Modbus RTU Modality the setting is NONE; number of bit = 8  
- in Modbus ASCII Modality the setting is MARK; number of bit = 7

DIP POSITION

ON OFF

## HOW TO ORDER

The device can be supplied with the configuration specified by the customer.

DAT 10024 / mA — Output type

TAB.5 Address Selection 1+247 (Pos.1 LSB; Pos.8 MSB)

SW2	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8						
EEPROM									Address 38									Address 76									Address 114									Address 152									Address 190									Address 228								
Address 1									Address 39									Address 77									Address 115									Address 153									Address 191									Address 229								
Address 2									Address 40									Address 78									Address 116									Address 154									Address 192									Address 230								
Address 3									Address 41									Address 79									Address 117									Address 155									Address 193									Address 231								
Address 4									Address 42									Address 80									Address 118									Address 156									Address 194									Address 232								
Address 5									Address 43									Address 81									Address 119									Address 157									Address 195									Address 233								
Address 6									Address 44									Address 82									Address 120									Address 158									Address 196									Address 234								
Address 7									Address 45									Address 83									Address 121									Address 159									Address 197									Address 235								
Address 8									Address 46									Address 84									Address 122									Address 160									Address 198									Address 236								
Address 9									Address 47									Address 85									Address 123									Address 161									Address 199									Address 237								
Address 10									Address 48									Address 86									Address 124									Address 162									Address 200									Address 238								
Address 11									Address 49									Address 87									Address 125									Address 163									Address 201									Address 239								
Address 12									Address 50									Address 88									Address 126									Address 164									Address 202									Address 240								
Address 13									Address 51									Address 89									Address 127									Address 165									Address 203									Address 241								
Address 14									Address 52									Address 90									Address 128									Address 166									Address 204									Address 242								
Address 15									Address 53									Address 91									Address 129									Address 167									Address 205									Address 243								
Address 16									Address 54									Address 92									Address 130									Address 168									Address 206									Address 244								
Address 17									Address 55									Address 93									Address 131									Address 169									Address 207									Address 245								
Address 18									Address 56									Address 94									Address 132									Address 170									Address 208									Address 246								
Address 19									Address 57									Address 95									Address 133									Address 171									Address 209									Address 247								
Address 20									Address 58									Address 96									Address 134									Address 172									Address 210																	
Address 21									Address 59									Address 97									Address 135									Address 173									Address 211																	
Address 22									Address 60									Address 98									Address 136									Address 174									Address 212																	
Address 23									Address 61									Address 99									Address 137									Address 175									Address 213																	
Address 24									Address 62									Address 100									Address 138									Address 176									Address 214																	
Address 25									Address 63									Address 101									Address 139									Address 177									Address 215																	
Address 26									Address 64									Address 102									Address 140									Address 178									Address 216																	
Address 27									Address 65									Address 103									Address 141									Address 179									Address 217																	
Address 28									Address 66									Address 104									Address 142									Address 180									Address 218																	
Address 29									Address 67									Address 105									Address 143									Address 181									Address 219																	
Address 30									Address 68									Address 106									Address 144									Address 182									Address 220																	
Address 31									Address 69									Address 107									Address 145									Address 183									Address 221																	
Address 32									Address 70									Address 108									Address 146									Address 184									Address 222																	
Address 33									Address 71									Address 109									Address 147									Address 185									Address 223																	
Address 34									Address 72									Address 110									Address 148									Address 186									Address 224																	
Address 35									Address 73									Address 111									Address 149									Address 187									Address 225																	
Address 36									Address 74									Address 112									Address 150									Address 188									Address 226																	
Address 37									Address 75									Address 113									Address 151									Address 189									Address 227																	