

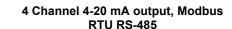


Isolated Modbus RTU 4-20mA Output

Phone: +1 561 779 5660 E-mail: Info@datexel.com - Web Site www.datexel.com

#### **FEATURES**

- Modbus Slave 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 mark
- DIN rail mounting in compliance with EN-50022



# **DAT 10024**









#### **GENERAL DESCRIPTION**

The device DAT10024 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.

#### **COMMUNICATION PROTOCOLS**

The device is designed to work with the <u>MODBUS RTU/MODBUS ASCII protocol</u>: standard protocol in field-bus; allows to directly interface DAT10000 series devices to the larger part of PLCs and SCADA applications available on the market.

For the protocol instructions, refer to the User Guide of the device.

#### **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)

OUTPUT (4 channels)			Output Accuracy		
Output type	Min	Max	Current	± 10 uA	
Current mA	0 mA	+20 mA	Voltage	± 5 mV	
<b>Voltage</b> Volt	0 V	+10 V	- Thermal drift Full scale	± 0.01 % / °C	
voit		110 V	Load resistance Voltage Current Auxiliary Voltage (4 ch	≥ 5 KΩ ≤ 500 Ω annels) ≥ 13Vdc @ 20mA	
			Response time (from 10 % to 90 %)	15 ms 50 ms	
			Data Transmission Baud Rate Max. distance	115.2 Kbps 1.2 Km – 4000 ft	
			Baud Rate	115.2 Kbps	

# POWER SUPPLY

Power supply voltage 20 .. 30 Vdc Reverse polarity protection 60 Vdc max Current consumption 150 mA max.

# ISOLATION

On all the ways 1500 Vac, 50 Hz, 1 min

# **ENVIRONMENTAL CONDITIONS**

Operative Temperature
Storage Temperature
Humidity (not condensed)
Maximum Altitude
Installation
Category of installation
Pollution Degree

-20°C .. +60°C
-40°C.. +85°C
0 .. 90 %
1 .. 90 %
1 .. 1000 m
Indoor
Indoor
2

#### MECHANICAL SPECIFICATIONS

Material Self-extinguish plastic
IP Code IP20
Wiring wires with diameter
0.8÷2.1 mm² /AWG 14-18

Tightening Torque 0.5 N m

Mounting in compliance with DIN rail standard EN-50022

Weight about 200 g.

#### **CERTIFICATIONS**

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

#### **INSTALLATION INSTRUCTIONS**

The DAT10024 is suitable for fitting to DIN rails in the vertical position. For optimum operation and long life follow these instructions:

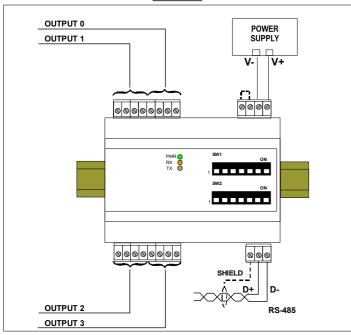
When the devices are installed side by side it may be necessary to separate them by at least 5 mm in the following case:

- 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.

#### **WIRING**



#### **LIGHT SIGNALLING**

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

## **ISOLATION STRUCTURE** OUTPUT 0 RS485 OUTPUT 1 OUTPUT 2 POWER SUPPLY OUTPUT 3

# **MECHANICAL DIMENSIONS (mm)** 00000000 SW<sup>2</sup> TTTTTTT SW2 00000000 000



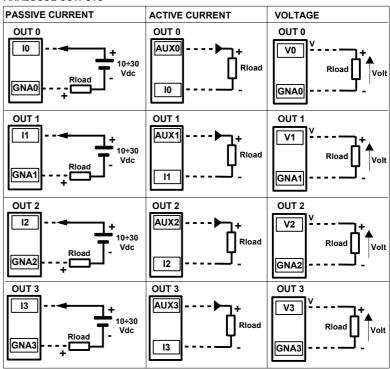
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and

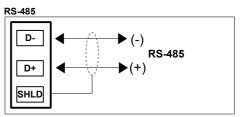
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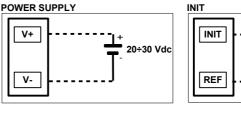
For more information contact the proper office in the user's city , the service for the waste treatment or the supplier from which the product has been purchased

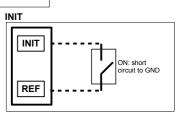
#### ANALOGUE OUTPUTS

#### CONNECTIONS



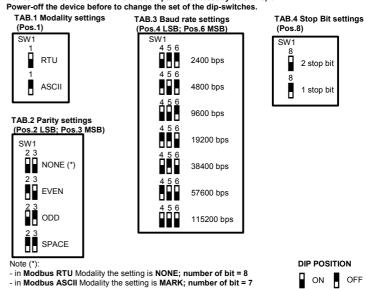


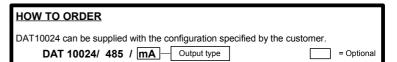




ON OFF

<u>DIP-SWITCHES: TABLES OF CONFIGURATION</u>
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.





(Pos.1 LSB; Pos.8 MSB)	247						
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 Address 114	1 2 3 4 5 6 7 8 Address 152	12345678	1 2 3 4 5 6 7 8 Address 190	Address 228
1 2 3 4 5 6 7 8 Address 1	1 2 3 4 5 6 7 8 Address 39	1 2 3 4 5 6 7 8 Address 77			1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 191	Address 229
1 2 3 4 5 6 7 8 Address 2	1 2 3 4 5 6 7 8 Address 40	1 2 3 4 5 6 7 8 Address 78			1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 192	Address 230
1 2 3 4 5 6 7 8 Address 3	1 2 3 4 5 6 7 8 Address 41	1 2 3 4 5 6 7 8 Address 79			1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 193	Address 231
1 2 3 4 5 6 7 8 Address 4	1 2 3 4 5 6 7 8 Address 42	1 2 3 4 5 6 7 8 Address 80	1 2 3 4 5 6 7 8 Address 118	1 2 3 4 5 6 7 8 Address 156	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 194	Address 232
1 2 3 4 5 6 7 8 Address 5	1 2 3 4 5 6 7 8 Address 43	1 2 3 4 5 6 7 8 Address 81				1 2 3 4 5 6 7 8 Address 195	Address 233
1 2 3 4 5 6 7 8 Address 6	1 2 3 4 5 6 7 8 Address 44	1 2 3 4 5 6 7 8 Address 82			12345678	Address 196 1 2 3 4 5 6 7 8	Address 234
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1 2 3 4 5 6 7 8 Address 9	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 85			12345678	Address 199 1 2 3 4 5 6 7 8	Address 237
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1 2 3 4 5 6 7 8 Address 14	Address 52	Address 90	1 2 3 4 5 6 7 8 Address 128	Address 166	12345678	Address 204 1 2 3 4 5 6 7 8	Address 242
1 2 3 4 5 6 7 8 Address 15	1 2 3 4 5 6 7 8 Address 53	1 2 3 4 5 6 7 8 Address 91	1 2 3 4 5 6 7 8 Address 129		12345678	Address 205 1 2 3 4 5 6 7 8	Address 243
	Address 54 1 2 3 4 5 6 7 8	Address 92 1 2 3 4 5 6 7 8	Address 130	Address 168	12345678	Address 206 1 2 3 4 5 6 7 8	Address 244
1 2 3 4 5 6 7 8	Address 55	Address 93 1 2 3 4 5 6 7 8	Address 131	Address 169	1 2 3 4 5 6 7 8	Address 207 1 2 3 4 5 6 7 8	Address 245
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12345678	1 2 3 4 5 6 7 8	12345678	Address 146	12345678	1 2 3 4 5 6 7 8	Address 222	
12345678	1 2 3 4 5 6 7 8	12345678	Address 147	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	Address 223	
12345678	12345678	12345678	1 2 3 4 5 6 7 8	12345678	1 2 3 4 5 6 7 8	Address 224	
<u>12345678</u>	1 2 3 4 5 6 7 8	12345678	1 2 3 4 5 6 7 8	12345678	1 2 3 4 5 6 7 8	Address 225	
12345678	1 2 3 4 5 6 7 8	12345678	Address 150	12345678	1 2 3 4 5 6 7 8	Address 226	
Address 37	Address 75	Address 113	3 Address 151	Address 189		Address 227	