

## 8 Channel Voltage to Modbus RTU DAT10017-V

## DAT 10017-V

### FEATURES

- Modbus Server device on RS-485
- Modbus RTU/ Modbus ASCII protocol
- 8 input channels  $\pm 10$  Volt
- 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 DAT10017-V converts up to 8 analogue input signals into engineering units in digital format. The data are transmitted with MODBUS RTU / MODBUS ASCII protocol over the RS-485 network.

It is possible to connect on input 8 voltage signals up to  $\pm 10$  Vdc. By programming, it is possible to execute the scaling of the measure of input up to  $\pm 32768$  points obtaining in the dedicated registers the measure of the channel in the desired format (ref. User Guide).

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

To ensure the plant safety, a Watch-Dog timer alarm is provided.

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 inputs 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)

INPUT			OUTPUT	GENERAL SPECIFICATIONS	
Input Type	Min	Max	Data Transmission	Power supply voltage	10 .. 30 Vdc
Voltage			<b>RS-485 asynchronous serial</b> <b>Baud Rate</b> 115.2 Kbps <b>Max. distance</b> 1.2 Km – 4000 ft	Reverse polarity protection	60 Vdc max
10 Volt	-10 V	+10 V		<b>Current consumption @ 24 Vdc</b>	
					35 mA max.
				<b>Max. Current consumption</b>	45 mA
<b>Input Accuracy (1)</b>				<b>ISOLATION</b>	
Voltage	$\pm 10$ mV			Among all the ways	1500 Vac, 50 Hz, 1 min
<b>Linearity (1)</b>				<b>ENVIRONMENTAL CONDITIONS</b>	
Voltage	$\pm 0.1$ % f.s.			Operative temperature	-10°C .. +60°C
<b>Input impedance</b>				Storage temperature	-40°C .. +85°C
Voltage	$\geq 1$ M $\Omega$			Humidity (not condensing)	0 .. 90 %
<b>Thermal drift (1)</b>				Maximum Altitude	2000 m slm
Full scale	$\pm 0.005$ % / °C			Installation	Indoor
<b>Sample time</b>	0.5 ÷ 1 sec.			Category of Installation	II
				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

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

## INSTALLATION INSTRUCTIONS

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

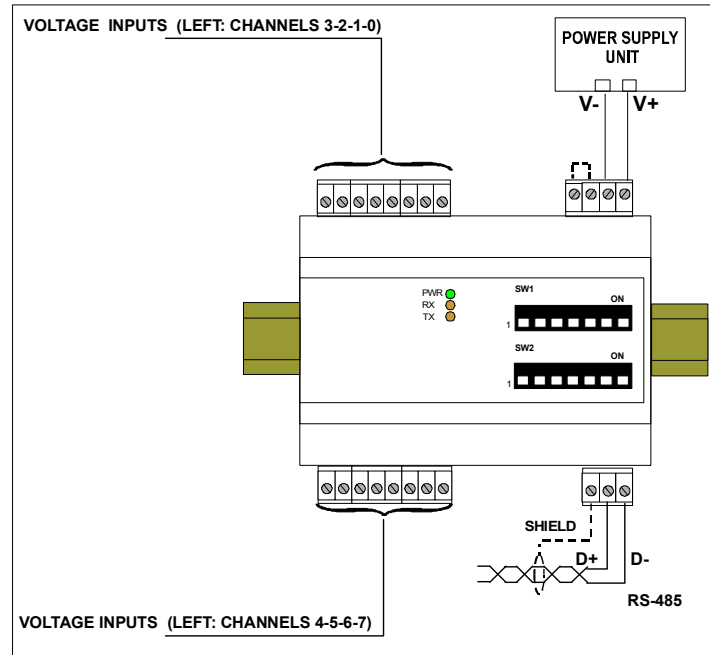
**When the devices are installed side by side it may be necessary to separate them by at least 5 mm in the following case:**  
- If panel temperature exceeds 45°C and power supply voltage 10 Vdc.

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.

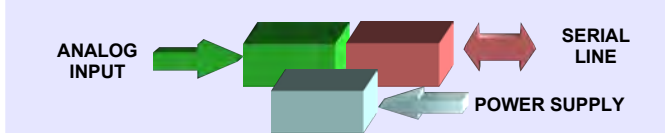
## TERMINALS OVERVIEW



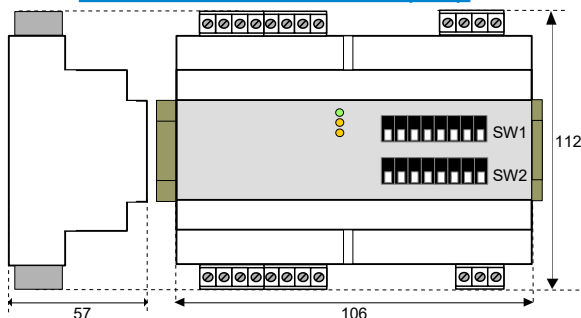
## LIGHT SIGNALLING

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
		OFF	No data over receiving line of RS-485
TX	ORANGE	BLINK	Stream of data over transmission line of RS-485
		OFF	No data over transmission line of RS-485

## ISOLATION STRUCTURE



## MECHANICAL DIMENSIONS (mm)

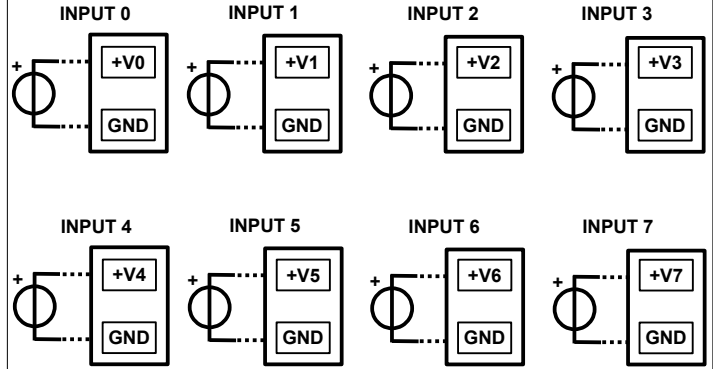


The symbol reported on the product indicates that the product itself must not be considered as a domestic waste.  
It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste.  
For more information contact the proper office in the user's city, the service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

## WIRING

### ANALOGUE INPUTS

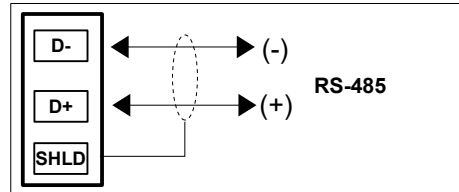
#### VOLTAGE



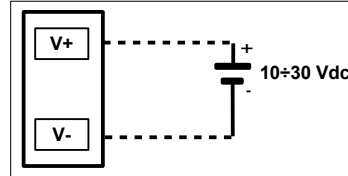
#### NOTE:

the input channels are not isolated between them (terminal GND is common)

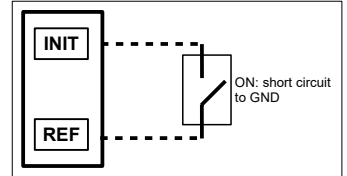
### SERIAL LINE RS-485



### POWER SUPPLY



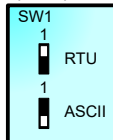
### INIT



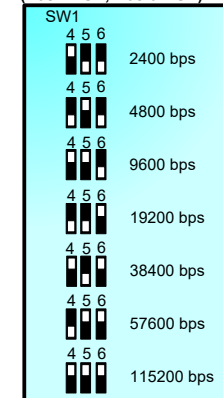
## DIP-SWITCHES : TABLES OF CONFIGURATION

**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.

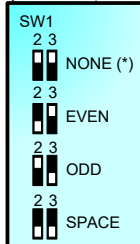
**TAB.1 Modality settings**  
(Pos.1)



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



**TAB.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

**DAT 10017-V**

TAB.4 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		