

8 Channel Current to Modbus RTU DAT10017-I

DAT 10017-I

FEATURES

- Modbus Server device on RS-485
- Modbus RTU/ Modbus ASCII protocol
- 8 input channels ± 20 mA
- 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-I 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 current signals up to ± 20 mA. By programming, it is possible to execute the scaling of the measure of input up to ± 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
Current			RS-485 asynchronous serial Baud Rate 115.2 Kbps Max. distance 1.2 Km – 4000 ft	Reverse polarity protection	60 Vdc max
20 mA	-20 mA	+20 mA		Current consumption @ 24 Vdc	
					35 mA max.
				Max. Current consumption	45 mA
Input Accuracy (1)				ISOLATION	
Current	± 20 uA			Among all the ways	1500 Vac, 50 Hz, 1 min
Linearity (1)				ENVIRONMENTAL CONDITIONS	
Current	± 0.1 % f.s.			Operative temperature	-10°C .. +60°C
Input impedance				Storage temperature	-40°C .. +85°C
Current	≤ 50 Ω			Humidity (not condensing)	0 .. 90 %
Thermal drift (1)				Maximum Altitude	2000 m slm
Full scale	± 0.01 % / °C			Installation	Indoor
Sample time	0.5 ÷ 1 sec.			Category of Installation	II
				Pollution Degree	2
				MECHANICAL SPECIFICATIONS	
				Material	Self-extinguish plastic
				IP Code	IP20
				Wiring	wires with diameter 0.8÷2.1 mm ² AWG 14-18
				Tightening Torque	0.8 N m
				Mounting	in compliance with DIN rail standard EN-50022
				Weight	about 200 g.
				CERTIFICATIONS	
				EMC (for the Industrial Environments)	
				Immunity	EN 61000-6-2
				Emission	EN 61000-6-4
				UKCA (ref S.I. 2016 N°1091)	
				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:

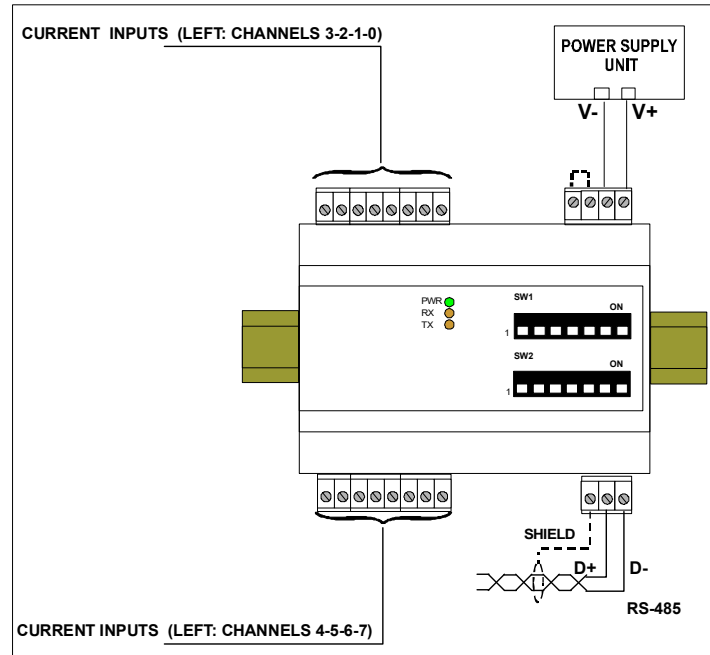
When the devices are installed side by side it may be necessary to separate them by at least 5 mm in the following case:
- If panel temperature exceeds 45°C and power supply voltage 10 Vdc.

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.

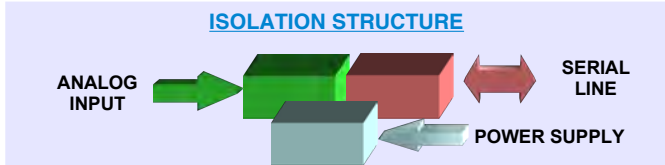
TERMINALS OVERVIEW



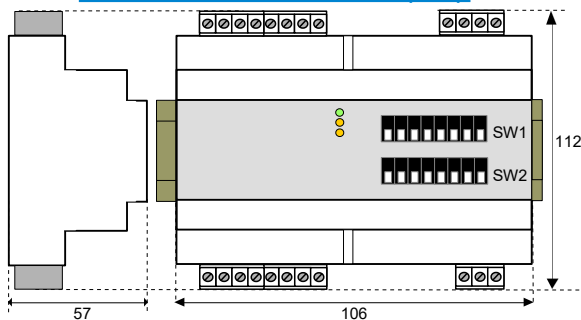
LIGHT SIGNALLING

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)

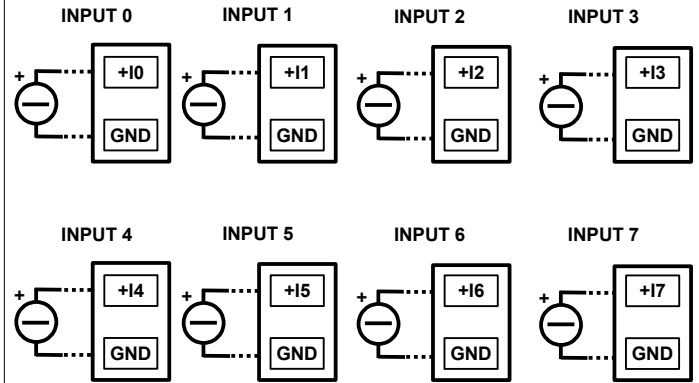


The symbol reported on the product indicates that the product itself must not be considered as a domestic waste.
It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste.
For more information contact the proper office in the user's city, the service for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

WIRING

ANALOGUE INPUTS

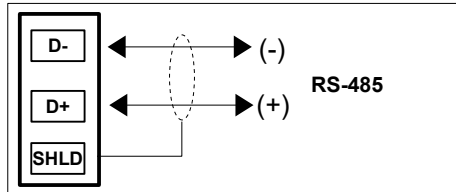
CURRENT (Passive inputs: to connect to active current loops)



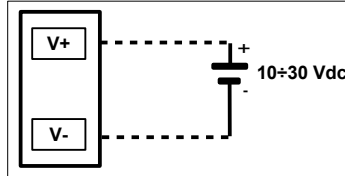
NOTE:

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

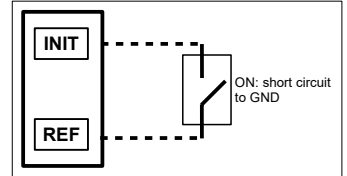
SERIAL LINE RS-485



POWER SUPPLY



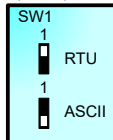
INIT



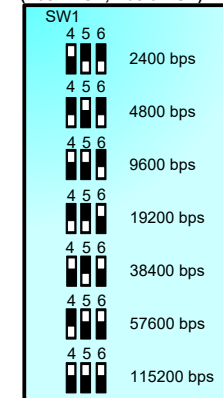
DIP-SWITCHES : TABLES OF CONFIGURATION

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.

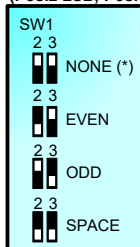
TAB.1 Modality settings
(Pos.1)



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

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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 114	
		Address 1		Address 39		Address 115	
		Address 2		Address 40		Address 116	
		Address 3		Address 41		Address 117	
		Address 4		Address 42		Address 118	
		Address 5		Address 43		Address 119	
		Address 6		Address 44		Address 120	
		Address 7		Address 45		Address 121	
		Address 8		Address 46		Address 122	
		Address 9		Address 47		Address 123	
		Address 10		Address 48		Address 124	
		Address 11		Address 49		Address 125	
		Address 12		Address 50		Address 126	
		Address 13		Address 51		Address 127	
		Address 14		Address 52		Address 128	
		Address 15		Address 53		Address 129	
		Address 16		Address 54		Address 130	
		Address 17		Address 55		Address 131	
		Address 18		Address 56		Address 132	
		Address 19		Address 57		Address 133	
		Address 20		Address 58		Address 134	
		Address 21		Address 59		Address 135	
		Address 22		Address 60		Address 136	
		Address 23		Address 61		Address 137	
		Address 24		Address 62		Address 138	
		Address 25		Address 63		Address 139	
		Address 26		Address 64		Address 140	
		Address 27		Address 65		Address 141	
		Address 28		Address 66		Address 142	
		Address 29		Address 67		Address 143	
		Address 30		Address 68		Address 144	
		Address 31		Address 69		Address 145	
		Address 32		Address 70		Address 146	
		Address 33		Address 71		Address 147	
		Address 34		Address 72		Address 148	
		Address 35		Address 73		Address 149	
		Address 36		Address 74		Address 150	
		Address 37		Address 75		Address 151	