



Channel Current and Voltage to Modbus RTU DAT10015

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FEATURES

- Modbus Slave device on RS-485
- Modbus RTU/ Modbus ASCII protocol
- 4 input channels dedicated to ± 10 Volt
- 4 input channels dedicated to ± 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 mark
- DIN rail mounting in compliance with EN-50022

4 input channels for mA 4 input channels for Volt to Modbus RTU RS-485

DAT 10015









GENERAL DESCRIPTION

The device DAT10015 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 4 voltage signals up to ± 10 V and 4 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.

COMMUNICATION PROTOCOLS

(1) referred to the input Span (difference between max

The device is designed to work with the MODBUS RTU/MODBUS ASCII protocol: 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 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.

INPUT			Input Accuracy (1)		POWER SUPPLY		
Input type	Min	Max	Current Voltage	± 20 uA ± 10 mV	Power supply voltage Reverse polarity protection	10 30 Vdc 60 Vdc max	
Current 20 mA	-20 mA	+20 mA	Linearity (1)	± 0.1 % f.s.	Current consumption (operative)	35 mA max@24Vdc 45 mA max@10Vdc	
Voltage 10 Volt	-10 V	+10 V	Input impedance Current Voltage	<= 50 Ω >= 1 MΩ	ISOLATION Between all the ways	1500 Vac, 50 Hz, 1 min	
			Thermal drift (1) Full scale	± 0.005 % / °C	ENVIRONMENTAL COND Operative Temperature Storage Temperature	ITIONS -10°C +60°C -40°C +85°C	
			Sample time Data Transmission (RS-4 Baud Rate Max. distance	0.5 ÷ 1 sec. 485 asynchronous serial 115.2 Kbps 1.2 Km – 4000 ft	Humidity (not condensed) Maximum Altitude Installation Category of installation Pollution Degree	0 90 % 2000 m Indoor II 2	
					MECHANICAL SPECIFICA Material IP Code Wiring Tightening Torque Mounting Weight	ATIONS Self-extinguish plastic IP20 wires with diameter 0.8÷2.1 mm² /AWG 14-18 0.5 N m in compliance with DIN rail standard EN-50022 about 200 g.	
					CERTIFICATIONS EMC (for industrial environments) Emission	ronments) EN 61000-6-2 EN 61000-6-4	

INSTALLATION INSTRUCTIONS

The DAT10015 is suitable for fitting to DIN rails in the vertical position. For optimum operation and long life follow these instructions:

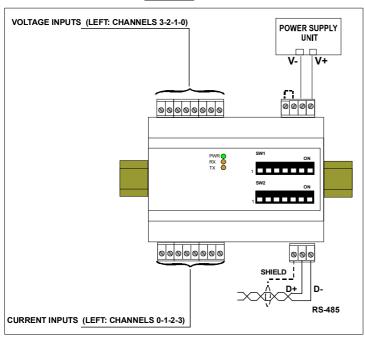
When the devices are installed side by side it may be necessary to separate them by at least 5 mm in the following case:

- 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.

WIRING



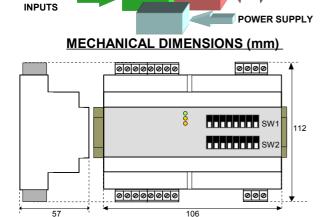
LIGHT SIGNALLING

LED	COLOUR	STATE	DESCRIPTION	
PWR	GREEN	ON Device powered		
		OFF	Device not powered	
		BLINK	~1 sec Watch-Dog alarm condition occurred	
RX	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

SERIAL

LINE





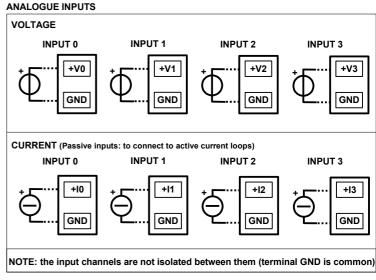
ANALOGUE

The symbol reported on the product indicates that the product itself must not be

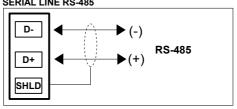
considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste

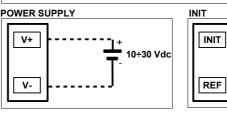
For more information contact the proper office in the user's city , the service for the waste treatment or the supplier from which the product has been purchased.

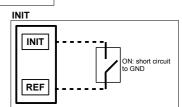
CONNECTIONS



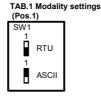
SERIAL LINE RS-485

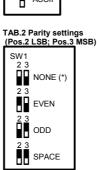


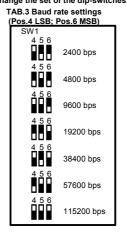




<u>DIP-SWITCHES: TABLES OF CONFIGURATION</u>
Warning: set all the dip-switches in OFF position to access to the device in EEPROM modality (the device will follow all the communication parameters set by software) or INIT. Power-off the device before to change the set of the dip-switches.







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 DAT10015

(Pos.1 LSB; Pos.8 MSB)	241						
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	1 2 3 4 5 6 7 8	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 Address 153	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 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 Address 155	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 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 157		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 196 1 2 3 4 5 6 7 8	Address 234
1 2 3 4 5 6 7 8 Address 7	1 2 3 4 5 6 7 8 Address 45	1 2 3 4 5 6 7 8 Address 83		1 2 3 4 5 6 7 8 Address 159	1 2 3 4 5 6 7 8	Address 197 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8	Address 235
1 2 3 4 5 6 7 8 Address 8	1 2 3 4 5 6 7 8 Address 46	1 2 3 4 5 6 7 8 Address 84				Address 198 1 2 3 4 5 6 7 8	Address 236
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 1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 85		1 2 3 4 5 6 7 8 Address 161	1 2 3 4 5 6 7 8	Address 199 1 2 3 4 5 6 7 8	Address 237
1 2 3 4 5 6 7 8 Address 10 1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 48	1 2 3 4 5 6 7 8 Address 86 1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 124 1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 162 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 200 1 2 3 4 5 6 7 8	Address 238
1 2 3 4 5 6 7 8 Address 11	1 2 3 4 5 6 7 8 Address 49	Address 87	Address 125	1 2 3 4 5 6 7 8 Address 163		Address 201 1 2 3 4 5 6 7 8	Address 239
1 2 3 4 5 6 7 8 Address 12	1 2 3 4 5 6 7 8 Address 50	1 2 3 4 5 6 7 8 Address 88 1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 Address 126	1 2 3 4 5 6 7 8 Address 164	1 2 3 4 5 6 7 8	Address 202 1 2 3 4 5 6 7 8	Address 240
1 2 3 4 5 6 7 8 Address 13	1 2 3 4 5 6 7 8 Address 51	1 2 3 4 5 6 7 8 Address 89	1 2 3 4 5 6 7 8 Address 127	Address 165	1 2 3 4 5 6 7 8	Address 203 1 2 3 4 5 6 7 8	Address 241
1 2 3 4 5 6 7 8	Address 52	Address 90 1 2 3 4 5 6 7 8	Address 128	Address 166	1 2 3 4 5 6 7 8	Address 204 1 2 3 4 5 6 7 8	Address 242
Address 15	Address 53	Address 91	1 2 3 4 5 6 7 8		1 2 3 4 5 6 7 8	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 168 1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	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 1 2 3 4 5 6 7 8	Address 169	1 2 3 4 5 6 7 8	Address 207 1 2 3 4 5 6 7 8	Address 245
1 2 3 4 5 6 7 8	12345678	Address 94	1 2 3 4 5 6 7 8 Address 132	12345678	1 2 3 4 5 6 7 8	Address 208 1 2 3 4 5 6 7 8	Address 246
1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	Address 95	Address 133	Address 171		Address 209	Address 247
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12345678	Address 61	Address 99 1 2 3 4 5 6 7 8	12345678	1 2 3 4 5 6 7 8	12345678	Address 213	
12345678	Address 62 1 2 3 4 5 6 7 8	12345678	1 2 3 4 5 6 7 8	Address 176 1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	Address 214	
12345678	Address 63	12345678	1	12345678	1 2 3 4 5 6 7 8	Address 215	
12345678	Address 64 1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	12345678	Address 178 1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	Address 216	
1 2 3 4 5 6 7 8	12345678	12345678	Address 141 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 217	
1 2 3 4 5 6 7 8	Address 66	1 2 3 4 5 6 7 8	Address 142 1 2 3 4 5 6 7 8	12345678	1 2 3 4 5 6 7 8	Address 218	
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 181	1 2 3 4 5 6 7 8	Address 219	
12345678	Address 68	12345678	6 Address 144 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 220	
12345678	1 2 3 4 5 6 7 8	12345678	7 Address 145 1 2 3 4 5 6 7 8	12345678	1 2 3 4 5 6 7 8	Address 221	
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	9 Address 147 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 223	
12345678	12345678	12345678	1 2 3 4 5 6 7 8	Address 186 1 2 3 4 5 6 7 8 Address 187	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	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	Address 225	
12345678	1 2 3 4 5 6 7 8	12345678	Address 150	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	Address 226	
Address 37	Address 75	Address 113	3 Address 151	Address 189		Address 227	