



FEATURES

- Modbus Slave device on RS-485
- Modbus RTU/ Modbus ASCII protocol
- 8 input channels for voltage up to ± 250 mV and thermocouples sensor type B, E, K, J, N, R, S, T
- 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

GENERAL DESCRIPTION

The device DAT10018 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 ± 250 mV or thermocouples sensor type B, E, K, J, N, R, S, T. 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

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.

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			Input Accuracy (1) mV, TC	> of $\pm 0.05\%$ f.s. or 5 μ V	POWER SUPPLY		
Input type	Min	Max					
Voltage			Linearity (1) mV TC	$\pm 0.1\%$ f.s. $\pm 0.2\%$ f.s.	Power supply voltage	10 .. 30 Vdc	
50 mV	-50 mV	+50 mV			Reverse polarity protection	60 Vdc max	
100 mV	-100 mV	+100 mV			Current consumption (operative)	35 mA max@24Vdc 45 mA max@10Vdc	
250 mV	-250 mV	+250 mV	CJC Compensation	± 1 °C	ISOLATION	Between all the ways	1500 Vac, 50 Hz, 1 min
Thermocouple			Input impedance mV,TC	≥ 1 M Ω	ENVIRONMENTAL CONDITIONS	Operative Temperature	-10°C .. +60°C
J	-210 °C	+1200 °C	Thermal drift (1) Full scale	$\pm 0.005\%$ / °C	Storage Temperature	-40°C.. +85°C	
K	-210 °C	+1372 °C			Thermal drift CJC Full scale	$\pm 0.02\%$ / °C	Humidity (not condensed)
R	-50 °C	+1767 °C	Line resistance influence (1) mV, TC	< 0.8 μ V/Ohm			Maximum Altitude
S	-50 °C	+1767 °C			Sample time	0.5 \div 1 sec.	Installation
B	+400 °C	+1825 °C	Warm-up time	3 min			Category of installation
E	-210 °C	+1000 °C			Data Transmission (RS-485 asynchronous serial)	Baud Rate	Pollution Degree
T	-210 °C	+400 °C	Max. distance	115.2 Kbps			MECHANICAL SPECIFICATIONS
N	-210 °C	+1300 °C			1.2 Km – 4000 ft	1.2 Km – 4000 ft	IP Code
							Wiring
					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	

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

INSTALLATION INSTRUCTIONS

The DAT10018 is suitable for fitting to DIN rails in the vertical position. For optimum operation and long life follow these instructions:

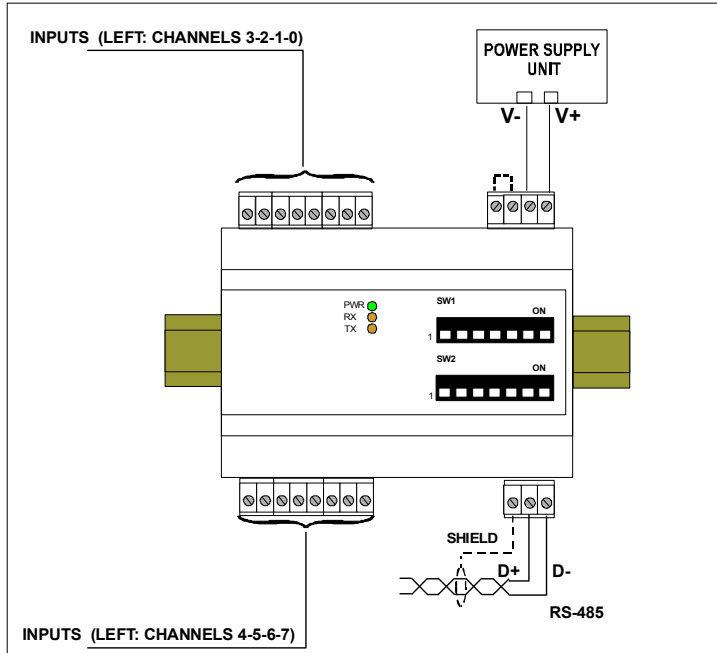
When the devices are installed side by side it may be necessary to separate them by at least 5 mm in the following case:

- 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



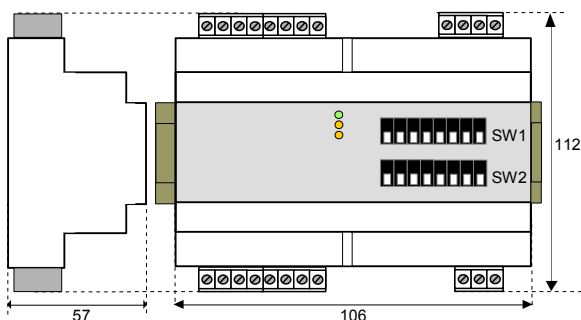
LIGHT SIGNALLING

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



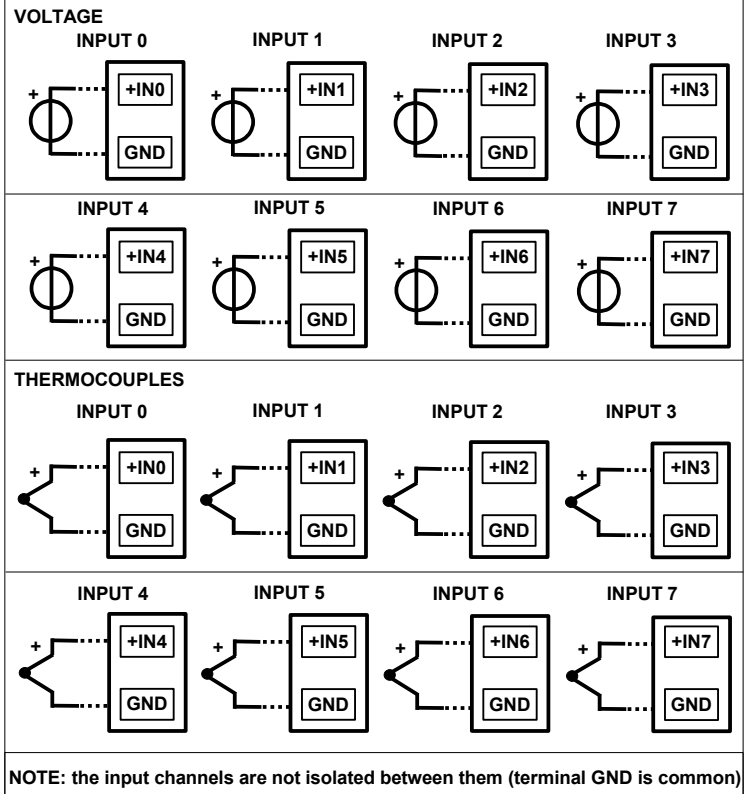
MECHANICAL DIMENSIONS (mm)



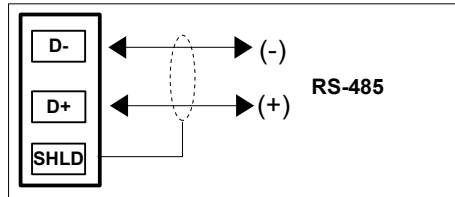
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city, the service for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

CONNECTIONS

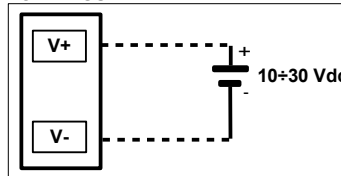
ANALOGUE INPUTS



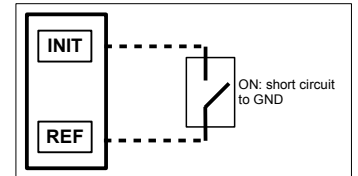
SERIAL LINE RS-485



POWER SUPPLY



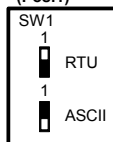
INIT



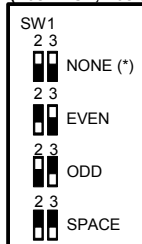
DIP-SWITCHES : TABLES OF CONFIGURATION

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.

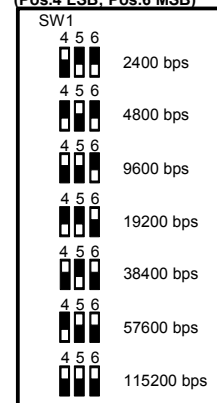
TAB.1 Modality settings (Pos.1)



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



TAB.3 Baud rate settings (Pos.4 LSB; Pos.6 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 DAT10018 could be supplied as requested from the customer. Refer to the section "Technical Specifications" for the input type available.

DAT 10018 / TCK — Input type

TAB.4 Address Selection 1+247
 (Pos.1 LSB; Pos.8 MSB)

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