

Isolated converter for DIN-B in head mounting communicating on RS485 network

DAT 1485

FEATURES

- Configurable input for RTD, TC, mV, Resistance and Potentiometer
- 1500 Vac 3-ways Galvanic Isolation
- Modbus Slave device over RS-485 with MODBUS RTU / MODBUS ASCII protocol
- Remotely Configurable
- High accuracy
- On-field reconfigurable
- EMC compliant – CE / UKCA mark
- DIN B in-head mounting with option for DIN rail mounting in compliance with EN 50022 (DIN RAIL Option)



GENERAL DESCRIPTION

The isolated converter DAT1485 is able to execute many functions such as measure and linearisation of the temperature characteristic of RTDs sensors, conversion of a linear resistance variation, conversion of an mV signal and conversion of a signal from a potentiometer connected to its input. The DAT1485 is able to measure and linearise the standard thermocouples with internal cold junction compensation. The measured values are converted into engineering units in digital format. The data are transmitted with MODBUS RTU / MODBUS ASCII protocol over the RS-485 network. The device guarantees high accuracy and performance stability both in time and in temperature.

The programming of the DAT1485 is made by a Personal Computer using the software "MODBUS_3000_1000" developed and provided by DATEXEL.

The isolation between the parts of circuit removes the effects of all ground loops eventually existing and allows the use of the converter in heavy environmental conditions found in industrial applications.

It is housed in a self-extinguish plastic enclosure suitable for DIN B in-head mounting.

Moreover, it is possible to mount the DAT1485 on DIN rail by proper mounting kit (**only on request**).

USER INSTRUCTIONS

Before to install the device, please read the "Installation Instruction" section.

It is possible to configure the device via software using the INIT modality. By setting the dip switch in INIT mode, the device will automatically be set in the set-up configuration when the device is turned on (refer to the User Guide of the device).

Connect power supply, serial bus and analogue inputs as shown in the "Wiring" section.

TECHNICAL SPECIFICATIONS (Typical at 25 °C and in nominal conditions)

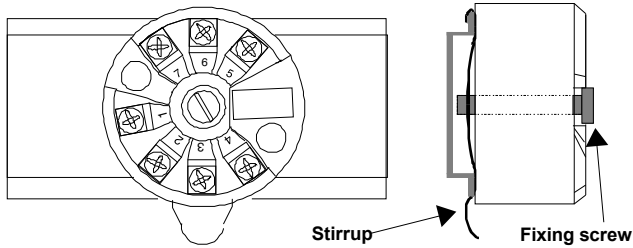
INPUT			OUTPUT		GENERAL SPECIFICATION	
Input Type	Min	Max				
TC (*) CJC int.			Thermal drift (1)		Power supply voltage	18 .. 30 Vdc
J	-200°C	1200°C	Full scale	± 0.01% / °C	Current consumption	16 mA max
K	-200°C	1300°C	CJC	± 0.01% / °C	Reverse polarity protection	60 Vdc max
S	0°C	1750°C	Sample time	about 200 ms	ISOLATION (Referred 50 Hz, 1 min)	
R	0°C	1750°C	Warm-up time	3 min	Input - Pow. Supply	1500 Vac
B	400°C	1800°C	Data Transmission		Input - RS485	1500 Vac
E	-200°C	1000°C	(RS-485 asynchronous serial)		Pow. Supply - RS485	1500 Vac
T	-200°C	400°C	Baud Rate	115.2 Kbps	ENVIRONMENTAL CONDITIONS	
N	-200°C	1300°C	Max. distance	1.2 Km – 4000 ft	Operative temperature	-40°C .. +85°C
RTD (*) 2,3 wires			Interface	RS485 (2 wires)	Storage temperature	-40°C .. +85°C
Pt100	-200°C	850°C	Protocol	Modbus RTU	Humidity (not condensing)	0 .. 90 %
Pt1000	-200°C	185°C		Modbus ASCII	Maximum Altitude	2000 m slm
Ni100	-60°C	180°C			Installation	Indoor
Ni1000	-60°C	150°C			Category of Installation	II
RES. 2,3 wires					Pollution Degree	2
Res 500 Ω	0 Ω	500 Ω			MECHANICAL SPECIFICATIONS	
Res 2000 Ω	0 Ω	2000 Ω			Material	PC + ABS V0
Voltage					Mounting	DIN B in-head
mV	-100 mV	+90 mV			Wiring	Wire section max 1.5 mm ²
mV	-100 mV	+200 mV				AWG 16
mV	-100 mV	+800 mV			Weight	about 50 g.
Potentiometer					Dimensions	∅ = 43 mm ; H = 24 mm
(R nom. <= 50 KΩ)	0 %	100 %			IP Code	Enclosure: IP40
Input calibration (1)						Terminals : IP10
RTD	> of ±0.1% f.s. or ±0.2°C				CERTIFICATIONS	
Low res.	> of ±0.1% f.s. or ±0.15 Ω				EMC (for the Industrial Environments)	
High res.	> of ±0.2% f.s. or ±1 Ω				Immunity	EN 61000-6-2
mV, TC	> of ±0.1% f.s. or ±10 uV				Emission	EN 61000-6-4
Input impedance					UKCA (ref S.I. 2016 N°1091)	
TC, mV	≥ 10 MΩ				Immunity	BS EN 61000-6-2
Linearity (1)					Emission	BS EN 61000-6-4
TC	± 0.2 % f.s.					
RTD	± 0.1 % f.s.					
Line resistance influence						
TC, mV	≤ 0.8 uV/Ohm					
RTD 3 wires	0.05%/Ω (50 Ω balanced max.)					
RTD excitation current						
Typical	0.400 mA					
CJC comp.	± 1.5°C					
			(1) referred to input Span (difference between max. and min. values)			
			(*) For the temperature sensors it is possible to set the measurement also in °F			

INSTALLATION INSTRUCTIONS

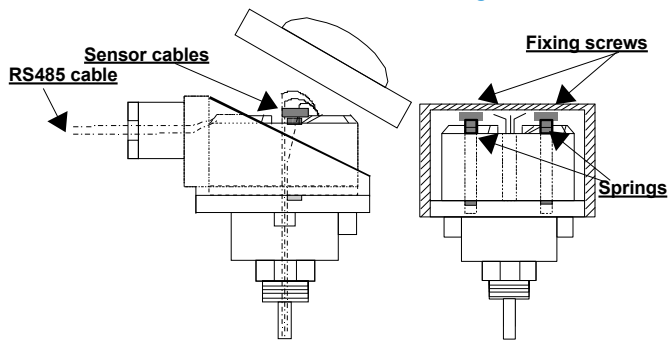
The device DAT1485 is suitable for direct DIN B in-head mounting. The converter must be fixed inside the probe by the proper kit. By apposite stirrup, provided on request, it is possible to mount the device on DIN rail in compliance with EN-50022. It is necessary to install the device in a place without vibrations and avoid to routing conductors near power signal cables.

To avoid passive current loops, the shield of the communication cable (RS485) must only be connected at one point on the network.

DIN rail mounting (DIN RAIL Option)



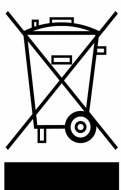
DIN B in-head mounting



REGISTER TABLE

Register (*)	Description	Access
40001	Test	R/W
40002	Firmware [0]	RO
40003	Firmware [1]	RO
40004	Name [0]	R/W
40005	Name [1]	R/W
40006	Communication	R/W
40007	Address	R/W
40008	Delay RX/TX	R/W
40009	WatchDog timer	R/W
40010	System Flags	R/W
40011	Input type	R/W
40012	Degree Type	R/W
40013	Offset CJC	R/W
40014	Measure CJC	RO
40015	Input Value	RO
40023	Sync Input value	RO
40031	Input Offset	R/W

ISOLATION STRUCTURE

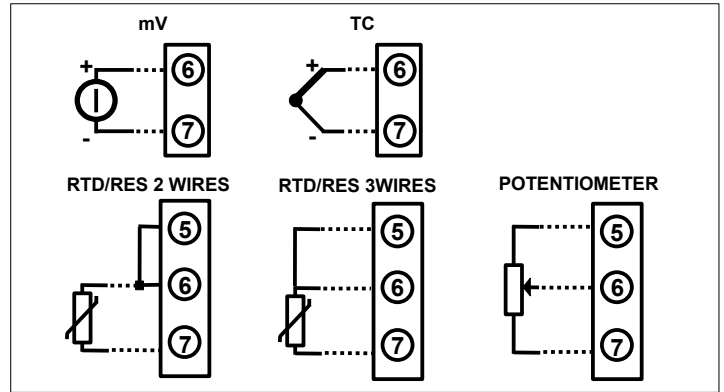


The symbol reported on the product indicates that the product itself must not be considered as a domestic waste.

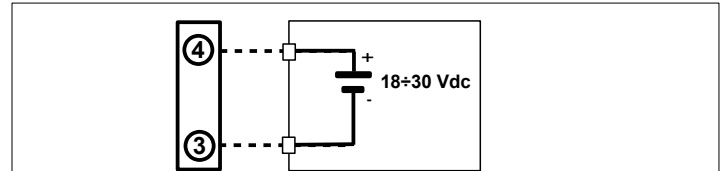
It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city, the service for the waste treatment or the supplier from which the product has been purchased.

DAT1485 WIRING

INPUT CONNECTIONS

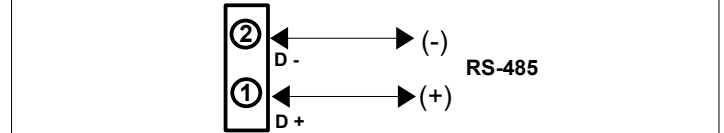


POWER SUPPLY CONNECTIONS



Terminal 3 = GND POWER SUPPLY

RS485 CONNECTIONS



The DAT1485 does not have a shield terminal which must be connected only in one point of the network.

Note: in this modality the communication parameters are fixed to Modbus address 1 and Baud-rate 9600 Kbps.

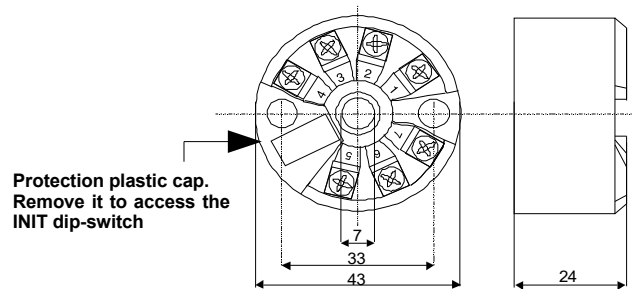
Enable INIT

- Power-off the device.
- Remove the protection plastic cap.
- Move the actuator of the dip-switch towards the central hole of the device.
- Power-on the device.

Disable INIT

- Power-off the device.
- Move the actuator of the dip-switch towards the external of the device.
- Apply the protection plastic cap.
- Power-on the device.

MECHANICAL DIMENSIONS (mm)



Protection plastic cap. Remove it to access the INIT dip-switch

HOW TO ORDER

The DAT1485 is provided as requested on the Customer's order. The mounting kit for DIN rail is provided **only on request** with code DIN RAIL.

ORDER CODE EXAMPLE:

DAT1485 / Tc K

Input type