



FEATURES

- Field-Bus remote data acquisition
- Modbus Slave device on RS-485
- Modbus RTU/Modbus ASCII Protocol
- 2 Isolated Universal Analogue Input
- 2 Analogue Outputs 0-20mA
- 4 Digital Inputs with pulse counters up to 3 kHz
- 3 SPST Relay Outputs
- Watch-Dog Alarm
- Remotely Configurable
- 1500 Vac galvanic isolation on all the ways
- High Accuracy
- DIN rail mounting in compliance with EN-50022

GENERAL DESCRIPTION

The DAT3012 device, through the two universal input channels galvanically isolated from each other, converts a signal coming from RTD, Tc, mV sensors, V or mA applied as input in engineering units in digital format. It can also acquire up to 4 digital inputs and supply 3 SPST Relay outputs. The digital inputs are also equipped with pulse counters up to 3 kHz and a frequency meter up to 200 Hz. The data is transmitted using the MODBUS protocol RTU on RS-485 network. The device guarantees a high precision and a very stable measurement both in time and in temperature. In order to guarantee the system safety, the device is equipped with a Watch-Dog timer system for both analogue and digital outputs. 1500 VAC insulation on all streets eliminates all effects due to ground loops that may be present, allowing the use of the device even in the most harsh environmental conditions. The device is housed in a rough self-extinguishing plastic container which, thanks to its thin profile of 22.5mm only, allows a high density mounting on EN-50022 standard DIN rail.

USER INSTRUCTIONS

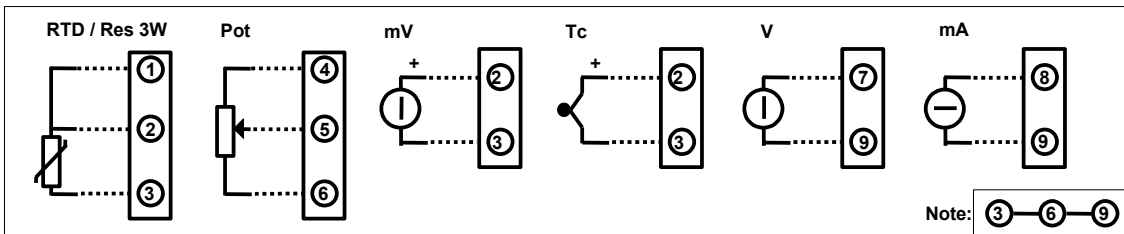
Before to install the device, please read the "Installation Instruction" section. If the module configuration is unknown, with device powered off, connect the INIT terminal to the GND terminal (ground), at the next power on the device will be auto-configured in the default settings (refer to the User Guide of the device). Connect power supply, serial bus, analogue and digital inputs and outputs as shown in the "Wiring" section. When the device is powered, the green LED "PWR" is fixed in ON condition, the yellow LED "STS" changes state and depends on the working condition of the device: refer to 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)

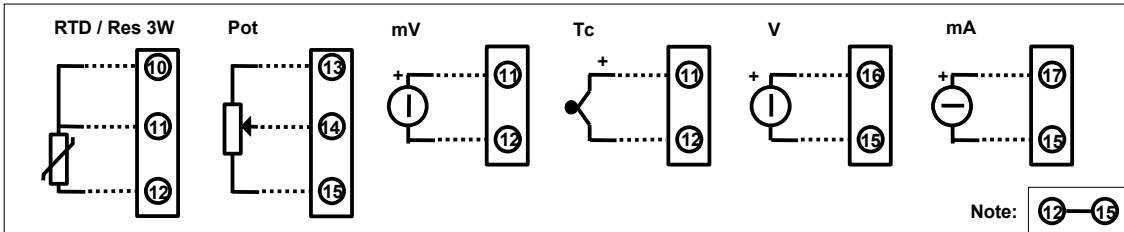
INPUT			Input Impedance		POWER SUPPLY			
Input type	Min	Max	mV, TC	10 MΩ	Power supply voltage	18 .. 30 Vdc		
Voltage			Volt	1 MΩ	Reverse polarity protection	60 Vdc max		
100 mV	-100 mV	100 mV	mA	22 Ω	Current consumption	100 mA max.		
10 Volt	-10 V	10 V	Thermal Drift (1)		ISOLATION			
TC			Inputs - Full Scale	± 0.01 % / °C	(Power supply - RS485 – Universal input A – Universal input B – Digital Inputs – Analogue Outputs)			
J	-210°C	1200°C	Thermal Drift CJC		1500 Vac, 50 Hz, 1 min			
K	-210°C	1370°C	Full Scale	± 0.02 °C/ °C	ENVIRONMENTAL CONDITIONS			
R	-50°C	1760°C	Sample time	150 ms	Operative Temperature	-10°C .. +60°C		
S	-50°C	1760°C	Warm-up time	3 minutes	UL Operative Temperature	-10°C .. +40°C		
B	400°C	1825°C	OUTPUT (2 channels)			Storage Temperature	-40°C .. +85°C	
E	-210°C	1000°C	Output type	Min	Max	Humidity (not condensed)	0 .. 90 %	
T	-210°C	400°C	Current	0 mA	20 mA	Maximum Altitude	2000 m	
N	-210°C	1300°C	Accuracy (2)			Installation	Indoor	
RTD 2,3 wires			± 0.05 % f.s.			Category of installation	II	
Pt100	-200°C	850°C	Linearity (2)			Pollution Degree	2	
Pt1000	-200°C	200°C	± 0.05 % f.s.			MECHANICAL SPECIFICATIONS		
Ni100	-60°C	180°C	Thermal Drift (2)			Material	Self-extinguish plastic	
Ni1000	-60°C	150°C	± 0.01 % / °C			IP Code	IP20	
Resistance 2,3 wires			Load resistance			Wiring	wires with diameter	
Low	0 Ω	500 Ω	< 500 Ohm			0.8÷2.1 mm ² /AWG 14-18		
High	0 Ω	2000 Ω	Auxiliary Voltage			Tightening Torque	0.5 N m	
Potentiometer			> 12V @ 20 mA			Mounting	in compliance with DIN rail standard EN-50022	
Current			Data Transmission			Weight	about 150 g.	
20 mA	-20 mA	20 mA	Baud Rate			CERTIFICATIONS		
Accuracy (1)			115.2 Kbps			EMC (for industrial environments)		
mV, Volt, mA	± 0.05 % f.s.		Max. distance			Immunity		EN 61000-6-2
Pot, RTD, Res.	± 0.05 % f.s.		1.2 Km – 4000 ft			Emission		EN 61000-6-4
TC	> ± 0.05 % f.s. or 5 uV		DIGITAL INPUTS					
Linearity (1)			Number of Channels					
mV, Volt, mA	± 0.05 % f.s.		4					
Pot, RTD, Res.	± 0.1 % f.s.		Pulse Counters (32 bit)					
TC	± 0.2 % f.s.		4 up to 3 kHz					
RTD, Res, Pot excitation current			Input voltage					
Typical	0.700 mA		OFF State : 0÷3 V					
Lead wire resistance influence			(bipolar)					
RTD/Res 3 wires(50 Ω max balanced)	0.05 f.s. %/Ω		ON State : 10÷30 V					
mV, Tc	< 0.8 uV/Ohm		Input Impedance					
CJC Compensation error			4.7 KOhm					
± 1°C			DIGITAL OUTPUTS					
(1) Referred to input Span (difference between max. and min. values)			N.3 Relays SPST					
			Maximum switching power per contact (resistive load)					
			2 A @ 250 Vac					
			2 A @ 30 Vdc					
			Max. voltage					
			250Vac (50 / 60 Hz) ,					
			30Vdc					
			Dielectric Strength between contacts					
			1000 Vac, 50 Hz, 1 min.					
			Dielectric Strength between coil and contacts					
			4000 Vac, 50 Hz, 1 min.					
			(2) Referred to output Span (difference between max. and min. values)					

WIRING

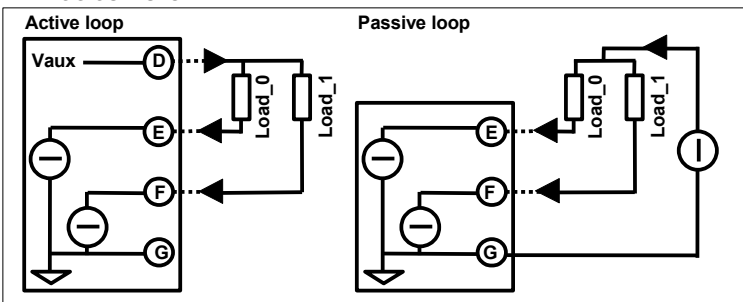
ANALOG INPUT A - UNIVERSAL



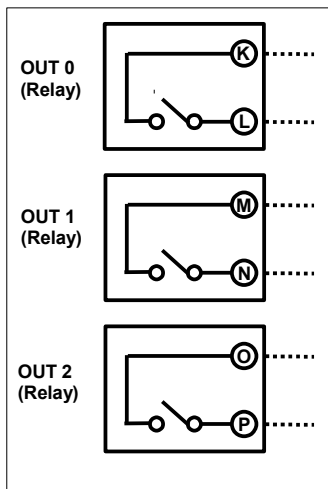
ANALOG INPUT B - UNIVERSAL



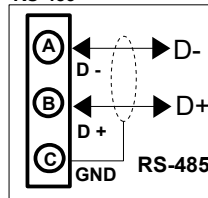
ANALOG OUTPUTS - mA



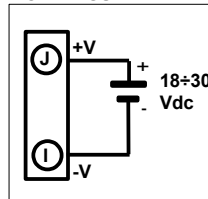
DIGITAL OUTPUTS



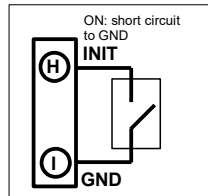
RS-485



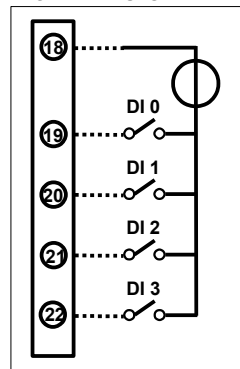
POWER SUPPLY



INIT



DIGITAL INPUTS



MODBUS REGISTERS MAPPING

Registro	Descrizione	Accesso
40001	--Reserved--	R/W
40002	Firmware Version	RO
40003		RO
40004	Name	R/W
40005		R/W
40006	--Reserved--	RO
40007	Address	R/W
40008	--Reserved--	RO
40009	Digital Input	RO
40010	Digital Output	R/W
40011	System Flags	R/W
40012	Enable PowerUp/Safe Dig. Out	R/W
40013	WatchDog Timer	R/W
40014÷18	--Reserved--	RO
40019	Communication	R/W
40020÷26	--Reserved--	RO
40027	Analog Input #1	RO
40028	Analog Input #2	RO
40029÷32	--Reserved--	RO
40033	Analog Output #1	R/W
40034	Analog Output #2	R/W
41204	Reset Digital Counter	R/W
41205	Freq. Digital input #0	RO
41206	Freq. Digital input #1	RO
41207	Freq. Digital input #2	RO
41208	Freq. Digital input #3	RO
41209÷10	Counter Digital input #0 (32bit)	R/W
41211÷12	Counter Digital input #1 (32bit)	R/W
41213÷14	Counter Digital input #2 (32bit)	R/W
41215÷16	Counter Digital input #3 (32bit)	R/W
41217	Input Type	R/W
41221	PowerUp Analog Output #1	R/W
41222	PowerUp Analog Output #2	R/W
41223	Safe Analog Output #1	R/W
41224	Safe Analog Output #2	R/W

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:

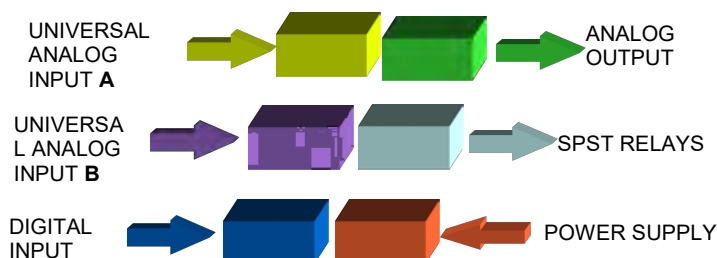
- If panel temperature exceeds 45°C and at least one of the overload conditions exist.

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.

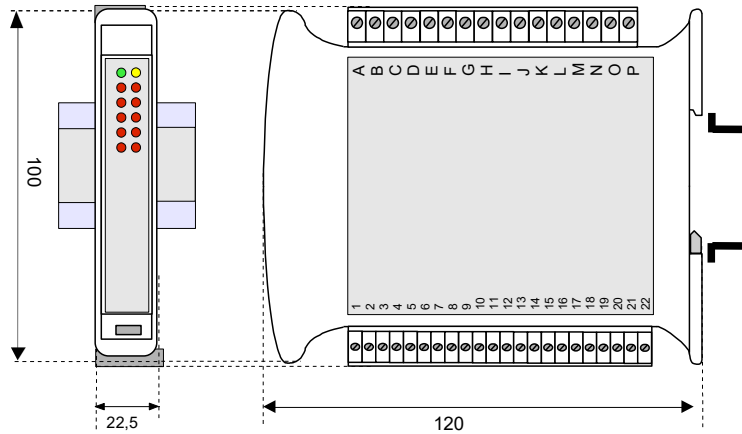
ISOLATIONS



LIGHT SIGNALLING

LED	COLOR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
		BLINK	Watch-dog Alarm
STS	YELLOW	OFF	Correct working
RX	RED	BLINK	Data receiving from RS-485
		OFF	No Data receiving
TX	RED	BLINK	Data Transmission on RS-485
		OFF	No Data Transmission
I(n)	RED	ON	Digital Input 'n' : ON State
		OFF	Digital Input 'n' : OFF State
R(n)	RED	ON	Digital Output 'n' : ON State
		OFF	Digital Output 'n' : OFF State

MECHANICAL DIMENSIONS (mm)



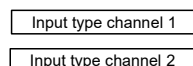
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city, the service for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

HOW TO ORDER

DAT3012 can be supplied with the configuration specified by the customer.

ORDER CODE:

DAT 3012 / Pt100 / 20 mA



=Requested
 = Optional