



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 DAT 3012 device is able to acquire RTD or Tc sensors, mV, V or mA input signals connected to the universal analogue input in engineering units in digital format. Moreover it is available a second isolated analogue input for V or mA. The device is able to acquire up to 3 digital inputs and to drive one solid-state relay and two SPST relays. The Data are transmitted with MODBUS RTU/MODBUS ASCII protocol on the RS-485 network. The device guarantees high accuracy and a stable measure versus time and temperature. To ensure the plant safety two Watch-Dog timer alarms are 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 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.

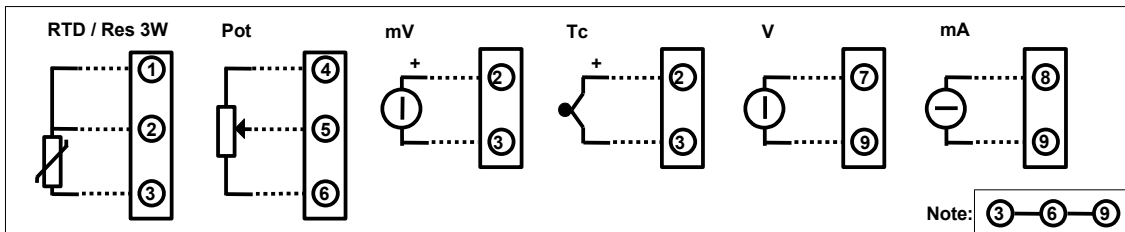
To simplify handling or replacing of the device, it is possible to remove the wired terminals even with the device powered.

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

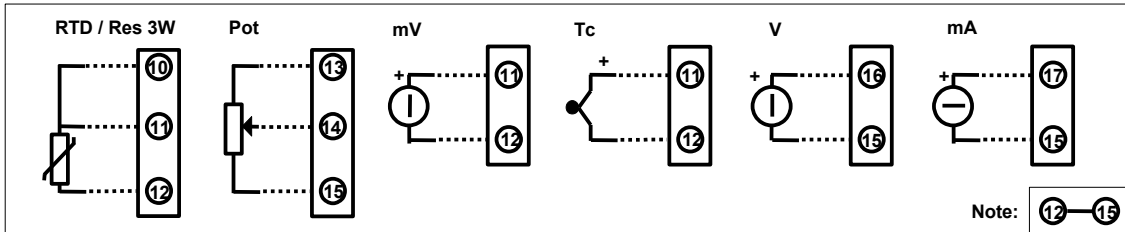
INPUT			Input Impedance		POWER SUPPLY	
Input type	Min	Max				
Voltage 100 mV 10 Volt	-100 mV	100 mV	mV, TC	10 MΩ	Power supply voltage	18 .. 30 Vdc
	-10 V	10 V	Volt	1 MΩ	Reverse polarity protection	60 Vdc max
			mA	22 Ω	Current consumption	100 mA max.
TC J K R S B E T N	-210°C	1200°C	Thermal Drift (1) Inputs - Full Scale		ISOLATION (Power supply - RS485 – Universal input – V mA Input – Digital Inputs – Analogue Outputs)	
	-210°C	1370°C	± 0.01 % / °C			
	-50°C	1760°C	Thermal Drift CJC Full Scale		1500 Vac, 50 Hz, 1 min	
	-50°C	1760°C	± 0.02 °C / °C			
	400°C	1825°C	Sample time		ENVIRONMENTAL CONDITIONS Operative Temperature -10°C .. +60°C UL Operative Temperature -10°C .. +40°C Storage Temperature -40°C .. +85°C Humidity (not condensed) 0 .. 90 % Maximum Altitude 2000 m Installation Indoor Category of installation II Pollution Degree 2	
	-210°C	1000°C	150 ms			
	-210°C	400°C	Warm-up time			
	-210°C	1300°C	3 minutes			
RTD 2,3 wires Pt100 Pt1000 Ni100 Ni1000	-200°C	850°C	OUTPUT (2 channels)			
	-200°C	200°C	Output type	Min	Max	
	-60°C	180°C	Current	0 mA	20 mA	
	-60°C	150°C	Accuracy (2) ± 0.05 % f.s.			
			Linearity (2) ± 0.05 % f.s.			
Resistance 2,3 wires Low High	0 Ω	500 Ω	Thermal Drift (2) ± 0.01 % / °C			
	0 Ω	2000 Ω	Load resistance < 500 Ohm			
Potentiometer	20 Ω	50 kΩ	Auxiliary Voltage > 12V @ 20 mA			
			Data Transmission			
Current 20 mA	-20 mA	20 mA	Baud Rate 115.2 Kbps			
			Max. distance 1.2 Km – 4000 ft			
Accuracy (1) mV, Volt, mA Pot, RTD, Res. TC	± 0.05 % f.s.		DIGITAL INPUTS			
	± 0.05 % f.s.		Number of Channels 4			
	> ± 0.05 % f.s. or 5 uV		Pulse Counters (32 bit) 4 up to 3 kHz			
			Input voltage OFF State : 0÷3 V			
Linearity (1) mV, Volt, mA Pot, RTD, Res. TC	± 0.05 % f.s.		ON State : 10÷30 V			
	± 0.1 % f.s.		Input Impedance 4.7 KOhm			
	± 0.2 % f.s.		DIGITAL OUTPUTS			
			N.3 Relays SPST			
RTD, Res, Pot excitation current		Typical 0.700 mA		Maximum switching power per contact (resistive load)		
Lead wire resistance influence		RTD/Res 3 wires(50 Ω max balanced) 0.05 f.s. %/Ω		2 A @ 250 Vac		
CJC Compensation error ± 1°C		mV, Tc < 0.8 uV/Ohm		2 A @ 30 Vdc		
(1) Referred to input Span (difference between max. and min. values)				5Vdc, 10mA		
(2) Referred to output Span (difference between max. and min. values)				Max. voltage 250Vac (50 / 60 Hz) , 110Vdc		
				Dielectric Strength between contacts 1000 Vac, 50 Hz, 1 min.		
				Dielectric Strength between coil and contacts 4000 Vac, 50 Hz, 1 min.		
				MECHANICAL SPECIFICATIONS		
				Material Self-extinguish plastic		
				IP Code IP20		
				Wiring wires with diameter 0.8÷2.1 mm ² /AWG 14-18		
				Tightening Torque 0.5 N m		
				Mounting in compliance with DIN rail standard EN-50022		
				Weight about 150 g.		
				CERTIFICATIONS		
				EMC (for industrial environments)		
				Immunity EN 61000-6-2		
				Emission EN 61000-6-4		

WIRING

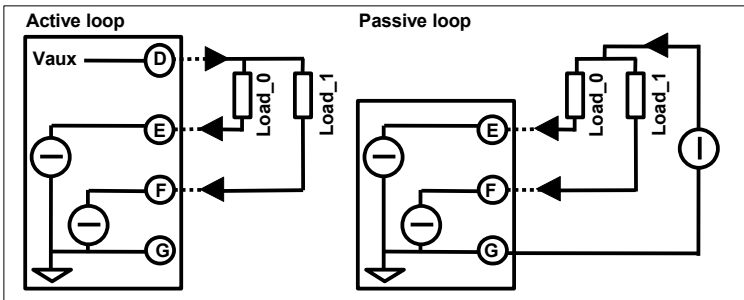
ANALOG INPUT A - UNIVERSAL



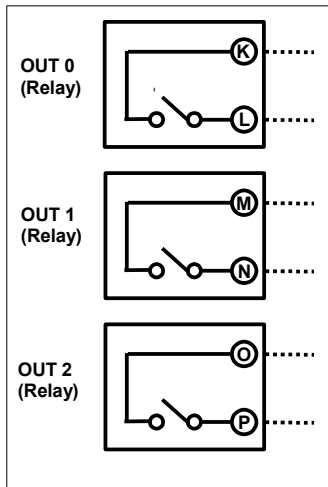
ANALOG INPUT B - UNIVERSAL



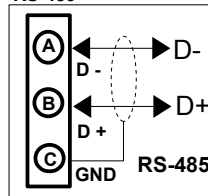
ANALOG OUTPUTS - mA



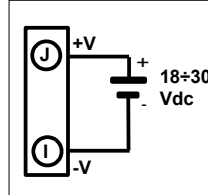
DIGITAL OUTPUTS



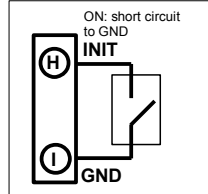
RS-485



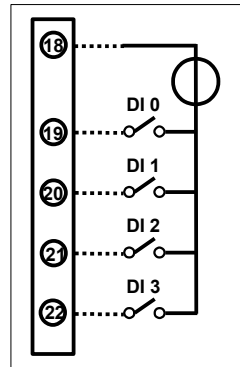
POWER SUPPLY



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:

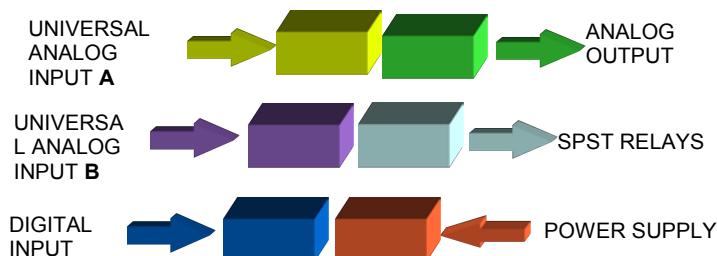
When the devices are installed side by side it may be necessary to separate them by at least 5 mm in the following case:

- 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.

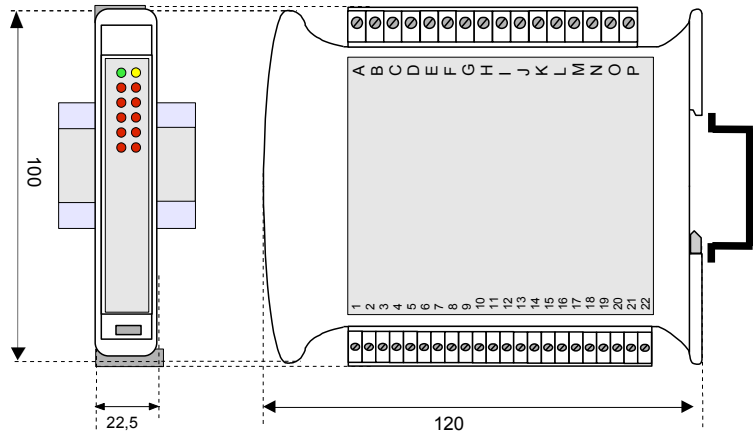
ISOLATIONS



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)



AVAILABLE VERSIONS ON REQUEST

The DAT3012 is available on request in non-standard versions. Each non-standard version is associated with a STDV code that will be communicated at the time of the request.

Available versions out of standard are:

- DAT3012 with 2 analog outputs 0-10V (instead of 2 current outputs 0-20mA)



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 (standard version)

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

ORDER CODE:

DAT 3012 / [Pt100] / [20 mA]

Input type channel 1
Input type channel 2

= Requested
 = Optional

HOW TO ORDER (not standard version)

DAT3012 can be supplied with the configuration specified by the customer. Refer to the "Available versions on demand" section for available standard versions.

ORDER CODE:

DAT 3012 STDV XXXXXX / [Pt100] / [20 mA]

Input type channel 1
Input type channel 2

= Requested
 = Optional