DATEXEL

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Remote I/O module
8 channel RTD input
on RS-485 network

DAT 3019

UNI EN ISO 9001:2008

FEATURES
- **Field-Bus remote data acquisition**
- **RS-485 Master/Slave communication type**
- **MODBUS RTU/ASCII protocol**
- **8 channel 2 wires input**
- **Pt100, Pt1K, Ni100, Ni1K and up to 2 KΩ configurable input**
- **Watch-Dog Alarm**
- **Remotely Configurable**
- **2000 Vac 3-way Galvanic Isolation**
- **High Accuracy**
- **EMC compliance – CE mark**
- **DIN rail suitable mounting - EN-50022 compliance**

CE
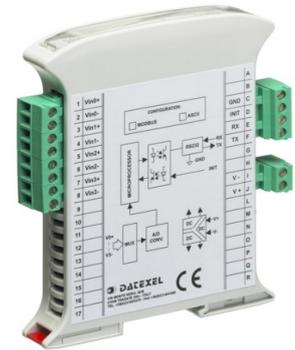
GENERAL DESCRIPTION

The DAT 3019 device is able to acquire up to 8 analog input signals. Data values are transmitted with MODBUS RTU/ASCII protocol on the RS-485 network (RS-232 interface is available).
It is possible to connect 2-wires RTD sensors or up to 2 KΩ resistance signals.
By means of a 16 bit converter, the device guarantee a high accuracy and a stable measure versus time and temperature.
To ensure the plant safety, two Watch-Dog timer alarms are provided.
The 2000 Vac isolation between input, power supply and serial line removes eventual ground-loop effects, allowing the use of the device even in the heavy environmental conditions.
DAT 3019 is in compliance with the Directive 2004/108/EC on the electromagnetic compatibility.
The device is housed in a rough self-extinguishing plastic container which, thanks to its thin profile of 17.5mm only, allows a high density mounting on EN-50022 standard DIN rail.

COMMUNICATION PROTOCOLS

The DAT3019 is designed to work with the MODBUS RTU/ASCII protocol: standard protocol in field-bus; allows to directly interface DAT3000 series devices to the larger part of PLCs and SCADA applications available on the market.
For the protocol instructions, see the relative User Guide.

USER INSTRUCTIONS

Before to install the device, please read the "Installation Instruction" section.
If the module configuration is unknown, it can be hardly to establish a communication with them; connecting the INIT terminal to the GND terminal (ground), at the next power-up the device will be auto-configured in the default settings (see Operating User Guide).
Connect power supply, serial bus and analog inputs as shown in the "Wiring" section.
The "PWR" LED state depending to 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 Operating User Guide.
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 type	Min	Max
RTD 2 wires		
Pt100	-200°C	850°C
Pt1000	-200°C	200°C
Ni100	-60°C	180°C
Ni1000	-60°C	150°C
RES. 2 wires		
Low	0 Ω	500 Ω
High	0 Ω	2000 Ω

Input Calibration (1)
RTD   ±0.2 % f.s.
Res.   ±0.2 % f.s.

Linearity (1)
RTD   ±0.2 % f.s.

RTD excitation current
Typical   0.450 mA

Thermal drift (1)
Full scale   ± 150 ppm / °C

Sample time   0.5 ÷ 2 sec.

Data Transmission
Baud Rate   38.4 Kbps
Max. distance   1.2 Km

Warm-up time   3 min.

(1) Referred to input Span (difference between max. and min. values)

Power Supply
Supply Voltage   10 .. 30 Vdc
Current consumption   30 mA @ 24 Vdc
Polarity inversion protection   60 Vdc max

Isolation
Input – RS485   2000 Vac 50 Hz, 1 min.
Supply – Input   2000 Vac 50 Hz, 1 min.
Supply – RS485   2000 Vac 50 Hz, 1 min.

Temperature & Humidity
Operating temperature   -10°C .. +60°C
Storage temperature   -40°C .. +85°C
Humidity (non condensing)   0 .. 90 %

Housing
Material   Self-extinguishing plastic
Mounting   EN-50022 DIN rail
Weight   ~ 150 g.

EMC (for industrial environments)
Immunity   EN 61000-6-2
Emission   EN 61000-6-4

NOTE:
(1) refered to input Span (difference between max. and min. values)

INSTALLATION INSTRUCTIONS

The DAT 3019 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 racewais 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

ANALOG INPUT WIRING

RTD, Res.

INPUT 0	INPUT 1	INPUT 2	INPUT 3
①②	③④	⑤⑥	⑦⑧

INPUT 4	INPUT 5	INPUT 6	INPUT 7
⑨⑩	⑪⑫	⑬⑭	⑮⑯

NOTE: input channels are not isolated between them.

②—④—⑥—⑧—⑩—⑫—⑭—⑯ = Ref.

CABLING
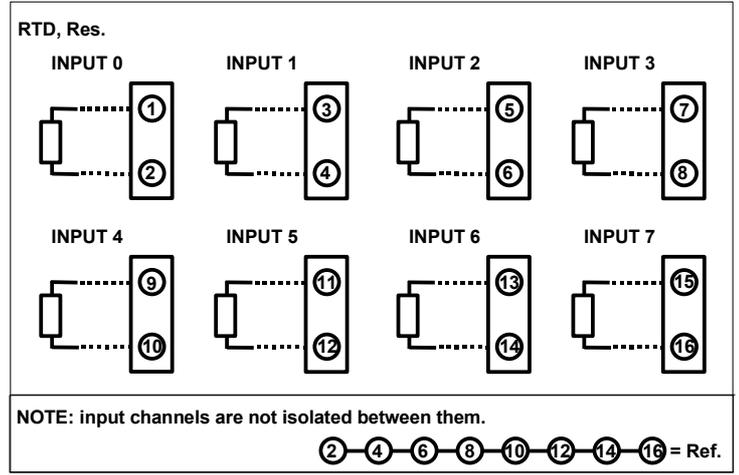
RS-485 NETWORK WIRING
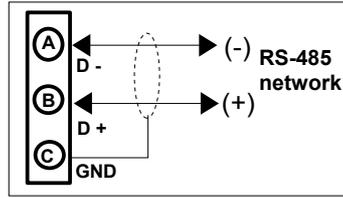
A D - → (-) **RS-485 network**
B D + → (+)
C GND

RS-232 NETWORK WIRING

E RX ← TX **RS-232**
F TX → RX
C GND — GND

POWER SUPPLY WIRING

J +V
I -V
10÷30 Vdc

INIT WIRING

D INIT
C GND
ON: short-circuit to GND

LIGHT SIGNALLING

| LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered / Wrong RS-485 cabling.
		FAST BLINK	Communication in progress (blink frequency depends to baud-rate)
		1 second BLINK	Watch-Dog Alarm condition

ISOLATION DIAGRAM

ANALOG INPUTS → ← RS485 (RS232)

↑ POWER SUPPLY

MECHANICAL DIMENSIONS (mm)

100
17.5
20
120
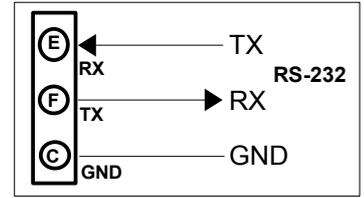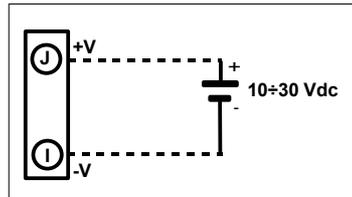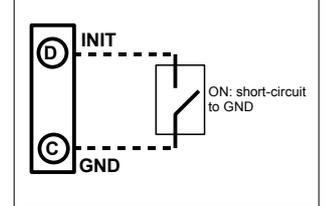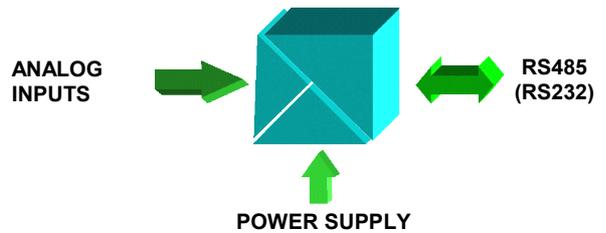
HOW TO ORDER

In the order phase, it is mandatory to specify the interface type (RS485 or RS232) .
DAT3019 can be supplied with the configuration specified by the customer.
Please refer to the "Technical Specification" section for the output type available.

ORDER CODE:

DAT 3019 / **485** / **Pt100**

Interface type
485 : RS-485
232 : RS-232

Input type

▨ = Requested
☐ = Optional