

## Digital Input, and Relay Output Module on MODBUS RS485

# DAT 3130

### FEATURES

- Modbus Server device on RS-485
- Modbus RTU/ Modbus ASCII protocol
- 4 digital inputs
- 4 relay outputs (2 SPDT + 2 SPST)
- Watch-Dog alarm
- Four ways galvanic isolation 1500 Vac
- CE / UL / UKCA mark
- DIN rail mounting in compliance with EN-50022



### GENERAL DESCRIPTION

The device DAT 3130 is able to acquire up to 4 digital inputs and to drive up to 4 relay outputs. The data are transmitted with MODBUS RTU/MODBUS ASCII protocol on the RS-485 network.

To ensure the plant safety, it is provided a Watch-Dog timer alarm.

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 in compliance with the Directive UL 61010-1 for US market and with the Directive CSA C22.2 No 61010-1 for the Canadian market.

It 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, digital inputs and relay outputs as shown in the "Wiring" section.

The "PWR" LED 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)

| DIGITAL INPUTS                 |   | SERIAL OUTPUT   | GENERAL SPECIFICATIONS                         |   |
|--------------------------------|---|---|--|---|
| <b>Number of Channels</b>      | 4                                       | <b>Data Transmission (asynchronous serial RS-485)</b><br>Baud Rate 115.2 Kbps<br>Max. distance 1.2 Km – 4000 ft | Power supply voltage                           | 18 .. 30 Vdc  |
| <b>Input voltage (bipolar)</b> | OFF State : 0÷3 V<br>ON State : 10÷30 V |   | Reverse polarity protection                    | 60 Vdc max  |
| <b>Input Impedance</b>         | 4.7 KOhm                                |   | <b>Max. Current consumption</b>                | 120 mA  |
| <b>Sample time</b>             | 5 ms                                    |   | <b>ISOLATION</b>                               |   |
|                                |   |   | Among all the ways                             | 1500 Vac,<br>50 Hz, 1 min                                   |
|                                |   |   | <b>ENVIRONMENTAL CONDITIONS</b>                |   |
|                                |   |   | Operative temperature                          | -10°C .. +60°C  |
|                                |   |   | UL Operative Temperature                       | -10°C .. +40°C  |
|                                |   |   | Storage temperature                            | -40°C .. +85°C  |
|                                |   |   | Humidity (not condensing)                      | 0 .. 90 %   |
|                                |   |   | Maximum Altitude                               | 2000 m slm  |
|                                |   |   | Installation                                   | Indoor  |
|                                |   |   | Category of Installation                       | II  |
|                                |   |   | Pollution Degree                               | 2   |
|                                |   |   | <b>MECHANICAL SPECIFICATIONS</b>               |   |
|                                |   |   | Material                                       | Self-extinguish plastic                                     |
|                                |   |   | IP Code  | IP20  |
|                                |   |   | Wiring   | wires with diameter<br>0.8÷2.1 mm <sup>2</sup><br>AWG 14-18 |
|                                |   |   | Tightening Torque                              | 0.5 N m   |
|                                |   |   | Mounting                                       | in compliance with DIN<br>rail standard EN-50022            |
|                                |   |   | Weight   | about 210 g.  |
|                                |   |   | <b>CERTIFICATIONS</b>                          |   |
|                                |   |   | <b>EMC ( for the Industrial Environments )</b> |   |
|                                |   |   | Immunity                                       | EN 61000-6-2  |
|                                |   |   | Emission                                       | EN 61000-6-4  |
|                                |   |   | <b>UKCA (ref S.I. 2016 N°1091 )</b>            |   |
|                                |   |   | Immunity                                       | BS EN 61000-6-2   |
|                                |   |   | Emission                                       | BS EN 61000-6-4   |
|                                |   |   | <b>UL</b>                                      |   |
|                                |   |   | US Standard                                    | UL 61010-1  |
|                                |   |   | Canadian Standard                              | CSA C22.2 No 61010-1  |
|                                |   |   | CCN  | NRAQ/NRAQ7  |
|                                |   |   | Typology                                       | Open Type device  |
|                                |   |   | Classification                                 | Industrial Control<br>Equipment                             |
|                                |   |   | File Number                                    | E352854   |

## INSTALLATION INSTRUCTIONS

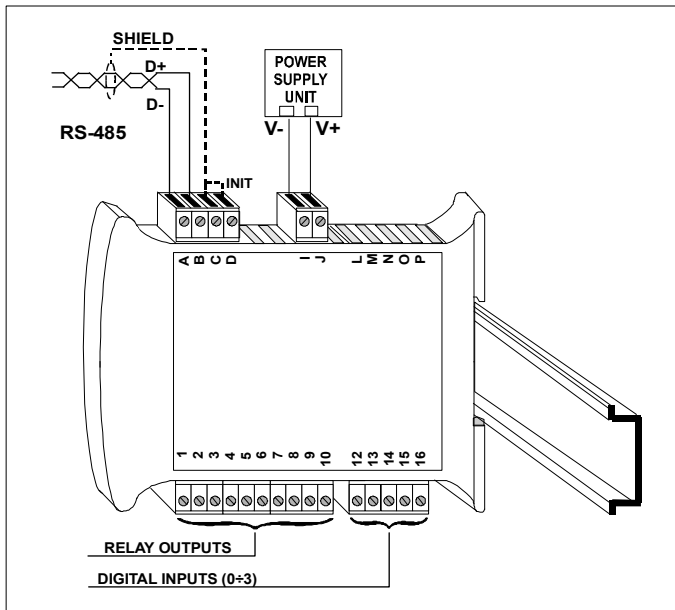
The device is suitable to be mounted on DIN rail, in vertical position. For a correct working and a long life of the device, read the following indications. In case of the devices are mounted side by side, please leave about 5mm between if the temperature in the cabinet higher than 45 °C and high supply voltage (>27Vdc).

Avoid to place raceways or other objects which could obstruct the ventilation slits. 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.

Avoid to install the devices in a site where vibrations are present.

It is recommended to use shielded cable for connecting signals. The shield must be connected to an earth wire provided for this purpose. Moreover it is suggested to avoid routing conductors near power signal cables.

## CABLING



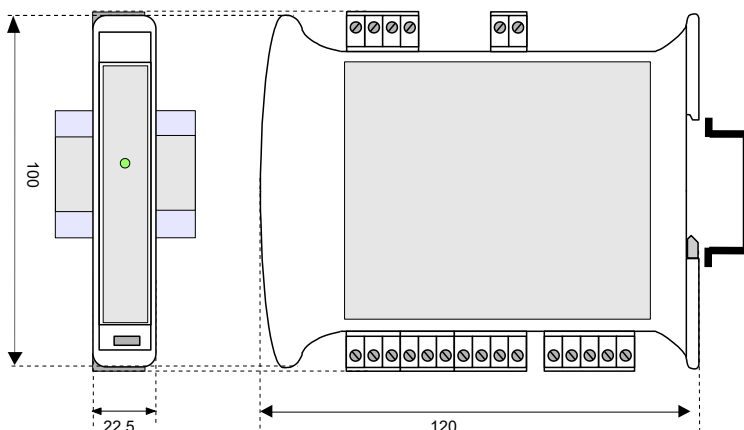
## LIGHT SIGNALLING

| LED | COLOR | STATE             | DESCRIPTION   |
|-----|-------|-------------------|---|
| PWR | GREEN | ON                | Device powered  |
|     |       | OFF               | Device not powered / Wrong RS-485 cabling.                              |
|     |       | FAST BLINKING     | Communication in progress (the blinking frequency depends on baud-rate) |
|     |       | 1 second BLINKING | Watch-Dog Alarm condition   |

## ISOLATION STRUCTURE



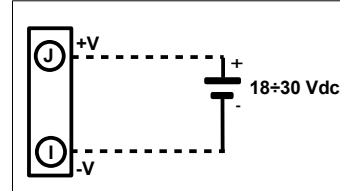
## MECHANICAL DIMENSIONS (mm)



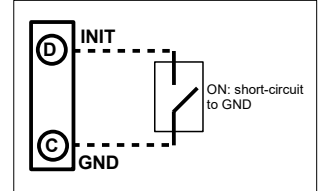
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city, the service for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

## WIRING

### POWER SUPPLY (\*)

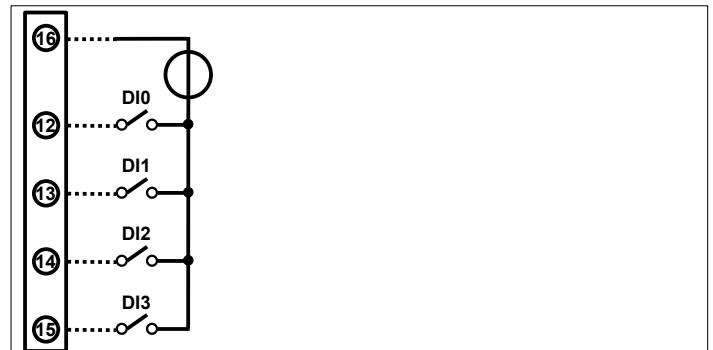


### INIT

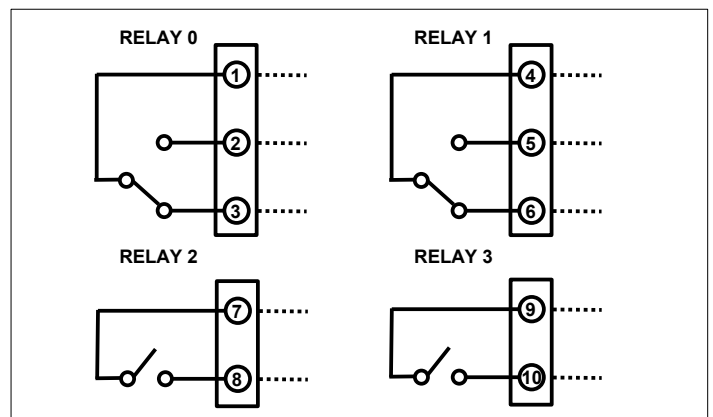


(\*) Note: for UL installation the device must be powered using a power supply unit classified NEC class 2 or SELV with limited energy

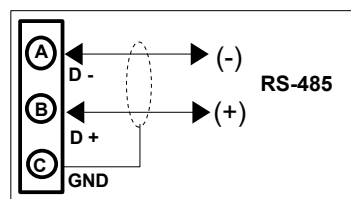
### DIGITAL INPUTS



### RELAY OUTPUTS



### RS-485



## HOW TO ORDER

### ORDER CODE:

DAT 3130