

DAT 3140



FEATURES

- Field-Bus remote data acquisition
- Modbus Slave device on RS-485
- Modbus RTU/ Modbus ASCII protocol
- 4 digital inputs
- 8 digital outputs type NPN
- Watch-Dog alarm
- Galvanic isolation on all ways
- High accuracy
- UL / CE mark
- In compliance to EN-50022 DIN rail mounting



GENERAL DESCRIPTION

The device DAT 3140 is able to acquire up to 4 digital inputs and to drive up to 8 transistor outputs type NPN. The data are transmitted with MODBUS RTU/MODBUS ASCII protocol on the RS-485 network.

The device guarantees high accuracy and 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 DAT 3140 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.

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 DAT3140 is designed to work with the MODBUS RTU/MODBUS 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, refer to the User Guide of the device.

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 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 under nominal conditions)

| DIGITAL INPUTS | | DIGITAL OUTPUTS | | ISOLATION | |
|-----------------------------------|---|------------------------------------|-------------------------------------|---|---|
| Number of Channels | 4 | Number of Channels | 8 | Inputs – Outputs | 1000 Vac 50 Hz, 1 min. |
| Input voltage (bipolar) | OFF State : 0÷3 V ON State : 10÷30 V | Type | NPN | Inputs – RS485 | 2000 Vac 50 Hz, 1 min. |
| Input Impedance | 4.7 KOhm | Max. Voltage | 30 Vdc | Inputs – Supply | 2000 Vac 50 Hz, 1 min. |
| Sample time | 20 ms | Max. Load | 600 mA per channel 3A per module | Outputs – RS485 | 2000 Vac 50 Hz, 1 min. |
| | | Over-current protection | NO | Outputs – Supply | 2000 Vac 50 Hz, 1 min. |
| | | Data Transmission | | RS-485 – Supply | 2000 Vac 50 Hz, 1 min. |
| | | Baud Rate | 38.4 Kbps | ENVIRONMENTAL CONDITIONS | |
| | | Max. distance | 1.2 Km – 4000 ft | 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 |
| | | POWER SUPPLY | | MECHANICAL SPECIFICATIONS | |
| | | Power supply voltage | 10 .. 30 Vdc | Material | Self-extinguish plastic |
| | | Reverse polarity protection | 60 Vdc max | IP Code | IP20 |
| | | Current consumption | 45 mA max. | 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 |
| | | | | UL | |
| | | | | US Standard | UL 61010-1 |
| | | | | Canadian Standard | CSA C22.2 No 61010-1 |
| | | | | CCN | NRAQ/NRAQ7 |
| | | | | Typology | Open Type device |
| | | | | Classification | Industrial Control Equipment |
| | | | | File Number | E352854 |

INSTALLATION INSTRUCTIONS

The DAT 3140 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.

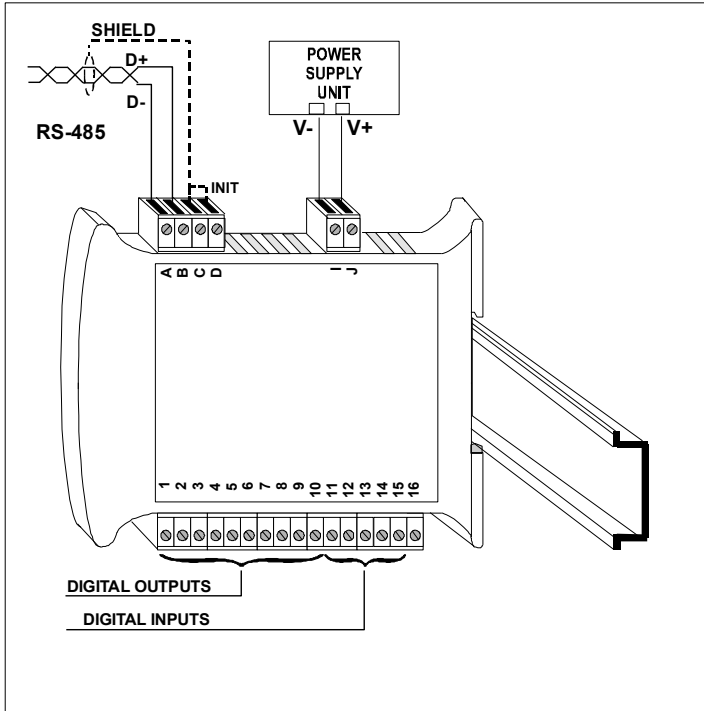
In case of the devices are mounted side by side, please leave about 5mm between in the following situations:

- 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.

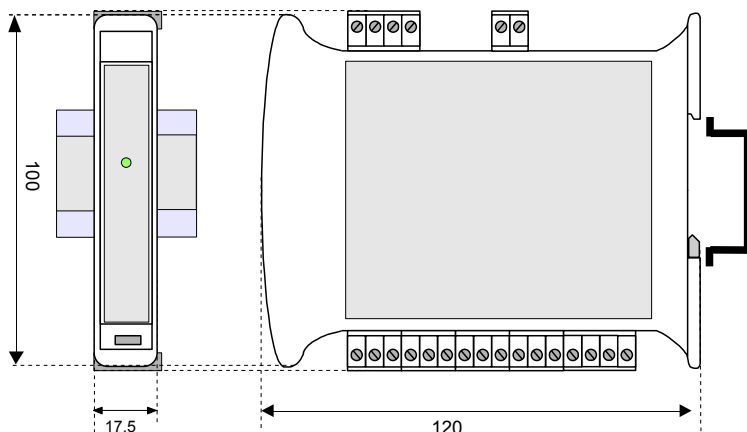
CABLING



LIGHT SIGNALLING

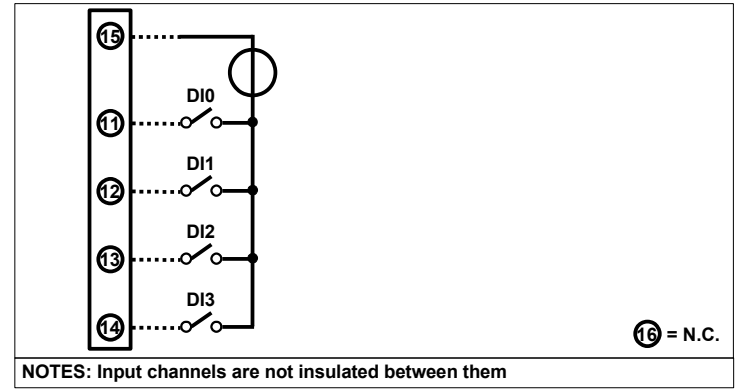
| LED | COLOUR | STATE | DESCRIPTION |
|-----|--------|-------------|--|
| PWR | GREEN | ON | Device powered |
| | | OFF | Device not powered or wrong RS-485 connection |
| | | RAPID BLINK | Communication in progress (the blink frequency depends to the Baud-rate) |
| | | SLOW BLINK | ~1 sec. - Watch-Dog Alarm condition |

MECHANICAL DIMENSIONS (mm)



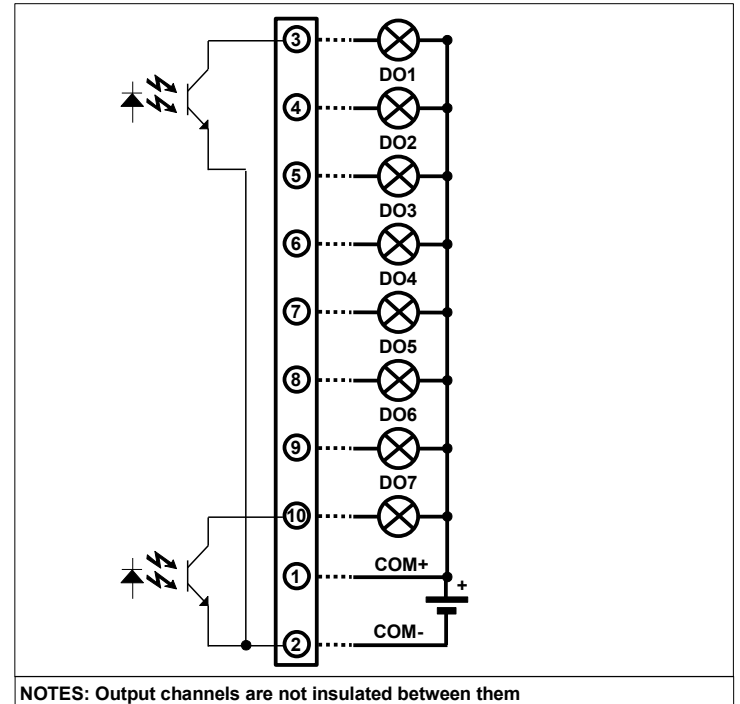
WIRING

DIGITAL INPUTS



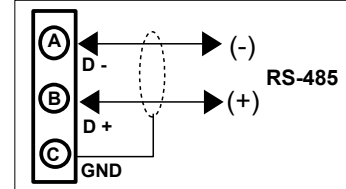
NOTES: Input channels are not insulated between them

DIGITAL OUTPUTS

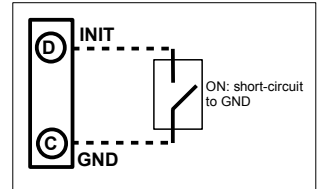


NOTES: Output channels are not insulated between them

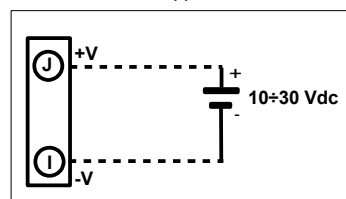
RS-485 NETWORK



INIT



POWER SUPPLY (*)



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

ISOLATION STRUCTURE



HOW TO ORDER

DAT 3140

■ = Mandatory
□ = Optional