

FEATURES

- Modbus Slave device on RS-485
- Modbus RTU/ Modbus ASCII protocol
- 16 digital inputs
- 8 digital 16 bit counters up to 100 Hz
- Communication parameters configurable by dip-switches
- Watch-Dog Alarm
- Remotely Configurable
- 1500 Vac 3-ways Galvanic Isolation
- LEDs of signalling on front side for power supply and communication
- LEDs of signalling on front side for digital inputs state
- Connection by removable screw terminals
- High Accuracy
- CE mark
- DIN rail mounting in compliance with EN-50022



GENERAL DESCRIPTION

The device DAT10148 is able to acquire up to 16 digital inputs with connection NPN or PNP. The data are transmitted with MODBUS RTU / MODBUS ASCII protocol over the RS-485 network.

To ensure the plant safety, a Watch-Dog timer alarm is 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 6 module DIN rough self-extinguishing plastic box for mounting on EN-50022 standard DIN rail.

COMMUNICATION PROTOCOLS

The device is designed to work with the MODBUS RTU/MODBUS ASCII protocol: standard protocol in field-bus; allows to directly interface DAT10000 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.

It is possible to configure the device in two modes: by the dip-switches located on the front of the device or via software using the INIT modality.

Connect the terminal INIT to the terminal REF; at the power-on the device will be automatically set in the configuration set-up (refer to the User Guide of the device).

Connect power supply, serial bus, digital inputs as shown in the "Wiring" section.

The LEDs 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)

| | |
|--|---|
| INPUT Channels 16 Voltage input (bipolar) OFF State 0 ÷ 3 V ON State 10 ÷ 30 V Impedance 4.7 KΩ Sample time 5 ms Number of counters 8 Counter register size 16 bit Counter frequency up to 100 Hz Minimum pulse width 1 ms Data Transmission (RS-485 asynchronous serial) Baud Rate 115.2 Kbps Max. distance 1.2 Km – 4000 ft | POWER SUPPLY Power supply voltage 10 .. 30 Vdc Reverse polarity protection 60 Vdc max Current consumption (operative) 40 mA max@24Vdc 85 mA max@10Vdc |
| | ISOLATION Between all the ways 1500 Vac, 50 Hz, 1 min |
| | ENVIRONMENTAL CONDITIONS Operative Temperature -10°C .. +60°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 |
| | 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 200 g. |
| | CERTIFICATIONS EMC (for industrial environments) Immunity EN 61000-6-2 Emission EN 61000-6-4 |

INSTALLATION INSTRUCTIONS

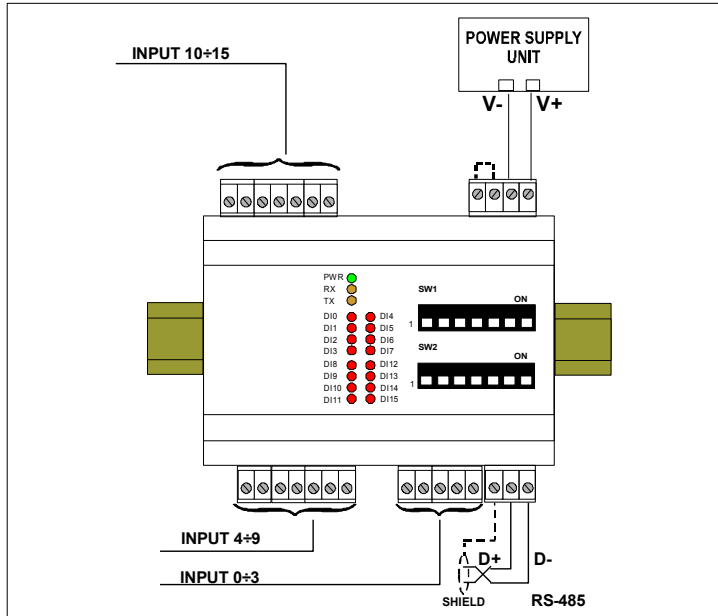
The DAT10148 is suitable for fitting to DIN rails in the vertical position. For optimum operation and long life follow these instructions:

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 power supply voltage 10 Vdc. 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.

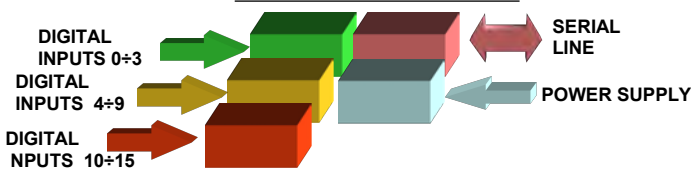
WIRING



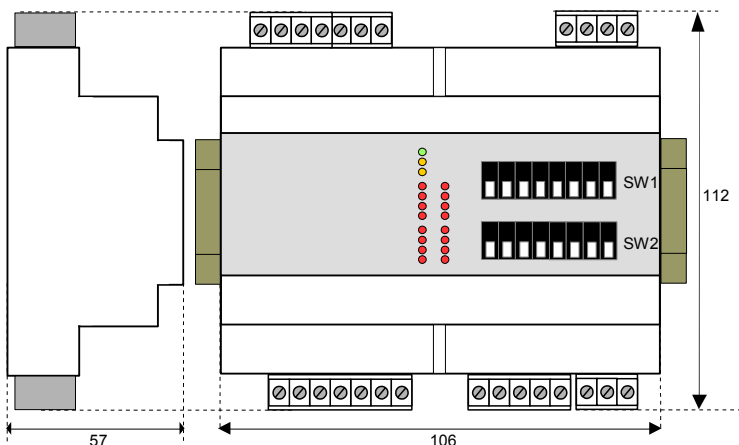
LIGHT SIGNALLING

| LED | COLOUR | STATE | DESCRIPTION |
|-----|--------|-------|---|
| PWR | GREEN | ON | Device powered |
| | | OFF | Device not powered |
| | | BLINK | ~1 sec. - Watch-Dog alarm condition occurred |
| RX | ORANGE | BLINK | Stream of data over receiving line of RS-485 |
| | | OFF | No data over receiving line of RS-485 |
| TX | ORANGE | BLINK | Stream of data over transmission line of RS-485 |
| | | OFF | No data over transmission line of RS-485 |
| DIn | RED | ON | Digital input ON state |
| | | OFF | Digital input OFF state |

ISOLATION STRUCTURE

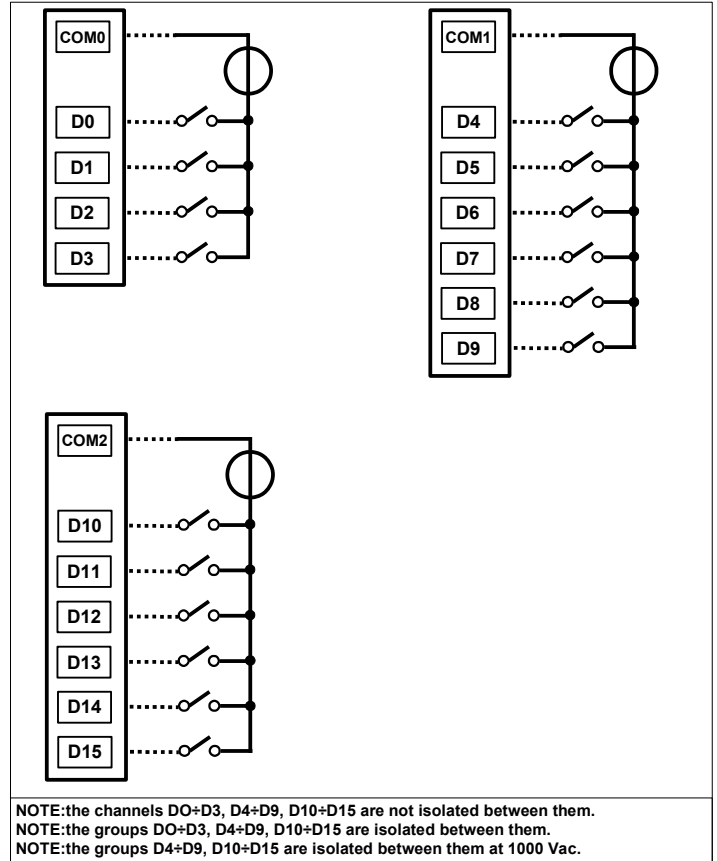


MECHANICAL DIMENSIONS (mm)



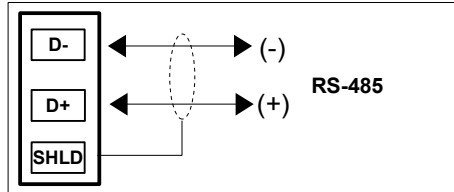
CONNECTIONS

DIGITAL INPUTS

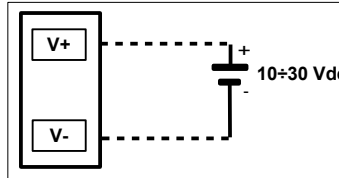


NOTE: the channels D0÷D3, D4÷D9, D10÷D15 are not isolated between them.
NOTE: the groups D0÷D3, D4÷D9, D10÷D15 are isolated between them.
NOTE: the groups D4÷D9, D10÷D15 are isolated between them at 1000 Vac.

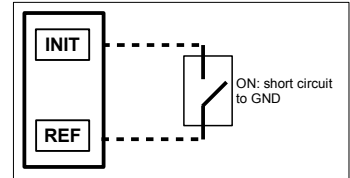
SERIAL LINE RS-485



POWER SUPPLY



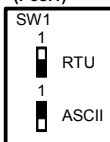
INIT



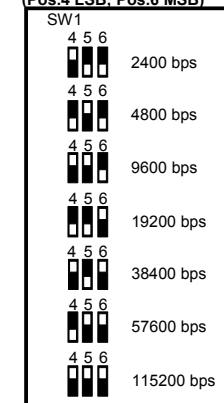
DIP-SWITCHES : TABLES OF CONFIGURATION

Warning: set all the dip-switches in OFF position to access to the device in EEPROM modality (the device will follow all the communication parameters set by software) or INIT. Power-off the device before to change the set of the dip-switches.

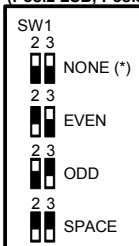
TAB.1 Modality settings (Pos.1)



TAB.3 Baud rate settings (Pos.4 LSB; Pos.6 MSB)



TAB.2 Parity settings (Pos.2 LSB; Pos.3 MSB)



Note (*):

- in Modbus RTU Modality the setting is NONE; number of bit = 8
- in Modbus ASCII Modality the setting is MARK; number of bit = 7

DIP POSITION

ON OFF

HOW TO ORDER
DAT 10148

