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Distributed I/O Module 12 digital inputs communicating over RS-485

DAT 3148/12

FEATURES

- **Modbus Server device on RS-485**
- **Modbus RTU/ Modbus ASCII protocol**
- **12 digital inputs**
- **8 counters 16 bit up to 100 Hz**
- **Watch-Dog alarm**
- **Four ways galvanic isolation**
- **CE / UL / UKCA mark**
- **DIN rail mounting in compliance with EN-50022**

GENERAL DESCRIPTION

The device DAT 3148/12 is able to acquire up to 12 digital inputs. For each of the first 8 digital inputs it is implemented a 16 bit counter with maximum frequency of 100 Hz. 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 17.5mm 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 and digital inputs 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

Number of Channels	12
Input voltage (bipolar)	OFF State : 0÷3 V ON State : 10÷30 V
Input Impedance	4.7 KOhm
Sample time	5 ms
Counters 16 bit	8 up to 100 Hz

SERIAL OUTPUT

Data Transmission (asynchronous serial RS-485)	
Baud Rate	115.2 Kbps
Max. distance	1.2 Km – 4000 ft

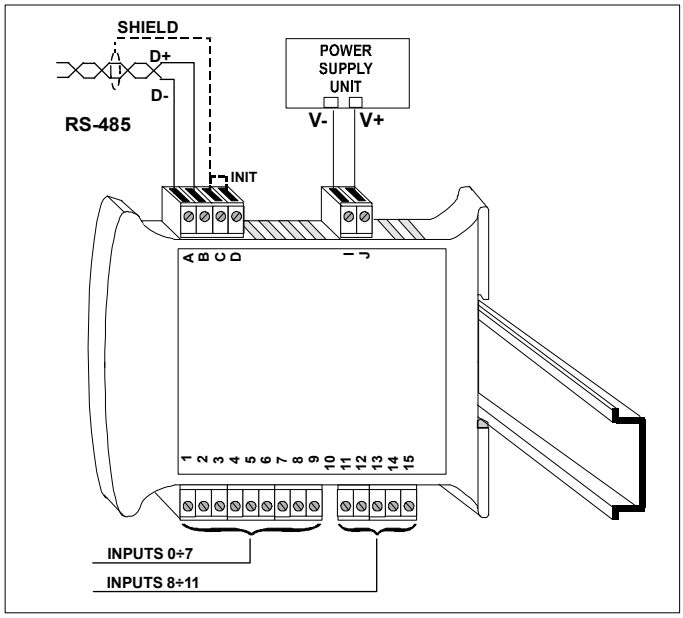
GENERAL SPECIFICATIONS

Power supply voltage	10 .. 30 Vdc
Reverse polarity protection	60 Vdc max
Max. Current consumption	35 mA
ISOLATION (test time 1 minute)	
Inputs – RS485	2000 Vac 50 Hz
Inputs – Supply	2000 Vac 50 Hz
RS-485 – Supply	2000 Vac 50 Hz
Inputs 0÷7 – Inputs 8÷11	1500 Vac 50 Hz
ENVIRONMENTAL CONDITIONS	
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
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 the Industrial Environments)	
Immunity	EN 61000-6-2
Emission	EN 61000-6-4
UKCA (ref S.I. 2016 N°1091)	
Immunity	BS EN 61000-6-2
Emission	BS 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 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.

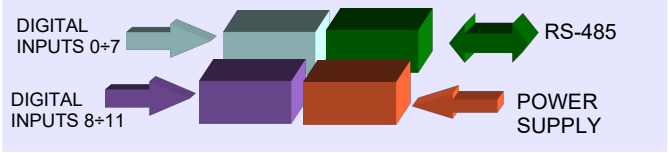
CABLING



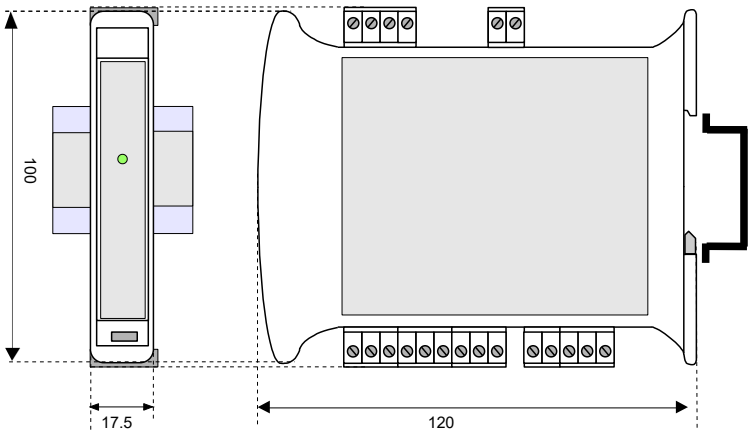
LIGHT SIGNALLING

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



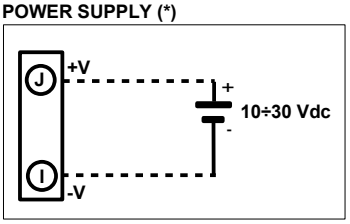
MECHANICAL DIMENSIONS (mm)



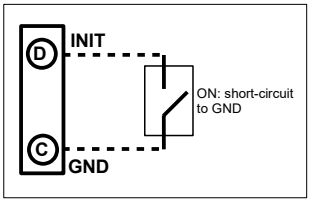
The symbol reported on the product indicates that the product itself must not be considered as a domestic waste.
It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste.
For more information contact the proper office in the user's city , the service for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

WIRING

POWER SUPPLY (*)

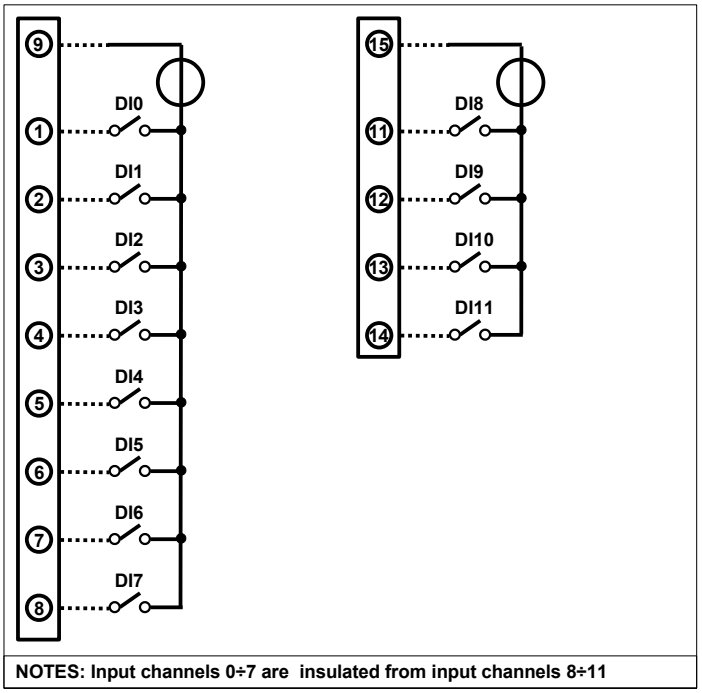


INIT



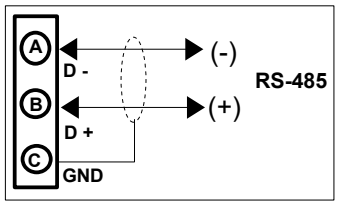
(*) Note: for UL installation the device must be powered using a power supply unit classified NEC class 2 or SELV with limited energy

DIGITAL INPUTS



NOTES: Input channels 0÷7 are insulated from input channels 8÷11

RS-485



HOW TO ORDER

ORDER CODE:

DAT 3148/12