

16 Digital inputs on Modbus RTU DAT10148

DAT 10148

FEATURES

- Modbus Server 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/UKCA 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.

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)

DIGITAL INPUTS (WET CONTACTS)		SERIAL OUTPUT	GENERAL SPECIFICATIONS
Channels	16	Data Transmission	Power supply voltage 10 .. 30 Vdc
Voltage input (bipolar)			Reverse polarity protection 60 Vdc max
OFF State	0 ÷ 3 V	RS-485 asynchronous serial	Current consumption @ 24 Vdc
ON State	10 ÷ 30 V	Baud Rate 115.2 Kbps	40 mA max
Impedance	4.7 KΩ	Max. distance 1.2 Km – 4000 ft	Max. Current consumption 85 mA
Sample time	5 ms		
Number of counters	8		ISOLATION
Counter register size	16 bit		Among all the ways 1500 Vac,
Counter frequency	up to 100 Hz		50 Hz, 1 min
Minimum pulse width	1 ms		ENVIRONMENTAL CONDITIONS
			Operative temperature -10°C .. +60°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 0.8 N m
			Mounting in compliance with DIN rail standard EN-50022
			Weight about 200 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

INSTALLATION INSTRUCTIONS

The 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 power supply voltage 10 Vdc.

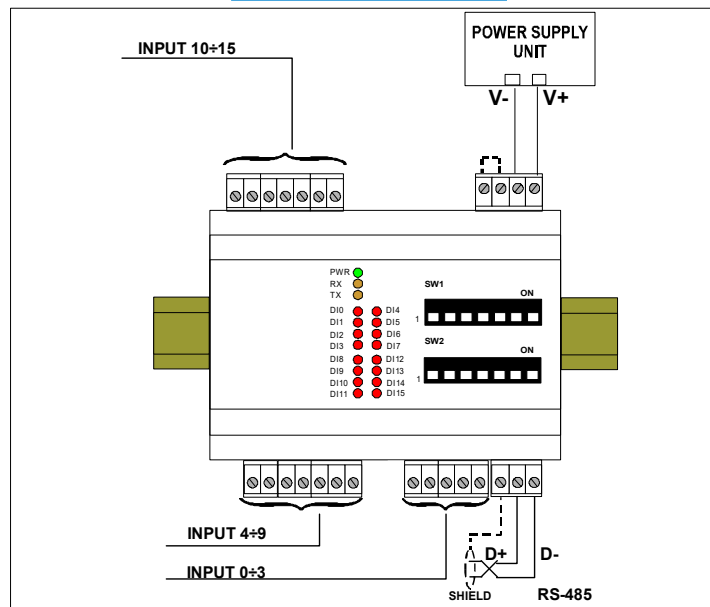
Make sure that sufficient air flow is provided for the device avoiding to place raceways or other objects which could obstruct the ventilation slits.

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.

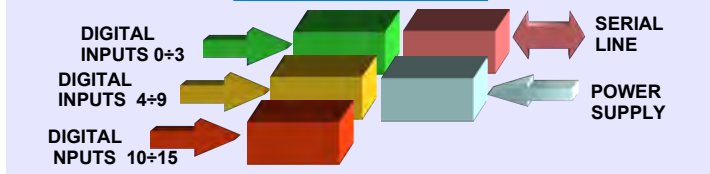
TERMINALS OVERVIEW



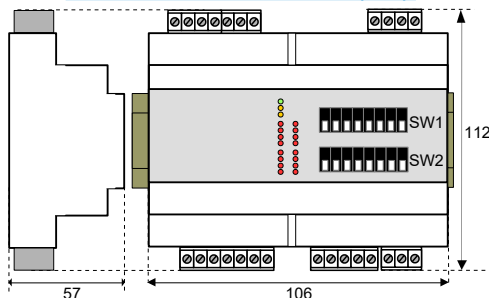
LIGHT SIGNALLING

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)

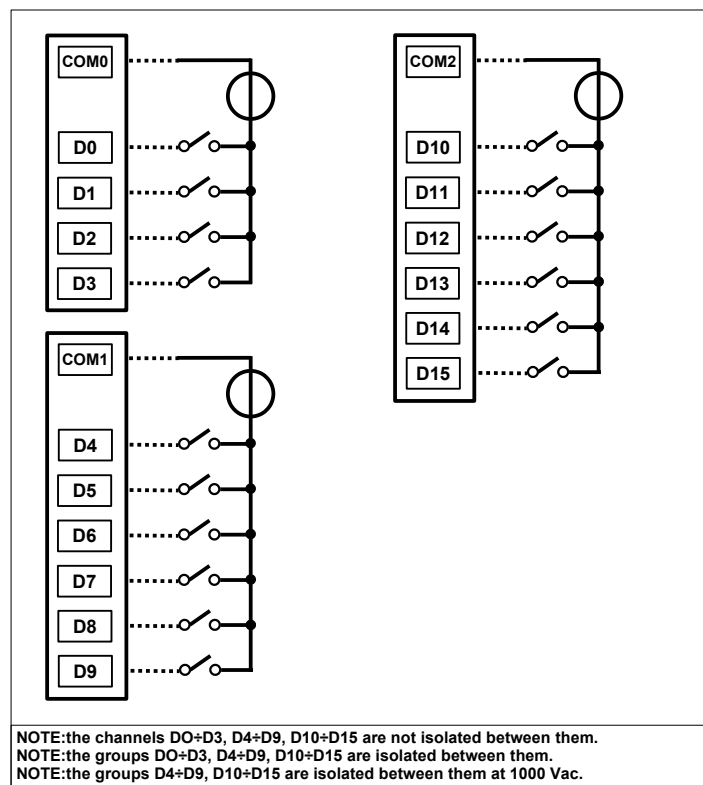


The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste.

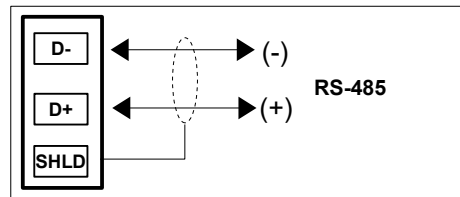
For more information contact the proper office in the user's city, the service for the waste treatment or the supplier from which the product has been purchased.

WIRING

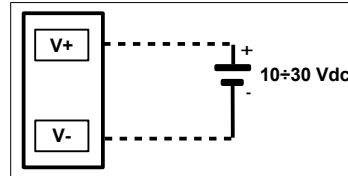
DIGITAL INPUTS



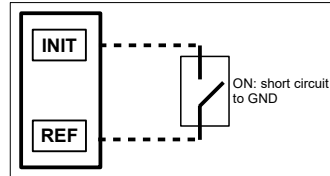
SERIAL LINE RS-485



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)

SW1	Position	Modality
1	RTU	RTU
1	ASCII	ASCII

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

SW1	Position	Parity
2 3	NONE (*)	NONE (*)
2 3	EVEN	EVEN
2 3	ODD	ODD
2 3	SPACE	SPACE

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

SW1	Position	Baud rate
4 5 6	2400 bps	2400 bps
4 5 6	4800 bps	4800 bps
4 5 6	9600 bps	9600 bps
4 5 6	19200 bps	19200 bps
4 5 6	38400 bps	38400 bps
4 5 6	57600 bps	57600 bps
4 5 6	115200 bps	115200 bps

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

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TAB.4 Address Selection 1+247 (Pos.1 LSB; Pos.8 MSB)

SW2	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
	EEPROM		Address 38		Address 76		Address 114
	Address 1		Address 39		Address 77		Address 115
	Address 2		Address 40		Address 78		Address 116
	Address 3		Address 41		Address 79		Address 117
	Address 4		Address 42		Address 80		Address 118
	Address 5		Address 43		Address 81		Address 119
	Address 6		Address 44		Address 82		Address 120
	Address 7		Address 45		Address 83		Address 121
	Address 8		Address 46		Address 84		Address 122
	Address 9		Address 47		Address 85		Address 123
	Address 10		Address 48		Address 86		Address 124
	Address 11		Address 49		Address 87		Address 125
	Address 12		Address 50		Address 88		Address 126
	Address 13		Address 51		Address 89		Address 127
	Address 14		Address 52		Address 90		Address 128
	Address 15		Address 53		Address 91		Address 129
	Address 16		Address 54		Address 92		Address 130
	Address 17		Address 55		Address 93		Address 131
	Address 18		Address 56		Address 94		Address 132
	Address 19		Address 57		Address 95		Address 133
	Address 20		Address 58		Address 96		Address 134
	Address 21		Address 59		Address 97		Address 135
	Address 22		Address 60		Address 98		Address 136
	Address 23		Address 61		Address 99		Address 137
	Address 24		Address 62		Address 100		Address 138
	Address 25		Address 63		Address 101		Address 139
	Address 26		Address 64		Address 102		Address 140
	Address 27		Address 65		Address 103		Address 141
	Address 28		Address 66		Address 104		Address 142
	Address 29		Address 67		Address 105		Address 143
	Address 30		Address 68		Address 106		Address 144
	Address 31		Address 69		Address 107		Address 145
	Address 32		Address 70		Address 108		Address 146
	Address 33		Address 71		Address 109		Address 147
	Address 34		Address 72		Address 110		Address 148
	Address 35		Address 73		Address 111		Address 149
	Address 36		Address 74		Address 112		Address 150
	Address 37		Address 75		Address 113		Address 151
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