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Isolated converter USB◄►RS485 / 422

DAT 3580-USB

FEATURES

- **Asynchronous serial data transmission**
- **Automatic baud-rate fitting up to 115.2 Kbps**
- **Distance up to 1200 m**
- **Point to point connection or multipoint connection up to 32 modules**
- **DC or AC power supply**
- **Galvanic isolation on all ways**
- **USB cable on front side**
- **UL / CE mark**
- **Suitable for DIN rail mounting in compliance with EN-50022**

GENERAL DESCRIPTION

The device DAT3580-USB is an isolated interface converter between USB port and asynchronous serial lines RS485 or RS422 that guarantees a full isolation between power supply, USB and serial line RS-485 or 422 removes eventual ground-loop effects, allowing the use of the device even in the heavy environmental conditions.
It is designed to operate either on serial interface RS-422 full-duplex 4 wires or RS485 half-duplex 2 wires, with a baud-rate transmission up to 115.2 Kbps.
The transmission is asynchronous without settings of protocol, data format and baud rate.
The DAT 3580-USB is in compliance with the Directive 2004/108/EC on the electromagnetic compatibility.
The DAT 3580-USB 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 22.5 mm 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.
The device DAT3580-USB converts the serial transmission from USB to RS-485 (2 wires) or RS-422 (4 wires) as follows.
The data incoming from the line TX of USB port are converted and transmitted to the terminals D-E of RS-485 and RS-422.
The data incoming from the line RX of RS-485 (terminal D and E) or RS-422 (terminal B and C) are converted and transmitted to the terminal RX of USB port.
The transmission of the signal follows the logic state of every single bit, then there is not necessary to set the protocol, the data format and the baud-rate.
When the data transmission from the USB is off, the RS-485 driver is in the receive condition (high impedance); when the data transmission from the USB goes on the RS-485 driver switch immediately to the transmission condition (low impedance). The low impedance is kept for about 150 us, then the line returns automatically in high impedance (receiver).

TECHNICAL SPECIFICATIONS (Typical @ 25 °C and in the nominal conditions)

In compliance with standard	**USB 2.0, RS485 and RS422**
RS485 Interface	
Baud-rate	up to 115.2 Kbps
Max. distance / baud-rate ratio (recommended) (1)	1.2 Km – 4000 ft @ 38400 bps 2 Km – 6560 ft @ 19200 bps 3 Km – 9840 ft @ 9600 bps 4 Km – 13100 ft @ 4800 bps 5 Km – 16400 ft @ 2400 bps 7 Km – 23000 ft @ 1200 bps
Number of modules in multipoint	up to 32
Switching time TX/RX (RS485)	150 us.
Internal terminator resistance (optional)	120 Ohm

POWER SUPPLY	
Power supply DC voltage	10 .. 30 Vdc
Reverse polarity protection	60 Vdc max
Power supply AC voltage	9 ÷ 18 Vac (18 ÷ 30 Vac optional)
Current consumption	35 mA max.
Connection	
USB	USB connector type “A” (cable length ~ 1.8 mt.)
RS-485/422	removable screw terminals

(1) – The maximum distance depends of: number of devices connected, type of cabling, noises, etc...

ISOLATION	
Power supply / USB	2000 Vac, 50 Hz, 1 min.
Power supply / RS485-422	2000 Vac, 50 Hz, 1 min.
USB / RS485-422	2000 Vac, 50 Hz, 1 min.

ENVIRONMENTAL CONDITIONS	
Operative Temperature	-20°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

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 to DIN rail standard EN-50022
Weight	about 160 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

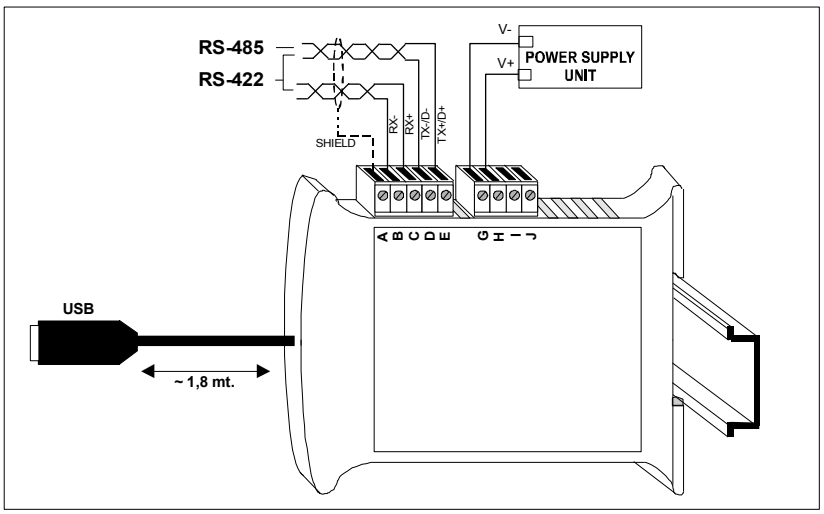
The DAT 3580-USB is suitable for fitting to DIN rails in the vertical position.
For optimum operation and long life follow these instructions:

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 high power supply value(> 27 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.

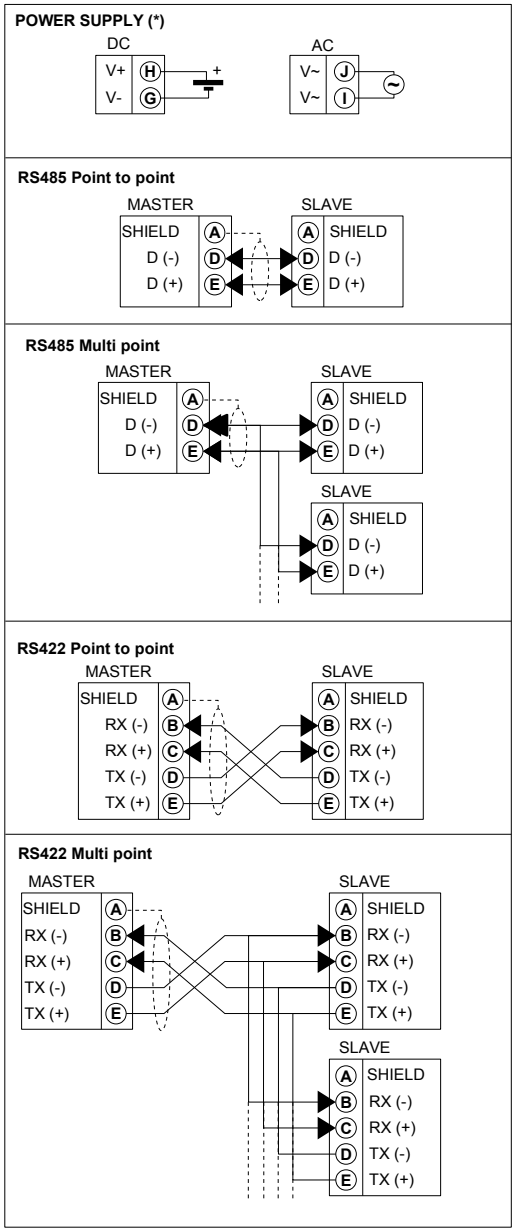
CABLING



LIGHT SIGNALLING

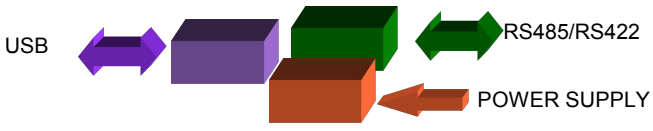
LED	COLOUR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered
		OFF	Device not powered
TX	RED	RAPID BLINK	Data transmission from the USB port (the blink frequency depends to the baud-rate)
		OFF	No communication in progress
RX	RED	RAPID BLINK	Data reception on the RS485/422 port (the blink frequency depends to the baud-rate)
		OFF	No communication in progress

WIRING

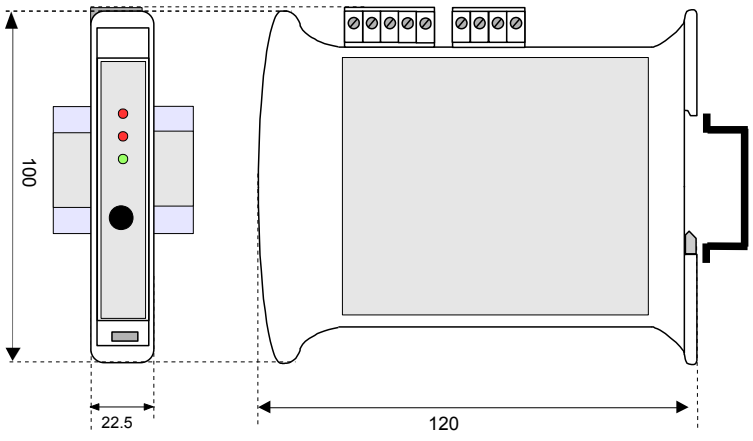


(*) Note: for UL installation the device must be powered using a power supply unit classified NEC class 2 or SELV

ISOLATION STRUCTURE



DIMENSIONS (mm)



HOW TO ORDER

In phase of order it is necessary to specify the type of interface (RS485 or RS422) and, if required, the 24Vac power supply option.

DAT 3580-USB / 2W / 24

- 2W: Type of interface: 2W: RS-485 (2 wires) 4W: RS-422 (4 wires)
- 24: AC power supply option: 24 : 24Vac (18÷30Vac)

= Requested
= Optional