EX-9531
Isolated USB to RS-485 & 422(TX,RX,RTS,CTS) Converter

Introduction

The EX-9531 convert is an intelligent, stackable expansion module that connects to a PC USB port or USB Hub via the Universal Serial Bus(USB) port, providing one High-Speed RS-422 or RS-485 serial port(jumperless) The EX-9531 features easy connectivity for traditional serial devices.

The RS-232 standard supports full-duplex communication and handshaking signals (such as RTS, CTS) and The RS-485 control is completely transparent to the user and software written for half-duplex COM works without any modification.

The EX-9531's Opto-isolators provide 3000 Vdc of isolation to protect the host computer from ground loops and destructive voltage spikes on the RS-422/485 data lines.

EX-9531 also offer internal surge-protection on their data lines. Internal high-speed transient suppressors on each data line protect the modules from dangerous voltages levels or spikes.

The EX-9531 module derives the power from USB port and doesn't need any power adapter.

Features

- USB Specification 1.1 Compliant
- Auto direction flow control on RS-485
- Full-Duplex RS-422 support
- RS-422 support RTS & CTS handshake signals
- Minimum 3000 VDC isolation protection
- Transient suppression on RS-485 data lines
- Auto switching for USB to RS-422 or RS-485(jumperless)
- Auto Switching Baud Rate up to 115.2 Kbps
- Reserved space for termination resistors R1(TX/DATA), R2(RX), R3(CTS), R4(RTS)
- Power and data flow indicator for troubleshooting
- Driver support for Windows 95/98/ME/2000/XP, Linux
- Power requirement: Self Power
- Mounts easily on DIN-rail or panel

Specifications:

- USB Controller: Compatibility USB Specification 1.1 Standard
- USB interface connector: USB type B
- Isolation Side: RS-422/485
- Converted signals: RS-422 or RS-485 Auto switching(jumperless)
- Handshakel: RS422 support RTS & CTS handshake signals
- Auto Switching Baud rate (bps):300 ~115.2 K BPS
- Transmission and Receiving LED indicator
- Isolation voltage: 3000 V DC
- RS-422/RS-485 connector: plug-in screw terminal
- Accessories (Supplied):NYLON DIN-rail Mounting Adapter SECC Panel Mounting Bracket
- Plug-in screw terminal wiring: Accepts AWG 1-#12 to #22 (0.5 to 2.5 mm) wires
- Power requirement: USB bus power
- Case: ABS with captive mounting hardware
- Power consumption: 0.65 W
- Operating temperature:0 ~ 70 °C (32 ~ 158 °F)
- Storage temperature:-25 ~ 85 °C (13 ~ 185 °F)
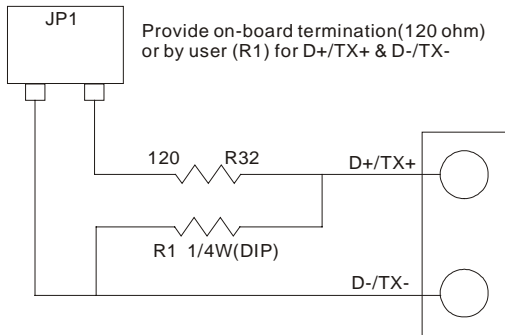- Humidity: 5 ~ 95%, non-condensing

Block diagram
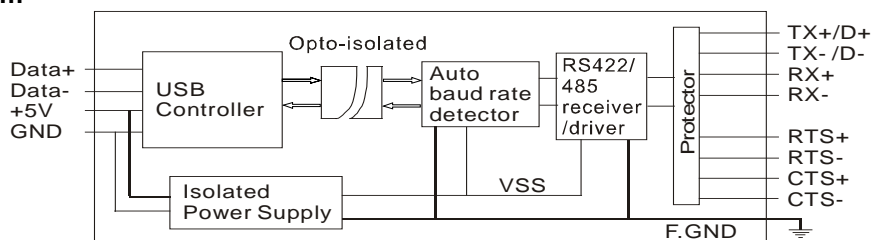
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RS-422 / 485 Termination Resistor

JP1

Provide on-board termination(120 ohm)
or by user (R1) for D+/TX+ & D-/TX-

120   R32   D+/TX+

R1 1/4W(DIP)

D-/TX-

Termination Resistor

Termination Resistor "R1" for D+/TX+ & D-/TX-
Termination Resistor "R2" for RX+ & RX-
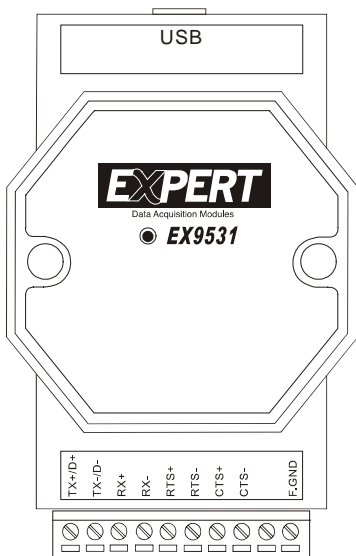Termination Resistor "R3" for CTS+/CTS-
Termination Resistor "R4" for RTS+/RTS-

If the length of RS-485 is about 1.2KM, try 120 ohm first.
If the length of RS-485 is about 600M, try 220 ohm first.
If the length of RS-485 is about 300M, try 330 ohm first.

Connection

USB

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TX+/D+ TX-/D- RX+ RX- RTS+ RTS- CTS+ CTS- F.GND

Pin Definitions

Pin No.	Name	Description
1	TX+/D+	RS-422 or RS-485 transmission line, positive
2	TX-/D-	RS-422 or RS-485 transmission line, negative
3	RX+	RS-422 receive line, positive
4	RX -	RS-422 receive line, negative
5	RTS+	RS-422 Request to send line, positive
6	RTS -	RS-422 Request to send line, negative
7	CTS+	RS-422 Clear to send line, positive
8	CTS -	RS-422 Clear to send line, negative
9	NC.	
10	F.GND	Ground

USB Type B connector

1	+5V	USB +5VDC bus power
2	Data-	USB Data line, Negative
3	Data+	USB Data line, Positive
4	GND	USB bus power ground

Windows 98 USB Driver Installation

- Plug the EX-9531 into the computer USB port or a USB Hub
- Open Control Panel.
- Select Add New Hardware Wizard icon.

    The 'Add New Hardware Wizard' appears,Press 'Next' button.
    In the dialog box that comes up, leave the default choice,
    (Search for the best drivers for your device), Press 'Next' button.
    In the dialog box that comes up, leave the default choice,
    (Floppy disk drivers), Press 'Next' button.
    In the dialog box that comes up, leave the default choice,
    (The update driver), Press 'Next' button.
    In the dialog box that comes up, Press 'Next' button.
    (Window driver file search for the device)
    Diaglog box appears to tell you that the installation has finished,
    Press 'Finish' button.

- Now you have installed EX-9531 on your system, you can see a new USB serial device in 'Control->Device Manager'. The EX-9531 plays a role as standard COM port,you can use any UART serial communication utility, or call standard windows API for COM.

Dimensions

7.2CM

USB

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5.55CM

10.1CM

2.25CM

2.6CM

TX+/D+ TX-/D- RX+ RX- RTS+ RTS- CTS+ CTS- F.GND

5CM