USB ISO ADAPTER

Our Products: USB High Speed - High Isolated - Industry Converter Interfaces
Highest quality - on the basis of our experience - we not accept compromise!

USB 2.0 - RS485 High Isolated Industry Converter Box for DIN Rail - product #248

USB 2.0 <=> RS485 High Isolated Industry Converter Box for DIN Rail (product no. #248)

Notes:
Extreme EMC-safe 8KV !
Extreme tough ! Designed for industry !
9 switchable terminating resistors !
Dimension outside boiler (mm) L 90 x W 75 x B 23 !
Low current consumption ! High-Speed Digital Isolator (no optocoupler) !
Box for DIN Rail 35 x 7.5 mm installation !

USB Modul:
USB Specification 2.0 & 1.1
Automatic switching Ready-Transmit
Max. 3 Mbps "data transfer rate"
Aided "Remote wake-up" and power management
Plug & Play installing
Royal driver - FTDI Chipset

RS485 Receiver:
+/- 15 kV Human Body Model
+/- 6 kV IEC 1000-4-2, Contact Discharge
+/- 12 kV IEC 1000-4-2, Air-Gap Discharge
Allow Up to 128 Receivers on the Bus
True-Fail-Safe Receiver
-7V .. +12V Common-Mode Range
Thermal Protection Against Output Short Circuit

RS485 Driver:
+/- 9 kV Human Body Model
Slev-Rate Limited for Errorless Data Transmission
-7V .. +12V Common-Mode Range
Current Limiting
Thermal Shutdown for Driver-Overload Protection

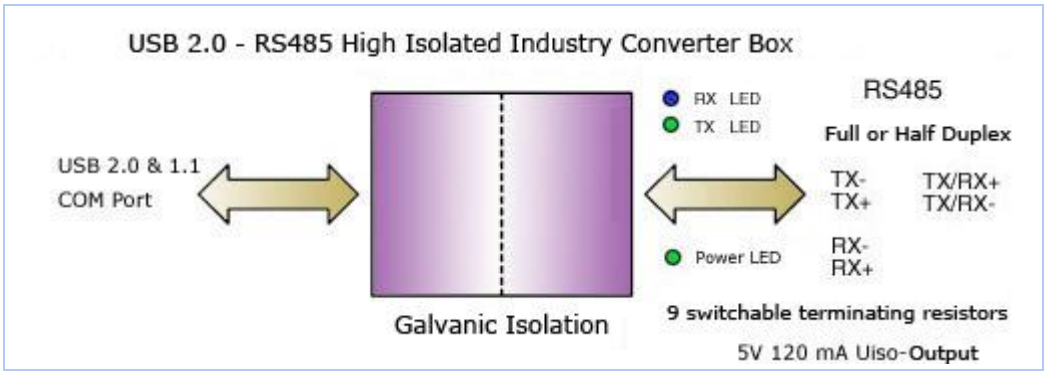
Galvanic Isolation:
High common-mode transient immunity: >25 kV/µs
Safety and regulatory approvals
UL recognition: 5000 V rms for 1 minute per UL 1577
CSA Component Acceptance Notice #5A
IEC 60950-1: 600 V rms (reinforced)
IEC 60601-1: 250 V rms (reinforced)
VDE certificate of conformity
DIN V VDE V 0884-10 (VDE V 0884-10):2006-12
VIORM = 846 V peak

EMC-safe: 8 KV

Excellent References:
Base stations of Cellular mobile telephony
Welding robots production line
With Ferrite - Shield Bead - 99,99 % reliability contra system crash

Extras:
Galvanically isolated +5V DC 120mA Output

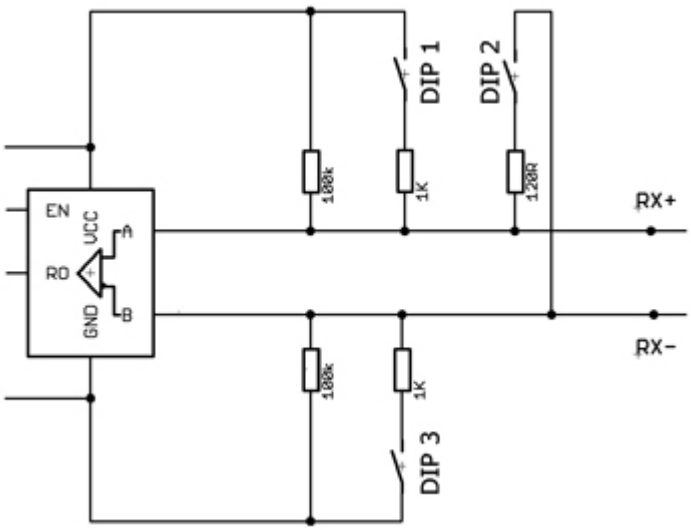
Block diagram

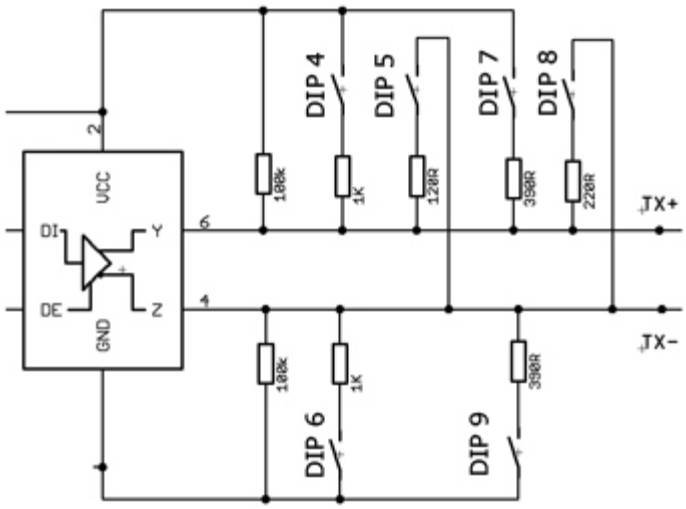


Converter images

Technical characteristics

Product:	USB 2.0 <=> RS485 High Isolated Industry Converter Box for DIN Rail DIN Rail 35 x 7.5 mm	#248
Driver:	please see Drivers	
Installing:	Plug & Play please see FAQs & Doks	
Chipset:	FTDI	
Cable length:	1,8 m (optional 0,5 1,5 2,5 5,0) or clamp-connection (please use only USB 2.0 cable ! max. lenght 5,0m !)	
USB-Interface:	Virtual COM port (VCP) VCP drivers cause the USB device to appear as an additional COM port available to the PC. Application software can access the USB device in the same way as it would access a standard COM port.	
Connection 1:	USB2.0 (1.1) - USB Female Mini Typ A 5 pol.	
Pin assignment 1:	USB Female - Mini Typ A 5 pol. Pin 1 - Vcc Pin 2 - D- Pin 3 - D+ Pin 4 - GND Pin 5 - GND Optional connection: Clamp-connection (please use only USB 2.0 cable ! max. lenght 5,0m !) Clamp A - USB shield Clamp B - USB +5V (red) Clamp D - USB Data+ (green) Clamp E - USB Data- (withe) Clamp F - USB GND (black) Please make assembled feed line (USB cable) shortly as possible !	

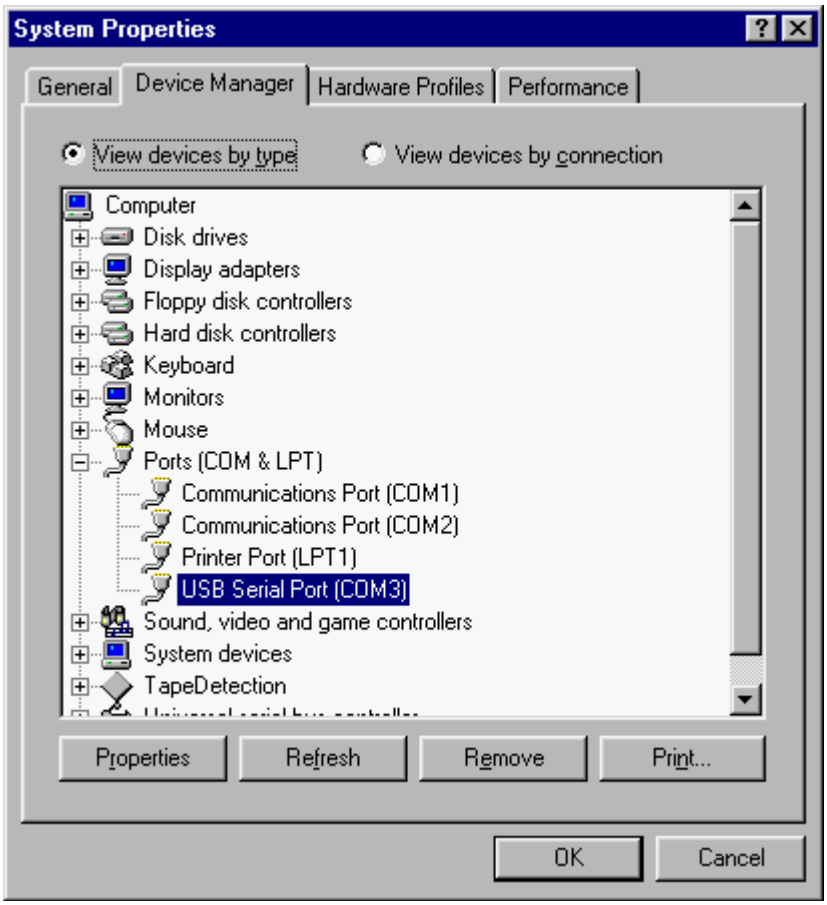
Connection 2:	RS485 Clamp-connection	
Pin assignment 2:	Clamp G - TX- (Z) Converter Output Clamp H - TX+ (Y) Converter Output Clamp J - RX+ (A) Converter Input Clamp K - RX- (B) Converter Input Clamp L - GND Clamp M - Galvanically isolated +5V DC 120mA Output	
Terminating resistors:	9 switchable terminating resistors - to find on printed board **If all DIP switch 1..9 OFF then**: RX+/- Terminating resistor 100K RX+ Pull Up resistor 100K RX- Pull Down resistor 100K TX+/- Terminating resistor 100K TX+ Pull Up resistor 100K TX- Pull Down resistor 100K **Optional shiftable Terminating and Pull Up/Down resistors**: 1 DIL - RX+ Pull Up resistor 1K 2 DIL - RX Terminating resistor 120R 3 DIL - RX- Pull Down resistor 1K 4 DIL - TX+ Pull Up resistor 1K 5 DIL - TX Terminating resistor 120R 6 DIL - TX- Pull Down resistor 1K 7 DIL - TX+ Pull Up resistor 390R 8 DIL - TX Terminating resistor 220R 9 DIL - TX- Pull Down resistro 390R 10 DIL - Local Echo_OFF Halfduplex DIP 10 = ON / Fullduplex DIP 10 = OFF  	

		
Connection 2 guard:	RS485 Receiver: +/- 15 kV Human Body Model +/- 6 kV IEC 1000-4-2, Contact Discharge +/- 12 kV IEC 1000-4-2, Air-Gap Discharge Allow Up to 128 Receivers on the Bus True-Fail-Safe Receiver -7V .. +12V Common-Mode Range Thermal Protection Against Output Short Circuit RS485 Driver: +/- 9 kV Human Body Model Slev-Rate Limited for Errorless Data Transmission -7V .. +12V Common-Mode Range Current Limiting Thermal Shutdown for Driver-Overload Protection	
Handshake:	no X-On / X-Off	
TX/RX switching:	automatic	
Transmission lines:	2-Wires Halfduplex or 4-Wires Fullduplex	
Galvanic Isolation:	High common-mode transient immunity: >25 kV/µs Safety and regulatory approvals UL recognition: 5000 V rms for 1 minute per UL 1577 CSA Component Acceptance Notice #5A IEC 60950-1: 600 V rms (reinforced) IEC 60601-1: 250 V rms (reinforced) VDE certificate of conformity DIN V VDE V 0884-10 (VDE V 0884-10):2006-12 VIORM = 846 V peak	
Galvanic Isolation Docs:	**DC/DC converter 6KV** **Quad-Channel Digital Isolators** **FAQ: Isolation, iCoupler® Technology, and iCoupler Products**	
EMC-safe:	8 KV	
Data transfer rates:	183, 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 11520, 230400, 460800, 921600 bps. TTL 3,3V and 5V up to 3000000 bps. Supported transfer rates PDF file	
Status indication:	Red LED - TXD activity Green LED - RXD activity Green LED - +5V 120mA Output activity	
Operating temperature:	-10..+70°C	
Available Drivers:	Windows Vista, Windows Vista x64 Windows XP, Windows XP x64 Windows 2000 Windows Server 2008, Windows Server 2008 x64 Windows Server 2003, Windows Server 2003 x64 Windows 98, Windows ME	

	Mac OS X (Intel), Mac OS X, Mac OS 9, Mac OS 8 Linux, Linux x86_64 Windows CE 6.0, CE 4.2 - 5.2, Windows Mobile 6 Windows Mobile 5, PocketPC 2003 ARM/XScale Processor & x86 Processor Windows CE 6.0 and CE 4.2 - 5.2 (Other Processors) - email support	

Installing the USB-RS485 converter

The USB to RS485 converter is shipped with a Windows driver disk. When the converter is connected to the Windows based host computer, Windows will display the "Found New Hardware" screen and will prompt the user for a driver for the device. With the driver disk installed in drive "A", select the "Have Disk" option and browse the driver disk to the appropriate driver. Once installed, the USB converter will be assigned the next available COM port on the host computer. To verify the proper set-up, open the "System" icon in the "Control Panel" and click on the "Device Manager" tab. Under "Ports", there should now be a new COM port labeled "USB Serial Port".

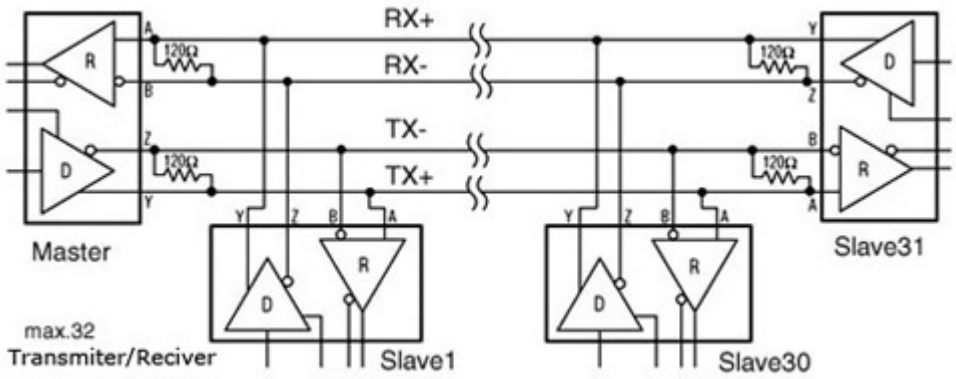


RS485 Info
EIA-485 only specifies electrical characteristics of the driver and the receiver. It does not specify or recommend any data protocol. EIA-485 enables the configuration of inexpensive local networks and multidrop communications links. It offers high data transmission speeds (35 Mbit/s up to 10 m and 100 kbit/s at 1200 m). Since it uses a differential balanced line over twisted pair (like EIA-422), it can span relatively large distances (up to 4000 feet or just over 1200 metres).

In contrast to EIA-422, which has a single driver circuit which cannot be switched off, EIA-485 drivers need to be put in transmit mode explicitly by asserting a signal to the driver. This allows EIA-485 to implement linear topologies using only two wires. The equipment located along a set of EIA-485 wires are interchangeably called nodes, stations

and devices.

The recommended arrangement of the wires is as a connected series of point-to-point (multidropped) nodes, a line or bus, not a star, ring, or multiply-connected network. Ideally, the two ends of the cable will have a termination resistor connected across the two wires. Without termination resistors, reflections of fast driver edges can cause multiple data edges that can cause data corruption. Termination resistors also reduce electrical noise sensitivity due to the lower impedance, and bias resistors are required. The value of each termination resistor should be equal to the cable impedance (typically, 120 ohms for twisted pairs).



RS422 and RS485 Standards	RS422	RS485
Mode of operation	Differential	Differential
Allowed no. of Tx and Rx	1 Tx, 10 Rx	32 Tx 32 Rx
Maximum cable length	4000ft length	4000ft length
Maximum data rate	10 Mbsp	10 Mbps
Minimum driver output range	±2V	±1,5V
Maximum driver output range	±5V	±5V
Maximum driver short-circuit current	150 mA	250 mA
Tx load impedance	100 Ohm	54 Ohm
Rx input sensitivity	±200 mV	±200 mV
Maximum Rx input resistance	4 kOhm	12 kOhm
Rx input voltage range	±7V	-7V to +12V
Rx logic high	>200 mV	>200mV
Rx logic low	<200mV	<200mV

Cable lenght (m) = 100.000.000 / Baud (bps)

Baud (kbps)	9600	19,2	38,4	115,2	250	500	750
Lenght (m)	10417	5208	2602	868	400	200	133
Baud (Mbps)	1	2	3	10			
Lenght (m)	100	50	33	10			

More Infos - Wiki - RS485

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