Isolated USB to RS422/485 Converter

ISO485

isolates
protects
simplifies

"The universal isolating converter"

- High isolation strength
- Data rate above 460800 Baud
- A number of externally selectable operating modes
- Supports non standard baud rates
- 3 colored functional LEDs
- Supports Windows and Linux
- Made in Germany, 3 years warranty
- Includes the **CleverTerm** terminal software

CleverTerm

Universal and safe

The ISO485 USB to RS485/422 converter comes with a lot of setup possibilities to cover a wide range of bus applications. All operating modes can be easily selected at the 9 pin connection jack without opening the housing.

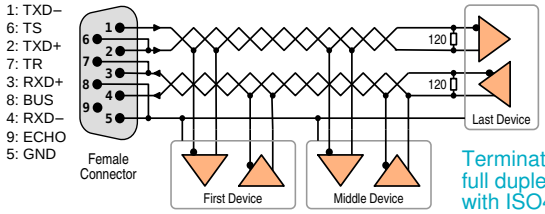
By its high isolating capability it is usable in critical environments with potential shift and decouples the controlling components from the system bus.

Bus-System and operating modes

The ISO485 converter is equally appropriate for RS485 and RS422 bus systems. RS422 connections are normally implemented as full duplex point to point connections or multi drop networks where only one sender is allowed on the bus. This sender is always active. RS485 is designed as a bi-directional bus system with up to 32 participants. Data can be transferred through one line pair (2-wire) or in a full duplex variant with separated line pairs (4-wire).

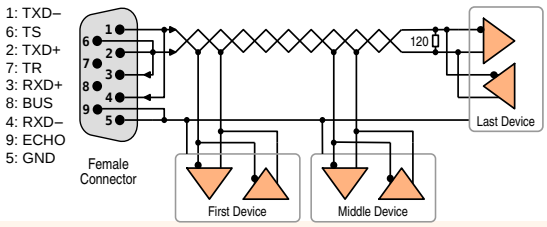
Since multiple RS485 devices can send on a common line the output send drivers must be activated only while sending. The activation is done automatically and completely transparent by the converter. The selection of the bus system and the used wiring is made at the connector pins.

Name	Connect	Description	open	closed
BUS	8,5	Bus-System	RS485	RS422
WIRE	4,1 + 3,2	2-Wire HDX or 4-Wire FDX	4-Wire FDX	2-Wire HDX



TerminatedRS422/485 full duplex connection with ISO485 as sender.

Terminated half duplex RS485 Bus with ISO485 as sender and Echo off.



Special features

Operating mode externally selectable: RS422/485 Mode, Echo on/off, full/half duplex Bus, termination resistors of the send and receive lines can be activated independently.
Direct control of the data stream with 3 LEDs, easy check for correct connection and driver activation (USB). green: RXD, yellow: TXD, blue: USB activation.
Any baud rate: Latest FTDI chip generation allows the use of non standard baud rates.

Termination resistors

Both systems, RS422 as well as RS485, require a termination of the bus lines at both ends of a bus segment. The ISO485 converter has two termination resistors available which can be activated independently for sender (TS) and receiver (TR), depending on the selected wiring and location within the bus segment.

Name	Connect	Description	open	closed
TS	6,2	Terminate send channel	none termination	120Ω termination
TR	7,3	Terminate receive channel	none termination	120Ω termination

Echo Mode

For a fast check of the returning send data in 2-wire half duplex mode the converter offers an additional echo mode, which does not suppress the returning of the send data over the receiver channel. The deactivating is done by:

Name	Connect	Description	open	closed
ECHO	9,5	Sent character echoed	Echo on	No sende echo

Attention: In full duplex mode this pin must not be connected! Check of the echo pin status via DCD

Serial supplementary signals

By using a USB to RS232/485 converter chip RS232 signals are also available. They do not have effect externally to the RS422/ RS485 bus. The converter uses these signals to read in status information and to simulate protocols. By a direct feed back of RTS/ CTS and DTR/DSR all RS232 software which need a hardware protocol can be used.

Signal	Description
RI	Input static 1
RTS	Output, directly connected to CTS
CTS	Input, directly connected to RTS
DTR	Output, directly connected to DSR
DSR	Input, directly connected to DTR
DCD	Echo Mode connector, 1:closed=Echo on, 0:open, Echo off

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Technical changes and improvements can be done without prior notice. October 2018

IF tOOLS Discover your connection

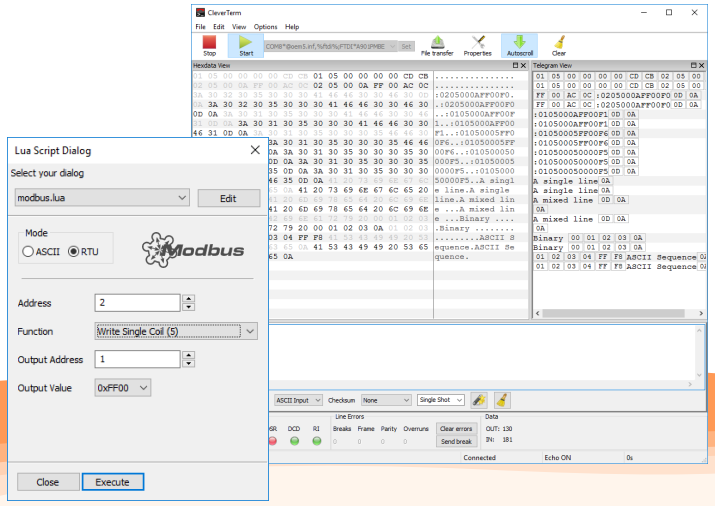
Isolated USB to RS422/485 Converter

versatile
system independent

ISO485

"Including RS422/485 terminal program with modbus ASCII and RTU support"

- Full PC COM Port compatibility
- No additional supply necessary
- Designed for more than 32 participants
- Automatic send activation



Driver installation

The ISO485 converter comes with driver licensed by Microsoft. Simply insert the CD-ROM. Select the product and click onto 'install driver' - ready!
Current Linux systems already contain the driver as a kernel module.
The access is done via a virtual COM port, e.g. COMx (Windows) or /dev/tyUSBx (Linux).

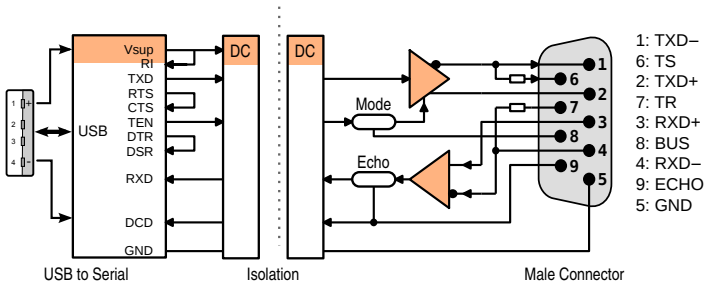
Including terminal program CleverTerm

CleverTerm is a free terminal program for the serial communication and provides everything you need for a first contact to a bus device connected through the ISO485
CleverTerm supports all baud rates in the range from 300 to 921600 baud, even non-standardized. It is expandable by own send dialogs and offers an Modbus ASCII / RTU master request simulation.
It is free and available for Windows and Linux.
The current version can be found at http://www.iftools.com

Optional accessories

Phoenix Contact cable interface DSUB 9 pin female connector to screw terminal.
Available at the IFTOOLS shop as ATD9FSC.

Connection Schematic



Technical data

Data rates	Standard baud rates 300 to 460800 Baud, unusual baud rates via 'aliasing' and programable divisor (e.g. operate at 512 kBaud by selecting 115200 Baud in your program application). Possible non-standard rates are calculated as: 3000000 / (n + (0.125 * m)) where n = 2...16384, m = 0...7.
Isolation	High isolating strength 5000Vrms 1min, 250Vpk working Voltage.
Handshake	Feed back of the signals RTS/CTS and DTR/DSR in input and output for protocol simulation.
Protocol	Provides 5, 6, 7 or 8 Data Bits, 1 or 2 Stop Bits and Odd/Even/Mark/Space/No Parity.
RS422/485 Signals	TxD, RxD according to the RS485 Standard, ±15kV ESD.
Chipset	FTDI FT232RL: Additional functions for high transmission safety, internal data buffer 384 bytes (input 128 bytes, output 256 bytes). USB serial number for individual COM port assignment.
Driver access	Clean working software with generation of virtual com-ports and/or USB direct drivers for own applications. Windows: Accessing via COMx, Linux: Device access via /dev/ttyUSBx.
Supported OS	Windows: Windows 10, 8/8.1, Windows 7, Vista, Windows XP, (all Microsoft certified driver). Linux: Kernel 2.4.x or higher, needed driver (ftdi_sio module) is part of all newer kernels.
Connectors	USB: USB cable about 1m length with PC compatible type A connection jack and integrated inductance. RS422/485: Standard DSub9 Male Connector with undetachable UNC screw nuts.
USB compatibility	Compatible to USB 1.1/2.0. Absolutely functionable with all USB-Interfaces of old and new PCs.
Scope of delivery	USB to RS422/485 Converter Cable (1m), 9 pin DSub jack with housing for soldering connection of the external bus systems, wire jumpers to select the operating modes. CDROM with drivers (Windows), Terminal program software CleverTerm.
Dimension	Case without cable [mm]: 36 x 17 x 63 (Width, Height, Length). Minimal cable seat: 18mm

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