USB to RS485 isolated converter

XJ485USB

1. GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- This device shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.
- In case of any doubt regarding the network topology or the MODBUS protocol, please refer also to the official MODBUS documentation visiting the site: *www.modbus.org*.

1.2 ⚠ SAFETY PRECAUTIONS

- Do not expose to water or moisture: use this device only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- In case of failure or faulty operation send the device back to the distributor or to "Dixell s.r.l." (see address) with a detailed description of the fault.

2. GENERAL DESCRIPTION

This device is an USB peripheral that provide a 2-wire RS485 serial communication interface to computers with USB support. It supports a single serial communication interface which appears to be a standard serial port for the operating system. The device is supported by third party Windows and Linux drivers and is designed to isolate the serial communications interface from the computer power. The device is Plug and Play, connects to an USB port with a standard USB type B cable and draws its power from the host's computer USB interface. The isolation provides a protection up to common mode voltage peaks of 1kVDC. It provides isolation also for data channels (up to 2,5kV spikes) and is useful in all those applications where high integrity data transmission and reception are required in an electrically severe environment. The maximum data rate supported is 115kbaud and there is a 384 byte receive FIFO buffer and a 128 byte transmit FIFO buffer.

3. GETTING STARTED

3.1 CONNECTIONS AND DRIVERS

Connect an USB Type B cable between the XJ485USB and the host computer. The supplied drivers will handle all configuration of the device. After connecting the device to the PC, the Windows OS will discover a new hardware and ask for properly drivers. When prompted for a disk, use the supplied driver files. Exact installation instructions are operating system dependent. Please read carefully the supplied documentation. All needed files are placed into the USB key present into the package.

3.2 SIMPLE TEST SOFTWARE

A lot of programs are available for testing and operating on the communication channels. For example, the "HyperTerminal" program, supplied under Windows OS, is fully compatible with the XJ485USB. Many other application packages include a self-test function to check if hardware and drivers have been correctly installed. Such kind of test should be performed in order to check correct operation.

4. MAKING THE CONNECTIONS

This device has a 2-wire RS485 connector (See image below). A couple of LEDs give the possibility to check network communication in a quick and simple way.

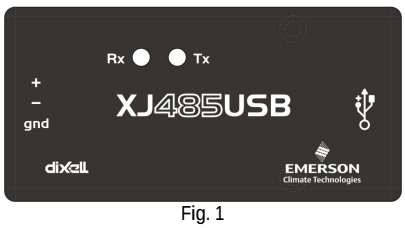

Fig. 1

If you are going to use a shielded cable, do not use the shielding as the third or common wire. Connect instead one end of the network cable shield to earth ground. The preferred method for an RS485 network is "daisy chaining" topology. All RS485 networks need to be properly terminated in order to function properly: terminators are normally not needed for cable runs less than 300 m. Termination must be added only at the ends of the network path.

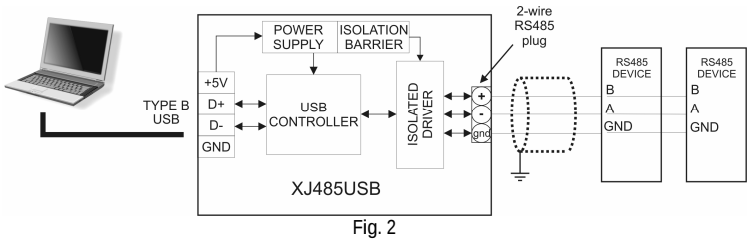

Fig. 2

Table 1 shows a comparison between XJ458USB terminal name and the standard MODBUS name. For additional information refer to official MODBUS documentation: "*www.modbus.org/docs/Modbus_over_serial_line_Vxx.pdf*".

EIA/TIA-485 name	XJ485USB name	Description
A/A'	-	Transceiver terminal 0, V0 voltage (V0 > V1 for binary 0 [ON] state)
B/B'	+	Transceiver terminal 1, V1 voltage (V1 > V0 for binary 1 [OFF] state)
C/C'	gnd	Signal and Power Supply Common

Table 1: terminal descriptions

5. FEATURES

- USB 2.0 and 1.1 Compliant
- Included a 3-way pluggable terminal block for easy installation
- Adds one RS485 port to your device using the USB port
- Plug & play (hot pluggable data format auto-sensing and self-adjusting)
- Supports 300 baud to 1 Mbps baud rates
- Uses latest FTDI Chipset and Drivers
- USB type A-B (1,5m) cable for convenience
- Transmit / Receive LED Indicators
- Internal 128/384 Byte TX / RX buffers
- No IRQs, IO, DMA required. No IRQ Conflicts
- Supports remote wakeup and power management
- Port Powered: no external power is necessary
- Current consumption: less than 100mA
- RoHS, CE, FCC and ISO 9001 Compliance Certified

6. TECHNICAL SPECIFICATION

USB interface: USB2.0 and USB1.1 compatible.
USB connector: Type B (cable is supplied with the package).
USB interface: FTDI chipset model FT232BM USB UART IC.
Power Requirements: +5VDC from USB HOST. Current required is less than 100 mA.
Data transfer rates supported: from 300 to 1Mbps.
Data Bits: support for 7 or 8 data bits, 1 or 2 stop bits and odd/even/mark/space/no-parity.
Modes: Half-duplex operations.
I/O connector: 3 way pluggable male connector. The female part is supplied in the package.
Drivers: third party drivers are placed into the supplied USB key. All popular OS are supported (Windows, Linux, MacOS).
Visual indications: 2 LEDs on the serial side, one for RX and the other for TX channel.
Isolation: 1kV (common mode voltages), 2,5kV (data channels).
Dimensions: 78x40x22mm
Operating temperature range: 0.0 to +60.0°C (32 to 140°F)
Storage temperature range: -20.0 to +85°C (-13 to 185°F)
Relative humidity: 0 to 85% not condensing.