gearmo®

User Manual

RS-422/485 USB 2.0 Serial Adapter

w/ FTDI Chip **Model No.** US-482422

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Contents

Summary

- Compatible with the Recommended Standards of USB, RS-422 and RS-485, **GM-482422** photoelectric isolation interface converter can convert the single-ended USB signal into balance differenced RS-422 or RS-485 signal.

- The **GM-482422** USB to RS-485 or 422 Converter's built-in photoelectric isolator can provide an isolation voltage of as high as 2500Vrms. It is also manufactured with a rapid transient voltage suppression protector; this is protection for the RS-422 or RS-485 interface developed with advanced TVS (Transient Voltage Suppressor) technology adopted.

- Under normal operating conditions, the TVS tube is in the state of high resistance. However, when both ends of the TVS tube are hit by a transient high energy, the impedance at both ends can be suppressed by the TVS at a very high speed. After absorbing a high current, the voltage between the two ends is suppressed and kept at a pre-set value; therefore no damage is caused to the electrical components behind by the transient high voltage impact.

- The surge protection in the USB to RS-485 converter can effectively restrain lightning or ESD (electrostatic discharge) with a protection voltage of 600W on each line for lightning surge, surge voltage, or transient over-voltage possibly caused by other electrical sources. In this case, the USB to serial converter will maintain the high-speed transmission of RS-422 or RS-485 interface ensured by the tiny capacitance between the poles.

RS-422 & RS-485 Interfaces

- RS-422 and RS-485 interfaces with a DB9 male connector that is to be used for connection. The internal zero delay auto transceiver contained in the unique I/O circuit, controls the RS-422 converter's data stream direction automatically. No handshaking signal required (for example RTS, DTR etc).

- The GM-482422 USB to serial converter is plug-and-play, no jumper settings needed for mode shift between full duplex (RS-422) and half duplex (RS-485). The converter is applicable for the existing communication software/hardware interface.

- A reliable and stable point-to-point and point-to-multipoint communication can be ensured by GM-482422 photoelectric isolation interface converter. For point-to-multipoint communication, as many as 32 interface facilities of RS-422 or RS-485 standard can be connected to each converter with a high 300-921.6KBPS data transmission rate. LED indicators for Power and Data are also available with the converter for malfunction indication. Two conversion communication modes including USB to RS-422 and USB to RS-485 are supported.

Performance Parameters

USB Version	1.0, 1.1, and 2.0 Standards compliant
Serial Signal Supported	RS-485, RS-422 TIA/EIA Standard
USB Signal	VCC DATA+, DATA-, GND, FG
RS-485 Signal	T/R+, T/R-, GND
RS-422 Signal	TXD+, TXD-, RXD+, RXD-, GND
Working Mode	Asynchronous working, point-to-point or point-to-multipoint 2 wires (half duplex) 4 wires (full duplex)
Direction Control	Adopt the technology which automatically controls the data-flow direction, automatically distinguish and control the data-transmission direction.
Transmission Rate	300-921600bps, Automatically detect the serial port signal rate
Load Capability	Support point-to-multipoint transmission. Each converter can connect 32 RS-422 or RS-485 interface equipment
Transmission Distance	RS-485/422 port: 1.2km (921600bps-300bps).USB port: No more than 5 meters
Interface Protection	600W lightning strike, surge protection, & ±15KVESD protection
Interface Form	USB Port: A-Type Male Interface RS-485/422 Port: 5-Pin Connection Pole
Signal Indication	3 LED's for Power (PWR), Send (TXD), and Receive (RXD)
Transmission Media	Twisted-Pair Cable or Shielded Cable
Dimensions	62mm x 33mm x 19mm
Working Environment	-40° to 85°C, relative humidity 5% to 95%
Operating System	Windows95/98/2000/XP/Vista/7/8/10, IMAG supported

Connector & Signals

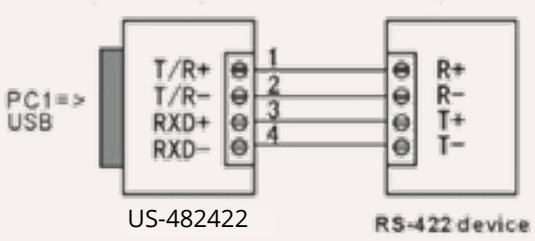
1. RS-485 and RS-422 output signals and PIN Assignment

DB9 connector (PIN)	Output Signal	RS-422 Full Duplex Cabling	RS-485 Half Duplex Cabling
1	T/R+	Sending (A+)	RS-485 (A+)
2	T/R-	Sending (B-)	RS-485 (B-)
3	RXD+	Receiving (A+)	Null
4	RXD-	Receiving (B-)	Null
5	GND	Grounding	Grounding

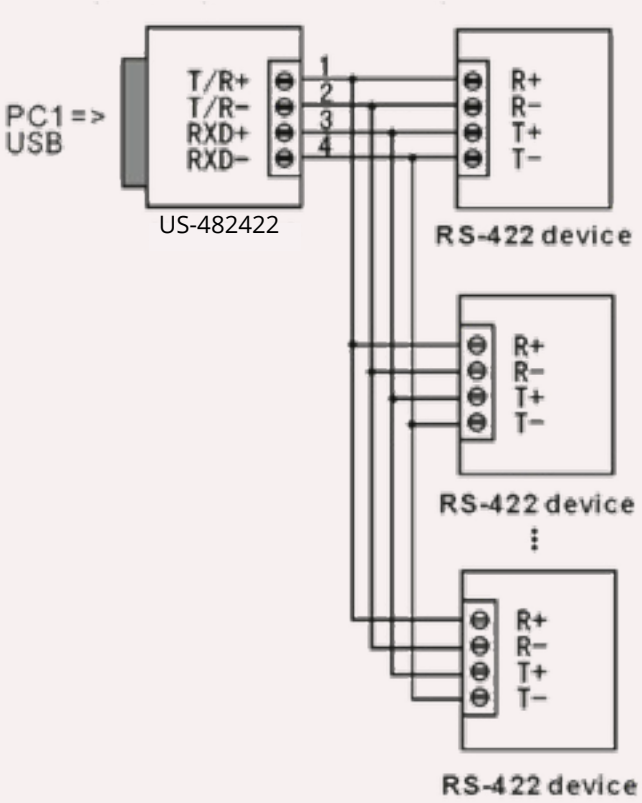
Communication Connection Chart

USB to RS-422 Conversion

RS-422 point-to-point / 4-line full duplex

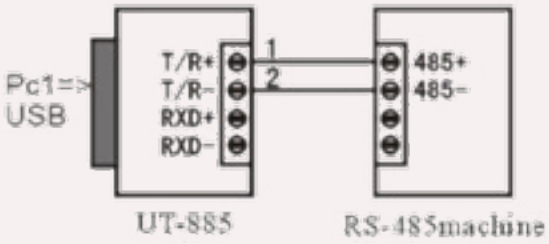


RS-422 point-to-point / 4-line full duplex

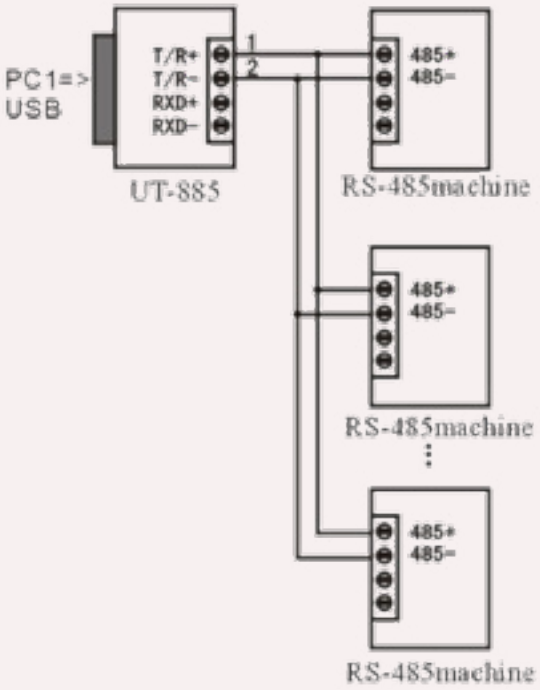


USB to RS-485 Conversion

RS-485 point-to-point / 2-wire half-duplex



RS-485 point-to-point / 2-wire half-duplex



Faults & Troubleshooting

1. Data Communication Failure

a. Check to make sure USB cable is OK

b. Make sure RS-485/RS-422 output interface cable is OK

c. Check the power supply

d. Check the wire terminal connection

e. Check receive indicator and see if it flashes

f. Check send indicator and see if it flashes

2. Data missing or incorrect

a. Check to see whether the data rate and format at both ends of the communication equipment is consistent.