



GearMo GM-482422

USB TO RS-485/422 Interface Converter User Manual

Introduction

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 and 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 and surge protection and ± 15 KV ESD 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, IMAG supported.

Connector and Signal

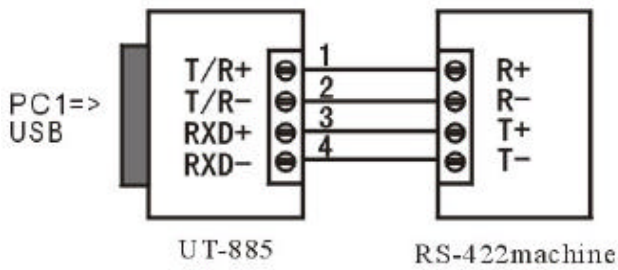
RS-485, RS-422 data output, connector, and bay-line distribution.

Connection pole	Data Output	RS-422 Full-Duplex	RS-485 Half-Duplex
1	T/R+	Send (A+)	RS-485 (A+)
2	T/R-	Send (B-)	RS-485 (B-)
3	RXD+	Receive(A+)	N/C
4	RXD-	Receive(B-)	N/C
5	GND	Ground Wire	Ground Wire

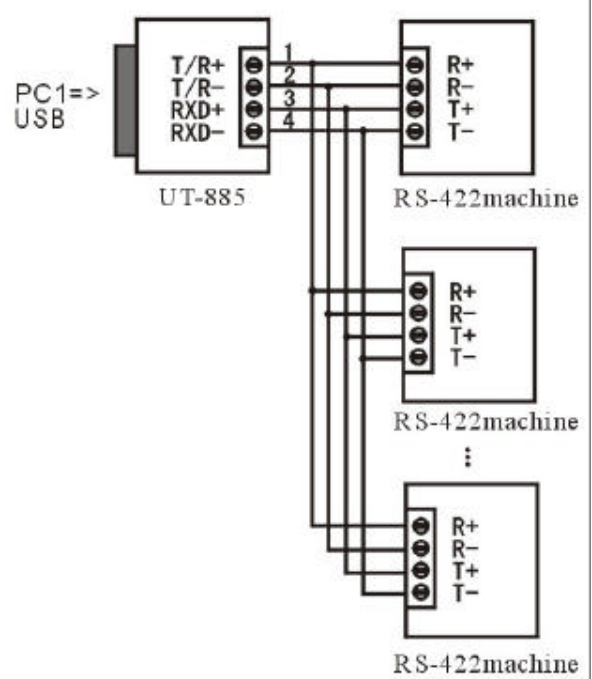
USB to RS-422 and RS-485 Schematic Diagrams

USB to RS-422 Conversion

RS-422 point-to-point 4 wires full-duplex

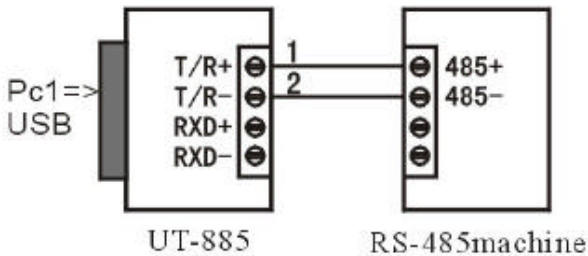


RS-422 point-to-multipoint 4 wires full-duplex

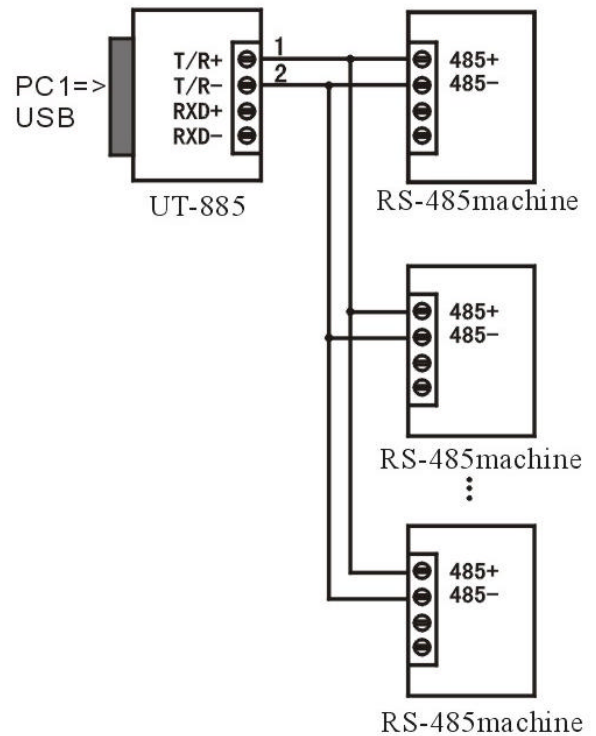


USB to RS-485 Conversion

RS-485 point-to-point 2 wires half-duplex



RS-485 point-to-multipoint 2 wires half-duplex



Problem and Resolution

Data communication failure

1. Make sure USB interface connection is correct.
2. Make sure RS-485/RS-422 output interface connection is correct.
3. Make sure power supply is OK.
4. Make sure the wire terminal connection is OK.
5. Make sure the pilot lamp flashes when receiving.
6. Make sure the pilot lamp flashes when sending.

Data missing or incorrect

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