



UT-520

RS-485 2-port Photoelectric

Isolation Data Repeater

User Manual

I. Summary

Compatible with the Recommended Standard of RS-485, UT-520 photoelectric isolation data repeater can extend the communication distance of RS-485 BUS network and increase the number of RS-485 network equipments. The built-in photoelectric isolator and the DC/DC isolation module can provide an isolation voltage of as high as 2,500Vrms. Also, there are rapid transient voltage suppression protectors for the protection of 2-port RS-485 interfaces at both ends with the advanced TVS (TRANSIENT VOLTAGE SUPPRESSOR) technology adopted. Under normal 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 depressed by the TVS at a very high speed, and 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 protector can effectively restrain lightning or ESD (electro static discharge) with a protection voltage of 600W on each line for lightning surge and surge voltage or transient over voltage possibly caused up by various reasons, and at the same time, a high-speed transmission of 2-port RS-485 interface is ensured by the tiny capacitance between the poles. For both input and output, wiring post connectors (PIN) are used for connection. The unique I/O circuit of the internal zero delay auto transceiver contained in the converter controls the data stream direction automatically without any handshaking signal (for example RTS, DTR etc). The converter is plug-and-play without any jumper settings needed for mode shift to half duplex (RS-485).

A reliable and stable point-to-point and point-to-multipoint communication can be ensured by UT-520 photoelectric isolation interface converter. For point-to-multipoint communication, as many as 128 interface facilities of RS-485 standard can be connected to each converter, and a high data transmission rate of 300-115.2KBPS can be achieved. Power indicator light and data traffic indicator light are also available with the converter for malfunction indication.

II. Performance parameters

1. Interface features: compatible with RS-485 standard of EIA/TIA.
2. Electric interface: 10-bit wiring post connector for both input and output ends of RS-485.
3. Protection Grade: Impose a protection of 600W on each line of RS-422 and RS-485 interfaces for lightning surge, +/-15KV ESD protection.
4. Isolation degree: an isolation voltage of 2,500 Vrms, 500VDC non-stop and DC/DC

isolation module.

5. Working mode: asynchronous half-duplex.
6. Signal indication: 5 indicator lights for Power (PWR), 2 for Send (TXD) and another 2 for Receive (RXD).
7. Transmission media: twisted-pair cable or shielded cable.
8. Transmission rate: 300-115.2K BPS
9. Dimensions: 120mmX72mmX22mm
10. Working environment: -40°C to 85°C, relative humidity 5% to 95%.
11. Transmission distance: 0-5,000meters (115,200bps-9,600bps)

III. Connector and signal

Pin assignment of 2-port RS-485 input end

Wiring post (PIN)	Signal definition	RS-485 half duplex cable
1	T/R+	RS-485 (A+)
2	T/R-	RS-485 (B-)
3	GND	Grounding cable
4	T/R+	RS-485 (A+)
5	T/R-	RS-485 (B-)
6	GND	Grounding cable
7	N/C	
8	N/C	
9	N/C	
10	ETH	Ground

Pin assignment of 2-port RS-485 output end

Wiring post (PIN)	Signal definition	RS-485 half duplex cable
1	T/R+	RS-485 (A+)
2	T/R-	RS-485 (B-)
3	GND	Grounding cable
4	T/R+	RS-485 (A+)
5	T/R-	RS-485 (B-)
6	N/C	
7	N/C	
8	Eaeth	Ground
9	VCC	Power 9V-36V DC input
10	GND	Grounding cable

Use the UT-520 photoelectric isolation data connector for input and output interface proper setting. Either twisted pair cable or shielded cable is recommended for installation. T/R+T/R represents

transmission and receiving line A+/B-, VCC represents power input or output, GND represents public underground line and the two lines of T/R+ and T/R- are used for half duplex communication.

UT-520 repeater supports the following 2 communication modes:

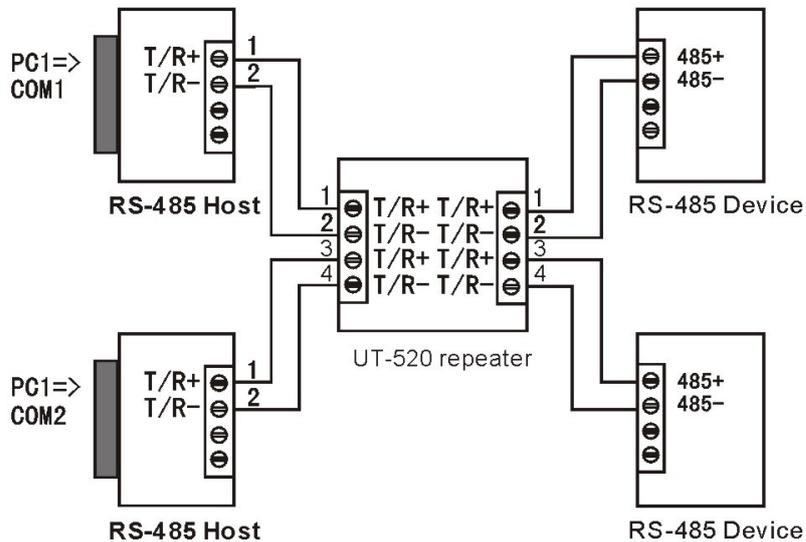
1. Point-to-point 2-line half duplex
2. Point-to-multipoint 2-line half duplex

In order to prevent the signal reflection or interference when repeater is used in full-duplex or half-duplex mode, a proper matching resistance should be connected at the terminal of the line (120Ω1/4W).

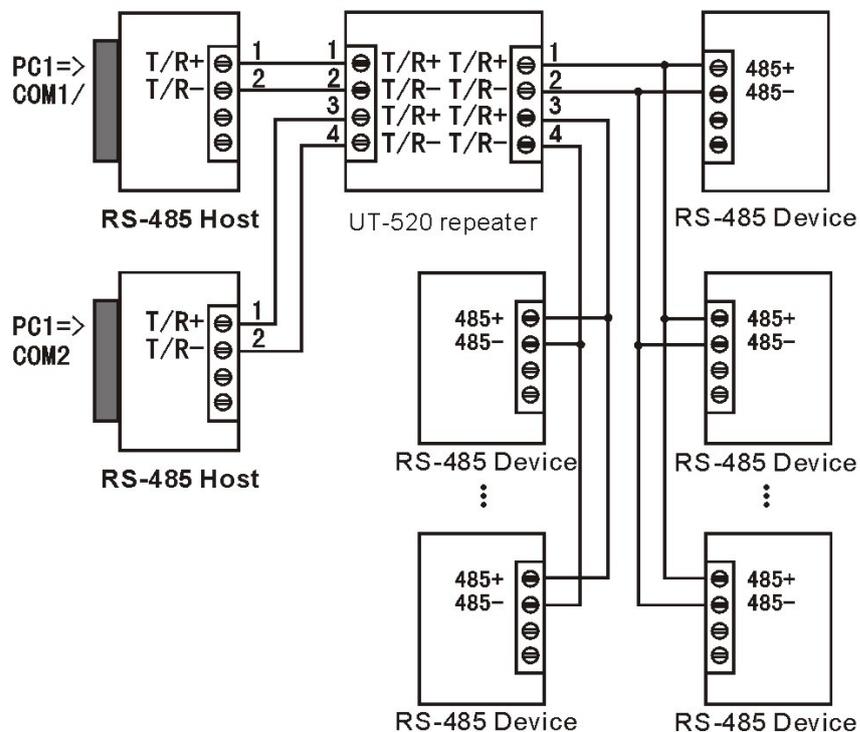
V. Communication connection chart

RS-485 2-line relay conversion

1. 2-port RS-485 point-to-point / 2-line half duplex relay communication



2. RS-485 point-to-multipoint / 2-line half duplex relay communication



C Make sure power supply is OK.

D. Make sure the wire terminal connection is OK.

E. Make sure the indicator lights flash when receiving.

F. Make sure the indicator lights flash when sending.

2. Data missing or incorrect

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