



Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual

E810-DTU(RS)

Isolated-Interface Bidirectional RS232 to RS422/RS485 Converter



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1.Overview

1.1 Introduction

E810-DTU (RS) is a high cost-effective RS232 to RS485/RS422 isolated interface bidirectional converter independently developed by Chengdu Ebyte Electronic Technology Co., Ltd. This product is featured by it's small size, simple wiring, convenient installation, etc. It is a reliable assistant tool for engineering application, project debugging and product development.

E810-DTU (RS) product integrates one RS232 interface and one multiplexed RS485 / RS422 interface, which can realize transparent and mutual transmission between RS232 signals and RS485 / RS422.



1.2 Features:

- Bidirectional conversion between RS232 and RS485 / RS422 data;
- Automatic adaptive of baud rate;
- No handshake signal needed to achieve transparent transmission;
- RS232 port provides surge protection and 400W lightning protection;
- RS485 / RS422 port protection, 15KV ESD;
- High-speed optocoupler signal isolation between RS232 and RS485 / RS422;
- Power isolation voltage 1500VDC;
- Point-to-point, point-to-multipoint communication, support up to 32 nodes;
- LED indicates power and signal status;
- 5V ~ 36V wide voltage power supply.

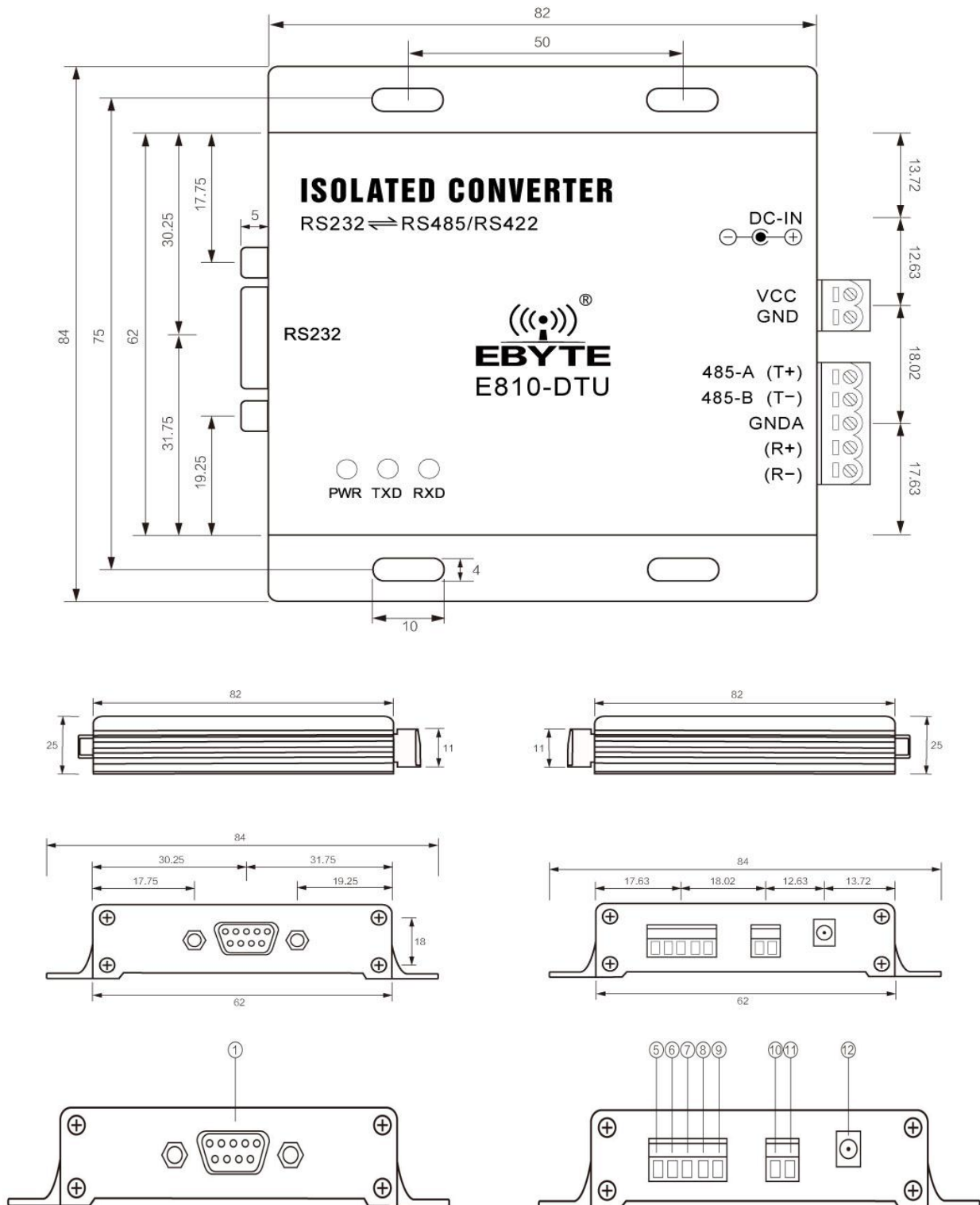
1.3 Applications

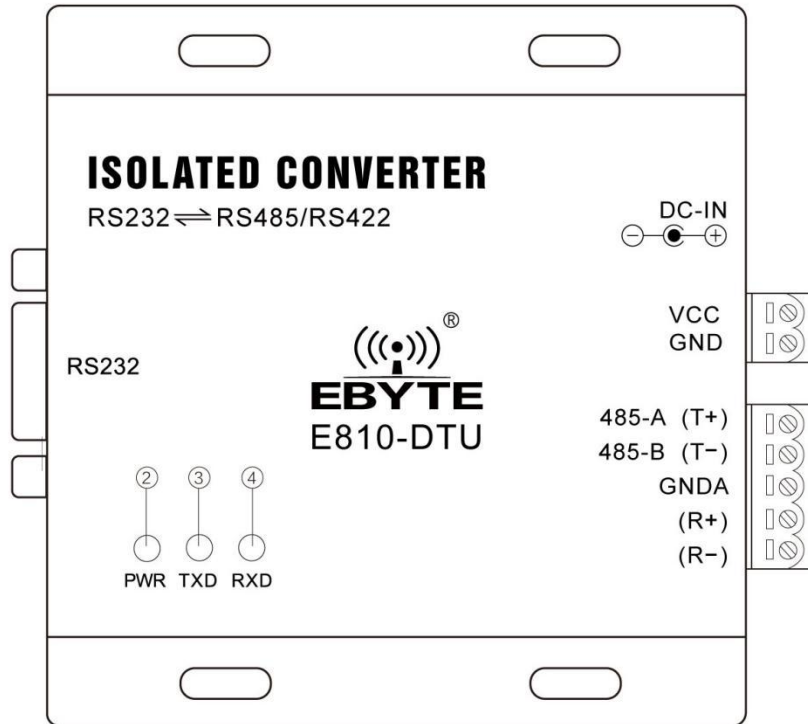
- Industrial automation control system
- Bus fare, parking lot toll system
- Access control, time and attendance, card system
- Autonomous banking system
- Consumption system, etc.

2. Parameters

Parameter	Specifications
Power Supply	5V ~ 36V, over 36V may burn out, 12V or 24V power supply is recommended
Working Current	24mA @ 12V
Transmitting Method	Asynchronous half-duplex or asynchronous full-duplex
Transmission medium	Twisted pair or shielded wire
Interface characteristics	Interface compatible with EIA / TIA RS232C, RS485 / RS422 standards
Interface method	RS232: DB9 female connector, RS485 / RS422: 1 * 5 * 3.81, crimping method
Transmission distance	1200 meters (RS485 port), 5 meters (RS232 port)
Operating temperature	-40 °C ~ + 85 °C, industrial grade
Working humidity	10% ~ 90%, relative humidity, non-condensing
Size	82 × 84 × 25mm
Average weight	130 ± 5g

3. Mechanical dimension drawing and label definition





No.	Name	Function
1	RS232	DB9 female connector
2	PWR	Power Indicator
3	TXD	RS232 serial port sending indicator
4	RXD	RS232 serial port receiving indicator
5	(R-)	Receive (B-)
6	(R+)	Receive (A +)
7	GNDA	Signal reference ground
8	485-B(T-)	Send (B-)
9	485-A(T+)	Send (A +)
10	GND	Power terminal ground
11	VCC	Power terminal, default 5-36V, 12V / 24V is recommended, cannot be supplied with power socket at the same time
12	DC-IN	Power socket, 5-36V by default, 12V / 24V is recommended. Do not supply power with the power terminal at the same time.

4. Hardware installation and application

Please read the user manual carefully before installing the E810-DTU (RS) isolated interface bidirectional converter. First, connecting the appropriate communication cables to the RS-232 interface and RS485 / RS422 interface respectively. Then, connecting the power adapter to the power socket (or to the power terminal). Using universal connectors as the input/output interface, the converter will automatically implement RS-485 or RS-422 communication methods without doing jumper settings. Using twisted-pair or shielded wires, the converter is easy to connect and disconnect wire-connection. The converter's working modes includes: point-to-point, point-to-multipoint, half-duplex communication with two wires (T + / T-), point-to-point, point-to-multipoint, full-duplex communication with four wires T + / T- / R + / R-).

E810-DTU (RS) supports the following four communication methods:

- 1.Point-to-point / two-wire half-duplex
- 2.Point-to-multipoint / two-wire half-duplex

3.Point-to-point / four-wire full duplex

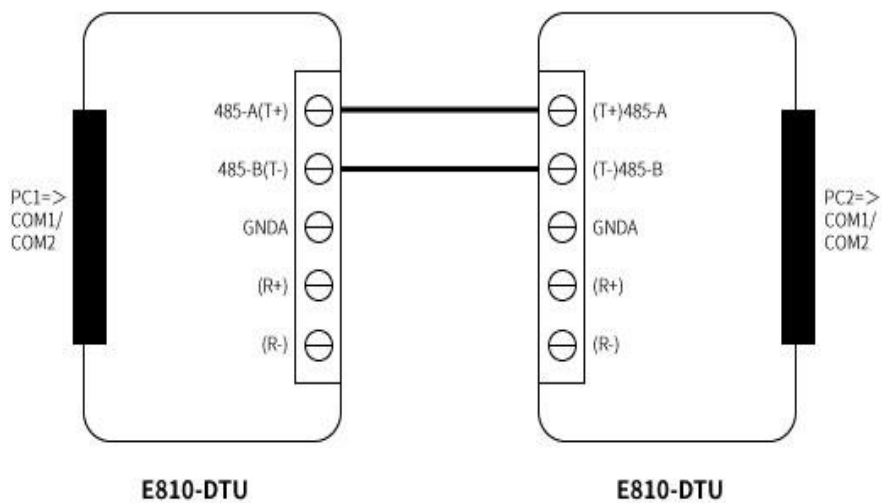
4.Point-to-multipoint / four-wire full duplex

When the converter is used as full-duplex or half-duplex wiring, in order to prevent signal reflection and interference, a matching resistor must be connected to the terminal of the line (the parameter is 120 ohm 1/4W)

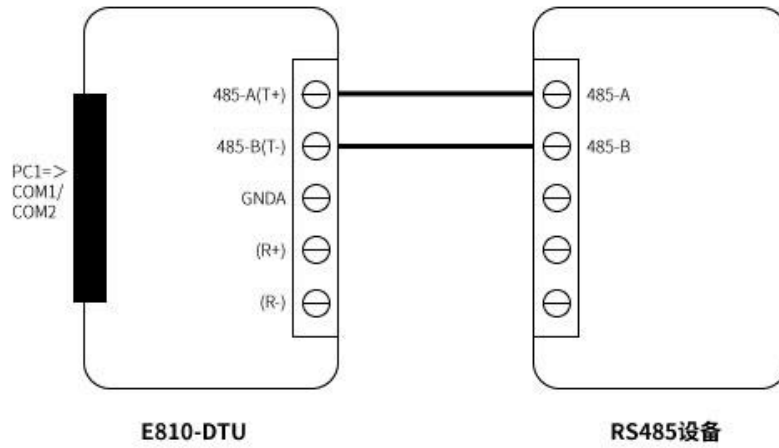
5.Communication connection diagram

5.1 RS232 to RS485 connection

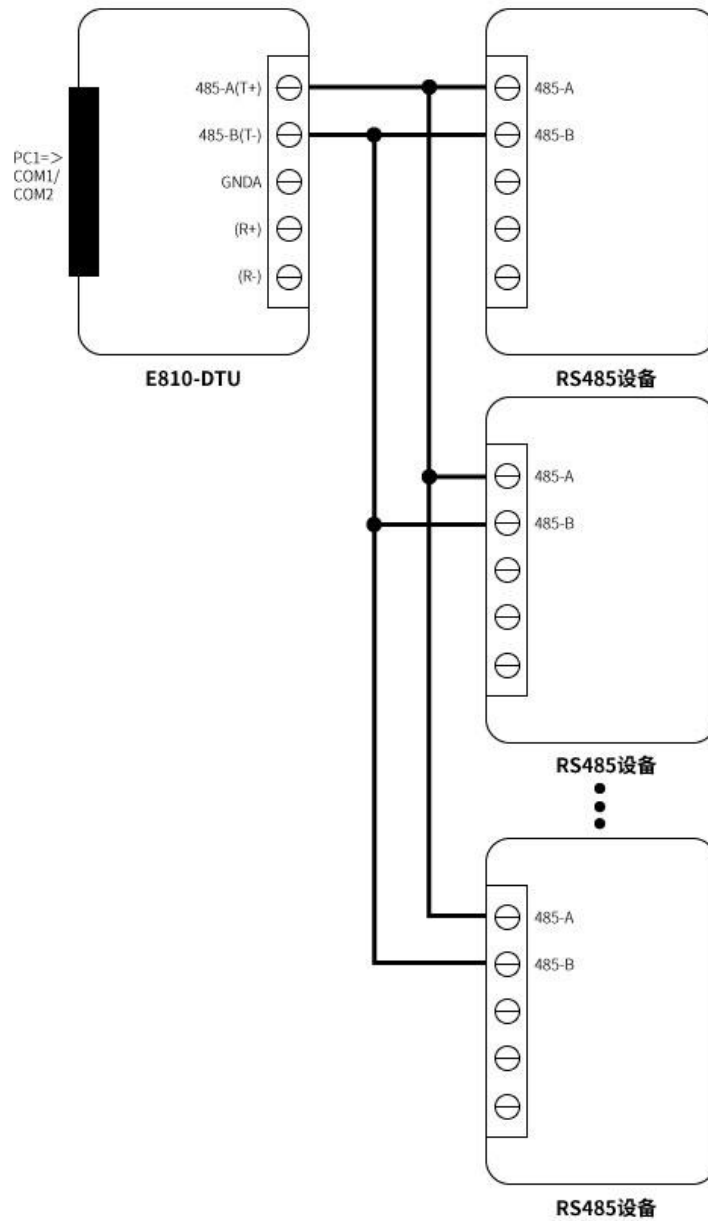
A. Half-duplex communication connection



B. Point-to-point / two-wire half-duplex connection

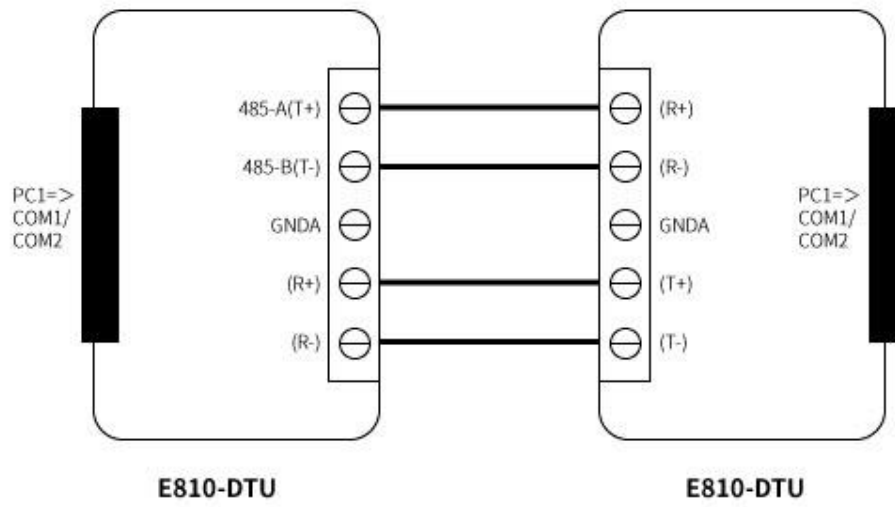


C. Point-to-multipoint / two-wire half-duplex connection

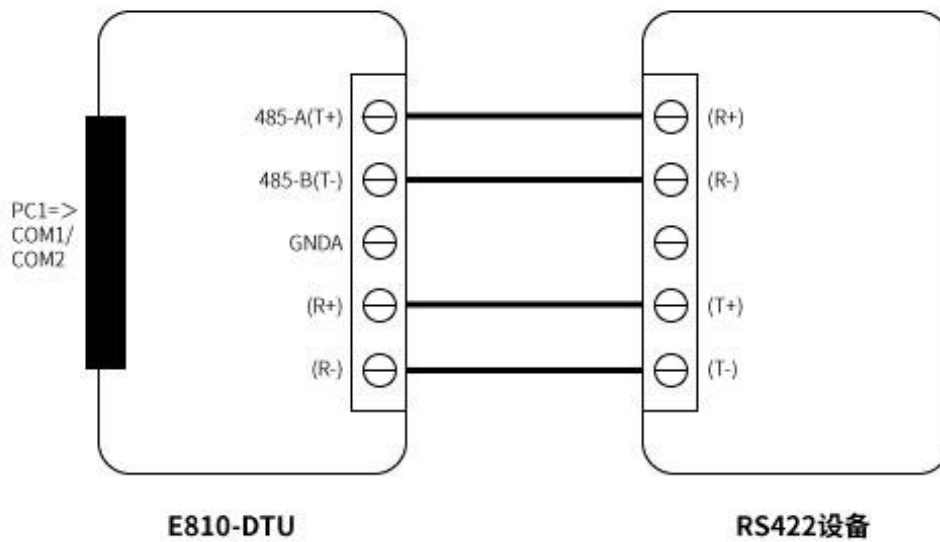


5.2 RS232 to RS422 Connection

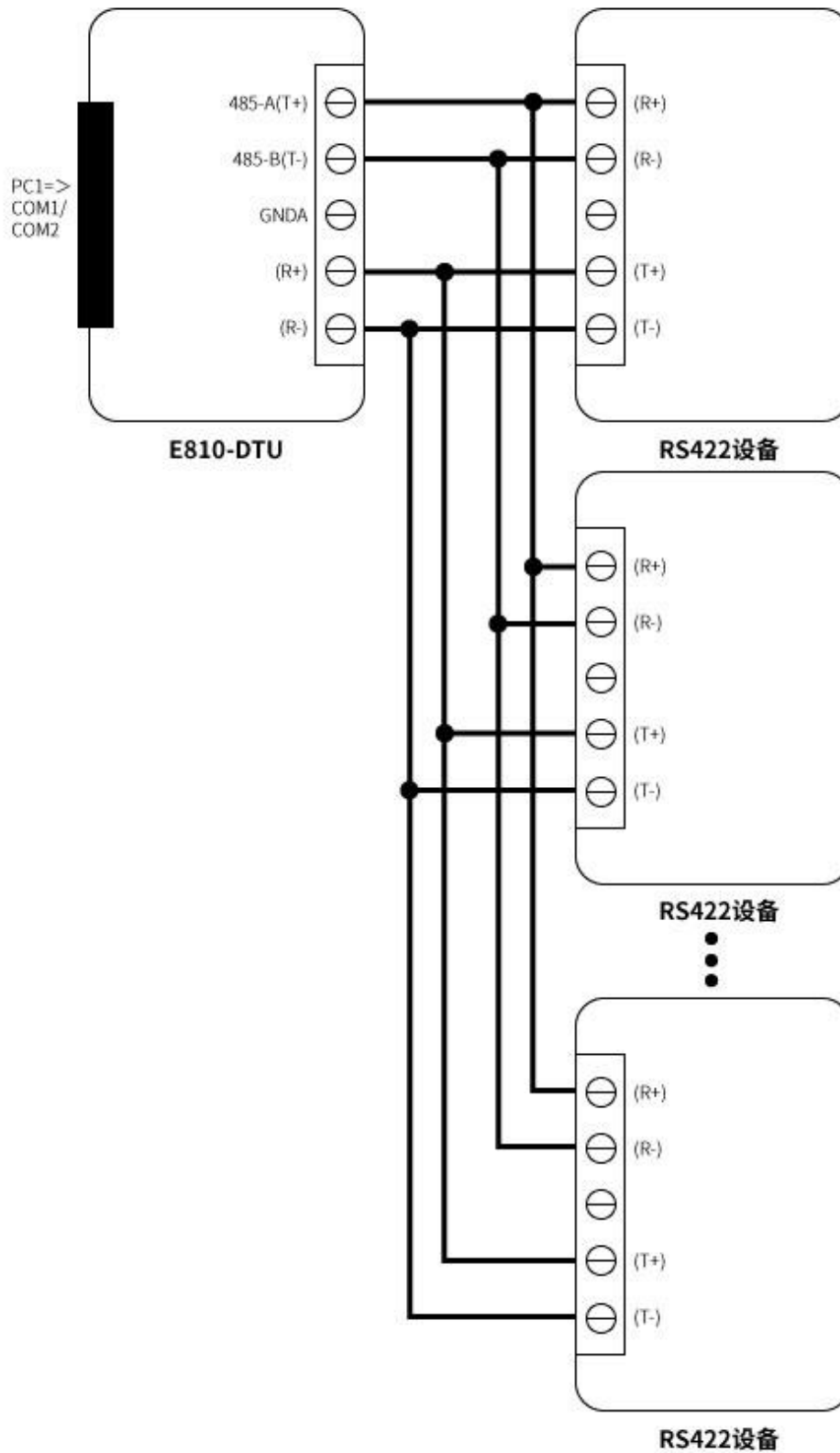
A. Full-duplex communication connection



B. Point-to-point / four-wire full duplex



C. Point-to-multipoint / four-wire full duplex



6. Failure and Troubleshooting

6.1 Data communication failed

- A. Check whether the RS232 interface wiring is correct
- B. Check whether the RS485 / RS422 wiring interface is correct
- C. Check if the connection terminals are well connected

6.2 Data loss or error

- A. Check whether the **data rate** at both ends of the data communication equipment is consistent
- B. Check whether the **data format** at both ends of the data communication equipment is consistent

7.Revision History

Version	Date	Description	Issued by
1.00	-	Initial version	huaa
1.10	2019-7-25	Error correction	Lyl

About us

Website: www.ebyte.com Sales: info@cdebyte.com Support: support@cdebyte.com

Tel: +86-28-61399028 Ext. 812 Fax: +86-28-64146160

Address: Innovation Center B333~D347, 4# XI-XIN road,High-tech district (west), Chengdu, Sichuan, China



Chengdu Ebyte Electronic Technology Co.,Ltd.