CHIYU
TECHNOLOGY CO., LTD.

USB/RS-485/RS-422

BF-850 CONVERTER USER MANUAL

I、FOREWORD

Developing by PC industry, USB interface replacing many kind of old PC interface step by step. However, many types of important equipment still use RS-422/RS-485 interface, in order to transfer the data between PC and RS-422/RS-485 interface. That's why we need to use USB/RS-422/485 converter.

BF-850 is a converter in common use; it does not need extra power. It also conforms to the standard of USB, RS-422 and PR-485, and be able to transfer USB signal to RS-422 or RS-485 signal. There has no delay automatic transfer inside, the unique I/O electric auto-control the direction of data transfer, and need no handshake signal (like RTS, ETR) to transfer with full duplex (RS-422) and half duplex (RS-485).

BF-850 can provide the reliable connection between point to point and point to multi-points. In point to multi-points each converter can connects 32 units of RS-422 or RS-485 interface equipment. The speed of data transfer is 300~921600 bps and the communication types are USB to RS-422, USB to RS-485.

II、 Property argument

1. Standard：Conform to the standard of USB V1.1, EIA RS-485, RS-422.
2. USB signal：VCC、DATA+、DATA-、GND、FG
3. RS-485 signal：T+、T-、GND
4. RS-422 signal：T+、T-、R+、R-、GND
5. Communication type：Asynchronous communication, Point to point or point to multi-points, 2 lines of halt-duplex, 4 lines of full-duplex.
6. Communication control：use auto-control technology to transfer the data, automatic determine and control the direction of data transfer.
7. Baud Rate：300~921600 bps, automatic detect the serial port speed.
8. Load ability：In point to multi-points each converter can connects 32 units of RS-422 or RS-485 interface equipments.
9. Communication distance：RS-422/RS-485 5000 meter (9600 bps), USB less than 5 meter
10. Type of communication line：Double twist line or cover line.
11. Communication speed：921600 bps 300 M
38400 bps 2.4 KM
9600 bps 5 KM
12. Dimension：55mm × 36mm × 18mm
13. Operation environment：-25℃ ~ 70℃, humidity 5% ~ 95%
14. Support Windows95/98/2000/xp

III、 connection and signal

RS-422/RS-485 export signal

DB9 PINS	Output	RS-422 Duplex	RS-485 Half Duplex
1	T/R+	Transfer(A+)	RS-485(A+)
2	T/R-	Transfer(B-)	RS-485(B-)
3	RXD+	Receive(A+)	Empty
4	RXD-	Receive(B-)	Empty
5	GND	Ground	Ground
6	N/A		
7	N/A		
8	N/A		
9	N/A		

IV、 hardware installment and application

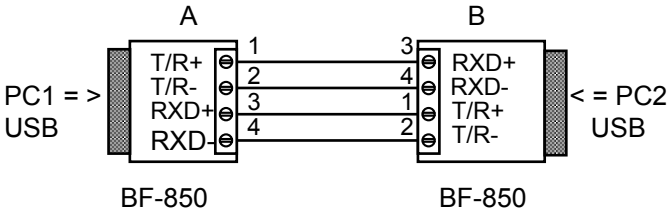
Please read the user manual carefully before install BF-850, connect the USB to PC. BF-850 use USB/DB-9 connector, and needs no crossover set to automatic do RS-422 or RS-485 communication type. You can use double twist line or cover line, so it's very convenience to combine it. T/R+ T/R- represent the transfer and receive A+/B-, RXD+/RXD- represent the receive A+/B-, GND represent the public ground line, point to point, point to multi-points half-duplex connect to 2 lines T/R+, T/R-, point to point, point to multi-points full-duplex connect to 4 lines T/R+, T/R-, RXD+, RXD-.

BF-850 provides 4 types of communication as below：

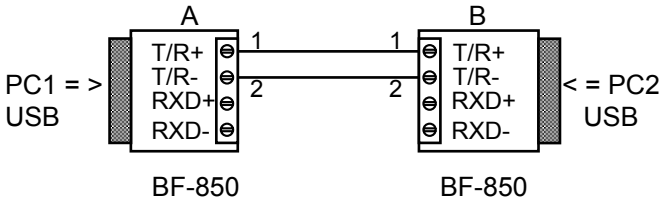
1. point to point/4 lines full-duplex
2. point to multi-points/4 lines full-duplex
3. point to point/2 lines half-duplex
4. point to multi-points/2 lines full-duplex

When connects to full-duplex or half-duplex, in order to prevent the reflection or interference of signal. You need to connect electric resistance at the end of line(120Ω 1/4W).

3. between BF-850 full-duplex



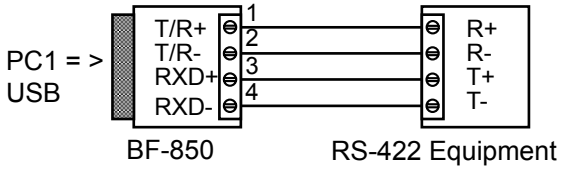
3. between BF-850 half-duplex



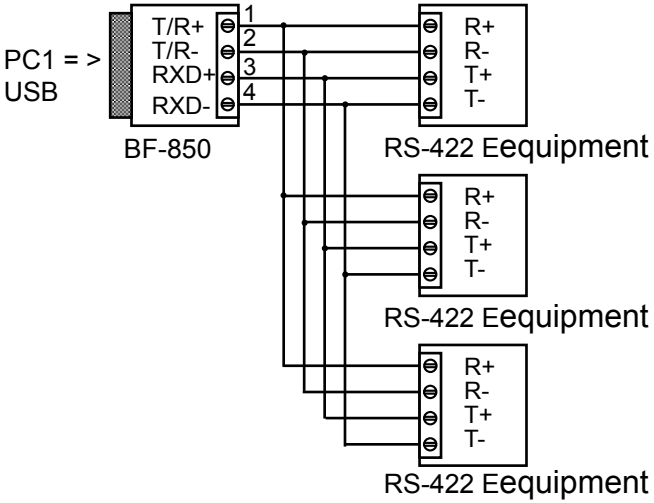
V、 The connection diagram of communication

USB/RS-422 transfer

1. RS-422 point to point 4 lines full-duplex communication

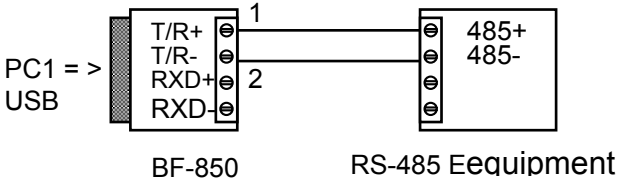


2. RS-422 point to multi-points 4 lines full-duplex

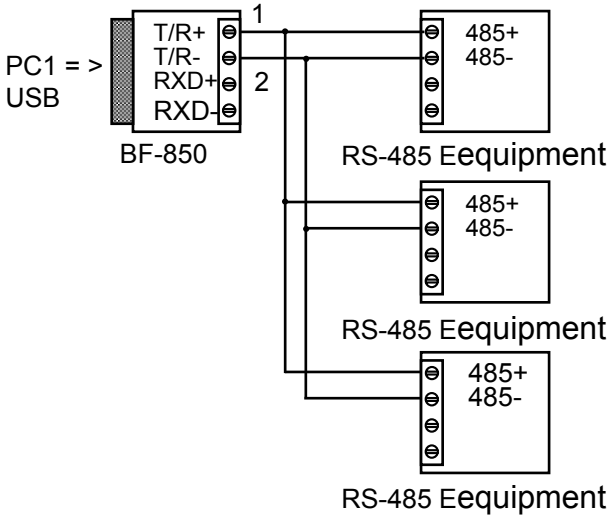


USB/RS-485 transfer

1. RS-485 point to point 2 lines half-duplex



2. RS-485 point to multi-points/2 lines full-duplex



VI、 breakdown and elimination

1. the failure of data transfer
   A. check the USB line connects right or not
   B. check RS-422/RS-485 line connects right or not.
   C. Check the terminal connects well or not.

2. data loss or mistake
   A. check the transfer speed and format same or not of both two sides.