AD485-A and AD485-C

RS-232 to RS-485 passive converter

User's Guide

Ⅰ.Sukmmary

In order to communicate between various standard series ports If computers,external equipments,or intelligent instruments,we must convert these signals first.Thes converter is compatible with RS-232C and RS-485 standard.It is able to convert RS-232 signal to RS-485 balanced differential signal and extend the communication distance to 1.2KM.It is passive and doesn't require external power.It uses a particular pump to gain power from RS-232 signals (RTS,DTR,TXD)without initializing the RS-232 series interface.An internal transceiver and particular circuit automatically controls the data stream direction instead of handshake signals(such as RTS,DTR,etc.)When works in RS-232 half-duplex mode,the software keeps the same function under RS-485 without any change. The transmission rate of 300-115200bps is capable of applying between host computers,host computer and its external equipments and forms point ,to point,point to multi-points network.It is widelu used in industrial autom ation,door safe,all-in-one-card,car parding,ATM,bus charge,eatery sell out,staff attendance management,and highway toll gate etc.

This guide is suitable for two models:

AD485-C   (Standard)

AD485-B   (Commercial version)

AD485-A   (Industrial version)

Ⅱ. Features

1.   Interface:Compatible with ELA RS-232Cstandard and RS-485 standard.

2.   Electronec interface:At the side of RS-232 is a DB9 male(hole-type)connector,with connection board.

3.   Working mode:Asynchronous,half-duplex, differential transmission.

4.   Transmission media:Twisted pair or shielded twisted pair(STP).

5.   Transmission rate:300-115200bps.

6.   Mechanical dimension:95mm*33mm*17mm

7.   Working environments:
0~70 ℃ (AD485-C),-20~58 ℃ (AD485-1).relative humidity 5% to 95%.

8.   Transmission distance:1200m(RS-485),5m(RS-232).

Ⅲ.Connector and signal definition

1.   RS-232C connector definition:

DB9 female	RS-232C signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

2.   RS-485 connector definition:

PIN number	DB9 Male	RS-485 connection board
1	D-/B	D+/A
2	D+/A	D-/B
3	---	
4	---	
5	GND	GND
6	+5V`+12V	+5V`+12V
7	---	
8	---	
9	---	

Ⅳ.Hardare installation and application

This converter use traditional DB9/Female and DB9/Male connectors.Output connection board has four poles.You can use twisted pair(TP)or shielded twisted pair(STP)and easily to assemble or disassemble.D+/A is positive signal,D-/B is negative signal,+5V/+6V is external power input if need,GNDis public ground wire. Communication needs at least 2 connections(D+/A,D-/B).Connecting the same polarity signals together.If you use STP,the GND signal must connect too.
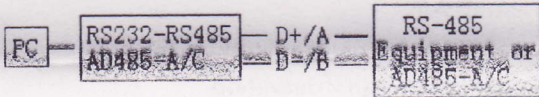
This converter supports 2 communication modes as below:

1.   Point to poent,2 wires, half-duplex.
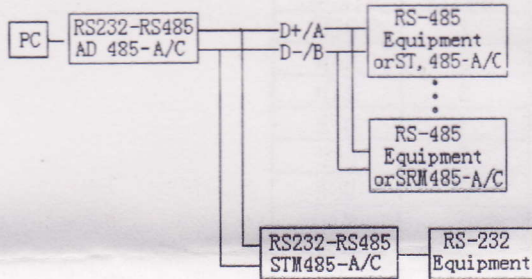
2.   Point to multi-poents,2 wires,half-duplex.

When thes converter works at the end of the network,it needs to install a terminal resistance(normally 120 Ω ,1/4 W),for preventing signal reflection and interference.

Ⅴ.Network illustration

1. Point to point,2 wires,half-duplex

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┌────┐   ┌───────────────┐ ─ D+/A ─  ┌───────────────┐
│ PC │ ─ │ RS232-RS485   │           │   RS-485      │
└────┘   │ AD485-A/C     │ ─ D-/B ─  │ Equipment or  │
         └───────────────┘           │   AD485-A/C   │
                                      └───────────────┘
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2. Point to muti-points,2wires,half-duplex

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┌────┐   ┌───────────────┐        ┌───────────────┐
│ PC │ ─ │ RS232-RS485   │─ D+/A ─│   RS-485      │
└────┘   │ AD 485-A/C    │─ D-/B ─│  Equipment    │
         └───────────────┘        │ orST, 485-A/C │
                                    └───────────────┘
                                           ⋮
                                    ┌───────────────┐
                                    │   RS-485      │
                                    │  Equipment    │
                                    │ orSRM485-A/C  │
                                    └───────────────┘

         ┌───────────────┐  ┌───────────────┐
         │ RS232-RS485   │  │   RS-232      │
         │ STM485-A/C    │  │  Equipment    │
         └───────────────┘  └───────────────┘
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VI. Frequently asked question (FAQ)

1. Data communication failure
    a. Check if RS-232 interface output signal is correct;
    b. Check if rs-232 output signal is correct;
    c. Check if connection poles are well connected.

2. Data loss or mistake

a.Check if data rate and format is consistent on both communication equipments.

Standard accessory:

①	User's guide on a paper	1pc
②	6 poles connection board	1pc