

## HXSP-485 RS-232/RS-485 Converter

### User Guide

#### Product introduction

HXSP-485 series converter is bi-directional connector converter between RS-232 and RS-485; it is mainly used for communication between main controller machines, main controller machine and SCMs or Peripherals, point to point and point to points remote communicate network, it achieve request-response communication between multi-machines, it is mainly used for the field of electricity, industrial automatic control, IC card billing system; such as one card solution, access control system, parking system, and so on.

HXSP-485 series converters change the TXD and RXD signals of RS-232 serial port to 2 wire half duplex RS-485 signal. No need to get through the power, it can get the electricity from the 3rd pin of RS-232 interface , at the same time, there is a request sending by 7<sup>th</sup> pin(RTS), 4<sup>th</sup> pin data terminal prepares(DTR) to help power supplying HXSP-485. The automatically process control make you need not reset and make a easy application of the hardware and software installation.

#### Specification

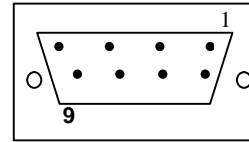
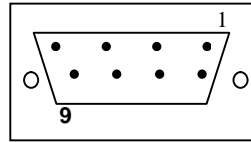
- Standard: Accord EIA RS-232, RS-485 standard.
- Connector: DB9 female on RS-232 side, DB9 male with 4 or 6 terminal block on RS-485 side.
- Work methods: asynchronous, point to point or multi-point, 2 wire half-duplex.
- Transmission medium: Ordinary Line , twisted pair cable or Shielded Wire
- Baud rate: 300~115000bps.
- Transmission distance: 5 meters (RS-232 side) and 1200 meters (RS-485 side).
- Communication protocol: Transparent.

8. Environment: -10℃ to 85℃ working temperature, 5% to 95% relative humidity.

9. Signals: RS-232 TXD, RXD,GND ; RS-485 Date+, Date-,GND .

#### Connection wire and signals :

RS-232 Side(DB9 Female) RS-485 ( DB9 Male )



RS-232 pin definition

DB9 Female	1	2	3	4	5	6	7	8
	DCD	RXD	TXD	DTR	GND	DSR	RTS	CTS

RS-485 pin definition

DB9 Male	1	2	3	4	5	6
	Data	Data			GND	+12V

There are two situations about working power supply:

- It can get the electricity from the 3rd pin of RS -232 connector, at the same time, there is a request sending by 7<sup>th</sup> pin (RTS), 4<sup>th</sup> pin data terminal prepares (DTR) to help power supplying HXSP-485.
- When the RS-232 cannot power supply, it can be power supply by RS-485 6<sup>th</sup> pin (+5~+12V) and 5<sup>th</sup> Pin (GND).

#### Installation and Application

##### 1. Installation:

- Prepare two pieces ordinary wire or twisted pair cable before installing HXSP-485 products;
- Close the serial port of equipment (turn off the equipment);
- The RS-232 port of HXSP-485 series converter use DCE method, it can plug into DB9 Male DTE equipment directly (e.g. COM port of computer) ,and get the electricity from TXD、DTR、RTS signals but please notice that the SL (signal level) should be higher than +5V , if the equipment uses the DCE method, it must be connect as below:

Equipment	DB 9-pin corresponding								
RS-232 of HXSP-485	1	2	3	4	5	6	7	8	9
DB9 male of DCE	1	3	2	4	5	6	7	8	9

RS-485 Equipment and HXSP-485 connection table:

HXSP-485 DB9 Male	RS-485	HXSP-485 Board	RS-485	RS-485 equipment
Pin1 Data-		Data-		Data-
Pin2 Data+		Data+		Data+
Pin3		GND		
Pin4		GND		
Pin5 GND		+5~+12V		GND
Pin6				

#### 2. Application

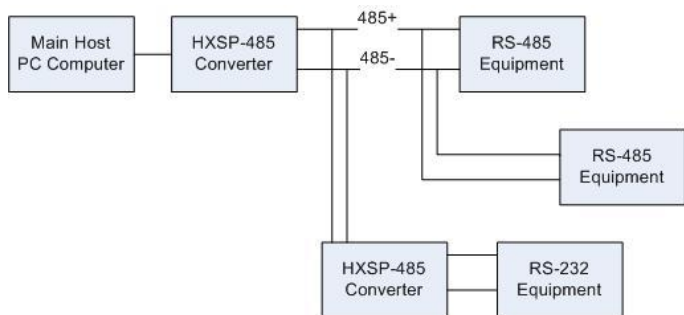
1) The communication of RS-232 equipment and RS-485 equipment

This method is mainly used for control-side equipment connector is RS-232c and the connector of equipment under control is RS-485 ,The two side can not communicate directly because of disaccord of two side electrical specialty , HXSP-485 series converter can be used for transparent change the RS-232 signals to RS-485 signals.



2) RS-485 Network Application

A RS-232 Host will control more than 32 RS-485 equipment, use this method , in order to avoid signal reflex and interfering signal, it should be add the matched resistance on the terminal circuit ( 120 ,1/4 w)



There are two connection methods:

Two HXSP-485 converters connect:

HXSP-485	.....	HXSP-485
Data (+)	.....	Data (+)
Data (-)	.....	Data (-)
GND	.....	GND

HXSP-485 connect with RS-485 equipment

HXSP-485	.....	RS-485 equipment
Data (+)	.....	T+/R+ or 485+
Data (-)	.....	T-/R- or 485-

## Problem analysis :

### 1. Data communication unsuccessful

- A. Check RS-232 interfaces whether to be correct;
- B. Check RS-485 interfaces whether to be correct;
- C. Check whether RS-232 signal level ( TXD、DTR、RTS ) lower than +5V, if that, it can get through power from 6<sup>th</sup> pin of DB9 Male.

### 2. Data missing or messy code

- A. Check whether the baud rate and format of both sides of data communication equipment are same.
- B. If possible, add the matched resistance on the terminal circuit (120 Ω, 1/4 w)