

RS-232/RS-485/RS-422 Interface Converter User Manual

Special Tips

Before using this product, please read this manual carefully. Please keep this manual of future reference. Please use the product properly and with full understanding of the contents. We reserve the right to make changes to the product without notice due to technical updates.

Overview

The interface converter, compatible with RS-232C, RS-422, RS-485 standards, is capable of converting single-ended RS-232 signals to balanced differential RS-422 or RS-485 signals with built-in fast transient voltage suppression protector, which is designed to protect RS-422/RS-485 interfaces with today's advanced TVS (TRANS IENNT VOLTAGE SUPPRESSOR). IENNT VOLTAGE SUPPRESSOR) transient voltage suppressor, the TVS tube is in a high resistance state under normal conditions, when the two ends of the TVS tube are subjected to an instantaneous high-energy shock, it can reduce the impedance at both ends at a very high rate, absorbing a large current, thus damping the voltage at both ends at a predetermined value, protecting the circuit components behind from damage due to transient high-voltage shock. This protector can effectively suppress lightning (LIGHTNING), providing 600W of lightning surge protection power per line, as well as various causes of surge voltage and transient overvoltage generated on the line. And the extremely small inter-pole capacitance ensures high speed transmission for RS-422/RS-485 interface. RS-232 interface end is connected to the compatible RS-232C standard interface through a DB9 female connector, and RS-422 and RS-485 ports are connected through DB9 male connectors. The converter comes with zero delay automatic transceiver conversion inside, unique I/O circuitry automatically controls the data flow direction without any handshak-

(Please refer to the actual product)

ing signal (such as RTS, DTR, etc.), no jumper setting to achieve full-duplex (RS-422), half-duplex (RS-485) mode conversion, plug-and-play, ensuring that it is suitable for all existing communication software and interface hardware, without any software modification to the previous RS-232 based 232-based operation without any software modifications.

The interface converter can provide a reliable connection for point-to-point and point-to-multipoint communications, allowing 32 RS-422 or RS-485 interface devices to be connected to each converter from point to multipoint. The supported communication methods are RS-232 to RS-422, RS-232 to RS-485 conversion.

Performance Parameters

- Interface features: interface compatible with EIA/TIA, RS-232C, RS-485/RS-422 standards
- Electrical interface: RS-232 interface input DB9 hole type connector. RS-422/RS-485 interface output DB9 pin type, RJ-45 connector.
- Protection level: RS-422, RS-485 interface 600W per line of lightning surge protection.
- Operating mode: Asynchronous half-duplex or asynchronous full-duplex.
- Signal indication: three signal batch lights power (PWR), Transmit (TXD), receive (RXD)
- Transmission medium: twisted pair or shielded wire
- Transmission rate: 115.2K BPS to 300M, 38.4K BPS to 2.4KM, 9600 BPS to 5KM
- Dimension: 97mmX65mmX26mm
- Operating environment: -25°C to 70°C, relative humidity of 5% to 95%
- Transmission distance: 0-5,000m (115200bps-9600bps)

Connectors and Signals

RS-232C Pin Assignment

DB9 female/hole type(PIN)	RS-232C Interface Signal
1	Protected Areas
2	Receive data SIN(RXD)
3	Send data SOUT(TXD)
4	Data Terminal ReadinessDTR
5	Signal ground GND
6	Data device preparationDSR
7	Request to Send RTS
8	Clear send CTS
9	Ringing instruction RI

RJ-45 socket pin assignment diagram



RS-485/RS-422 output signal and terminal pin assignment

DB9 pin type(PIN)	RJ-45 (PIN)	Output Signal	RS-422 full duplex wiring	RS-485 half-duplex wiring
1	1	T/R+	Hair (A+)	RS-485(A+)
2	2	T/R-	Send(B-)	RS-485(B-)
3	3	RXD+	Receive(A+)	Empty
4	6	RXD-	Receive(B-)	Empty
5	4,5,7,8	GND	Ground	Ground Line
6		VCC	Power supply10-30 VDC input 9VDC output	Power supply10-30 VDC input 9VDC output
7		N/A		
8		N/A		
9		N/A		

Hardware installation and application

Before installation, please read the product manual carefully, connect the communication cable provided with the product to the RS-232 interface end and the power converter to the socket, this product uses DB-9/DB-9 universal connector for input/output interface, no jumper setting automatically realize RS-485 or RS-422 communication mode, twisted pair or shielded cable can be used, very convenient to connect and disassemble. t/r+/ R- represents transmitting and receiving A+/-B-, RXD+/RXD- represents receiving A+/-B-, VCC represents input or output power, GND represents common ground, point-to-point, point-to-multipoint, half-duplex communication connects two wires T/R+, T/R-, point-to-point, point-to-multipoint, full-duplex communication connects four wires T/R+, T/R-, RXD+, RXD-.

The interface converter supports the following four communication methods.

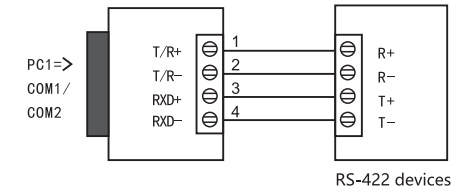
- Point-to-point/four-line full duplex
- Point-to-multipoint/four-line full duplex
- Point-to-point/two-wire half-duplex
- Point-to-multipoint/two-wire half-duplex

When the converter is wired as full duplex or half duplex, a matching resistor (parameter 120 Ohm 1/4W) needs to be connected at the terminal of the line in order to prevent signal reflection and interference.

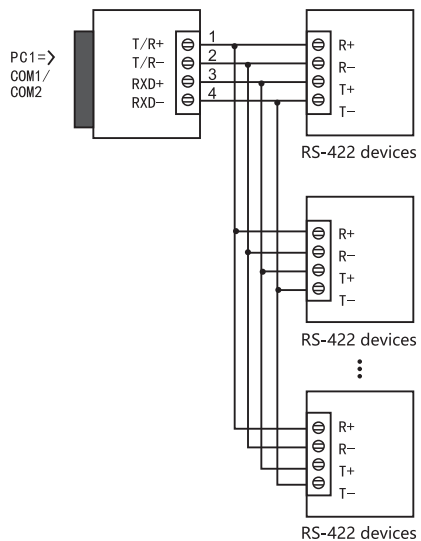
Communication connection diagram

RS-232 to RS-422 conversion

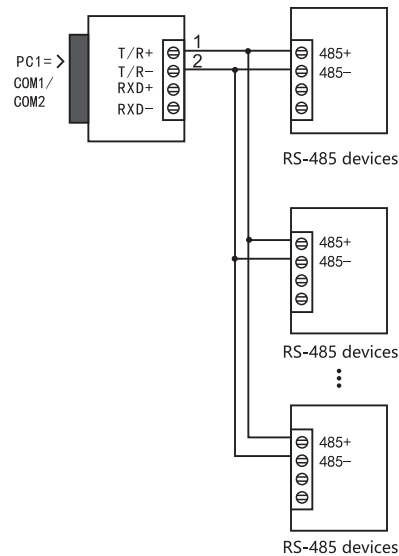
- RS-422 point-to-point/four-wire full-duplex communication



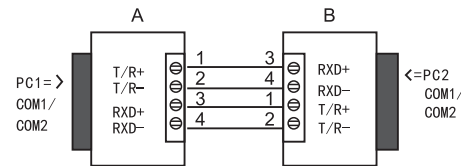
2. RS-422 point-to-multipoint/four-wire full duplex



2. RS-485 point-to-multipoint/two-wire half-duplex

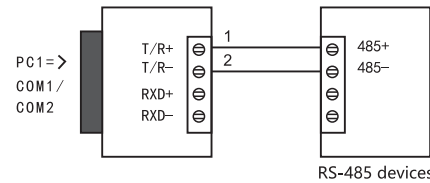


3. Full duplex communication connection between converters

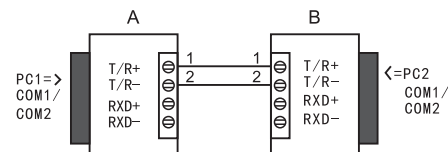


RS-232 to RS-485 conversion

- RS-485 point-to-point/two-wire half-duplex



3. Half-duplex communication connection between converters



Troubleshooting

- Data communication failure
 - Checking that the RS-232 interface is wired correctly.
 - Checking that the RS-485/RS-422 output interface is wired correctly.
 - Checking for proper power supply.
 - Checking that the terminals are well connected.
 - Observe whether the receive indicator flashes when it is received.
 - Observe whether the send indicator flashes when sending.
- Data loss or error
 - Check whether the data rate and format are consistent at both ends of the data communication equipment.

Safety instructions for use

To ensure the reliable use of the equipment and the safety of personnel, please observe the following when installing, using and maintaining.

- Do not use the product in the following places: places with dust, oil fumes, conductive dust, corrosive gases, combustible gases; places exposed to high temperature, condensation, wind and rain; places with vibration and shock. Electric shock, fire, misuse can also lead to damage and deterioration of the product.
- Avoid wiring, plugging and dialing cable plugs in a charged state, which may easily lead to electric shock or cause circuit damage to bonus.
- Installation and wiring must be solid and reliable, poor connection may lead to misoperation.
- This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth, and the product must be properly grounded before making connections to the input or output of this product.
- The external power must be completely disconnected before installation, wiring, etc., or else electric shock or equipment damage may result.
- In the following cases, please disconnect the power immediately and contact the company.
 - Water enters the equipment.
 - The equipment is broken or the case is cracked.
 - The equipment works abnormally or the demonstrated performance has been completely changed.
 - The equipment produces odor, smoke or noise.
- Do not repair the equipment yourself, except as expressly instructed in the manual.