

# IOT9000 RS232 to RS485 Passive Isolation Converter

Please read the product manual carefully before using the product.

## I. Product Overview

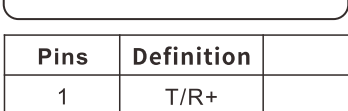
To facilitate remote data communication between computers, external devices, or intelligent instruments equipped with different serial interface standards, conversion between standard serial interfaces is essential. This converter is compatible with both RS232 and RS485 standards, converting single-ended RS232 signals to balanced differential RS485 signals. This converter can extend RS232 communication distances up to 1.2 kilometers, requiring no external power supply. It utilizes a unique "RS232 charge pump" driver, which draws power without initializing the RS232 serial port. It also features internal zero-delay automatic transmit/receive conversion, and unique I/O circuitry automatically controls data flow direction, eliminating the need for handshaking signals (such as RTS and DTR). It also supports half-duplex (RS485) mode conversion, ensuring that programs written for RS232 full-duplex or half-duplex modes can run unchanged in RS485 mode. This ensures compatibility with existing operating software and interface hardware, and can be used to establish point-to-point and point-to-multipoint remote multi-machine communication networks between host computers, between host computers and microcontrollers, or between peripherals, enabling multi-machine communication. It is widely used in industrial automation control systems, all-in-one cards, access control systems, parking systems, self-service banking systems, bus fare collection systems, canteen meal vending systems, company employee attendance management systems, highway toll station systems, etc.

## II. Function Parameters

- Interface Features: The interface is compatible with EIA/TIA RS232 and RS485 standards.
- Electrical Interface: DB9 female connector on the RS232 end, four-position binding posts on the RS485 end.
- Operation: Asynchronous full-duplex RS232, half-duplex differential RS485 transmission with automatic channel switching.
- Transmission Media: Twisted pair or shielded cable.

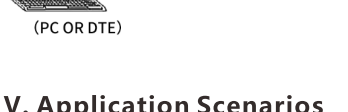
## III. Interface Description

### RS232 interface (DB9 female connector for converter)



Pins	Definition	Explanation
1	DCD	NC
2	TXD	Transmit data
3	RXD	Receive data
4	DTR	NC
5	GND	RS232 Signal ground
6	DSR	NC
7	RTS	Request to send
8	CTS	Clear to send
9	RI	NC

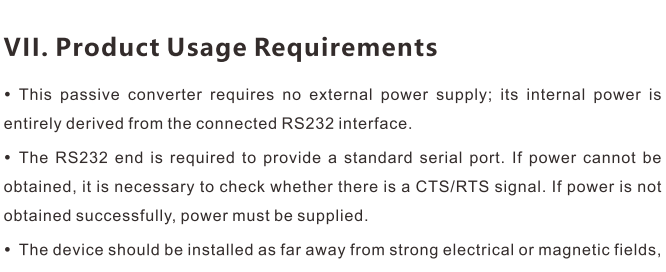
### RS485 interface (converter DB9 male connector)



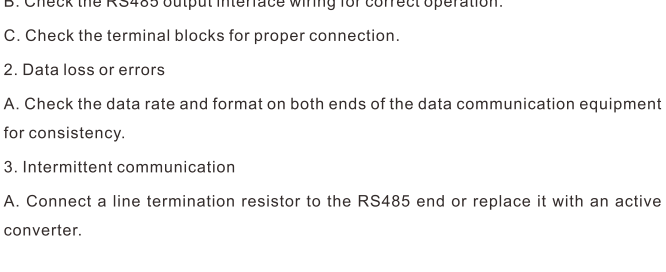
Pins	Definition	Explanation
1	T/R+	RS-485 (A+)
2	T/R-	RS-485 (B-)
3	NC	/
4	NC	/
5	GND	Power ground wire
6	NC	/
7	NC	/
8	NC	/
9	VCC	5-24V power supply

## IV. Product Connection Diagram

RS485 point-to-point or point-to-multipoint, half-duplex connection diagram



RS485 point-to-point, docking, achieving RS232 signal half-duplex connection diagram



## V. Application Scenarios

At meteorological observation stations, some wind speed and direction sensors use an RS232 interface to transmit monitoring data, while the station's data aggregation equipment often communicates via an RS485 interface. Using a passive RS232-to-485 converter, the RS232 signals from the wind speed and direction sensors can be converted to RS485 signals, allowing for easy integration into the weather station's monitoring network and efficient collection and transmission of meteorological data. Meteorological departments can use this real-time data to generate weather forecasts and provide early warnings of meteorological disasters.



## VI. Product Accessories

- One set of products

## VII. Product Usage Requirements

- This passive converter requires no external power supply; its internal power is entirely derived from the connected RS232 interface.
- The RS232 end is required to provide a standard serial port. If power cannot be obtained, it is necessary to check whether there is a CTS/RTS signal. If power is not obtained successfully, power must be supplied.
- The device should be installed as far away from strong electrical or magnetic fields, high humidity, high temperatures, and extremely low temperatures as possible to avoid damage.
- When using this converter, secure it to prevent it from dropping.
- Please select a converter model based on your application needs.

## VIII. Precautions

- Data communication failure.
  - Check the RS232 interface wiring for correct operation.
  - Check the RS485 output interface wiring for correct operation.
  - Check the terminal blocks for proper connection.
- Data loss or errors
  - Check the data rate and format on both ends of the data communication equipment for consistency.
- Intermittent communication
  - Connect a line termination resistor to the RS485 end or replace it with an active converter.

## IX. Product Accessories

This product's DB9 port is the RS232 port and can be connected to a PC via a USB-to-RS232 serial cable or an RS232 serial cable (DB9M/DB9F). The DB9 pin port is the RS485 port. If a 9-pin port is required for RS485 device connection, please refer to the following 9-pin pin definition (pin 1 is 485+, pin 2 is 485-, and pin 5 is GND). The DB9 pins connect to the binding posts and can be connected using twisted-pair or shielded cable for ease of use. T/R+ and T/R- represent the transmit and receive A+ and B-, respectively. GND represents the common ground. When wiring in RS485 half-duplex mode, connect T/R+ (transmit/receive+) to the other party's A+, and T/R- (transmit/receive-) to the other party's B-.

# Product Warranty Card

### Customer Information

Model:	
Date of purchase:	
User telephone:	
User address:	
Distributor:	
Agency address:	
User telephone:	Dealer stamp valid

### Intenance Records

Repair times	Date	Fault	Treatment measures	Repair work NO.

Electronic products are guaranteed for one year, and other products are guaranteed for two years. Damage caused by human factors or product burnout caused by improper operation is not included in the scope of warranty.