



# UT-2204 4-port RS-485 Smart Data Converter

## Instruction Manual

### I 、 Overview

UT-2204 is a RS-485 bus split hub designed for RS-485 system used in demanding environments. It supports a data communication rate up to 115.2KBPS and has data buffers and microprocessors. It uses external switching power supply for safety and reliability and is ideal for engineering applications.

The built-in discrimination circuit can automatically sense the direction of data flow and switch the enable control circuit to ensure the switch of transmit and receive in RS-485 mode. The communication distance of RS-485 can exceed 1200m for stable performance, so it's widely used in applications such as video supervision system as a high-performance data interface converter.

UT-2204 RS-485 HUB provides star-type RS-485 bus connection. Users can improve the RS-485 bus structure and split bus segments conveniently to improve the communication reliability. This feature significantly improves the reliability of existing RS-485 network and reduces maintenance interval. Reasonable use of UT-2204 RS-485HUB can help to design a unique, highly reliable RS-485 system.

### II 、 Features

- 1. Interface: Compatible with RS-232 and RS-485 standards of EIA/TIA
- 2. Electric connection: DB9/F socket for RS-232C interface, wiring terminal for RS-485 end

- 3. Transmission media: twisted-pair cable or shielded cable
- 4. Operation mode: Asynchronous half-duplex
- 5. Signal indicator: 9 signal LEDs: power (PWR), transmit(TXD1), (TXD2), receive (RXD1),(RXD2) and error (E1-E4)
- 6. Data rate: 1200BPS-115.2KBPS
- 7. Protection class:  $\pm 15\text{KVESD}$  protection;1500W lightning surge protection for RS-485 interface
- 8. Transfer distance: 0-1.2 Kilometers (115200-1200BPS)
- 9. Power supply: DC9-30V 1A
- 10. Dimension: 210mm $\times$ 140mm $\times$ 32mm
- 11. Working environment: -40 $^{\circ}\text{C}$  to 85 $^{\circ}\text{C}$ ,relative humidity of 5% to 95%

### III 、 Panel and signal indication

There are 9 indicator lights on the front panel of UT-2204. Wiring terminal and socket are on the rear panel. RS-232 Setup port is used for baud rate setting (please refer to the software instruction manual), SIGNAL OUT is alarm relay output, DC9-30 is the power input socket and wiring terminal, RS-485INPUT and RS-485OUTPUT are data communication ports.



Figure 1 Frontpanel view ofUT-2204

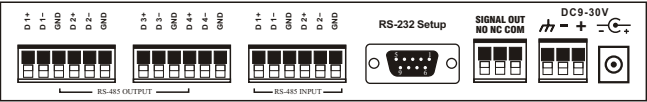


Figure 2 Rearpanel view ofUT-2204

Explanations of indicator lights on the front panel of UT-2204  
**PWR**—power indicator, normally red  
**TX** —data transmitting indicator, normally flashing green, indicating that the data is transmitted from RS-485 Output 1-4 to RS-485 Input 1-2ports  
**RX** —data receiving indicator, normally flashing yellow, indicating that the data is transmitted from RS-485 Input 1-2 to RS-485 Output 1-4 ports  
**E1-E4**—error alarm indicator for port 1-port 4; If it always turns ON then the RS-485 interface devices connected to port 1-port 4 are short-circuited or reverse connected, and E1 corresponds to port 1, and E4 corresponds to port 4, and at the same time alarm relay will operate and the normally open contacts will be closed. Users can determine the failed port and the connected faulty device according to the state of these error alarm indicators.

### IV 、 Electric interface and its definition

RS-232C interface definition

RS-485 interface definition



Figure 3 RS-232 interface      Figure 4 RS-485 interface

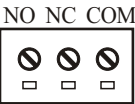
#### 1、 RS-232C interface definition

DB9 Female (PIN)	RS-232C Interface signals
1	Protective earth SIN(RXD)
2	Transmit data SOUT(TXD)
3	Receive data SIN(RXD)
4	Empty
5	Signal ground GND
6	Empty
7	Empty
8	Empty
9	Transmit data

#### 2、 RS-485 interface definition

Wiring terminals	Description
D x +	485+
D x -	485-
GND	GND
Note: X can be 1, 2, 3 or 4	

3、Relay alarm signal output

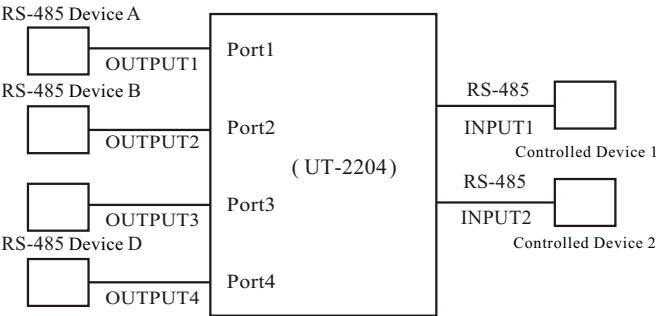


SIGNAL OUT: signal output

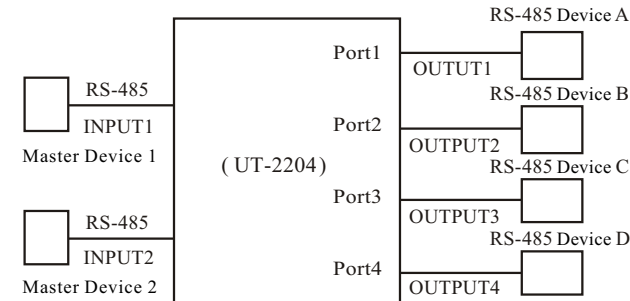
- No: normally open
- Nc: normally close
- COM: common

V 、Typical UT-2204 4-port RS-485HUB applications

1. 4 RS-485 devices controlling 1-2 devices, in which the 4 devices on the RS-485 bus can simultaneously control 1-2 devices



2、Extension of 1-2 RS485 ports of a master to 4 RS-485 ports



VI、Alarm and protection of RS-485 faults

Error alarm and protection of RS-485 interface is effective for connecting multiple RS-485 devices for improved reliability. UT-2204 provides 4 subordinate ports used to determine quickly the faulty ports and the connected faulty devices according to fault indicators. If fault occurs then relay will act and normally open contacts will be connected to the common point, so users can connect alarm bell or alarm light to the relay output terminal.

VII、Power supply and lightning protection

UT-2204 is powered by an external compact switching power supply of 12V/1A. Other non-regulated voltage supply must not be used. This may cause product damaged. Each RS-485 port of the UT-2204 has a lightning protection of 1500W, and it can effectively prevent lightning and ESD. Port 4 of UT-2204 is the protective earth of surge protection and it's must be grounded correctly to avoid being not-used to ensure safe communication.

VIII、Application note

The data on Input 1 and Input 2 will be transmitted immediately to Output port 1- port 4, and the data on any one port of Output port 1- port 4 will be stored to the data buffer and then forwarded to Input port 1- port 2, so the time interval of Output port 1- port 4 should not be too short. For example, if the data input of port 1- port 4 last for 100ms for each channel, then each channel of port 1- port 4 should input data once for more than 400ms and the input data length should be less than 100 bytes, or data may be lost.