



UT-1204 4-port RS-485 Hub User Manual

I. Summary

As a new RS-485 bus splitting hub specially designed to meet requirements of RS-485 systems under complex electromagnetic environments, UT-1204 supports a transmission rate as high as 115.2KBPS. To ensure safe data transmission, photoelectric isolation technology is adopted for RS-485 interfaces to eliminate the induction of lighting surge into converter or related devices. An isolation voltage as high as 2,500V can be provided by the built-in photoelectric isolator and the 600W surge protection circuit for effective restraint of lighting and ESD as well as lightning strike and common-grounding interference. The external switching power ensures the best safety and stability for outdoors projects.

The direction interpreting circuit under RS-485 working mode is able to perform automatic interpretation of data stream direction for circuit control through automatic shift, therefore the transfer delay for RS-485 is solved. RS-485 interface has a transmission distance of more than 1,200 meters with stable performance. It is widely used in speedway charging system, road monitoring system and electric data gathering system as a quality product for data interface conversion at competitive price.

All ports of RS-485 star bus connection provided by UT-1204 RS-485 hub have short circuit and open circuit protection. The photoelectric isolation voltage is as high as 2,500V. The RS-485 bus structure can be easily re-shaped and network range split for improvement of communication reliability. In the event of lighting strike or device failure, the affected network range will be isolated to ensure the normal working of other network ranges. This feature enhances the reliability of the current RS-485 network greatly with effective decrease of time consumption for network maintenance. A proper use of UT-1204 RS-485 hub will surely help you present a nice RS-485 system design of uniquely reliable stability.

II. Performance parameters:

1. Interface: compatible with RS-232C and RS-485 standards by EIA/TIA.

2. Electric interface: RS-232C interface for RJ-45 socket and RS-485 interface for RJ-45 socket.
3. Transmission media: twisted-pair cable or shielded cable.
4. Working mode: asynchronous duplex
5. Signal indication: 7 signal indicator power(PWR), sending(TD), receiving(RD) and failure(E1-E4).
6. Isolation degree: isolation voltage 2,500 Vrms, 500VDC continuous. DV/DC modules.
7. Transmission rate: 115.2K-300BPS.
8. Protection grade: 5KV ESD protection for RS-232 interface and 600W lighting surge protection for each RS-485 interface.
9. Transmission distance: 0-5 kilometer (115.200-300BPS)
10. Measurements: 90mm*69mm*23mm
11. Working environments: -25 to +70 degrees Celsius, relative humidity 5% to 95%.

III. Product panel and signal indication

There are 7 indicator lights on the front panel of UT-1204. On the back panel, there are 6 RJ-45 sockets, and of them, RS-485 and RS-232 are for input, port 1-4 are for photoelectric isolation output.



Figure 1. UT-1204 Front Panel

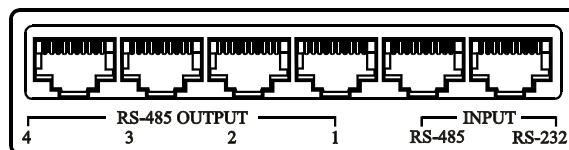


Figure 1. UT-1204 Back Panel

Indicators on the front panel are interpreted as the following:

PWR----indicates power, red for on.

TD----indicates data sending, green for normal, from INPUT ports to OUTPUT ports 1-4.

RD----indicates data receiving, yellow for normal, from OUTPUT ports 1-4 to INPUT ports.

E1-E4----failure warning for ports 1-4, light on indicates short circuit or signal reverse for RS-485 interfaces connected with ports 1-4. E1 for port 1, E2 for port 2, etc.

IV. Electric interface and definitions

RS-232C interface definition RS-485 interface definition

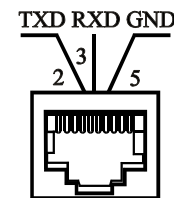


Figure 3. RS-232C interface

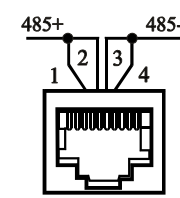


Figure 3. RS-485 interface

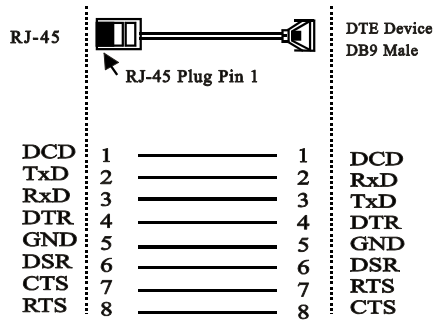
1. RS-232C interface definition

RJ-45 connector	Definition	Signal direction
2	TXD	OUT
3	RXD	IN
5	GND	

2. RS-485 interface definition

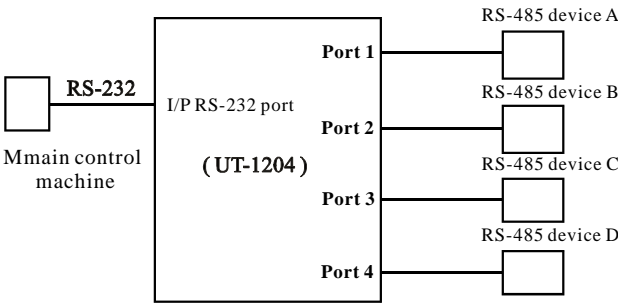
RJ-45 connector	RS-485
1、 2	485+
3、 4	485-
5、 6(Port 4 only)	+5V/1A Spare power input
7、 8(Port 4 only)	Grounding protection

2. Connection from RJ-45 plug pin of RS-232 interface to DB9 female.

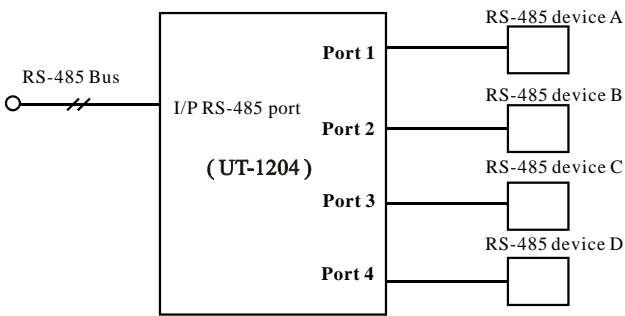


V. Applications

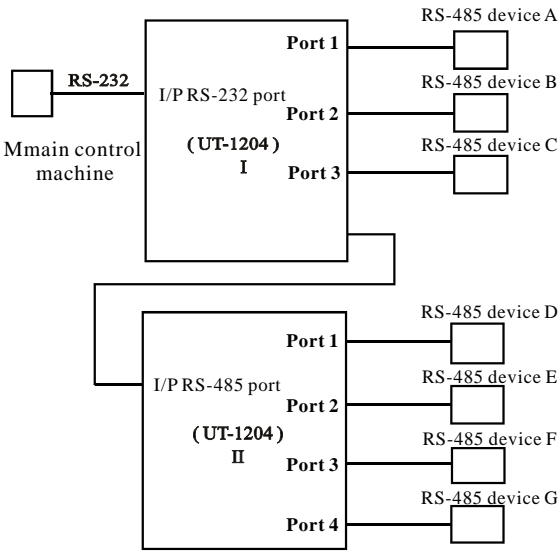
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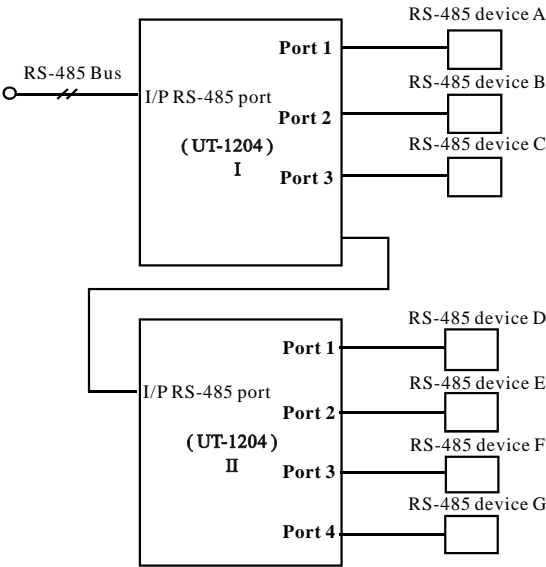
2. Application of extension to 4 highly reliable RS-485 interfaces from existing RS-485 bus, and as many as 128 RS-485 hubs are supported on the RS-485 bus.



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VI. RS-485 ports failure warning and protection

RS-485 ports failure warning and protection is an effective solution for the connection of multiple RS-485 devices and reliability enhancement. The 4 ports for lower machines with short circuit protection can work in off mode. Failure of any one of the RS-485 ports affects only the RS-485 bus system connected with that port, while other RS-485 systems from other ports work normally. The user can locate the failed port or devices connected according to the failure indicator lights.

VII. Power supply and anti-lighting protection

Mini-sized external switching power supply of 5V/1A is used for UT-1204. Don not use other un-regulated power to avoid damage of the product.

The 600W lighting protection of all the interfaces of UT-1204 effectively restrain lighting and ESD. The surge protection grounding of RJ-45 pin 7-8 in port 4 of UT-1204 shall be well grounded without being suspended in the air for a safe communication.