epcom POWER LINE

Model: 4RS485

Instruction manual

Ⅰ. Overview

HUB is a RS-485 bus-division hub designed for RS-485 system used in complicated electromagnetic environments. It supports data communication rate up to 115.2KBPS. Photoelectric isolation technique is introduced to the RS-485 interface to prevent converter and device from lightning and surge voltage for ensuring the safe and reliable data communication. The built-in photoelectric isolator (an isolation voltage as high as 2.5KVrms) and 600W surge suppressor can effectively suppress lightning and ESD and the grounding interference with each RS-485 line. It uses external switching power supply for safety and reliability and is ideal for outdoor engineering applications. The built-in discrimination circuit can automatically sense the direction of data flow and switch the enable control circuit to ensure the automatic switch of transmit and receive in RS-485 mode.

RS-485 is widely used in thruway toll system, road supervision system and electric power acquisition system as a high-performance and economical data interface converter. Short-circuit and open-circuit protection are provided for each port. Users can improve the RS-485 bus structure and divide bus segments conveniently for improved communication reliability. If lightning or faults occur then the failed segment will be isolated and make sure other segments can operate normally.

This feature significantly improves the reliability of existing RS-485 network and reduces maintanence interval. Reasonable use of RS-485HUB can help to design a unique, highly reliable RS-485 system.

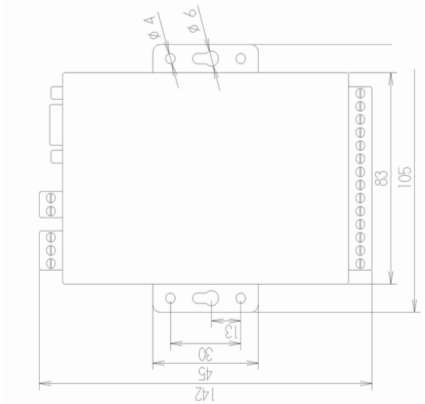
Ⅱ、Features:

1、 Interface: Compatible with RS-232 and RS-485 standards of EIA/TIA

2. Electric connection:2,3and14 -bit wiring terminal for both DC and RS-485 interface ,DB9-Female for RS232.
3. Transmission media: twisted-pair cable or shielded cable
4. Operation mode: Asynchronous half-duplex
5. Power supply: 9-30VDC/350mA
6. Signal indication: 7 signal indicators - Power (PWR), Transmission (TD), Receive(RD), Error (E1-E4)
7. Isolation voltage: continuous 2.5KVrms /500VDC isolation DC/DC module
8. Data rate: 115.2K-300BPS
9. Protection class: +/-15KV ESD protection for RS-232 interface; 600W lightning strike and surge protection for each RS-485 line.
10. Communication distance: 0-5 KM(115200bps-300bps)
11. Dimension: 140mm / 105mm / 26mm
12. Working environment: -25℃to 70℃， relative humidity of 5% to 95%

Ⅲ、Panel and signal indicator

HUB panel there is 4 indicator light, electrical interfaces are used for the DB9 and line pressing terminals. The left for RS-232 DB9 interface signal input, the left three RS-485 line pressing terminal is input, GND1 is RS-485 at the input signal ground, GND2 power landlines, two line pressing terminal is external power supply input (adapted to the case by the internal power, the power supply with standard can be plugged directly into DCIN mouth), left for the DC IN external power socket. The right end for four ways of RS-485 signal output port.
Pay attention to the signal input RS485 GND1 can't and power GND2 wire together.



Meanings of indicator lights on the front panel of HUB

PWR power indication, normally red

TXD Data transmitting indication, normally flashing yellow, indicating that the data is transmitted from INPUT port to OUTPUT port 1- port 4

RXD Data receiving indication, normally flashing green, indicating that the data is transmitted from OUTPUT port 1- port 4 to INPUT port

E1-E4 error alarm indication for port1-port4; If it's permanently illuminated then short-circuit or reverse connection exists on the RS-485 interface devices connected to port1-port4, and E1 light corresponds to port 1, and E4 light corresponds to port 4.Users can determine the fault port and the connected fault device according to the state of these fault alarm indicator lights.

Ⅳ、Electric interface and its definition ：

DB9,3-bit RS-485C and 2-bit DC interface definition

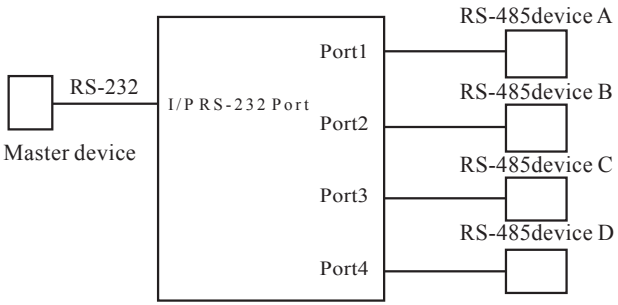
3-bit wiring terminal	Definition	Signal description
1	485-	RS-485 Negative signal input
2	485+	RS-485 Positive signal input
3	GND1	Ground
2-bit wiring		
1	GND2	Power Ground
2	VCC	Power input DC+9-30V
DB9-Female		
2	RXD	RS-232 Signal receive
3	TXD	RS-232 Signal transmit
5	GND	Ground

RS-485 interface definition

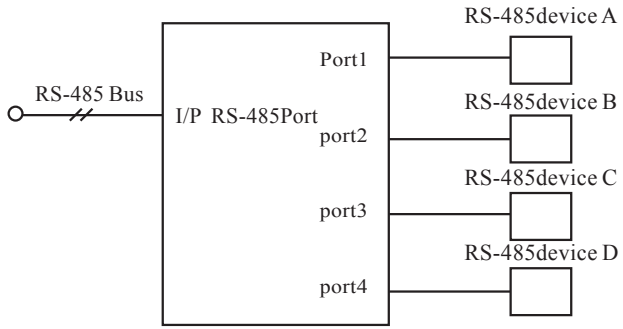
14-bit wiring terminal	Definition	Signal description
1	T/R1-	RS-485 signal output -
2	T/R1+	RS-485 signal output +
3	T/R2-	RS-485 signal output -
4	T/R2+	RS-485 signal output +
5	T/R3-	RS-485 signal output -
6	T/R3+	RS-485 signal output +
7	T/R4-	RS-485 signal output -
8	T/R4+	RS-485 signal output +
9	GND	Isolation ground
	NC	

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

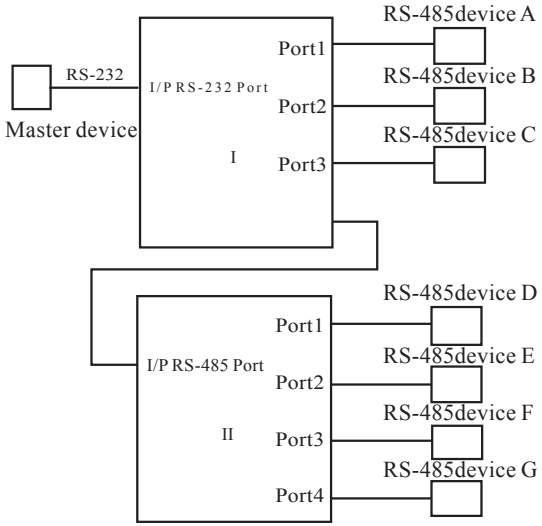
1、 RS-232C serial port of master device to 4 highly reliable RS-485 interface



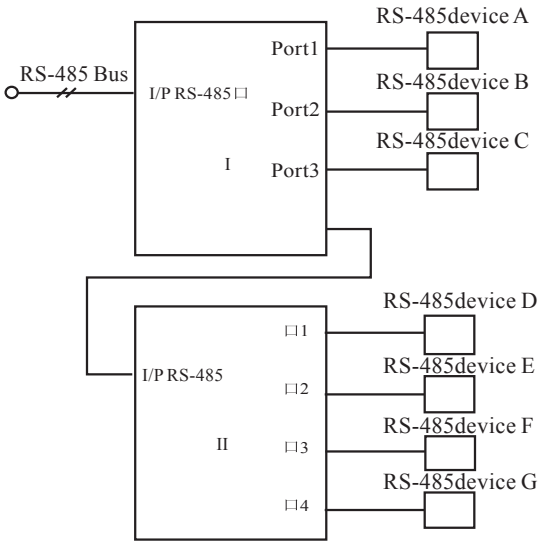
2、 Extend the existing RS-485 bus to 4 highly reliable RS-485 interfaces, and maximum 128 RS-485 hubs can be connected to the RS-485 bus in parallel



3、 Serial port of master device (RS-232C) to multiple highly reliable RS-485 interface



4、Extension of existing RS-485 bus to multiple highly reliable RS-485 interfaces, and maximum 128 RS-485 hubs can be connected to the RS-485 bus in parallel



、ⅥError alarm and protection of RS-485

Error alarm and protection of RS-485 interface is effective for connecting multiple RS-485 devices and enhancing its reliability. There are 4 subordinate ports on HUB which can be used to determine quickly the faulty ports and the connected faulty devices according to error indicators. Each port is equipped with short-circuit protection and can operate in turn-off mode. Any one fault RS-485 port only can influence the bus system in which it exists and other system can still operate normally.

、ⅦPower supply and lightning protection

DC power supply of +9 V - +40V / 350mA min is used for powering the HUB . Lightning protection of 600W is provided for each RS-485 port of the HUB , and it can effectively su ppress lightning and ESD.

Port 4 of HUB is the protective earth of surge protection and it's must be grounded reliably to avoid being hanged in the air for ensuring the communication safety.