**User's Guide for U-485G   USB-RS485/422   high-speed light-isolated converters**

U-485G is to realize communication conversion from USB to RS485 and RS422. The power supply of

the product is from the USB port. There are DC / DC isolated power modules and high-speed optical dipole

in the product to respectively realize the isolation of the power and signal. Use the unique zero-delay

automatic sending and receiving conversion technique and baud rate adaptive technique. Plug-and-play,

suit for all software, and a transceiver enable control. And in the high resistance state when not sending

data. Support multi-point communication, which is different from other similar cheap products in market.

There is a built-in anti-static anti-lightning circuit in the product. Uniquely with power and

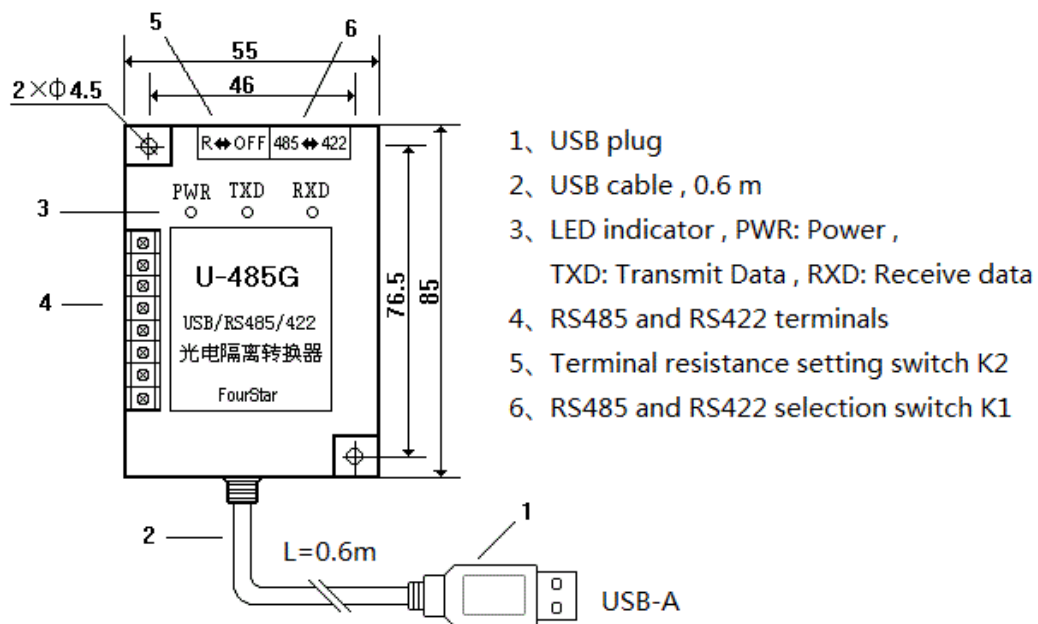sending/receiving indicator lights, the shape is the industrial structure of standard rail installation.

**Features and technological index:**

1, applies to all USB ports on PC. Support U-485G operating system: Windows98 \ ME \ 2000 \ XP

2, USB port-powered, no external power, the current <50 mA

3, output is the four-wire full-duplex RS422 interfaces and second-line half-duplex RS485 interfaces.

4, optical isolation voltage: 1000 VDC (up to 3000 VDC, it should be declared when making an order)

5, use the shielded twisted pair whose sectional area is over 0.5 mm2 as communication lines

6, the largest communications distance is 3,000 meters (4800 bps), 2000 m (9600 bps)

7, Group website is at least 32 points. For the most points of the group website site is depend on the input

impedance of RS485.

8, communications rate of 300 bps ~ 1Mbps, standard baud rate adaptive

9, support for UART data format: data bits: 7-8, stop bit: 1, 2, check-bit: odd / even / no parity

10, a transient voltage suppression, can withstand the transient over-voltage whose power is up to 400 W

and electrostatic discharge and lighting strikes impact

11, installation: installation of 35 mm standard rail and the bolt hole

12, the working temperature: -20 ～ 70 ℃

13, Dimensions: 85 × 55 × 25

**Products' shape and definition of video signals:**



1、 USB plug

2、 USB cable , 0.6 m

3、 LED indicator , PWR: Power ,
   TXD: Transmit Data , RXD: Receive data

4、 RS485 and RS422 terminals

5、 Terminal resistance setting switch K2

6、 RS485 and RS422 selection switch K1

signals definition

| signal name | note |
|---|---|
| D+ | RS485 signals positive |
| D- | RS485 signals negative |
| TXD+ | RS422 sent positive |
| TXD- | RS422 sent negative |
| RXD+ | RS422 signal receive positive |
| RXD- | RS422 signal receive negative |
| SG | DGND |
| FG | AGND |

**U-485G driver installation method:**

The driver of U-485G interface converters is easy to install. plug the converter into USB interface, the system will prompt the discovery of new hardware, according to dialog , Add a CD-ROM to drive, then finish the setup with tips on the next step. After the installation is complete, in the Windows "start menu \ Settings \ Control Panel \ system \ hardware \ Device Manager" .the property and other information of the new COM ports will display on the screen. This new COM port is the COM port which U-485G is mapped to computer, just select the port in communications software when you need.

**The application of products:**

U-485G can be used for point-to-point communications and multi-point communications. Except for linking several other RS485/422 interfaces, it can also make as many as 32 USB interfaces compose of RS485 or RS422 communication network, its communication range is up to 3km（4800bps）、2km（9600bps）. The addresses of each nodes are determined by the internal procedures of the equipment. Please connect the shield to the "FG" terminal of products when using shielded twisted pair,.

1, second-line half-duplex RS485 communication network:

Turn the RS485 and RS422 selection switch K1 of U-485G converters to "485", the terminal resistance setting switch K2 on U-485G of  network's terminal and initiating terminal to "R", the terminal resistance setting switch K2 on other FS-485G of the network to "OFF".
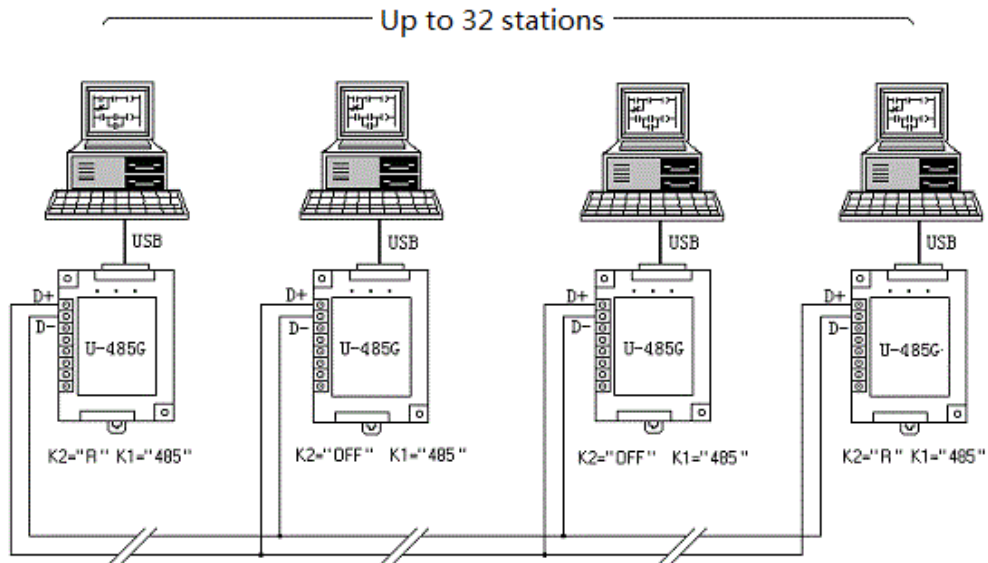
2, 4-wire full-duplex RS422 communication network

Turn the RS485 and RS422 selection switch K1 of U-485G converters to "422", the terminal resistance

setting switch K2 onU-485G of   network's terminal and initiating terminal to "R", the terminal resistance

setting switch K2 on other FS-485G of the network to "OFF".
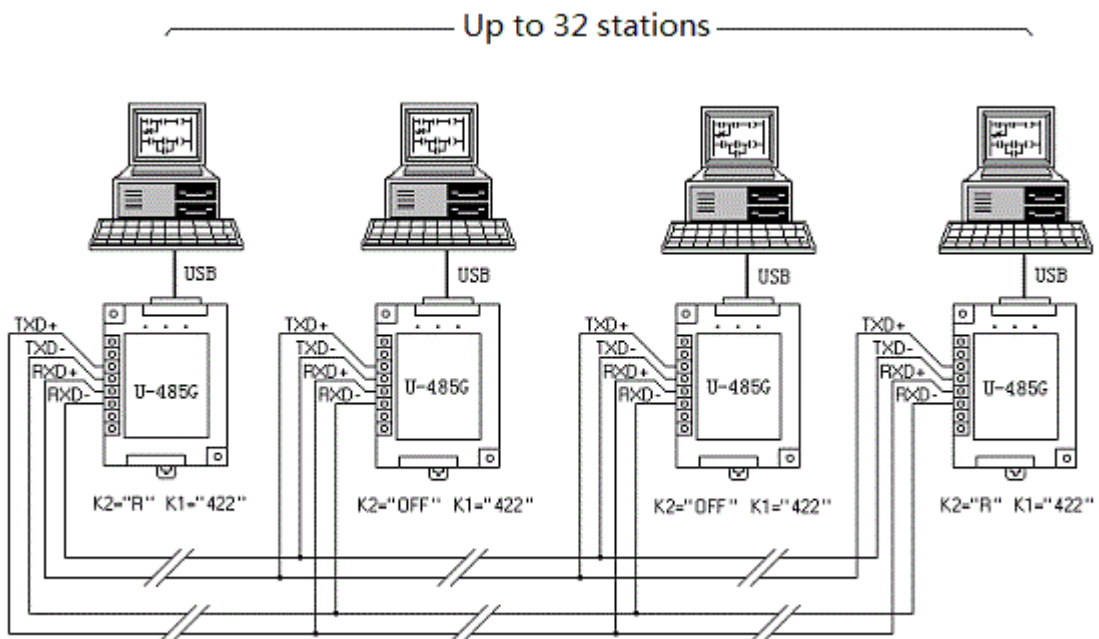
**Note:**

1, Shielded twisted pair with. above 0.5 mm2 cross-sectional area and 120-ohm impedance should be used as the communication lines,

2, In order to prevent the common mode voltage of RS485/422 interface beyond the permitted range witch would impact the reliability of communication or even damage interfaces, you can use a low resistance wire whose cross-sectional area is 1 mm2 to connect the signal ground "SG" of each FS-485G to remove the earth potential difference of each node on the network..

3, the cable length from each FS-485G to the bus (extension) is no more than 15 m, otherwise will cause echoes and affect the normal communication of system. Best scheme is to parallel connect FS-485G directly to the RS485/422bus.

4, For the setting of terminal resistance, the role of terminal resistance is to eliminate the waveform distortion caused by the reflection of signal in the communication lines. Please turn the termination resistor setting switch K2 witch is on the FS-485G of the communication line's terminal and initiating terminal to "R" (connect 120 ohm terminal resistance), the terminal resistance setting switch K2 of other FS-485G to "OFF" (terminal resistance is unacceptable).

5, when the FS-485G and other equipments' RS485/422communication interface are connected, please connect 120 Europe terminal Resistance and two 1 K pull-up and pull-down resistances in the receiving terminal of the final equipment's RS485/422, as Shown below:
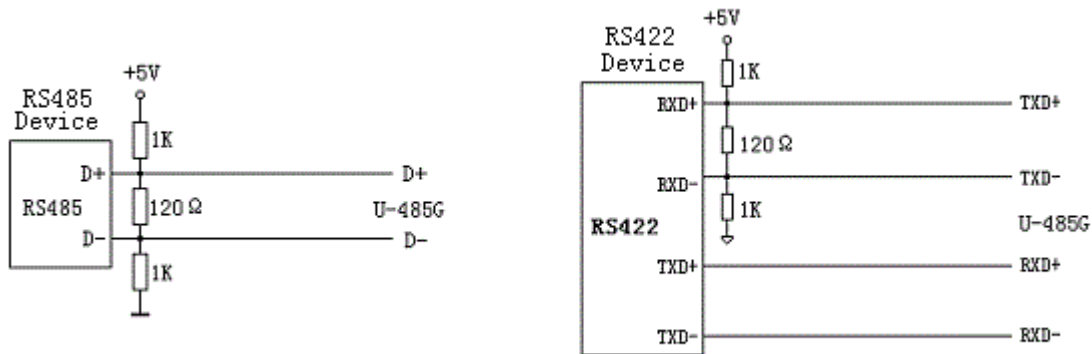
The 120 Ω resistances in the picture is terminal resistance. They are to prevent the signal reflection in the line. 1 K resistances are the level-pull-up resistor and level-pull-down resistor respectively. Its role is to ensure the line is logic "1" when the line is in leisure so that the data bits in cease - to prevent the reception error.

6、when the communication procedures are in full-duplex mode, can only use four-wire full-duplex RS422 connection. When the communication procedures use half-duplex way, can use second-line half-duplex RS485or four-wire full-duplex RS422 connection. The addresses of each node are determined by the internal procedures of the equipment.

7、can not extend the USB interface cable.

8、Annex: a CD-ROM drivers is with the product.