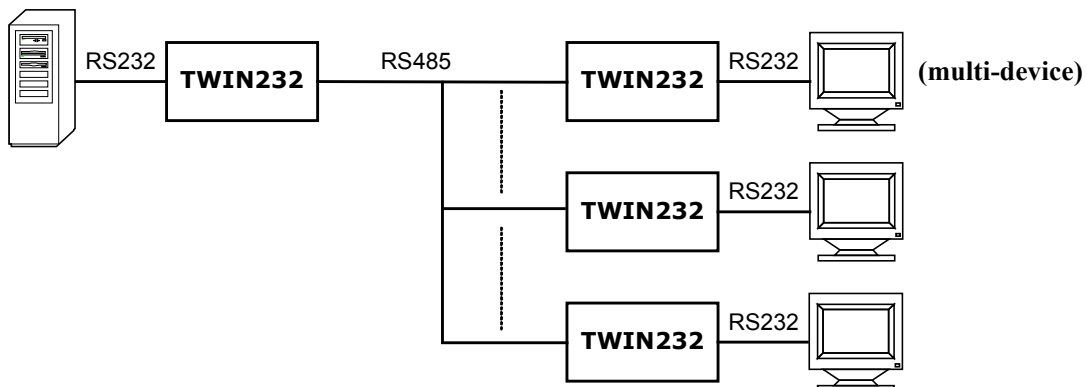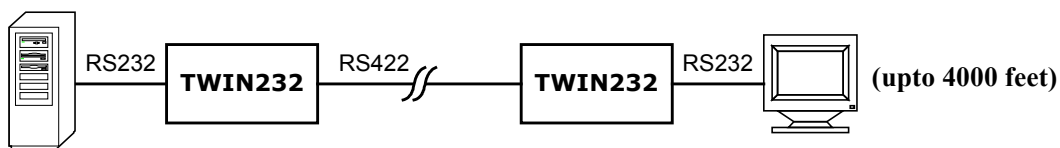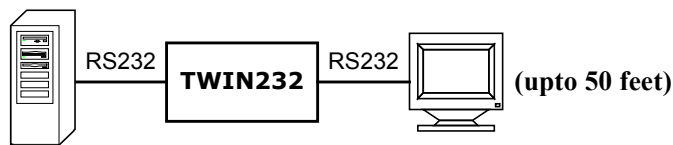# RAYON's Interface Converter Product Line

Generally one PC's COM port is RS232 interface. RS232 interface is common ground signal transmission method. So we can't use RS232 interface to connect long distance equipment. Generally we can use RS232 interface for 15 meters (50 feet) connection. But some people may connect up to 50 meters. But it is based on try and error condition. We may need to use RS422 or RS485 interface for long distance application. Because RS422/RS485 interface may use differential signal transmission method, so we can support long distance requirement. Generally we can use RS422/RS485 to connect up to 1200 meter (4000 feet). We can use RS422 repeater or RS485 bridge to extend connection distance. So we may need RS232 to RS422/RS485 converter to let PC COM's COM to connect remote equipment. We may need RS422 repeater and RS485 bridge for more longer distance connection.

Because we may see some GROUND potential difference between two equipments. Such GROUND potential difference may let data communication with error data. When the potential difference is too large, the interface IC may be damaged. In this rigid application environment it is very important to have GROUND isolated feature to protect our device.

RAYON's interface converter product line can have different models to meet different requirement. The first one is TWIN232DBI box. TWIN232DBI box is RS232 to GROUND isolated RS232 and RS422/RS485 converter. For RS232 user TWIN232DBI box can support RS232 GROUND isolated feature for safety consideration. When user have some problem between PC COM port and RS232 equipment. Firstly We can add one TWIN232DBI box between PC COM port and RS232 equipment. This RS232 GROUND isolator can solve the signal ground potential difference problem. If this action could not solve the problem, we may need to check the distance between PC COM port and RS232 equipment may be too far to use RS232 interface. When the distance between PC COM port and RS232 equipment is longer than 15 meters, we may need to use RS422 interface for long distance connection up to 1200 meters. In this condition TWIN232DBI box can convert PC COM's RS232 interface to RS422 interface. We can have two TWIN232DBI boxes for PC COM port and RS232 equipment to use RS422 connection between both site. Or you can change your equipment from RS232 interface to RS422 interface. So you can have TWIN232DBI box to protect your PC connection with any interface type.

TWIN232DBI box can support RS232 to GROUND Isolated RS232 and GROUND Isolated RS422/RS485 simultaneously with triple isolated feature. For cost effective solution we can have UCON301-I box or UCON310-I box with RS232/RS422/RS485 to GROUND Isolated RS232 or RS422/RS485 feature only.
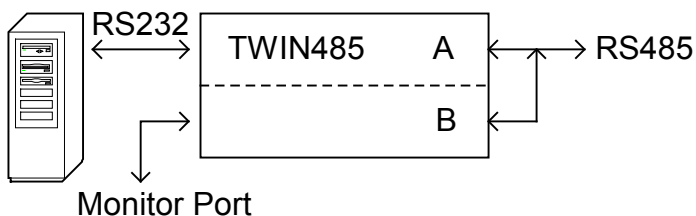
RAYON's TWIN485 box can support two sets RS232 to GROUND isolated RS422/485 interface converter with RS422 repeater and RS485 bridge function. It is multi-function interface converter box. Traditionally we need one RS232 to RS422/RS485 interface converter for PC to use in RS422/RS485 environment. Then we need one RS422 repeater for distance extension. Or we need one RS485 bridge for multiple RS485 segment split. Now TWIN485 can work in standard mode to support two sets RS232 to GROUND isolated RS422/RS485 converter. From cost consideration we can have less cost for each converter share. From backup consideration we can have two converter in one box. When one converter is failure, we can use the other converter to work. In this condition you have two possible application structures. In first structure you just use one converter for normal operation. When engineer find such converter is failed, they just need to change the connection from such converter

to another converter in the same box. In the other structure you can use one converter as working one and use the other converter as monitor one. So we can monitor all activity in RS485 network from this monitor converter. When we find error condition in RS485 network, you can use the data log in this monitor one to find the possible reason. If we found the working one failed, we can use monitor one as working one immediately.

TWIN485 box can be set in special bridge mode. In this mode we can have RS232 port A to send/receive data from RS422/485 port A & B. The data between RS422/485 port A & B is duplicated to each other. So we can have RS422 repeater function or RS485 bridge function between RS422/485 port A & B. It means that you can have two RS485 segment for PC COM port to work with TWIN485 box in this mode. In traditional structure you need one RS232 to RS485 converter and one RS485 bridge for PC COM port to support two RS485 segment. Now you just need one TWIN485 box to support two RS485 segment.
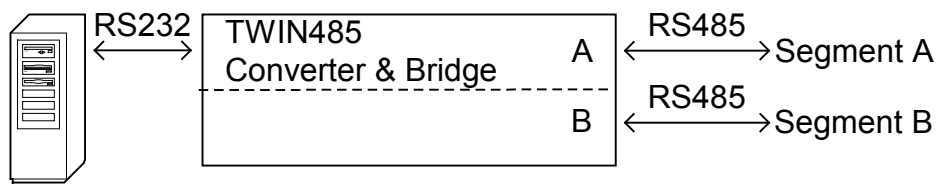

From investment and maintenance consideration you need to buy RS232 to RS422/485 converter box and RS485 bridge box in traditional RS485 application environment. Now you just need to buy TWIN485 box in your RS485 application environment. When you need to keep both type boxes in stock for maintenance, you need to pay more money. Generally we are always short of the box type for maintenance. For example you may have converter box in stock and you always need the bridge box without stock. When you use TWIN485 box, you never have such problem. Because you just need to keep one type of box in stock.

In RS485 application environment it is not easy for us to find the problem in data transmission error condition. We need to let many RS485 equipments to be connected together. When we have RS232 to RS485 converter to be used in RS485 network, it is more difficult to find the problem. Because RS232 is full duplex communication and RS485 is half duplex communication. When we have problem in data communication. It may be wrong in RS232 receiver of RS232 to RS485 converter from RS232 equipment. It may be wrong in RS485 transmitter of RS232 to RS485 converter to send in RS485 network. It may be wrong in RS485 receiver of RS232 to RS485 converter to receive from RS485 network. It may be wrong in RS232 transmitter of RS232 to RS485 converter

to send to RS232 equipment. Because you have logic conversion function between RS232 interface (full duplex) and RS485 interface (half duplex) in converter.

   RAYON's ULOG485 converter box can help you to solve your problem. In converter function ULOG485 box can support two set RS232 to RS422/RS485 converter. Port A (RS232) and port C (RS422/RS485) is one set converter. Port B (RS232) and port D (RS422/RS485) is another set converter. In debug function ULOG485 can have USB to four serial ports converter (port A,B,C,D) to receive data from each serial port. In normal RS232 to RS485 converter application all data received in serial port (port A,B,C,D) will be transmitted to PC via USB. So we can monitor such data in PC to find the problem. All the data communication in RS232 to RS485 converter will be monitored in PC without interrupt the converter function. We can also transmit data from PC to target serial port to simulate the data is received from RS232 to RS485 converter's other site and transmit in this site. So ULOG485 box is very good RS232 to RS485 converter with monitor feature.
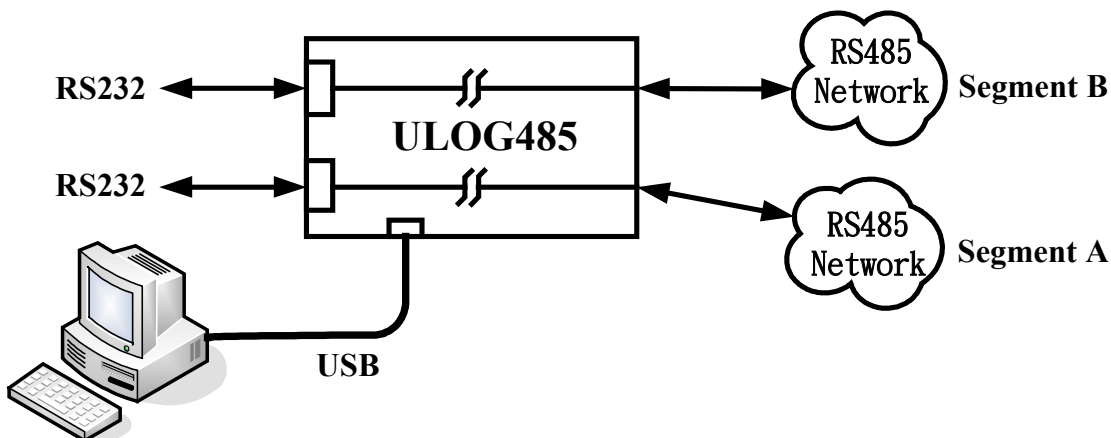
   For more interface converter application environment we can have RS4232-4 and RS4232-8 box to be used. RS4232-4 box can support four sets RS232 to GROUND isolated RS232/RS422/RS485 converter. You can see RS4232-4 box as four TWIN232 boxes. Each converter can be set to RS232, RS422 or RS485 interface by DIP switch. It can be RS232 to RS232 GROUND isolator. It can be RS232 to RS422 interface converter for full duplex long distance connection. It can be RS232 to RS485 interface converter for half duplex multi-drop application. RS4232-8 box can support eight sets RS232 to GROUND isolated RS422/RS485 converter. You can see RS4232-8 box as four TWIN485 boxes. Generally you can use RS4232-4 box to work with RAYON's A402 or P584U card to support four serial ports with GROUND isolated RS232, RS422 or RS485 interface. You can use RS4232-8 box to work with RAYON's A480 or P588U card to support eight

serial ports with GROUND isolated RS422 or RS485 interface.

   Now, you can find RAYON's products are more cost effective and more flexible for user. You can get more features in one box.
   RAYON's iLOG485 box can support RS232 to GROUND isolated RS485 converter with monitor function from IP network. We can have two virtual COM ports in Windows system to send and receive data in RS232 serial port and RS485 serial port. In normal condition we may just need to monitor the data conversion function in RS232 and RS485 serial port. All the data received from RS232 serial port will be converted to RS485 and also send to remote virtual COM port to record. All the data received from RS485 serial port will be converted to RS232 and also send to remote virtual COM port to record. When we may have some problem in RS485 communication, we may need to find possible reason. So we can check the data recorded in remote virtual COM port to analyze possible reason. Generally we may install RS232 to RS485 converter in rigid environment. It is not suitable for man to stay in such area long period. To use iLOG485 converter box we can record data in remote virtual COM port and analyze converter function. Then we can know the possible reason for malfunction. So we can fix such problem by man in short period. We can also send data from remote virtual COM port to RS232 serial port or RS485 serial port. So we can simulate RS232 device to send data to RS485 network. We can also simulate RS485 device to send data to RS232 host.
   We can have more option in special application environment. Please send mail to rayon@ms1.hinet.net or info@rayontech.com.tw for more support and we can work with you.