# Q: How to link serial devices through RS-485 on XP-8000?

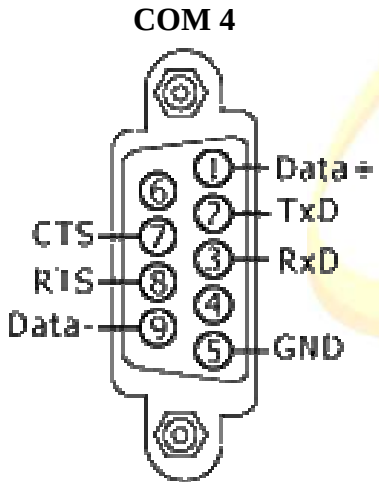
*Applied to:*

| *Platform* | *OS version* | *XPAC utility version* |
|---|---|---|
| *XPAC series* | *All versions (WinCE6)* | *All versions* |
| | | |
| | | |
| | | |

XPAC is equipped with two RS485 COM ports (COM3, COM4) which enable the transmission rate up to a maximum of 115.2K bps. The medium for connection is a twisted-pair, multi-drop, 2-wire RS-485 network that can link i-7000, M-7000, RU-87Pn, high profile I-87K modules and the other serial devices.

**Pin assignment of COM4:**

COM3 can be configured as either RS-232 or RS-485, that only can select one at a time and its configuration depends on the pin connections as follows: RS-232 (RXD, TXD, CTS, RTS and GND) RS-485 (Data+ and Data-) there is no software configuration or hardware jumper needed.




**Master/Slaves Settings of COM4/COM3:**

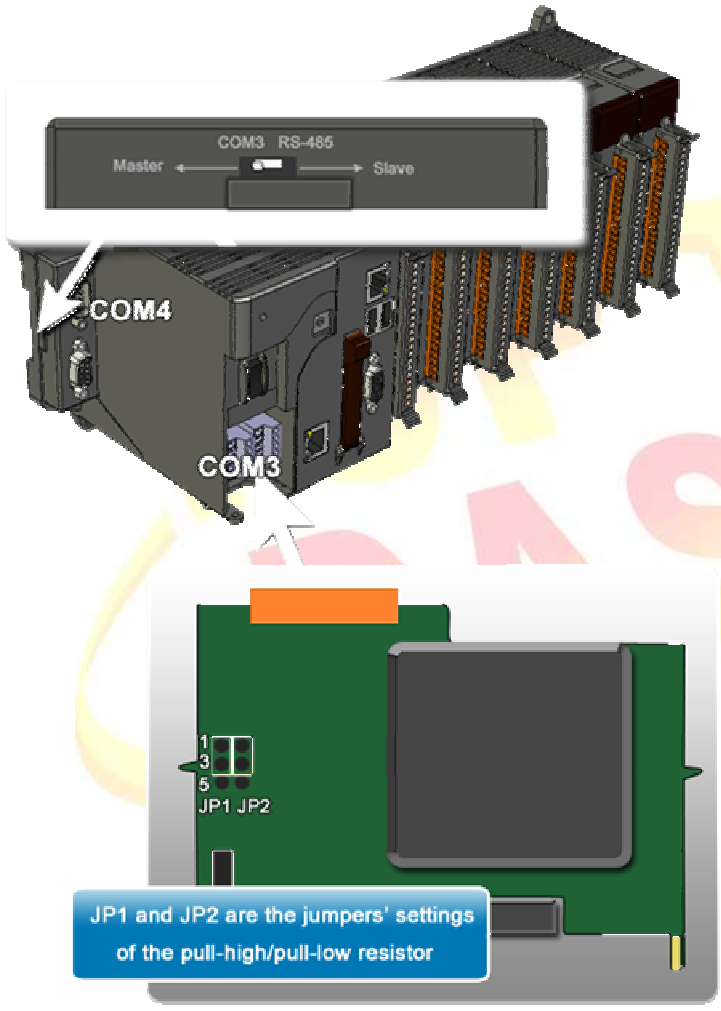
The RS-485 network based on master-slave architecture consists of a single master device and one



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or more slave devices. The XPAC provides two RS-485 communication interfaces based on the master-slave system architecture, all of which have a pull-high/pull-low resistor, user can set it to master or slave for implementing an RS-485 multi-drop network.

One of the RS-485 communications, COM3, its pull-high/pull-low resistor located on power board, the other, COM4, located on the right side and its pull-high/pull-low resistor located on the bottom of the right side, as shown below.




**Tips & Warnings**

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⚠ If XPAC is used as a Slave device on RS-485 network, it's better to use COM3.

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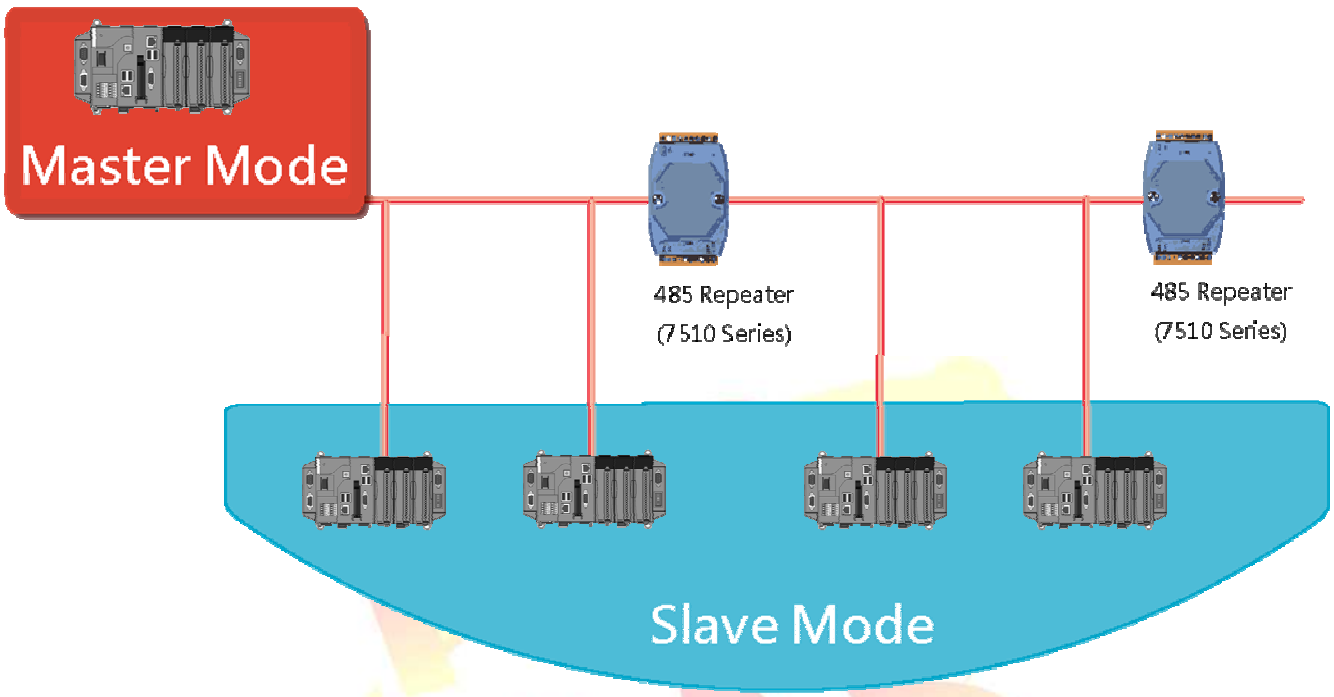
**XPAC as a Master (default):**

When one of XPAC is set to master, then all the other devices on the same network must be slave




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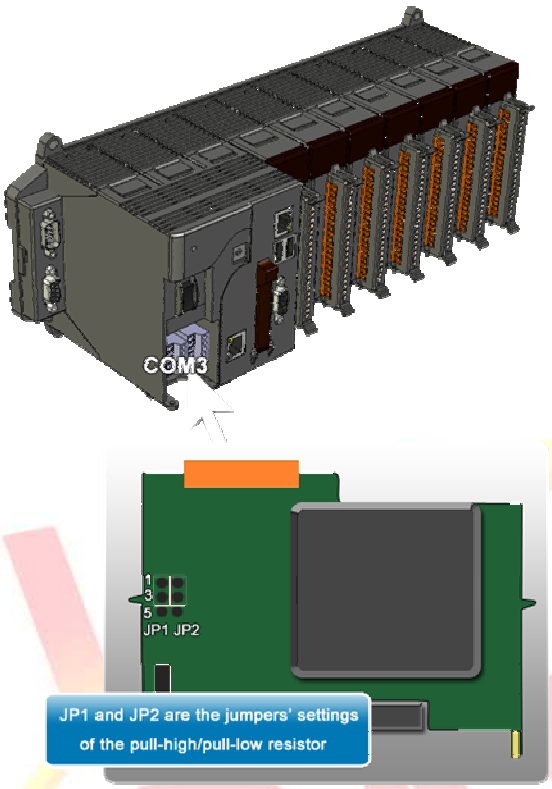
mode. If the network is up to 1.2 KM, it will need a repeater (7510 series) to extend the network length.



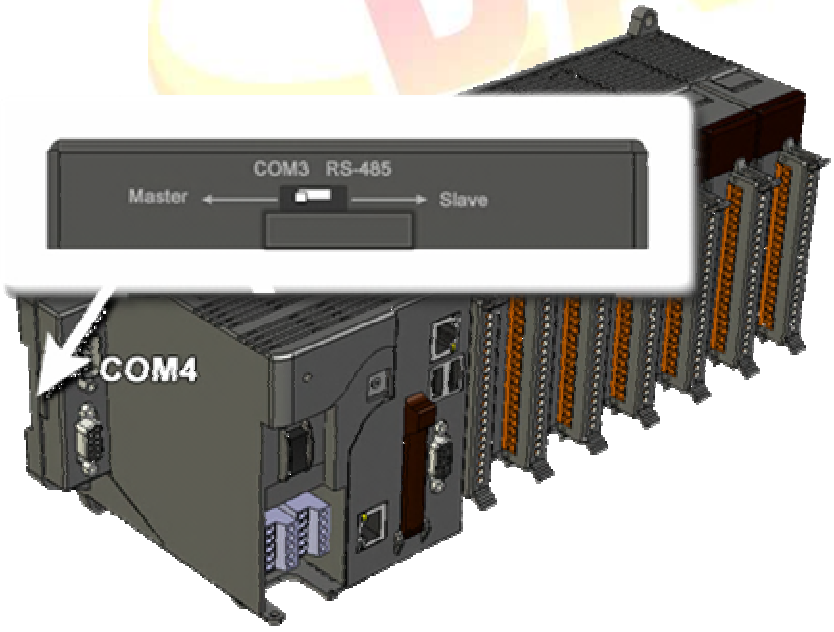



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When XPAC as a master using COM3 communication interface, the pull-high/pull-low resistor located on the power board must adjust to enable as shown below.




When XPAC as a master using COM4 communication interface, the pull-high/pull-low resistor located on the power board must adjust to enable as shown below.

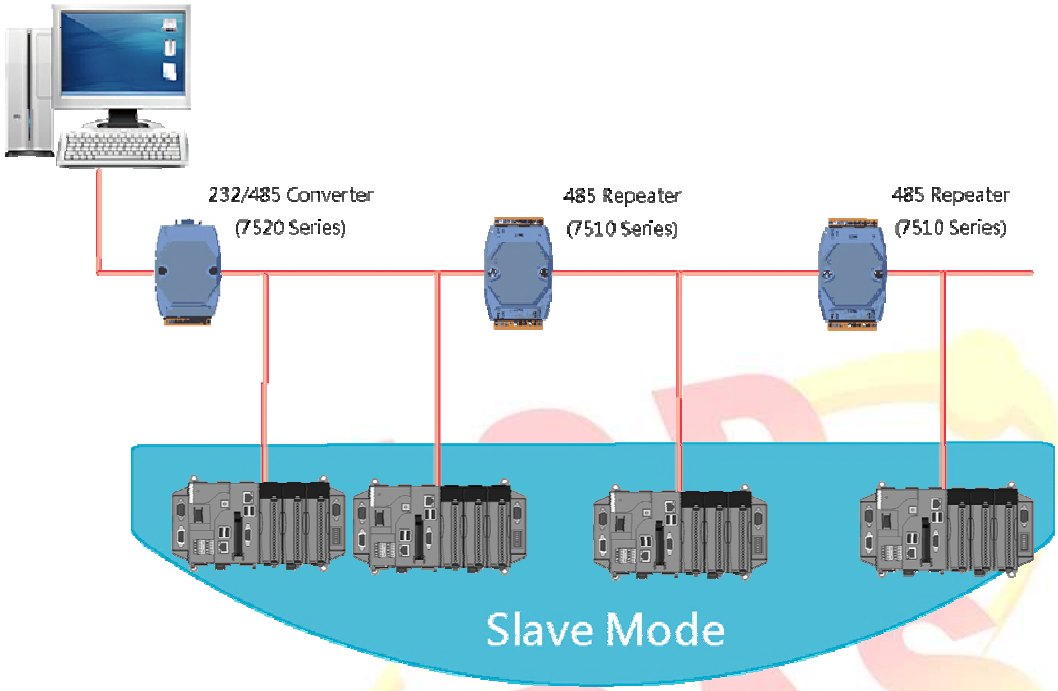





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**XPAC as a Slave:**

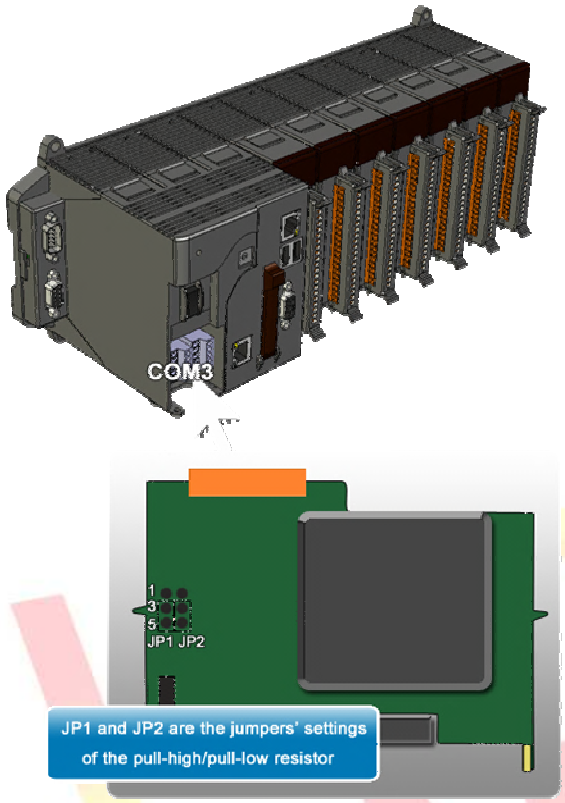
For most of application, when using one 7520 series as RS-232/485 converter, its pull-high/pull-low resistors are set to enabled. Then the XPAC-8000 and all the other devices on this network must be slave mode (the pull-high/pull-low resistors must be disabled). If there are repeaters on the RS-485 network, there will be pull-high/pull-low resistors on both sides of the repeaters (I-7510)



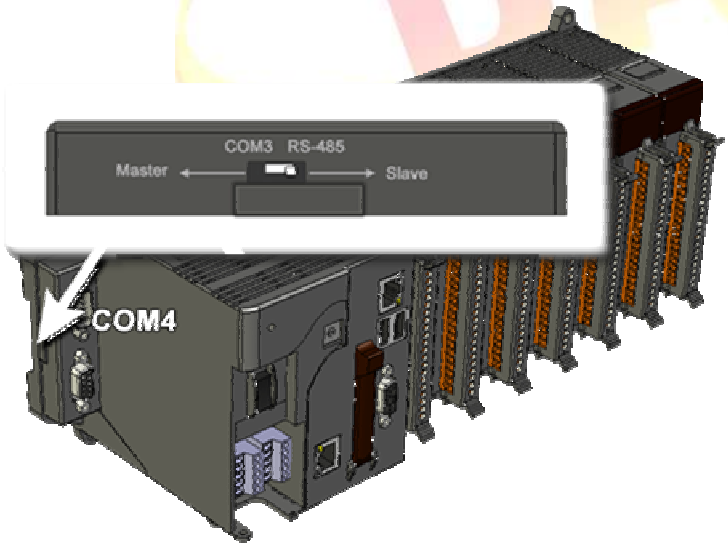

When XPAC as a slave using COM3 communication interface, the pull-high/pull-low resistor located on the power board must adjust to disabled as shown below



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When XPAC as a Slave using COM4 communication interface, the pull-high /pull-low resistor located on the power board must set to “Slave” as shown below.



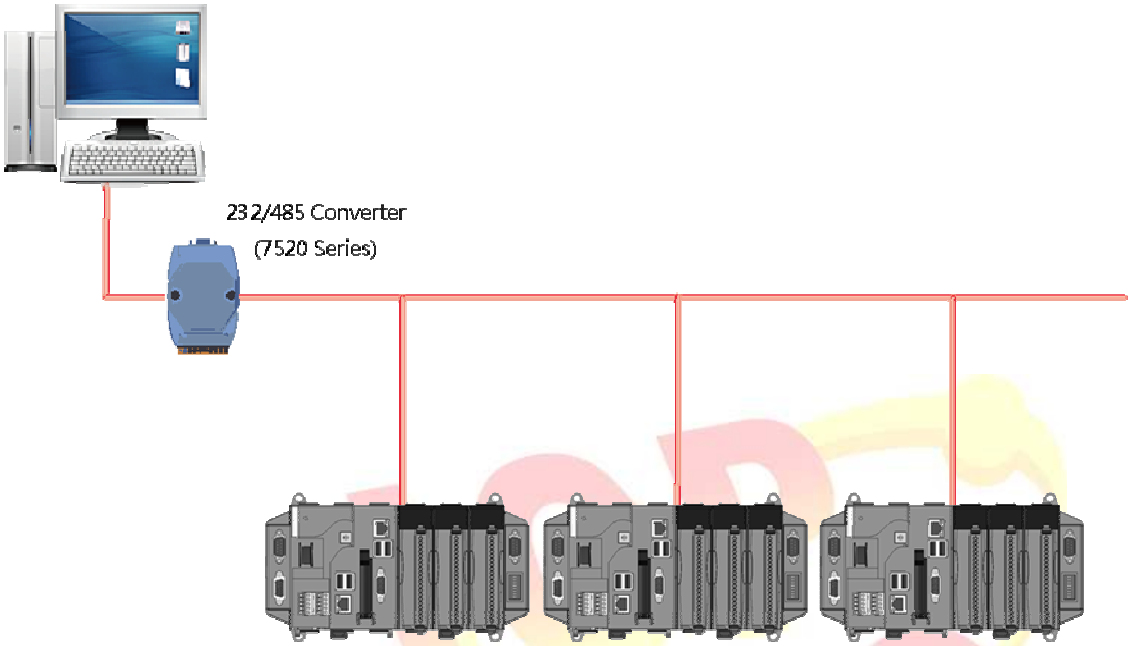



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**Four kinds of RS-485 networks**

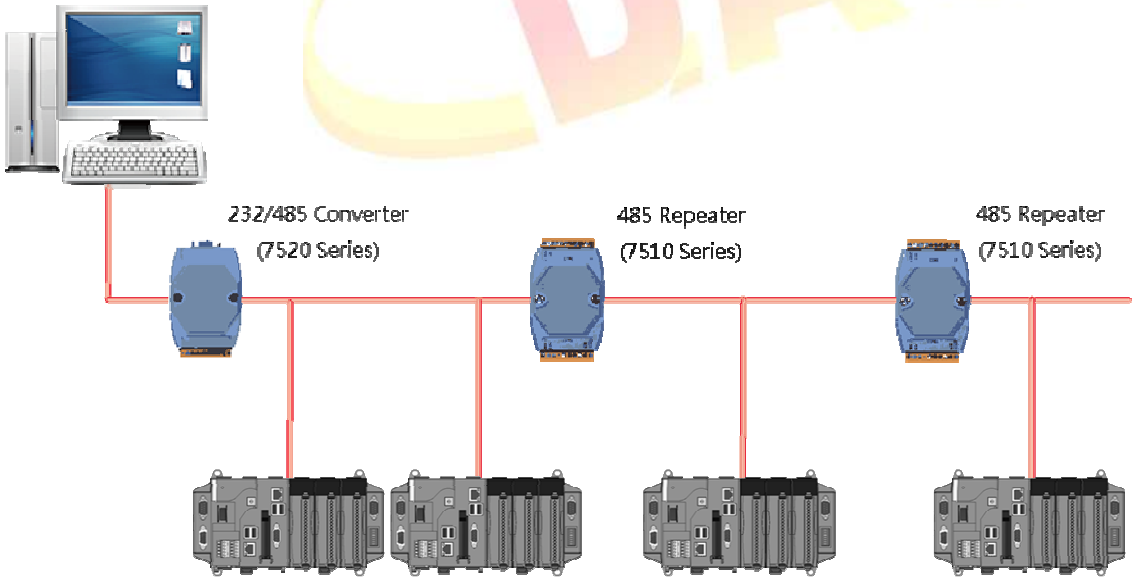
**1. Basic RS-485 Network.**

The basic component of the RS-485 network consist of a Master Controller (or using a PC as a host controller), and some RS-485 devices.




**2. Daisy Chain RS-485 Network.**

All RS-485 devices are wired directly to the main network, if the network is up to 1.2 km, it will need a repeater (7510 series) to extend the network length.

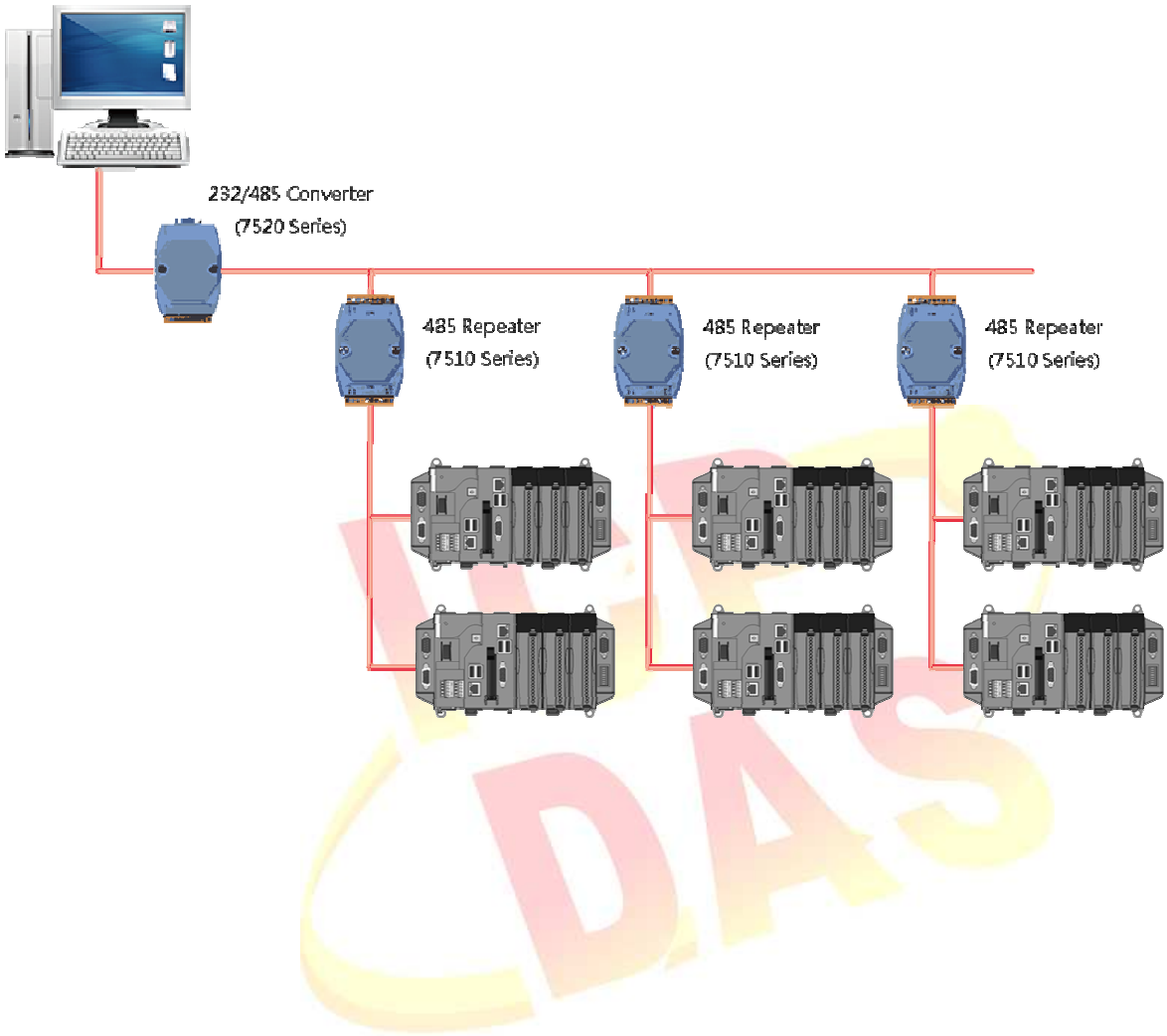





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**3. Star Type RS-485 Network.**

There are branches along the main network. In this case, it is better to have a repeater to isolate or filter the noise that is made by devices.

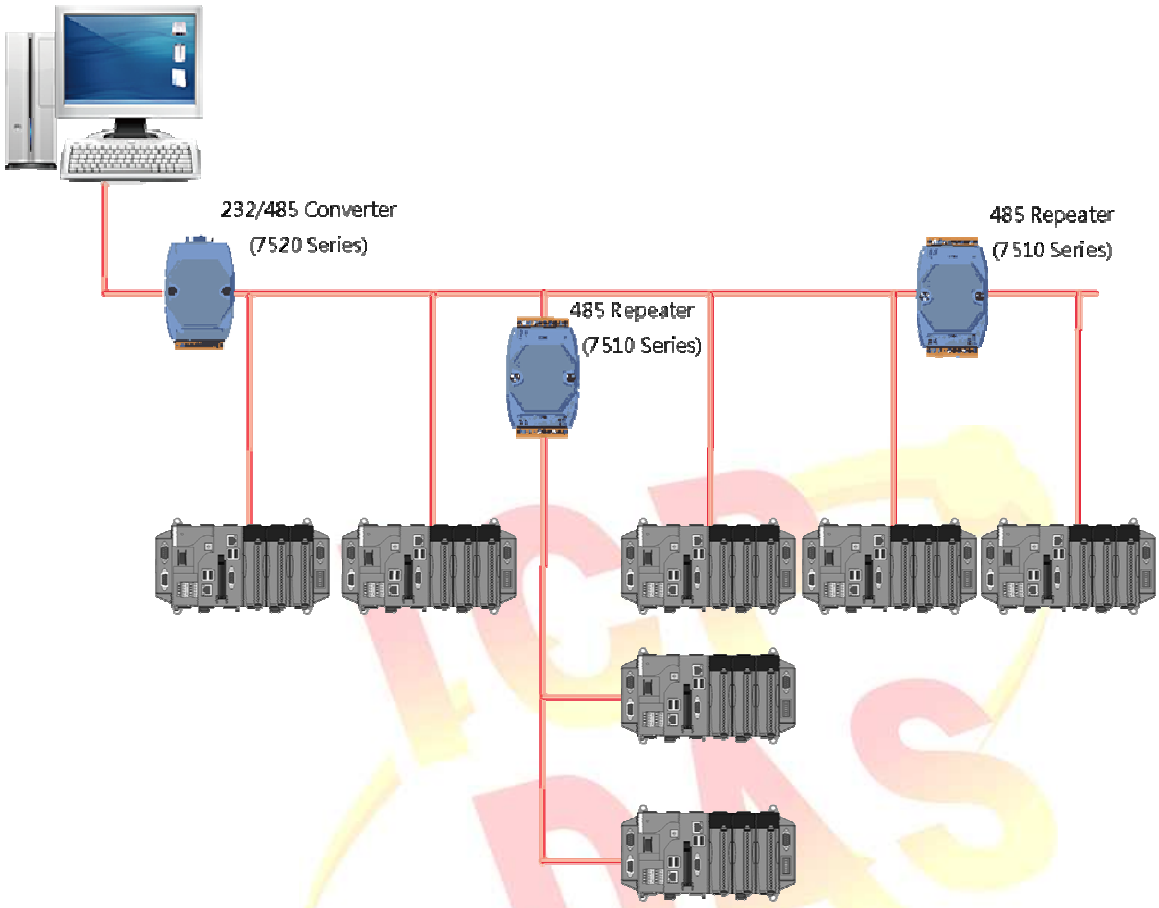





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**4. Random RS-485 Network.**

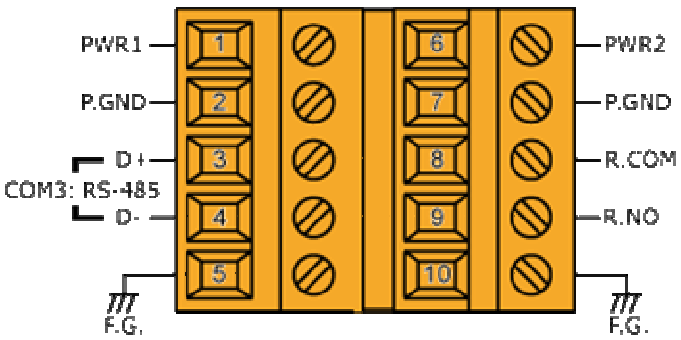
There are branches along the main wire. In this case, it is better to have a repeater to isolate or filter the noise that is made by devices




To link serial devices through RS-485 of COM3/COM4, please perform the following steps:

**COM3 hardware** connection

**Step 1:** Find the pin of Data+ Data- on COM3



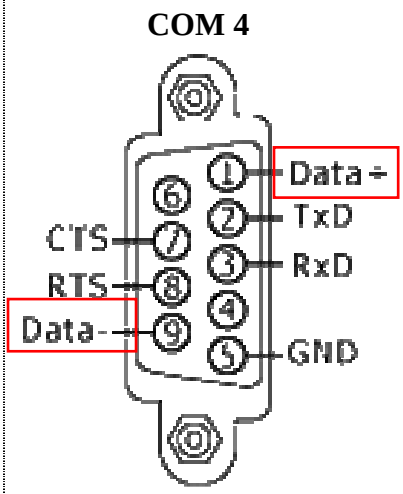

**Step 2:** Connect the “Data+” and “Data-”. (Example below)



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**COM4 hardware** connection

**Step 1:** Find the pin of Data+ Data- on COM4.




**Step 2:** Connect the “Data+” and “Data-”. (Example below)



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