How to link serial devices through RS-485 on WP-9000

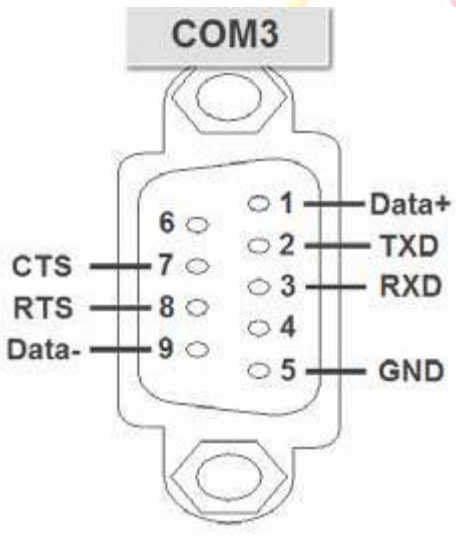
Applies to:

Platform	*OS version*	*PAC utility version*
WP-9xxx	*All versions*	*All versions*
WP-8x2x	*N/A*	*N/A*
VP-x201	*N/A*	*N/A*
VP-x231	*N/A*	*N/A*

N/A: Not applicable to this platform and OS.

WinPAC is equipped with three RS-485 COM ports (COM1、COM2、COM3) which enable a 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 other serial devices.

COM1、COM3 may be configured as either RS-232 or RS-485, but only one can be used at a time. Using RS-232 or RS-485 is depending on the pin connections of which RS-232 (RXD, TXD, CTS, RTS and GND) or RS-485 (Data+ and Data-) is wired without software configuration or hardware jumper setting.



To link serial device to WP-8000 via RS-485 ports, users need to

1. Set the WP-8000 as a master or slave device.
2. Wire the data lines together.

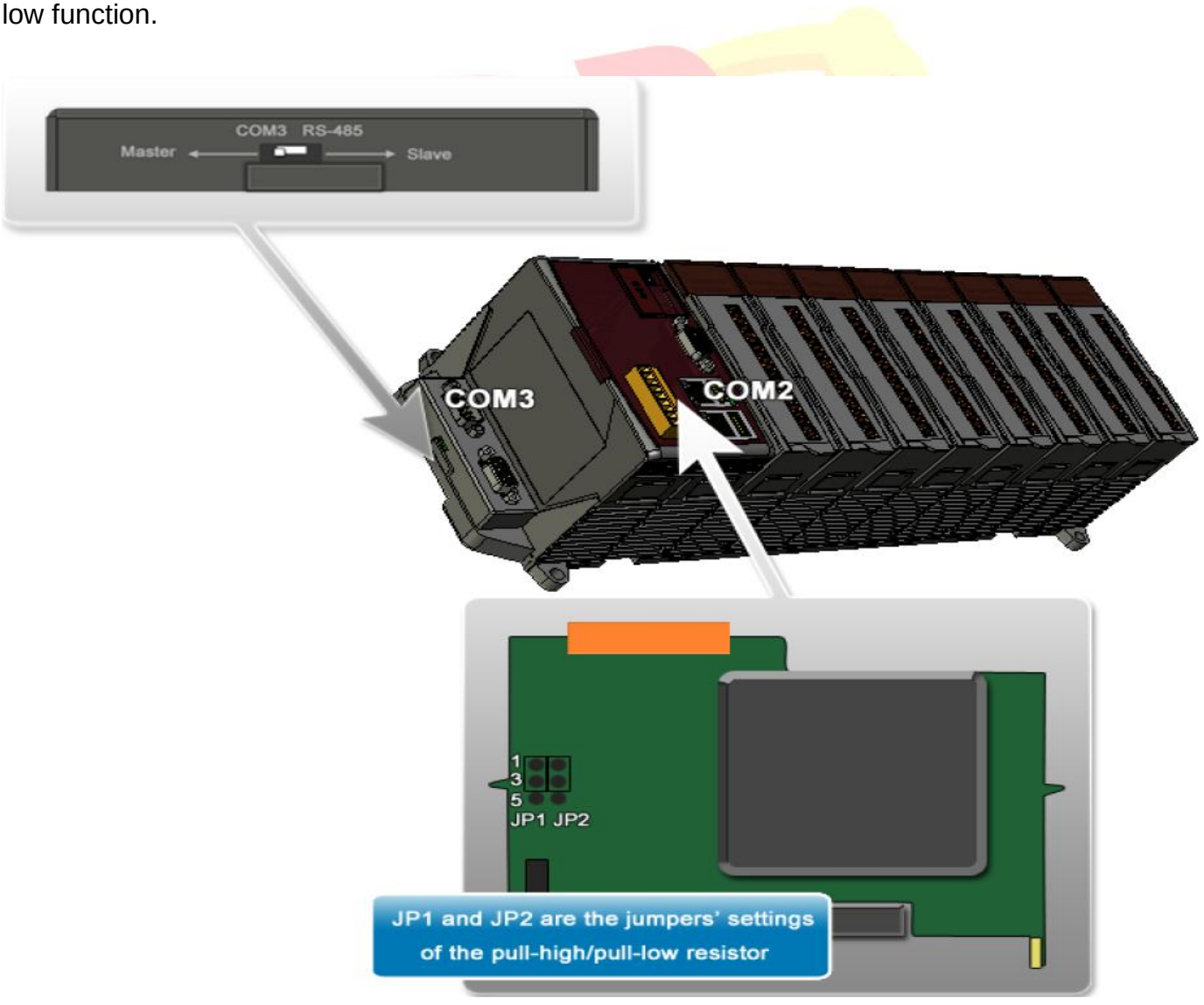
The details are introduced as below.

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Setting COM3/COM2 for defining the WinPAC as a master or slave

An RS-485 network based on a master/ slave architecture consists of a single master device and one or more slave devices. The WinPAC provides two RS-485 communication interfaces, both of which have pull-high/pull-low resistors; the user can set the interface to either master or slave in order to implement an RS-485 multi-drop network.

Pull-high/pull-low resistors of COM2 are located on the power board; setting JP1 and JP2 as below (position 1 and 3) enables the pull-high/pull-low function for as a master. Of COM3, the pull-high/pull-low resistors may be set as enable or disable by switching the switch located on the bottom of the right hand side as shown below. Setting as a master enables the pull-high/pull-low function.



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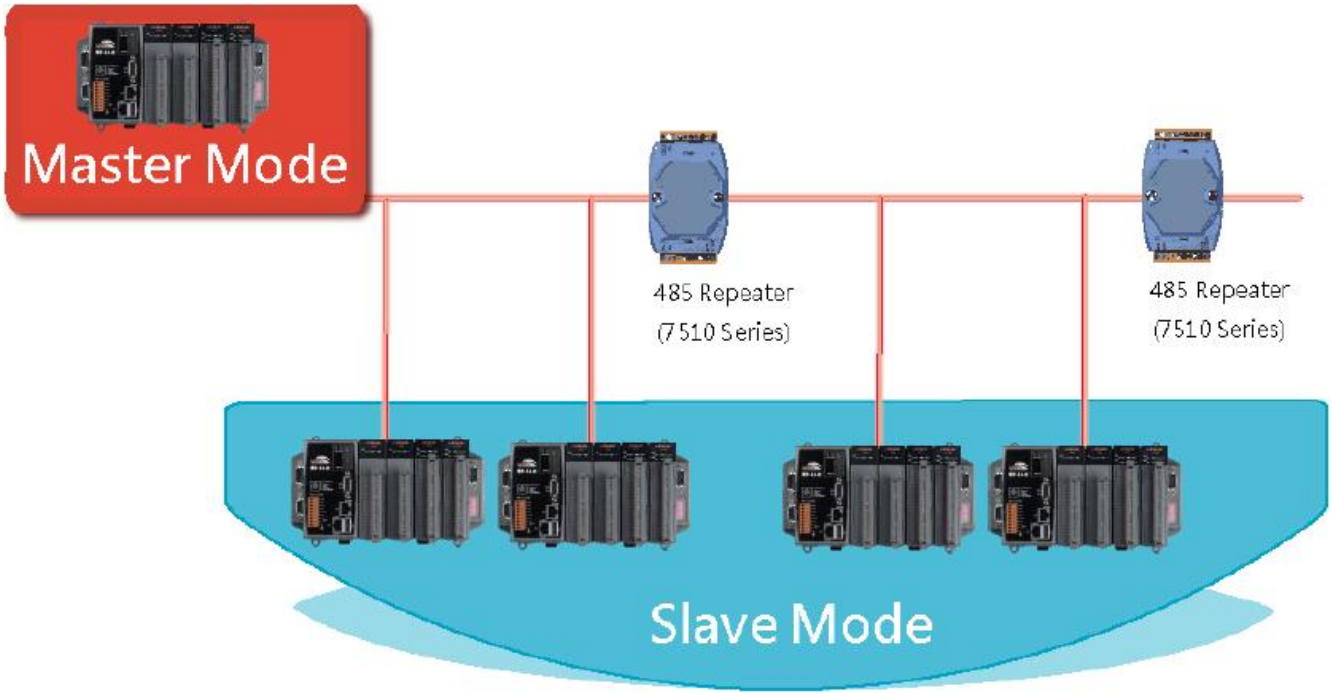
Tips & Warnings



To use WinPAC as a Slave device on an RS-485 network, it is better to use COM3.

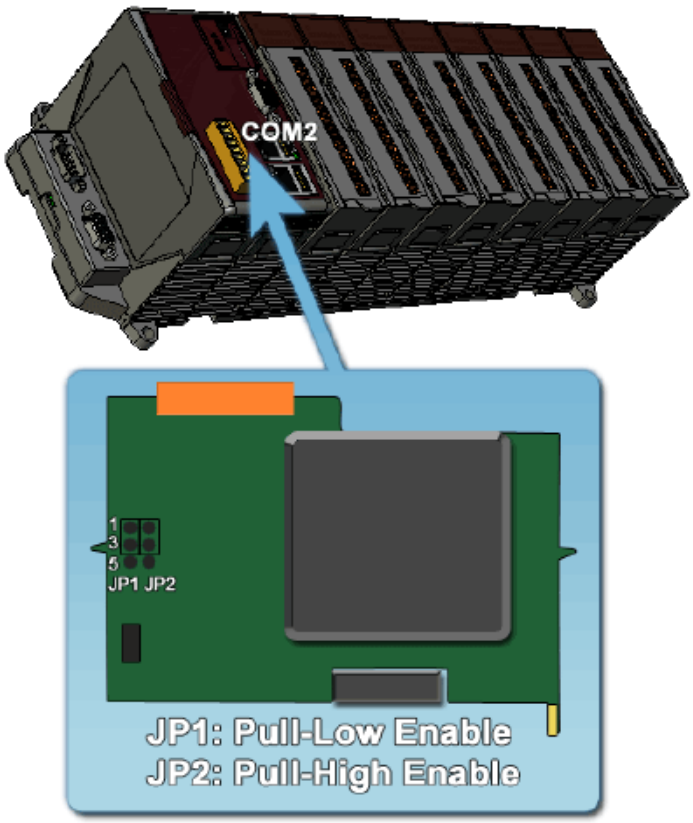
Using WinPAC as a Master (default):

When one of the WinPAC devices is set as a master, then all the other devices on the same network must be set to slave mode. If the total length is more than 1.2 Km, a repeater will be needed (7510 series) in order to extend the network length.

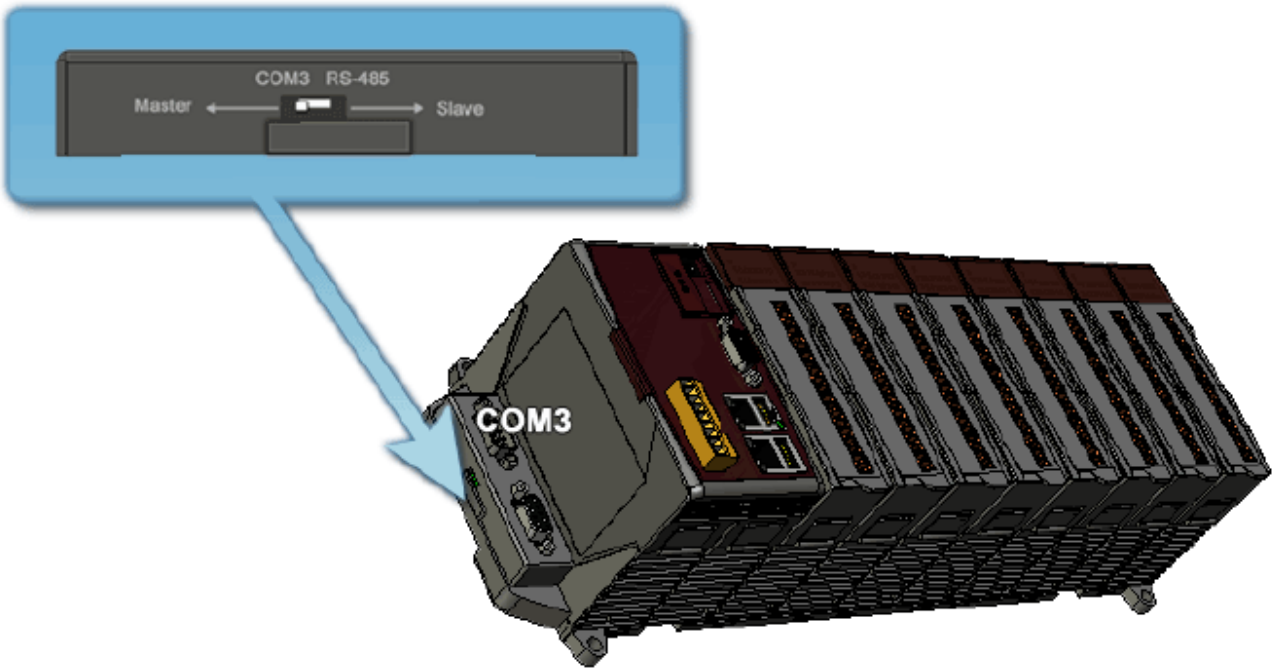


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When the WinPAC is set as a master using the COM2 communication interface, the pull-high/pull-low resistor located on the power board must be set to enable as shown below.



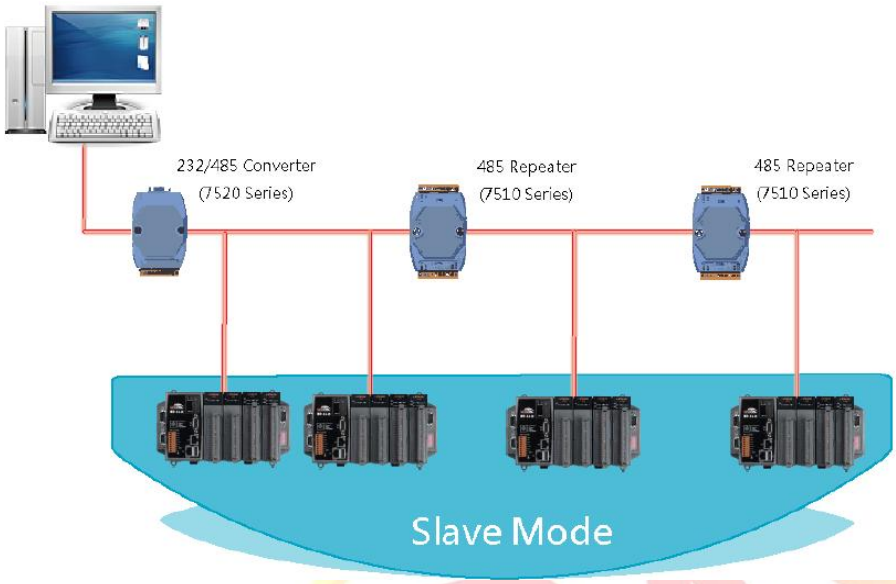
When WinPAC is set as a master using the COM3 communication interface, the pull-high/pull-low resistor located on the power board must be set to enable as shown below.



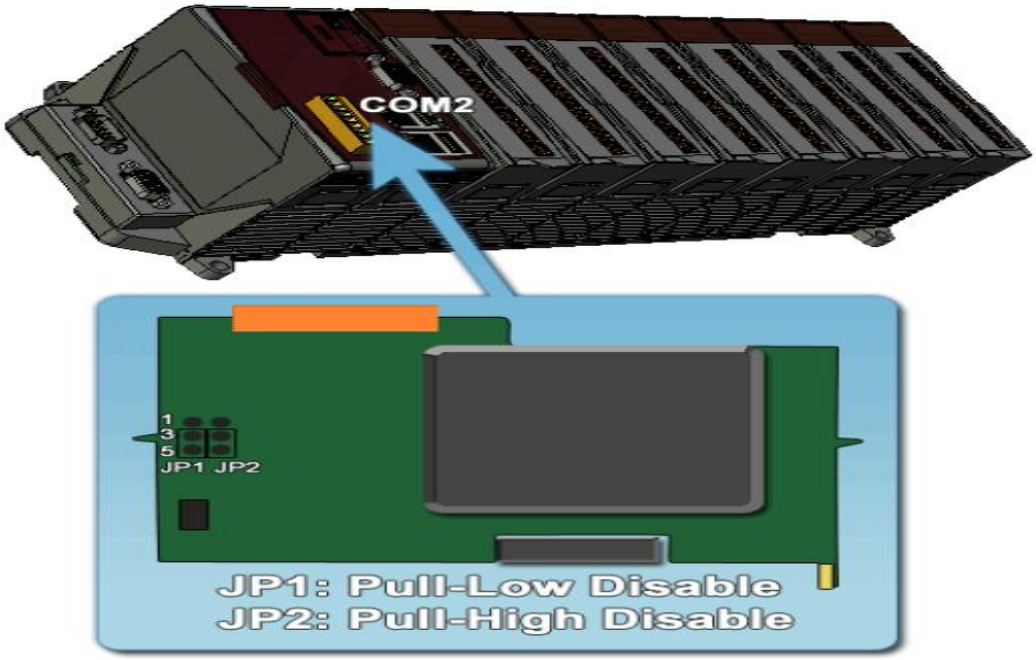
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Using WinPAC as a Slave:

For most applications, when using one 7520 series module as an RS-232/485 converter, its pull-high/pull-low resistors are set to enable. Therefore the WinPAC-8000 and all the other devices on the network must be set to slave mode (disable the pull-high/pull-low resistors). 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)

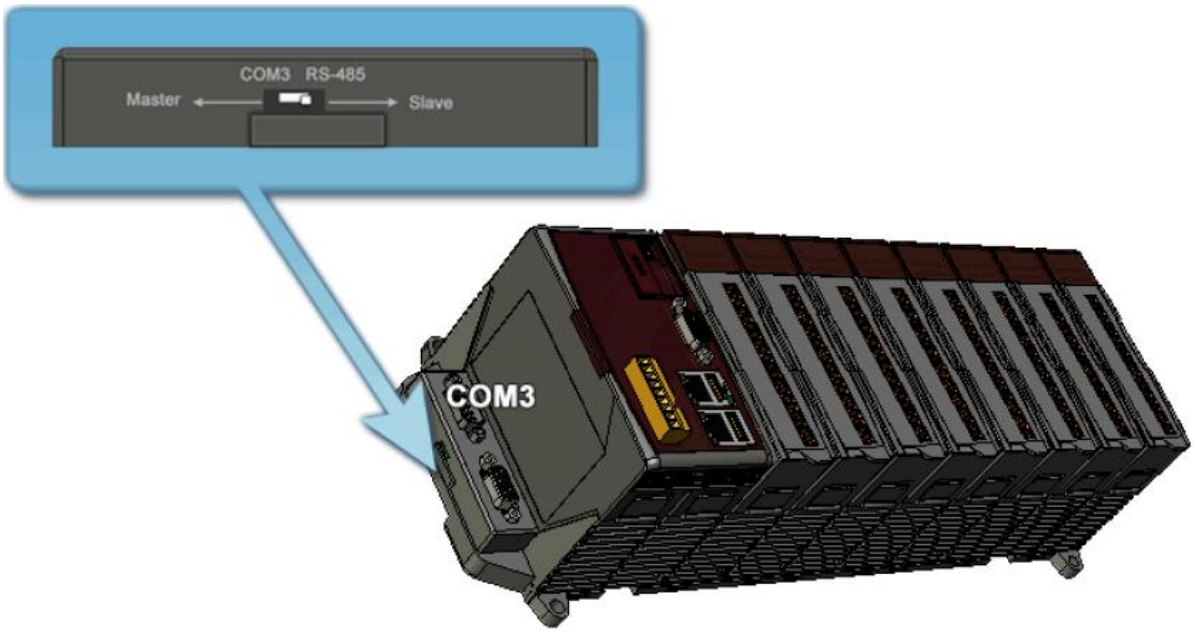


When the WinPAC is set as a slave with using COM2, the pull-high/pull-low resistor located on the power board must be set to disabled as shown below:



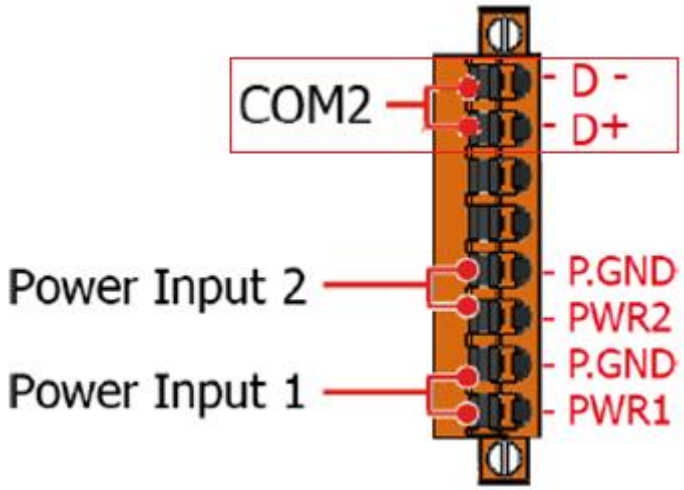
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When the WinPAC is set as a Slave using the COM3, the pull-high/pull-low resistor must be set to “Slave” as shown below.

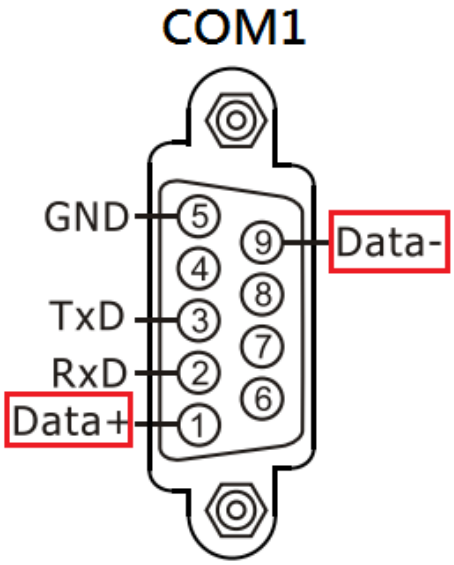


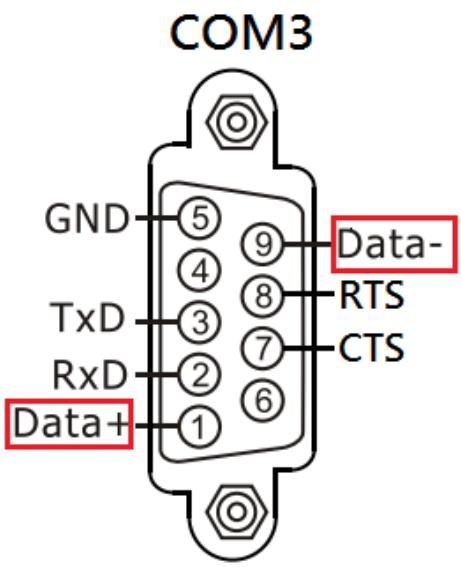
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Hardware Wiring









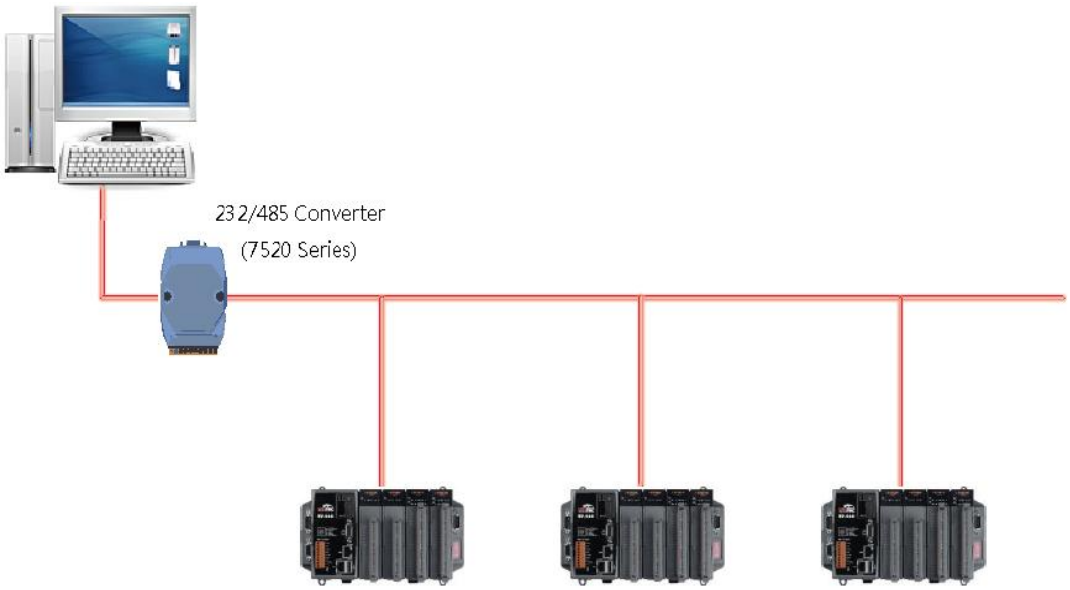


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Four kinds of RS-485 network

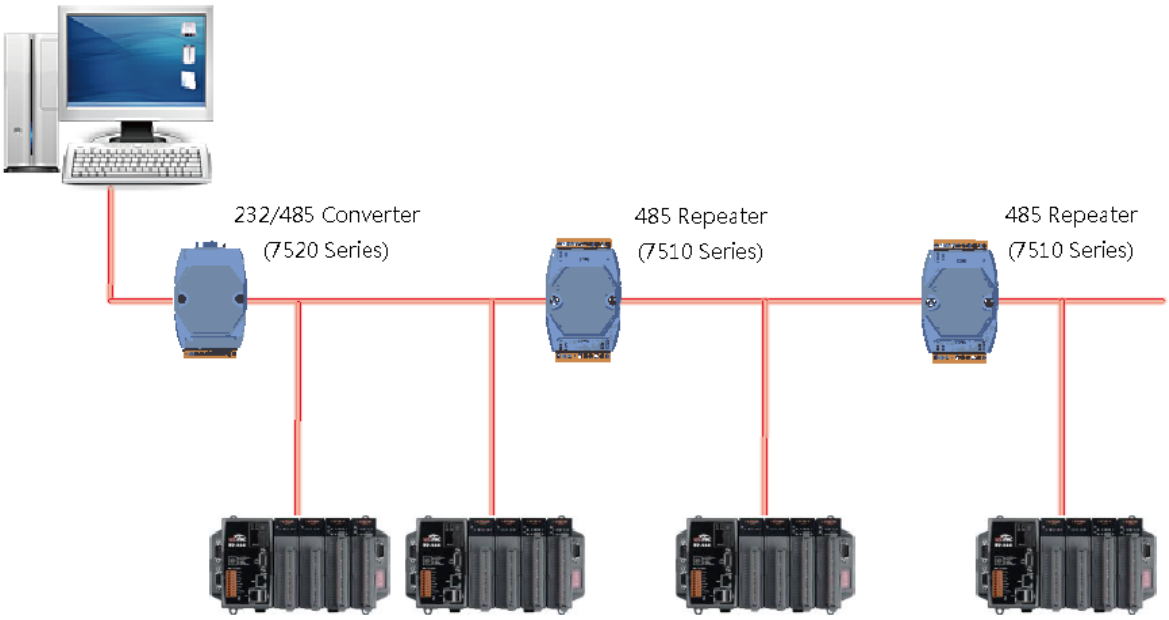
1. Basic RS-485 Network.

The basic components of an RS-485 network consist of a Master Controller (or a PC used as a host controller), and some RS-485 devices.



2. Daisy Chain RS-485 Network.

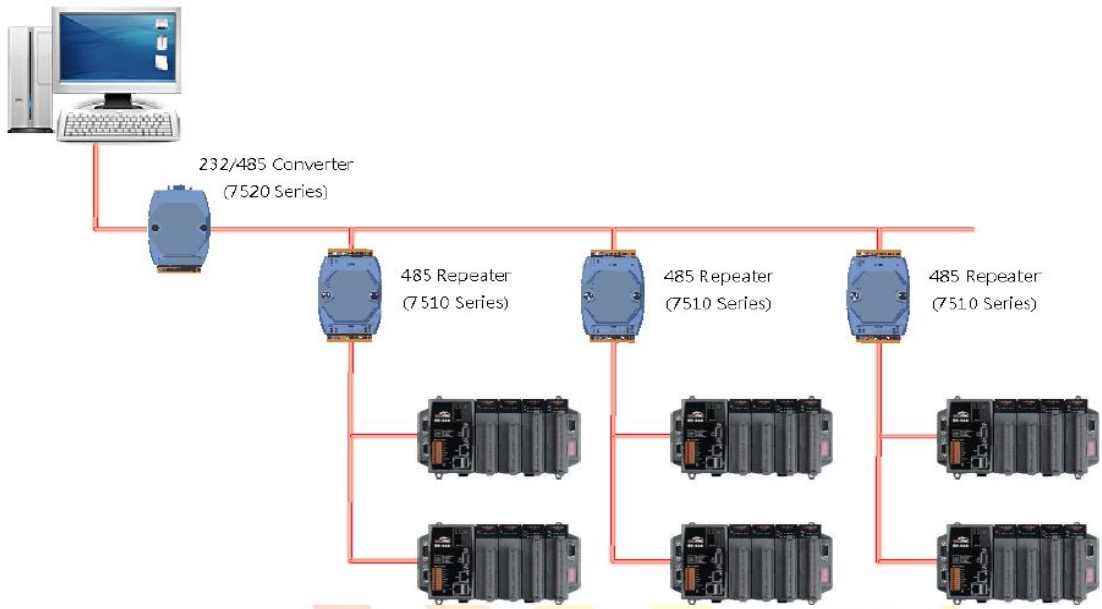
In the formation, all RS-485 devices are wired directly to the main network. If the total length is over 1.2 km, a repeater (7510 series) is needed to extend the network length.



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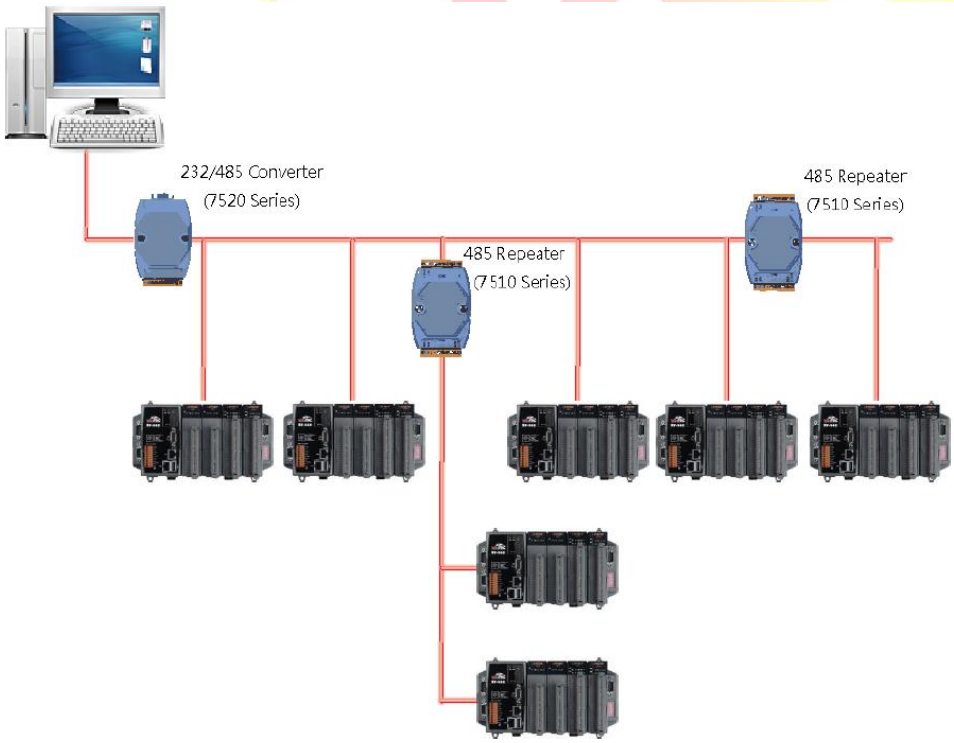
3. Star Type RS-485 Network.

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



4. Random RS-485 Network.

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



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