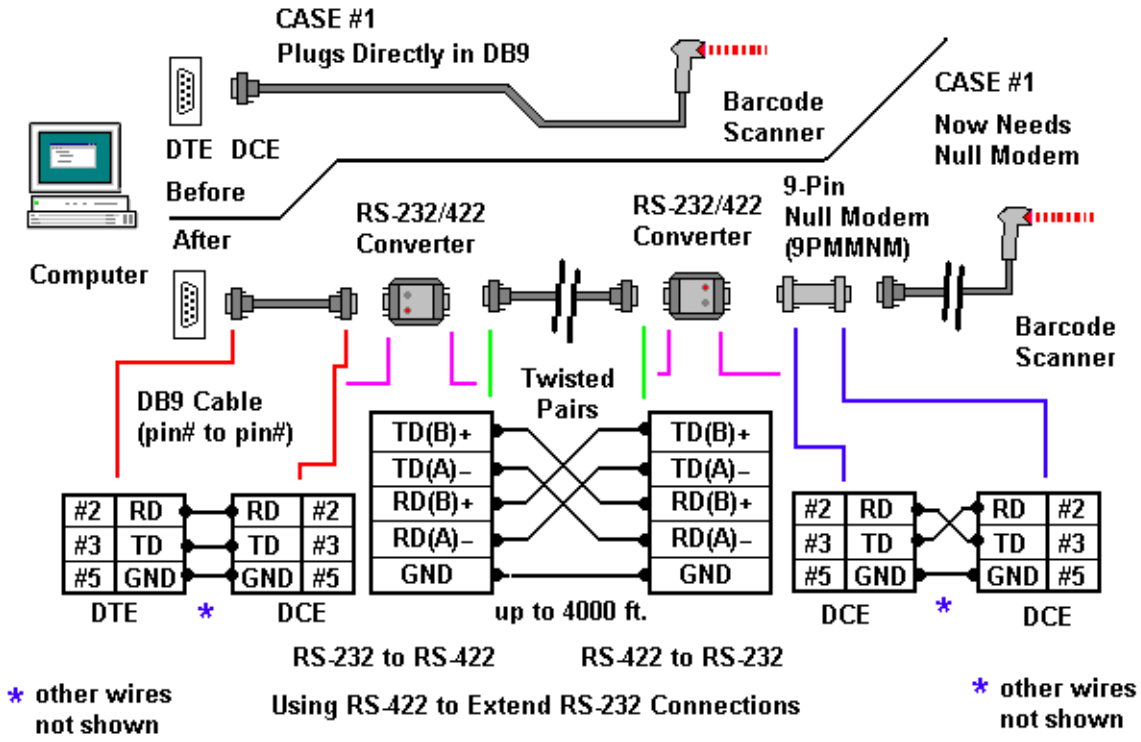
Q: I Want to use RS-422 Converters to Extend RS-232. How do I Connect them?

A: It depends on the two devices being connected, whether they are DTE or DCE devices, how they are connected together before adding a RS-232/RS-422 Converter, how many signal lines are required. This information is for devices requiring only Receive (Rx) and Transmit (Tx) signal only, other devices require more connection pairs.

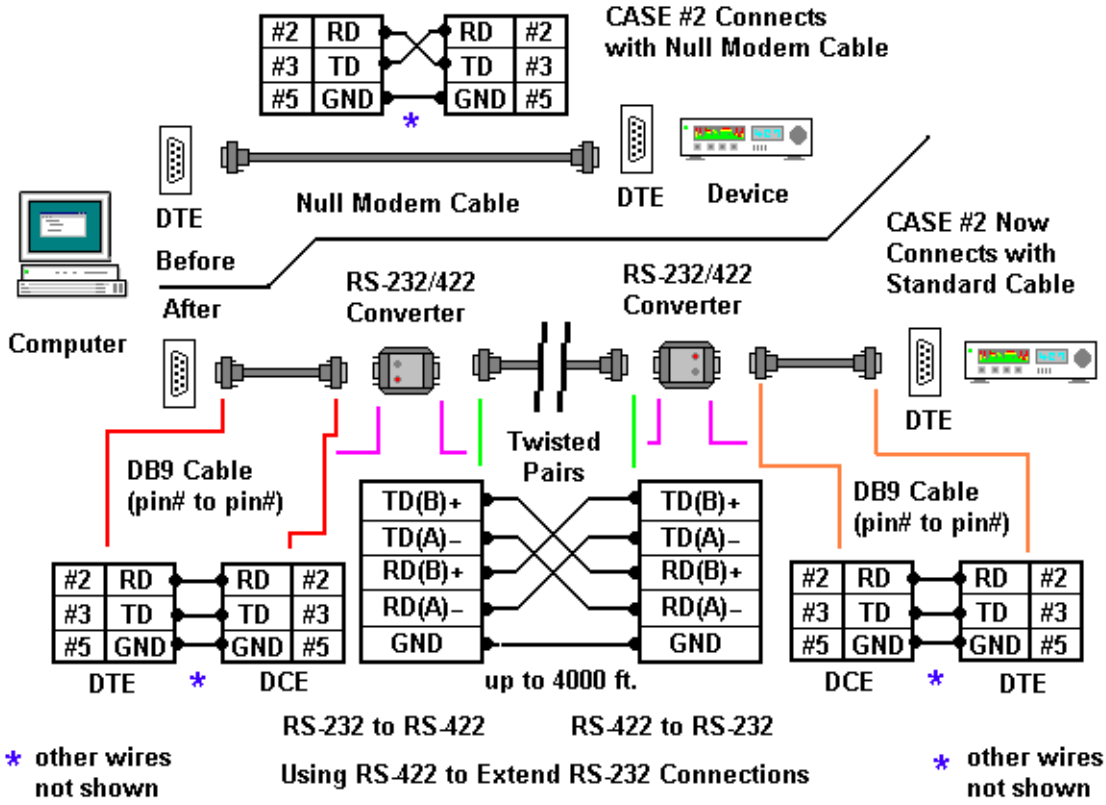
A1: CASE #1: The Device connects directly to the serial port on the Computer. The computer serial port is configured as a DTE port, the device cabling is configured as DCE to connect directly. With this connection, the first RS-422 converter connects with a Standard serial cable wired pin #1 to #1, #2 to #2, etc. The second converter requires a null modem connection between it and the device, since our converter is configured as DCE on the RS-232 side, and the device cabling is also DCE. See the connection diagram for CASE #1.



A2: CASE #2: The Device connects through a Null Modem (Crossover) Cable to the serial port on the Computer. This original connection requires a Null Modem cable because both Computer and Device are configured as DTE. In this case, the first RS-422 Converter connects to the Computer with a Standard serial cable wired pin #1 to #1, #2 to #2, etc. The original Null Modem Cable is set aside, not used. A new Standard serial Cable is connected to the device and the second converter. See the connection diagram for CASE #2. (pg. 2)

A3: CASE #3: In the third case, we want to extend a set of RS-232 connections between two devices, but we don't know how either port is configured. Both devices use DB9F (female) connectors. We have a voltmeter. We know the converters are DCE devices. When powered, the RS-232 output will have a negative DC voltage compared to GND. So, we connect a Standard cable to the device, power it up, measure between Pin #5 of the cable to Pin #3. If it has a minus voltage (usually between –3VDC to –11VDC), connect it to the DB9 connector of the converter. This connection should be okay. If almost no voltage on Pin #3, check Pin #2. If it has the minus voltage, use a Null Modem Connection between the device and converter to swap

the pin connections. If neither has a voltage, you need pinouts for the connector/cable. Make a similar test for the RS-232 connections at the other end. The voltage should be on the cable pin connecting to Pin #3. No Connection diagram for CASE #3, it will either match CASE #1 or CASE #2, but could instead require connections with Null Modem Connections on *both converters if the original cable is not used.*



The pin numbers for the RS-422 connections are not shown, they may vary according to the model, but the signal name will be shown on the data sheet.

In the case of DB25 RS-232 connections, Pin #2 is TD, Pin #3 is RD, and Pin #7 is GND.

Note: These connection figures do not show power supplies or handshaking lines needed to power “port powered” converters. The port powered devices usually need the RTS line and DTR line high (signal level +11 VDC), a power supply may be required for both ends if the RS-422 transmitter voltage is less than 4.4 volts TD(B) to TD(A). For pinouts of RS-232, refer to the FAQ on RS-232 Connections that WORK!.

This information should help you make the connections needed for the most common connections.

- twr28Feb03