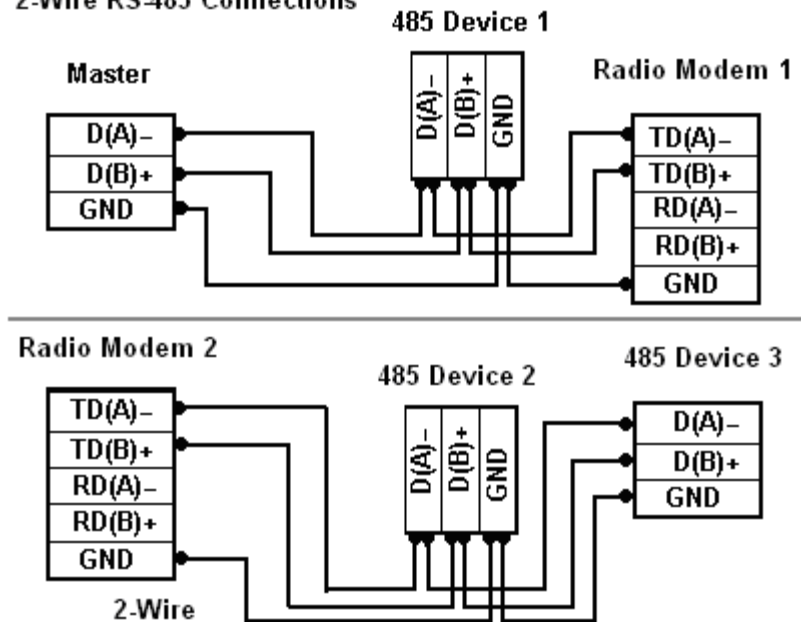


**Q: How Do I Make 2-Wire or 4-Wire RS-485 or RS422 Connections to my ZP Wireless Radio Modems?**

**A:** First check the pinout connections and specifications of the devices you want to connect in order to determine whether you need a “2-wire” RS-485 connection or a “4-wire” RS-422/RS-485 connection. Termination is not required for baud rates 19.2K or lower at distances up to 4000 ft.(1220 m), so it is not shown in the simplified figures which follow. (see note on page 3 regarding markings and pinouts)

**2-Wire RS-485 Connections**



**Figure 1. 2-Wire Connections to Radio Modems**

Set the Switches 1 & 2 Up to ON to bridge the Transmitter and Receiver across the same two wires, set Switch 4 up to ON for half duplex operation (no echo). Switch 3 down/OFF=No Termination, unless your serial baud rate is 38.4Kbps or higher.

If the radio modems are being used to send data in only one direction, the Receive Terminals are the Inputs, the Transmit Terminals are the Outputs. Connect the signal source to the RD(A)-, RD(B)+, and GND. GND is typically a separate connection labeled REF, COM or Ground. If the unit does not have a separate GND lead, and is DC powered, the minus side of the power supply is usually Common to Signal Ground, unless the port is Isolated. One example of output only device is the output of a Truck or Railcar weighing scale with no return communication or the data source for a remote display, or PTZ (Pan/Tilt/Zoom) controlled Camera.

On the radio modem output side, use the TD(A)-, TD(B)+ and GND terminals for the Output connections to the devices, such as a PTZ Camera or other Receive only Device, Remote Scale Display.

*Continued next page...*

4-Wire RS-485 Connections

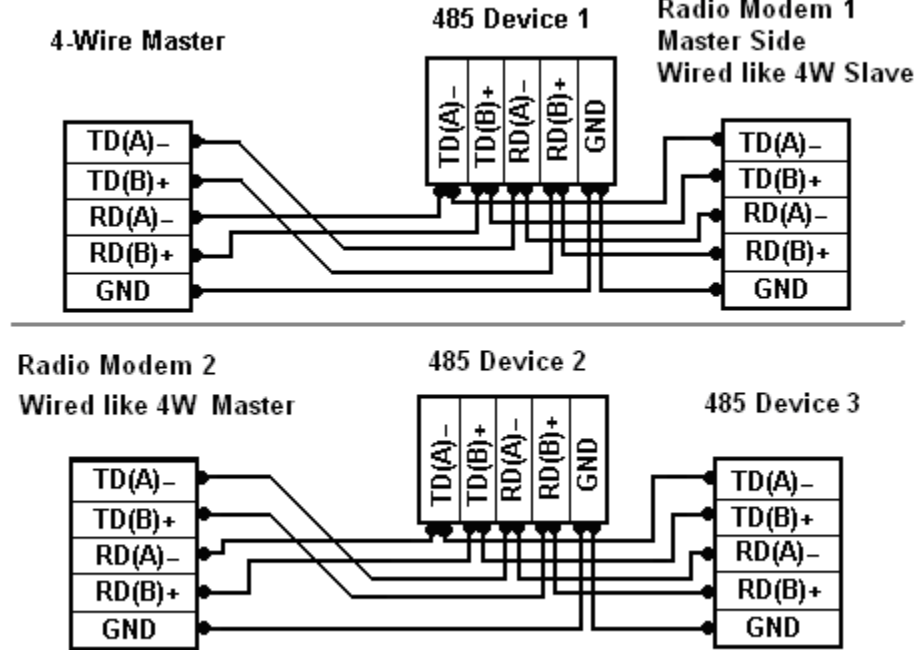


Figure 2. 4-Wire Connections to Radio Modems on Master Side & Remote Side

Set switches 1, 2, 3, & 4 Down/OFF for Full Duplex 4-Wire Operation, No Termination.  
 Termination is not needed at baud rates lower than 38.4Kbps.

**Note on RS-485 Pinout markings:** Sometimes a device will be marked with the polarity reversed from normal RS-485 standards where the Data A or TD(A)/RD(A) line is (+) and the Data B line or TD(B)/RD(B) is (-). In a system with 2-wire connections, try reversing the lines to see if the device will respond. In a system with 4-wire connections, try reversing the receive pair polarity and transmit pair polarity. If the connections are wrong, you won't be able to communicate because the data bits are upside down, but swapping polarity won't damage anything. The marking Rx or Tx may be used instead of TD and RD or in a 2-wire system, TxRx+ and TxRx-, or Dx+ and Dx- for the Data lines. Many naming schemes are in use. RS-485 pinouts also have many variations, there is no single standard pinout arrangement or connector type, DB9, DB15, DB25, RJ-11, RJ-12, RJ-45 or 8 pin DIN connector.

-twr25Feb09