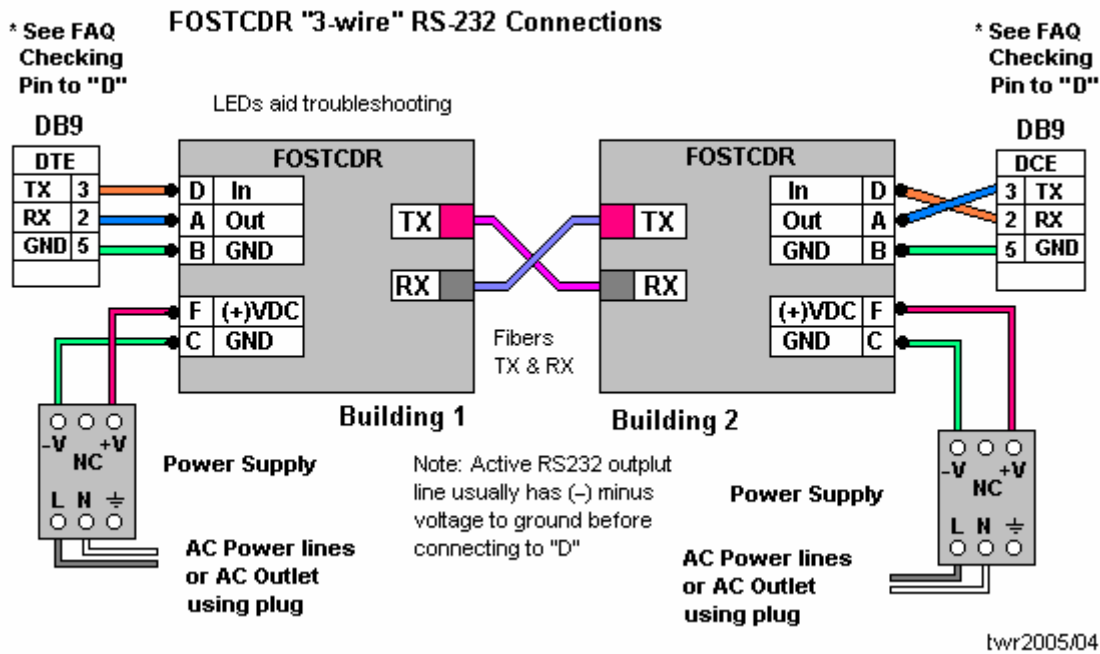


**Q: How do I connect two FOSTCDR Fiber Converters to Isolate and Extend RS-232?**

**A:** The RS-232 connections depend on whether the RS-232 devices are configured as (1) DTE or DCE, the wiring for normal interconnections before adding the Converters, and (2) how many active signal lines are required by the devices. You can use the FOSTCDR (or FOSTC) if your RS-232 device is "3-wire" and requires only Receive (Rx), Transmit (Tx) and Ground connections. Some RS-232 devices will perform hardware handshaking using RTS/CTS or DTR/DSR/CD, so the FOSTC or FOSTCDR cannot be used. The 232FLST or 9PFLST may be suitable, directly supporting RTS/CTS connections, or DTR/DSR may be remapped into RTS/CTS pins using custom cable wiring. Check FAQ for those models.

See figure below: Set switch Sw #6 to OFF. Other switches have no effect on RS-232 operation. If using one end as RS-232, the other end as RS-422 or RS-485, the RS-232 side will match either the left side or right side connection in the figures which follow.



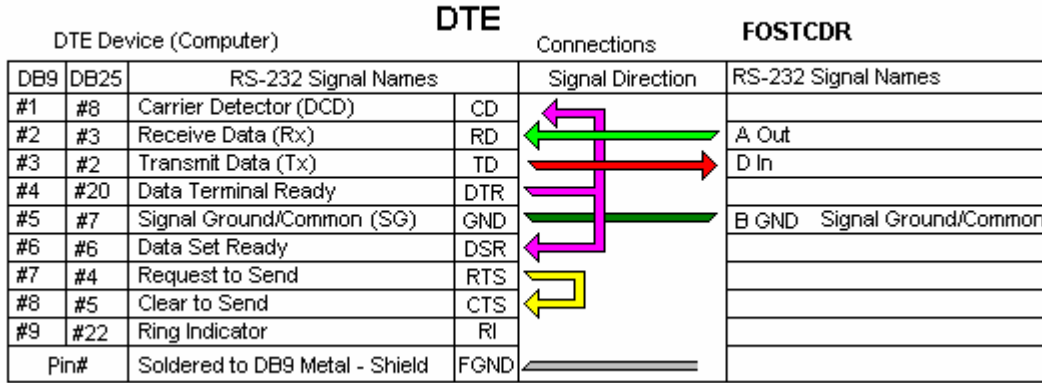
1. The RS-232 device on the left side has **DTE** pinouts which match a computer with DB9M connector. Pin #3 is output (Tx), pin #2 is input (Rx), pin #5 is ground. See DTE figure for DB-25 pinouts. Signal flow for DTE and DCE is opposite.
2. The RS-232 device on the right side has **DCE** pinouts similar to a modem, so pin #3 on the device is input (Tx), pin #2 is output (Rx), #5 is ground, note crossover. See DCE figure for DB-25 pinouts.

*How to identify which line should connect to Terminal D (Output) from the RS-232 device:*

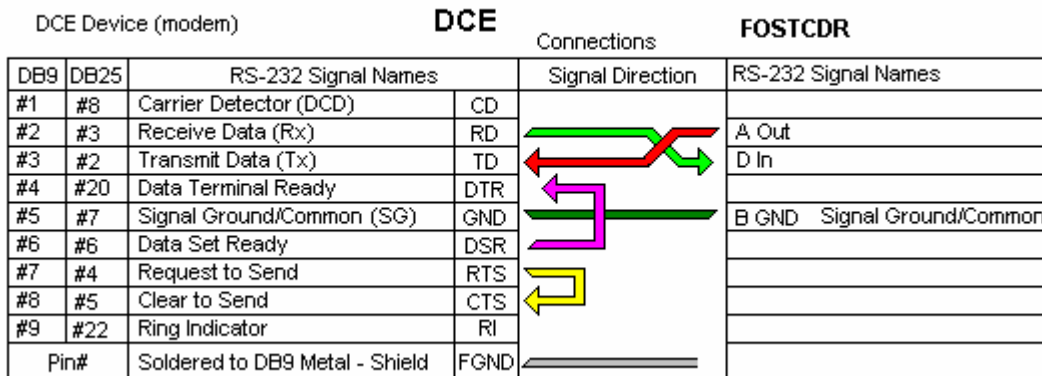
Take a DC voltmeter, measure from the ground wire to each of the other two RS-232 wires, while the RS-232 device is powered up. Usually one lead has a minus (-) DC voltage, typically between -11 volts and -3 volts. Whichever lead has a minus voltage is the lead to connect to our Terminal D. The other lead usually has nothing or noise relative to ground. If neither lead has a minus (or positive) voltage on it relative to ground, recheck for OPEN cable connections to the

RS-232 device or the device pinouts. If the device can be configured multiple ways, make sure all the jumpers and such are set to RS-232.

A few devices may use very low power RS-232 ports which switch only between Ground and positive, so to identify which is line is active, the device must be set to transmit, then connect the ground wire to the FOSTCDR and one of the wires to D, see if the TD indicator flashes. If not, try the other wire. If the data request is coming from the other end, and all that wiring is correct, and if it is being polled, the RD indicator should be flashing. Some DC meters may show a slight flicker of DC or AC voltage on a data line with changing data.



RTS/CTS & DTR/DSR/CD loopbacks may be needed.



RTS/CTS & DTR/DSR/CD loopbacks may be needed.

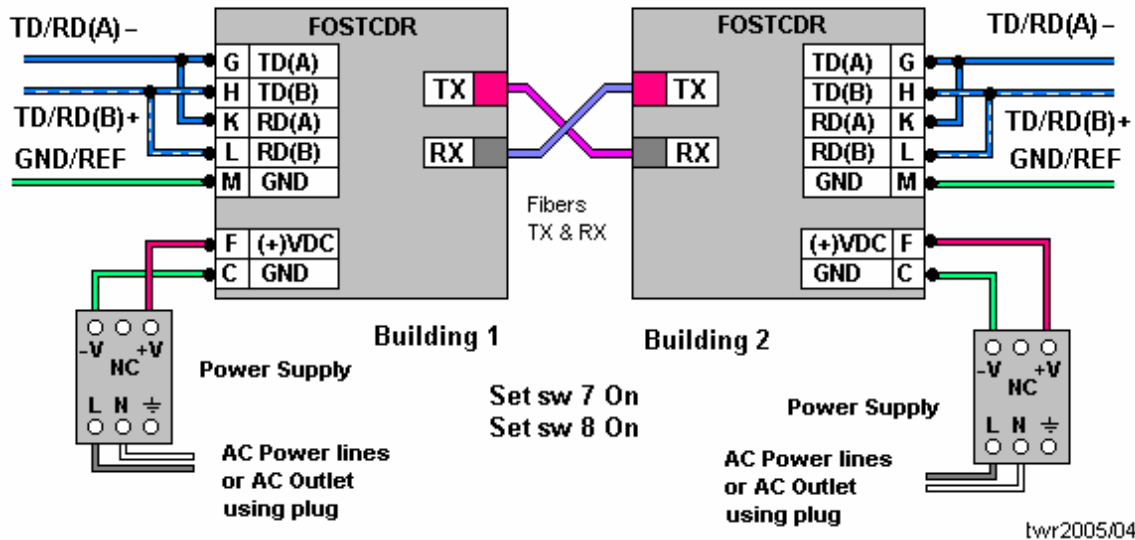
The RS-232 loopbacks are only needed if the software or devices need them to operate, if the output is looped back and active, the matching input will be active. On a host computer, software may choose to ignore them if not used or may use them only to verify a cable is connected.

The FOSTCDR (and FOSTC) keep the light in the fiber turned on when no data is transmitted and the input signal is in the MARK state. If light is lost or too low, the electrical signals go to the SPACE state. The input signal turns the light off/on in step with the data. The indicator for Transmit indicates sending data out the fiber, Receive is data from the fiber. If the Receive indicator is lighted when no fiber is connected, no light is being received. To check, try the other fiber into RX or use a fiber patch cable from TX to RX.

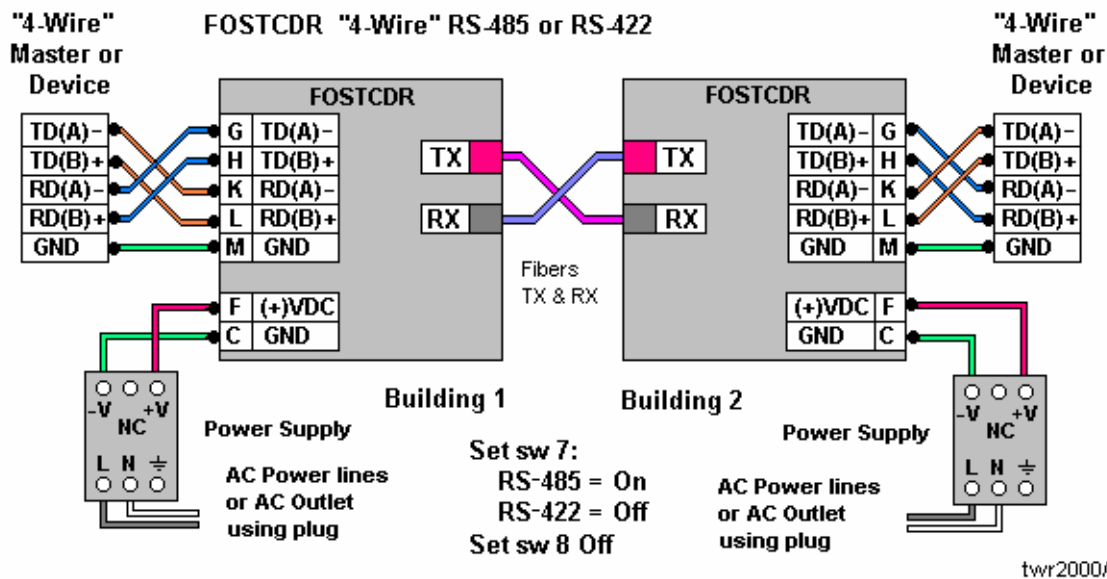
**Q: How do I connect two FOSTCDR Fiber Converters to extend and isolate RS-485 or RS-422 signals?**

**A:** See the Connection figures for "2-Wire" RS-485 and "4-Wire" RS-485 or RS-422.

FOSTCDR "2-Wire" RS-485 Connections



In 2-Wire RS-485 mode, the receiver and transmitter must be connected together, and switches #7 and #8 set to On. Set the baud rate switches to match the baud rate of the data so that data is not lost. Not all RS-485 devices are marked correctly for Data (+) and (-), so if the slave devices don't respond after going through the fiber converts, try swapping the wire pairs polarity to each converter. When there is no light received from the fiber in, the receive indicator will be On. You can interconnect or loop back the transmit fiber on one unit to the receive input on the same unit to verify the receive light goes out. If the transmit light is lighted all the time without data, the polarity of the RS-485 is reversed, or there is not enough bias, or termination loads on the RS-485 bus. Normal bias before termination is about 3.8 to 4.0 VDC, Data (+) to (-). See our RS-422/485 Application note for more information on biasing. **Fiber data has Priority.**



Set switch #7 to On for RS-485 transmit, to Off for RS-422 mode transmit. Set switch #8 to Off to enable the receiver. See notes above if receive light is on, or if transmit light is on. A faint red light can be seen in the transmit ST connector when the fiber is removed.