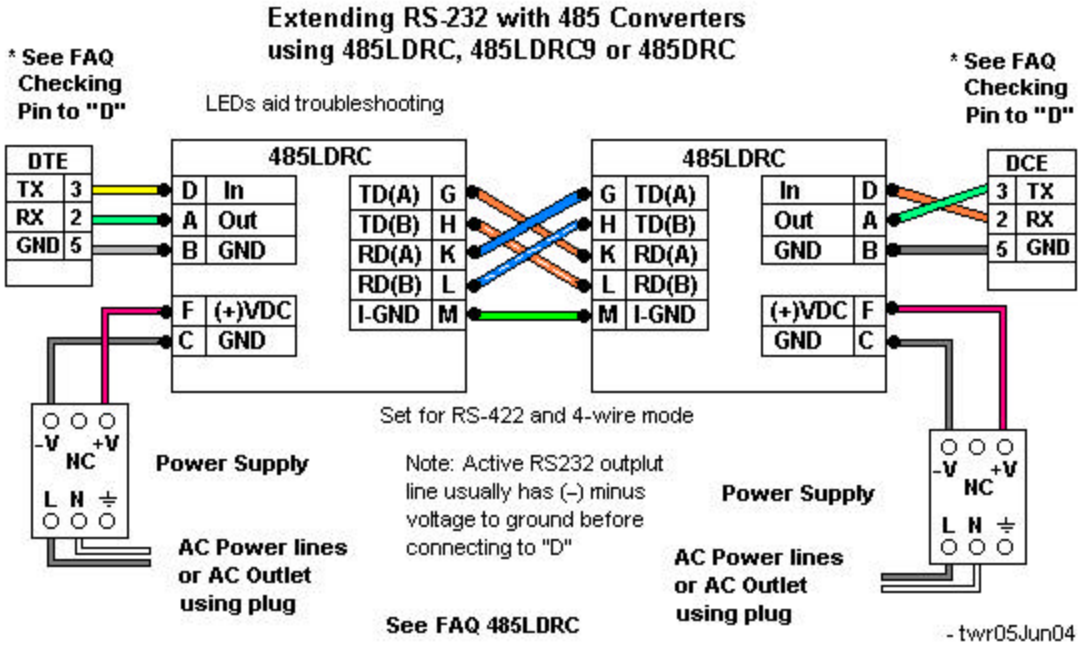
Q: I want to use a pair of 485LDRC, 485LDRC9 or 485DRC Converters to Isolate and Extend RS-232. How do I interconnect them?

A: It depends on the two devices being connected, whether they are (1) DTE or DCE devices, (2) how they are connected together before adding RS-232/RS-485 Converters, and (3) how many signal lines are required by the devices. You can use these converters if your RS-232 device is "3-wire" and requires only Receive (Rx), Transmit (Tx) and Ground connections. Some devices will require connections for RTS/CTS and DTR/DSR, so 4 channel or 8 channel RS-422 converters must be used instead.

A: See example figure below: Set switches 1-4 OFF for RS422 mode.



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. Connect as Shown. If you have the 485LDRC9, you can connect directly to a computer or DTE device with a straight through cable, the DB9 connections include loopback.. See table for DB25.

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. If using the 485LDRC9, you will need to use the terminal connections or wire a crossover cable to the DB9.

How to identify which of two lines is the 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 485LDRC 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.

Set switches 1 to 4 OFF. This sets the receiver always On, and Transmitter to RS-422 mode which is proper for one device at each end. There is no need to tri-state the transmitter because the line pair does not need to be shared with another device. In this mode, the baud rate switches have no effect, leave them at default.

DTE

DTE Device (Computer)				Connections	485LDRC
DB9	DB25	RS-232 Signal Names		Signal Direction	RS-232 Signal Names
#1	#8	Carrier Detector (DCD)	CD		
#2	#3	Receive Data (Rx)	RD		A Out
#3	#2	Transmit Data (Tx)	TD		D In
#4	#20	Data Terminal Ready	DTR		
#5	#7	Signal Ground/Common (SG)	GND		B GND Signal Ground/Common
#6	#6	Data Set Ready	DSR		
#7	#4	Request to Send	RTS		
#8	#5	Clear to Send	CTS		
#9	#22	Ring Indicator	RI		
Pin#		Soldered to DB9 Metal - Shield	FGND		

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

DCE

DCE Device (modem)				Connections	485LDRC
DB9	DB25	RS-232 Signal Names		Signal Direction	RS-232 Signal Names
#1	#8	Carrier Detector (DCD)	CD		
#2	#3	Receive Data (Rx)	RD		A Out
#3	#2	Transmit Data (Tx)	TD		D In
#4	#20	Data Terminal Ready	DTR		
#5	#7	Signal Ground/Common (SG)	GND		B GND Signal Ground/Common
#6	#6	Data Set Ready	DSR		
#7	#4	Request to Send	RTS		
#8	#5	Clear to Send	CTS		
#9	#22	Ring Indicator	RI		
Pin#		Soldered to DB9 Metal - Shield	FGND		

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

2-wire

Full Duplex 4-wire operation works best for RS-232 signals. Half Duplex operation using "2-wire" connections is usually NOT satisfactory because the RS-485 bus takes time to "turn-around" between transmit and receive, so some of the first bytes sent may be lost. RS-232 devices don't wait before responding to a data request, but RS-485 devices designed for 2-wire operation wait.

This information should help you make the needed connections.

Customers typically use this connection for Fire Alarm panels serial port extension, and other RS-232 devices for weight or signaling between locations.