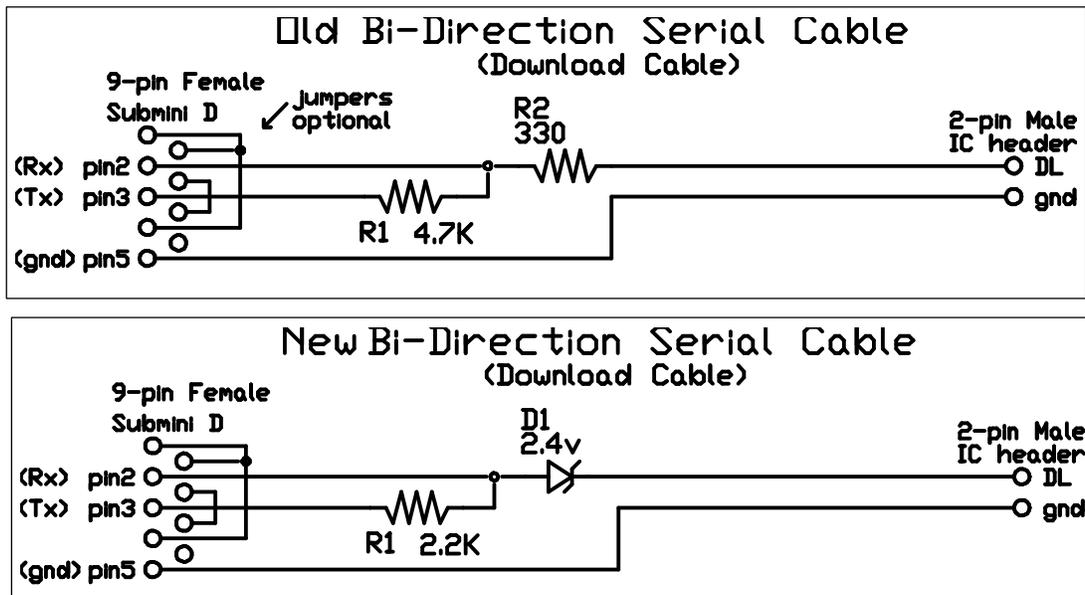


Appendix A: Circuits

A.1 Download Cable(s)



Pin 3 of the Consolecomputer's 9 pin serial port is a transmit pin. When the Console is not transmitting data, this pin will be low (-9 to -12 volts). This is an RS232 idle or stop bit state. The 4.7K ohm resistor acts as a pull down resistor to cause Pin 2 of the Console's port to see an idle state, also. Pin 2 is the receive line for the console. The + pin of the DL port on the TICkit will also see the -9 volt signal, but will shunt it to ground via the 330 ohm current limiting resistor. Either the TICkit or the Console can raise the voltage on the data line by simply transmitting data. When the TICkit transmits data, a voltage divider is formed between the PIC's output and the output of the Console's RS232 output. Because the leg of the divider to the Console's output has a much greater resistance, the PIC's output has priority over the Console's output.

When using this type of bi-directional data cable, The TICkit must be programmed to invert the RS232 signal. The TICkit will use an open source output causing low outputs to be "high impedance", while high outputs will be approximately 5 volts.