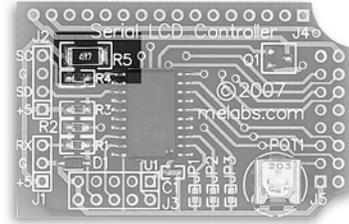


**NOTE: Resistor selection should be performed before using your backlit LCD.**

The **R5** current limiting resistor installed on the melabs Serial LCD Controller Module has been selected for the specific LCD displays used in the 16x2 (SLCD162) and 20x4 (SLCD204) Serial LCD modules from microEngineering Labs. The backlight LED's in those displays have a Forward Voltage of **4.2VDC**.



If your LCD backlight is different, you will need to select and install a different resistor to better control the maximum current supplied to the backlight of the display. Failure to do so may result in damage to either (or both) the Serial LCD controller Module or the LCD backlight LED.

The formula required to calculate the correct resistor value is:

$$R = (VDD - VF_{led}) / I_{led}$$

VDD = Supply Voltage to SLCD (typically +5V)

VF<sub>led</sub> = LED Forward Voltage

I<sub>led</sub> = LED Typical Current (also called Nominal Current)

The Forward Voltage and Typical Current should be looked up in the datasheet for your specific LCD display. A maximum current will also be listed, but it is not recommended that you run your backlight at that current as excessive heating will occur, which will reduce the longevity of the LED.

Example:

For an LED with a forward voltage of 3.6V and typical current of 120mA ...

$$R = (5 - 3.6) / 0.12$$

$$R = (1.4) / 0.12$$

$$R = \mathbf{11.666\Omega}$$

The power dissipated by the resistor is calculated with ...

$$P = (VDD - VF_{led}) * I_{led}$$

$$P = (5 - 3.6) * 0.12$$

$$P = (1.4) * 0.12$$

$$P = 0.168W$$

For the above example, a 1/4W resistor is required.

The brightness is controlled with Pulse Width Modulation via a transistor that has a maximum continuous current capability of 120mA. Exceeding this current may cause the transistor to overheat. Failure, damage or fire may result.

**It is your responsibility to insure proper current levels.**