

This README file contains instructions and information relevant to operating the LAB12GUI MATLAB application for the acquisition of light intensity data.

To operate the application first setup the hardware. The schematic (Figure 1) illustrates the circuit intended for the application. The positive terminal of the LED is wired to the 5V terminal of the DAQ device. The negative terminal of the led is wired to the collector of an NPN transistor, this is required so that the DAQ device AO doesn't have to supply all the necessary current for the LED. A ramp voltage supplied by the user defined DAQ AO channel is wired to the 1k resistor and base of the NPN transistor. The emitter is wired with a current limiting resistor to ground. The application user defines the value of the current limiting resistor in "LED Resistor Value" field. The user defined DAQ AI channel measures the voltage in, differential mode, across this resistor and converts it to current; The analog input is defined by the user with the "LED Current Ch" control. The positive differential terminal it wired to the emitter and the negative differential input is wired to ground. This Branch of the circuit provides the variable light intensity to be read by the TAOS Light-Frequency Converter.

Branch "B" in Figure 1 shows the configuration of the intensity-frequency conversion circuit. PIN 1 of the intensity to frequency sensor is wired to ground, and PIN 2 is wired to a regulated 5V supply or a 5V supply and voltage regulating capacitor. Incident light causes the sensor to produce a frequency on PIN3. This pin is to be wired to the DAQ PFI channel defined by the user on the application front panel.

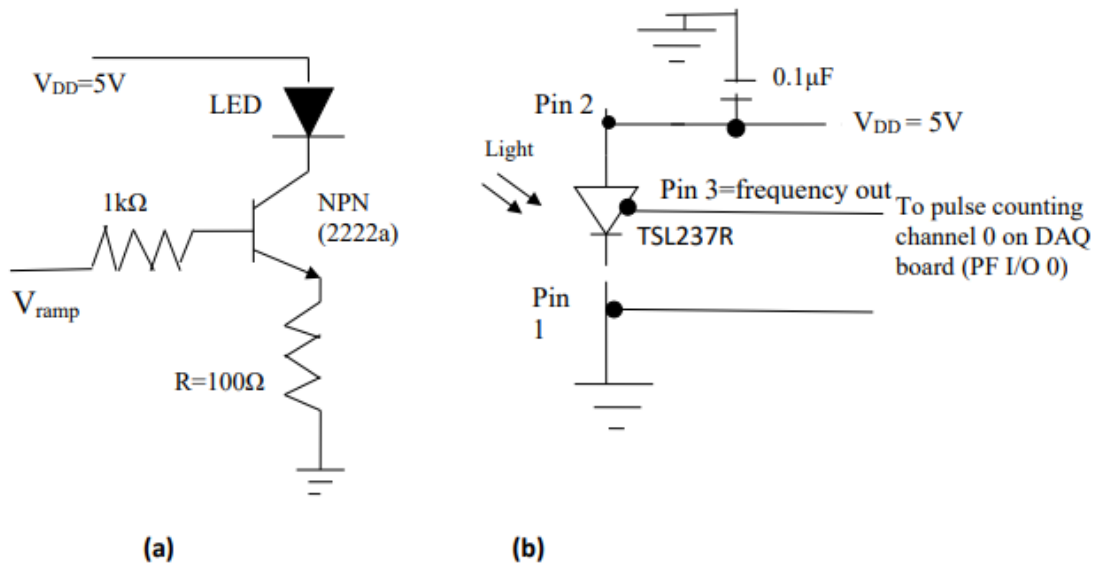


Figure 1: Schematic of data acquisition hardware configuration