Electronic Supplementary Material (ESI) for Reaction Chemistry & Engineering.

High Intensity Plate Photoreactor Notes

This reactor provides uniform illumination for running photochemical reactions in well plates or arrays of vials. Illumination intensity is ~200mW/cm^2 @ 450nm when operated at the included settings. The fan should be plugged in while the reactor is operating, to provide cooling for the LED array and the plate/vials. The reactor can be used with a SBS plate adapter, 1 dram vial rack, or 2 dram vial rack. A function generator and switch have been included for applications where the light source needs to be timed or synchronized with external equipment. If the timer is not needed, a jumper can be soldered on the circuit board between the negative terminal on the power supply and the negative terminal on the LED array output.

Frequency Generator Settings

The frequency generator determines the timing of the LED light array illumination. To modify a setting, use the CH1/CH2 keys to select the channel, and the select the parameter to modify. Then, use the left/right keys and the dial to program the desired value. To save the settings as power-on default (memory location 00), select SYS->Save & Load 00->STORE.

Power Supply Settings

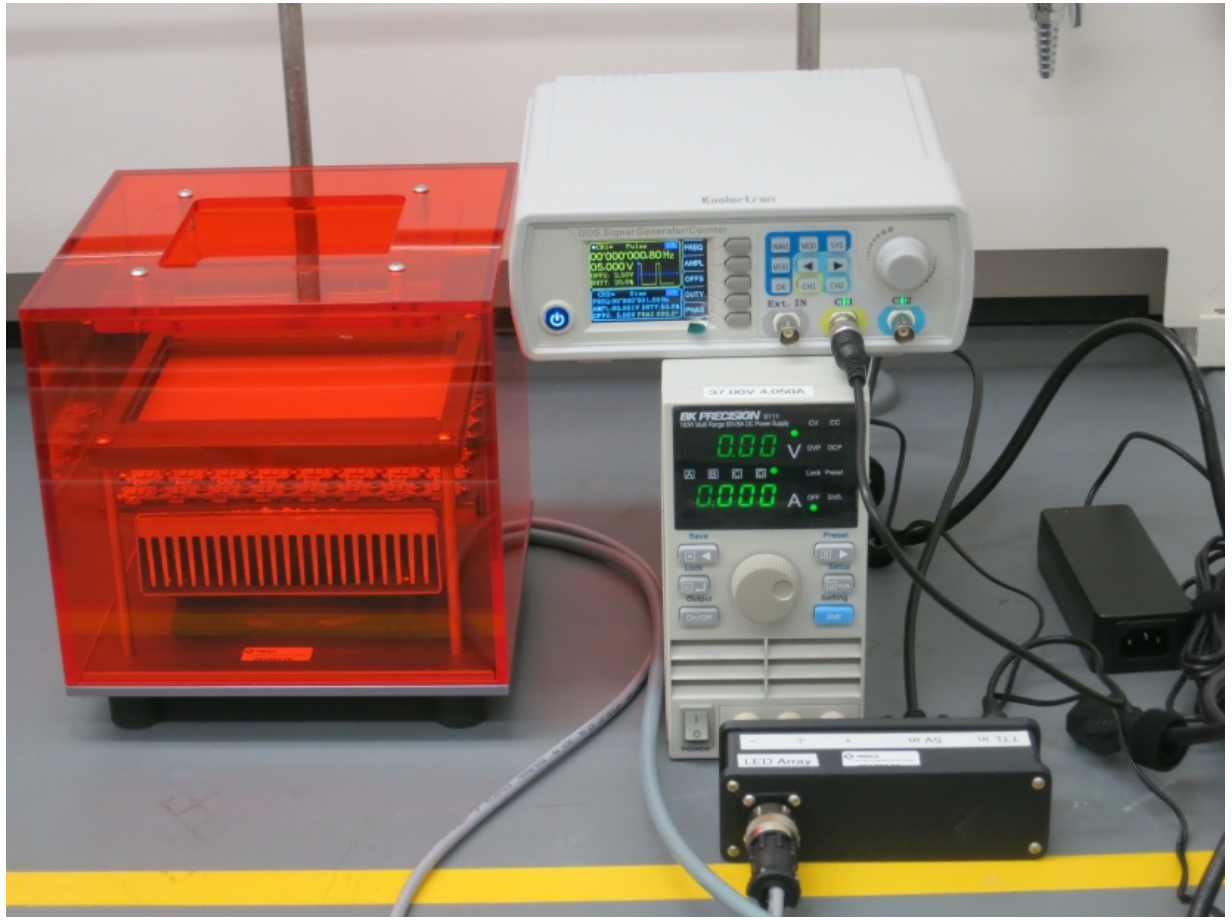
The power supply settings determine how much power is applied to the LED array. The LED array should be operated in “constant current” mode. In this mode, the current reading when the power supply is on should match the programmed value. To edit voltage and current, use the V/A key, the left and right arrow keys, and the dial. When satisfied with the setting, use the on/off key to turn the supply output on and off. The settings are saved automatically.

Voltage: 37V

Current: Nominally 4A, but use actual measured value from sticker on power supply.

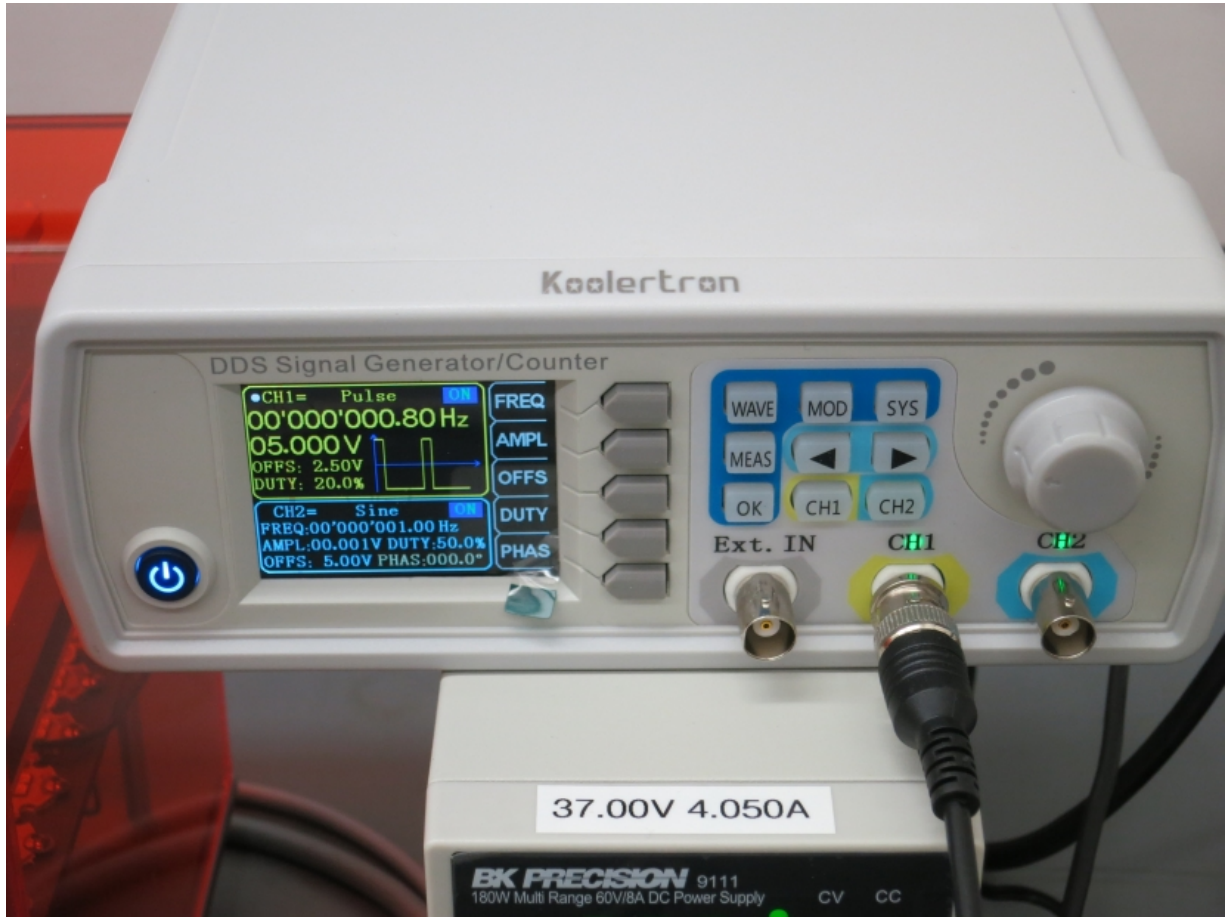
When connected to CH2 of the function generator and turned on, the output voltage should read less than 37V, and the current should read close to 4A.

Overall System



Power Supply Connections

Function Generator Connections



Acrylic Nest Drawings