

## Nu-B Manual (Version 1.1 IR)

Thank you for purchasing the Nu-B! We think that you will find the Nu-B to be an indispensable narrow-band light source for optics demonstrations and student experiments.

### Quick Start

The Quick Start really is the only start! The button marked "On" in the center of the top panel is the only control available. Simply depress the button once to cycle the Nu-B to the next available output modes. Holding the button down for more than 2 seconds will turn the unit off (in any mode in the sequence).



Each push of the button will advance the Nu-B through the following modes:

- Push [On] All LEDs on, low brightness
- Push [On] All LEDs on, high brightness
- Push [On] LED 1 (white) on, low brightness

Push [On] LED 1 (white) on, high brightness  
Push [On] LED 2 (blue) on, low brightness  
Push [On] LED 2 (blue) on, high brightness  
Push [On] LED 3 (green) on, low brightness  
Push [On] LED 3 (green) on, high brightness  
Push [On] LED 4 (yellow) on, low brightness  
Push [On] LED 4 (yellow) on, high brightness  
Push [On] LED 5 (red) on, low brightness  
Push [On] LED 5 (red) on, high brightness  
Push [On] LED 6 (Infrared) on, low brightness  
Push [On] LED 6 (Infrared) on, high brightness  
Push [On] Unit will turn off!

Pushing [On] once more will begin the sequence again.

## **What's Included**

Your complete kit Nu-B includes:

1. The Nu-B unit itself (Two new CR2032 Lithium batteries are pre-installed)
2. A holographic diffraction grating in a 35mm slide mount
3. This manual

## **Features**

- Single-button operation
- Individual selection of sources or all six at once
- Two brightness levels
- Filtered LED light results in narrow emission bandwidths
- Microprocessor-controlled
- Battery-operated - no AC adapter, wires, or plugs
- Batteries included (2 CR2032 coin cells)
- Auto-off after 2 hours
- Designed for maximum battery life - 100+ hours
- Holographic diffraction grating slide included (750 lines/mm)
- Near-monochromatic light without the safety concerns of laser diodes

## Power Consumption

The battery lifetime for the Nu-B depends on a number of factors. The pair of CR 2032 batteries will provide between 100 and 200 mAh of capacity depending on the selected LED(s) and brightness.

The current drain for each mode is listed in the following table:

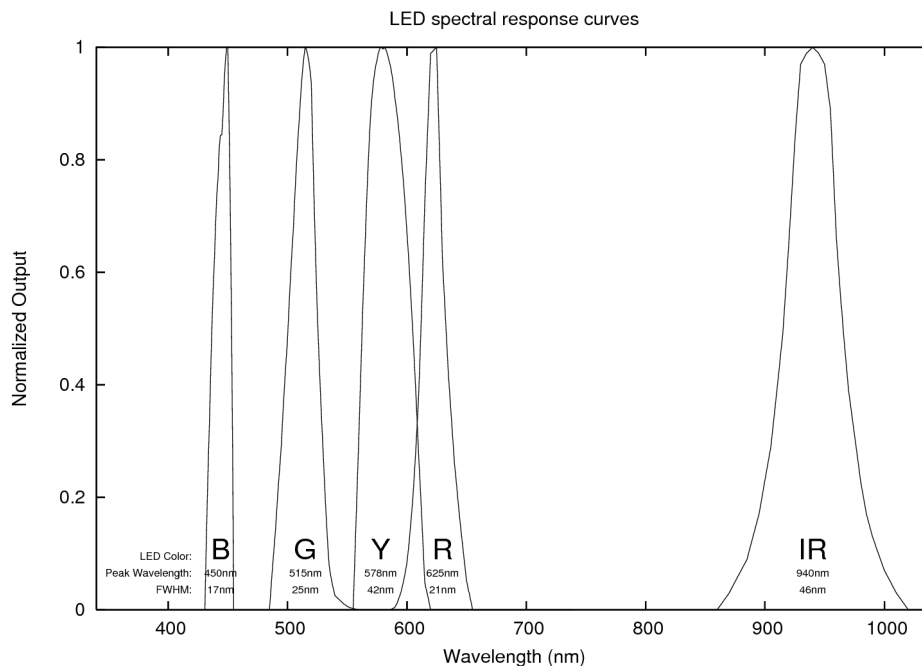
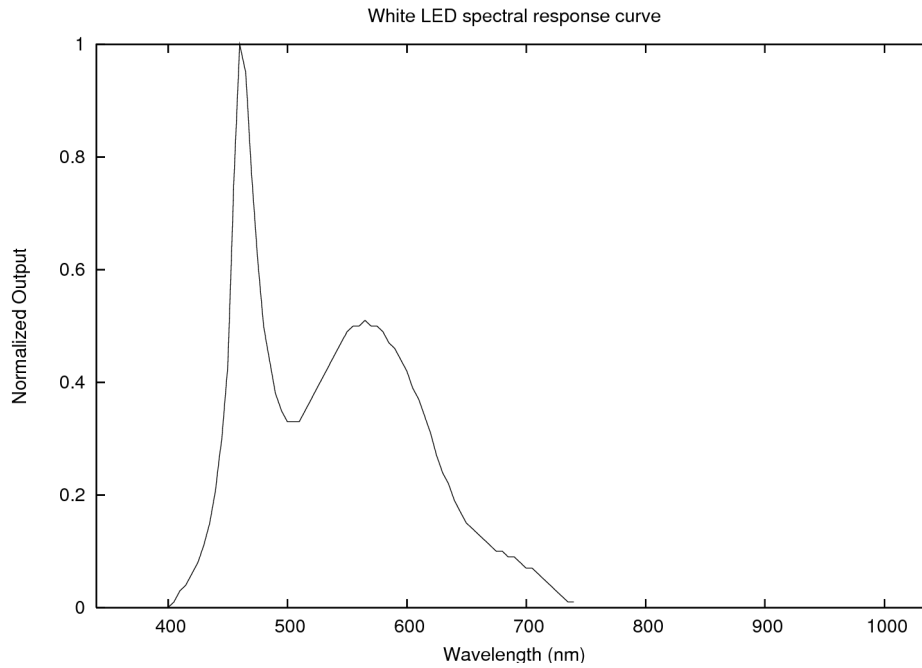
Selection	Brightness Setting	Current (mA)
All LEDs	Low	3.30
	High	12.79
White	Low	1.65
	High	13.14
Blue	Low	3.06
	High	12.69
Green	Low	2.95
	High	12.19
Yellow	Low	3.21
	High	13.95
Red	Low	2.86
	High	14.14
Infrared	Low	3.86
	High	16.56

When not in operation, the unit consumes a few microamps of current. Under normal circumstances, the shelf life will be several years.

The Nu-B will operate normally provided that the voltage produced by the two CR2032 batteries in series is greater than 3.75V.

# Spectral Energy Curves

The filtered LED spectral energy distributions are found below, based on the manufacturers specifications.



## Slide-mounted Diffraction Grating

The supplied slide-mounted holographic plastic transmission grating will disperse the light in the direction of the long axis of the slide. The grating is ruled in plastic at 750 lines per mm. For a light source perpendicular to the grating, the first-order image of LED 3 (green) will be centered at 22.7 deg. The second-order image will be centered at 50.6 deg to the source. Align the Nu-B LEDs at right angles to the dispersion direction to allow measurements from a common source angle and to prevent overlapping diffracted images of LEDs when all six are selected.

## Replacing Batteries

The Nu-B is powered by two CR2032 3V Lithium batteries which are widely available at low cost. To access the batteries, slide the battery access door horizontally away from the case.

The batteries are held snugly in place by a top contact pin. Do not bend this pin upward. The easiest way to release the top batteries is to press an eraser or other blunt object down on the battery near the edge opposite the side opening in the battery holder. Once the top battery is slipped out, the bottom one will be more easily removed. Replace both batteries at the same time.

Good deals on CR2032 Lithium batteries are frequently found at “dollar stores”.

## Troubleshooting

There are very few ways for the Nu-B to fail. If none of the following suggestions remedy the problem, please contact Unihedron for a possible warranty replacement.

The Nu-B does not turn on:

- If this occurs after prolonged usage, the batteries may need to be replaced. See “Replacing Batteries” for further information.
- Reset the micro controller by:
  1. Slide a business card or other insulator between the battery clip and the battery.
  2. Press the pushbutton to drain any internal charge.
  3. Remove the insulator from the battery clip.
  4. Try pressing the button, the unit should come on.

The light emitted by the white and blue LEDs is very feeble:

- The batteries are past the end of their useful life. See “Replacing Batteries” for further information.

How do I know the unit is OFF?:

- While the unit is ON, press the button for at least 2 seconds, all the LEDs will go OFF.
- If the Infrared LED is on, you will not see any light, make sure that the unit is actually OFF by pressing the button repeatedly until a visible LED is ON, then press the button for 2 seconds and the unit will shut off.

## **Limited Warranty**

The Nu-B is warranted against defects in manufacture for one year. Battery replacement is not covered by this warranty.

## **Customization**

Unihedron can customize the set of LEDs and filters to your needs. Contact us below for a quotation on custom units.

## **Contact Information**

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