

Introduction

Congratulations on purchasing the Proton Pack: Power Cell and Cyclotron Light Kit that adds some serious lighting effects to your nuclear accelerator!

The Light Kit plugs in directly to the GBFans Sound Board, or can be used stand-alone by plugging directly into a battery pack. Movie accurate mode can be activated by rotating a potentiometer (which also controls the speed), turning it further activates a special effects mode that will add a lot of awesome animation to your power cell and cyclotron! This Light Kit also receives commands from the GBFans Sound Board, which adds other cool effects like overheating, venting, and the video game modes. So many features packed into one low priced kit.

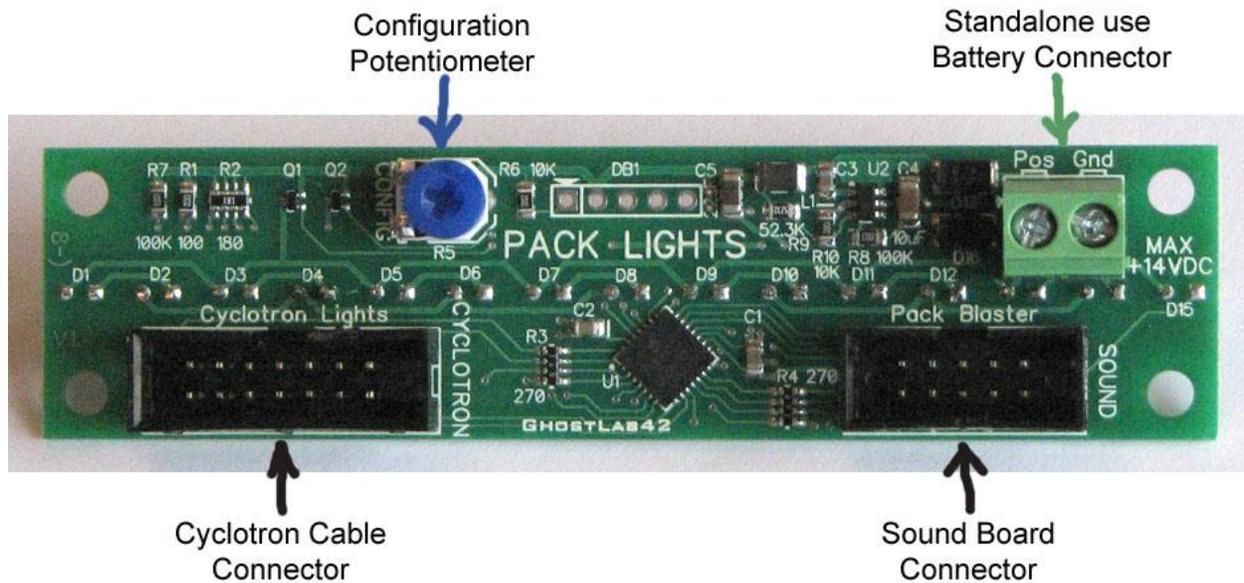
Power Cell and Cyclotron Light Kit features:

- 15 Wide angle Blue LEDs on the main Power Cell circuit board
- 4 Wide angle Ultra Bright Red LEDs for the cyclotron Lights
- 1 Wide angle Bright Wide LED for Venting affects
- Works with battery voltages from 9V to 14V
- High efficiency switching power supply for longer battery life
- Easy wiring with a single cable connection for power and control from the GBFans Sound Board
- Easy wiring for stand-alone operation with a separate set of battery connection screw terminals (not used when connected to a GBFans Sound Board)
- Cables are keyed to only go in one direction and also have strain reliefs to make the cable more durable
- Cyclotron LED connector also provides power for an optional TVG controller with RGB color LEDs for Red, Green, Blue and Orange colored Cyclotron lighting affects that are perfectly coordinated with the GBFans Sound Board.
- Capable of providing additional light sequences while powering up and down, firing, overheating and venting.

Front:



Back:



The Light Kit has a [Blue](#) configuration potentiometer on the back of the board to select between four main modes of operation:

- 1) Firmware Version Display and Cyclotron Test
(Configuration potentiometer fully counterclockwise)
 - a. The Power Cell LEDs will show the firmware version number
 - b. The Cyclotron LEDs will show what is on the 4 digital inputs (all on in stand alone mode)
 - c. The White Vent LED will be turned on
- 2) Movie Accurate Mode
(Configuration potentiometer counterclockwise half of the range)
 - a. No separate power-up sequence
 - b. Each Cyclotron Light will snap on and off
 - c. Rotate Counterclockwise for slower or Clockwise for faster sequencing
- 3) Special Affects Mode
(Configuration potentiometer clockwise half of the range)
 - a. Separate power-up sequence
 - b. Cyclotron lights will snap on and fade off like in the Video Game
 - c. Rotate Counterclockwise for slower or Clockwise for faster sequencing
- 4) Power Cell Test Mode
(Configuration potentiometer fully clockwise)
 - a. All Power Cell LEDs will be steadily on
 - b. All Cyclotron and Vent LEDs are off

Connecting to the GBFans Sound Board

The Cyclotron LEDs and the Vent LED are on a single multi-colored ribbon cable that plugs into the 14 pin connector on the left side on the back of the board. Connection to the GBFans Sound Board is with the 10 pin connector on the lower right side of the back of the board that uses the included grey colored ribbon cable. Only connect the cable to both the Sound Board and the Light Kit when the Sound Board does not have power.

Since the sound Board supplies power through this same grey colored ribbon cable, no additional connections are needed and the Green screw terminal power connector is not used.

Here is what the Light Kit looks like with both the Cyclotron and Sound Board cables installed:

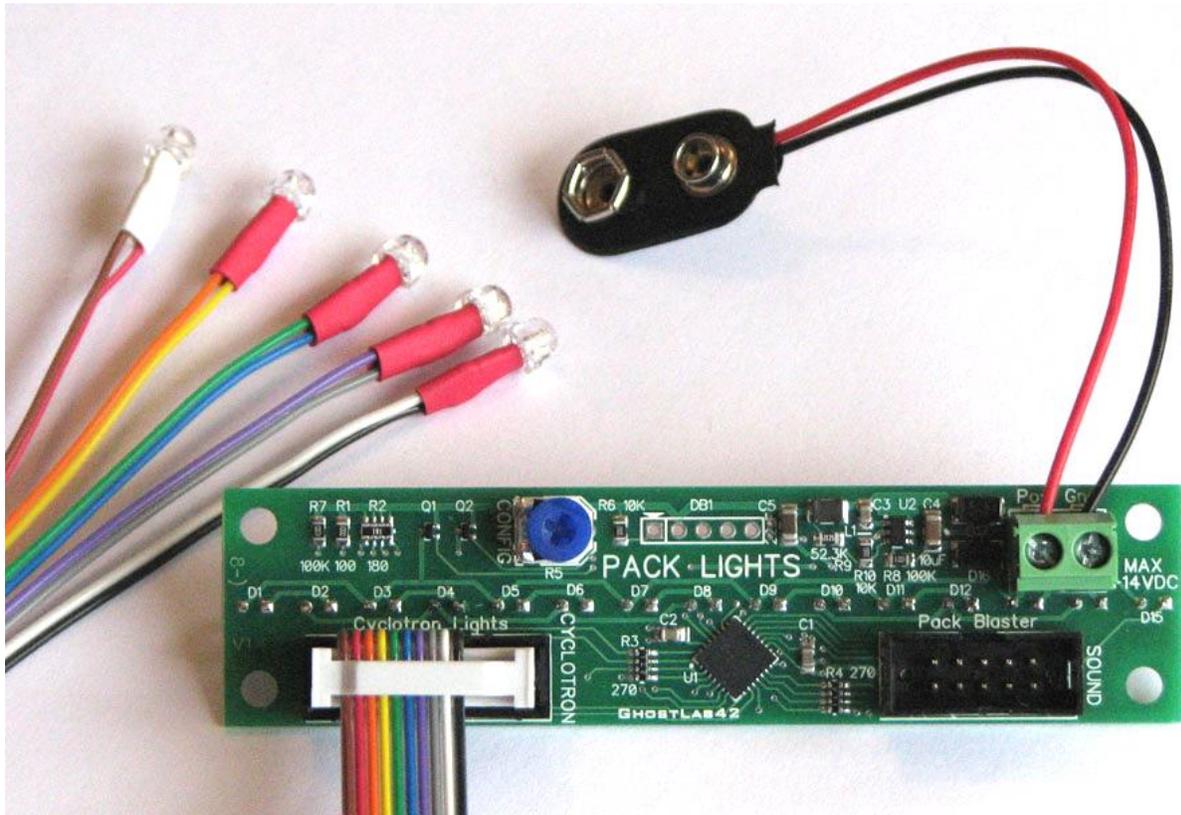


Standalone Operation

For Standalone operation, the Sound Board cable is not used, but the board must get battery power, so the Green battery connector in the upper right side of the back of the board must be connected to power. Below is shown a 9V battery connector (not included) wired to the screw connections. You may also want to add a power switch for easy on-off control of the Light Kit. “Pos” is the positive connection and is usually Red or marked with “+”, “Pos” or “Positive”. “Gnd” is the negative connection and is usually Black or marked with “-“, “Neg”, “Negative”, “Gnd” or “Ground”.

Do not connect to a battery that is greater than 14VDC. This could damage both this board and the battery.

The Cyclotron LEDs and the Vent LED are on a single multi-colored ribbon cable that plugs into the 14 pin connector on the left side on the back of the board.



Advanced Standalone Operation

For those adventurous enough to hack up a cable and connect their own wires and switches, the Standalone mode has some additional capabilities. You could also wire in the battery connections so you do not need to use the screw terminal to connect power.

The Standalone mode does support up to four additional switch connections wired directly to the Sound Board cable:

- 1) PowerUp/Down toggle switch
 - a. Enables a power up sequence (if the configuration allows) when the switch is open
 - b. Enables a power down sequence when the switch is closed
 - c. If power is applied and the switch is closed, the board waits for the switch to be opened
- 2) Fire momentary switch
 - a. Will cause the sequence to speed up when the switch is closed
 - b. Will slow back down to the normal sequence speed when the switch is open
- 3) Vent momentary switch (or toggle)
 - a. Vent sequence when the switch is closed
- 4) Pack Switch momentary switch (or toggle)
 - a. The pack mode is changed when the switch is closed
 - b. Cycles between the four pack modes
 - c. Also cycles between the four Cyclotron colors when the optional Cyclotron TVG board and RGB color LEDs are attached

You can cut off one end of the Sound board Grey cable. The ends are slightly different, so even though either end could be cut off, plug in the cable to the Light Kit and make sure the cable is coming out in the desired direction (I like the direction of away from the board) and cut off the other end. Unused wire ends should be covered so they do not accidentally short on something.

The inputs are all single ended and the switches would need to share a common ground signal (one of the 3 “Gnd” signals in the cable) and just short the selected input to Gnd. If this does not make sense, don't try this advanced operation mode!

Sound Board Connector and Grey Ribbon cable Pinout:

- 1: +VBattery (7VDC to 14VDC), connected to “Pos” Standalone use Battery Connector
- 2: +VBattery (7VDC to 14VDC) , connected to “Pos” Standalone use Battery Connector
- 3: +VBattery (7VDC to 14VDC) , connected to “Pos” Standalone use Battery Connector
- 4: GND, connected to “Gnd” Standalone use Battery Connector
- 5: GND, connected to “Gnd” Standalone use Battery Connector
- 6: GND, connected to “Gnd” Standalone use Battery Connector
- 7: Pack Change (Gnd = Change), has a weak 10K to 100K Ω pullup to +5VDC
- 8: Vent (Gnd = Vent), has a weak 10K to 100K Ω pullup to +5VDC
- 9: Fire (Gnd = Fire), has a weak 10K to 100K Ω pullup to +5VDC
- 10: PowerUp/Down (Gnd = PowerDown), has a weak 10K to 100K Ω pullup to +5VDC