

## **Light Up Your Layout with the Woodland Scenics Just Plug System**

### **Basic System**

Power Supply JP5770 : MSRP - \$19.99 : Retail Prices \$14.99 – \$24.99 (includes shipping)

Lights & Hub Set JP5700 : MSRP - \$19.99 : Retail Prices \$14.99 – \$24.99 (includes shipping)

**Total Cost : \$30 - \$50**

### **Alternative Basic System**

Power Supply - Old Train Power Pack : FREE! - If you have one available

Lights & Hub Set JP5700 : MSRP - \$19.99 : Retail Prices \$14.99 – \$24.99 (includes shipping)

Connecting Cables JP5760 : MSRP - \$5.99 : Retail Prices \$4.99 – \$9.99 (includes shipping)

**Total Cost : \$20 - \$30**

### **Enhancements**

Woodland Scenics sells 7 different styles of street lights, 2 styles of wall mount lights and 2 varieties of wired LED's in 7 Colors and 2 flashing LED's (Red and Yellow).

### **Expanded System** – Gives you the ability to add more hubs and lights

Expansion Hub JP5702 : MSRP - \$15.99 : Retail Prices \$13.99 – \$19.99 (includes shipping)

Auxiliary Switch JP5725 : MSRP - \$9.99 : Retail Prices \$7.59 – \$11.99 (includes shipping)

### **Additional Tools**

Light Diffusing Window Film Kit JP5715 : MSRP - \$16.99

Light Block Kit JP5716 : MSRP - \$16.99

### **Other Lighting Add-ons**

CatzPaw Innovations, LLC – [www.catzpaw.com](http://www.catzpaw.com)

3D Printed w/Woodland Scenic compatible Plug – Available in N, HO, S, O, G Scales

BBQ Grill Flickering (HO) 18.99

Burn Barrel Flickering (HO) 16.99

Campfire Flickering (HO) 14.99

Gas Pump Set 1940-50's Lit (HO) 32.99

Traffic Barrels Flashing (HO) 25.99

### **Do It Yourself lighting using components from the Just Plug System**

#### **Basic Supplies**

LEDS, Resistors, Wire, Connectors, Power Supply, Double Sided Copper Clad (PC Board Ties), Heat Shrink Tubing

#### **LED lights Sizes**

5mm, 3mm, 1.8mm, SMD's that range from 1mm x 0.5mm to 5mm x 5mm

#1206 Pre-Wired SMD Warm White LED's : Ebay Price: 10 Pieces - \$8.99 & Free Shipping

#5050 SMD Warm White LED's : Ebay Price: 50 Pieces - \$5.29 & Free Shipping

#### **Resistors**

Recommended ohms rating : 470 – 680 – 1000

E-Projects 25EP512680R 680 Ohm Resistors, 1/2 W, 5% (Pack of 25) : Price - \$5.88 (\$0.24 / Resistors)

#### **Wire**

Many choices: 24 - 30 AWG Multi-strand Copper or 30 - 50 AWG Enameled Magnet Wire

A good source for Enameled Magnet Wire is from old "wall warts". Open up the case and remove the wire coils

that are used to transform the 120 AC house current to the final output voltage. The coils of wire can be accessed by dismantling the transformer. Most transformers are held together by glue or enamel. The metal inserts can be separated by using a painter's 5 in 1 tool.

### Connectors

Woodland Scenics uses a Micro JST 2.5 PH 2 pin style Connector. Bettal Micro JST 2.5 PH 2 Pin Battery Connector Plug with 4.75" Wire, 50 Sets (Male & Female) : Amazon Price - \$4.49 & FREE Shipping

### Alternative Power Supplies

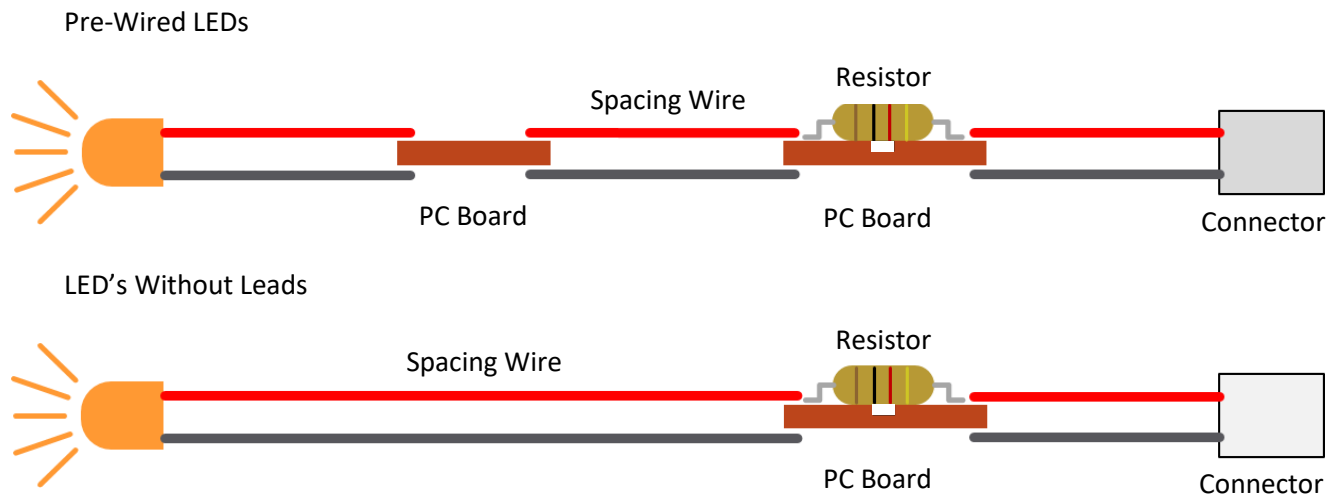
Recommended 18V AC – 1A : Old Tyco, AHM, Model Power and other power packs that have an AC accessories connection will work for a power supply.

### Double Sided Copper Clad Printed Circuit Board

Ties used for hand built turnouts are the right size to attach wires, resistors and LED's for connections. Fast Track and Clover House both sell PC board ties.

### Building LED Lights

There are two types of LED Light wiring construction



For Pre-wired LED's you start by cutting a 3/8" piece of PC board to create the connection for the leads. Tin the ends of both sides of the PC board. Tin the wire leads from the LED. Solder each of the leads to opposite sides of one end of the PC Board. Next solder the spacing wire (Cut to whatever length you want) to each side on the other end of the PC board. Be sure to add the heat shrink tubing before soldering the opposite ends of the spacing wire. Do not shrink the tubing around the PC board at this time.

For LED's without leads you will solder the spacing wire to the LED.

For both types of construction you need to create a resistor board. Start by cutting a piece of PC board to 1/2" length. Take a small file and file through the copper cladding on one side to break the connectivity from end to the other. Tin both sides of the PC board at the ends.

Bend the leads of the resistor so they are even with the bottom of the resistor. This will allow the resistor to sit flat on the PC board. Solder the resistor to the side of the PC board with the cut in the copper cladding. Trim the resistor leads even with the ends of the PC board.

Add a piece of heat shrink tubing to the leads from the JST connector. Solder one of the wires from your spacing wire to one end of the resistor board. Solder the other wire to the reverse side of the same end of the resistor board. Solder the leads from the JST connector to the other end of the resistor board.

Plug the LED light into the Woodland Scenics Light Hub and power up the hub. If the LED does not light up then you have crossed wires. This is easily corrected by reversing the wires on the resistor board. If the LED still does not light up then check all your solder connections to make sure they are good.

Once the LED lights up it now time to shrink the heat shrink tubing around the PC boards.

#### **ADDITIONAL NOTES :**

To connect the Expansion Hub or Light Hub to an old Train Power Pack you need to create a connector. There are two ways to do this.

1. You can buy Connecting Cables from Woodland Scenics. Cut the cable in half and strip the wires. Add open spade (U Shaped) connectors to the wire ends.
2. If you have purchased the JST connectors then simply add more wire with the spade connectors on the end.

The Auxiliary Switch is a nice optional item to control power for the Expansion Hub or Light Hub. You may have some old single pole single throw style switches laying around. These can be easily substituted for the Auxiliary Switch. Another option for an Auxiliary Switch is to use a house light switch. These run about \$0.75 a piece from the local hardware store. You can mount these in a switch box with a wall plate and mount in a convenient location under the layout or in the fascia.

To connect the switch to either hub you can remove the small jumper in the Control slot of the hub. The loop wire is short, but it can be cut in half and more added to reach the connections on the switch you are using.

The light diffusing kit for the windows can be substituted with many different methods.

1. You can purchase frosted mylar or plastic from many craft or art supply stores.
2. Use any kind of clear plastic or styrene and give it a coat of Dullcoat or similar spray.

Instead of buying the light block kit you can use black craft paint which may require several coats of paint. You can use any acrylic house paint that you may have from leftover home improvement projects. The important point to remember is that the interior paint needs to block the light to keep the building from glowing!