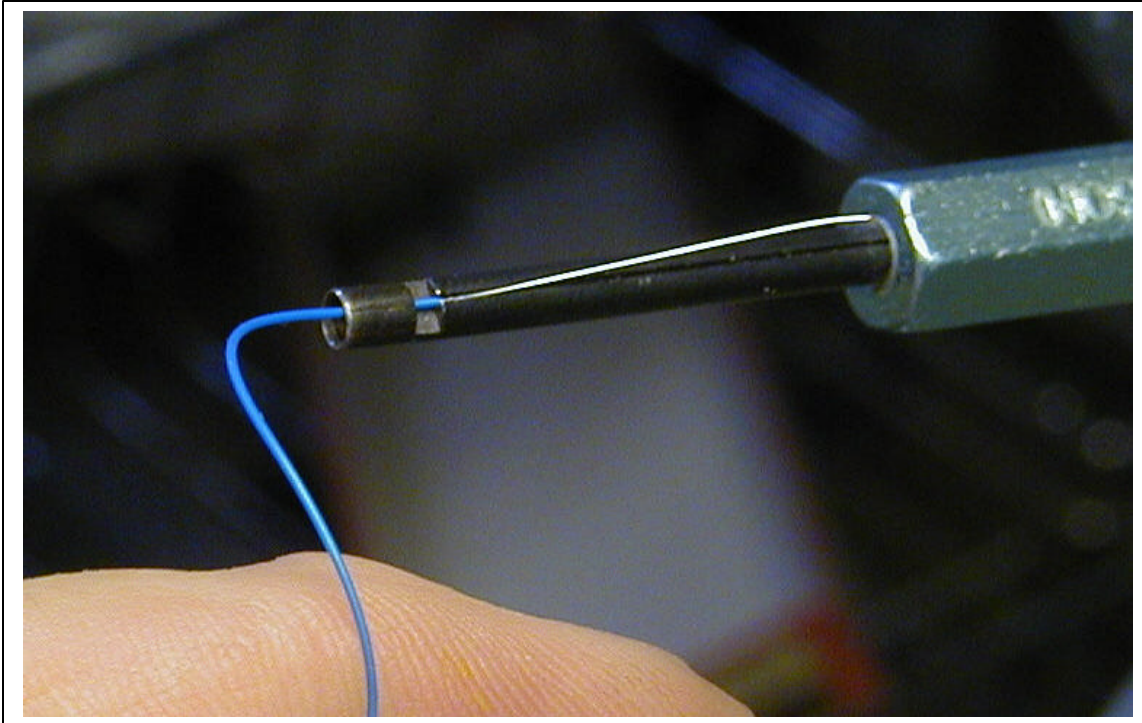


# CONCEPT MODELS

Web Address: <http://www.con-sys.com>

8810 El Toro Way  
Stockton, CA 95210



Wire Wrap tool with stripped wire in place ready to apply.

**LED WIRE WRAPPING  
INSTRUCTIONS**

## Tools

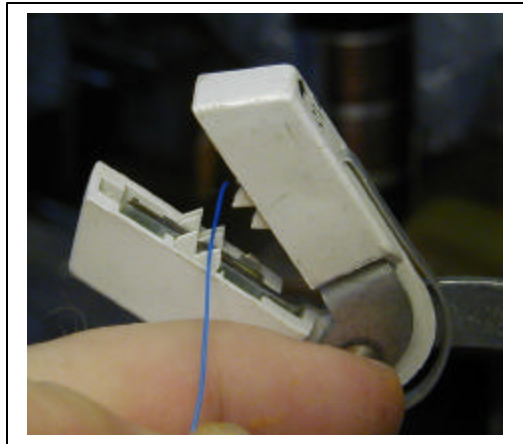
	Description	Source/Data
1	No-Nick Wire Strippers	30 Gauge (.015") <a href="http://www.twacomm.com/catalog/model_NN008.htm">http://www.twacomm.com/catalog/model_NN008.htm</a> This tool is preferred for high volume. The tool below includes a wire stripper.
2	Wire-Wrap Tool	<a href="http://elexp.com/pro_sr30.htm">http://elexp.com/pro_sr30.htm</a>
3	Wire-Wrap Wire	Red or Yellow – bright color for (+) lead Electronics Express <a href="http://www.elexp.com/">http://www.elexp.com/</a> <a href="http://elexp.com/cbl_wwrld.htm">http://elexp.com/cbl_wwrld.htm</a>
4	Wire-Wrap Wire	Green or Blue – Cool color for (-) lead <a href="http://elexp.com/cbl_wwrld.htm">http://elexp.com/cbl_wwrld.htm</a>
5	510 ohm ¼ watt resistors	Mouser 291-510-RC <a href="http://www.mouser.com/catalog/catalogUSD/639/658.pdf">http://www.mouser.com/catalog/catalogUSD/639/658.pdf</a>
6	Pactra Transparent Amber Paint – RC ACRYL – PAC5314	<a href="http://www.wholesaletrains.com">http://www.wholesaletrains.com</a>
7	Soldering Iron	35W
8	Rosin Core Solder for Electronic work	
9	Quik Grip Glue	Wal-Mart Craft Dept.
10	Styrene sheet .080	Cut in ~5/8" squares
11	Styrene Strip .080" x .125"	Cut 5/8" lengths
12	.025" Pins	<a href="http://elexp.com/con_210s.htm">http://elexp.com/con_210s.htm</a>

13	Bright White LEDs	<p>See application sheet on las page for polarity and current limiting specifications.</p> <p>LEDs are available in quantity on eBay from Hong Kong sources at reasonable prices.</p> <p><a href="http://stores.shop.ebay.com/hktaiyuen-LED-store_W0QQ_armrsZ1">http://stores.shop.ebay.com/hktaiyuen-LED-store_W0QQ_armrsZ1</a></p> <p><a href="http://shop.ebay.com/led-hk/m.html?_nkw=&amp;_armrs=1&amp;from=&amp;ipg=25">http://shop.ebay.com/led-hk/m.html?_nkw=&amp;_armrs=1&amp;from=&amp;ipg=25</a></p>

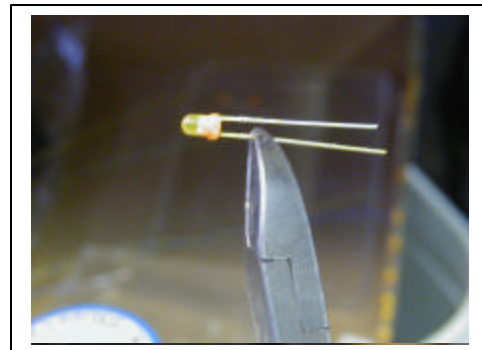
## Instructions

**1** Color the LEDs by dunking the head in the amber paint. This gives the bright white of the LED an incandescent type of coloration. Amber LEDs would be too dark. The cut edge of a corrugated box makes a good dry rack. Do not proceed until the paint is dry.

**2** Prepare equal lengths of the wires in the colors you have selected for the + and – lead wires by stripping approximately 1” of insulation from one end of the lead wires.



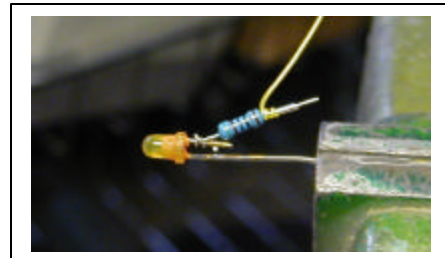
**3** Cut off the long lead of the LEDs which is the + lead. Save the cut off pins since they make good terminating leads for the thin 30 gauge wire.



4 Cut the resistor leads to 1" on one end and ½" on the other end. Insert the 1" end of resistor into the slot of the wire wrap tool. Insert the + lead of the LED (was cut off in previous step) in the center hole of the wire wrap tool. Rotate the wire wrap tool until all of the resistor lead is applied to the LED.

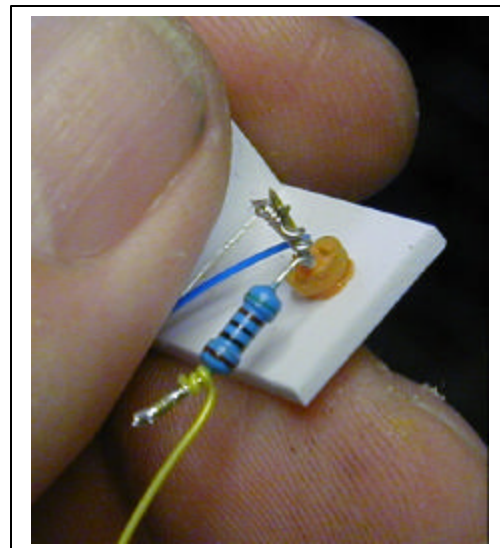


5 No take the + wire and wire wrap it onto the resistor lead as shown. Apply solder to this connection since the resistor lead is round. Soldering is not required when wrapping wire to a square post such as the LED terminals.

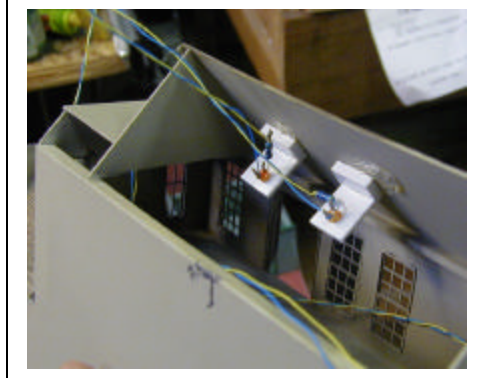


Now cut off the other LED lead and wire wrap the - wire to the - LED lead. You may further trim the LED leads to make as small as possible.

6 Make an angle bracket from two pieces of styrene as shown. Drill a #32 hole through the the bracket and press the LED into place. If you don't have a #32 drill use what you have and glue the LED into place using Quick Grip (Wal-Mart craft section).

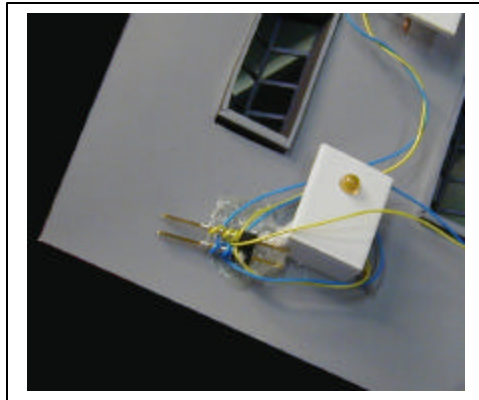


7 Glue the bracket mounted LED's into place in the top of the structure you are going to illuminate as shown.



8 When using more than one LED in a structure, connect them in parallel use the .025" pins as junctions. The pins come in long strip and you snap off in pairs as needed. Connect to a 10-12 volt DC power source.

The Amber coating can be removed with lacquer thinner or more paint can be applied to subdue the light.



9 Here's what the result is. There's plenty of light to make it evident in broad daylight that the buildings are lighted. Now there's a need for detail since it's easy to see inside!



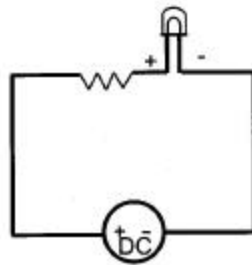
**LED Reference Data**



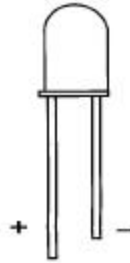
We are here just for you!

Ultra Bright LEDs, 3mm(5mm), Clear(multiple color) & Free Resistors

Recommended Resistors (1/4 Watts) For Blue, Green, UV, White LEDs	
5V	82-100 ohm
7.2V	220 ohm
9V	330 ohm
12V	470 ohm
13.2V	560 ohm
Recommended Resistors (1/4 Watts) For Red, Yellow, Orange, Pink LEDs	
5V	180 ohm
7.2V	270 ohm
9V	390 ohm
12V	560 ohm
13.2V	680 ohm



Schematic



User Guide



**Note:**  
The LED could NEVER be connected to power supply directly. It could be connect with a current-limiting resistor in serial to the power supply. The table below shows how to choose the resistor.

LED	Color	White	Red	Blue	Green	UV	Orange	Yellow	Pink	Cyan	Infrared
	Lens Color:										
		Clear Color									
Size (mm)	Peak Wave Length (nm)	N/A	625-630	460-470	520-525	400-405	600-605	585-595	N/A	500-505	850
	Forward Voltage (V)	3.0-3.2	1.9-2.1	3.2-3.4	3.0-3.3	3.2-3.4	1.9-2.1	1.9-2.1	3.2-3.4	3.2-3.4	1.1-1.3
	Static Sense	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes	No
	Luminous Intensity:	15000-17000	3500-4000	5000-6000	12000-15000	120-200	3500-4000	About 5000	2000-3000	4000-5000	N/A
3mm	View Angle:	5 - 25°									
5mm	Maximum Current	20mA Continuous, 50mA peak for 10% Pulse Width									

<http://www.sure-electronics.net>

[support@sure-electronics.net](mailto:support@sure-electronics.net)