SUPER | VISION
INTERNATIONAL

Border Light ™

Rev. 6 4/27/05

Congratulation, on your purchase of *Supervision International, Inc.*, Border Light product. The Border Light was developed to replace neon lighting products, allowing the effect of neon without the upfront costs and uses less energy, resulting in a savings from beginning to end. Unlike neon, this product retains its color in broad daylight whether energized or not. Border Light is a Low Voltage (12 Volt DC) product designed for years of Trouble free operation. The tube and track are constructed of durable Acrylic DR, making it both tough and naturally UV resistant. Powered by Light Emitting Diodes (LED's), the bright colors will last for years and look good Day or Night. The product is UL listed.

This installation manual is not to be construed to intend warranty or fitness of use of this product, or provide safety instruction for those who will install the product.

The following instructions will assist you to install this product and promote trouble free performance. The product is divided into several components, these include;

1. Track
2. Colored Border Tube
3. Power Supplies & Enclosures
4. Custom Lengths & Connections

These components are sold to order, in standard lengths of 4 and 8 foot .lengths, Custom lengths can be ordered on lengths up to 10Ft. The final product can be cut to length within certain predetermined lengths for custom applications (see section on custom length cuts), and best fit. Contact you're nearest authorized dealer for details on other advanced products from SVI.

1. Track:

Black Border Light Track is sold foot for foot with the Color Tube, and installed as follows;

Once the building or application has been surveyed and measured accurately, from any corner (see section on corner installation; A Chalk line will serve as the best method to insure a straight and level installation. Border Light is designed for Straight surfaces, and **is not intended for radius applications**. Once the location is measured the corners installed, and the proper line snapped for installation the track installation can begin.

The track is secured into position by the use of industry standard hardware, including #8 Tech and Tap-Con® screws through a variety of building surfaces, including; Brick, Stucco, concrete wood or metal Fascia, but may include all conventional building surfaces. Please select an appropriate and approved fastener for your application. **Local building codes may require specific fasteners. It is recommended that each screw be fitted with the appropriate sized flat washer, to spread the load against the track material.**

When installing the track, please use the recommended numbers of fastening points to insure a positive connection to the building surface. All mounting slots are pre-cut into the Track material**; each point should have a fastener installed in it to provide for security. Failure to apply a fastener per hole COULD result in warpage over time.**

8ft sections (**96.5")** require 8 mounting screws (Standard Length)
4ft sections (**48.5")** require 4 mounting screws (Standard Length)

If a given section of track will not fit in place, leaving the appropriate end spacing for Expansion/Contraction, you must consider making "field adjustments" to allow for this event, (see section on Custom Lengths)

Track Continued:

Helpful hints;

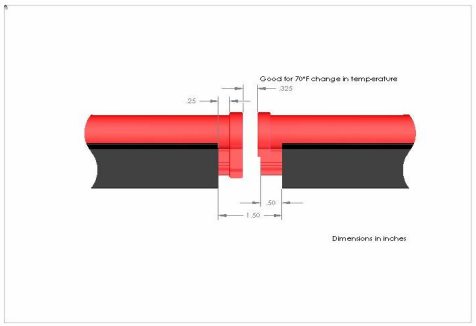
Starting from the center of the track, begin to secure the track against the building or wall surface using either Tech 8 Self drilling/tapping screw (in wood, sheet metal) or Tap-Con ® screws (in Cement or Concrete block) Holding the track on the pre-established Chalk line, and leaving a 7/8ths inch gap between the end on the track and the end of the tube run or wall. ***IMPORTANT: Acrylic Dr material is subject to expansion and contraction over a wide range of temperatures, because of this the Track MUST be allowed to move with these changes in temperature. When installing the Track Mounting Screws it is IMPORTANT to not bottom out the mounting screws in the base of the track. The screws should secure the track solidly to the surface , yet allow for a minimal movement with expansion. This can be accomplished by setting the screw into place, but allowing a ¼ turn relief (back out) the mounting screw. The expansion /contraction of the product can be controlled by securing the centermost hole in the section of the track, solidly and then forcing the expansion/contraction to move equally left/right of center. This is accomplished by running a single screw through the track at the center of the run, fixing that point to the building. The slotted fasteners will then expand and contract in a linear fashion.***

In some applications the surfaces will not be straight, plum or level. In this event you will need to support the tube from behind using a suitable shim material. The mounting screw should pass through the shims securing both the track as well as the shims in place.

After the first section of Track is installed, and a screw is set in EVERY pre-punched hole, allow a 1.5-inch gap between the first section of track and the beginning of the second track section. This gap will allow for tube expansion, as well as provide clearance for the molded end-caps found on the end of each pre-assembled Border Light Tube. Continue this pattern of along the entire length of the installation. If there is a corner that is to be fitted with the product, address these as prescribed in the section on Corner installation. Upon completion of this section, the Black Track will be mounted straight, level and present 1.5-inch gaps between track sections. Installation of the track and preplanning for the Power supply locations is the most complicated part of the entire installation.

2. Colored Border Tube:

Border Light Tube sections are shipped Pre-Assembled in Specific Lengths, although sold as 4', and 8' sections they are physically longer than this nomenclature describes, **4ft=49 1/2" & 8ft=97 1/2",.** The track sections are exactly 1 inch shorter than the tubes Assemblies, minus the end caps at **4ft=48" & 8ft=96".** This is done to allow for expansion and contraction. Allowing a .500 inch gap between end caps/sections and 1.5 inches between track sections. This will allow for Expansion/contraction over a Change in ambient temp. If cutting is required for custom installations there are specific limitation that must be observed (see custom lengths).



Part Number/Description:

SVBL8-RED	8Ft. Border Light Assembly, Red
SVBL4-RED	4Ft. Border Light Assembly, Red
SVBL8-BLUE	8Ft. Border Light Assembly, Blue
SVBL4-BLUE	4Ft. Border Light Assembly, Blue
SVBL8-GREEN	8Ft. Border Light Assembly, Green
SVBL4-GREEN	4Ft. Border Light Assembly, Green
SVBL8-WHITE	8Ft. Border Light Assembly, White
SVBL4-WHITE	4Ft. Border Light Assembly, White
SVBL8-ORANGE	8Ft. Border Light Assembly, Orange
SVBL4-ORANGE	4Ft. Border Light Assembly, Orange
SVBL8-YELLOW	8Ft. Border Light Assembly, Yellow
SVBL4-YELLOW	4Ft. Border Light Assembly, Yellow
SVBL8-AMBER	8Ft. Border Light Assembly, Amber
SVBL4-AMBER	4Ft. Border Light Assembly, Amber
SVBL8-CLEAR	8Ft. Border Light Assembly, Clear
SVBL4-CLEAR	4Ft. Border Light Assembly, Clear

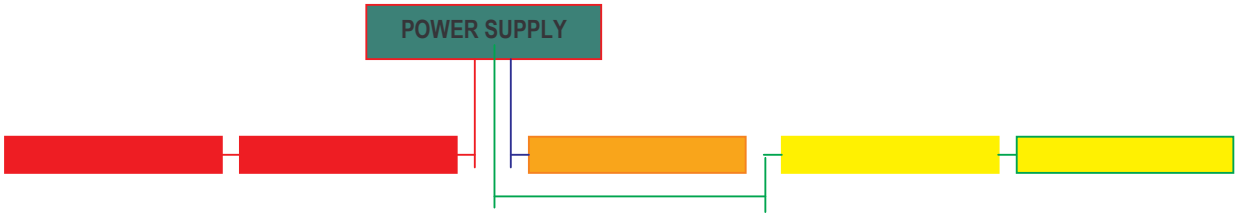
Other colors are possible by mixing LED strips and Colored Tubes.

3. Power Supplies/Enclosure:

Wiring of Power supplies to 120VAC systems must be performed by a Qualified Electrician, and meet all State, County, City and Local Electrical Codes.

Advance "Xitanium" LED120A0012V50F Class 2 Power Supplies are not rated for Wet Locations and must be installed into a NEMA 3R approved enclosure or mounted out of the weather/water.

Pre-positioning the power supplies is the key to a successful installation: There are limitations on the Number of feet of Border Light Tube that a given Power supply can energize. These limitations are in the Power Supply itself (wattage), the wiring (current Limitation, and wire resistance) The Border Light Tube assemblies (Current conduction between tube sections) this sound very difficult but is not IF you follow the lists from the specific product that is being installed.
Surface mount **Red, Orange, Yellow,** and **Amber** LED's consume **1.5 Watts/ft** therefore no more than 5, eight foot sections (40feet) can be attached to a single 60 Watt supply. These MUST be wired as follows:
RED/YELLOW/AMBER/ORANGE 8ft **SMD** Border Tube with 60Watt Power Supplies (P/S)



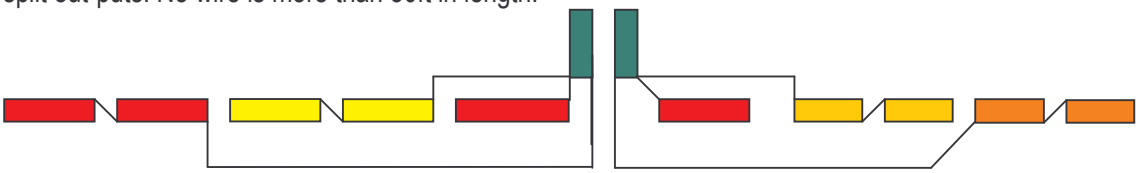
Section 1 / Section 2 / Section 3 / Section 4 / Section 5

Longest run of wire cannot exceed 30 ft

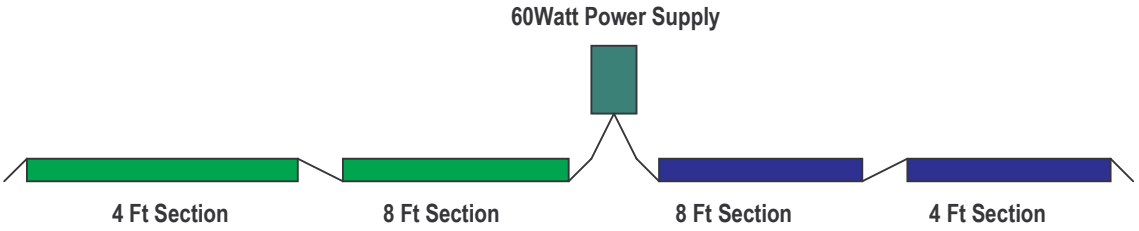
Here, sections #1, and 2 are connected in series with each other with jumper # (17.0450/17.0451), and in parallel with the Section# 3 via Jumper 17.0453.. A separate parallel run from the supply to section #4 &5 (interconnected with jumpers 17.0450/17.0451) are attached to the P/s via a jumper (p/n 17.0455). This jumper CANNOT exceed 30 ft in length. The jumpers are concealed upon installation within the recess provided internally of the track. No more than three, 8ft sections can be daisy chained together**. No more than 40** total linear feet of RED YELLOW AMBER or ORANGE can be run off one power supply.

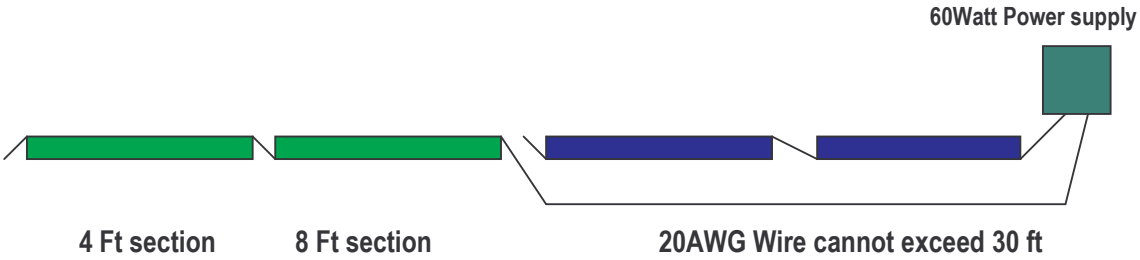
Power Supplies/Enclosure Continued:

Here a single wall intrusion supplies 120 Watts power for 80 linear feet of Red, Amber, Orange and Yellow Border light, whether supplied by 2 separate 60 watt supplies or a single 120 Watt supply with split out-puts. No wire is more than 30ft in length.



For **White, Blue and Green**, these circuits draw **2.25 Watts/ft** therefore the total footage on a given 60Watt power supply cannot exceed 26 feet total. While two 8ft sections may be daisy chained together, **no single circuits longer than 13ft can be daisy chained!!**





Each 60 Watt power supply is designed to power **up to** 40 feet of Border Light product in **RED, YELLOW, AMBER and ORANGE,** while providing a **Maximum of 26 linear feet** of **WHITE, GREEN and BLUE.** Plan your lay out and the placement of the power supplies so as to minimize the number of intrusions through the building surface. When possible use 8 Ft sections as much as possible, this will minimize the abutment of sections and make for a cleaner overall installation. Make every attempt to place Power Supplies so as to power equal length section, **not to exceed 40 total linear feet on a given 60 Watt power supply for RED YELLOW, AMBER or ORANGE, or 26 Feet of WHITE, GREEN or BLUE**

4. Custom Lengths & Connections:

Each individual LED strip is 12 inches long (308mm +/-2mm). If they MUST be cut to allow the installation observe the following:

a) Calculate the amount of border tube to be removed;

b) Measure the distance between the end cap of the previous section of Border Light Tube and the end of the Run or termination point. Ensure that the expansion Spacing is calculated into your equation;

Example:

The distance from End of Border Light End Cap to a Dissecting Wall equals 35 inches.

Start by deducting the end gap clearance from the total length; (.375" from both sides)

35"-3/4= 34 ¼". This is the target Number

A standard length section of Border Light, is too long (49.5inches). So an adjustment must be made by taking a 4ft section and cutting it to the nearest acceptable length. Start by removing the track, measure and place the track into final position as directed above on the TRACK section of this document. Next remove the end caps from the pre-made Border tube and discard as **these are NOT reusable!** Remove the LED strips and set aside, measure the three strips end to end (or 12 X 3=36"), and deduct the nearest complete circuit that will meet your needs:

Red, Orange, Yellow and Amber=Approx 2 inch, or 25mm circuits

Green Blue and White = approx 1 5/16th or 18.5mm circuits,

36" – 2" = 34th", (one circuit removes 2 inches in length)

34" final length of cut tube assembly for installation.

Reassemble the border tube, **add NEW end-caps**, Attach the end-caps with the required cement. Once dry, **add a thin layer of Clear Silicone sealer around the end-cap to tube junction to act as a water seal**. Also, **add a dollop of silicone to the area of the wire protrusion to insure watertight seal over the wires**.

While Green Blue and White would be cut removing increments of 1 5/16 (33 1/2mm) long;

Removing 2 sections will allow enough clearance

36" – (2 X 1.3125)= 36 - 2.625 = 33.375"

All cut pieces must be absolutely square to the tubing base and clean, without splits, cracks or chips.

We recommend a high tooth count blade, preferably in a Miter saw.

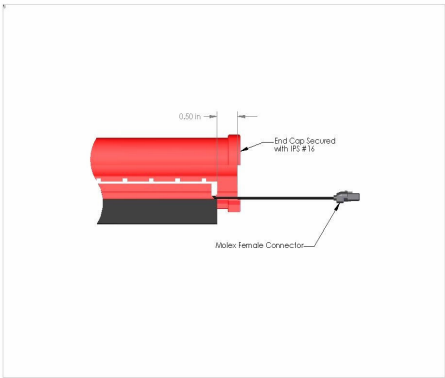
c) Cut LED strips ONLY an indicated cut lines, these are clearly marked between separate circuits and denoted by black dashed lines running across the circuit board. Perform the cut with a SHARP pair of side cutters. The cut should be crisp and clean.

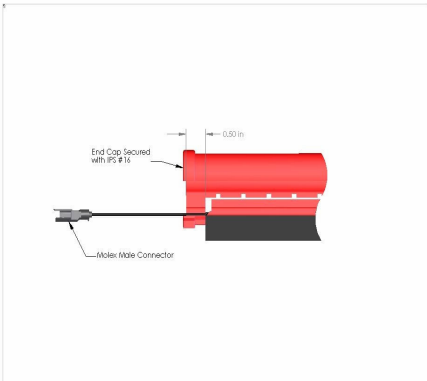
d) Reassemble the strip into the tube, Seat the PCB strips into place against the next section of strip within the tube.

e) Insure that all jumpers used in the reassembly are FULLY seated upon installation. Failure to do so will result in oxidation and charring of the exposed connector pins

f) Confirm the measurements from the end of the tube to the beginning of the LED strip. There should be ½" (12.7mm) of space between the end of the strip and the end of the tube at each

Custom Lengths & Connections Continued:





g) Re connect the outboard jumpers, These MUST be fully seated into the JST connectors for trouble-free operation.

h) Install and glue NEW end caps into place, using the special glue provided. The glue MUST be applied into the channel of the end cap and provide a continuous bead of cement, prior to mating against the end of the Border Light Tube. This is to insure a water tight connection. Failure to properly perform this task will result in water intrusion into the tube, and possible product failure. (non-Warranted)

i) Apply Special silicone sealing compound to form water proof seal on the interior of the end cap prior to seating into place. This will prevent water from entering at the site of the Wire intrusion in the end cap.

j) Once the cement has set, apply a continuous bead of Silicone sealer around the ends of each end cap to prevent water intrusion.

k) When connecting the Molex Connectors between to sections of Border Light, allow the connecting wires to form a safety drip loop between end caps. This will prevent water from following the wire to the intrusion point of the end cap.

l) Interconnect the sections of border Tube, as shown in the illustrations above. The home run wires from adjacent lengths of Border tube were designed to travel along the Channel created between the Tube and the track. This will make for a seamless and clean application.

Supervision International, Inc. (SVI) Use High Brightness LED's in our products as the source of illumination. These products are purchased from Quality manufacturers around the world. Although **LED manufacturers estimate** LED's to achieve life from 60,000 to 100,000 hours average mean time between failures, (AMTBF) based on Manufacturers data. This is not an accurate reflection of the total products performance. This estimate is for total output failure similar to that used to measure conventional lamps. As LED's can continue to produce light over an extended period of time, the AMTBF, does not completely define the useful life of LED products. LED's will by their nature begin to depreciate in lumen output over time. The rate of light loss experienced by LED's is effected by several factors, including, environmental (Ambient temperature, Humidity, Ventilation) and electrical, (Forward Current, internal thermal temperatures) and physical properties (Mechanical bonding, substrate heat transference component height to the board)

SVI products are engineered to achieve extended life for the products, if operated under predefined conditions. Ambient temperature -4 degrees F. (-20C) to +104 degrees F (40C) and Humidity between 0 and 93%, and non-condensing, allowing adequate ventilation, nonrestrictive air flow. Operation of product out side of these parameters, or extended usage within the upper tolerances ranges will increase the rate of degradation for the LED's, or cause complete failure of internal components.