

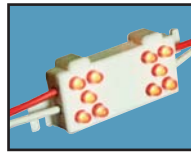
# Channel Letter Illumination Installation Guide

## CAO Group, Inc. Products

CAO Group, Inc. products operate from safe low-voltage power supplies that are highly energy efficient. Safety and efficiency features – coupled with long life and ease of maintenance – create the ideal choice for use in demanding commercial settings requiring continuous operation.

### LuxemBright (Pixel)

- Length: 2" (50 mm)
- Width: .8" (20 mm)
- 5 LEDs per pixel
- 2 pixels per module
- Viewing Angle: 50/110°
- Voltage: 12VDC



LuxemBright™- ST (Pixel)								
Part Number	Color	Type	Power Consumption (watts per foot)	Intensity Per Module (mcd)	Expected Lifetime (hours)	Typical Wavelength/Color Temp	Modules Per Foot	Feet Per Reel
770-W0013	White	Standard	~ 3.0	36,000	20,000	5500-35000K	3.5	50
770-R0013	Red	Standard	~ 1.5	10,000	50,000	629	3	50
770-Y0013	Yellow	Standard	~ 1.5	6,500	50,000	590	3	50
770-G0013	Green	Standard	~ 3.5	15,000	30,000	520	3.5	50
770-B0013	Blue	Standard	~ 3.5	4,000	50,000	470	3.5	50

LuxemBright™-EC (Pixel)								
Part Number	Color	Type	Power Consumption (watts per foot)	Intensity Per Module (mcd)	Expected Lifetime (hours)	Typical Wavelength/Color Temp	Modules Per Foot	Feet Per Reel
772-W0013	White	Economy	~ 2.0	36,000	20,000	5500-35000K	2	50
772-R0013	Red	Economy	~ 1.0	10,000	50,000	629	2	50
772-Y0013	Yellow	Economy	~ 1.0	6,500	50,000	590	2	50
772-G0013	Green	Economy	~ 2.3	15,000	30,000	520	2	50
772-B0013	Blue	Economy	~ 2.3	4,000	50,000	470	2	50

Storage Temperature Range -40°F to 149°F (-40° to 65° C)  
 Operating Temperature Range -40°F to 140°F (-40° to 60° C)  
 Humidity: ≤ 70%

### Installation Supplies

- Wire Cutter
- Wire Stripper
- Wire Connectors
- Wire Connector Pliers
- Screwdriver
- Tape Measure
- Surface cleaning solution
- Wire Nuts
- Appropriate Power Supply
- 16 AWG or higher hook up wire.
- Silicone

Power Supplies					
Part Number	Input Current (A)	Maximum Output Current (A)	Input Voltage (VAC)	Output Voltage (VDC)	Watt
771-13112	3.2 / 1.6	12.5	110-120 / 220-240	12	150
771-16012	3.0 / 1.5	12.5	90-264 / 221-332	12	60

Accessories - Connectors			
Part Number	Color	Description	Quantity per package
771-13201	Red	Used to connect positive wires	10
771-13202	Blue	Used to connect negative wires	10

Accessories - Pinch Pliers		
Part Number	Description	Quantity per package
771-13301	Pinch pliers	1

Recommended connection wire ≥ AWG 20

This guide is meant for the use of skilled trades-people that are knowledgeable with electrical and sign installation. Connections made to the approved power supply should be performed by a licensed electrician. All installation should be done in accordance with local and state laws. Instructions in this guide may be altered to comply with these laws.



Image 1

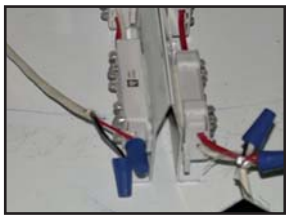


Image 2

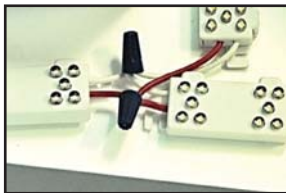


Image 3

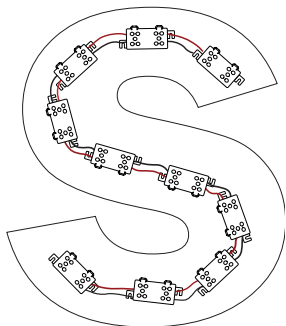


Image 4

**PREPARE AREA**

Drill a hole in the back and sides of the channel letter or another signage application. The location of the hole may vary depending on the desired exit of the wiring.  
 Inspect surface of channel letter casing or sign and remove all dust, graze and other contaminants. Use an alcohol based cleaner or some other solution which will not leave a residue. Allow surface to dry completely.

**SIDE MOUNT INSTALLATION GUIDELINES FOR CHANNEL LETTERS**

Letter Width (inch)	<5"	5"-18"	>19":	-	-
Strokes	1	2	NA	-	-

Recommended letter depth for the side mount: 2 inches to 4 inches.

For small letters with a stroke of 5 inches or less, it is only necessary to mount LuxemBright-ST or LuxemBright-EC down a single side of the letter (Image 1). Using the double face tape provided on the back of each module, position the modules so that they are an inch away from contact with the back of the letter. The first module should be placed near the drilled hole for easy wiring.

\*If higher brightness is desired, mount on all inside walls of the channel letter.

For large letters with a stroke between 5 inches and 18 inches, mount LuxemBright-ST around all inside walls of the channel letter. Again, position the modules an inch away from the back of the channel letter.

\*If your channel letter has a stroke larger than 18 inches, it is necessary to use a back mount installation (see below) or install baffles within the channel letter (Image 2).

After all modules have been securely placed within the channel letter or sign, splice together any connecting wires before permanently attaching (Image 3).

**BACK MOUNT INSTALLATION GUIDELINES FOR CHANNEL LETTERS**

Letter Width (inch)	<4"	4"~7"	7"~10"	10"~13"	13"~16"
Strokes	1	2	3	4	5
Letter Width (inch)	16"~19"	19"~22"	22"~25"	25"~28"	25"~28"
Strokes	6	7	8	9	10

Recommended letter depth for back mount: 4 inches to 8 inches.

For small letters with a stroke of 5 inches or less, mount a line of LuxemBright-ST or LuxemBright-EC directly down the center of the letter using the double faced tape provided on the back of each module (Image 4).

For large letters over 5 inches, use the diagram to determine how many rows of LuxemBright-ST or LuxemBright-EC you will need for your particular letter. Place the first row 2 ½ inches away from the edge of the letter and subsequent rows 3 inches apart (measuring from the center of the module). After modules have been arranged, use the double faced tape on the backs of the modules to secure.

\*All rows that are next to the letter wall should not be placed further away than 2 ½ inches or else hot spots will occur.

Apply silicone to the top and bottom edge of each module to permanently attach.

## INSTALLATION GUIDELINES FOR HALO LIT (REVERSE) CHANNEL LETTERS

Most guidelines for installing LuxemBright-ST or LuxemBright-EC will be using the back mount. For letters with a stroke smaller than 1 inch, the modules can be siliconed to the clear lexan back of the channel letter on their side (Image 5). This will not affect the brightness.

Letters with a stroke width of 1 inch up to 8 or 9 inches (depending on desired effect), require a single row of LuxemBright-ST or LuxemBright-EC mounted down the center of the clear lexan back of the channel letter (Image 6). The modules will be facing the channel letter (not the wall), allowing the light to reflect inside the letter and produced a homogenous glow of light on the wall.

Larger letters (up to any size) require a row of LuxemBright-ST or LuxemBright-EC to be mounted along the entire circumference of the clear lexan back of the channel letter. It is not necessary to mount LEDs down the center. Again, the modules will be facing the inside of the channel letter.

Secure the modules in place using the double face tape provided. Apply silicone to the top and bottom edges of each module to permanently attach.

## POWER SUPPLY

The LED Module incorporates no protection against short circuits, overload or overheating. Therefore, it is absolutely necessary to operate the modules with an electrically stabilized power supply.

When connecting unit to power supply, ensure that the connection has a reliable ground wire, no flammable material is nearby, temperature is moderate and air is dry.

The power supply must be mounted in an area that is accessible after installation. Mount with pan head screws to a dry area that will not exceed temperatures of 60°C (122°F)

### Connecting Unit to Power Supply

After securely mounting the power supply, have the primary connected by a licensed electrician in accordance with local and national codes.

## TESTING

To test the power supply, plug the power supply to AC power using 18 AWG wires. Check the red jump switch on the side. Set the input to 110V. Connect output points in power supply and measure the voltage using a multiple meter. If reading matches power supply, it is working correctly. If not, disconnect and contact vendor.

Plug power supply to AC output. All LED modules should be lit and intensity should be uniform. If not, check troubleshooting guide or contact vendor.

## WIRING

Wiring LED modules to power supply (Image 7)

When power supply is 15 ft from unit, 18 AWG wire can be used to connect power supply to light modules. For greater distances, use 14 AWG wires.

Recheck the polarity of each module wired before connecting to the power supply. Reverse polarity connections may damage the LED modules.

Each power supply can support 60 feet total with 4 15-foot parallel lengths. Please arrange power supplies accordingly.

The output of the power supply should be checked after loading. The current drawn by each leg should not exceed the rated current in the power specification table.

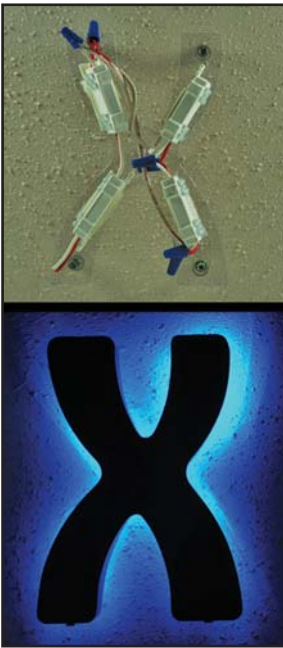


Image 5

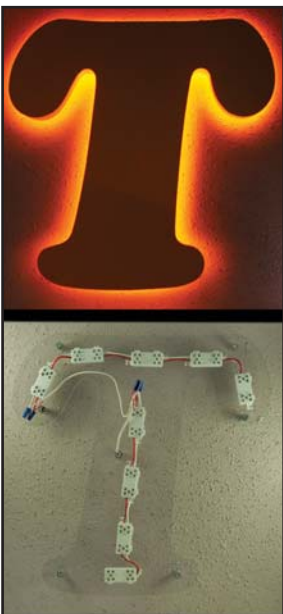


Image 6

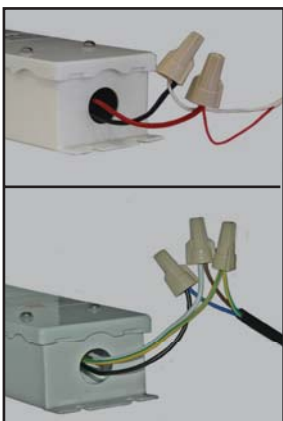


Image 7

## SAFETY

Turn power off at fuse or breaker panel before installation, inspection, service or removal. For use in dry and damp locations only. DO NOT use in wet locations. Power Supply must be properly grounded before operation. All wire connections must be made per NEC and local codes.

Note: These numbers are calculated according to the corresponding approved power supplies and will change depending on the wattage of the power supply being used. (The use of a non-approved power supply voids manufacturer warranty.)

Use UL Listed 18 AWG or higher insulated wire to connect modules to the power supply, or if there is extra wire needed between modules.

## CAO GROUP, INC. WARRANTY POLICY

This Warranty covers CAO part numbers: 770-W0013 (ACA011), 770-R0013 (ACA013), 770-B0013 (ACA046), 770-Y0013 (ACA045), 770-G0013 (ACA047), 772-W0013 (ACA011-A), 772-R0013 (ACA077), 772-B0013 (ACA046-A), 772-Y0013 (ACA045-A), and 772-G0013 (ACA047-A).

CAO Group warrants the LuxemBright-10 channel letter illumination to be free of defects in material and workmanship. The LuxemBright-10 will operate according to documented specifications from the time of manufacture and during the usage period (subject to the Terms and Conditions below). If failure occurs during the set warranty period, CAO Group will replace defective materials free of charge in accordance with the Terms and Conditions below.

## TERMS AND CONDITIONS

CAO Group-branded Channel Lettering Illumination System (Only approved system components are under warranty). Part numbers 770-R0013 (ACA013), 770-Y0013 (ACA045), 770-G0013 (ACA047), 772-R0013 (ACA077), 772-Y0013 (ACA045-A), and 772-G0013 (ACA047-A) CAO Group-branded Channel Lettering Illumination Kits carry a Standard Warranty Period of five (5) years. Part numbers 770-W0013 (ACA011), 772-W0013 (ACA011-A), 770-B0013 (ACA046) 772-B0013 (ACA046-A) carry a one (1) year Warranty. Warranty is based on a usage of 24 hours a day, continuous burn (8,760 hr/yr). Any other operating cycles may affect warranty conditions. There are no warranties which extend beyond the face of the CAO limited warranty. CAO disclaims all other warranties, express or implied, regarding the Products, including any implied warranties of merchantability, fitness for a particular purpose or non infringement. In the United States, some laws do not allow the exclusion of the implied warranties.

Any other installations or uses that are not specified by CAO Group in written documentation will not be covered under warranty. Installations must include proper wiring into a CAO Approved (and UL Approved) power supply, as well as proper connections with UL approved wire nuts or wire connectors using UL approved 16 AWG wires. Warranty is void under abnormal uses or applications, or if in violation of local, state or national safety codes. Using CAO LED systems and components with the products of any other manufacturer of the same type will void the warranty.

## RETURN MATERIAL AUTHORIZATION (RMA)

No Product may be returned directly to CAO without first contacting CAO for a Return Material Authorization ("RMA") number. If it is determined that the Product may be defective, you will be given an RMA number and instructions for Product return. An unauthorized return, i.e. one for which an RMA number has not been issued, will be returned to you at your expense. Authorized returns are to be shipped prepaid and insured to the address on the RMA in an approved shipping container. Your original box and packaging materials should be kept for storing or shipping your Product. To request an RMA, please click on Warranty information.

## EXCEPTION CLAUSE

Contact the CAO Group, Inc. to get a non-approved power supply recognized for warranty coverage. CAO Group, Inc. reserves the right to reject request if the power supply does not meet CAO Group, Inc. regulation standards.