LED Illumination System for Channel Letters and 12VDC Power Supplies Installation Guide

Products covered in this guide:

LED Module: Part Number Description

SL-001R Red LED Module
SL-002A Amber LED Module
SL-003B Blue LED Module
SL-004G Green LED Module
SL-005W White LED Module

Power Supplies: Part Number Description

TR3A 12VDC, 3.3 Amp, 40Watt, 1 Output
LP1020-12 12VDC, 1.6 Amp, 20Watt, 1 Output, Class 2
LP1040-12 12VDC, 3.3 Amp, 40Watt, 1 Output, Class 2
LP1060-12-GG290 12VDC, 5.0 Amp, 60Watt, 1 Output, Class 2

ATTENTION!

Scope:

- This guide is designed to aid in the installation of LED module channel letter illumination products sold by Electraletter® Inc.
- Skilled trades people that are familiar with general construction, electrical and sign installation techniques should do the installation.
- Licensed electricians should provide all installation and hook-up of both the primary input and secondary outputs of the power supply.
- All installation and hook-ups should be done in accordance with all national and local codes.
- In no way is this document intended to construe warranty or fitness of use of the products described, nor is it to provide safety instruction for those installing the products.

CAUTION: TURN OFF ALL INTEGRAL DISCONNECTS BEFORE SERVICING (IF INTEGRAL DISCONNECTS ARE NOT PROVIDED, TURN OFF POWER TO THE SIGN BY OTHER MEANS, i.e. TURN OFF THE CIRCUIT BREAKER OR REMOVE THE FUSE AT THE SEVICE PANEL).

THE FIELD ASSEMBLY OF ANY SIGN IS SUBJECT TO THE ACCEPTANCE OF LOCAL INSPECTION AUTHORITY.

LED Modules

Electraletter® LED modules are a low-voltage, long-life alternative to neon and florescent lighting for channel letters. The light source for the LED module is the Light Emitting Diode (LED) instead of traditional neon or florescent tubes. LED technology allows the LED modules to provide excellent color and brightness in a safe, low-voltage circuit (12 volts DC). LED modules are a robust, easily installed product designed for a long life of safe, maintenance-free operation.

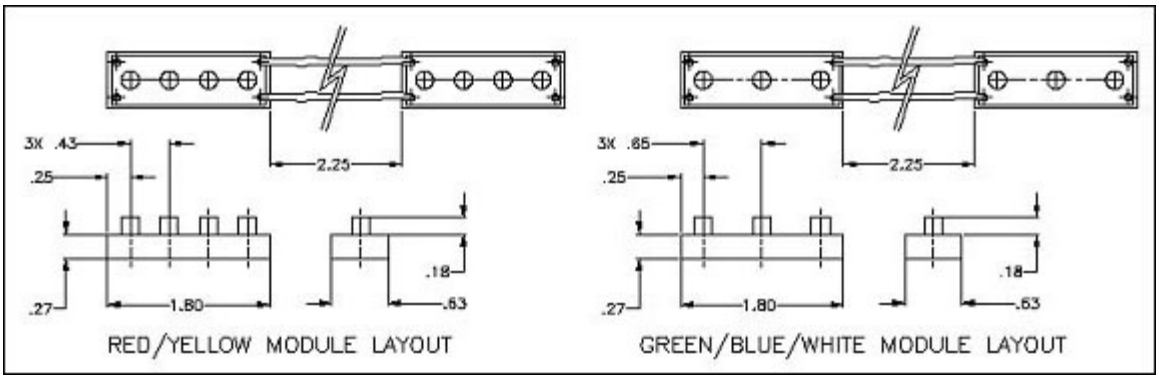

Fig. 1- LED module layout. All modules operate on 12VDC and can be run by the same power supply.

Tools Required:

- Wire stripper/cutter
- Measuring tape

Standard Hardware and Supplies:

- Splice connector, Molex IDC (Insulation Displacement Connector) Type
- 4" or 8" nylon zip ties
- 3M VHB tape
- Bulk wire

Guidelines for Populating the Channel Letter

Populating a channel letter with LED modules is as easy as peeling the liner off the factory-applied mounting tape and firmly pressing the light module in the desired location. *It is important that the bonding surface be clean and dry*.

The following guide can help determine where the LED modules should be places and how many to use. (Results may vary based upon desired light intensity and letter construction.)

- LED modules are designed to be placed in rows:
  - An LED module should have approximately 2.5 inches of space between modules within the row. This will result in 3 modules per linear foot.
- One row of LED modules will illuminate a stroke width of 4 inches or smaller in a channel letter (letter depth of 4 to 8 inches.) Letters with a stroke width larger than 4 inches should have multiple rows of LED modules placed according to the following rule:
  - 4 to 6 inch stroke- 2 rows
  - 6 to 8 inch stroke- 3 rows
  - 8 to 10 inch stroke- 4 rows
  - *Actual number of rows/modules may vary depending upon the application. The above schedule is offered only as a guideline.*

When all modules are in place, the secondary putput from the power supply can be connected. Multiple letters in a sign must be connected to the power supply in parallel. Use UL listed Insulation Displacement Connectors to make this connection and to cap off the open ends of the rows.

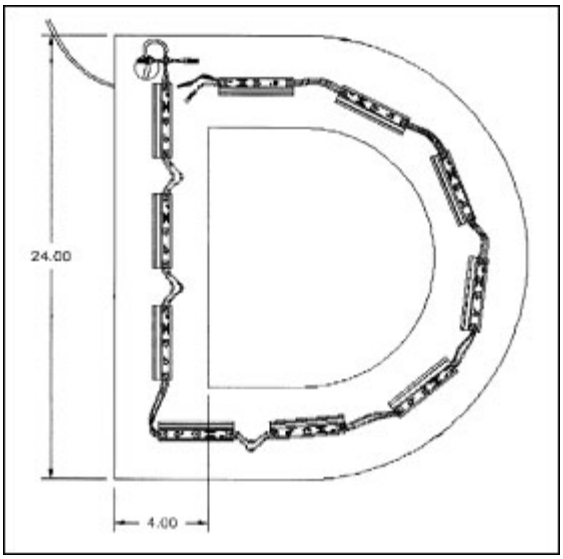

Fig. 3- Examples of 4 inch stroke letters populated with LEDs.

Connecting to a Power Supply

- All LED modules, regardless of color, operate on 12VDC.
  - All color modules can be connected to the same power supply.
  - Colors can be mixed on the same power supply.

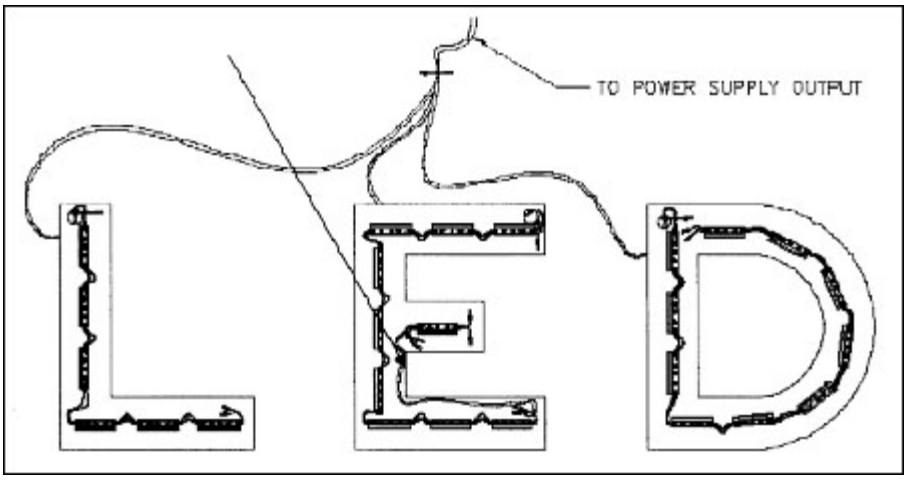

Fig. 4- Sample sign layout and connections.

Power Supply Loading for LED Modules

LED Module Type	Modules per Foot	Maximum Modules per 40Watt Remote (Indoor) Power Supply	Maximum Modules per 20Watt Class2 (Outdoor) Remote Power Supply	Maximum Modules per 40Watt Class2 (Outdoor) Remote Power Supply	Maximum Modules per 60Watt Class2 (Outdoor) Remote Power Supply
SL-001R Red	3	100	50	100	150
SL-002A Amber	3	100	50	100	150
SL-003B Blue	3	100	50	100	150
SL-004G Green	3	100	50	100	150
SL-005W White	3	100	50	100	150

Power Supply Options

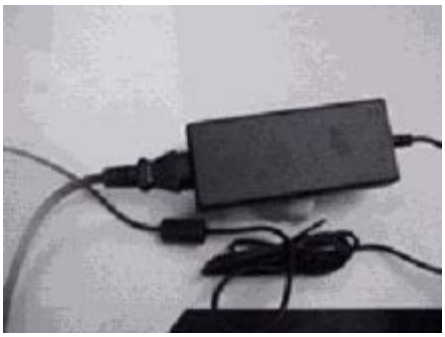


Fig. 5- Clockwise from top left- 40Watt Remote P/S (TR3A), 20Watt Class2 P/S (LP 1020-12), 40Watt Class2 P/S (LP 1040-12), and 60Watt Class2 P/S (LP 1060-12-GG-290)

Mounting the Power Supply

Mount the power supply directly to the wall with #8 or #10 pan head screws. The power supply must be mounted in a wall ventilated area that allows for accessibility after installation and must not be adjacent to combustible materials or in an area that exceeds temperatures of 50°C (122°F). Mount the power supply indoors, out of the weather, and do not leave it exposed to rain or water. For outdoor or wet locations, the power supply can be enclosed inside of a raceway, inside the channel letter itself, in a UL listed for wet locations transformer box, or in a NEMA 3R box with ventilation. Some acceptable boxes for power supplies being mounted outdoors are Hoffman p/n A12R126, Westrim TC 18SO-UL or equivalent. A Class 2 power supply can also be used for outdoor or wet locations.

Connecting the Primary

After securely mounting the power supply, have the primary connected by a licensed electrician in accordance with local and national codes. For the 40Watt Remote Power Supply simply plug the AC power cord into a standard 3 prong grounded outlet.

Connecting the Output

LED power supplies have Class2 DC outputs. For reliability and

performance, the following loading is not to be exceeded.

Power Supply Part Number	Outputs	Input Voltage (Volts-AC)	Output Power (Watts)	Output Voltage (Volts-DC)	Maximum Output Current (Amps)
TR3A	1	100-240	40	12	3.3
LP1020-12	1	90-264	20	12	1.6
LP1040-12	1	90-264	40	12	3.3
LP1060-12	1	90-264	60	12	5

Table 2- Power supply outlet schedule.

It is recommended that the current be checked on each power supply output after loading is complete. The current drawn by each leg should not exceed the current rating on the power supply label. If the measured current does exceed the rated current, reduce the nuber of LED modules on that leg until the current is below the rated output. **The total number of modules per power supply is not to exceed the schedule as shown in Table 1.**
NOTE: If any power supply ouput leads are left unused, the unterminated wires must be individually capped inside a UL Listed junction box, raceway, or sign housing.

Routing Secondary Wires

When wiring the secondary outputs of the power supply, all routing through walls must be sealed with outdoor rated caulk to protect the sign and building from water damage and the cable from chafing. The power supply leads and letter-to-letter jumpers can be routed through walls, inside and outside without conduit. It is recommended that all connections be enclosed in a UL listed junction box with strain relief.

Extension of Power Supply Leads

If a longer lead wire from the power supply to the modules is needed, an extension can be used. The extension should be kept as short as possible (under 15 feet for 18 AWG UL listed, or under 50 feet for 14 AWG UL listed.)

WARNING: CHECK POLARITY

After all wiring is complete and the lighting modules are connected to the power supply, RECHECK THE POLARITY OF ALL CONNECTIONS. Reverse polarity connections may damage the LED modules and voids

the product of warranty.

Power Supply Dimensions

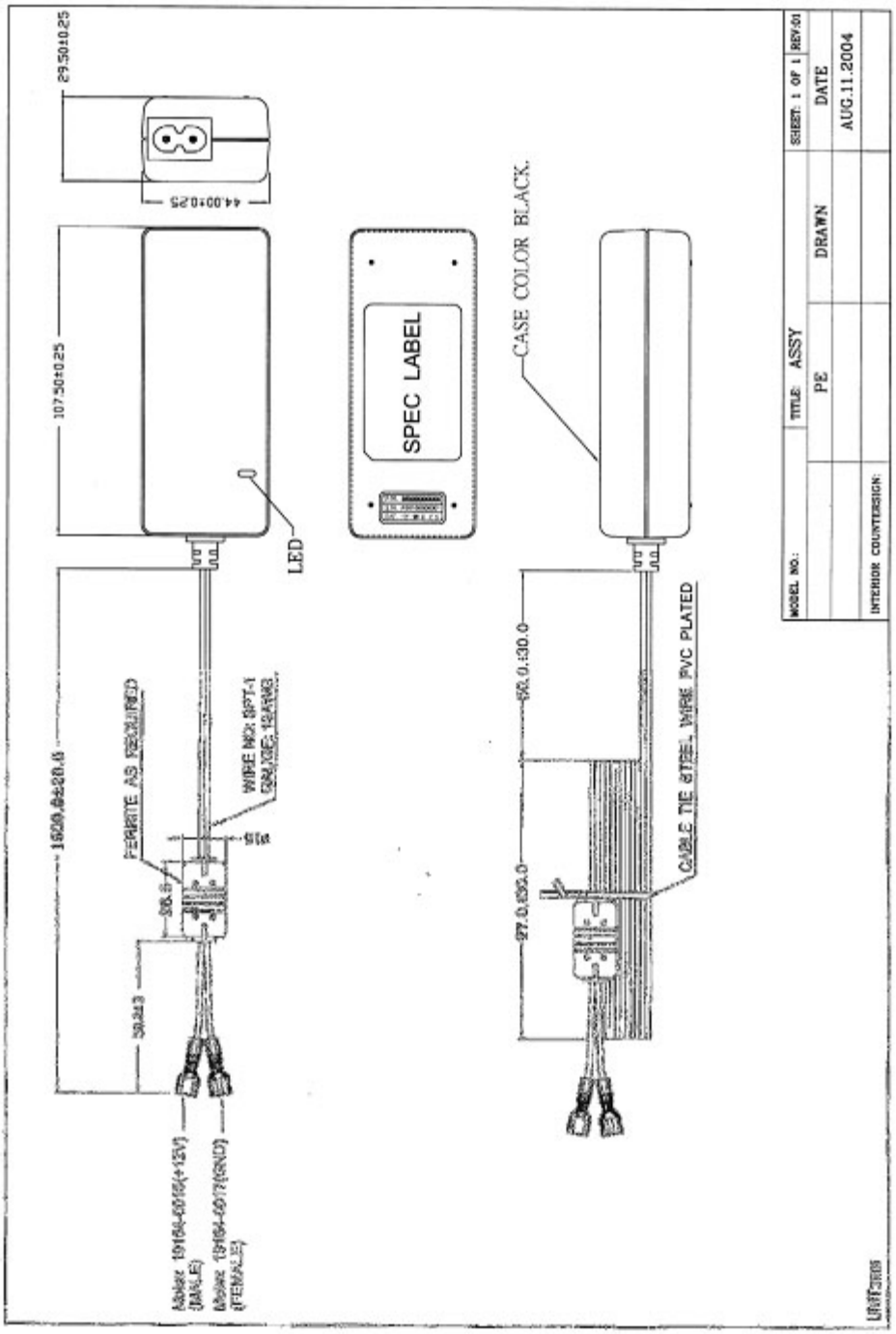

Fig. 6- Overall dimensions for 12VDC, 40Watt, Remote Power Supply (TR3A)

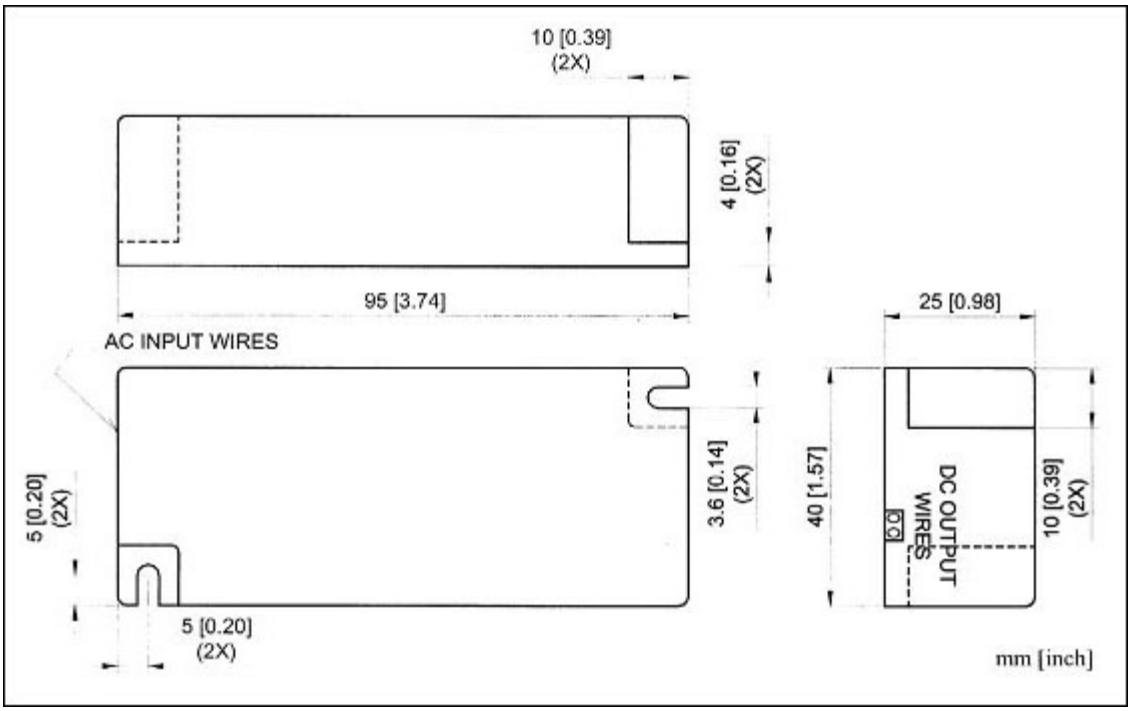

Fig. 7- Overall dimensions for 12VDC, 20 Watt, Class2 Power Supply (LP 1020-12)

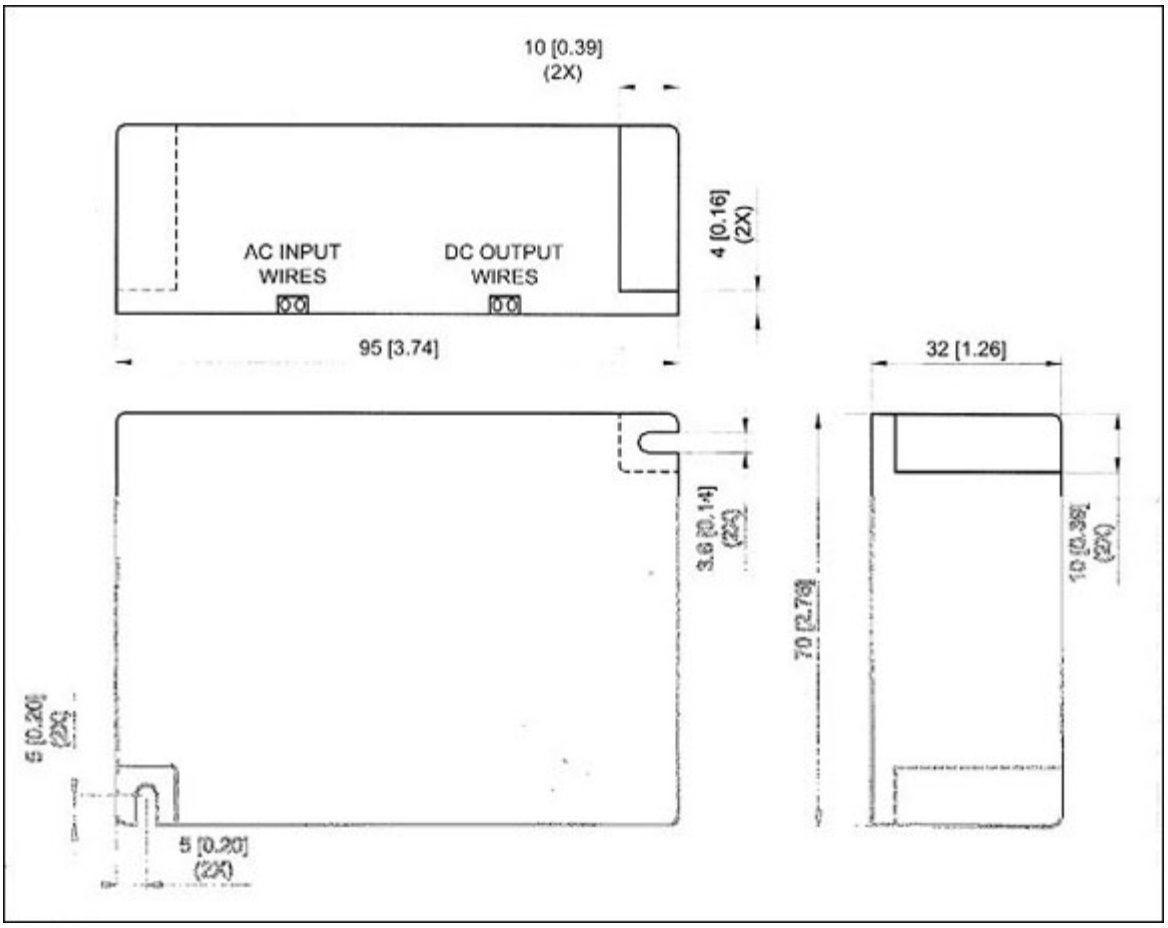

Fig. 8- Overall dimensions for 12VDC, 40Watt, Class2 Power Supply (LP1040-12)

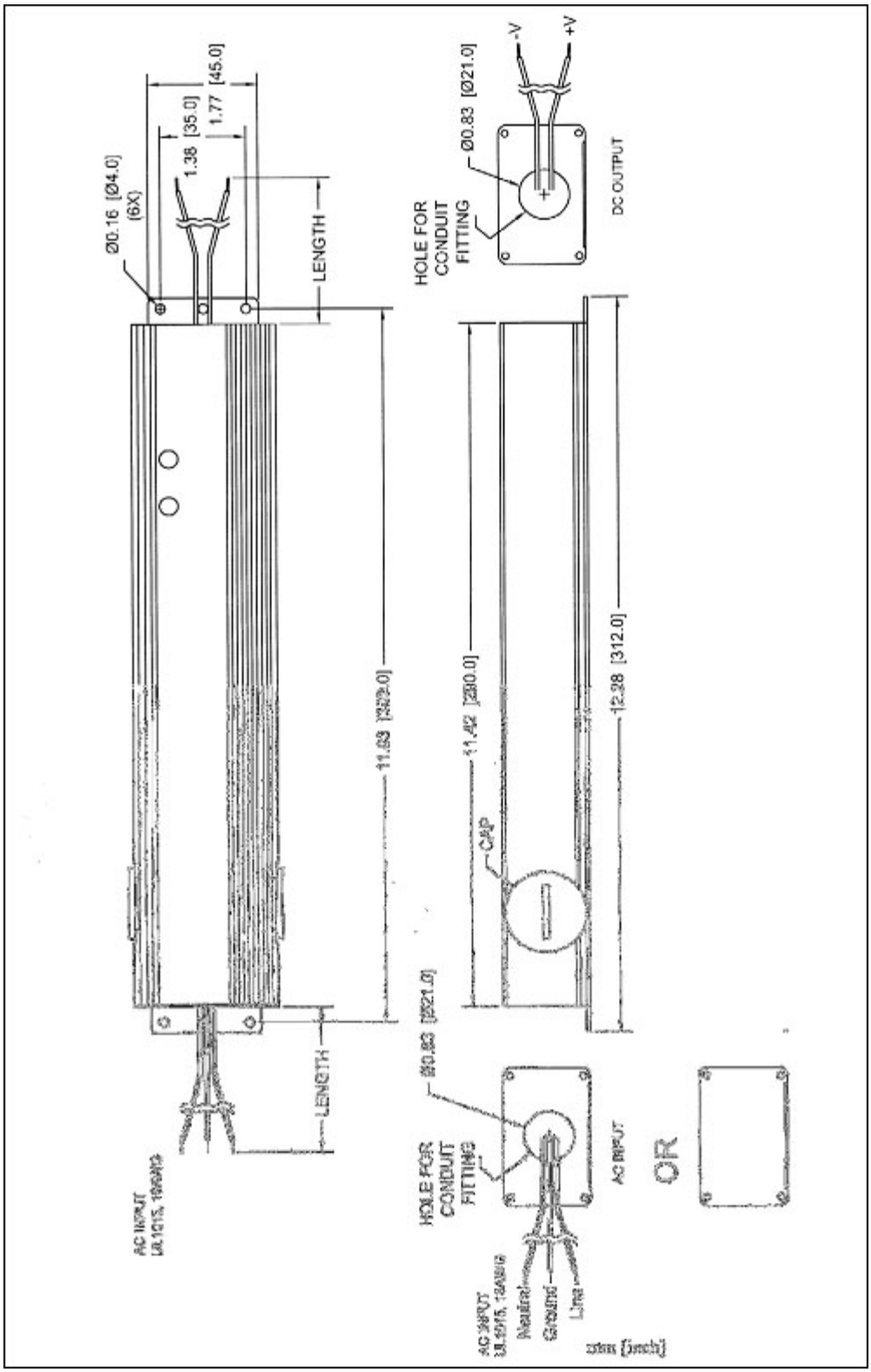

Fig. 8- Overall dimensions for 12VDC, 60Watt, Class2 Power Supply (LP1060-12)

Trouble Shooting Guide

- Entire sign or leg with LED modules does not light after complete installation.
    - Check the connection from the power supply to the first LED module. Make sure the polarity of the connections made at the power supply lead and any jumper wire is correct.
- *Still does not light.*
    - Using a volt meter check the output of the power supply. The output voltage should be 12.0VDC + or - 0.5VDC. If there is no output voltage, have a licensed electrician check the input voltage. Make sure the power supply is hooked up correctly and getting primary power. If the power supply is hooked up correctly and getting primary power and there is still no output voltage, replace the power supply with a new one.
- *The beginning of an LED module led lights up, but the entire leg does not light or lights intermittenly.*
    - The primary cause of a portion of an LED module leg not lighting or lighting intermittenly is a bad connection between the modules that light and the modules that don't light. Check this connection.
- *One LED module does not light, but all others in the leg light.*
    - LED modules are designed so if one module fails, it will not cause the entire sign or leg to go out. If one LED module is not lighting, but all others in the leg are lighting, replace the module with a new one.