LIGHTING FOR P.O.P, DISPLAY, EXHIBIT, and SIGNS

THE SCOOP ON UNDERWRITERS (UL) LISTINGS
(LUMINAIRE, PORTABLE LUMINAIRE, ELECTRIC SIGNS,
WIRED CABINETS, and COMMERCIAL DISPLAYS)

by William H. Siegel EE, LC, CLEP

Lighting is to a POP display what the band is to a parade! Well lit displays simply sell more merchandise. A properly lit display is not an accident. It is the end result of a deliberate and focused collaboration between sales, creative design, product development, engineering, estimating, purchasing, and the lighting vendor.

Sooner or later, every lighting project will face the question of whether or not to require Underwriter’s Laboratory (UL) listing of the electrical and mechanical components, especially the lighting elements, of the display. Maybe your client is more liability conscience than most and has this requirement as part of their specifications or, maybe your own company’s design philosophy demands this extra measure of quality and safety or, maybe your vendor has strongly suggested you consider it. However the question gets asked, the answer will effect the choice and construction of the electrical components and hence the timing and cost of your project. Understanding UL, and what UL listing means to you, will help you to make the right choices and a better, more competitive product.

The first concept to understand is that UL does not “approve” anything. They only “List” products. That means the product has been inspected by UL and complies with the current listing standard for such products. It also means the manufacturer allows UL to perform onsite periodic inspections of the product as it is manufactured to insure future product continues to meet these standards.

The second common misunderstanding is focus. UL’s concern is almost exclusively safety, not function or performance. A UL listing does not guarantee one product works better or performs better than another. It means only that the product has met the safety standard set by the listing requirements.

IT ALL STARTS WITH NFPA70, THE NATIONAL ELECTRICAL CODE (NEC): here is what the NEC has to say about the concept of “listed” and “approved”:

NFC 600.3: Every electric sign of any type, fixed or portable, shall be listed and installed in conformance with that listing unless otherwise permitted by special permission.

SPECIAL PERMISSION, NEC 100.2: Approved: The conductors and equipment required or permitted by this code shall be acceptable only if approved.

APPROVED: NEC100: Acceptable to the authority having jurisdiction.
UNDERWRITERS (UL) LISTINGS FOR P.O.P, DISPLAYS, SIGNS, AND EXHIBITS

AUTHORITY HAVING JURISDICTION (AHJ): NEC 90.4 Enforcement: The authority having jurisdiction for enforcement of code will have responsibility for making interpretations of rules, for deciding upon approval of equipment and materials and for granting the special permission contemplated in a number of rules.

LABELED: Equipment or materials to which has been attached a label, symbol, or other ID mark of an organization acceptable to the AHJ and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with the appropriate standards or performance in a specified manner.

LISTED: Equipment and materials included in a list published by an organization acceptable to the AHJ and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or material meets appropriate designated standards or has been tested and found suitable for use in a specified manner.

NEC 90.7 EXAMINATION OF EQUIPMENT FOR SAFETY: It is the intent of this code that factory-installed internal wiring or construction of equipment need not be inspected at the time of installation of equipment, except to detect alterations or damage, if the equipment has been listed by a qualified Nationally Recognized Testing Laboratory (NRTL).

NEC 110.3(B) INSTALLATION AND USE: Listed and labeled equipment shall be used or installed in accordance with any instructions included in the listing or labeling.

Generally, listed equipment modified in the field will lose its listing. Unless the modifications have been specifically tested and evaluated by an organization acceptable to the AHJ, there is no way to determine if the modified product continues to comply with the safety requirements. Products originally tested and evaluated to allow for field modification will be marked accordingly.

Municipalities using their own inspection departments to verify compliance can permit alternative methods and materials. Municipalities with their own codes adopted by jurisdiction, take on greater responsibility and perhaps liability. A shield of protection is given by incorporating the use of listed and labeled products.

A NATIONALLY RECOGNIZED TESTING LABORATORY, or NRTL, is the organization referred to previously. UL is one of the larger and perhaps the most well known NRTL in the USA. UL is charged with writing most if not all of the safety and electrical standards used in the USA. Most of UL’s standards are accepted by The American National Standards Institute (ANSI) as public national standards. The National Electrical Code (NEC or NFPA70) is another ANSI Standard.

There are many other NRTLs available to test products (ETL, CSA, SGS, TUV, etc.) What is important to understand is that all NRTLs, including UL, test to the same ANSI standards.

INTERNATIONAL HARMONIZATION Globalization, world markets, and facilitating trade are at the forefront of everyone’s mind. Many U.S.-based manufacturers distribute products in Europe, Asia and other international locations. Similarly, products manufactured in other countries are distributed in the United States. Therefore, these global products must comply with the requirements of multiple countries, and, specifically, multiple safety standards. As a result, many industries seek standards harmonization.

UL supports standards harmonization to minimize redundant or conflicting standards where support for such harmonization exists. Typically, international harmonization implies the adoption of an International Electrotechnical Commission (IEC) or International Organization for Standardization (ISO) standard. When support for harmonization of a standard is achieved, then an IEC-based UL standard is developed.

UL LISTINGS USUALLY COVER entire families of products. To obtain a UL listing a manufacturer submits a representative sample product to UL for inspection. If UL determines the product meets it’s applicable standards it authorizes the manufacturer to affix a UL label to the product and...
initiates periodic in factory inspections to insure compliance. Labels are only applied at the point of final assembly where the product or system is considered to be finished and complete. The honesty and integrity of the manufacturer is an integral part of this system. Crownlite is extremely proud of the excellent reputation it has earned for engineering and producing products meeting the highest standards of quality and performance. Our relationship with UL and the industry in general is excellent.

**PROCEDURAL STANDARDS VS. GENERAL COVERAGE STANDARDS:**

A “General Coverage” standard allows a manufacturer to list and label a product without sending it to UL for engineering evaluation and added testing. Crownlite maintains general coverage procedures for both fluorescent and incandescent lighting fixtures under UL1598.

Under a General Coverage standard:
1. The local UL field inspector is the Authority Having Jurisdiction (AHJ).
2. No further engineering investigation is required.
3. Inspections take place in the mfg's factory.
4. It allows for flexibility in manufacturing.

A “Procedural” standard requires a complete engineering investigation and requires additional testing:
1. The UL engineer at UL is the Authority Having Jurisdiction (AHJ).
2. A complete engineering investigation is required.
   i. This usually focuses on construction and thermal testing.
3. Inspections take place at the mfg’s factory.
4. Every product must strictly adhere to the procedure.
5. If not written correctly, the procedure allows very little room for flexibility.

**THERE ARE SEVERAL BASIC UL LISTINGS** applicable to most if not all P.O.P displays, Signs, and Exhibits and the lighting products used in them. Crownlite maintains UL listings under all the major applicable UL standards:
1. UL1598 (general coverage).
2. UL 153 (Portable lamps)
And
3. UL48 (Electric signs - a display having lettering is considered a “sign” by UL).

We also produce several electrical distribution systems suitable for listing under UL65 (wired cabinets) and UL962 (Retail Commercial Displays).

4. UL65 covers wired cabinets, such as illuminated display cases.
   a. Cabinets intended for other than merchandise display are covered under Furnishings, Household and Commercial (UL962).
   b. A Cabinet is defined by UL as being “totally enclosed”.
   c. A display case that is completely open in the rear and in the front can not be a “cabinet” as defined by UL. Therefore, UL65 does not apply in this application.

5. UL962 is a commercial furnishing and display standard. Covers the inspector would investigate all the components and construction to see if it met UL962 requirements. He would first ask if all the components where UL listed or recognized and under what standards.

Either way, the UL962 listing would need to cover the entire display because UL962 is not a lighting fixture or enclosure standard. That is UL1598. UL962.

**FREQUENTLY, OUR CUSTOMERS ARE ASKED TO OBTAIN UL LISTING** for their entire display or sign system, rather than on just for the lighting subsystem. Since UL labels are only applied at the point of final assembly where the product or system is considered to be finished and complete, they are required to obtain their own UL listings. Product inspections Then take place, and UL labels are then affixed, in their own factories.

**LISTED COMPONENT VS. RECOGNIZED COMPONENT**

When a UL Listed and Labeled product is incorporated into another product or system (a display), it becomes a “Recognized Component” of that new product or system.

When UL investigates the new larger system the listing process is faster and easier when Recognized Components are used because UL will not have to completely reinvestigate products.
or components that have already been UL listed on their own. Usually, recognized Components are designed to be factory connected only. There are exceptions that can be field installed. Components listed under the correct standard, such as a lighting fixture already listed and labeled under UL1598, would not require any further investigation, saving time and money.

Any components that are only Recognized Components would undergo a limited further investigated. Some components may require de-rating to be acceptable when used in the new product or system. This information will be found in the “Conditions Of Acceptability” for the recognized component.

Any components not Listed or Recognized would require a complete engineering review. That gets time consuming and expensive.

THE UL LISTING AND LABELING ON THE NEW LARGER SYSTEM indicates UL has investigated all the components in the context of the new system and found the entire new system suitable, meeting UL’s requirements and standards, and suitable for listing and labeling as a separate finished product on its own. This new listing of the completed product or system supersedes any listings or labeling of the recognized components inside.

Crownlite often reviews samples of custom products with UL as a standard procedure before making customer’s samples or moving to production. When required, we will not proceed without UL’s agreement the system is UL listable.

FIELD MODIFICATIONS of UL LISTED PRODUCTS

The issue revolves around the concern for loss of control, materials substitution, loss of quality, the need for re-inspection, the continued meeting of UL standards after modification, voiding manufacturer’s warranties, and many others. There has been much heated discussion on this topic both among manufacturers and UL. In general, field modifications to UL listed products are not allowed because of the large liability exposure to UL, the manufacturer, and the owner. Typically, the only parts allowed to be field replaced without voiding the existing UL listing or manufacturer’s warrantee are the lamps and, in the case of fluorescent and HID light fixtures, the ballast. Ballast replacement is either done under warrantee by the manufacturer’s own field service people or a licensed contractor, in order to avoid added liability exposure.