Understanding Class P Driver Certifications

History

Intertek *(certification only)*

- December 2014: ETL Listing offered for Class P LED drivers
- Not certified to a UL or CSA standard
- Home grown program to meet requests of customers
- References UL935 and UL8750 as basis for testing & requirements
- Luminaire OEMs *may not* benefit if program is not accepted by UL or CSA
- Meant to enable driver substitutions (reduce pitfalls)

History

CSA Group *(certification & standards)*

- June 2015: CSAus Listing offered for Class P LED drivers *(per UL standard)*
  - Class 3426-98
  - Certifies to UL 8750 Supplement SE
- 2017??: CSA Listing for Class P LED *(per CSA standard)*
  - Is up for approval as part of standard CSA C22.2 No. 250.13 (Feb 2017)
  - Similar requirements as in portions of UL935 and UL8750
- US luminaire OEMs benefits *limited* if program not embraced by UL
- Meant to enable substitutions (reduce pitfalls)

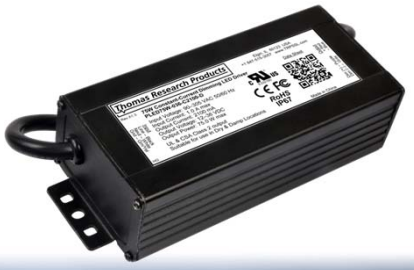
History

UL *(certification & standards)*

- April 2014: Type TL LED driver Program
  - UL8750 Supplement SC
  - UL Recognized
- January 2016: Class P LED driver Program
  - UL8750 Supplement SE
  - UL Listed
- Does not recognize Class P LED driver certification of Intertek or CSA
- Resembles UL935 requirements
- US Luminaire OEMs benefit most from UL certification
- Meant to enable driver substitutions (reduce pitfalls)

Basic Driver Certifications

- May be Listed or Recognized
  - o Listed - Direct-plug-in, cord-and-plug field-wiring compartment, or mating connector for a manufactured wiring system
  - o Recognized – Leads, connector, terminal block, solder points, etc.
- Most LED Drivers are Recognized Components
  - o No enclosure requirements
  - o Temperature test confirms compliance with ratings of components
  - o No temperature limits during abnormal testing
  - o Drivers must be evaluated for each luminaire project separately



Type TL Certification

- UL recognized with additional requirements
- Standardized certain constructions requirements
  - Enclosure
  - Supply and load connection methods
- Standardized certain testing requirements & added thermal limits
  - Temperature testing
  - Abnormal testing
- Standardized the way data was collected (iQ Database)

Class P Certification

- Uses Type TL as a starting point
  - Many requirements are identical to Type TL
  - Standardized construction and testing requirements
- Modified Temperature Testing scheme (at UL)
  - Evaluates LED Driver under normal operating conditions and confirms that the LED Driver case temperature does not exceed 90 C
  - Evaluates LED Driver case under abnormal testing and increased ambient conditions. Confirms these temperatures generally do not exceed 110 C (with short excursions up to 150 C as with UL 935)
- Fundamentally means the driver will not present a shock or fire hazard due to excessive temperature or fault conditions
  - Can be implemented in different ways
  - Schemes can be for one time use or self resetting
  - Protection can occur by power reduction or shut off of output

Class P Certification

- Tc point is not required for Class P driver applications
  - o Safety features are built-in
  - o Tc point can be used for life estimates and warranty temperature limits
  - o No Measured Tref & Tref Max values to consider, no required Tc point for safety
- **Built-in safety features DO NOT EQUAL long lifetime performance**
  - o Driver is protected from thermal overheating
  - o Driver may not have a long life at high case temperatures
- **Built-in safety features DO NOT EQUAL high temperature performance**
  - o Driver is protected from thermal overheating
  - o Driver may dim or shut off at high case temperatures (cycling)
- **Use driver manufacturer's recommended operating temperatures for long life and full warranty**

Type TL Substitutions

- Type TL
  - Focus is on compatibility between driver temperature ratings
- When substituting a driver:
  - Alternate and original driver must both be Type TL certified
  - **Tref** (alternate spec ≤ original spec) means alternate driver runs as cool or cooler
  - **Trefmax** (alternate spec ≥ original spec) means alternate driver can handle same or higher temperatures

Type TL Driver - Original

Type TL Driver - Alternate

Class P Substitutions

- Offers a path for Luminaire manufacturers to substitute LED Drivers without the need to resubmit to UL
- LED Drivers are certified as a UL Listed product
- More flexible, simplified, interchangeability scheme
- Temperature points are not taken into consideration

UL Recognized Driver (Type TL optional)
OR
UL Listed Driver (Class P)

UL Listed Driver
(Class P)