

# UL/CSA FUSE CLASSES AND APPLICATIONS

## Overcurrent and short-circuit protection of power and lighting feeders and branch circuits

### Current Limiting

Fuses which meet the requirements for current limiting fuses are required to be labeled "Current Limiting". Fuse labels must include: UL/CSA fuse class, manufacturer's name or trademark, current rating, AC and/or DC voltage rating, and AC and/or DC interrupting rating. "Time Delay," "D," "TD" or equivalent may also be included on the label when the fuse complies with the time delay requirements of its class.

**CLASS L**

**STANDARDS:** UL Standard 248-14,  
CSA Standard C22.2, No. 106, classified as HRCI-L

**VOLTAGE RATING:** 600 volts, AC and/or DC

**CURRENT RATINGS:** 601-6000 amps  
KLPC also available 200-600A; LDC also available 150-600A

**INTERRUPTING RATING:** AC: 200,000 amps rms symmetrical  
DC: 50,000, 100,000, or 200,000 amps

Not interchangeable with any other UL fuse class.  
Time delay: Class L fuses may be marked "Time-Delay" although UL does not investigate time-delay characteristics of Class L fuses.  
KLPC & KLLU: 10 seconds at 500% current rating  
LDC: 4 seconds at 500% current rating

**LF SERIES:** KLPC, KLLU, LDC

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**CLASS R**

**STANDARDS:** UL Standard 248-12,  
CSA Standard C22.2, No. 106, classified as HRCI-R

**VOLTAGE RATINGS:** 250 and 600 volts, AC; 125 and 300 volts DC

**CURRENT RATINGS:** 0-600 amps

**INTERRUPTING RATING:** 200,000 amps rms symmetrical

**TWO CLASSES:** RK1 and RK5  
Time delay is optional for Class R fuses.  
Time Delay fuses are required to hold 500% current rating for a minimum of ten seconds. Same dimensions as UL Class H fuses, terminals modified to provide rejection feature. Fits UL Class R fuse holders which reject non Class R fuses.  
Physically interchangeable with UL Class H, NEMA Class H, and UL Classes K1 & K5 when equipment has Class H fuse holders.

**CLASS RK1**

High degree of current limitation. Provides IEC Type 2 (no damage) protection for motor starters and control components. Time Delay optional, LLSRK\_ID Series provides visual indication of blown fuse.

**LF SERIES:** Time Delay: LLNRK, LLSRK, LLSRK\_ID  
Fast Acting: KLNR, KLSR

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**CLASS RK5**

Moderate degree of current limitation, adequate for most applications. Time delay optional. FLNR\_ID, FLSR\_ID and IDSR series provides visual indication of blown fuse.

**LF SERIES:** FLNR, FLNR\_ID, FLSR, FLSR\_ID, and IDSR

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**CLASS J**

**STANDARDS:** UL Standard 248-8,  
CSA Standard C22.2, No. 106, classified as HRCI-J

**VOLTAGE RATING:** 600 volts, AC

**CURRENT RATINGS:** 0-600 amps

**INTERRUPTING RATING:** 200,000 amps rms symmetrical

Not interchangeable with any other UL fuse class.  
Time delay optional: Minimum of 10 seconds at 500% current rating.

**LF SERIES:** Time Delay: JTD\_ID, JTD  
Fast Acting: JLS

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**CLASS CC/CD**

**STANDARDS:** UL Standard 248-4,  
CSA Standard C22.2, No. 106, classified as HRCI Misc.

**VOLTAGE RATING:** 600 volts, AC

**CURRENT RATINGS:** UL Class CC: 0-30 amps  
UL Class CD: 35-60 amps

**INTERRUPTING RATINGS:** 200,000 amps rms symmetrical  
Time delay optional: Minimum of 12 seconds at 200% current rating.

**LF SERIES:** Time Delay: CCMR (motors), KLDR (transformers)  
Fast Acting: KLKR

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**CLASS T**

**STANDARDS:** UL Standard 248-15  
CSA Standard C22.2, No. 106, classified as HRCI-T

**VOLTAGE RATINGS:** 300 and 600 volts AC, 125 and 300 volts DC

**CURRENT RATINGS:** 0-1200 amps  
900 to 1200 amps UL Recognized for 600V version

**INTERRUPTING RATING:** 200,000 amps rms symmetrical  
Fast-Acting fuses. High degree of current limitation.  
Very small fuses; space-saving and non-interchangeable with any other UL fuse class.

**LF SERIES:** JLLN, JLLS

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**CLASS G**

**STANDARDS:** UL Standard 248-5  
CSA Standard C22.2, No. 106, classified as HRCI Misc.

**VOLTAGE RATING:** 480 volts, AC

**CURRENT RATINGS:** 0-60 amps

**INTERRUPTING RATING:** 100,000 amps rms symmetrical

Not interchangeable with any other UL fuse class.  
Time delay optional: Minimum of 12 seconds at 200% current rating.

**LF SERIES:** SLC

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**CLASS K**

**STANDARDS:** UL Standard 248-9; No CSA Standard

**VOLTAGE RATINGS:** 250 and 600 volts, AC

**CURRENT RATING:** 0-600 amps

**INTERRUPTING RATINGS:** Three permitted: 50,000, 100,000, and 200,000 amps rms symmetrical

Time delay is optional for Class K fuses.  
Time Delay fuses are required to hold 500% current rating for a minimum of ten seconds. Same Dimensions and Physically interchangeable with UL Class H fuse holders.  
Class K fuses are not permitted to be labeled Current Limiting because there is no rejection feature as required by NEC® Article 240-60(B).

**CLASS K1**

Same prescribed degree of current limitation as RK1 fuses when tested at 50,000 or 100,000 amps rms symmetrical.

**LF SERIES:** Time Delay: LLNRK, LLSRK  
Fast Acting: KLNR, KLSR

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**CLASS K5**

Same prescribed degree of current limitation as RK5 fuses when tested at 50,000 or 100,000 amps rms symmetrical.

**LF SERIES:** NLN, NLS

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## UL/CSA FUSE CLASSES AND APPLICATIONS

### Overcurrent and short-circuit protection of power and lighting feeders and branch circuits

#### FUSES FOR SUPPLEMENTARY OVERCURRENT PROTECTION

**STANDARDS:** UL Standard 248-14; CSA Standard C22.2, No. 59-1. Three Classifications covered:

**NOTE:** Fuses may be rated for AC and/or DC when suitable for such use.

(1) **MICRO FUSES**  
 Voltage ratings: UL, 125 volts; CSA, 0-250 volts  
 Current ratings: UL, 0-10 amps; CSA, 0-60 amps  
 Interrupting rating: 50 amps rms symmetrical

(2) **MINIATURE FUSES** (CSA classifies these as Supplemental Fuses)  
 Voltage ratings: UL, 125 or 250 volts; CSA, 0-600 volts  
 Current ratings: UL, 0-30 amps; CSA, 0-60 amps  
 Interrupting rating: 10,000 amps rms symmetrical

(3) **MISCELLANEOUS CARTRIDGE FUSES** (CSA classifies these as Supplemental Fuses)  
 Voltage ratings: UL, 125-1000 volts; CSA, 0-100 volts  
 Current ratings: UL, 0-30 amps; CSA 0-60 amps  
 Interrupting ratings: 10,000, 50,000, or 100,000 amps rms symmetrical  
 Time delay (Optional); Minimum delay at 200% fuse rating:  
 5 seconds for fuses rated 3 amps or less  
 12 seconds for fuses rated more than 3 amps

**LF SERIES:** BLF, BLN, BLS, FLA, FLM, FLQ, FLU, KLK, KLO, KLKD, SPF  
**NOTE:** Littelfuse electronic fuses are also covered by these standards; see electronic section of this catalog, or [littelfuse.com](http://littelfuse.com) for complete listing.

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#### SPECIAL PURPOSE FUSES

There are no UL Standards covering this category of fuses. These fuses have special characteristics designed to protect special types of electrical or electronic equipment such as diodes, SCR, transistors, thyristors, capacitors, integrally fused circuit breakers, parallel cable runs, etc.  
 Fuses may be UL Recognized for use as a component in UL Listed equipment.  
 UL Recognized fuses are tested for characteristics such as published interrupting capacity. They are also covered by UL re-examination service.  
 Non-renewable  
**VOLTAGE RATINGS:** up to 1000 volts AC and/or DC  
**AMPERE RATINGS:** up to 6000 amperes  
**INTERRUPTING RATINGS:** up to 200,000 amperes  
 Many of these fuses are extremely current limiting. When considering application of these fuses, or if you have special requirements, contact Littelfuse Technical Support Group for assistance.

**LF SERIES:** KLC, LA15QS, LA30QS, LA50QS, LA60QS, LA60X, LA70QS, LA100P, LA120X, LA070URD, LA130URD, L15S, L25S, L50S, L60S, L70S, JLLS 900 amp through 1200 amp

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## Non-Current Limiting

**STANDARDS:** **CLASS H**  
 UL Standard 248-6  
 CSA Standard C22.2, No. 59.1  
 Also known as NEMA Class H, and sometimes referred to as "NEC" or "Code" fuses

**VOLTAGE RATINGS:** 250 and 600 volts, AC  
**AMPERE RATINGS:** 0-600 amps  
**INTERRUPTING RATINGS:** 10,000 amps rms symmetrical

Two types: one-time and renewable  
 Physically interchangeable with UL Classes K1 & K5;  
 Fits UL Class H fuse holders which will also accept K1, K5, RK5, and RK1 fuses.  
 Manufacturers are upgrading Class H One-time fuses to Class K5 per UL Standard 248-9D, See Class K fuses.

#### ONE-TIME FUSES (NON-RENEWABLE)

Time delay: Optional  
 Time-delay fuses must hold 500% current rating for a minimum of ten seconds.

**LF SERIES:** NLKP

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#### RENEWABLE FUSES

Only Class H fuses may be renewable. While time delay is optional, no renewable fuses meet requirements for time delay.  
 Some renewable fuses have a moderate amount of time delay, referred to as "time lag" to differentiate from true time delay.

**LF SERIES:** Discontinued - Please cross to RK5 or RK1 class fuses

#### PLUG FUSES

**STANDARDS:** UL Standard 248-11, CSA Standard C22.2, No. 59.1

**VOLTAGE RATINGS:** 125 volts AC only  
**AMPERE RATINGS:** 0-30 amps  
**INTERRUPTING RATINGS:** 10,000 amps rms symmetrical. Interrupting rating need not be marked on fuse.

Two types: Edison-base and Type S

**EDISON-BASE:** Base is same as standard light bulb. All amp ratings interchangeable. NEC® permits Edison-base plug fuses to be used only as replacements for existing fuses, and only when there is no evidence of tampering or overfusing.

**TYPE S:** Not interchangeable with Edison-base fuses unless non-removable Type S fuse adapter is installed in Edison-base fuse socket. To prevent overfusing, adapters have three ampere ratings: 10-15, 16-20, and 21-30 amps.

Time delay: Fuses may be time delay, if so, they are required to hold 200% of rating for 12 seconds minimum.

**NOTE:** Plug fuses may be used where there is not more than 125 volts between conductors or more than 150 volts from any conductor to ground. This permits their use in 120/240 volts grounded, single-phase circuits.

**LF SERIES:** Edison-base: TOO, TLO  
 Type S: SOO, SLO  
 Type S Adapters: SAO

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#### Additional Resources and POWR-GARD® Products

Littelfuse is continually developing new technical resources and products that meeting evolving industry standards. For the latest information, visit:

[littelfuse.com](http://littelfuse.com)