

UL489 or UL1077?

What are your Circuit Protection Requirements?

An understanding of circuit types and circuit protection products is critical to ensure their proper application.
See NEC Sections 100, 430 and 409 for definitions.

The proper sizing of an overcurrent protection device is the responsibility of the customer and should be determined using the application standards of the NEC (National Electric Code), CEC (Canadian Electrical Code) or other applicable standards. Per fine print note of 2008 NEC Section 100 "A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Therefore, the rules for overcurrent protection are specific for particular situations."

UL489 Branch Protection



UL1077 Supplementary Protection



What You Need to Know and Look For In Specifications

Certifications – Standards – Acceptance

UL489 Branch Protection

- UL489 Listed or Recognized
- CSA C22.2 No. 5
- International ratings available depending on breaker type

UL1077 Supplementary Protection

- UL Recognized under UL1077
- CSA 22.2 No. 285
- IEC 60947-2 or IEC 898

Function

- Opens automatically on Overload and Short Circuit when properly applied within its ratings
- Protects wire and cable against Overload and Short Circuit

- Opens automatically on Overload and Short Circuit
- Provides additional equipment protection where branch circuit protection is already provided or not required
- Not suitable for the protection of branch circuit conductors

Applications

- Branch circuit protection in control panels, panelboards, switchboards and motor control centers
- Motor overload and motor short circuit protection (UL489 Recognized motor circuit protectors) for control panels and motor control centers

- Used within appliances or other electrical equipment such as control circuits, control power transformers, relays, PLC I/O points and lighting circuits
- Ideal replacement for fuses that are applied as supplementary protection

Features

- Bolted down or DIN-rail mounted
- External handle mechanisms available
- Field mounted accessories
- Stand alone branch circuit protection
- Various levels of protection (curve type)
- High voltage and interruption levels (up to 100 kAIC @ 480V)

- DIN-Rail mounted
- Field mounted accessories
- Current limiting
- Various levels of protection (curve type)
- 10 kAIC @ 240 VAC
- 6 kAIC @ 277 VAC and 5 kAIC @ 480 VAC
- 10 kAIC @ 65 VDC

kAIC = thousands of Amps interrupt capacity

Summary

A Supplementary Protector can't Be used for Branch Circuit Protection.
Understanding the difference between Branch Circuit Protection and Supplementary Protection helps to ensure their proper use.

Edison Fuses – Selection Guide

Line Overview

The Edison family of fuses, fuse blocks and fuse holders is divided into two classes:

1. Current Limiting: Class CC, Class J, Class RK, Class T
2. General Purpose: Class M Midget and Small Dimension

The fuse selection guide below is a general summary of the specifications included for each fuse type. This selection guide does not include the many variables that can exist for specific situations such as local codes, unusual temperature, or other operating conditions. When selecting fuses, be sure to comply with any applicable PUBLIC SAFETY standards that apply to Overcurrent Protection Devices (OPD).

Edison Fuses Selection Guide and General Specifications											
Description	Current Limiting										
	Class J		Class RK5		Class RK1		Class T		Class CC		
Fuse Type	Fast-Acting	Time-Delay	Time-Delay				Extremely Fast-Acting	Fast-Acting	Time-Delay		
Part Number	JHL	JDL	ECNR	ECSR	LENRK	LESRK	TJN	TJS	HCLR	HCTR	EDCC
Voltage Rating	600 VAC 450 VDC	600 VAC 300 VDC*	250 VAC 125 VDC* (1–200A) 250 VDC* (201–600A)	600 VAC 300 VDC*	250 VAC 125 VDC* (10–60A) 250 VDC* (70–600A)	600 VAC 300 VDC*	300 VAC 160 VDC (15–600A)	600 VAC	600 VAC 300 VDC (15–20A)	600 VAC	600 VAC 300 VDC (0.5–2.25A) (20–30A)
Amp Rating	1 to 600		1 to 600	3 to 600	10 to 600	5 to 600	1 to 600		0.5 to 30	0.25 to 30	0.5 to 30
Interrupting Rating	200,000 RMS Symmetrical Amps										
Current Limiting	Class J		Class RK5		Class RK1		Class T		Class CC		
Agency Approvals	UL Listed Class J Guide JDDZ File E162363 CSA Certified HRCI-J per C22.2, No. 248.8 File 700489 RoHS compliant	UL Listed Class J Guide JDDZ File E162363 CSA Certified HRCI-J per C22.2, No. 248.8 File 700489	UL Listed, Class RK, Guide JDDZ, File E162363 CSA Certified HRCI-R per C22.2, No. 248.12, File 700489 (LENRK CSA File 053787)				UL Listed, Class T, Guide JDDZ, File E162363 CSA Certified HRCI-T per C22.2, No. 248.12, File 53787, Class 1422-02 & 1422-82		UL Listed to 248.4, Class CC, Guide JDDZ, File E162363, CSA certified HRCI-MISC per C22.2 No. 248.4, File 700489		
Dimensions	See product specification pages.								ferrule (in): 13/32, length (in): 1-1/2		
* Self-certified DC ratings											

Edison Fuses Selection Guide and General Specifications												
Description	General Purpose – Midget				General Purpose – Small Dimension Electronic							
	Fast-Acting		Time-Delay		Fast-Acting Ceramic	Fast-Acting Glass		Medium Time-Delay Glass	Time-Delay Ceramic	Time-Delay Glass	Fast-Acting Glass	Time-Delay Glass
Part Number	MCL	MOL	MEQ	MEN	ABC	AGC	GMA	GMC	MDA	MDL	S500	S506
Voltage Rating	600 VAC	250 VAC	500 VAC	250 VAC	250 VAC (0.5 to 20A) 125VAC: (25 to 30A) 125VDC	250VAC: (0.1 to 10A) 32VAC: (15 to 30A)	250VAC (0.063 - 3A) 125VAC (4 - 15A)	250VAC (0.5 - 3A) 125VAC (4 - 10A)	250VAC 125VDC (20A)	250VAC: (0.0625 to 8A) 32VAC: (10 to 20A)	250VAC	250VAC
Amp Rating	0.5 to 50	0.5 to 30	0.25 to 30	0.5 to 30	0.5 to 30	0.10 to 30	0.063 to 15	0.5 to 10	0.5 to 20	0.0625 to 20	0.032 to 10	0.25 to 6.3
Interrupting Rating	100,000 RMS Amps	10,000 RMS Amps			See specifications table on product pages							
Current Limiting	N/A				N/A							
Agency Approvals	UL Listed to 248.14, File E162443 CSA Cert. C22.2 Part 59.2, LR 700489				UL Listed standard 248-14 UL Listed Guide and File nos. (ABC 0.25-20 A): (AGC 1/100-10 A) JDYX and E19180 UL Recognition Guide and File nos. (ABC 20-30A):(AGC 11-30) JDYX2 and E19180 CSA Certification Record No: 053787 C 000 and Class No: 1422 01 and 1422 30	Designed to UL/CSA 248-14 UL Listed, Guide JDYX, File E19180 63mA-6A UL Recognition, Guide JDYX2, File E19180, 7A-15A CSA Certified, File 053787_C_000, 63mA-6A Class 1422-01		UL Listed standard 248-14 UL Listed Card: MDA 2/10-20A , MDL 1/16-8A (Guide JDYX, File E19180 UL Recognized Card: MDA 25-30A MDL 9-30A (Guide JDYX2, File E19180) CSA Certification Card: MDA 2/10-15A (Class No. 1422-01)		UL Recognized Guide JDYX2, File E19180 Semko Approval VDE Approval BSI Approval IMQ Approval RoHS compliant		
Dimensions	ferrule (in): 13/32 length (in): 1-1/2				1/4" x 1-1/4", (6.3mm x 32mm)		0.197" x 0.788" (5mm x 20mm)		1/4" x 1-1/4", (6.3mm x 32mm)		0.197" x 0.788" (5mm x 20mm)	

Get Your Fuses From Us!

AutomationDirect has teamed up with Edison Fuse, a subsidiary of Cooper Industries, the worldwide leader in circuit protection, to offer the Edison line of fuses and fuse holders. Cooper Industries is a \$4.1B corporation with seven electrical products divisions, including two fuse brands. The Edison Fuse products are industry-standard fuses that are designed using the highest quality materials and manufacturing methods. All Edison fuses can be directly cross referenced and used as replacements for other name-brand fuses such as Littelfuse, Mersen, Siemens, and many more. Our fuse manufacturer cross reference list is at the end of this section.

AutomationDirect carries a wide range of fuses in convenient package sizes. Just about every electrical system requires some sort of circuit protection, so while you're ordering your other components from us, don't forget the fuses!



Fuses

Fuse Blocks



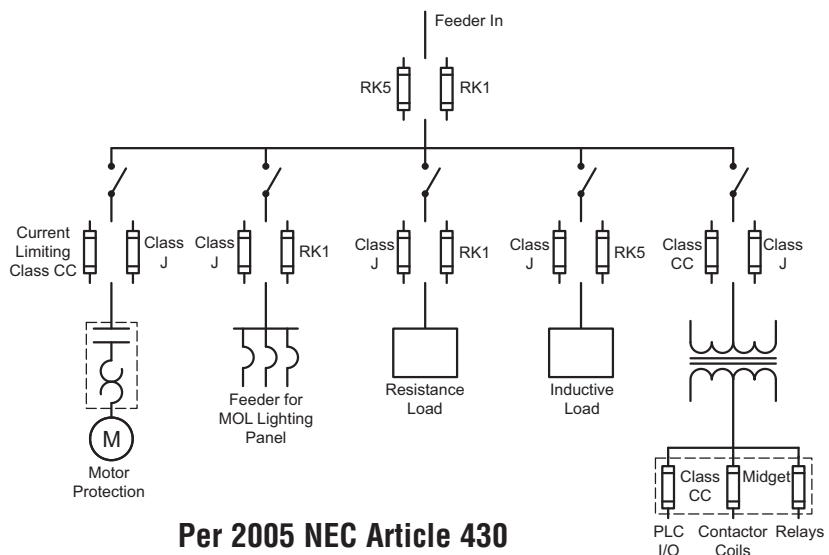
Where to Use a Fuse

Fuses can be used for a variety of over-current and overload applications. They can be used to protect transformers, motors, DC power supplies, lighting circuits, contactors, relays and other industrial and commercial electrical equipment and conductors.

AutomationDirect is pleased to carry the most popular Current Limiting and General Purpose fuses for industrial control applications. The current limiting fuses, frequently used in applications for motor branch circuit protection, are available in both time-delay and fast-acting models. Because of their superior current limiting performance, these current limiting products are sometimes regarded as an upgrade to the general purpose fuses. In addition, the current limiting line is recognized for NEC branch circuit protection and Type 2 coordinated applications for IEC or NEMA starters/contactors. Where adherence to

extensive current limiting codes is not required, the Class M general purpose midget fuses are a great low-cost solution for both time-delay and fast-acting protection. And, we've not forgotten the accessories you need: several fuse holders and fuse blocks are available in a variety of 1, 2, and 3-pole form factors.

Fuse Holders



10 Great Reasons to Use a Fuse...

Why use a fuse?

Fuses offer a safe and economical solution for overcurrent protection of both conductors and components. Fuses can help make your control systems meet the UL and NEC codes.

1 Safety

Overcurrent protective devices that have tripped are often reset without first investigating the cause of the fault. Electromechanical devices may not have the reserve capacity to open safely when a second or third fault occurs. When a fuse opens it is replaced with a new fuse, so the protection level is not degraded by previous faults. Our current limiting fuses meet the UL and NEC codes.

2 Cost effective

Fuses typically are the most cost effective means of providing overcurrent protection. This is especially true where high fault currents exist or where small components such as Control Transformers or DC power supplies need protection.

3 High interrupting rating

With most low voltage current limiting fuses (≤ 600 volts) having a 200,000 amp interrupting rating, you are not paying a high premium for a high interrupting capacity. Our current limiting fuses meet the UL and NEC codes.

4 Reliability

Fuses have no moving parts to wear out or become contaminated by dust or oil.

5 North American standards

Tri-National Standards specify fuse performance and maximum allowable fuse I^P and $I^2 t$ let-thru values.

6 Component protection

The high current limiting action of a fuse minimizes or eliminates component damage.

7 Extended protection

Devices with low interrupting ratings are often rendered obsolete by service upgrades or increases in available fault current. Updated NEC and UL standards are causing the need for potentially expensive system upgrades to non-fused systems.

8 Selectivity

Fuses can be easily coordinated to provide selectivity under both overload and short circuit conditions.

9 Minimal maintenance

Fuses do not require periodic recalibration as do some electromechanical overcurrent protective devices.

10 Long life

As a fuse ages, the speed of response will not slow down or change. A fuse's ability to provide protection will not be adversely affected by the passing of time.

...plus the best reason of all - our prices!

AutomationDirect has secured great pricing for our fuses, fuse holders and fuse blocks, and can pass those savings on to you. Many items are priced well below industry list prices, making fuse protection a beneficial and affordable option for almost every electrical device.

CHECK OUT OUR PRICES				
Fuses	AutomationDirect Price/Part Number	VS.	Littelfuse Price/Part Number	
Midget Class M fast-acting 5A, 600 VAC	\$5.50 MCL5		\$21.18 KLK005	
Class CC current limiting time-delay 10A, 600 VAC	\$7.00 HCTR10		\$23.03 KLDR010	
Midget Class M time-delay 2A, 250 VAC	\$2.35 MEN2		\$6.82 FLM002	
Class CC current limiting time-delay 20A, 600 VAC	\$5.90 EDCG20		\$21.98 CCMR20	

(Sold in packages, prices shown are per piece) All fuses are 13/32" x 1-1/2".

All prices are U.S. published prices. AutomationDirect prices are from March 2010 Price List. Prices and specifications may vary by dealer. Littelfuse prices are from <http://www.newark.com> 2/1/10. Prices subject to change without notice.

Edison Cross Reference Guide

CROSS REFERENCE GUIDE By manufacturers type reference or series number. Ampere ratings must be added for ordering purposes.								
FUSE TYPE		VOLT	EDISON	BRUSH/ DORMAN	BUSSMANN	MERSEN / GOULD	GEC/CEFCO	LITTELFUSE
UL CLASS CURRENT LIMITING FUSES (CSA CLASS)								
CC (HRCI-CC)	Time-Delay	600	EDCC	–	LP-CC	ATDR	–	CCMR
	Time-Delay	600	HCTR	–	FNQ-R	ATQR	–	KLDR
	Fast-Acting	600	HCLR	HCLR	KTK-R	ATMR	CTK-R	KLKR
RK1	Time-Delay Dual Element	250	LENRK	–	LPN-RK-SP	A2DR	–	LLNRK
		600	LESRK	–	LPS-RK-SP	A6DR	–	LLSRK
RK5	Time-Delay Dual Element	250	ECNR	–	FRN-R	TR	–	FLNR
		600	ECSR	–	FRS-R	TRS	–	FLSR
J	Time-Delay Dual Element	600	JDL	–	LPJ	AJT	–	JTD
	High-Speed AC Drive	600	JHL	–	DFJ	HSJ	–	–
T	Extremely Fast-Acting	300	TJN	–	JJN	A3T	–	JLLN
		600	TJS	–	JJS	A6T	–	JLLS
UL CLASS GENERAL PURPOSE FUSES								
Midget	Fast-Acting	600	MCL	MCL	KTK	ATM	CTK	KLK
		250	MOL	MOL	BAF/BAN	OTM	–	BLF
	Time-Delay	500	MEQ	MEQ	FNQ	ATQ	–	FLQ
		250	MEN	MEN	FNM	TRM	–	FLM
1/4"x1/4" Ceramic	Fast-Acting	250/125	ABC	ABC	ABC	GAB	–	314
		1/4"x1/4"Glass	250/32	AGC	AGC	AGC	GGC	–
1/4"x1/4" Ceramic	Time-Delay	250	MDA	MDA	MDA	–	–	326
		1/4"x1/4"Glass	250/32	MDL	MDL	MDL	GDL	–
5x20 mm Glass	Fast-Acting	250/125	GMA	GMA	GMA	GGM	–	235
	Medium Time-Delay	250/125	GMC	GMC	GMC	GSC	–	–
5x20 mm Glass	Fast-Acting	250	S500	BDB	GDB	GSB	–	217
	Time-Delay	250	S506	BDC	GDC	GDG	–	218
Fuse Puller								
Fuse Puller FP-2		–	old - 38072 new - FP-2	–	FP-2	–	–	–