



**Catalog symbols**

**ECNR 1-600 A, 250 Vac or Less**

**ECSR 1-600 A, 600 Vac or Less**

**Specifications**

- RK5 current limiting, dual-element, time-delay fuses

**Ratings**

- Volts
  - ECNR - 250 Vac
  - ECNR - 125 Vdc (1-60 A, 110-200 A), 250 Vdc (225-600 A)
  - ECSR - 600 Vac
  - ECSR - 300 Vdc (1-30 A, 70-600 A), 250 Vdc (35-60 A)
- Amps 1-600 A
- Interrupting Rating
  - 200 kA RMS Sym.
  - 20 kA DC

**Agency Information**

- UL Listed for US and Canada, Class RK5, File E162363, Guide JDDZ

<b>Amp Ratings</b>					
<b>ECNR</b>					
1	8	25	70	150	400
2	9	30	75	175	450
3	10	35	80	200	500
4	12	40	90	225	600
5	15	45	100	250	—
6	17.5	50	110	300	—
7	20	60	125	350	—
<b>ECSR</b>					
1	8	25	70	150	400
2	9	30	75	175	450
3	10	35	80	200	500
4	12	40	90	225	600
5	15	45	100	250	—
6	17.5	50	110	300	—
7	20	60	125	350	—

**Benefits**

- True dual-element construction allows sizing of 125% FLA for motor backup protection.
- Superior overload and cycling capabilities.
- Current limitation provides component short-circuit protection.

**Applications**

- Recommended for AC power distribution system mains, feeders, and branch circuits.
- Protection of motors and motor branch circuits.
- Protection of transformers and other inductive loads.
- All general-purpose applications including lighting, heating and other non-inductive loads.

**Recommended fuse upgrade**

- Class RK1 (LENRK/LESRK) for greater degree of short-circuit protection.

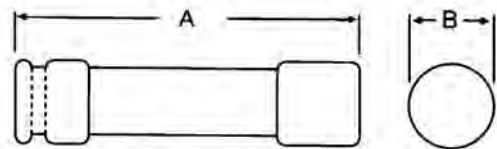
<b>Cross reference</b>			
Volts	Edison	Mersen	Littelfuse
250	ECNR	TR	FLNR
600	ECSR	TRS	FLSR

**ECNR/ECSR dual element, time-delay fuses**

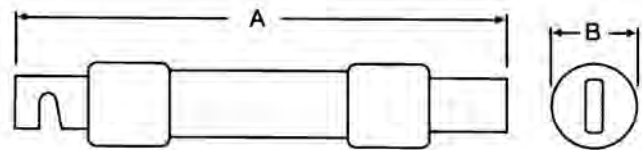
These fuses are recommended for AC power distribution system mains, feeders and branch circuits having inductive loads (motors, transformers) or non-inductive loads (lighting, heating) where the available short-circuit current does not exceed 200 kA RMS Sym. These “dual-element, time-delay” fuses have minimum industry standard time-delay of 10 seconds at 5 times the fuse rating (8 sec. minimum for 250 V, 30 A and less). The time-delay characteristics of these fuses typically allows them to be sized closer to the running amps of inductive loads to reduce cost and provide improved overcurrent protection. These fuses will override normal equipment current surges to reduce unnecessary fuse openings. They are the most popular fuses used in the industry and the most economical for most applications, especially motors and transformers. They have moderate current limitation.

- Class R fuses will fit Class H, K and R fuse clips.
- Class R fuse clips will only accept Class R fuses.
- Fuses rated 600 Vac or less may be applied at any lower voltage.

**Dimensions – in**



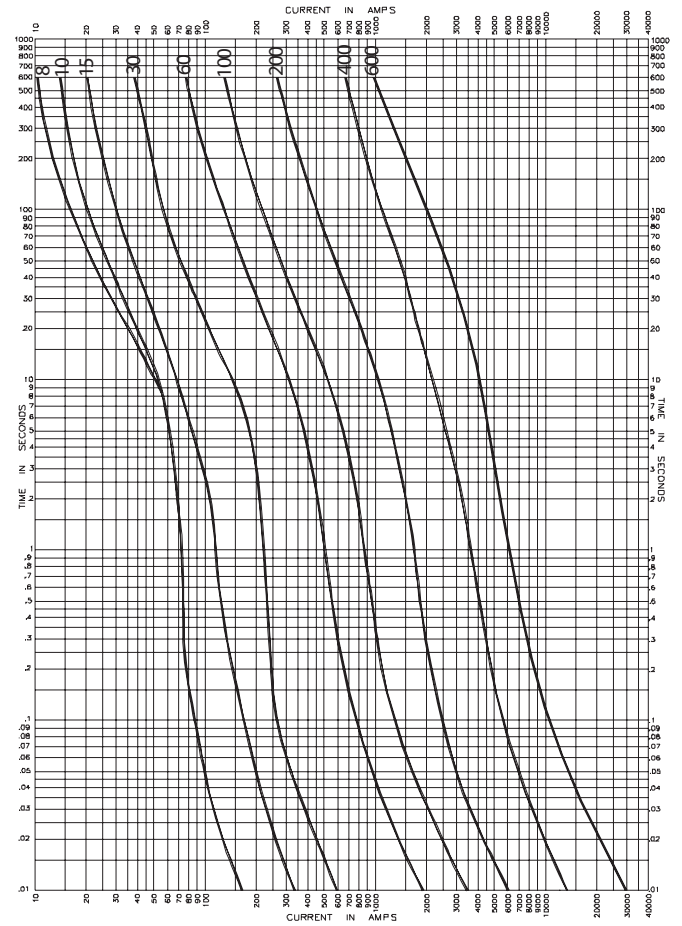
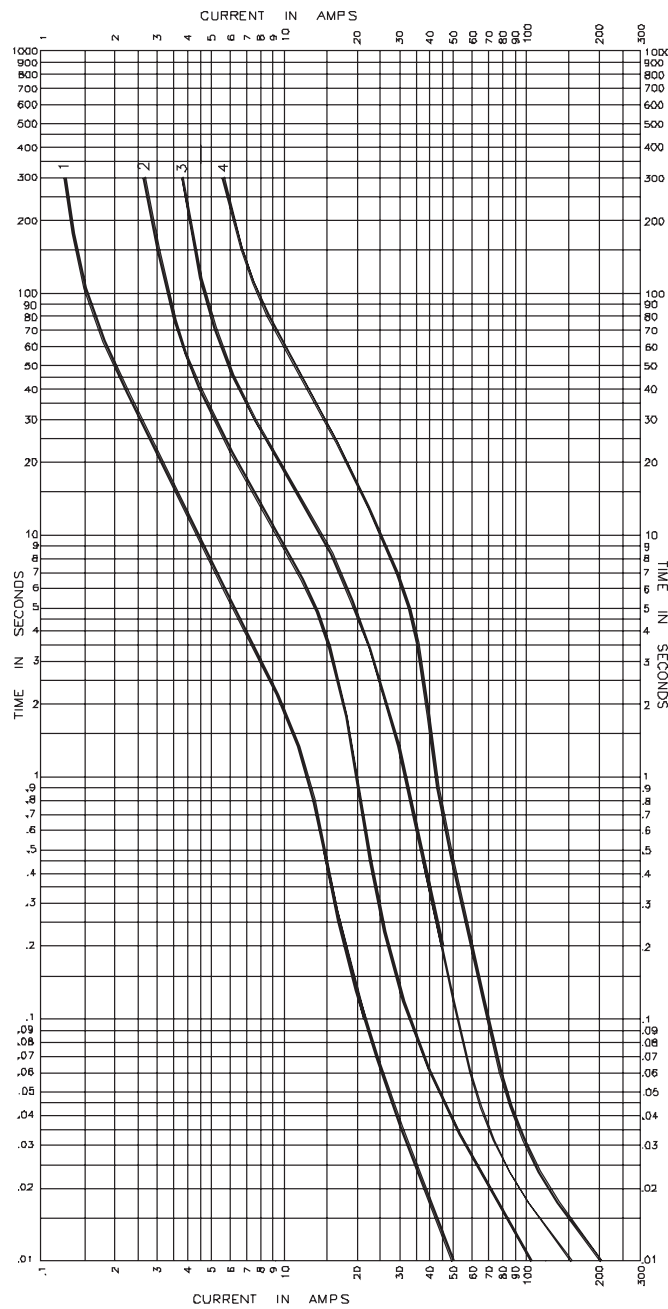
**Up to 60 A**



**70-600 A**

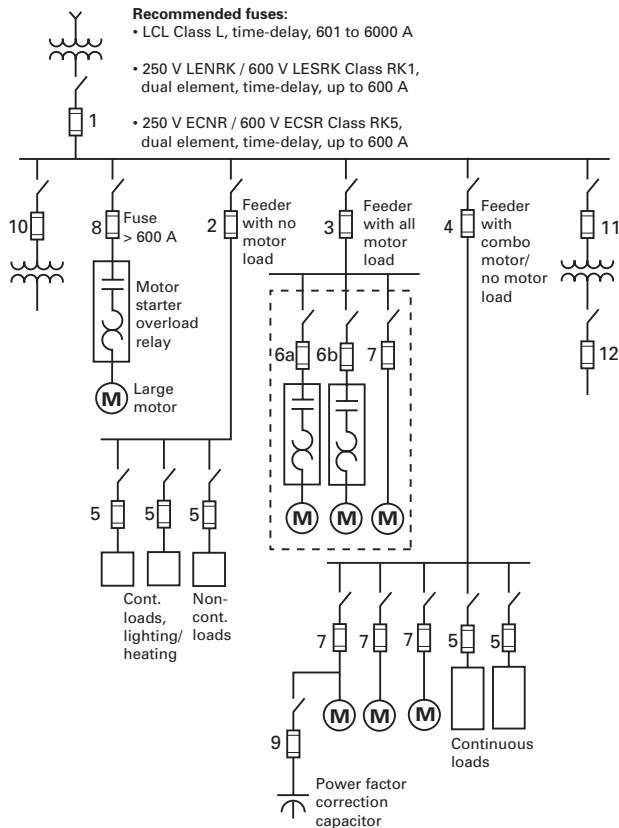
Catalog symbol	Amps	A	B
ECNR	Up to 30	2	0.56
	35-60	3	0.81
	70-100	5.88	1.06
	110-200	7.13	1.56
	225-400	8.63	2.38
	450-600	10.38	2.88
ECSR	Up to 30	5	0.81
	35-60	5.5	1.06
	70-100	7.88	1.11
	110-200	9.63	1.61
	225-400	11.63	2.34
	450-600	13.38	2.88

ECNR time-current curves — average melt



## Fuse sizing for 600 V building electrical systems

General guidelines are given for selecting fuse amp ratings for most circuits. For specific applications warranting other fuse sizing, the load characteristics and appropriate NEC sections should be considered. The selections shown here are not, in all cases, the maximum or minimum amp ratings permitted by the NEC. Demand factors as permitted by the NEC are not included. Study the pertinent NEC sections noted by “( )” and reference pertinent footnotes.



### Dual-element, time-delay fuses

#### Class J, RK1 and RK5 (up to 600 A)

For fuses above 600 A, use Class L time-delay fuses with ratings from 601-6000 A. While these fuses are not dual-element construction, the Edison LCL is a time-delay fuse.

- 1. Main service.** Size fuse according to method in 4 below.
- 2. Feeder circuit with no motor loads.** (215.3) The fuse size must be at least 125% of the continuous load<sup>T</sup> plus 100% of the non-continuous load. Do not size larger than the conductor's ampacity\*.
- 3. Feeder circuit with all motor loads.** (430.62) Size the fuse at 150% to 175% of the largest motor's full load current<sup>\*\*</sup> plus the full-load current<sup>\*\*</sup> of all other motor'sΔ.
- 4. Feeder circuit with mixed loadsΔ.** (430.63) Size fuse at sum of:
  - a. 150% to 175%<sup>††</sup> of the largest motor's full-load current<sup>\*\*</sup>, plus
  - b. 100% of all other motors' full-load current<sup>\*\*</sup>, plus
  - c. 125% of the continuous, non-motor load<sup>†</sup>, plus
  - d. 100% of the non-continuous, non-motor load

- 5. Branch circuit with no motor load.** (210.20) The fuse size must be at least 125% of the continuous load<sup>†</sup> plus 100% of the non-continuous load. Do not size larger than the conductor's ampacity\*.
- 6. Motor branch circuit with overload relays.** Where overload relays are sized per 430.32 for motor running overload protection, there are various alternatives:
  - 6a. Motor branch circuit short-circuit and ground fault protection. (430.52) (most common).** Size the fuse between 150 to 175%<sup>††</sup> of the full load current. <sup>\*\*</sup> Provides branch circuit short-circuit and ground fault protection only.
  - 6b. Motor branch circuit short-circuit and ground fault protection (430.52) as well as backup overload protection.** Size ECNR and ECSR Class RK5 dual-element, time-delay fuses at 125% and LENRK and LESRK Class RK1 dual-element, time-delay fuses at 130% of motor full-load current or next higher size. This results in closer fuse sizing and provides some backup running overload protection. In addition, it provides motor branch circuit short-circuit and ground fault protection. Sizing in this manner may result in better motor protection if the overload relays are not properly sized or calibrated.
- 7. Motor branch circuit with only fuse protection.** Where the fuse is the only motor protection, the following ECNR and ECSR, Class RK5, fuses provide motor running overload protection (430.32) and short-circuit protection (430.52):
  - Motor 1.15 service factor or 40°C rise. Size the fuse at 110% to 125% of the motor full-load current on the name plate [430.6(a)(2)].
  - Motor less than 1.15 service factor or over 40°C rise. Size fuse at 100% to 115% of motor full-load current on the name plate [430.6(a)(2)].
- 8. Large motor branch circuit.** Fuse larger than 600 A. [436.52(c) and 430.52(c)(1) Exceptions 2(d)]. For large motors, size LCL time-delay fuse at 175% to 300% of the motor full-load current<sup>\*\*</sup>, depending on the starting method; i.e., part-winding starting, reduced voltage starting, etc.
- 9. Power factor correction capacitors.** [460.8(b)]. Size dual-element fuses as low as practical, typically 150% to 175% of capacitor rated current.
- 10. Transformer primary fuse (without secondary fuse protection).** [450.3(b)] When transformer primary current is equal to or greater than 9 amps, the dual-element, time-delay fuse should be sized at 125% of transformer primary current or the next size larger if 125% does not correspond to a standard fuse size. Note: Secondary conductors must be protected from overcurrent damage per Article 240.
- 11. Transformer primary fuse (with secondary fuse protection).** [450.3(b)] May be sized at 250% of transformer primary current if the secondary is fused per 12 below.
- 12. The secondary fuse is sized at no more than 125% of secondary full-load current.** [450.3(b)] Note: Secondary conductors must be protected at their ampacities per Article 240.

## Cross reference by manufacturer's catalog symbol

Fuse class/type	Description	Volts	Edison	See cat. page	Brush/Dorman	GEC/CEFCO	Mersen	Littelfuse	Fusetek	Siemens	Noram	Aeroflex
<b>UL Class fuses (CSA Class)</b>												
<b>RK1 (HRCI-R)</b>	Fast-acting	250	NCLR	24	NCLR	C-HG	A2KR, HNR	KLNR	RHN	—	—	HB
		600	SCLR		SCLR	C-HR	A6KR, HSR	KLSR	RHS	—	—	HA
	Time-delay	250	LENRK	19	LENRK	LON-RK	A2D-R	LLNRK	—	—	2R-D	—
		600	LESRK		LESRK	LOS-RK	A6D-R	LLSRK	—	—	6R-D	—
<b>RK5 (HRCI-R)</b>	Time-delay	250	ECNR	27	ECNR	CRNR	TRNR, TR	FLN-R	RDN	—	—	—
		600	ECSR		ECSR	NRSR	TRSR, TRS	FLS-R IDSR	RDS	—	—	—
	Fast-acting	600	LCU	15	LCU	CL, CLU	A4BQ	—	LFA	—	—	6L-F L8, L12
Time-delay	600	LCL	LCL		CLL	A4BY, A4BT	KLPC, KLLU	—	—	—	6L-D	L16, L20
<b>J (HRCI-J)</b>	Fast-acting	600	JFL	9	JCL, CJ	C-J	A4J, CJ	JLS	JFC	3NW2-71-	6J-F	JA
	Time-delay	600	JDL	7	—	—	AJT	JTD	—	—	J-D	—
	High speed	600	JHL	11	—	—	—	LDFJ	—	—	—	—
<b>T (HRCI-T)</b>	Fast-acting	300	TJN	32	TJN	—	A3T	JLLN	—	—	—	—
		600	TJS		TJS	—	A6T	JLLS	—	—	—	—
<b>G</b>	Time-delay	480	SEC	5	—	—	AG5	SLC	—	—	—	—
	Time-delay	600	EDCC	1	—	—	ATDR	CCMR	—	—	6M-S	—
<b>CC (HRCI-CC)</b>	Time-delay	600	HCTR	3	—	—	ATQR	KLDR	—	—	6CC-S	—
	Time-delay	600	HCTR		—	—	—	—	—	—	—	6CC-S
	Fast-acting	600	HCLR	—	HCLR	CTK-R	ATMR	KLKR	FLKR	—	6CC-F	—
<b>H and K5</b>	Fast-acting	250	KON	13	KON	50KOTN	OTN	NLN	OFN	—	—	—
		600	KOS		KOS	50KOTS	OTS	NLS	OFS	—	—	—
<b>UL 13/32" x 1-1/2" supplemental fuses</b>												
<b>Midget</b>	Fast-acting	600	MCL	38	MCL	CTK	ATM	KLK	FLK	—	6M-S	—
		600	EBS*		EBS*	—	SBS*	BLS*	—	—	6N-F*	—
		250	MOL		MOL	—	OTM	BLF	FLF	—	—	—
<b>Midget</b>	Time-delay	500	MEQ	40	MEQ	—	ATQ	FLQ	—	—	—	—
		250	MEN		MEN	—	TRM	FLM	FRM	—	—	—
		125/250	MID		MID	—	GFN	FLA	—	—	—	—
<b>Canadian fuses</b>												
<b>Code/standard 10 kA</b>	One Time	250	KON/PONC	—	KON/PON	50KOTN	NRN OTN	NLN	OFN	—	—	—
		600	KOS	—	KOS	50KOTS	NRS OTS	NLS	OFS	—	—	—
	Time-delay	250	CDNC	—	CDN	—	CRN	FLN	ODN	—	—	—
<b>TYPE K Class C</b>	Offset	600	CIH07	—	CIH07	C-K	ESK	—	—	—	—	—
			CIK07	—	CIK07	C-K	ESK	—	—	—	—	—
	Blade	600	CIL14	—	CIL14	C-K	ESK	—	—	—	—	—
<b>HRCI-CA</b>	Fast-acting	600	CIF21	—	CIF21	C-N	MS	—	—	3NWOMFS2	6CA-F	—
<b>HRCI-CB</b>	Fast-acting	600	CIF06	—	CIF06/NK	CNS	GNS	—	NIC	3NWOMFS1	6CB-F	—
			EK	—	EK	CES	—	—	—	—	—	—
<b>HRC-II Fuses</b>												
<b>HRC-II-C</b>	Offset blade	600	H07C	—	H07C, AAO	CIA	FES, GIA	—	2CO	3NW2-11	6C-F	932
			K07C	—	K07C, BAO	CIS	FES, GIS	—	2CO	3NW2-12	6C-F	933
			L14C	—	L14C, CEO	CCP	FES, GCP	—	2CO	3NW2-13	6C-F	944
	Center blade		M09C	—	M09C, DD	CF	FESC, GF	—	2CC	3NW2-23	6C-F	965
			P11C	—	P11C, EF	CM	FESC, GM	—	2CC	3NW2-31	6C-F	976
<b>HRC-II MISC</b>	Offset center	R11C	—	R11C, FF	CLM	FESC, GLM	—	2CC	3NW2-34	6C-R	977	
		K07CR	—	K07CR, OSD	—	—	—	—	—	—	—	
		L09C	—	L09C, CD	CC	FESC, GC	—	2CM	3NW2-22	—	964	
		M14C	—	M14C, DEO	CFP	FES, GFP	—	2CM	3NW2-14	—	945	
		P09C	—	P09C, ED	CMF	FESF, GMF	—	2CM	3NW2-25	—	966	
<b>Miniature blade</b>	Offset	CIF21	—	F21, NITD	NIT	GIT	—	N2B	—	—	—	
		CIF06	—	F06, NSD, NSC	NS	NSG	—	N2C	—	—	—	
<b>Small dimension fuses</b>												
Size	Description	Edison		See cat. page	Brush	GEC/CEFCO	Mersen	Littelfuse	Fustek	Noram		
		New	Old									
5x20 mm	Time-delay, gls.	S506	GDC	43	BDC	CMB	GDG	218	SD6	SE-S		
	Fast-acting, gls.	GMA	BMA	44	BMA	CMA	GGM	235	MQ4	SE-F		
	Fast-acting, gls.	S500	GDB	43	BDB	—	GSB	217	—	—		
	Fast-acting, gls.	S501	GDA		—	—	—	216	—	—		
	Time-delay, gls.	GMC	—	44	—	—	GSC	—	—	—		
	Time-delay, gls.	GMD	—		—	—	GSC	239	—	—		
1/4 x 1-1/4"	Fast-acting, gls.	AGC	BGC	45	BGC	3AG	GGC	312	SS2/SS6	SU-F		
	Fast-acting, cer.	ABC	BBC		BBC	3AB	GAB	314	CES14	—		
	V fast-acting, cer.	GBB	—	46	—	—	—	322	—	—		
	Time-delay, gls.	MDL	BDL		BDL	3AG-SB	GDL	313	SD4	SU-S		
	Time-delay, cer.	MDA	BDA		—	—	GSA	326	—	—		

\* 13/32" x 1-3/8"