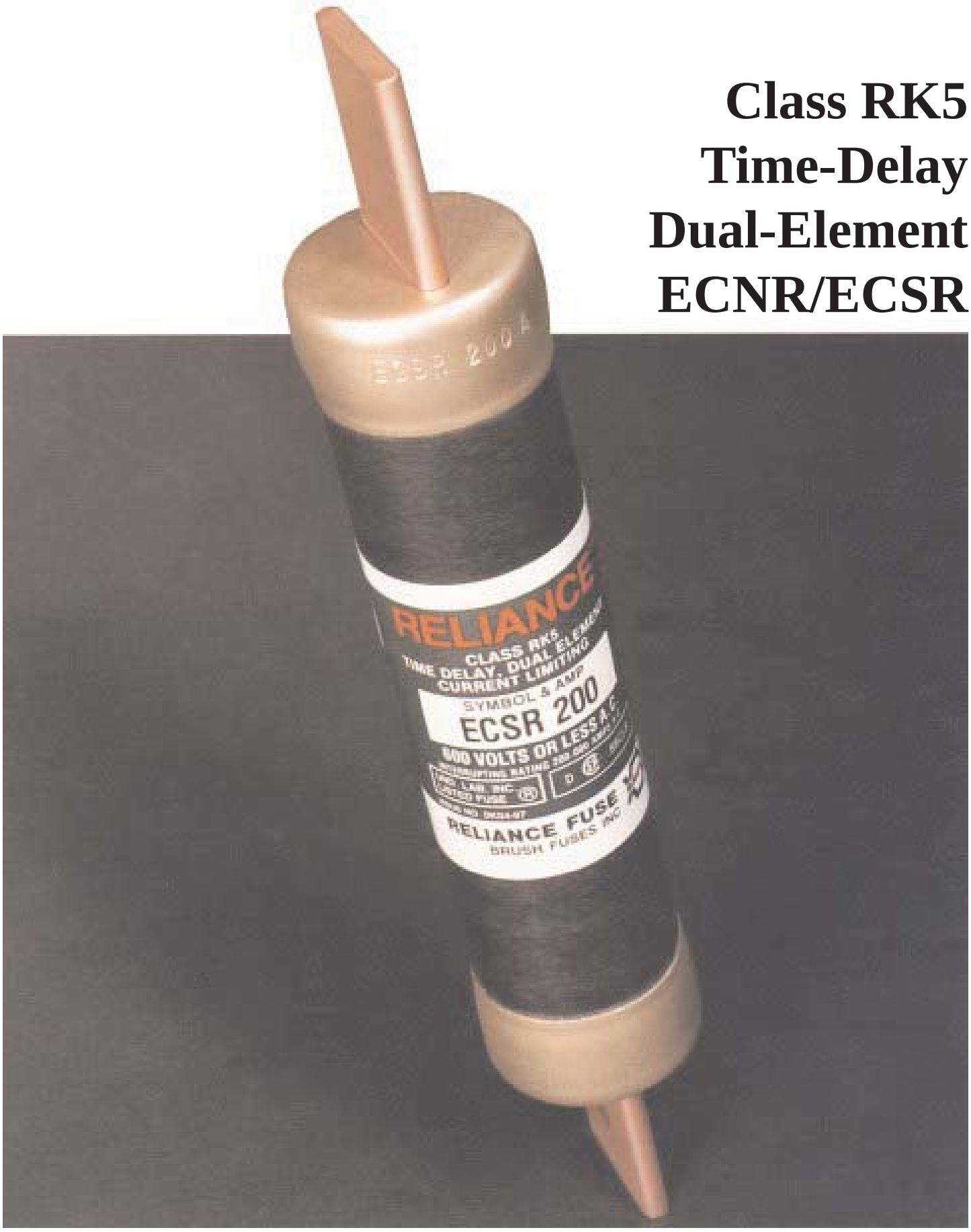
Class RK5 Time-Delay Dual-Element ECNR/ECSR



B-I-A Vertriebs GmbH / Germany
Email: info@BiaGmbH.com
www.BiaGmbH.com
www.BiaOnline.com

Further items on request. Dimensions mm.
Subject to change without notice.

Created 08.07.1987
L1718

UL CLASS RK5 TIME-DELAY FUSES

Quality Fuses For Dependable Protection

UL Class RK5 Time-Delay Fuses

ECNR—250V or Less AC & ECSR—600V or less AC

ECNR and ECSR Specifications

- U.L. Class RK5, Time-Delay/Dual Element, Current Limiting
- Performance Listings: UL 198E, Federal Specification WF-1814, MSHA Certification for ECSR fuses Rated 9-600 amperes, CSA HRCI-R Specification 106
- Industry Standards Definition: ANSI/NEMA FUI-86
- Current Ratings: 1/10 through 600 Amperes
- Voltage Ratings:
  250VAC (or less); Catalog Symbol ECNR
  600VAC (or less); Catalog Symbol ECSR
  300 VDC (or less); Catalog Symbol ECSR (MSHA)
- Interrupting Rating:
  200,000 RMS symmetrical amperes
  20,000 amperes DC (MSHA)
- Overload Element Operation: U.L. required minimum 10 seconds time-delay at 500% fuse ampere rating
- Short-Circuit Element Operation: Current limitation exceeding U.L. requirements

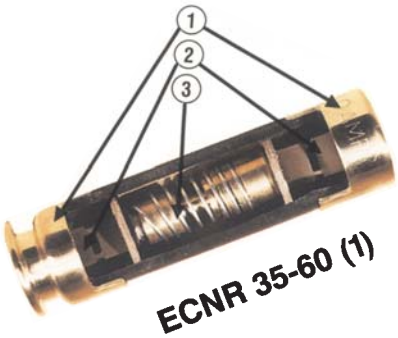
Features

① Copper alloy ferrule terminals (1/10 - 60A) and copper knife blade terminals (70 - 600A) fit Class R or standard Class H and K fuse clips.

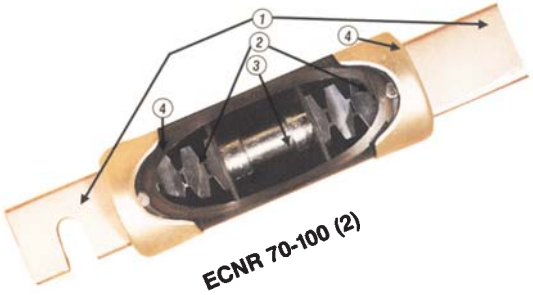
② Short-circuit elements. Copper links with arc quenching material filling element chambers.

③ Overload Element.
- ECNR Fuses from 1/10-60 amperes have a spring operated overload element. ECSR Fuses 10-60 amperes have a eutectic alloy slug overload element.
- ECNR/ECSR Fuses from 70-600 amperes have a eutectic alloy slug overload element.

④ Copper alloy caps (70 - 600A) for energy conservation. Non-ferrous metal prevents hysterisis heat loss. Caps and ferrules are permanently marked.



ECNR 35-60 (1)



ECNR 70-100 (2)

UL CLASS RK5 TIME-DELAY FUSES

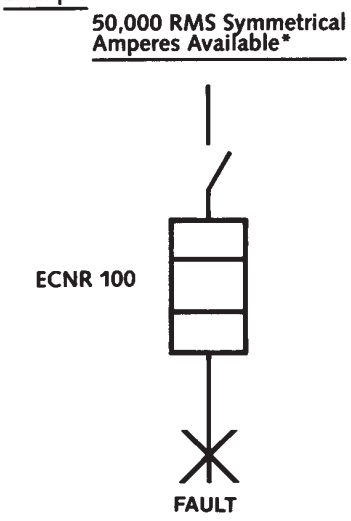
Benefits

RELIANCE FUSE ECNR and ECSR Class RK5 fuses combine **200,000 RMS symmetrical ampere interrupting rating,** short-circuit current limitation, and true dual element time-delay performance as defined by U.L. ECNR/ECSR fuses are recommended in a wide range of overcurrent protection applications for either inductive or non-inductive loads. ECNR/ECSR U.L. Class RK5 time-delay fuses are the most economical choice when the greater current limitation of RELIANCE FUSE LENRK/LESRK Class RK1 time-delay fuses is not required.

EXCELLENT PROTECTION

- ECNR/ECSR fuses provide **excellent current limitation** to reduce the potentially damaging physical force and heat that occurs when short-circuit current flows through conducting paths to a fault location. **"Current limitation"** occurs when the flow of a short-circuit current is in the current limiting range of a fuse. The fuse will stop the fault current flow before the current flow reaches its maximum damaging value. The following example illustrates the current limitation capability of an ECNR 100 ampere fuse.

Example



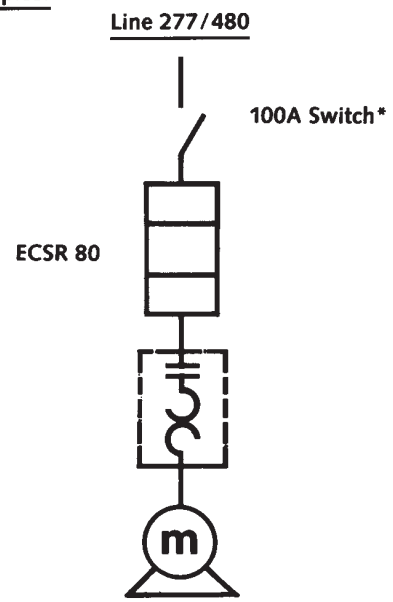
*The defined peak value of this RMS fault current is 2.3 x 50,000 = 115,000 amperes (Ip).

Magnetic fields that are generated when fault current flows create potentially damaging forces between conducting paths. The strength of the force is proportional to the square of the maximum value of peak current allowed to flow by the overcurrent protection device protecting the circuit. RELIANCE FUSE ECNR/ECSR fuses provide protection by limiting the peak value of current and reducing the cost of physical bracing required to meet National Electrical Code 110-10.

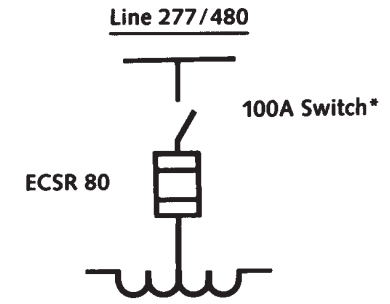
The flow of fault current also generates potentially damaging heat in conducting paths. This heat is proportional to the square of the RMS (effective) value of a fault current multiplied by the length of time (seconds) that an overcurrent protection device allows the current to flow. This heating effect is known as "I^2t". RELIANCE FUSE ECNR/ECSR fuses reduce "I^2t" effect to meet NEC 110-10 requirements.

- ECNR/ECSR fuses are especially efficient is providing protection for circuits with inductive loads such as motors and transformers. The defined time-delay characteristic will override the harmless transient current surges that occur when motors and transformers are first energized. The use of ECNR/ECSR fuses normally allow the fuse ampere rating selection to be closer to the equipment ampacity for excellent overcurrent protection. When overcurrent protection devices are oversized, overcurrent protection may be seriously reduced. This oversizing also requires larger devices which increase space requirements and costs.*

Examples:



65A Motor Full Load Amperes—Starting current 390 amperes for about 4-8 seconds, normally.



60A Transformer primary Full Load Amperes—Magnetizing current 720 amperes for about 0.1 second.

*If Non-time-delay fuses are used they must be sized to about 150-175A and would be installed in 200A switches to allow for normal equipment operation.

INCREASED UPTIME

- ECNR/ECSR dual element fuses with time-delay, override harmless transient current surges and greatly reduce unnecessary fuse opening. In addition, a dependable method is provided by RELIANCE FUSE to determine selectivity so only the fuses protecting a faulted circuit will open in order to keep power outages to a minimum. Positive selectivity can greatly reduce potential hazards and cost.

B-I-A Vertriebs GmbH / Germany
Email: info@BiaGmbH.com
www.BiaGmbH.com
www.BiaOnline.com

Created 08.07.1987
L1718

UL CLASS RK5 TIME-DELAY FUSES

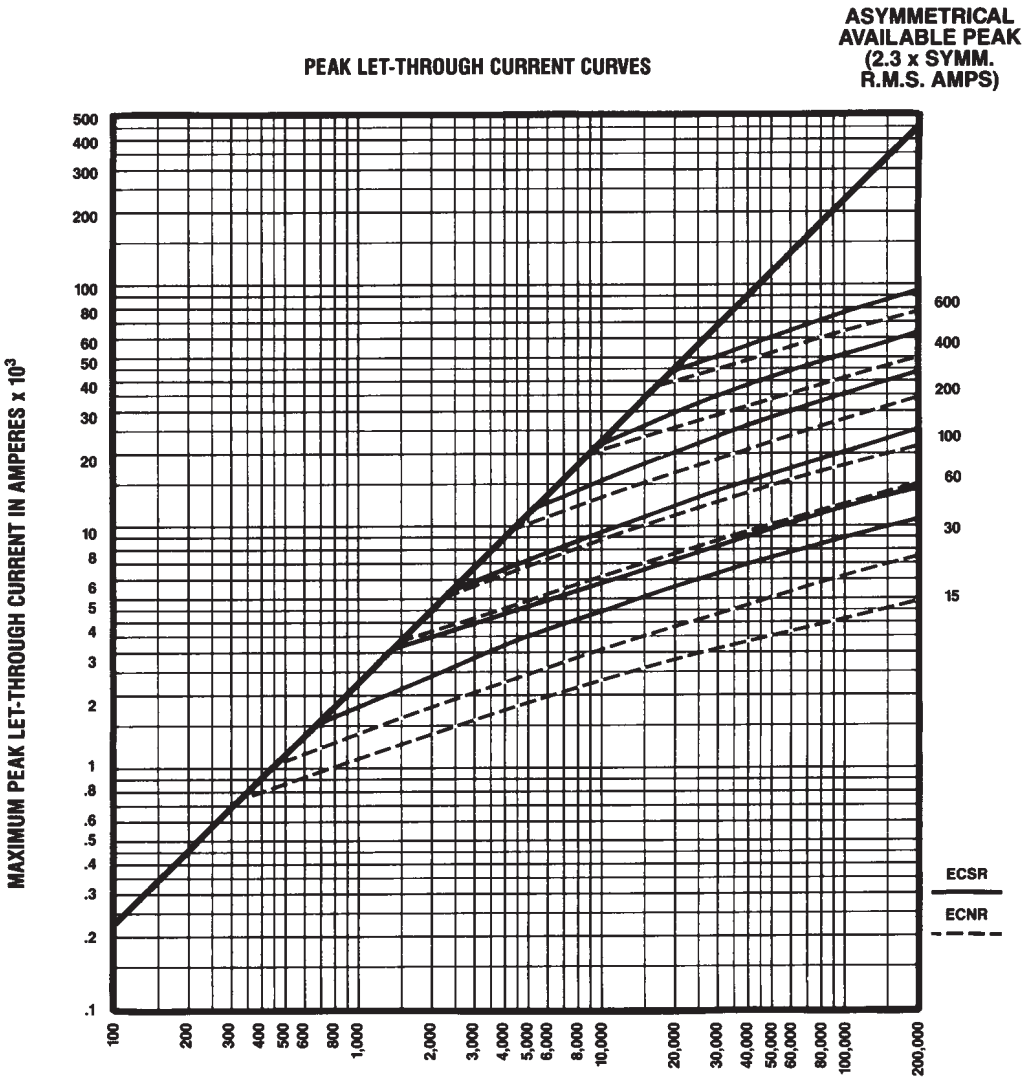
PROTECTIVE UPGRADE

- Class H fuses (10,000 ampere interrupting rating) may be replaced by Reliance Fuse RK5 ECNR/ECSR fuses to upgrade existing systems.

  NOTE: If replacing non-time delay fuses with ECNR, ECSR fuses, review local codes for sizing requirements/limits of time-delay overcurrent devices.

LONG SYSTEM LIFE

- It is not uncommon for the original available short-circuit current values in an existing system to increase. When the original overcurrent protection devices were selected they were adequate with, say, 22,000 ampere interrupting rating, however an increase in fault current available may cause safety hazards and violate NEC 110-9. Reliance Fuse ECNR/ECSR fuses with an interrupting rating of 200,000 amperes will safely interrupt ANY value of fault current up to this level, thus eliminating the concern for high cost upgrading.



*Contact Reliance Fuse for latest performance data.

†Refer to Reliance Fuse "Overcurrent Protection Handbook" for interpretation of performance curves, details of suggested application related to the overcurrent protection requirements of the National Electrical Code, and reference data.

B-I-A Vertriebs GmbH / Germany
Email: info@BiaGmbH.com
www.BiaGmbH.com
www.BiaOnline.com

Created 08.07.1987
L1718

UL CLASS RK5 TIME-DELAY FUSES

Applied Performance Data
Current Limitation Tables*

ECNR Fuses*

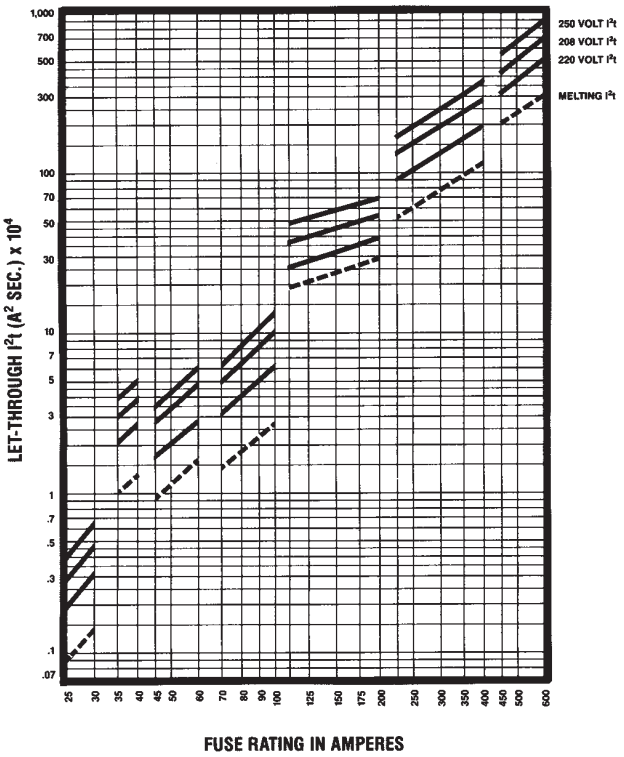
Available Fault Current RMS Amps	250 VAC					
	Apparent Effective Let-Thru Amperes					
	30A	60A	100A	200A	400A	600A
5,000	1,050	2,070	2,820	4,300	5,000	5,000
10,000	1,310	2,570	3,630	5,400	8,700	10,000
15,000	1,490	2,920	4,140	6,200	9,900	15,000
20,000	1,630	3,200	4,500	6,800	10,700	16,100
25,000	1,720	3,420	4,800	7,200	11,400	17,200
30,000	1,840	3,630	5,100	7,700	12,100	18,300
35,000	1,920	3,810	5,400	8,100	12,600	19,200
40,000	2,000	3,980	5,600	8,500	13,100	19,900
50,000	2,140	4,200	6,000	9,100	14,000	21,400
60,000	2,260	4,500	6,400	9,600	14,900	22,600
80,000	2,450	4,900	7,000	10,600	16,000	24,600
100,000	2,620	5,200	7,500	11,400	17,100	26,200
150,000	2,920	5,800	8,300	13,000	19,200	29,200
200,000	3,140	6,200	8,900	14,300	20,800	31,700

ECSR Fuses*

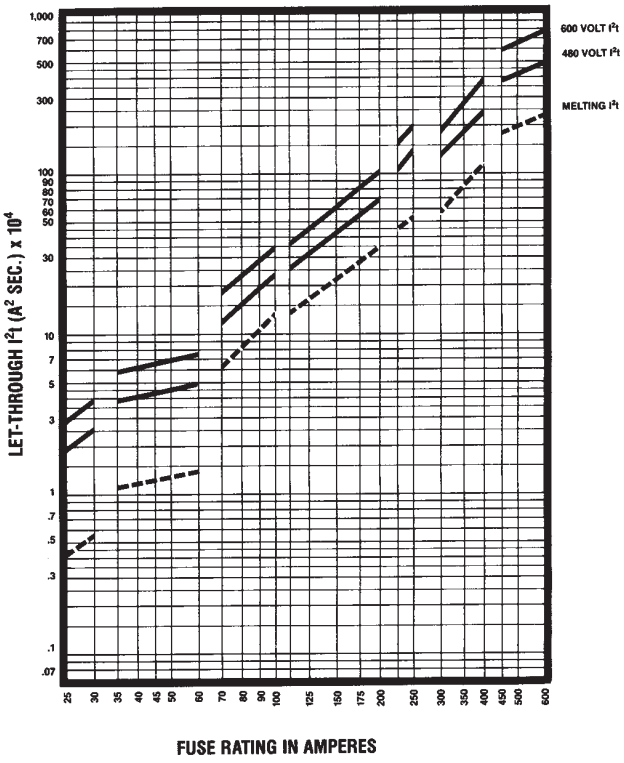
Available Fault Current RMS Amps	600 VAC					
	Apparent Effective Let-Thru Amperes					
	30A	60A	100A	200A	400A	600A
5,000	1,290	2,070	2,980	5,000	5,000	5,000
10,000	1,640	2,590	3,810	6,500	8,800	10,000
15,000	1,890	2,940	4,400	7,500	10,200	15,000
20,000	2,110	3,250	4,800	8,300	11,400	18,200
25,000	2,260	3,470	5,200	8,900	12,400	19,600
30,000	2,420	3,660	5,500	9,600	13,200	21,100
35,000	2,570	3,850	5,800	10,100	14,100	22,400
40,000	2,670	4,030	6,000	10,500	14,700	23,400
50,000	2,890	4,300	6,500	11,400	16,000	25,300
60,000	3,060	4,500	6,900	12,100	17,200	27,000
80,000	3,360	4,900	7,600	13,400	19,100	29,500
100,000	3,630	5,200	8,200	14,400	20,700	31,700
150,000	4,100	5,800	9,300	16,500	23,900	36,300
200,000	4,400	6,100	10,400	18,300	26,700	39,500

Reliance Fuse I^2t Selectivity Curves*

ECNR Fuses



ECSR Fuses



*Contact Reliance Fuse for latest performance data

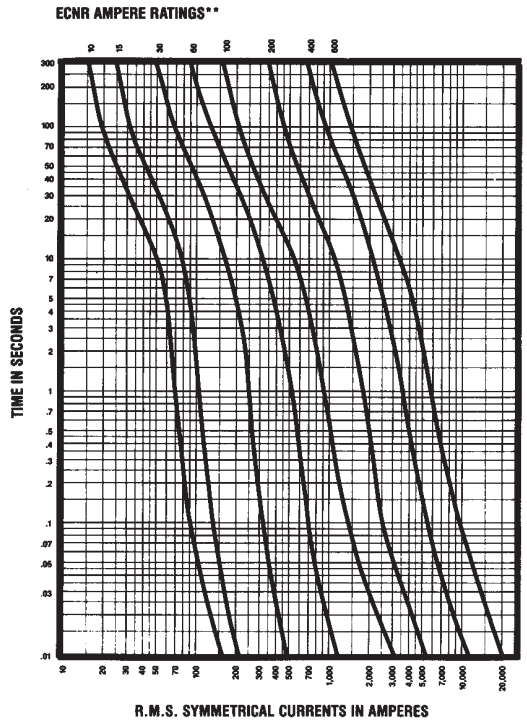
B-I-A Vertriebs GmbH / Germany
Email: info@BiaGmbH.com
www.BiaGmbH.com
www.BiaOnline.com

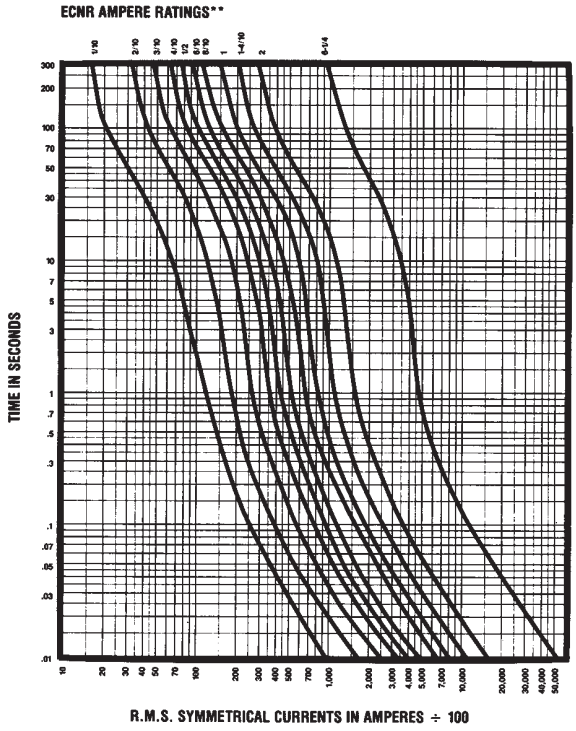
Created 08.07.1987
L1718

UL CLASS RK5 TIME-DELAY FUSES

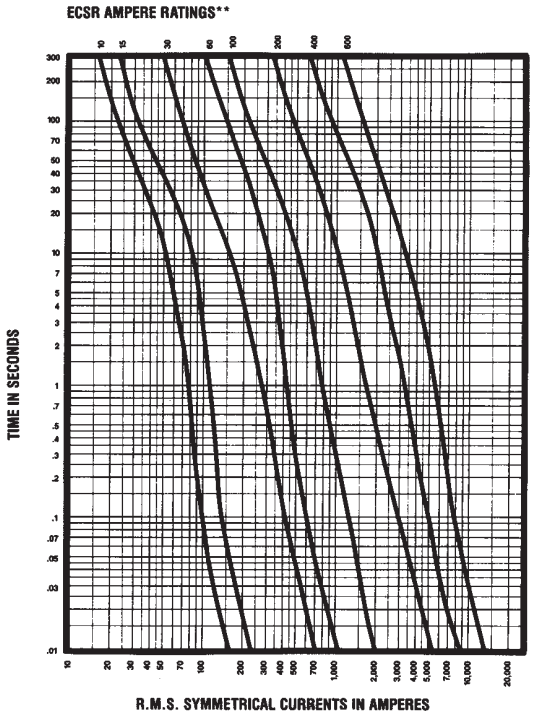
Applied Performance Data
Average Time/Current Characteristic Curves*

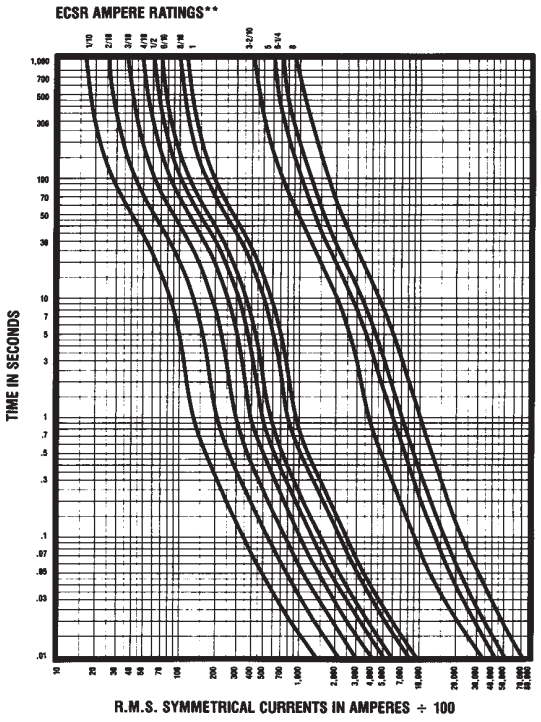
ECNR RATINGS—250 VAC





ECSR RATINGS—600 VAC





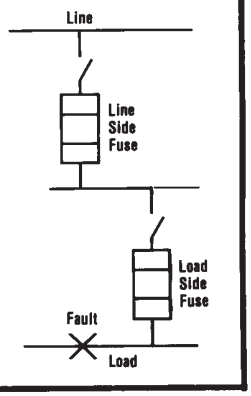
*Contact Reliance Fuse for latest performance data

**Contact Reliance Fuse for intermediate curves

UL CLASS RK5 TIME-DELAY FUSES

Minimum Ratio Selectivity Guide[1]*

FUSE CHARACTERISTICS		LINE SIDE FUSE[2]	LOAD SIDE FUSE											
UL CLASS FUSE	FUSE RATINGS	SYMBOLS & APPLIED V.	LENRK	LESRK	ECNR	ECSR	JCL		NCLR	SCLR	LCL		LCU	
			208V	480V	208V	480V	208V	480V	208V	480V	208V	480V	208V	480V
L Time Delay	601-6000A 600V	LCL 208V	2.4		3		1.3		1.3		1.7		1.3	
		LCL 480V		2		3		1.3		1.3		2.3		1.7
L Fast Acting	601-6000A 600V	LCU 208V	2.7		3.6		1.3		1.4		1.7		1.5	
		LCU 480V		2.7		3		1.3		1.8		2.7		2
J Fast Acting	25-600A 600V	JCL 208V	4		5.7		2.5		1.7					
		JCL 480V		4		8.8		3.2		3.5				
RK1 Fast Acting	25-600A 250V	NCLR 208V	5		5.7		2		3					
RK1 Fast Acting	25-600A 600V	SCLR 480V		4		10		3		3				
RK1 Time Delay	25-600A 250V	LENRK 208V	2.3		5		1.4		2					
RK1 Time Delay	25-600A 600V	LESRK 480V		2.8		6.3		2.3		2.9				
RK5 Time Delay	25-600A 250V	ECNR 208V	2.6		2.5		1.3		1.8					
RK5 Time Delay	25-600A 600V	ESCR 480V		1.5		2.8		1.3		1.3				



[1] To use the RATIO GUIDE, divide the amps rating of a LOAD side fuse into the amps rating of a LINE side fuse to find the APPLIED RATIO number. When the APPLIED RATIO number is equal to, or larger than, the RATIO GUIDE number, positive selectivity exists. When the APPLIED RATIO number is smaller than the appropriate RATIO GUIDE number, selectivity is not indicated but may actually exist for certain fuse amps rating combinations. The reason is that the RATIO GUIDE number is not the same for all amps ratings of the same fuse type which requires the RATIO GUIDE number to be the largest ratio for any of the possible fuse amps rating combinations.

[2] When applied (system) voltage is different from that shown in RATIO GUIDE, refer to "I^2t curves" selectivity method and interpolate for applied voltage.

[3] The ratios shown in this table apply only to Reliance Fuse fuses.

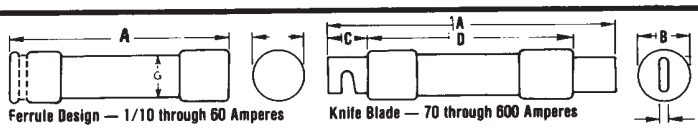
[4] Contact Reliance Fuse for selectivity of ratings below 25 amps.

Fuse Selection Data*

AMPERE RATINGS CATALOG NUMBER			
ECNR 1/10	ECNR 10	ECSR 1/10	ECSR 9
ECNR 15/100	ECNR 12	ECSR 15/100	ECSR 10
ECNR 2/10	ECNR 15	ECSR 2/10	ECSR 12
ECNR 3/10	ECNR 17-1/2	ECSR 3/10	ECSR 15
ECNR 4/10	ECNR 20	ECSR 4/10	ECSR 17-1/2
ECNR 1/2	ECNR 25	ECSR 1/2	ECSR 20
ECNR 6/10	ECNR 30	ECSR 6/10	ECSR 25
ECNR 8/10	ECNR 35	ECSR 8/10	ECSR 30
ECNR 1	ECNR 40	ECSR 1	ECSR 35
ECNR 1-1/8	ECNR 45	ECSR 1-1/8	ECSR 40
ECNR 1-1/4	ECNR 50	ECSR 1-1/4	ECSR 45
ECNR 1-4/10	ECNR 60	ECSR 1-4/10	ECSR 50
ECNR 1-6/10	ECNR 70	ECSR 1-1/2	ECSR 60
ECNR 1-8/10	ECNR 80	ECSR 1-6/10	ECSR 70
ECNR 2	ECNR 90	ECSR 1-8/10	ECSR 80
ECNR 2-1/4	ECNR 100	ECSR 2	ECSR 90
ECNR 2-1/2	ECNR 110	ECSR 2-1/4	ECSR 100
ECNR 2-8/10	ECNR 125	ECSR 2-1/2	ECSR 110
ECNR 3	ECNR 150	ECSR 2-8/10	ECSR 125
ECNR 3-2/10	ECNR 175	ECSR 3	ECSR 150
ECNR 3-1/2	ECNR 200	ECSR 3-2/10	ECSR 175
ECNR 4	ECNR 225	ECSR 3-1/2	ECSR 200
ECNR 4-1/2	ECNR 250	ECSR 4	ECSR 225
ECNR 5	ECNR 300	ECSR 4-1/2	ECSR 250
ECNR 5-6/10	ECNR 350	ECSR 5	ECSR 300
ECNR 6	ECNR 400	ECSR 5-6/10	ECSR 350
ECNR 6-1/4	ECNR 450	ECSR 6	ECSR 400
ECNR 7	ECNR 500	ECSR 6-1/4	ECSR 450
ECNR 8	ECNR 600	ECSR 7	ECSR 500
ECNR 9		ECSR 8	ECSR 600

Fuse Amps Ratings	Carton Quantity	Lbs. per Carton ECNR	Lbs. per Carton ECSR
1/10-30	10	0.56	1.62
35-60	10	1.38	3.00
70-100	5	1.56	3.00
110-200	1	0.90	1.41
225-400	1	1.80	3.13
450-600	1	3.30	5.28

CROSS REFERENCE		
Reliance Fuse	Bussmann	Gould/ Shawmut
ECNR	FRN-R	TR
ECSR	FRS-R	TRS



Ferrule Design — 1/10 through 60 Amperes

Knife Blade — 70 through 600 Amperes

Volts and Symbol	Amps	Overall Length A	Max. Diameter B	Min. Blade Length C	Min. Barrel Length D	Blade Thickness E
250V ECNR	1/10-30	2	9/16	—	—	—
	35-60	3	13/16	—	—	—
	70-100	5 7/8	1 1/16	1	3 13/16	1/8
	110-200	7 1/8	1 5/8	1 3/8	4 1/8	3/16
	225-400	8 5/8	2 1/4	1 7/8	4 5/8	1/4
	450-600	10 3/8	2 3/4	2 1/4	5 3/16	1/4
600V ECSR	1/10-30	5	13/16	—	—	—
	35-60	5 1/2	1 1/16	—	—	—
	70-100	7 7/8	1 5/16	1	5 5/16	1/8
	110-200	9 5/8	2	1 3/8	6 1/8	3/16
	225-400	11 5/8	2 3/4	1 7/8	7 1/8	1/4
	450-600	13 3/8	3 1/4	2 1/4	8 3/16	1/4

Dimensions are shown in inches, tolerances are not shown.

*Contact Reliance Fuse for latest performance data

B-I-A Vertriebs GmbH / Germany
Email: info@BiaGmbH.com
www.BiaGmbH.com
www.BiaOnline.com

Further items on request. Dimensions mm.
Subject to change without notice.

Created 08.07.1987
L1718

UL CLASS RK5 TIME-DELAY FUSES

Fuse Application Tips

The following application tips answer many frequently asked questions. For more information refer to Reliance Fuse *Overcurrent Protection Handbook*. For application assistance, contact your Reliance Fuse Distributor or the Factory (312/299-2211).

Fuse Voltage Ratings: Apply fuses at any circuit voltage less than or equal to the voltage rating. Unless otherwise noted, all Reliance Fuse voltage ratings shown are AC. Contact Factory for DC ratings.

Fuse Current Ratings: Select fuse types to provide the sizing of current (ampere) ratings as low as practical for a circuit without incurring unnecessary fuse opening for normal circuit operation. This provides optimum overcurrent protection.

Fuse Interrupting Ratings: Apply fuses where the maximum available short-circuit current magnitude is not expected to exceed the fuse interrupting rating. When a calculation for maximum short-circuit current is not made, selection of Reliance Fuse Class L, R, or J fuses with 200,000 amperes interrupting rating will satisfy N.E.C. 110-9 for most systems.

Fuse Current Limiting Ratings: UL requires that the designation "Current Limiting" only be shown on fuses which are *not interchangeable* with devices of lower interrupting ratings. Such Reliance Fuse products are Classes L, R and J fuses. Current limiting fuses open extremely fast for high magnitude short-circuit current conditions and will limit the short-circuit current magnitude in the current limiting range of the fuse to provide best protection. See N.E.C. Article 110-10.

Class R Fuses: Class R fuses will fit standard fuse clips to upgrade existing systems; however, the use of rejection type Class R fuse clips in Class R rated switches is recommended.

Fuse "Time-Delay" Rating: "Time-Delay" fuses have some opening "delay" designed into the overload range (up to 10 times fuse rating). This reduces the possibility of nuisance fuse opening for harmless current surges caused by inductive loads such as motors and transformers. Such fuses in Class L and Class R types, however, are current limiting and provide fast short-circuit protection.

Fuse "Fast Acting" Rating: Fuses with no designed "time delay" built into the overload range, usually used for non-inductive loads. The practice of oversizing "fast acting" fuses to accommodate inrush currents of inductive loads may reduce desired overcurrent protection.

Transformer Circuit Fuse Sizing: Use "time delay" fuses for transformer primary circuits at 125% or less of transformer primary rated current when no secondary protection is provided (N.E.C. 450-3). When secondary fuse protection is provided at 125% or less of transformer secondary rating, primary fuses may be sized at 250% or less of transformer primary current rating. For estimating transformer primary in-rush current, consider an effective current in-rush magnitude of 12 times transformer primary current rating for 0.1 second duration.

Motor Circuit Fuse Sizing: Class R dual-element fuses are recommended for motor and motor circuit protection. The following tables for "Sizing Fuse Protection for Motors and Motor Circuits" are based on N.E.C. Article 430. These tables are for reference only since the degree of motor and motor circuit protection is variable within N.E.C. limits and motor types, applications and ambient conditions. Sizing dual-element fuses for motor overload and running protection may be influenced by variables in applied voltage, actual motor circuit current (power factor, power factor correction capacitors, less than nameplate motor load), type motor load, jogging, reversing, frequent on-off cycles, ambient temperatures at motor and fuse, motor winding insulation thermal limit, etc. Usually, motor starter thermal overload relays are sized to provide primary motor overload and running protection for each specific installation requirement. Reliance Fuse Dual Fuses are commonly sized to "back up" the starter relay's motor overload protection as well as to provide excellent, dependable, short-circuit protection at minimum cost. Dual Element fuses may be sized for primary motor overload protection instead of "back up" for starter relays. Refer to the Reliance Fuse Overcurrent Protection Handbook for additional information.

Sizing Fuse Protection for Motors and Motor Circuits (N.E.C. Article 430)

115 Volts, Single-Phase, AC(2)
Use 250 Volt *ECNR* or *LENRK* Fuses

Motor		Fuse Amperes		
HP	Full Load Amps (Nominal)	For 1.15 S.F. or Less. 40°C Rise or Less (125% F.L.A.)(1)	All Other Motors (115% F.L.A.)(1)	Max. N.E.C. Fuse Ratings(1)(4)
1/6	4.4	5 6/10	5	8
1/4	5.8	7	7	10
1/3	7.2	9	8	15
1/2	9.8	12	12	17 1/2
3/4	13.8	17 1/2	15	25
1	16	20	17 1/2	30
1 1/2	20	25	25	35
2	24	30	30	45
3	34	45	40	60
5	56	70	70	100
7 1/2	80	100	90	150
10	100	125	110	175

*For reference only — see N.E.C. 430-6 and 430-32

230 Volts, Single-Phase, AC(2)
Use 250 Volt *ECNR* or *LENRK* Fuses

Motor		Fuse Amperes		
HP	Full Load Amps (Nominal)	For 1.15 S.F. or Less. 40°C Rise or Less (125% F.L.A.)(1)	All Other Motors (115% F.L.A.)(1)	Max. N.E.C. Fuse Ratings(1)(4)
1/6	2.2	2 8/10	2 1/2	4
1/4	2.9	4	3 2/10	5 6/10
1/3	3.6	4 1/2	4	7
1/2	4.9	6	5 6/10	9
3/4	6.9	9	8	15
1	8	10	9	15
1 1/2	10	12	12	17 1/2
2	12	15	15	25
3	17	20	20	30
5	28	35	30	50
7 1/2	40	50	45	70
10	50	70	60	90

*For reference only — see N.E.C. 430-6 and 430-32

200 Volts, Three-Phase, AC(3)
(Induction, Squirrel Cage & Wound Rotor)
Use 250 Volt *ECNR* or *LENRK* Fuses

Motor		Fuse Amperes			
HP	Full Load Amperes (Nominal)	For 1.15 S.F. or Less. 40°C Rise or Less (125% F.L.A.)(1)	All Other Motors (115% F.L.A.)(1)	Max. N.E.C. Ratings(1)	
				Code Letter A Wound Rotor, No Letter(4)	All Others(4)
1/2	2.3	2 8/10	2 1/2	3 1/2	4
3/4	3.2	4	3 1/2	5	5 6/10
1	4.1	5	4 1/2	6	7
1 1/2	6	7 1/2	7	9	10
2	7.8	10	9	12	15
3	11	15	12	17 1/2	20
5	17.5	20	20	25	30
7 1/2	25	30	30	40	45
10	32	40	35	50	60
15	48	60	60	75	90
20	62	80	70	90	110
25	78	90	90	110	125
30	92	110	100	125	150
40	120	150	125	175	200
50	150	175	175	225	250
60	177	225	200	250	300
75	221	300	250	350	400
100	285	350	325	400	450
125	359	450	400	500	600
150	414	500	450	600	Class L

*For reference only — see N.E.C. 430-6 and 430-32

B-I-A Vertriebs GmbH / Germany
Email: info@BiaGmbH.com
www.BiaGmbH.com
www.BiaOnline.com

Created 08.07.1987
L1718

UL CLASS RK5 TIME-DELAY FUSES

208 Volts, Three-Phase, AC(3)
(Induction, Squirrel Cage & Wound Rotor)
Use 250 Volt *ECNR* or *LENRK* Fuses

Motor		Fuse Amperes			
				Max. N.E.C. Ratings(1)	
HP	Full Load Amperes (Nominal)	For 1.15 S.F. or Less. 40°C Rise or Less (125% F.L.A.)(1)	All Other Motors (115% F.L.A.)(1)	Code Letter A Wound Rotor, No Letter(4)	All Others(4)
½	2.2	2 9/10	2½	3½	4
¾	3.1	4	3½	5	5 6/10
1	4	5	4½	6¼	7
1½	5.7	7	6¼	9	10
2	7.5	9	9	12	15
3	10.6	15	12	17½	20
5	16.7	20	17½	25	30
7½	24	30	30	35	45
10	31	40	35	45	60
15	46	60	50	70	80
20	59	70	70	90	110
25	75	90	80	125	150
30	88	110	100	150	175
40	114	150	125	175	200
50	143	175	175	225	250
60	169	225	200	250	300
75	211	250	225	350	400
100	272	350	300	450	500
125	335	400	400	500	600
150	396	500	450	600	600

*For reference only — see N.E.C. 430-6 and 430-32

230 Volts, Three-Phase, AC(3)
(Induction, Squirrel Cage & Wound Rotor)
Use 250 Volt *ECNR* or *LENRK* Fuses

Motor		Fuse Amperes			
				Max. N.E.C. Ratings(1)	
HP	Full Load Amperes (Nominal)	For 1.15 S.F. or Less. 40°C Rise or Less (125% F.L.A.)(1)	All Other Motors (115% F.L.A.)(1)	Code Letter A Wound Rotor, No Letter(4)	All Others(4)
½	2	2½	2¼	3 2/10	3½
¾	2.8	3½	3 2/10	4½	5
1	3.6	4½	4	5 6/10	7
1½	5.2	7	6¼	8	10
2	6.8	9	8	10	12
3	9.6	12	12	15	17½
5	15.2	20	17½	25	30
7½	22	30	25	35	40
10	28	35	35	45	50
15	42	50	50	70	80
20	54	70	60	90	100
25	68	90	80	110	125
30	80	100	90	125	150
40	104	125	125	175	200
50	130	175	150	200	250
60	154	200	175	250	300
75	192	250	225	300	350
100	248	300	300	400	450
125	312	400	350	500	600
150	360	450	400	500	600
200	480	600	600	Class L	Class L

*For reference only — see N.E.C. 430-6 and 430-32

AMBIENT TEMPERATURE DERATING CHART FOR MULTI-PURPOSE ECNR, ECSR, LENRK AND LESRK FUSES

Ambient Temperatures		Carrying Capacity of Fuse in % of Rating	% of Opening Time
°C	°F		
−60	−76	120	135
−40	−40	117	130
−20	− 4	113	125
0	32	108	120
20	68*	103*	105
25	77*	100*	100
30	86*	98*	95
40	104*	95*	85
60	140	85	70
80	176	75	50
100	212	60	35

460 Volts, Three-Phase, AC(3)
(Induction, Squirrel Cage & Wound Rotor)
Use 600 Volt *ECSR* or *LESRK* Fuses

Motor		Fuse Amperes			
				Max. N.E.C. Ratings(1)	
HP	Full Load Amperes (Nominal)	For 1.15 S.F. or Less. 40°C Rise or Less (125% F.L.A.)(1)	All Other Motors (115% F.L.A.)(1)	Code Letter A Wound Rotor, No Letter(4)	All Others(4)
½	1	1¼	1⅛	1½	1 8/10
¾	1.4	1 8/10	1 6/10	2	2½
1	1.8	2¼	2	3	3 2/10
1½	2.6	3 2/10	3	4	4½
2	3.4	4	4	5	6
3	4.8	6	5 6/10	7	8
5	7.6	10	9	12	15
7½	11	15	12	17½	20
10	14	17½	17½	20	25
15	21	25	25	30	35
20	27	35	35	40	50
25	34	40	40	50	60
30	40	50	45	60	70
40	52	70	60	80	90
50	65	80	70	100	110
60	77	100	90	110	125
75	96	125	110	150	175
100	124	150	150	175	200
125	156	200	175	225	250
150	180	225	200	300	300
200	240	300	300	350	400

*For reference only — see N.E.C. 430-6 and 430-32

575 Volts, Three-Phase, AC(3)
(Induction, Squirrel Cage & Wound Rotor)
Use 600 Volt *ECSR* or *LESRK* Fuses

Motor		Fuse Amperes			
				Max. N.E.C. Ratings(1)	
HP	Full Load Amperes (Nominal)	For 1.15 S.F. or Less. 40°C Rise or Less (125% F.L.A.)(1)	All Other Motors (115% F.L.A.)(1)	Code Letter A Wound Rotor, No Letter(4)	All Others(4)
½	0.8	1	1	1¼	1 4/10
¾	1.1	1¼	1⅛	1 6/10	2
1	1.4	1 8/10	1 6/10	2	2½
1½	2.1	2½	2½	3	3½
2	2.7	3½	3 2/10	4	5
3	3.9	5	4½	6	7
5	6.1	7	7	9	10
7½	9	12	10	15	15
10	11	15	12	17½	17½
15	17	20	20	30	35
20	22	30	25	35	40
25	27	35	30	40	45
30	32	40	35	50	60
40	41	50	45	60	70
50	52	70	60	80	90
60	62	80	70	90	100
75	77	100	90	110	125
100	99	125	110	150	175
125	125	150	150	200	225
150	144	175	175	225	250
200	192	250	225	300	350

*For reference only — see N.E.C. 430-6 and 430-32

Notes:
(1) Where thermal overload relays are not used as primary running protection, size dual-element fuses at 100% of nameplate ampere rating for 1.0 Service Factor (115% for 1.15 S.F.).
When applying running protection for synchronous motors, contact the motor manufacturer, or your Reliance Fuse sales representative for sizing assistance.
Motor applications above 600 amperes, and unusual application variables, require special consideration. Contact your Reliance Fuse sales representative for assistance.
(2) N.E.C. Table 430-148
(3) N.E.C. Table 430-150
(4) N.E.C. Table 430-152

B-I-A Vertriebs GmbH / Germany
Email: info@BiaGmbH.com
www.BiaGmbH.com
www.BiaOnline.com

Created 08.07.1987
L1718