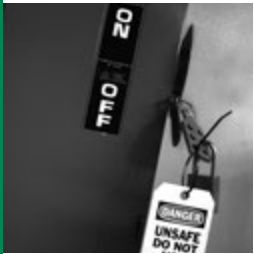




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Application Guide



POWR-GARD[®]

Technical Application Guide

MOTOR PROTECTION TABLES

Selection of Class RK5 Fuses (FLNR_ID / FLSR_ID / IDSR Series) or POWR-PRO® Class RK1 Fuses (LLNRK / LLSRK / LLSRK_ID Series) Based on Motor Full Load Amps

Using AC Motor Protection Tables to Select Fuse Ratings

Time-delay RK1 and RK5 fuse ratings selected in accordance with the following recommendations also meet NEC® requirements for Motor Branch circuit and Short-Circuit Protection.

Selecting Fuses for Motor Running Protection Based on Motor Horsepower

Motor horsepower and motor Full Load Amperes (FLA) shown are taken from NEC® Tables 430.248 through 430.250 covering standard speed AC motors with normal torque characteristics. Fuse ratings for motors with special characteristics may need to vary from given values.

If motor running protection will be provided by the fuses, select fuse ratings for correct type of motor from Motor Protection Table Columns headed, "Without Overload Relays."

If overload relays will provide principal motor running protection, select fuse ratings for correct type of motor from Motor Protection Table Columns headed, "Back-up Running Protection" or "With Overload Relays." Fuse ratings selected from these columns coordinate with most UL Class 10 and 20 overload relays which covers over 90% of motor applications.

Selecting Fuses for Motor Running Protection Based on Motor Actual Full Load Currents

Better protection is achieved when fuse ratings are based on motor actual FLA obtained from motor nameplates. Locate motor nameplate FLA in the column appropriate for the type of motor and type of protection required. Then select the corresponding ampere rating of the fuse from the first column of that line.

TIME DELAY UL CLASS RK1 OR RK5 FUSE AMPERE RATING	MOTOR RUNNING PROTECTION (USED WITHOUT PROPERLY SIZED OVERLOAD RELAYS) MOTOR FULL-LOAD AMPS		BACK-UP MOTOR RUNNING PROTECTION (USED WITH PROPERLY SIZED OVERLOAD RELAYS) MOTOR FULL-LOAD AMPS	
	MOTOR SERVICE FACTOR OF 1.15 OR GREATER OR WITH TEMP. RISE NOT OVER 40°C.	MOTOR SERVICE FACTOR LESS THAN 1.15 OR WITH TEMP. RISE GREATER THAN 40°C.	MOTOR SERVICE FACTOR OF 1.15 OR GREATER OR WITH TEMP. RISE NOT OVER 40°C.	MOTOR SERVICE FACTOR LESS THAN 1.15 OR WITH TEMP. RISE GREATER THAN 40°C.
1/10	0.08-0.09	0.09-0.10	0-0.08	0-0.09
1/8	0.10-0.11	0.11-0.125	0.09-0.10	0.10-0.11
15/100	0.12-0.15	0.14-0.15	0.11-0.12	0.12-0.13
2/10	0.16-0.19	0.18-0.20	0.13-0.16	0.14-0.17
1/4	0.20-0.23	0.22-0.25	0.17-0.20	0.18-0.22
3/10	0.24-0.30	0.27-0.30	0.21-0.24	0.23-0.26
4/10	0.32-0.39	0.35-0.40	0.25-0.32	0.27-0.35
1/2	0.40-0.47	0.44-0.50	0.33-0.40	0.36-0.43
6/10	0.48-0.60	0.53-0.60	0.41-0.48	0.44-0.52
8/10	0.64-0.79	0.70-0.80	0.49-0.64	0.53-0.70
1	0.80-0.89	0.87-0.97	0.65-0.80	0.71-0.87
1 1/8	0.90-0.99	0.98-1.08	0.81-0.90	0.88-0.98
1 1/4	1.00-1.11	1.09-1.21	0.91-1.00	0.99-1.09
1 1/10	1.12-1.19	1.22-1.30	1.01-1.12	1.10-1.22
1 1/2	1.20-1.27	1.31-1.39	1.13-1.20	1.23-1.30
1 9/10	1.28-1.43	1.40-1.56	1.21-1.28	1.31-1.39
1 8/10	1.44-1.59	1.57-1.73	1.29-1.44	1.40-1.57
2	1.60-1.79	1.74-1.95	1.45-1.60	1.58-1.74
2 1/4	1.80-1.99	1.96-2.17	1.61-1.80	1.75-1.96
2 1/2	2.00-2.23	2.18-2.43	1.81-2.00	1.97-2.17
2 9/10	2.24-2.39	2.44-2.60	2.01-2.24	2.18-2.43
3	2.40-2.55	2.61-2.78	2.25-2.40	2.44-2.60
3 1/10	2.56-2.79	2.79-3.04	2.41-2.56	2.61-2.78
3 1/2	2.80-3.19	3.05-3.47	2.57-2.80	2.79-3.04
4	3.20-3.59	3.48-3.91	2.81-3.20	3.05-3.48
4 1/2	3.60-3.99	3.92-4.34	3.21-3.60	3.49-3.91
5	4.00-4.47	4.35-4.86	3.61-4.00	3.92-4.35
5 8/10	4.48-4.79	4.87-5.21	4.01-4.48	4.36-4.87
6	4.80-4.99	5.22-5.43	4.49-4.80	4.88-5.22
6 1/4	5.00-5.59	5.44-6.08	4.81-5.00	5.23-5.43
7	5.60-5.99	6.09-6.52	5.01-5.60	5.44-6.09
7 1/2	6.00-6.39	6.53-6.95	5.61-6.00	6.10-6.52
8	6.40-7.19	6.96-7.82	6.01-6.40	6.53-6.96
9	7.20-7.99	7.83-8.69	6.41-7.20	6.97-7.83
10	8.00-9.59	8.70-10.00	7.21-8.00	7.84-8.70
12	9.60-11.99	10.44-12.00	8.01-9.60	8.71-10.43
15	12.00-13.99	13.05-15.00	9.61-12.00	10.44-13.04
17 1/2	14.00-15.99	15.22-17.39	12.01-14.00	13.05-15.21
20	16.00-19.99	17.40-20.00	14.01-16.00	15.22-17.39
25	20.00-23.99	21.74-25.00	16.01-20.00	17.40-21.74
30	24.00-27.99	26.09-30.00	20.01-24.00	21.75-26.09
35	28.00-31.99	30.44-34.78	24.01-28.00	26.10-30.43
40	32.00-35.99	34.79-39.12	28.01-32.00	30.44-37.78
45	36.00-39.99	39.13-43.47	32.01-36.00	37.79-39.13
50	40.00-47.99	43.48-50.00	36.01-40.00	39.14-43.48
60	48.00-55.99	52.17-60.00	40.01-48.00	43.49-52.17
70	56.00-59.99	60.87-65.21	48.01-56.00	52.18-60.87
75	60.00-63.99	65.22-69.56	56.01-60.00	60.88-65.22
80	64.00-71.99	69.57-78.25	60.01-64.00	65.23-69.57
90	72.00-79.99	78.26-86.95	64.01-72.00	69.58-78.26
100	80.00-87.99	86.96-95.64	72.01-80.00	78.27-86.96
110	88.00-99.99	95.65-108.69	80.01-88.00	86.97-95.65
125	100.00-119.99	108.70-125.00	88.01-100.00	95.66-108.70
150	120.00-139.99	131.30-150.00	100.01-120.00	108.71-130.43
175	140.00-159.99	152.17-173.90	120.01-140.00	130.44-152.17
200	160.00-179.99	173.91-195.64	140.01-160.00	152.18-173.91
225	180.00-199.99	195.65-217.38	160.01-180.00	173.92-195.62
250	200.00-239.99	217.39-250.00	180.01-200.00	195.63-217.39
300	240.00-279.99	260.87-300.00	200.01-240.00	217.40-260.87
350	280.00-319.99	304.35-347.82	240.01-280.00	260.88-304.35
400	320.00-359.99	347.83-391.29	280.01-320.00	304.36-347.83
450	360.00-399.99	391.30-434.77	320.01-360.00	347.84-391.30
500	400.00-479.99	434.78-500.00	360.01-400.00	391.31-434.78
600	480.00-600.00	521.74-600.00	400.01-480.00	434.79-521.74



Motor Protection White Paper

Download our white paper on motor protection at littelfuse.com/technicalcenter

MOTOR PROTECTION TABLES

Selection of Class RK5 Fuses (FLNR_ID / FLSR_ID / IDSR Series) or POWR-PRO® Class RK1 Fuses (LLNRK / LLSRK / LLSRK_ID Series) Based on Motor Horsepower

MOTOR HP	FULL LOAD AMPS	WITHOUT OVERLOAD RELAYS		WITH OVERLOAD RELAYS		SWITCH OR FUSE CLIP RATING
		S.F. = 1.15 OR MORE, TEMP RISE NOT OVER 40°C	S.F. = LESS THAN 1.15 OR TEMP RISE MORE THAN 40°C	S.F. = 1.15 OR MORE, TEMP RISE NOT OVER 40°C	S.F. = LESS THAN 1.15 OR TEMP RISE MORE THAN 40°C	
120 VOLT 1-PHASE MOTORS (120V CIRCUIT)						
1/8	4.4	5	5	5 ⁹ / ₁₀	5 ⁹ / ₁₀	30
1/4	5.8	7	6 ³ / ₄	7 ¹ / ₂	7	30
1/2	7.2	9	8	9	9	30
3/4	9.8	12	10	15	12	30
1	13.8	15	15	17 ¹ / ₂	17 ¹ / ₂	30
1 1/2	16	20	17 ¹ / ₂	20	20	30
2	20	25	20	25	25	30
3	24	30	25	30	30	30
230 VOLT 1-PHASE MOTORS (240V CIRCUIT)						
1/8	2.2	2 ¹ / ₂	2 ¹ / ₂	2 ⁹ / ₁₀	2 ⁹ / ₁₀	30
1/4	2.9	3 ¹ / ₂	3 ³ / ₁₀	4	3 ¹ / ₂	30
1/2	3.6	4 ¹ / ₂	4	4 ¹ / ₂	4 ¹ / ₂	30
3/4	4.9	5 ⁹ / ₁₀	5 ⁹ / ₁₀	6 ³ / ₄	6	30
1	6.9	8	7 ¹ / ₂	9	8	30
1 1/2	8	10	9	10	10	30
2	10	12	10	15	12	30
3	12	15	12	15	15	30
5	17	20	17 ¹ / ₂	25	20	30
7 1/2	28	35	30*	35	35	60
10	40	50	45	50	50	60
15	50	60	50	70	60	60
200 VOLT 3-PHASE MOTORS (208V CIRCUIT)						
1/2	2.5	3	2 ⁹ / ₁₀	3 ¹ / ₁₀	3	30
3/4	3.7	4 ¹ / ₂	4	5	4 ¹ / ₂	30
1	4.8	6	5 ⁹ / ₁₀	6 ³ / ₄	6	30
1 1/2	6.9	8	7 ¹ / ₂	7 ¹ / ₂	8	30
2	7.8	9	8	10	9	30
3	11	12	12	15	15	30
5	17.5	20	20	25	25	30
7 1/2	25.3	30*	25*	35	30*	60
10	32.2	40	35	45	40	60
15	48.3	60	50	70†	60	60
20	62.1	75	70	80	75	100
25	78.2	90	80	100	90	100
30	92	110	100*	125	110	200
40	120	150	125	150	150	200
50	150	175	150	200	175	200
60	177	200*	200*	225	225	400
75	221	250	250	300	300	400
100	285	350	300	400	350	400
125	359	400*	400*	450	450	600
150	414	500	450	600	500	600
230 VOLT 3-PHASE MOTORS (240V CIRCUIT)						
1/2	2.2	2 ⁹ / ₁₀	2 ¹ / ₂	2 ⁹ / ₁₀	2 ⁹ / ₁₀	30
3/4	3.2	4	3 ¹ / ₂	4	4	30
1	4.2	5	4 ¹ / ₂	5 ⁹ / ₁₀	5	30
1 1/2	6.0	7 ¹ / ₂	6 ³ / ₄	7 ¹ / ₂	7 ¹ / ₂	30
2	6.8	8	7 ¹ / ₂	9	8	30
3	9.6	12	10	12	12	30
5	15.2	17 ¹ / ₂	17 ¹ / ₂	20	17 ¹ / ₂	30
7 1/2	22	25	25	30	30	30
10	28	35	30*	35	35	60
15	42	50	45	60	50	60
20	54	60*	60*	70	70	100
25	68	80	75	90	80	100
30	80	100	90	100	100	100
40	104	125	110	150	125	200
50	130	150	150	175	150	200
60	154	175	175	200	200	200
75	192	225	200*	250	225	400
100	248	300	250	350	300	400
125	312	350	350	400	400	400
150	360	450	400*	450	450	600
200	480	600	500	600	600	600

MOTOR HP	FULL LOAD AMPS	WITHOUT OVERLOAD RELAYS		WITH OVERLOAD RELAYS		SWITCH OR FUSE CLIP RATING
		S.F. = 1.15 OR MORE, TEMP RISE NOT OVER 40°C	S.F. = LESS THAN 1.15 OR TEMP RISE MORE THAN 40°C	S.F. = 1.15 OR MORE, TEMP RISE NOT OVER 40°C	S.F. = LESS THAN 1.15 OR TEMP RISE MORE THAN 40°C	
460 VOLT 3-PHASE MOTORS (480V CIRCUIT)						
1/2	1.1	1 ¹ / ₁₀	1 ¹ / ₄	1 ¹ / ₁₀	1 ¹ / ₁₀	30
3/4	1.6	2	1 ⁹ / ₁₀	2	2	30
1	2.1	2 ¹ / ₂	2 ¹ / ₄	2 ⁹ / ₁₀	2 ¹ / ₂	30
1 1/2	3.0	3 ¹ / ₂	3 ³ / ₁₀	4	3 ¹ / ₂	30
2	3.4	4	3 ¹ / ₂	4 ¹ / ₂	4	30
3	4.8	5 ⁹ / ₁₀	5	6	5 ⁹ / ₁₀	30
5	7.6	9	8	10	9	30
7 1/2	11	12	12	15	15	30
10	14	17 ¹ / ₂	15	17 ¹ / ₂	17 ¹ / ₂	30
15	21	25	20	30	25	30
20	27	30*	30*	35	35	60
25	34	40	35	45	40	60
30	40	50	45	50	50	60
40	54	60*	60*	70	60*	100
50	65	80	70	90	75	100
60	77	90	80	100	90	100
75	96	110	110	125	125	200
100	124	150	125	175	150	200
125	156	175	175	200	200	200
150	180	225	200*	225	225	400
200	240	300	250	300	300	400
575 VOLT 3-PHASE MOTORS (600V CIRCUIT)						
1/2	0.9	1 ¹ / ₈	1	1 ¹ / ₁₀	1 ¹ / ₈	30
3/4	1.3	1 ⁹ / ₁₀	1 ¹ / ₁₀	1 ⁹ / ₁₀	1 ⁹ / ₁₀	30
1	1.7	2	1 ⁹ / ₁₀	2 ¹ / ₄	2	30
1 1/2	2.4	3	2 ¹ / ₂	3	3	30
2	2.7	3 ¹ / ₁₀	2 ⁹ / ₁₀	3 ¹ / ₂	3 ¹ / ₁₀	30
3	3.9	4 ¹ / ₂	4	5	4 ¹ / ₂	30
5	6.1	7 ¹ / ₂	7	8	7 ¹ / ₂	30
7 1/2	9	10	10	12	12	30
10	11	12	12	15	15	30
15	17	20	17 ¹ / ₂	25	20	30
20	22	25	25	30	30	30
25	27	30*	30*	35	35	60
30	32	40	35	40	40	60
40	41	50	45	60	50	60
50	52	60	60	70†	60	60
60	62	75	70	80	75	100
75	77	90	80	100	90	100
100	99	110	110	125	125	200
125	125	150	125	175	150	200
150	144	175	150	200	175	200
200	192	225	200*	250	225	400

NOTES

- S.F. = Motor Service Factor
- * Fuse Reducers Required
- † 100 Amp Switch Required



Motor Protection White Paper

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MOTOR PROTECTION TABLES

Selection of POWR-PRO® Class J Fuses (JTD_ID / JTD Series) Based on Motor Full Load Amps

MOTOR F.L.A.	JTD_ID / JTD AMPERE RATING	MOTOR F.L.A.	JTD_ID / JTD AMPERE RATING	MOTOR F.L.A.	JTD_ID / JTD AMPERE RATING
0.00 – 0.60	3/10	12.1 – 14.5	17 1/2	76.1 – 84.0	110
0.61 – 0.80	1	14.6 – 17.0	20	84.1 – 90.0	125
0.81 – 1.00	1 1/4	17.1 – 21.0	25	90.1 – 102	150
1.01 – 1.20	1 1/2	21.1 – 25.0	30	103 – 125	175
1.21 – 1.65	2	25.1 – 28.5	35	126 – 144	200
1.66 – 2.00	2 1/2	28.6 – 34.0	40	145 – 162	225
2.01 – 2.40	3	34.1 – 37.0	45	163 – 180	250
2.41 – 3.30	4	37.1 – 41.0	50	181 – 204	300
3.31 – 4.10	5	41.1 – 48.0	60	205 – 240	350
4.11 – 4.90	6	48.1 – 52.0	70	241 – 288	400
4.91 – 6.40	8	52.1 – 59.0	80	289 – 312	450
6.41 – 8.00	10	59.1 – 66.0	90	313 – 360	500
8.01 – 9.80	12	66.1 – 76.0	100	361 – 432	600
9.81 – 12.0	15				

NOTE: For severe motor starting conditions, fuses may be sized up to 225% motor F.L.A. (See NEC® Article 430.52 for Exceptions)

Selection of CCMR Time-Delay Fuses Based on Motor Full Load Amps

MOTOR FULL LOAD CURRENT (F.L.A.)						CCMR AMPERE RATING
FOR MOTORS WITH AN ACCELERATION TIME OF 2 SECONDS OR LESS		FOR MOTORS WITH AN ACCELERATION TIME OF 5 SECONDS OR LESS		FOR MOTORS WITH AN ACCELERATION TIME OF 8 SECONDS OR LESS		
MIN. F.L.A. (1)	MAX F.L.A. (3)	MIN. F.L.A. (1)	MAX F.L.A. (3)	MIN F.L.A. (2)	MAX F.L.A. (3)	
0.2	0.2	0.2	0.2	0.2	0.2	3/10
0.3	0.4	0.3	0.4	0.3	0.3	1/2
0.4	0.6	0.4	0.5	0.4	0.5	5/10
0.5	0.7	0.5	0.6	0.5	0.6	1
0.6	1.0	0.6	0.9	0.6	0.8	1 1/4
0.8	1.1	0.8	1.0	0.7	0.9	1 1/2
0.9	1.3	0.9	1.1	0.8	1.0	1 3/10
1.1	1.4	1.1	1.2	0.9	1.1	2
1.2	2.1	1.2	2.1	1.2	1.8	2 1/2
1.5	2.6	1.5	2.6	1.4	2.3	3
1.8	3.0	1.8	3.0	1.6	2.6	3 1/2
2.1	3.4	2.1	3.2	1.8	2.8	4
2.3	3.9	2.3	3.3	2.0	2.8	4 1/2
2.6	4.3	2.6	3.4	2.3	2.8	5
2.9	4.8	2.9	3.7	2.5	3.1	5 5/10
3.3	5.2	3.3	4.0	2.7	3.4	6
3.5	5.4	3.5	4.1	2.8	3.5	6 1/4
3.6	5.7	3.6	4.2	3.2	3.7	7
4.1	5.8	4.1	4.3	3.4	3.8	7 1/2
4.3	6.2	4.3	4.6	3.6	4.2	8
4.6	6.9	4.6	5.2	4.0	4.5	9
5.2	7.7	5.2	5.8	4.5	4.9	10
5.8	8.9	5.8	6.6	5.4	5.5	12
6.9	10.0	6.9	7.7	6.7	6.7	15
8.9	13.5	8.9	10.0	6.8	9.0	20
11.5	15.8	11.2 (2)	11.8	9.0	11.0	25
14.3	17.8	13.4 (2)	13.4	10.0	15.0	30
20.7	23.3	16.1	17.9	15.6	15.9	35
23.7	26.7	18.4	20.5	17.8	18.2	40
26.6	30.0	20.7	23.1	20.0	20.4	45
30.0	33.3	23.0	25.6	22.3	22.7	50
35.5	40.0	27.6	30.1	26.7	27.3	60

- 1 Based on NEC® requirement limiting the rating of time-delay fuses to 175% of motor F.L.A., or next higher rating.
- 2 Based on NEC® exception permitting fuse rating to be increased, but not to exceed, 225% motor F.L.A., however per NEC® Article 430.52 Class CC (0-30) fuses can now be sized up to 400% of motor F.L.A.
- 3 Based on Littelfuse CCMR time-delay characteristics.

NOTE: These values were calculated for motors with Locked Rotor Current (LRA), not exceeding the following values:

MOTOR F.L.A.	*LRA
0.00 – 1.00	850%
1.01 – 2.00	750%
2.01 – 10.0	650%
10.1 – 17.8	600%

*If motor LRA varies from these values, contact Littelfuse.

UL FUSE CLASSES AND SELECTION CHART

UL CLASS	LITTELFUSE SERIES	OVERLOAD CHARACTERISTICS	AC RATINGS			DC RATINGS			RECOMMENDED FUSE BLOCKS AND FUSE HOLDERS
			VOLTAGE (VOLTS)	CURRENT (AMPERES)	INTERRUPTING (AMPERES)	VOLTAGE (VOLTS)	CURRENT (AMPERES)	INTERRUPTING (AMPERES)	
L	KLPC	Time-Delay	600	200 - 6000	200K / 300K*	480	200 - 6000	20,000	-
	KLLU	Time-Delay	600	601 - 4000	200,000	300	601 - 4000	20,000	
	LDC	Fast-Acting	600	150 - 2000	200,000	600	150 - 2000	50,000	
RK1	LLNRK	Time-Delay	250	0.1 - 600	200K / 300K*	125	0.1 - 600	20,000	LFR25
	LLSRK_ID	Time-Delay	600	0.1 - 600		300	0.1 - 600		LFR60
	LLSRK	Time-Delay	600	0.1 - 600		300	0.1 - 600		LFR60
	KLNR	Fast-Acting	250	1 - 600	200,000	125	1 - 600		LFR25
	KLSR	Fast-Acting	600	1 - 600		250 300	1 - 30 35 - 600		LFR60
RK5	FLNR_ID	Time-Delay	250	35 - 600	200K / 300K*	125	35 - 600	20,000	LFR25
	FLNR		250	0.1 - 600		125	0.1 - 600		
	FLSR_ID		600	0.1 - 600		300	0.1 - 600		LFR60
	FLSR		600	0.1 - 600		300	0.1 - 600		
	IDSR		600	0.1 - 600		600	0.1 - 600		
J	JTD_ID	Time-Delay	600	0.8 - 600	200K / 300K*	300	0.8 - 100	20,000	LFJ60 • LFPSJ
	JTD	Time-Delay	600	0.8 - 600		500	110 - 600		
	JLS	Fast-Acting	600	1 - 600	200,000	-	-		
T	JLLN	Fast-Acting	300	1 - 1200	200,000	160 125	1 - 60 70 - 1200	20,000	LFT30 • LSCR002 (700-800A)
	JLLS		600	1 - 1200		300	1 - 1200		LFT60 • LSCR002 (700-800A)
CC	CCMR	Time-Delay	600	0.2 - 30	200K / 300K*	250 250 300 500	0.2 - 2 4.5 - 10 2.25 - 4 12 - 30	20,000	L60030C • LFPCS • LINK00_C • 571 • 572 • LEC • LEY
	KLDR	Time-Delay	600	0.1 - 30		300	0.1 - 30		
	KLKR	Fast-Acting	600	0.1 - 30		300	0.1 - 30		
CD	CCMR	Time-Delay	600	35 - 60	200K / 300K*	250	35 - 60	20,000	LFC60060
G	SLC	Time Lag	600 480	0.2 - 20 25 - 60	100,000	170	0.5 - 60	10,000	LFG480 (1 - 20A) LFG480 (25 - 60A)
	SPF	Solar	-	-	-	1000	1 - 30	20,000	LFPHV
Solar	SPFJ	Solar	-	-	-	1000	70 - 450	20K (70 - 200A) 10K (250 - 400A) 20K (400A)	LFJ1000
	SPFI	Solar	-	-	-	1000	2 - 20	20,000	Not Required
	SPXV	Solar	-	-	-	1500	6 - 30	30,000	LPXV
	SPXI	Solar	-	-	-	1500	2.5 - 3.5	15,000	Not Required
	K5	NLN	Fast-Acting	250	1 - 600	50,000	250	1 - 600	20K (1 - 60A) 50K (70 - 600A)
NLS		600		1 - 600	600 400 600 500		1 - 7 8 - 30 35 - 60 70 - 200 225 - 600	20K (1 - 60A) 50K (70 - 600A)	LFH60
Semiconductor	L15S	Very Fast-Acting	150	1 - 1000	200,000	150 100	1 - 60 70 - 1000	20,000	LSCR • 1LS (except L70S)
	L25S		250	1 - 800		250 200	1 - 200 225 - 800		
	L50S		500	10 - 800		450	10 - 800		
	L60S		600	1 - 800		-	-		
	L70S		700	10 - 800		650	10 - 800		
Midget (Supplementary)	BLF	Fast-Acting	250 125	0.5 - 15 20 - 30	10,000	-	-	-	L60030M • LFPSM • LINK00_M • 571 • 572 • LEB • LEX
	BLN	Fast-Acting	250	1 - 30	10,000	-	-	-	
	BLS	Fast-Acting	600 250	0.2 - 5 6 - 10	10,000	-	-	-	
	FLA	Time-Delay	125	0.1 - 30	10,000	-	-	-	
	FLM	Time-Delay	250	0.1 - 30	10,000	125	0.1 - 30	10,000	
	FLQ	Time-Delay	500	0.1 - 30	10,000	300	0.1 - 30	10,000	
	KLK	Fast-Acting	600	0.1 - 30	100K / 200K*	500	0.1 - 30	50,000	
	KLKD	Fast-Acting	600	0.1 - 30	100,000	600	0.1 - 30	50,000	
	KLQ	Time-Delay	600	1 - 6	10,000	-	-	-	
FLU	Fast-Acting	1000	0.44 11	10,000 20,000	1000	0.44 11	10,000 20,000	LFPHV	
Plug	S00, T00	Time-Delay	125	0.25 - 30	10,000	-	-	-	Box Cover Units
	SLO, TLO	Medium Time-Delay	125	15 - 30	10,000	-	-	-	
Telecom	L17T	Fast-Acting	-	-	-	170	70 - 1200	100,000	LTFD Series
	TLN		-	-	-		1 - 600		LFR25
	TLS		-	-	-		1 - 125		LTFD101 • LFT30060 (cartridge)

* Series are UL Listed with I.R. of 200,000A and Littelfuse® self-certified with 300,000A I.R.

CONDENSED CROSS REFERENCE

Power (Electrical) and Electronic Fuses

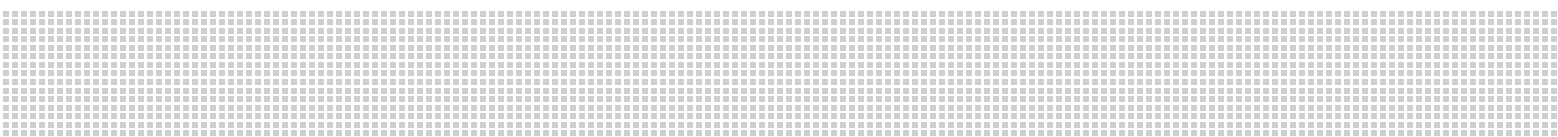
This cross reference covers the most popular fuses for which there is a similar Littelfuse standard item. Furnished for your convenience, it is meant to serve as a guide only for product selection. We suggest you check all applicable specifications before making substitutions. For special applications, more complete information, and for fuse block and medium voltage fuse cross referencing, visit littelfuse.com or call **1-800-TEC-FUSE (1-800-832-3873)**.

COMPETITION	LITTELFUSE	COMPETITION	LITTELFUSE	COMPETITION	LITTELFUSE	COMPETITION	LITTELFUSE
10K0TN	NLN	CNQ	FLQ	KBH	L50S	NRN	NLN
10K0TS	NLS	CRN-R	FLNR_ID³	KLM	KLKD	NRN (15-60A)	NLKP
50K0TN	NLN	CRS-R	FLSR_ID	KLMR	CCMR	NRS	NLS
50K0TS	NLS	CSF13X	L15S	KLU	KLLU or KLPC	OT	NLN
A	251	CSF25X	L25S (AC only)	KN	KLNR	OTM	BLF or BLN
A013F	L15S	CSF50P	L50S	KON	NLN	OTN	NLN
A015F	L15S	CSF60C	KLC (AC only)	KOS	NLS	OTS	NLS
A015R	L15S	CSF60X	L60S (AC only)	KRPC (SP)	KLPC	REN	FLNR or LLNRK⁵
A025F	L25S	CSF70P	L70S	KRPC-L	KLPC	RES	FLSR or LLSRK⁵
A050F	L50S	CTN-R	KLNR	KS	KLRSR	RF	FLNR or LLNRK⁵
A060F	L60S	CTS-R	KLSR	KTK	KLK	RFA	L15S
A060URL	KLK	EBS	BLS	KTKR	KLKR	RFC	KLC
A070F	L70S	ECNR	FLNR_ID³	KTNR	KLNR	RFL (750V)	L70S (700 V)
A13X	L15S	ECSR	FLSR_ID	KTSR	KLRSR	RFN (Ferraz)	FLNR or LLNRK⁵
A25X	L25S (AC only)	ELN	FLNR or LLNRK⁵	KTU	KLPC or LDC	RFS (Ferraz)	FLSR or LLSRK⁵
A2D-R	LLNRK	ELS	FLSR or LLSRK⁵	L	KLLU or KLPC	RFV	L50S
A2K-R	KLNR	ERN	FLNR or LLNRK⁵	LCL	KLPC or KLLU	RHN	KLNR
A3T	JLLN	ERS	FLSR or LLSRK⁵	LCU	KLPC or KLLU	RHS	KLRSR
A4BQ	KLPC	FNA	FLA	LENRK	LLNRK	RLN (Ferraz)	FLNR or LLNRK⁵
A4BT	KLLU or KLPC	FNB	235	LESRK	LLSRK_ID	RLS (Ferraz)	FLSR or LLSRK⁵
A4BY	KLPC or KLLU	FNM	FLM	LKN	FLNR or LLNRK⁵	S	S00
A4J	JLS	FNQ	FLQ	LKS	FLSR or LLSRK⁵	SA	SAO
A50P (type 1 & 4)	L50S	FNQ-R	KLDR	LKU	KLLU	SC	SLC
A60X	L60S	FRN-R	FLNR_ID³	LONRK	LLNRK	SCLR	KLRSR
A6D-R	LLSRK_ID⁴	FRS-R	FLSR_ID	LOSRK	LLSRK_ID	SEC	SLC
A6K-R	KLSR	FWA ²	L15S	LPCC	CCMR	SF13X	L15S
A6T	JLLS	FWH ²	L50S	LPJ (SP)	JTD_ID	SF25X	L25S
A70P	L70S	FWP ¹	L70S	LPNRK (SP)	LLNRK	SF50P	L50S
ACK	CCK	FWX ¹	L25S	LPSRK (SP)	LLSRK_ID⁴	SF60X	L60S
AG	SLC	GDA	216	MCL	KLK	SF70P	L70S
AGA	AGA	GDB	217	MDA	326	SFE	SFE
AGC	312	GDC	218	MDL	313	SL	SLO
AGU (1-30A)	BLN	GDL	313	MDQ	313	T	TOO
AGW	AGW	GEB	LEB	MDV	315	TJN	JLLN
AJT	JTD_ID	GEBN	LET	MDX	313	TJS	JLLS
ANL	CNL	GFA	251	MEN	FLM	TL	TLO
ANN	CNN	GFN	FLA	MEQ	FLQ	TR	FLNR_ID³
ATC	ATO (257)	GGC	312	MID	FLA	TRM	FLM
AT-DE	FLNR_ID³	GGM	235	MOF	BLN	TRN-R	FLNR_ID³
ATDR	CCMR	GLR	LGR	MOL	BLF	TRS	FLSR_ID
ATM (Ferraz)	KLKD	GMT	481	MTH	312	TRS-R	FLSR_ID⁴
ATMR	KLKR	HCLR	KLKR	NCLR	KLNR	XL25X	L25S
ATQ	FLQ	HCTR	KLDR	NON	NLN	XL50F	L50S¹
ATQR	KLDR	HEB	LEB	NOS	NLS	XL70F	L70S¹
AX	481	HET	LET				
BAF	BLF	HLR	LHR				
BAN	BLN	J	JLS				
BBS	BLS	JDL	JTD_ID				
CJ	JLS	JFL	JLS				
CJS	JLS	JHC	JTD_ID				
CLF	KLPC or KLLU	JJN	JLLN				
CLL	KLLU or KLPC	JJS	JLLS				
CLU	KLLU or KLPC	JKS	JLS				
CM	BLF	KAA	L15S				
CMF	BLN	KAB	L25S				
CNM	FLM	KAC	KLC				

1) Check specific mounting dimensions before substituting.
 2) Check fuse characteristics and mounting dimensions for specific application before substituting.
 3) For 1/10 - 30 amperes, order non-indicating FLNR series fuses.
 4) Verify voltage for DC applications.
 5) Littelfuse has discontinued Class H fuses and recommends upgrading to RK1 or RK5 Class fuses.

A fuse may be used in circuits where the fuse's voltage rating is equal to or greater than the circuit voltage, unless otherwise stated on the fuse. For example, the FLSR_ID indicating fuse has a voltage rating of 75-600 volts. This fuse can be used on 600 volts, 480 volts, 250 volts, 125 volts, or 75 volts. Never use a fuse in a circuit having a higher rated voltage than the fuse.

For more information, visit
littelfuse.com/TechnicalCenter



Additional technical information and application data for Littelfuse products can be found on littelfuse.com. For questions, contact our Technical Support Group (**800-TEC-FUSE**). Specifications, descriptions and illustrative material in this literature are as accurate as known at the time of publication, but are subject to changes without notice. All data was compiled from public information available from manufacturers' manuals and datasheets.