

Littelfuse®

INDICATOR™ Fuses...

Because DOWNTIME

is NEVER an Option.



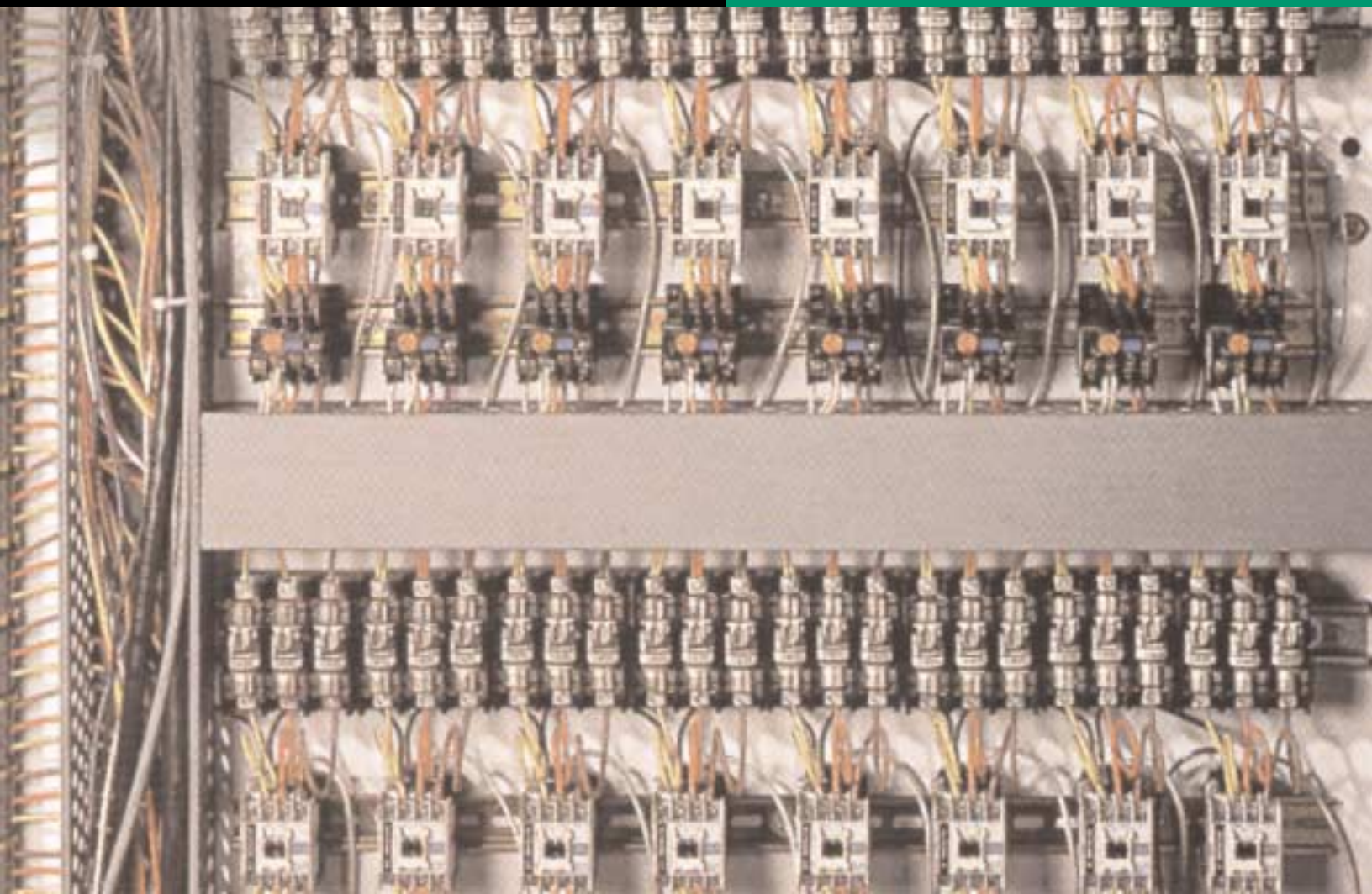
Littelfuse's New LLSRK_ID Series Fuses

Offer You Unmatched Performance

With the Same

At-A-Glance Simplicity

The Indicator™ Has Always Provided.





Initially introduced in 1994, Littelfuse's Indicator™ line represents the most significant improvement in fuse design to emerge in the last ten years, providing maximum protection for your equipment against overloads and short circuits. So revolutionary was its technology that it forever changed the way you look at modern circuit protection.

FUSE IS GOOD



**THE BEST
JUST GOT BETTER.**

The new LLSRK_ID
Indicator™ Fuse is,
quite simply, the
best-performing fuse
on the market today.

FUSE IS BLOWN

INDICATOR™ SERIES FUSES... ALL OTHERS ARE BLOWN AWAY.

The new LLSRK_ID Indicator™ Fuse is the only RK1 fuse available that shows you, without any doubt, whether or not it needs to be replaced. Its solid-state design offers unmatched reliability and can provide Type II “No Damage” protection to sensitive IEC and NEMA components — ensuring they are still operational after a short circuit. Frankly, no other fuse can compare.

Increase Uptime by Pinpointing Open Fuses Immediately

You lose money every time a circuit opens and brings production to a stop. You lose even more money every minute you spend testing to pinpoint the blown fuse. The patented design of the Littelfuse Indicator window provides instant visual identification of a down circuit in your system. Getting you back online faster.

Maximize Safety, Minimize Exposure to Circuits

By clearly showing whether the fuse is open or not, Indicator Fuses minimize the hazards of poking around an energized circuit panel to locate the blown fuse. You can test the circuit, correct the problem, and be up and running again quickly — and safely.

“No Damage” Protection

The LLSRK_ID’s advanced design also reduces short-circuit damage to full-size NEMA and sensitive IEC motor controllers. It is capable of providing “No Damage” protection to most NEMA size motor starters.

Solid-State Reliability

Littelfuse’s new single-chamber technology replaces the spring-loaded designs of conventional RK5 and RK1 time-delay fuses. We combined a eutectic alloy with an aerospace grade, elastomeric silicone EPR plug to eliminate all moving parts in a true dual-element fuse. This advancement eliminates fuse fatigue that is typical with conventional spring-loaded fuses.

Longer Fuse Life

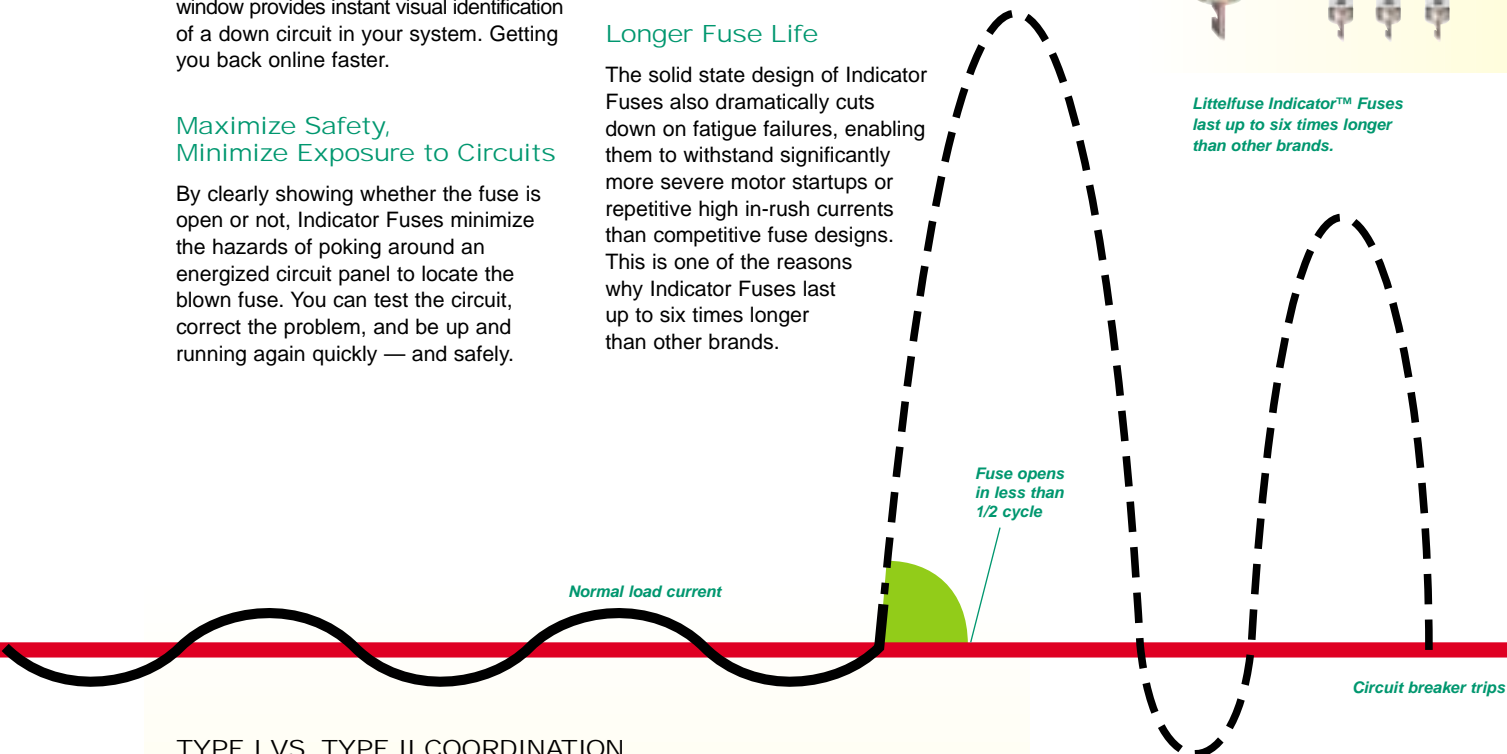
The solid state design of Indicator Fuses also dramatically cuts down on fatigue failures, enabling them to withstand significantly more severe motor startups or repetitive high in-rush currents than competitive fuse designs. This is one of the reasons why Indicator Fuses last up to six times longer than other brands.

Reduce Fuse Inventory And Maintenance

Unlike most RK5 and all RK1 fuses, Littelfuse LLSRK_ID fuses can be used anywhere in your facility, eliminating the need for other class RK5, one time and renewable fuses. This reduces your inventory costs and the chance that an inferior fuse will be used in a circuit where class RK1 protection is needed.



Littelfuse Indicator™ Fuses
last up to six times longer
than other brands.



TYPE I VS. TYPE II COORDINATION

Using NEMA and IEC devices, the UL 508E and IEC 947-4-1 protection standards were developed to define two levels of short circuit protection in motor applications — Type I and Type II.

Type I coordination provides only the most basic level of protection, assuring that a motor contactor or starter will not endanger workers and installations during a short circuit. *It does not protect motor components from being damaged.*

Type II coordination assures there is NO DAMAGE to motor starters, overload relays or contacts; and therefore, no expensive and time-consuming maintenance to repair or replace damaged equipment.

Only properly sized Class RK1, Class J or Class CC fuses can provide Type II protection. These fuses are designed to react instantly (within the first half cycle) whenever a fault occurs. This limits the amount of damaging energy that reaches components within the circuit.

Comparatively, mechanical devices such as circuit breakers, MCCPs or MSPs often take between 1½ to four cycles to open during a serious fault. This excessive exposure to damaging currents is enough to weld contacts and burn out motor starters.

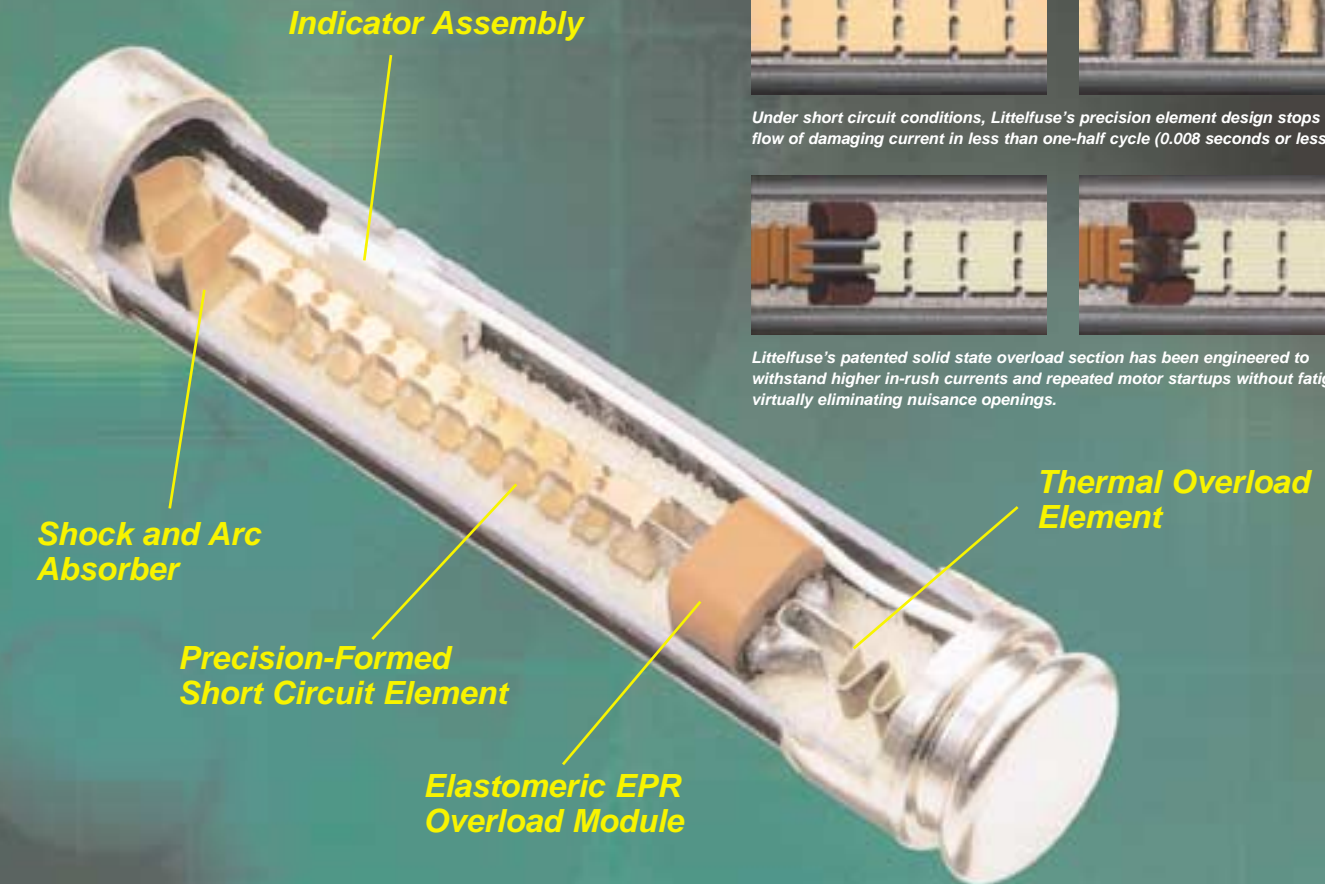
The Most **ADVANCED**

Fuse Technology Available

Is Why the Indicator™ Series

STANDS APART from

All the Other Brands.



WHY THE INDICATOR™ BEATS THE OTHER BRANDS.

The benefits of Littelfuse's Indicator™ fuses are simple:

- Increased uptime
- Reduced nuisance opening
- Reduced equipment damage
- Improved safety
- Reduced fuse inventory

What makes these benefits possible is the most advanced fuse technology available.

Precision Element Design

The elements used in Littelfuse Indicator fuses are all computer-designed and punched to provide consistent and reliable performance. They are constructed of 99.9% pure metals to ensure efficient

operation and eliminate excessive heat rise. Tightly controlled opening characteristics also limit damaging currents and can provide Type II "No Damage" protection (Class RK1 and J fuses only).

Solid State Overload Section

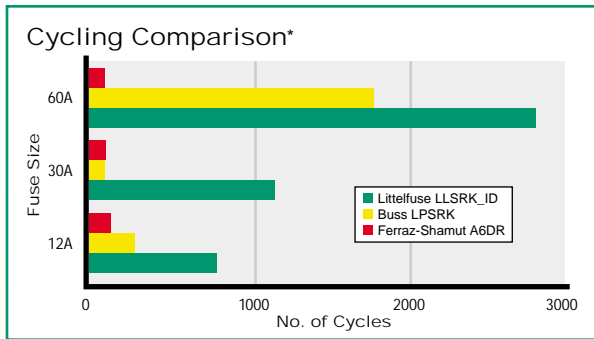
Our patented solid state overload section features an elastomeric silicon EPR module and an eutectic alloy which serve to interrupt the current only in the event of an overload. Unlike conventional spring-loaded fuses, which are susceptible to fatigue and mechanical failure, our overload section has no moving parts. Its thermally reversible design opens consistently and reliably during an overload by forcing the eutectic alloy out of the EPR module — opening the circuit every time!



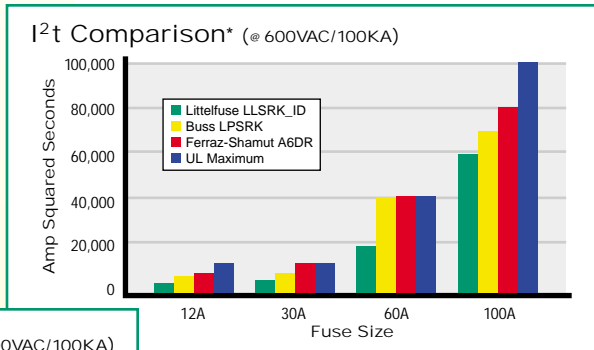
SUPERIOR TIME-DELAY PROTECTION

Nuisance openings can be a costly side effect to higher in-rush currents on high-efficiency motors. These currents can cause ordinary time-delay fuses to open needlessly unless they are oversized to compensate.

The LLSRK_ID Indicator fuse's solid-state, dual-element design reduces nuisance fuse openings as well as the headaches and unnecessary downtime they cause. Its superior time delay feature overrides current surges without sacrificing protection for sustained overloads.

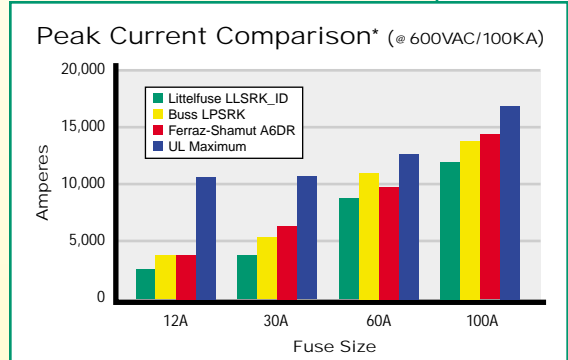


In cycling tests (measuring how many times a fuse can withstand the severe inrush currents typical during motor start-ups before prematurely fatigue opening), Littelfuse LLSRK_ID fuses prove to have a much longer fuse life compared to competitive fuses of the same amperage and UL Class. As a result of this increased cycling capability, Littelfuse LLSRK_ID fuses need to be replaced less often, saving you time and money.



I²t is a measure of how much total heat energy passes through a fuse before it opens during a short-circuit. Excessive I²t energy can damage circuit components and wiring.

Measured against the maximum allowable limits set by UL Standard 248, Littelfuse LLSRK_ID fuses outperform competitive fuses, allowing the least amount of damaging I²t heat energy to pass through to critical components.



During a short circuit, high levels of current can damage critical components, weld contacts, and bend buss bars. Fuses greatly reduce damage by limiting the amount of current that will pass through a circuit.

Measured here against competitive fuses and the maximum limits set by UL Standard 248, Littelfuse LLSRK_ID fuses show the lowest Peak Let-thru Currents to safely protect critical components and ensure long and reliable system operation.



*The above testing was performed on fuses randomly selected in the market place. No special selection or screening was performed before testing.

LLSRK_ID POWR-PRO® SERIES • CLASS RK1 FUSES

600 VAC • Dual-Element • Time-Delay • 1/10 to 600 A



The all-new LLSRK_ID Series Fuse is the most advanced Class RK1 fuse available today, providing unparalleled performance and protection to modern circuits. In addition to our patented Indicator™ window, the LLSRK_ID features precision formed short circuit elements which virtually eliminate damage to components from unexpected electrical faults. Its all-new, solid-state overload section has no moving parts, virtually eliminating fatigue failures common with other spring-loaded fuses.

Reduce Your Problems!

- **Reduce downtime.** The indicating window instantly pinpoints the open fuse.
- **Reduce fuse inventory.** Unlike most RK5 and all RK1 fuses, Littelfuse LLSRK_ID fuses can be used anywhere in your facility, eliminating the need for other class RK5, one time and renewable fuses.
- **Reduce nuisance openings.** Superior time delay and cycling characteristics provides longer fuse life.
- **Reduce equipment damage.** Superior overload and short-circuit protection cuts down on equipment damage. The LLSRK_ID is extremely current-limiting and provides IEC Type II “No Damage” protection to IEC and NEMA motor starters.
- **Reduce accidents.** Improves safety by minimizing exposure to live circuits. Once the window darkens it stays dark. Other forms of blown fuse indication require the power to remain on, presenting a potential safety hazard to personnel.

Applications

- All general-purpose circuits
- Motors
- Transformers
- Solenoids
- Fluorescent lighting
- All system components with high in-rush currents

Specifications

Voltage ratings:

AC: 600 Volts

DC: 300 Volts

Interrupting ratings:

AC: 200,000 amperes

rms symmetrical

300,000 amperes

rms symmetrical

(Littelfuse self-certified)

DC: 20,000 amperes

Ampere range:

1/10 to 600 amperes

Approvals:

AC: UL Listed Class RK1 fuses per UL 248 (formerly UL 198E) (File No. E81895).

CSA certified HRCI-R

(File No. LR29862)

QPL: Federal Specification (No. WF-1814)

DC: Littelfuse self-certified

Ampere Ratings

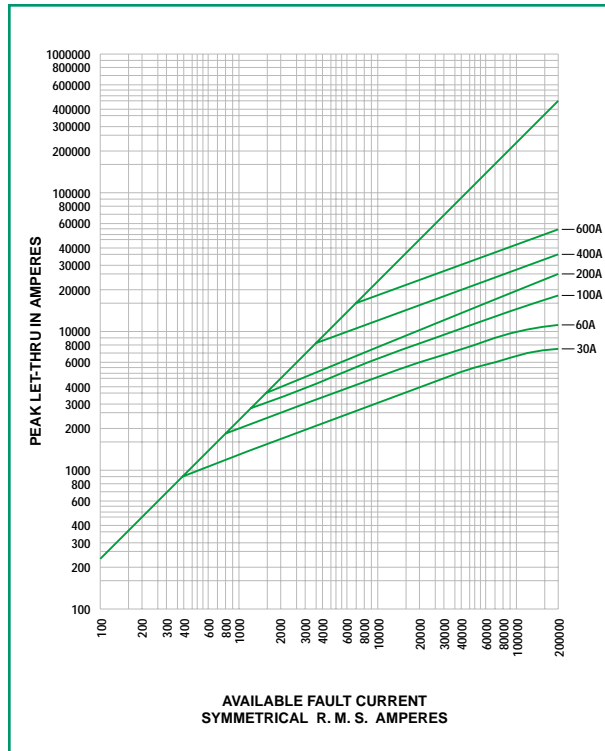
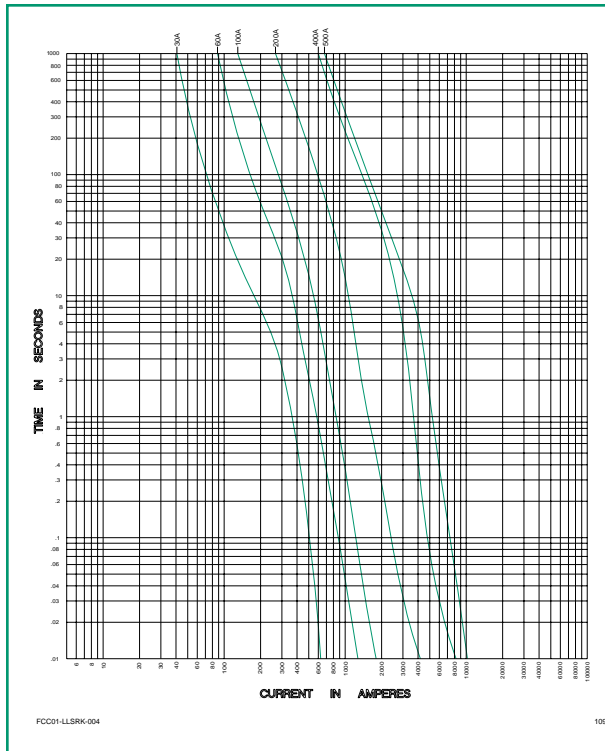
1/10	1/2	1 1/2	3	6	12	40	100	250
1/6	5/10	1 1/10	3 3/10	6 1/4	15	45	110	300
1 1/100	5/10	1 9/10	3 1/2	7	17 1/2	50	125	350
2/10	1	2	4	7 1/2	20	60	150	400
1/4	1 1/6	2 1/4	4 1/2	8	25	70	175	450
3/10	1 1/4	2 1/2	5	9	30	80	200	500
1/2	1 1/10	2 5/10	5 5/10	10	35	90	225	600

Example Part Number (series+amperage): LLSRK 30 ID

Note: All fuses rated 1 amp and above are Indicator™ fuses.



POWR-GARD™ Products



Dimensions

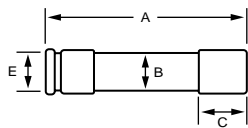


Figure 1

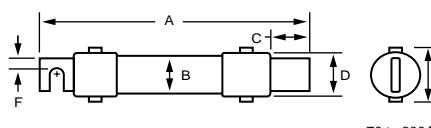


Figure 2

70 to 600A

Amperes	Refer to Fig. No.	Dimensions in Inches (mm)					
		A	B	C	D	E	F
1/10 – 30	1	5 (127.0)	3/4 (19.1)	5/8 (15.9)	13/16 (20.6)	5/8 (15.9)	—
35 – 60	1	5-1/2 (139.7)	1 (25.4)	5/8 (15.9)	1-1/16 (27.0)	7/8 (22.2)	—
70 – 100	2	7-7/8 (200.0)	1-1/4 (31.8)	1-1/16 (27.0)	1-5/16 (33.3)	1-1/2 (38.1)	1/4 (6.4)
110 – 200	2	9-5/8 (244.5)	1-3/4 (44.5)	1-15/32 (37.3)	1-27/32 (46.8)	2-3/32 (53.2)	7/16 (11.1)
225 – 400	2	11-5/8 (295.3)	2-1/2 (63.5)	2 (50.8)	2-19/32 (65.9)	2-27/32 (72.2)	5/8 (15.9)
450 – 600	2	13-3/8 (339.7)	3 (76.2)	2-13/32 (61.1)	3-3/32 (78.6)	3-11/32 (84.93)	3/4 (19.1)

FLNR_ID/FLSR_ID SERIES INDICATOR™ • CLASS RK5 FUSES

250/600 VAC • Dual-Element • Time-Delay • 1/10 to 600 A



FLNR_ID and FLSR_ID Series

To complement the LLSRK_ID Series, Littelfuse offers several other Indicator™ lines to meet all your protection needs.

Littelfuse FLNR_ID and FLSR_ID Series Indicator™ fuses provide “At a Glance” visual recognition of a blown fuse. Their patented solid state design provides superior performance and maximum reliability in a true dual-element design.

Applications

- Service entrance switches
- Switchboard main and feeder switches
- Motor control center mains and motor branch circuits
- Individual fused combination motor controllers
- Distribution panelboards
- Industrial control panels
- Protection of fully-rated panelboards and loadcenters
- All general purpose circuits

Specifications

Voltage ratings:

AC: 250 Volts (FLNR_ID)
600 Volts (FLSR_ID)
DC: 125 Volts (FLNR_ID)
300 Volts (FLSR_ID)

Interrupting ratings:

AC: 200,000 amperes rms symmetrical
300,000 amperes rms symmetrical (Littelfuse self-certified)
DC: 20,000 amperes

Ampere range:

1/10 to 600 amperes

Approvals:

AC: UL Listed Class RK5 fuses per UL 248 (formerly UL 198E) (File No. E81895)
CSA Certified HRCI-R per C22.2 #106 (File No. LR29862)
DC: FLNR: UL Listed 125 Volts per UL 198L (File No. E81895)
FLSR: UL Listed 300 Volts per UL 198L (File No. E81895)
MSHA 300 Volt listing
Federal Specification No. WF1814 (QPL)

Recommended Fuse Blocks

LR250 series (for FLNR_ID series fuses)
LR600 series (for FLSR_ID series fuses)

Refer to Fuse Block section of the latest *Powr-Gard Products Catalog* for additional information.

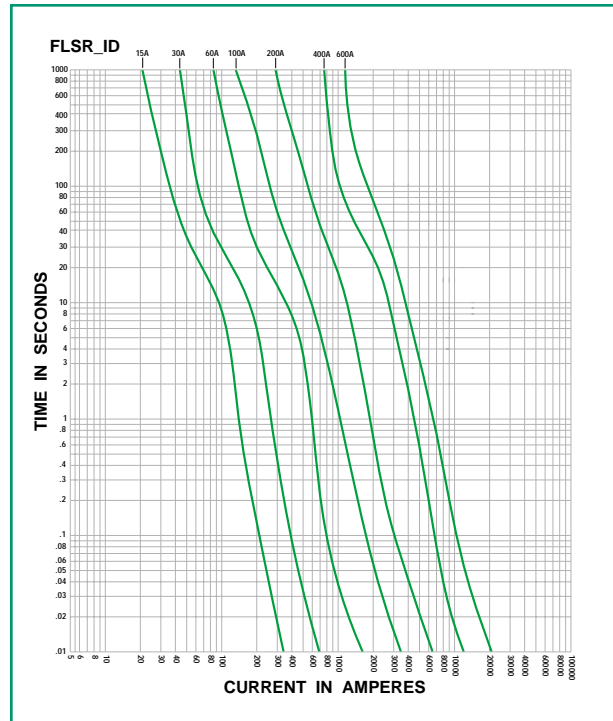
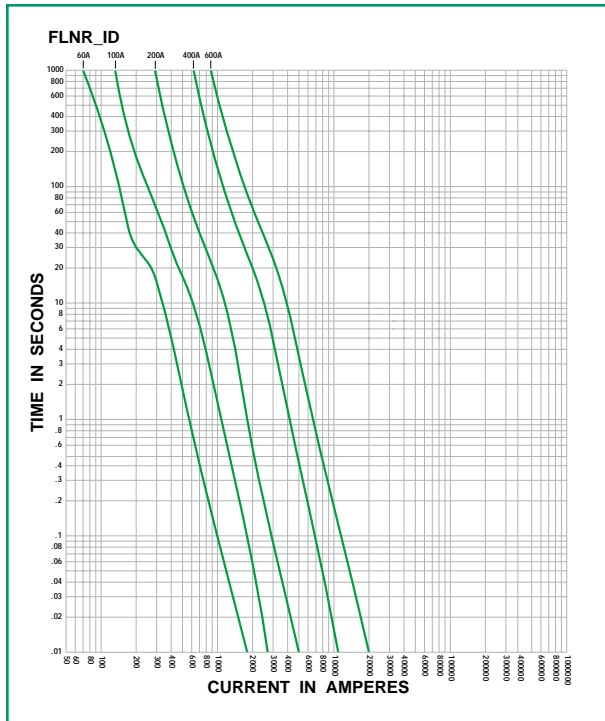
Ampere Ratings

1/10**	6/10	18/10	4	8	30	80	225
1/8	8/10	2	4 1/2	9	35	90	250
15/100	1	2 1/4	5	10	40	100	300
2/10	1 1/8	2 1/2	5 5/10	12	45	110	350
1/4	1 1/4	2 3/10	6	15	50	125	400
3/10	1 3/10	3	6 1/4	17 1/2	60	150	450
4/10	1 1/2	3 3/10	7	20	70	175	500
1/2	1 5/10	3 1/2	7 1/2	25	75*	200	600

**FLNR only

Example Part Number (series+amperage): FLSR 100 ID

Note: All 600 volt fuses rated 1 amp and above are Indicator fuses.
All 250 volt fuses rated 35 amp and above are Indicator fuses.



Dimensions

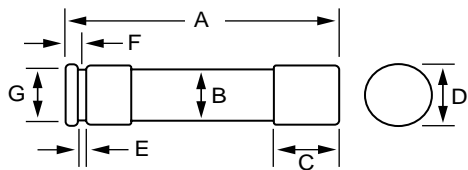


FIG. 1

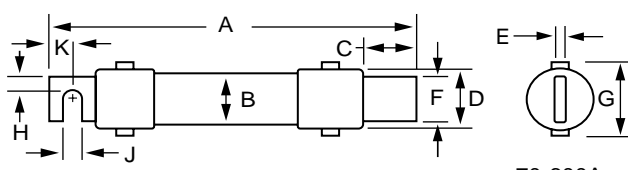


FIG. 2

70-600A

Amperes	Refer to Fig. No.	Series	Dimensions in Inches (mm)									
			A	B	C	D	E	F	G	H	J	K
1/10 – 30	1	FLNR_ID	2 (50.8)	1/2 (12.7)	1/2 (12.7)	9/16 (14.3)	5/64 (2.0)	5/32 (4.0)	3/8 (9.5)	—	—	—
		FLSR_ID	5 (127.0)	3/4 (19.1)	5/8 (15.9)	13/16 (20.6)	3/32 (2.4)	3/16 (4.8)	5/8 (15.9)	—	—	—
35 – 60	1	FLNR_ID	3 (76.2)	3/4 (19.1)	5/8 (15.9)	13/16 (20.6)	3/32 (2.4)	3/16 (4.8)	5/8 (15.9)	—	—	—
		FLSR_ID	5-1/2 (139.7)	1 (25.4)	5/8 (15.9)	1-1/16 (27.0)	3/32 (2.4)	1/4 (6.4)	7/8 (22.2)	—	—	—
70 – 100	2	FLNR_ID	5-7/8 (149.2)	1 (25.4)	1-1/16 (27.0)	1-1/16 (27.0)	1/8 (3.2)	3/4 (19.1)	1-1/4 (31.8)	1/4 (6.4)	9/32 (7.1)	1/2 (12.7)
		FLSR_ID	7-7/8 (200.0)	1-1/4 (31.8)	1-1/16 (27.0)	1-5/16 (33.3)	1/8 (3.2)	3/4 (19.1)	1-1/2 (38.1)	1/4 (6.4)	9/32 (7.1)	1/2 (12.7)
110 – 200	2	FLNR_ID	7-1/8 (181.0)	1-1/2 (38.1)	1-15/32 (37.3)	1-19/32 (40.5)	3/16 (4.8)	1-1/8 (28.6)	1-27/32 (46.8)	7/16 (11.1)	9/32 (7.1)	11/16 (17.5)
		FLSR_ID	9-5/8 (244.5)	1-3/4 (44.5)	1-15/32 (37.3)	1-27/32 (46.8)	3/16 (4.8)	1-1/8 (28.6)	2-3/32 (53.2)	7/16 (11.1)	9/32 (7.1)	11/16 (17.5)
225 – 400	2	FLNR_ID	8-5/8 (219.1)	2 (50.8)	1-15/16 (49.2)	2-3/32 (53.2)	1/4 (6.4)	1-5/8 (41.3)	2-11/32 (59.5)	5/8 (15.9)	13/32 (10.3)	15/16 (23.8)
		FLSR_ID	11-5/8 (295.3)	2-1/2 (63.5)	2 (50.8)	2-19/32 (65.9)	1/4 (6.4)	1-5/8 (41.3)	2-27/32 (72.2)	5/8 (15.9)	13/32 (10.3)	15/16 (23.8)
450 – 600	2	FLNR_ID	10-3/8 (263.5)	2-1/2 (63.5)	2-3/8 (60.3)	2-19/32 (65.9)	1/4 (6.4)	2 (50.8)	2-27/32 (72.2)	3/4 (19.1)	17/32 (13.5)	1-1/8 (28.6)
		FLSR_ID	13-3/8 (339.7)	3 (76.2)	2-13/32 (61.1)	3-3/32 (78.6)	1/4 (6.4)	2 (50.8)	3-11/32 (84.93)	3/4 (19.1)	17/32 (13.5)	1-1/8 (28.6)

IDSR SERIES INDICATOR™ POWR-PRO® • CLASS RK5 FUSES

600 VAC • Time-Delay • 1/10 to 600 A



IDSR Series

The Littelfuse IDSR Indicator™ fuse was the first indicating power fuse ever, forever changing the way you have looked at modern circuit protection. POWR-PRO® Indicator™ fuses feature a true dual-element fuse design incorporating leading edge metallurgy to eliminate all moving parts. This provides superior time delay to override current surges without sacrificing protection for sustained overloads.

Applications

- DC circuits
- All general-purpose circuits
- Motors
- Transformers
- Solenoids
- Fluorescent lighting
- All system components with high in-rush currents

Specifications

Voltage ratings:

- AC: 600 Volts
- DC: 600 Volts
(Min. 75 volts AC/DC required for indication)

Interrupting ratings:

- AC: 200,000 amperes rms symmetrical
300,000 amperes rms symmetrical (Littelfuse self-certified)
- DC: 20,000 amperes

Ampere range:

1/10 to 600 amperes

Approvals:

- UL Listed Class RK5 fuses per UL 248 (formerly 198E) and UL 198M (File No. E81895).
- CSA certified HRC1-R (File No. LR29862)
- MSHA 600V Listing
- Patent No. 5,345,210

Recommended Fuse Blocks

LR600 series

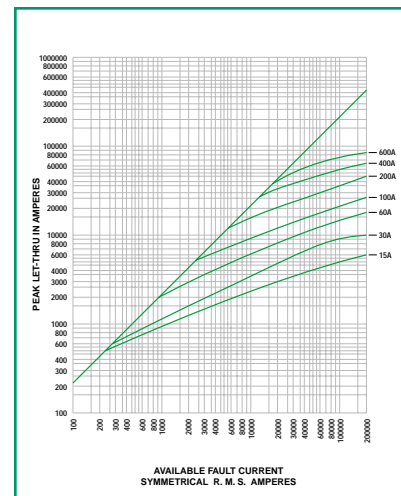
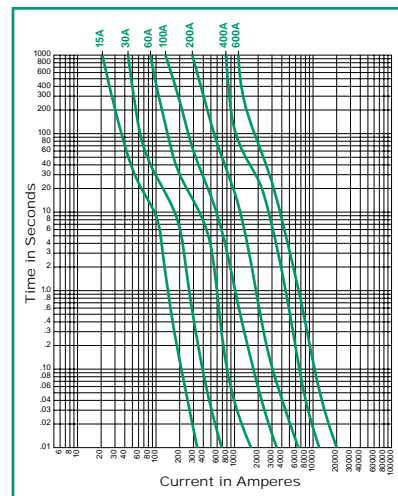
Refer to Fuse Block section of the latest *Powr-Gard Products Catalog* for additional information.

Ampere Ratings

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

Example Part Number (series+amperage): IDSR 30

Note: All fuses rated 1 amp and above are Indicator™ fuses.



JTD_ID SERIES INDICATOR™ POWR-PRO® • CLASS J FUSES

600 VAC • Time-Delay • 8/10 to 600 A



JTD_ID Series

The compact POWR-PRO® JTD_ID Indicator Class J fuse was designed specifically for circuits where space is at a premium. The current limiting time delay JTD_ID offers a patented true dual-element design that is ideal for use in circuits with high in-rush currents. Superior performance characteristics of JTD_ID Indicator fuses reduce nuisance fuse opening and the blown fuse indication reduces down-time and increases safety.

Applications

- Fused combination motor controllers to provide IEC Type II (no damage) motor branch-circuit short-circuit protection
- Motor control centers
- Transformer protection
- Protection for UL Listed series-rated molded case circuit breaker panels
- General purpose circuits: mains, feeders and branch circuits (especially when space is at a premium)

Specifications

Voltage ratings:

- AC: 600 Volts
- DC: Contact Factory

Interrupting ratings:

- AC: 200,000 amperes rms symmetrical.
- 300,000 amperes rms symmetrical (Littelfuse self-certified)

Ampere range:

- 8/10 to 600 amperes

Approvals:

- UL Listed Class J fuses per UL 248 (formerly 198C) (File No. E81895).
- CSA certified HRCI-J per C22.2 #106 (File No. LR29862)

Recommended Fuse Blocks

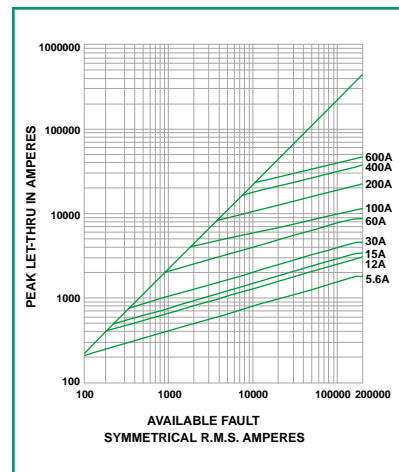
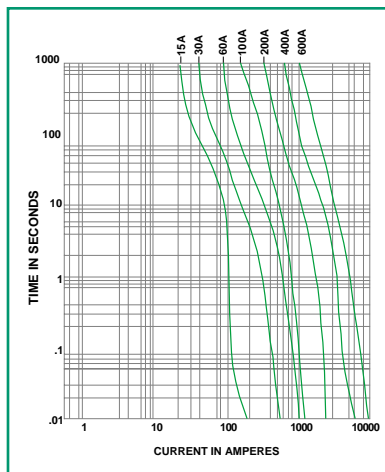
LJ600 series

Refer to Fuse Block section of the latest *Powr-Gard Products Catalog* for additional information.

Ampere Ratings

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

Example Part Number (series+amperage): JTD 60 ID



MOTOR PROTECTION TABLES • Based on Motor Full Load Amps

Selection of Class RK5 (FLNR_ID/FLSR_ID & IDSR Series) or POWR-PRO® Class RK1 (LLSRK_ID Series) Fuses

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 430-148 through 430-150 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, "When No Overload Relays Are Used."

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." Fuse ratings selected from these columns coordinate with most UL Class 10 and 20 overload relays which cover 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 as obtained from motor nameplates. Locate motor nameplate FLA in the column appropriate for the type motor and type of protection required. Read to the left and obtain the recommended ampere rating.

Slo-Blo or LittellPeak 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 ≥ 1.15 or With Temp. Rise ≤ 40°C	Motor Service Factor < 1.15 or With Temp. Rise > 40°C	Motor Service Factor ≥ 1.15 or With Temp. Rise ≤ 40°C	Motor Service Factor < 1.15 or With Temp. Rise > 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
1-4/10	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
1-6/10	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
2-8/10	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
3-2/10	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
5-6/10	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 TABLES • Based on Motor Horsepower

Selection of Class RK5 (FLNR_ID/FLSR_ID & IDSR Series) or POWR-PRO® Class RK1 (LLSRK_ID Series) Fuses

Motor HP	Full Load Amps	Without Overload Relays		With Overload Relays		Switch or Fuse Clip Rating
		MSF ≥ 1.15 or Temp. Rise ≤ 40°C	MSF < 1.15 or Temp. Rise > 40°C	MSF ≥ 1.15 or Temp. Rise ≤ 40°C	MSF < 1.15 or Temp. Rise > 40°C	
120 VOLT 1-PHASE MOTORS (120V CIRCUIT)						
1/6	4.4	5	5	5-6/10	5-6/10	30
1/4	5.8	7	6-1/4	7-1/2	7	30
1/3	7.2	9	8	9	9	30
1/2	9.8	12	10	15	12	30
3/4	13.8	15	15	17-1/2	17-1/2	30
1	16	20	17-1/2	20	20	30
1-1/2	20	25	20	25	25	30
2	24	30	25	30	30	30
230 VOLT 1-PHASE MOTORS (240V CIRCUIT)						
1/6	2.2	2-1/2	2-1/2	2-8/10	2-8/10	30
1/4	2.9	3-1/2	3-2/10	4	3-1/2	30
1/3	3.6	4-1/2	4	4-1/2	4-1/2	30
1/2	4.9	5-6/10	5-6/10	6-1/4	6	30
3/4	6.9	8	7-1/2	9	8	30
1	8	10	9	10	10	30
1-1/2	10	12	10	15	12	30
2	12	15	12	15	15	30
3	17	20	17-1/2	25	20	30
5	28	35	30*	35	35	60
7-1/2	40	50	45	50	50	60
10	50	60	50	70	60	60
200 VOLT 3-PHASE MOTORS (208V CIRCUIT)						
1/2	2.5	3	2-8/10	3-2/10	3	30
3/4	3.7	4-1/2	4	5	4-1/2	30
1	4.8	6	5-6/10	6-1/4	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	2-8/10	2-1/2	2-8/10	2-8/10	30
3/4	3.2	4	3-1/2	4	4	30
1	4.2	5	4-1/2	5-6/10	5	30
1-1/2	6.0	7-1/2	6-1/4	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
		MSF ≥ 1.15 or Temp. Rise ≤ 40°C	MSF < 1.15 or Temp. Rise > 40°C	MSF ≥ 1.15 or Temp. Rise ≤ 40°C	MSF < 1.15 or Temp. Rise > 40°C	
460 VOLT 3-PHASE MOTORS (480V CIRCUIT)						
1/2	1.1	1-4/10	1-1/4	1-4/10	1-4/10	30
3/4	1.6	2	1-8/10	2	2	30
1	2.1	2-1/2	2-1/4	2-8/10	2-1/2	30
1-1/2	3.0	3-1/2	3-2/10	4	3-1/2	30
2	3.4	4	3-1/2	4-1/2	4	30
3	4.8	5-6/10	5	6	5-6/10	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	1-1/8	1-1/8	30
3/4	1.3	1-6/10	1-4/10	1-6/10	1-6/10	30
1	1.7	2	1-8/10	2-1/4	2	30
1-1/2	2.4	3	2-1/2	3	3	30
2	2.7	3-2/10	2-8/10	3-1/2	3-2/10	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

MSF = Motor Service Factor

* Fuse reducers required

† 100 amp switch required

MOTOR PROTECTION TABLES • Based on Motor Full Load Amps

Selection of POWR-PRO® Class J (JTD_ID/JTD Series) Fuses

MOTOR F.L.A.	JTD_ID/JTD AMPERE RATING	MOTOR F.L.A.	JTD_ID/JTD AMPERE RATING	MOTOR F.L.A.	JTD AMPERE RATING
0.00 – 0.60	8/10	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 Section 430-52 for exceptions)

Consolidate Your Inventory... Reduce Your Costs!

Consolidating inventory by eliminating numerous fuse series means fewer SKUs, lower inventory costs, and in some cases, better protection!

Although the physical sizes are the same among the ampere ratings of Class RK1, RK5, H/K5 and renewable fuses, the superior performance of Littelfuse Indicator™ fuses allows you to consolidate inventories by replacing many older, conventional fuses with limited performance characteristics.

	You Should Use This Fuse...	...If You Have This Fuse			
		Littelfuse	Bussmann	Ferraz	Other
Class L	KLPC or LDC	KLPC KLLU	KRPC KLU KTU	A4BQ A4BY A4BT	LCL LCU
Class RK1 (600 Volts)	LLSRK_ID	FLSR FLSR_ID NLS* RLS* LLSRK KLSR*	FRSR NOS* RES* LPSRK KTSR*	TRS OTS* RFS* A6DR A6KR*	GF6B ECSR LESRK KOS* ERS*
Class RK5 (250 Volts)	FLNR_ID or FLNR	FLNR NLN* RLN* LLNRK** KLNR**	FRNR NON* REN* LPNRK** KTNR**	TR OT* RF* A2DR** A2KR**	GF6A ECNR LENRK** KON* ERN*
Class J	JTD_ID	JTD JLS*	LPJ JKS*	AJT A4J*	JDL JFL*
Class CC (Time Delay)	CCMR	FLM FLQ	LPCC FNM FNQ	ATDR TRM ATQ	EDCC MEN MEQ
	KLDR	KLDR	FNQR	ATQR	HCTR
Class CC (Fast Acting)	KLKR	KLK BLS BLF BLN	KTKR KTK BBS BAF BAN	ATMR SBS OTM ATM	HCLR MCL EBS MOL

*Consult Article 430 of the NEC when substituting for leads with motors, or call 1-800-TEC-FUSE.

**Depends on available fault current of other application criteria.



POWR-GARD™ Products



**AVAILABLE FREE
FROM LITTELFUSE**

EDR (Electronic Designer's Reference) Software is a fully integrated set of electrical calculation tools and design procedures. It includes a selection of the most commonly needed electrical equipment sizing tools — complete with examples, tutorials, advice, NEC requirements, project record keeping and Windows' print and file save functions.

“*Not a day goes by that I don't use the EDR program. It has been an incredibly useful tool. I loaded it onto my laptop so I wouldn't have to be without it, wherever I am. Again... many, many, many thanks.***”**

—Hugh Montague
Electrical Designer,
T&M Associates
Middletown, New Jersey



LITTELFUSE SOFTWARE SOLUTIONS

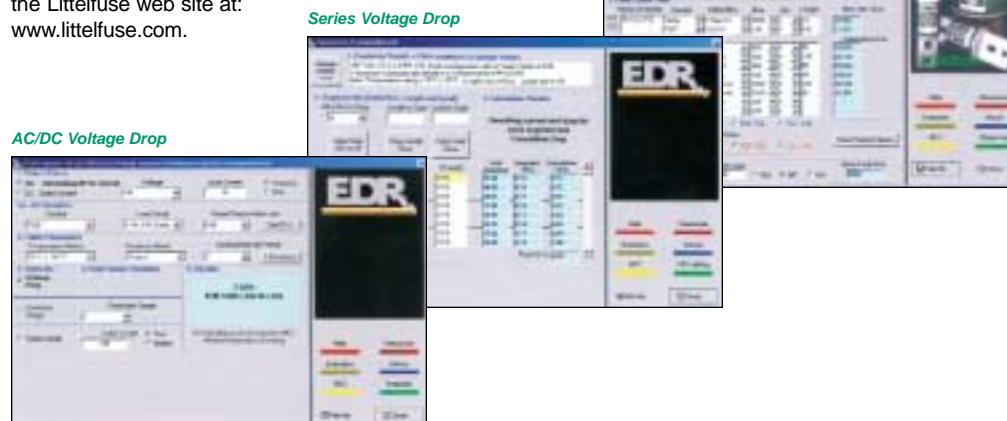
EDR (Electrical Designer's Reference) Software

The EDR software is comprehensive set of electrical tools intended for use by Consulting Engineers, Designers, Plant Engineers, Contractors, and Inspectors. The EDR software allows users to quickly and accurately calculate voltage drop, available fault current, fuse sizing, service sizing, conduit fill, etc., all in a uniform environment. This powerful software includes multiple calculation methods as well as help screens, advice screens, and NEC code references to guide users through setting up an electrical system.

EDR includes these modules:

- **AC/DC Voltage Drop:** Solves for voltage drop, minimum conductor size or maximum cable length.
- **Series Voltage Drop:** This calculates the incremental and end-of-line voltage drop for a string of lighting fixtures of other loads with variable distances, loads, and conductor sizes for each segment.
- **Fault Current:** This module calculates the system fault currents for any radial system up to 360 simultaneous nodes or buss points.
- **Fuse Overcurrent Protection:** More than just a calculation, this is a computerized design procedure which automatically sizes fuses, starters, disconnects and feeders for motors. It also sizes and selects fuses for transformers, AC units, lighting, and general loads. It contains fuse let through charts and provides selective coordination and cross references.

The EDR software is available *FREE* from a Littelfuse representative and can also be downloaded from the Littelfuse web site at: www.littelfuse.com.



The Indicator™ Solution

This easy to use software analyzes plant operations and calculates six areas of potential cost benefits by entering five simple variables. Based on switching to Littelfuse Indicator™ series fuses, the annual dollar savings are calculated. Also included are animated demos, calculation screens, a fuse consolidation table, and a cross reference program.



POWR-CROSS™ Cross Reference Software

Littelfuse POWR-GARD® Products cross-reference software makes identifying Littelfuse product equivalents quick and easy. Simply type in the competitive product series number and the program will cross it to the Littelfuse equivalent, complete with description and specifications. Other features include a HELP screen and print options in an easy to use "Windows" format.



The Indicator Solution (top) analyzes plant operations and helps identify potential cost savings. Littelfuse POWR-CROSS software (bottom) makes identifying product equivalents a snap.

For more information on Littelfuse's software programs, call: 1-800-TEC-FUSE (800-832-3837), or visit our web site: www.littelfuse.com.

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