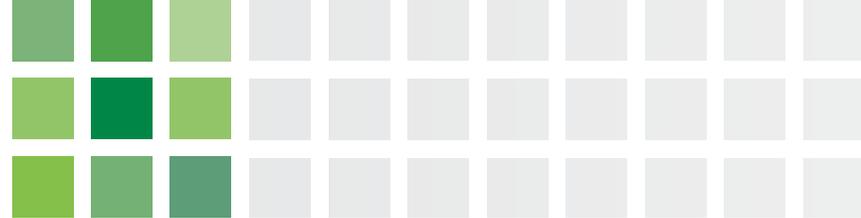




Littelfuse®

Expertise Applied | Answers Delivered

**FOOD & BEVERAGE
PRODUCT
CAPABILITIES**



The Recipe for **Safety**

Littelfuse products deliver protection, safe control and distribution of electrical power to optimize your food and beverage processing operations. The comprehensive line of industrial fuses and relays help minimize electrical safety hazards, limit equipment damage, improve productivity and safeguard personnel. From dairies to wineries and meat processing to bakeries, Littelfuse products can help protect your equipment and people.



PRODUCT BENEFITS & APPLICATIONS

Arc-Flash Relay

Arc-Flash Relays protect your equipment and people while also reducing downtime in the case of an arc flash. The relay can detect a developing arc-flash incident and send a trip signal to interrupt power before significant damage occurs. Their simple plug-and-play installation make them the perfect, cost-effective solution.

Protect this equipment with an Arc-Flash Relay:

- Chillers
- Feeders
- Grain silos
- Refrigeration equipment
- Transformers



Littelfuse.com/ArcFlash

Current Monitoring Relays

Current monitoring relays use current levels to determine feed rates, tool wear, loss of prime on pumps, mixer viscosity and all types of overload and underload conditions. They may also be used to stage pump motors, chillers and other machinery.

Monitor your:

- Boilers
- Chillers
- Mixers



Littelfuse.com/CurrentMonitoringRelays

Feeder Protection

Feeder protection relays help protect circuits from overcurrent, ground faults, phase loss, overload and other detrimental conditions. Browse our feeder protection relays below.

Protect this equipment:

- Feeders
- Grain silos



Littelfuse.com/FeederProtection

Ground-Fault Relays

Sensitive ground-fault relays quickly and reliably detect the breakdown of insulation resistance caused by moisture, vibration, chemicals or dust. With a wide variety of ground-fault relays, find the best one that meets your needs.

We have ground-fault relays for you:

- Chillers
- Conveyers
- Feeders
- Grain silos
- Heat exchangers
- Process piping
- Refrigeration equipment
- Steam cooking
- UPS and power conditioning



Littelfuse.com/GroundFault

Industrial Shock-Block® GFCI

The Littelfuse Industrial Shock-Block SB6100 is vital where people, equipment, and water are present. This product is the first and only ground-fault circuit interrupter (GFCI) to meet UL 943C Standard for People Protection. Additionally, it is the only GFCI device on the market that monitors the continuity of the ground circuit.

Use the Shock-Block with:

- Conveyers
- Drying equipment
- Mixers
- Process piping
- Steam cooking



Littelfuse.com/ShockProtection

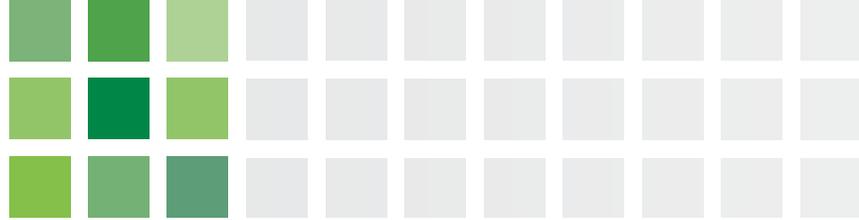
Field Success Story

Littelfuse Arc-Flash Relays are the Main Ingredient in Safety and Reduced Downtime

A major beer manufacturer saw a need to reduce high incident energy for a 480 V DS style switchgear application to a PPE category below 8 cal/cm². They were considering ARMS (Arc Flash Maintenance System Breakers) but chose the Littelfuse AF0500 arc-flash relay instead. The AF0500 proved to be more cost effective than installing ARMS breakers throughout the facility. The AF0500 is easier to install and has zone and tie breaker capabilities. The AF0500 was installed and the substation was back online in 4.5 hours.

Cheers!





PRODUCT BENEFITS & APPLICATIONS

Motor & Pump Protection

Protect your motors and pumps from overloads, jams, phase loss or unbalance, heat, heavy start-ups or excessive operational cycles. From basic to advanced, Littelfuse offers a wide range of protection relays, intrinsically safe relays, liquid level controls, and load sensors to deliver the right protection for low-voltage applications.

Protect the motors in:

- Chillers
- Conveyers
- Drying equipment
- Grain silos
- Mixers
- Process piping



Littelfuse.com/MotorProtection
Littelfuse.com/PumpProtection

NGR & NGR Monitors

Neutral-grounding resistors work by limiting the fault current, so it does not cause unwanted fault damage, but still allows the protective relays to work. Browse our NGR monitoring products.

Use NGRs and NGR Monitors in:

- Transformers

Littelfuse.com/ResistanceGrounding
Littelfuse.com/NGR



Timers

Delay starting and stopping loads, cycling, and sequencing of motors, pumps, compressors, heaters, and lighting.

Timers can be used in:

- Boilers
- Process piping



Littelfuse.com/Time-Delay-Relays

Voltage Monitors

Prevent damaged machinery and injury to personal by using voltage monitors. They prevent motors from running with no load applied and provide protection due to blown fuses, broken wires or worn contacts.

Protect your:

- Boilers
- Chillers
- Conveyers
- Drying equipment
- Mixers
- UPS and power conditioning
- Process piping
- Refrigeration equipment
- Steam cooking



Littelfuse.com/VoltageMonitoringRelays

EQUIPMENT APPLICATION	EQUIPMENT					
	Arc-Flash Relays	Current Monitoring Relays	Feeder Protection	Ground-Fault Relays	Shock-Block® GFCI	Motor & Pump Protection
Boilers		•				
Chillers	•	•		•		•
Cooling towers						
Conveyers				•	•	•
Drying Equipment					•	•
Feeders	•		•	•		
Grain Silos	•		•	•		•
Heat Exchangers				•		
Mixers		•			•	•
Process Piping				•	•	•
Refrigeration Equipment	•			•		
Steam Cooking				•	•	
Transformers	•					
UPS & Power Conditioning				•		

Surge Protection Device

With a globally-compliant, pluggable design, this easy-to-install and cost-effective SPD has higher nominal and total discharge current protection to help limit transient overvoltage to equipment mitigating costly damage and downtime.

Find the best surge protection device for:

- Boilers
- Chillers
- Conveyers
- Cooling towers
- Drying equipment
- Feeders
- Heat exchangers
- Mixers
- Process piping
- Refrigeration equipment
- Steam cooking
- Transformers
- UPS and power conditioning



Littelfuse.com/SPD

UL Class Fuses

Class CC, J, RK-1, RK-5, T, L and G

Littelfuse offers a variety of industrial power fuses to serve numerous applications in the food and beverage industry. Innovative features such as indication improve productivity while enhancing the safety of systems.

Midget Fuses

Midget style (10 x 38 size) fuses offer supplementary protection in a wide range of ampere ratings to match specific requirements while saving space.

We can help you find the right fuse for all your equipment like:

- Boilers
- Chillers
- Conveyers
- Cooling towers
- Drying equipment
- Feeders
- Heat exchangers
- Mixers
- Process piping
- Refrigeration equipment
- Steam cooking
- Transformers
- UPS and power conditioning



Littelfuse.com/IndustrialPowerFuses

High-Speed Fuses

High-speed fuses protect critical power semiconductor devices against short circuits in applications including inverters, variable-speed drives, UPS and DC drive systems.

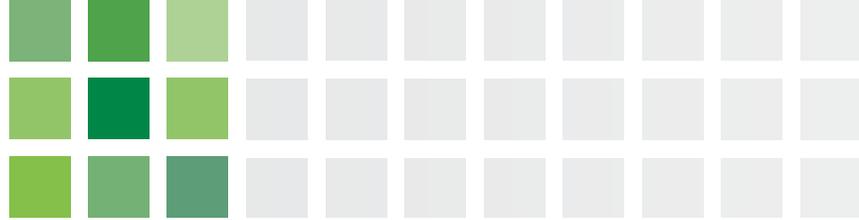
High-Speed Fuses can be used in:

- UPS equipment

Littelfuse.com/Powr-Speed



	EQUIPMENT							EQUIPMENT APPLICATION
	NGRs & NGR Monitors	Timers	Voltage Monitors	Surge Protection Devices	UL Class Fuses	Midget Fuses	High-Speed Fuses	
		●	●	●	●	●		Boilers
			●	●	●	●		Chillers
				●	●	●		Cooling towers
			●	●	●	●		Conveyers
			●	●	●	●		Drying Equipment
				●	●	●		Feeders
				●	●	●		Grain Silos
				●	●	●		Heat Exchangers
			●	●	●	●		Mixers
		●	●	●	●	●		Process Piping
			●	●	●	●		Refrigeration Equipment
			●	●	●	●		Steam Cooking
	●			●	●			Transformers
			●	●	●	●	●	UPS & Power Conditioning



MROplus™ MATERIAL REDUCTION OPPORTUNITY PROGRAM

The Littelfuse exclusive MROplus program helps customers lower costs, increase plant safety, decrease downtime and reduce inventory. In this industrial fuse consolidation program, our Technical Support Group analyzes a fuse inventory list and generates detailed reports to ensure the best circuit protection is being used. This decreases the risk of electrical hazards within your facility and saves time and money by optimizing inventory. All you have to do is complete a request form with your current fuse inventory and the MROplus program creates a custom recommendation for you. Best of all...it is absolutely FREE!

What can MROplus do for you?

Lower Costs

MROplus helps you upgrade circuit protection, increase safety, reduce fuse inventory, decrease downtime and improve productivity. These improvements amount to money saved towards your bottom line.

Improve Safety

Identify inadequate fuses and upgrade them to current-limiting circuit protection to reduce Hazard Risk Categories (HRC) in any type of facility. In accordance to NFPA 70E, after reducing HRC, workers are permitted to wear less Personal Protective Equipment (PPE) allowing repairs to be made quickly which minimizes time spent in live panels.

Decrease Downtime

Improve productivity with MROplus by converting to indicating fuses and consolidating inventory. Indication takes the guesswork out of fuse replacement with fast, visible identification, resulting in time and money saved.

Reduce Inventory

Eliminate duplicate or obsolete products and maintain only the fuses necessary for operation. This reduces SKUs, gets rid of waste and ensures the best protection available. Refer to the Fuse Consolidation Guide below to see how this is done.

Learn more at Littelfuse.com/MROplus

FUSE CONSOLIDATION GUIDE

If you have **THIS** fuse...

CLASS RK1 (600 V)	CLASS RK5, H, K (600 V)	CLASS RK5, H, K (250 V)	CLASS J	CLASS CC (Time Delay)
Littelfuse LLSRK	Littelfuse FLSR	Littelfuse FLNR	Littelfuse JTD	Littelfuse FLM
Littelfuse KLSR*	Littelfuse NLS*	Littelfuse NLN*	Littelfuse JLS*	Littelfuse FLQ
Bussmann LPSRK	Littelfuse RLS*	Littelfuse RLN*	Bussmann LPJ	Bussmann LPCC
Bussmann KTS(R)*	Bussmann FRS	Littelfuse KLNR*	Bussmann JHC	Bussmann FNM
Mersen A6D(R)	Bussmann NOS*	Bussmann FRN(R)	Bussmann JKS*	Bussmann FNQ
Mersen A6K(R)*	Bussmann RES*	Bussmann NON*	Mersen AJT	Mersen EDCC
	Mersen TRS	Bussmann REN*	Mersen A4J*	Mersen MEN
	Mersen OTS*	Bussmann KTN(R)*		Mersen MEQ
	Mersen RFS*	Mersen TR		
		Mersen OT*		
		Mersen RF*		
		Mersen A2K(R)*		

...consolidate with **THIS** fuse

LLSRK_ID	LLSRK_ID	LLNRK	JTD_ID	CCMR
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*Consult Article 430 of the NEC** when substituting for loads with motors, or call 1-800-TEC-FUSE.

** NEC is a trademark of it's respective owner.

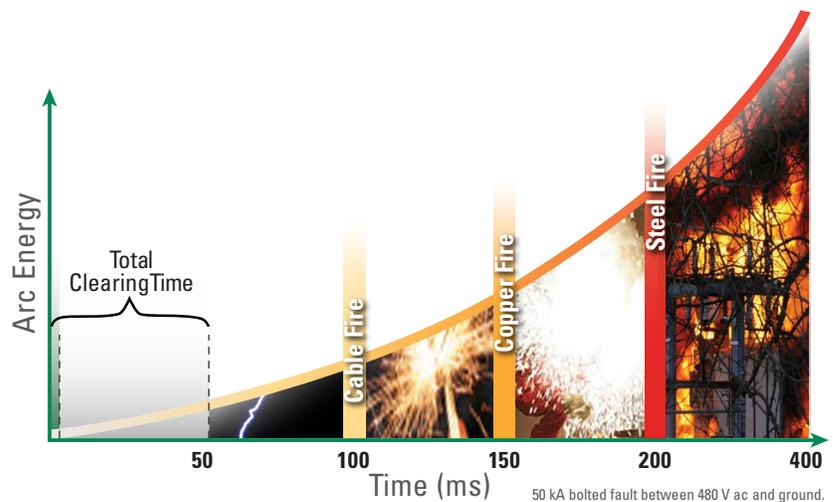
HOW TO MITIGATE AN ARC FLASH

- 1** Use current-limiting fuses to reduce incident energy levels.
- 2** Use arc-flash relays to protect critical panels and detect an arc flash in milliseconds and trip the breaker.
- 3** Use high-resistance grounding (NGR) systems to improve the overall architecture of the electrical system and significantly reduce the opportunity for faults. Continuously monitor the neutral-to-ground path to verify the NGR is intact.
- 4** Stay out of the panel with the MP8000 Bluetooth* relay.

Learn more at Littelfuse.com/IndustrialSafety

DAMAGE CAUSED BY ARC-FLASH INCIDENT

The Littelfuse Arc-Flash Relays use a 125- μ s light-sampling scheme in combination with an ultra-fast IGBT output to be able to detect a developing arc flash and send a trip signal to a circuit breaker in milliseconds.



UL Listed Fuses



Neutral-Grounding Resistor



SE-330 Neutral-Grounding Resistor Monitor



PGR-8800



AF0500

ARC-FLASH RELAYS



AF0100

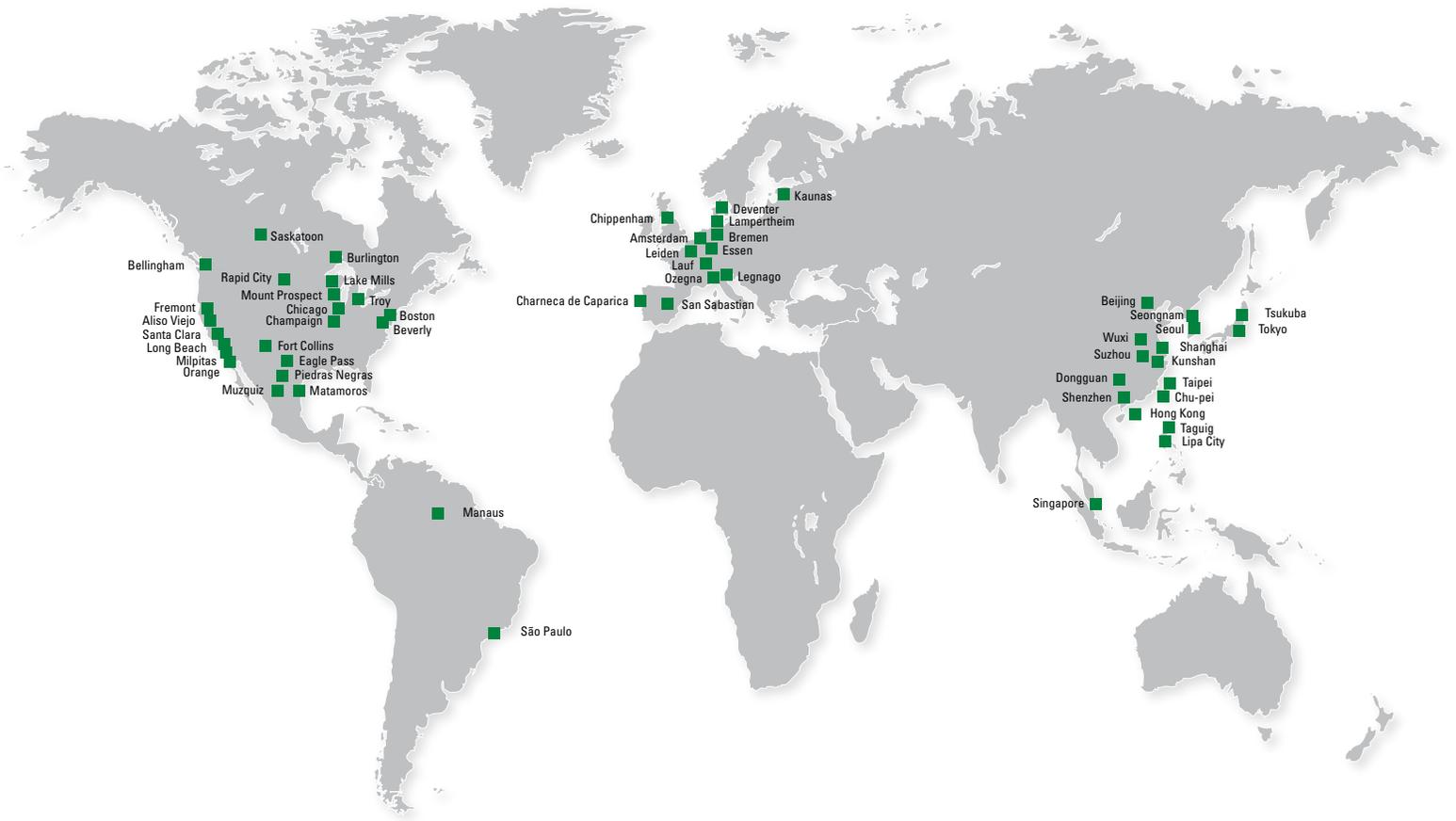


MP8000 Bluetooth Relay



*Bluetooth is a trademark of its respective owner.

LOCAL RESOURCES FOR A **GLOBAL** MARKET



Littelfuse.com/foodandbeverage

For a comprehensive library of resources including datasheets, product manuals, white papers, application guides, demos, online design tools, catalogs, and more, visit www.Littelfuse.com/TechnicalResources.

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