

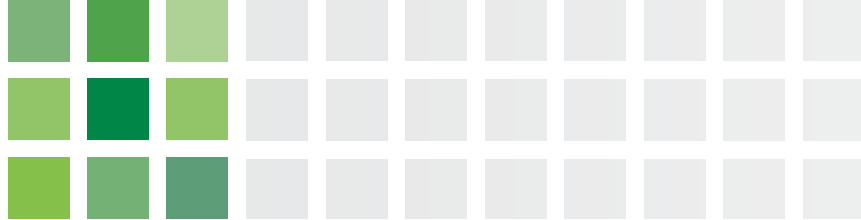


**Littelfuse®**

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, relays, sensors, surge protective devices and controls help minimize electrical safety hazards, limit equipment damage, improve productivity and safeguard personnel. From dairies to wineries and meat processing to bakeries, Littelfuse solutions can help protect your equipment and people.



## PRODUCT BENEFITS & APPLICATIONS

### Arc-Flash Relays

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. The simple plug-and-play installation make arc-flash relays the perfect, cost-effective solution for protecting your equipment.



[Littelfuse.com/ArcFlash](http://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.



[Littelfuse.com/CurrentMonitoringRelays](http://Littelfuse.com/CurrentMonitoringRelays)

### Feeder Protection

Feeder protection relays help protect circuits from overcurrent, ground faults, phase loss, overload, as well as other detrimental conditions found in feeder and grain silo applications. Browse our feeder protection relays below.



[Littelfuse.com/FeederProtection](http://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.



[Littelfuse.com/GroundFault](http://Littelfuse.com/GroundFault)

### Industrial Shock-Block® GFCI

The Littelfuse Industrial Shock-Block 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.



[Littelfuse.com/ShockProtection](http://Littelfuse.com/ShockProtection)

### 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.



[Littelfuse.com/MotorProtection](http://Littelfuse.com/MotorProtection)  
[Littelfuse.com/PumpProtection](http://Littelfuse.com/PumpProtection)

### 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/cm<sup>2</sup>. 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!





# FOOD & BEVERAGE PRODUCT CAPABILITIES

## PRODUCT BENEFITS & APPLICATIONS

### 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.



[Littelfuse.com/ResistanceGrounding](http://Littelfuse.com/ResistanceGrounding)

### 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.



[Littelfuse.com/VoltageMonitoringRelays](http://Littelfuse.com/VoltageMonitoringRelays)

### Timers

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



[Littelfuse.com/Time-Delay-Relays](http://Littelfuse.com/Time-Delay-Relays)

### UL Class Fuses

#### Class CC, J, RK1, RK5, 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.

#### 10 x 38 mm Fuses

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



[Littelfuse.com/IndustrialPowerFuses](http://Littelfuse.com/IndustrialPowerFuses)

### High-Speed Fuses

Designed for sensitive power electronic devices, these fuses offer extreme current-limiting protection and balanced performance for longevity. They are available in direct bus-bar mount flush end and blade designs.



[Littelfuse.com/Powr-Speed](http://Littelfuse.com/Powr-Speed)

### Surge Protective Devices

Surge protective devices (SPDs) provide equipment protection from transient overvoltage events lasting micro-seconds. By limiting the overvoltage to the equipment during these events, costly damage and downtime can be mitigated.



[Littelfuse.com/SPD](http://Littelfuse.com/SPD)

EQUIPMENT APPLICATION	EQUIPMENT										
	Arc-Flash Relays	Current Monitoring Relays	Feeder Protection	Ground-Fault Relays	Shock Block GFCI	Motor & Pump Protection	NGRs & NGR Monitors	Timers	Voltage Monitors	Surge Protective Devices	UL Class Fuses
Boilers		•						•	•	•	•
Chillers		•		•		•			•	•	•
Cooling towers										•	•
Conveyers				•	•	•			•	•	•
Drying Equipment					•	•			•	•	•
Feeders	•		•	•						•	•
Grain Silos			•	•		•				•	
Heat Exchangers				•						•	•
Mixers		•			•	•			•	•	•
Process Piping				•	•	•		•	•	•	•
Refrigeration Equipment				•					•	•	•
Steam Cooking				•	•				•	•	•
Transformers	•						•			•	•
UPS & Power Conditioning	•			•					•	•	•

## Capacitors

Run capacitors, also known as start capacitors, are engineered to boost the current or reduce the power factor to an electrical motor.



[Littelfuse.com/Capacitors](http://Littelfuse.com/Capacitors)

## Contactors

We offer a range of contactors available in 1 & 2, 3 & 4, and 4 pole configurations.



[Littelfuse.com/Contactors](http://Littelfuse.com/Contactors)

## Transformers

Littelfuse offers transformers engineered to change one ac voltage to another by magnetic induction. These heavy-duty transformers are available with primary and secondary voltages between 20 to 500 VA.



[Littelfuse.com/Transformers](http://Littelfuse.com/Transformers)

## Thermistor Probes and Assemblies

Littelfuse probe assemblies are invaluable for sensing temperature in a variety of industries. Standard and customized probe assemblies offer very precise and extremely reliable thermal monitoring in the most demanding applications.



[Littelfuse.com/TempSensors](http://Littelfuse.com/TempSensors)

## NTC and PTC Thermistors

Littelfuse leaded thermistor options include the highly accurate precision interchangeable thermistors as well as high temperature axial leaded glass encapsulated thermistors and glass coated radial leaded chip thermistors.



[Littelfuse.com/TempSensors](http://Littelfuse.com/TempSensors)

## RTD Elements and Probe Assemblies

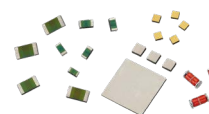
Littelfuse RTDs exhibit a nearly linear temperature-resistance curve as well as high accuracy over a very wide temperature range. Their unique characteristics result in a device especially suitable for use in extreme environmental conditions.



[Littelfuse.com/TempSensors](http://Littelfuse.com/TempSensors)

## Chip and MELF Style Thermistors

Littelfuse surface mount thermistors are manufactured using the most advanced equipment and technology available. They are available in a variety of sizes and configurations suitable for mounting using solder, wire bond, or epoxy.



[Littelfuse.com/SurfaceMountThermistors](http://Littelfuse.com/SurfaceMountThermistors)

EQUIPMENT									EQUIPMENT APPLICATION
10 x 38 mm Fuses	High-Speed Fuses	Capacitors	Contactors	Transformers	Thermistor Probes and Assemblies	NTC and PTC Thermistors	RTD Elements and Probe Assemblies	Chip and MELF Style Thermistors	
•		•	•	•		•			Boilers
•		•	•	•	•	•	•		Chillers
•		•	•	•		•			Cooling towers
•			•	•	•	•	•		Conveyers
•			•	•	•		•		Drying Equipment
•			•	•					Feeders
			•	•					Grain Silos
•		•	•	•	•		•		Heat Exchangers
•			•	•					Mixers
								•	Process Piping
•		•	•	•	•	•	•		Refrigeration Equipment
•		•	•	•	•		•		Steam Cooking
								•	Transformers
•	•	•						•	UPS & Power Conditioning

## PROTECT PERSONNEL FROM ELECTRIC SHOCK WITH THE MOST RELIABLE GFCI—**THE INDUSTRIAL SHOCK BLOCK**

### Common 3-Phase Loads in Food Manufacturing



1 Bandsaw

2 Mixing/Grinding Appliances

3 Drop-Down Receptacles for Prep

4 Conveyor

FEATURES	BENEFITS
UL 943 inverse time trip curve	Inverse time detection circuit protects people while also reducing unnecessary trips
DFT (Discrete Fourier Transform) filtering algorithm	Eliminates nuisance trips due to harmonics
Minimum trip time < 20 msec	Reduces the risk of ventricular fibrillation for leakage current of 250 mA and above
Fixed 6 mA (UL 943) or 20 mA (UL 943C) trip level	UL Listed GFCI and personnel protection for industrial and commercial loads up to 100 A
Selectable trip levels (EGFPD)	The settings below 20 mA provide extra safety. The settings above 20 mA can provide partial range personnel protection for loads with higher nominal leakage currents.
Two-stage ground monitor with Zener termination that meets UL 943C, CSA M421	Proactively protects from shock by tripping if continuity of ground wire between Shock Block and load is broken
Flexible configuration	Selectable manual reset or auto reset for brownout, power up, and ground monitor interruptions to fit safety protocols
Conformal coating	Internal PWB is conformally coated to protect against corrosion and moisture
Auxiliary contact	Alerts your SCADA system if the Shock Block is energized or tripped
Automatic self-test	The Shock Block will continuously test itself and will trip if there is an internal failure
GFCI Class A, C, D and EGFPD options in one series	Simplified planning and operator familiarity for multiple applications/requirements

Learn more at [Littelfuse.com/ShockProtection](https://www.littelfuse.com/ShockProtection)

## 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](http://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 KLN*	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)*		

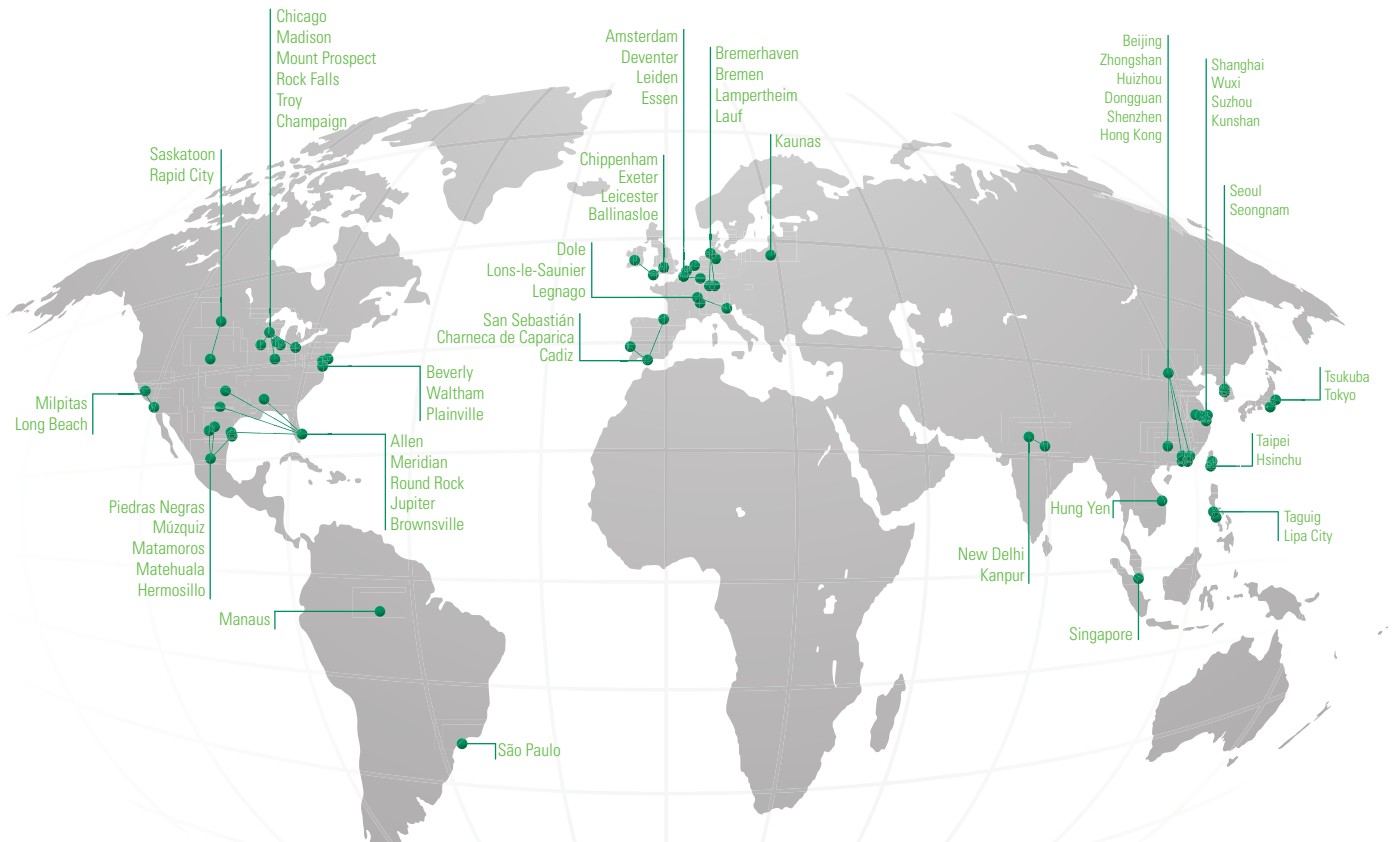
...consolidate with **THIS** fuse

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-TEG-FUSE.

\*\* NEC is a trademark of its respective owner.

# LOCAL RESOURCES FOR A **GLOBAL** MARKET



[Littelfuse.com/foodandbeverage](https://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 [Littelfuse.com/TechnicalResources](https://littelfuse.com/TechnicalResources)

## North America

**Littelfuse World Headquarters**  
8755 West Higgins Road, Suite 500  
Chicago, IL 60631, USA

**Littelfuse SymCom**  
1241 Concourse Drive  
Rapid City, SD 57703, USA

**Littelfuse Startco**  
140 – 15 Innovation Boulevard  
(The Galleria Building)  
Saskatoon, SK S7N 2X8, Canada  
Tel: +1-306-373-5505

**Littelfuse Hartland Controls**  
807 Antec Road  
Rock Falls, IL 61071, USA  
Tel: +1-815-626-5170

## Fuse and Relay

**Technical Support:**  
Tel: +1-800-TEC-FUSE  
Tel: +1-800-832-3873  
Fuses: [techline@littelfuse.com](mailto:techline@littelfuse.com)  
Relays: [relays@littelfuse.com](mailto:relays@littelfuse.com)

**Customer Service:**  
Tel: +1-800-227-0029  
E-mail: [PG\\_CSG@littelfuse.com](mailto:PG_CSG@littelfuse.com)

## Asia

**Littelfuse**  
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+86 755 8207 0760

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**Western Automation  
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Ballinalsoe, Co. Galway,  
H53 TD 78, Ireland  
Tel: +353 (0) 90 9643359



Littelfuse products are certified to many standards around the world. To check certifications on specific components, please refer to the specific product datasheet on [Littelfuse.com](https://littelfuse.com).

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