



**HVAC/R**  
**PRODUCT CAPABILITIES**



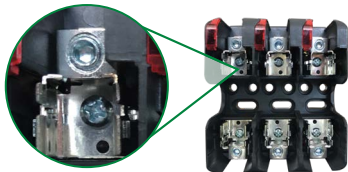


## GOING BEYOND SUPPLIER TO BE YOUR SOLUTION PARTNER

### Easy-to-Use Screw Head Type

#### Simplifying tightening process to help eliminate assembly errors

A major OEM approached Littelfuse indicating that they were having challenges with their installation tightening processes. Littelfuse designed a hex-screw head that would be better suited for their automated assembly, simplifying the tightening process and reducing assembly errors.



### Easy Ready-to-Install Fuse Holder

#### Reducing installation time by attaching the leads to the fuse holder

A rooftop unit manufacturer was able to significantly reduce installation time by attaching the leads to the fuse holder. By utilizing pre-assembled 571 (standard) and 572 (snap-mount) panel-mount fuse holders, Littelfuse included a KLK 5 A 600 V ac fuse, 150 °C #12 to #18 wire and 150 °C heat-shrink tubing to help streamline assembly.



### Pre-Assembled Fuse Holder with Terminals

#### Reducing installation time by attaching the leads to the fuse holder

A pre-assembled solution incorporating an LHR 2-wire fuse holder and an LMF 3.2 A 300 V ac fuse with customer specified 1/4" female quick connectors improved installation time and quality for this manufacturer.



### Customized Timing

#### Saving cost of potential lost inventory due to accidental manual override

Multiple large OEM companies requested a customized 3-phase voltage monitor without a manual reset option from the manufacturer to protect what's inside their refrigeration racks. This forced a time-delayed restart by eliminating the possibility of the rack accidentally waiting on a manual reset.



### Adaptive Fan Control

#### Helping to maximize energy efficiencies

A delay-on-break timer monitors the system run time and determines how long the delay-on-break time delay should be. The longer the system runs, the longer the timing, the longer the fan runs. This custom solution maximizes the system's heating and cooling by pulling as much conditioned air out of the duct work as possible making the system more efficient and reducing energy costs.



# 3 REASONS TO CHOOSE LITTELFUSE

**PROTECT** your brand reputation by including current-limiting fuses, arc-flash protection, motor protection relays, and surge protection devices.

**CONTROL** loads and increase system efficiency with time delay and current monitoring relays.

**SENSE** temperature more accurately and reduce cycle time with customized easy-to-install RTDs, and reed and temperature sensors.



Leading HVAC/R brands rely on Littelfuse for their custom protection, control, and sensing needs. As a design partner, our dedicated team can help you select the right combination of

solutions from our extensive product portfolio.

From overload to overcurrent and accuracy to durability, we have your equipment needs covered.



## PROTECT

### High-Speed Fuses

QS series fuses reduce the energy let-through by up to 70 % over previous generation high-speed semiconductor fuses. Our experts have designed high-performance silver fuse elements that combine with a hardened silica filler to provide enhanced HVAC system protection.

- Less energy wasted during operation
- Laser-etched resistance values to eliminate labels that erode over time
- Universal mounting adapts to wide variety of configurations



### UL Class Fuses

Littelfuse UL Class fuses offer quality overcurrent protection for all kinds of HVAC load conditions. These fuses are chosen over circuit breakers due to their higher amperage in a smaller package, quicker response time, and no calibration requirements.

- Available in both indicating and non-indicating versions
- Best-in-Class current-limiting performance available in Class RK5
- High interrupting rating (up to 300 kA)



### Class CC and Midget Fuses

Littelfuse UL Listed CC/CD fuses offer extreme current-limitation in a space-saving design and are available up to 60 A. Midget style (10 X 38 size) fuses offer supplementary protection in a wide range of ampere ratings to match specific requirements in a variety of applications.

- Saves 45 %–75 % space
- Fast-acting and time-delay performance
- High-interrupting rating



### Fuse Blocks and Holders

Enable easy fuse installation and replacement with our extensive line of fuse blocks, fuse holders, and fuse accessories.

- Compact design provides space savings
- Universal and DIN-rail mounting with optional DIN-clip covers
- Snap to release—no tools required



### Power Distribution Blocks

Integrated touch-safe covers provide protection against accidental shorting between poles caused by loose wires, tools, or other conductive material. They also safeguard personnel from accidentally contacting energized connectors.

- Meets UL standards
- Space-saving designs
- Mounts to DIN rail or panels



### Enhanced Overload Relays

Enhanced overload relays combine voltage and phase protection with underload and overload protection for motors. Protect motors from conditions resulting in motor windings overheating and burning insulation. Plus, optional communications allow connection to remote monitoring.

- Protects against phase loss and reverse phase
- Monitors over and under voltage and unbalanced voltage
- Real-time voltage and current readings and fault codes



### 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.

- Easily installs without changes to existing layout
- Flexible sensor configuration for any application
- No additional software is required



### Voltage and Phase Monitors

Prevent motors from running with no load applied and provide protection due to blown fuses, broken wires, or worn contacts. The monitors help to prevent damaged machinery and injury of personnel.

- Protects against phase loss and reverse phase
- Low- and high-voltage trip



### Surge Protection Devices (SPDs)

SPD2 series of Type 2 surge protection devices (SPDs) feature 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.

- Provides thermal protection to eliminate catastrophic failure
- Both UL Recognized and IEC Compliant to reduce inventory needs
- Compact footprint increases design flexibility



## CONTROL

### Time Delay Relays

Protect HVAC/R equipment from damage caused by rapid cycling of compressors. The Littelfuse SSAC line of timers include delay-on-make, delay-on-break, dual function, multifunction, and lockout functions.

- Provides brownout protection and prevents low-voltage start ups
- Encapsulated to guard against shock, vibration, and humidity
- Replaces thousands of competitive models



### Current Monitoring Relays

Littelfuse monitoring relays provide over and under current sensing with adjustable trip delays. These relays protect against single-phasing and current unbalance problems that can be caused by voltage supply problems, bad contactors, loose wiring, bad wires, or damaged motors.

- Self-powered for use as ac current proof relay
- Available with fast-on terminals for quick installation
- Monitors up to 200 A loads



## SENSE

### NTC Thermistor Pipe Temperature Sensors

Negative temperature coefficient (NTC) thermistor pipe sensors are ideal for measuring temperature on pipe surfaces, enabling better control of heating/cooling functions to drive energy efficiency.

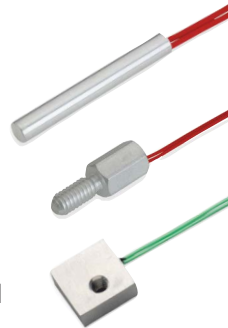
- Moisture resistant
- Supplied with copper-plated mounting clips, with custom options available to meet your dimension requirements
- 105 °C max operating temperature



### Temperature Sensors with Aluminum Housings

Littelfuse offers aluminum probe housings engineered for a wide range of HVAC temperature sensing applications. Customized solutions tailored for your needs are available by request.

- Suitable for a wide range of temperature sensing applications
- Temperature sensing element available that best fits your needs, along with other physical properties (lead wire type, termination, etc.)



### Reed Switch Position Sensors

Littelfuse offers a wide variety of reed sensors in both standard and custom packages for simplified mounting and connecting to detect position. Plus, these sensors are sealed from the outside environment for maximum robustness.

- Zero power consumption
- Contactless position sensing
- Sensing element available that best fits your needs, along with other physical properties (lead wire type, termination, etc.)



## What's the Best Fit For Your Application?

APPLICATIONS	PROTECT									CONTROL		SENSE		
	HIGH-SPEED FUSES	UL CLASS FUSES	MIDGET & CLASS CC FUSES	FUSE BLOCKS & HOLDERS	POWER DISTRIBUTION BLOCKS	ENHANCED OVERLOAD RELAYS	ARC-FLASH RELAYS	VOLTAGE MONITORS	SURGE PROTECTION DEVICES	TIME DELAY RELAYS	CURRENT MONITORING RELAYS	THERMISTORS	TEMPERATURE SENSORS	REED SENSORS
Air Handling Units		•	•	•	•	•		•	•	•	•	•	•	
Rooftop Systems		•	•	•	•	•		•	•	•	•	•	•	
Screw/Scroll Compressors	•	•	•	•	•	•		•	•	•	•			
Chillers	•	•	•	•	•	•	•	•	•	•	•	•	•	
Furnace Manufacturers		•	•	•	•	•				•	•	•		
Heat Pumps		•	•	•	•			•	•	•	•			
Walk-In Fridge/Freezers		•	•	•	•	•		•	•	•	•	•	•	•
Refrigeration Racks		•	•	•	•	•	•	•	•	•	•			•
Fixed Speed Compressors	•	•	•	•	•	•		•	•		•	•		
Vending Machines												•		•
Wall Thermostats												•		•
Ac Condensing Units		•	•	•	•				•	•	•			•
Split Systems		•	•	•	•				•	•	•			
Boilers		•	•	•	•					•	•			

Because we know quality matters when selecting products for your design, our engineers build our components to the highest industry standards. Littelfuse is committed to exceptional customer value through our relentless pursuit of zero defects and operational excellence in everything we do.



# Solutions For All Types of Applications

## Commercial Water Cooled Chiller

- High-Speed Fuses
- UL Class Fuses
- Midget & Class CC Fuses
- Fuse Blocks & Holders
- Power Distribution Blocks
- Surge Protection Devices
- Enhanced Overload Relays
- Voltage Monitors
- Time Delay Relays
- Load/Current Sensors
- Sensors Thermistors



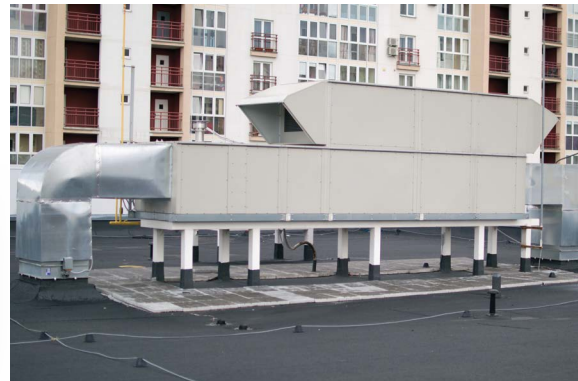
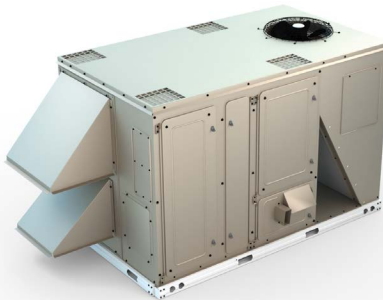
## Rooftop System

- UL Class Fuses
- Midget & Class CC Fuses
- Fuse Blocks & Holders
- Power Distribution Blocks
- Surge Protection Devices
- Enhanced Overload Relays
- Voltage Monitors
- Time Delay Relays
- Load/Current Sensors
- Sensors Thermistors
- Reed Sensors



## Air Handling Units

- UL Class Fuses
- Midget & Class CC Fuses
- Fuse Blocks & Holders
- Power Distribution Blocks
- Surge Protection Devices
- Enhanced Overload Relays
- Voltage Monitors
- Time Delay Relays
- Load/Current Sensors
- Sensors Thermistors
- Reed Sensors

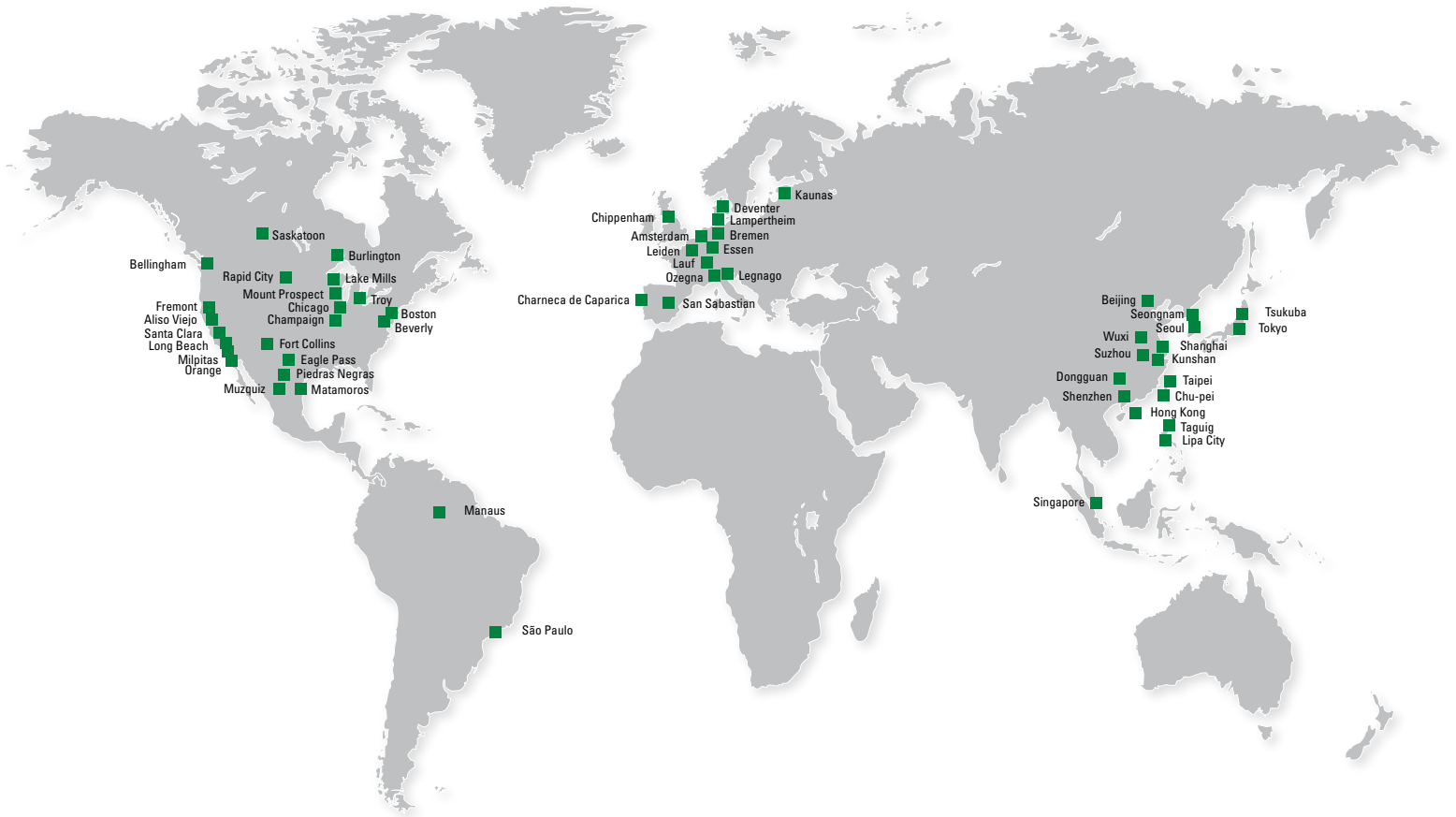


## Commercial Refrigeration

- UL Class Fuses
- Midget & Class CC Fuses
- Fuse Blocks & Holders
- Power Distribution Blocks
- Surge Protection Devices
- Enhanced Overload Relays
- Voltage Monitors
- Time Delay Relays
- Load/Current Sensors
- Sensors Thermistors



# LOCAL RESOURCES FOR A **GLOBAL** MARKET



## Littelfuse.com/HVAC

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](http://Littelfuse.com/TechnicalResources)

### North America

**Littelfuse World Headquarters**  
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Chicago, IL 60631, USA

**Littelfuse SymCom**  
222 Disk Drive  
Rapid City, SD 57701, USA

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