

MINING



ELECTRICAL SYSTEM PROTECTION



Expertise Applied | Answers Delivered





## Mining Vehicle Product Capabilities



With nearly a century of experience creating innovative solutions in the field of circuit protection and switching, Littelfuse continues to be the leading designer and manufacturer of electrical system protection products used by mining companies worldwide.

Our quality **circuit protection, switching, and power distribution** products help our customers maintain the safety and reliability of their heavy trucks, bulldozers, wheel loaders, excavators, and other mining vehicles.

With industry-respected circuit protection and power distribution products, customers can eliminate hazards, reduce downtime, and increase the operational life of mining vehicles to create a higher return on investment.



## Mining Vehicle Products and Benefits

Our commercial vehicle portfolio includes a comprehensive line of manual battery disconnects, disconnect lockout kits, power distribution modules, relays, and fuses to minimize electrical safety hazards, limit vehicle damage, and improve productivity.

**Manual Battery Disconnect Switches** allow the operator to completely disconnect the electrical current running through a vehicle or piece of equipment. Sealed master battery disconnect switches that are dust-tight and waterproof can help prevent vehicle failure in harsh environments.



- **Short-Circuit Protection.** In the event of a short circuit, manual battery switches can be activated to prevent further damage to the vehicle or injury to occupants.
- **Safety of Service Personnel.** Mechanics can ensure a vehicle's electrical system is shut down before performing maintenance by operating a battery switch.
- **Cost Savings.** A switch can be activated when a vehicle is not in use to prevent parasitic loads from draining the battery and causing premature failure.

**Manual Battery Disconnect Lockout Kits** add an additional level of security for mechanics and vehicle owners.



- **Mechanic Safety.** With a lockout kit, a mechanic can ensure a vehicle cannot be energized or started during service.
- **Theft Protection.** Owners can secure a switch with a lockout kit, making it difficult for unauthorized users to operate the equipment.

**Power Distribution Modules** provide applications with centralized, safe power distribution, preventing excess downtime due to service.



- **Centralization and Streamlining.** Power distribution modules can reduce or eliminate multiple interconnections. Protecting multiple circuits in a single waterproof, dust-tight enclosure can be useful for applications with limited space in the battery box.

**Master Battery Disconnect Switch Relays** allow a battery to be remotely disconnected from the vehicle's electrical system.



- **Cost Savings and Efficiency.** A relay allows the switching of a high current circuit by a low current signal. This allows the relay to be placed close to the power source, or load to be switched so that expensive high-current cabling is minimized while still giving easy access to the operator to turn the relay on or off.

**Fuses** are current-sensitive devices that provide reliable protection for discrete components or circuits by melting under current overload conditions.

- **Short-Circuit and Overload Protection.** Fuses are the most economical and reliable way to protect various circuits in mining vehicles from shorts and overloads, which can lead to thermal events and damaged vehicles.







## Battery Disconnect Switches for Mining Applications

Because of harsh environmental conditions and heavy operation, mining vehicles and equipment require heavy-duty, dustproof, and waterproof electrical system protection. Whether you need manual or electrical battery disconnect switches, fuses, fuse holders, or power distribution modules, you'll find reliable products from Littelfuse to safeguard the electrical systems of off-highway trucks, hydraulic shovels, wheel loaders, and more.



880175

880175-0002



880175-0001

### TR Series Dual Pole Master Disconnect Switch

The TR Series 32V 500A 2-Pole Waterproof Master Battery Disconnect Switch works in mining applications that require the switching of two circuits or both positive and negative. The dual-pole, single-throw (DPST) switch can be mounted in exposed locations thanks to IP67 and IP69K waterproof and dustproof ratings as well as its high shock and vibration tolerance. It can be used to disconnect one or two batteries in either the positive or negative line, and it can be used to switch two vehicle voltage circuits simultaneously (24V and 12V). Integrated lock-out/tag-out (LOTO) capability in either the ON or Off position using a padlock or hasp (not included) helps ensure personnel safety and vehicle security.

PART NUMBER	DESCRIPTION
880175	Master Disconnect Switch - Black Knob
880175-0001	Master Disconnect Switch - Red Knob
880175-0002	Master Disconnect Switch - Yellow Knob



75920

75920-01

### 75920 Series Master Disconnect Switch

The 75920 Series 36V Master Battery Disconnect Switch safeguards against battery drain from parasitic loads, ensures the safety of service professionals, and features built-in lock-out/tag-out for tampering and theft prevention. Fitting a standard master disconnect mounting pattern, the IPX8-rated waterproof switch can be used as a drop-in replacement. With a large knob that makes manual operation simple, plus clear switch position markings and 90° switch travel, it can effectively be used as a manual emergency power cutoff switch.

PART NUMBER	DESCRIPTION
75920	Master Disconnect Switch - On/Off Markings - Red Knob
75920-01	Master Disconnect Switch - On/Off Markings - Yellow Knob





## Battery Disconnect Switches & Disconnect Accessories for Mining Applications



24505-02



2484



M-284

### 24505 Series Lockout Lever Kit for Metal Case Master Disconnect Switches

The 24505 Series Lockout Lever Kit is suitable for use with Cole Hersee lever-actuated metal case master disconnect switches on applications requiring lock-out/tag-out. The kit allows for a padlock to securely lock a disconnect switch in the OFF position. The kit is available with a red, yellow, or metallic powder-coated finish to enable color coding of switches by function or application.

PART NUMBER	DESCRIPTION	LOCK SHACKLE SIZE
24505*	Lockout Lever Kit Metallic	5/16"/7.9mm
24505-01	Lockout Lever Kit Metallic	7mm
24505-02*	Lockout Lever Kit Red	5/16"/7.9mm
24505-03*	Lockout Lever Kit Yellow	5/16"/7.9mm

\*Blister Pack and Boxed Retail Parts Available



08075360



00227073

### ADR Series Battery Master Switch Relay

The 32V 250A ADR Magnetic Battery Disconnect Switch is a magnetic bi-stable isolator switch designed specifically for ADR (Accord Dangereux Routier) applications. It uses a minimum current when it is turned on and zero current when is off. The magnetic ON-OFF position absorbs current only during the commuting phase: when switched from (OFF) to (ON) and vice versa. This is generally referred to as "bistable with zero consumption." This switch can also be used for non-ADR applications that can utilize a programmable disconnect time delay (between 1 second and 1 hour). The ADR Series cutoff switch is available as either a base battery isolator switch or as a complete kit with an ATmospheres EXplosible (ATEX)-compliant chassis switch, cabin toggle switch, switch protection cover, and harnesses.

PART NUMBER	DESCRIPTION
08075300	ADR Battery Disconnect Switch Complete Kit The kit includes all the below part numbers
08075360	ADR Switch
00901560	ATEX Cabin Switch (ADR Required Usage)
00900560	Cabin Switch Cover (ADR Required Usage)
00227073	ATEX Chassis Switch (Optional Use)
00712600	7-Way Harness (ADR Switch Connector)





## Power Distribution Modules for Mining Applications

### MDB Series Waterproof MIDI® Fuse Power Distribution Box

The MDB Series 58V 200A Waterproof MIDI® Fuse Power Distribution Box is an internally bussed fuse holder designed for high current loads and harsh conditions. Effectively acting as a power distribution module, the rugged fuse box is available in configurations for holding 2 or 3 MIDI® fuses (sold separately). The waterproof fuse box is sealed to IP67/IP69K standards, making it ideal for applications close to the battery or for mounting in exposed locations. To keep the sealed cover securely in place, the MDB Series features AssureLatch™ yellow positive-sealing latches.



PART NUMBER	POLES	DESCRIPTION	INCLUDED ACCESSORIES	
			INPUT	OUTPUT
04980932ZXT	2	Fuse Holder Only	-	-
04980933ZXT	3	Fuse Holder Only	-	-
04980932.X	2	Fuse Holder with Caps and Seals	<ul style="list-style-type: none"> <li>• 1 x 25 mm<sup>2</sup> cap</li> <li>• 1 x 25 mm<sup>2</sup> seal</li> </ul>	<ul style="list-style-type: none"> <li>• 2 x 6-10 mm<sup>2</sup> seal</li> <li>• 2 x 10-16 mm<sup>2</sup> seal</li> <li>• 1 x plug</li> <li>• 1 x 6-16 mm<sup>2</sup> cap</li> </ul>
04980933.X	3	Fuse Holder with Caps and Seals	<ul style="list-style-type: none"> <li>• 1 x 25 mm<sup>2</sup> cap</li> <li>• 1 x 25 mm<sup>2</sup> seal</li> </ul>	<ul style="list-style-type: none"> <li>• 2 x 6-10 mm<sup>2</sup> seal</li> <li>• 3 x 10-16 mm<sup>2</sup> seal</li> <li>• 1 x plug</li> <li>• 1 x 6-16 mm<sup>2</sup> cap</li> </ul>

### LX Series Water-Resistant ATO® & MIDI® Fuse Power Distribution Module

Eliminate battery-box clutter and reduce overall system costs with the LX Series 60V ATO® & MIDI® Fuse Power Distribution Module (PDM). The 10-way fuse box protects both low-current and high-current circuits and provides a collection point for negative returns. Featuring AssureLatch™ technology, the water-resistant fuse holder is sealed to IP59K to withstand road splash and high-pressure, high-temperature washing. The rugged fuse box is also ignition protected to SAE J1171 and ISO 8846, so it can be installed in a battery box or on vehicles carrying hazardous loads.



PART NUMBER	MAX CONTINUOUS CURRENT	MAX FUSE RATING PER CIRCUIT		TERMINAL STUD TORQUE	DIMENSIONS	CONTENTS		
		170A	30A			•	•	•
880089	600A PDM w/Unfused Input	170A	30A	20 Nm	165x127x51mm	•	•	•
880094	200A PDM w/Fused Input	170A	30A	20 Nm	165x127x51mm	•	•	•

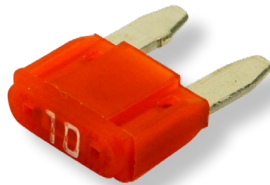




## Fuses for Mining Applications

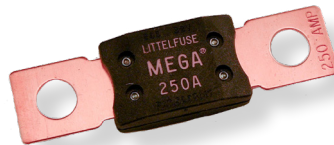
Littelfuse offers a variety of fuses that are well-suited to protecting circuits within mining vehicles and equipment. Our portfolio includes high-current fuses like MEGA® and MIDI® bolt-down options and blade-style fuses such as the ATO® fuse, which was designed and patented by Littelfuse in 1976 and quickly became the standard for automotive circuit protection.

### MINI®



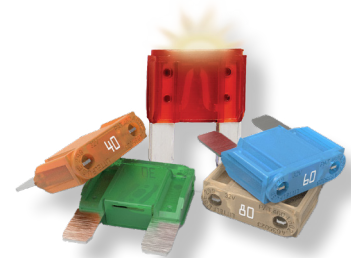
MINI® blade-style fuses range from 2A to 30A and feature a wide operating temperature range of -40°F to 250°F. MINI® fuses are ideal for applications with limited space.

### MEGA®



MEGA® bolt-down fuses range from 40A to 500A and are well-suited for protecting heavy electrical cables that connect the battery and alternator. The MEGA® fuse is available in 32V, 70V, and 120V versions.

### MAXI®



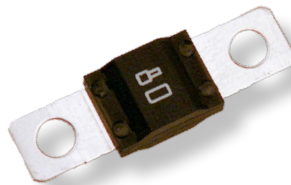
MAXI® blade-style fuses are available from 20A to 80A and use "Diffusion Pill Technology" to provide predictable time delay characteristics and low heat dissipation. MAXI® fuses are available with a 32V rating for standard applications or a 58V rating for 48V+ applications.

### ATO®



ATO® blade-style fuses are available from 1A to 40A and are also available in SmartGlow® versions that make it easy to see when the fuse is blown.

### MIDI®



MIDI® bolt-down fuses are space-saving fuses for high-current wiring protection that range from 30A to 200A. MIDI® fuses are available with a 32V rating for standard applications or a 70V rating for 48V+ applications.

### MICRO2®



MICRO2™ and MICRO3™ fuses offer sub-miniature designs that allow you to protect more circuits in a small space. The MICRO3™ fuse features 3 terminals and 2 fuse elements with a common center terminal. Both the MICRO2™ and MICRO3™ are known for their ability to cope with high temperatures in adverse environments.

### MICRO3®



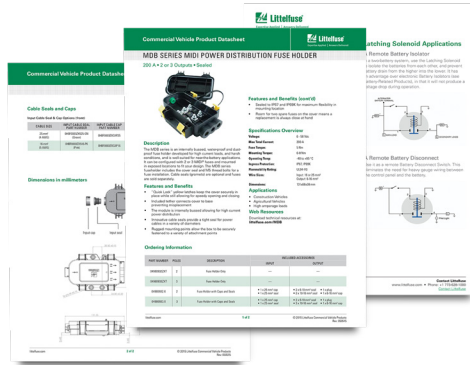


# PRODUCT INFORMATION & RESOURCES available at: [littelfuse.com/CVP](http://littelfuse.com/CVP)

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[Littelfuse.com/Commercial-Vehicle-Technical-Center](http://Littelfuse.com/Commercial-Vehicle-Technical-Center)

- Extended Datasheets
- Application Notes
- CAD Drawings
- 2D Outlines
- 3D Models
- Glossary
- FAQ



## Littelfuse.com/Catalogs

Littelfuse offers digital and printed catalogs and other product brochures. To request a copy, please contact Littelfuse or download the digital version on our website.

Our product catalogs feature circuit protection, power control and sensing products for OEM and aftermarket applications.

## Littelfuse.com/ContactUs

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