

SB6100

SPECIAL-PURPOSE
GFCI FOR
INDUSTRIAL
APPLICATIONS

Industrial

SHOCK BLOCK®

LITTELFUSE® Products

Special-Purpose GFCI

1. NEMA 4X Enclosure

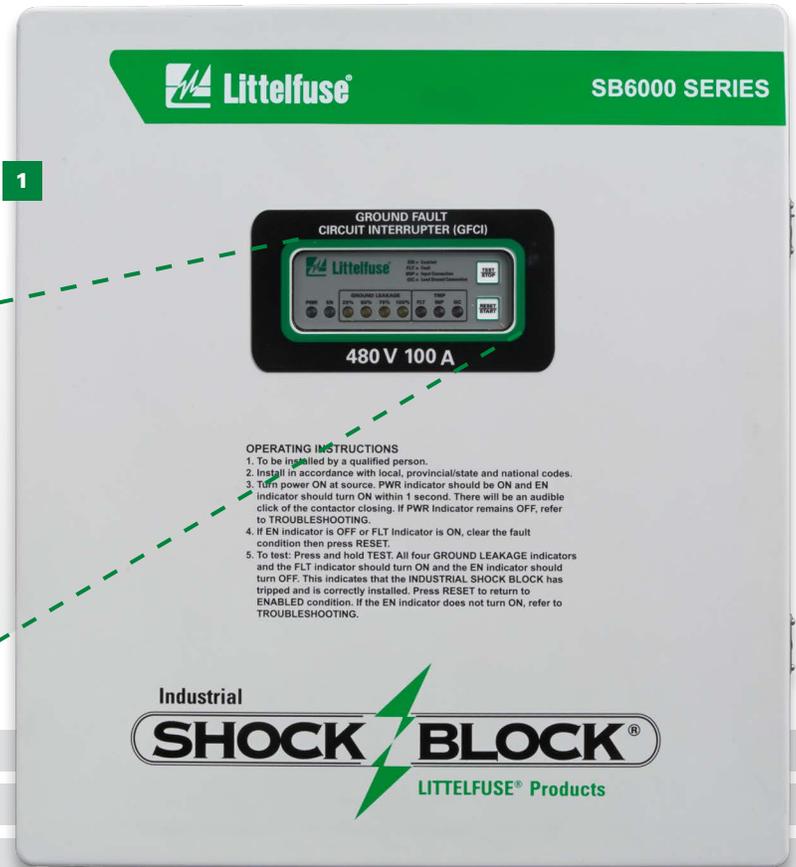
Prevents access to hazardous parts and provides protection against water, humidity and corrosion.

2. Operator Interface

Shows unit status, alarm types, % of leakage current and also has Test and Reset capabilities which can be used as a motor or pump starter.



Operator Interface (OPI)



Enclosed Model

(Patented)

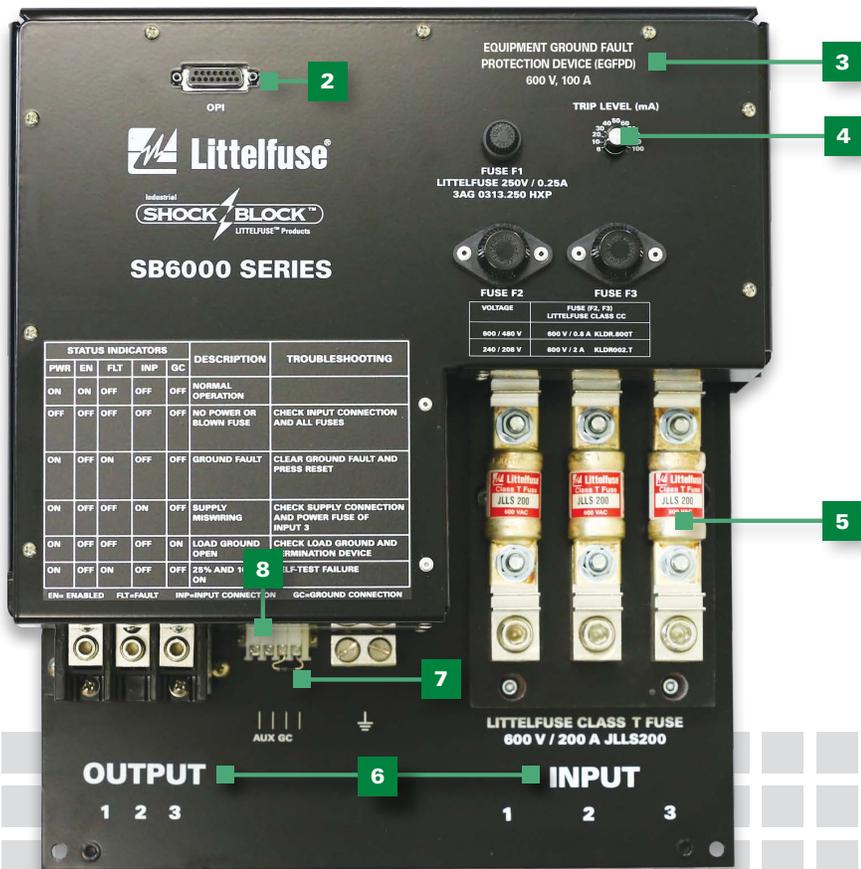
Introducing the SB6100 Industrial Shock Block®

The Industrial SB6100 Special-Purpose Ground-Fault Circuit-Interrupter (Special-Purpose GFCI) is the first UL 943C listed device that provides personnel protection for three-phase 208, 240, 480 and 600 V loads, and:

- Protects personnel from electrical shock where standard GFCI breakers and receptacles are not available
- Offers an all-in-one solution to detect leakage current and interrupt the power for loads up to 100 A
- Includes overcurrent protection provided by Littelfuse Class T fuses, eliminating the need to install separate contactor protection, saving cost and space while also allowing for a short-circuit current rating (SCCR) of 50 kA
- Monitors the continuity of the ground circuit to ensure equipment is properly grounded
- Prolongs the life of the internal contactor by offering undervoltage, brownout and chatter detection
- Is available as a GFCI, Special-Purpose GFCI, and equipment ground-fault protective device (EGFPD)
- GFCI models have a fixed 6 mA trip level (Class A)
- Special-Purpose GFCI models have a 20 mA trip level (Class C and D)
- EGFPD models can be set to trip at 6, 10, 20...100 mA in increments of 10 mA
- Class A GFCI with fixed 6 mA trip level allows commercial kitchens and other non-residential facilities with wet areas to meet NEC 210.8(B) for 100 A loads
- Special-Purpose GFCI and EGFPD models include CSA C22.2 No. 144-M91 certification

Listed to UL 943 and 943C

for Personnel Shock Protection



3. Available in GFCI, Special-Purpose GFCI, and EGFPD Models
GFCI models (fixed 6 or 20 mA trip levels) and EGFPD models as shown (adjustable trip levels) per UL 943, UL 943C, and UL 1053.

4. Selectable Trip Levels (EGFPD only)
Provides adjustable trip levels for systems with leakage current higher than GFCI 6 mA and 20 mA standards.

5. Built-in Class T Fuses
Provides overcurrent protection for the internal contactor and provides a 50 kAIC.

6. Input/Output
Input from incoming power source and output going to the load.

7. Ground Monitor/Interrupt
Standard on Special-Purpose GFCI and optional for GFCI and EGFPD per UL. Monitors continuity of ground wire between Industrial Shock Block and load.

8. Remote Indication
Auxiliary contact indicates the internal contactor status.

Open-Chassis Model (Patented)

Commercial kitchens now have a Class A GFCI for 208 V equipment up to 100 A; for industrial applications where Class A GFCIs cannot be applied, utilize Class C & D Special-Purpose GFCI models with UL 943C Listing.

The SB6100 meets all UL 943 and 943C requirements and more:

- Reliable performance
 - 85 %, 100 %, and 110 % of the rated voltage
 - Full-load and no-load
 - -35 °C (-31 °F) to +66 °C (+151 °F)
- Leakage-current return path – ground-wire monitor
- SCCR of 50 kA
- Surge tests up to 10 kV and 6 kA
- Environmental considerations
 - Humidity, ultraviolet, corrosion & dust
 - RF immunity
- UL 943 inverse time trip curve
- UL 943 fixed trip level (GFCI 6 mA)
- UL 943C fixed trip level (GFCI 20 mA)

Safeguarding your People in any **Wet Environment**



AN INDUSTRIAL
SPECIAL-PURPOSE
GFCI IS VITAL WHERE
PEOPLE, ELECTRICAL
EQUIPMENT, AND
WATER ARE PRESENT



- 1. Waste Water Facilities
- 2. Food and Beverage
- 3. Commercial Kitchens
- 4. Amusement Parks/Swimming Pools
- 5. Construction
- 6. Oil and Gas
- 7. Mining
- 8. Agriculture

Case Studies

Municipal Water Utility Company Protects Workers From Shock Hazards



A municipal water utility company that supplies water to more than three million residents wanted to protect its workers from shock hazards. The facility has two tanks the size of Olympic swimming pools. Once or twice a year, the tanks must be manually cleaned and workers enter while water is still present and the 600 V submersible pumps are running. The solution was the Littelfuse Industrial Shock Block SB6100 EGFPD. The utility company installed the EGFPDs in the motor control centers that supply power to each pump. The EGFPD is an industrial ground-fault circuit interrupter. If a device senses a ground fault above the trip setting, it will open the circuit very quickly to protect workers from shock.

Large Solution Mining Company Protects Employees From Electric Shock Near Pumping Station



Solution mining requires a constant supply of water. A large solution mining company has pump stations located near the water supply to supply water for processing. The water needs to be filtered before it is pumped to the mine, so there is a filter screening the water intake. Even though a second filter is installed inside the pumping station, rocks, sand and debris still get into the station. Typically once a year, an employee must clean the debris out of the sump with the help of a submersible pump. Having a submersible pump running while the employee is cleaning puts them at risk of electrical shock. The Industrial Shock Block SB6100 EGFPD was the solution. They mounted the EGFPD on the wall inside the pumping station. The enclosed-version Industrial Shock Block is well-suited for the wall-mount installation used in this application. Now when a worker goes into the pumping station to clean the sump, they will be protected by the Industrial Shock Block.

Brick Manufacturer Protects Workers From Electrocutation While Using Wet Saws



A brick manufacturing plant in the Western United States processes clay into bricks and other building materials for residential and commercial projects. Part of this process involves hand-operated wet saws that operate at 480 V. The company wanted to make sure operators were safe from electrical ground faults. The plant electrician discussed his concerns with a Littelfuse distributor in Salt Lake City, Utah, whose representative suggested the use of an equipment ground-fault protection device (EGFPD) from Littelfuse. The Industrial Shock Block SB6100 EGFPD was installed between the motor control center and the face-cut saws on a manufacturing line built in the 80's. It took a little experimentation to determine that 30 mA was the lowest setting that prevented nuisance tripping. If the device senses a ground fault at or above that threshold, it opens the circuit within 20 ms – fast enough to prevent worker injury or death from dangerous electric shock.



Patented

Technical Specifications



SB6100 Industrial Shock Block

Voltage Rating	See ordering information (p.7)
Current Rating	100 A (continuous)
Load	3-phase, 3-wire (no neutral), 60 Hz
Short Circuit Rating	50 kA
Trip Time	UL 943 inverse time trip curve
Enclosure	NEMA 4X, polyester, lockable
Conformal Coating	Internal circuits are conformally coated to protect against corrosion and moisture
Operating Temperature	-35 °C (-31 °F) to +40 °C (104 °F), up to +66 °C (151 °F) with derating
Wiring Requirements	2/0 AWG (maximum)
Approval	GFCI: UL Listed (enclosed model) and UL Recognized Component (open-chassis model); Special-Purpose GFCI: UL Listed (enclosed models) and UL Recognized Component (open-chassis models); EGFPD: cULus Listed (enclosed models) and cURus Recognized Component (open-chassis models); All models UL1998 Compliant (revision 01 or higher); SPGFCI and EGFPD CSA Certified to C22.2 No. 144-M91

Dimensions	Enclosed: H 453.8 mm (17.9") W 406.2 mm (16.0") D 223.3 mm (8.8") Open-chassis: H 455.0 mm (17.9") W 340.7 mm (13.4") D 174.9 mm (6.8")
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Warranty	1 year Littelfuse.com/warranty
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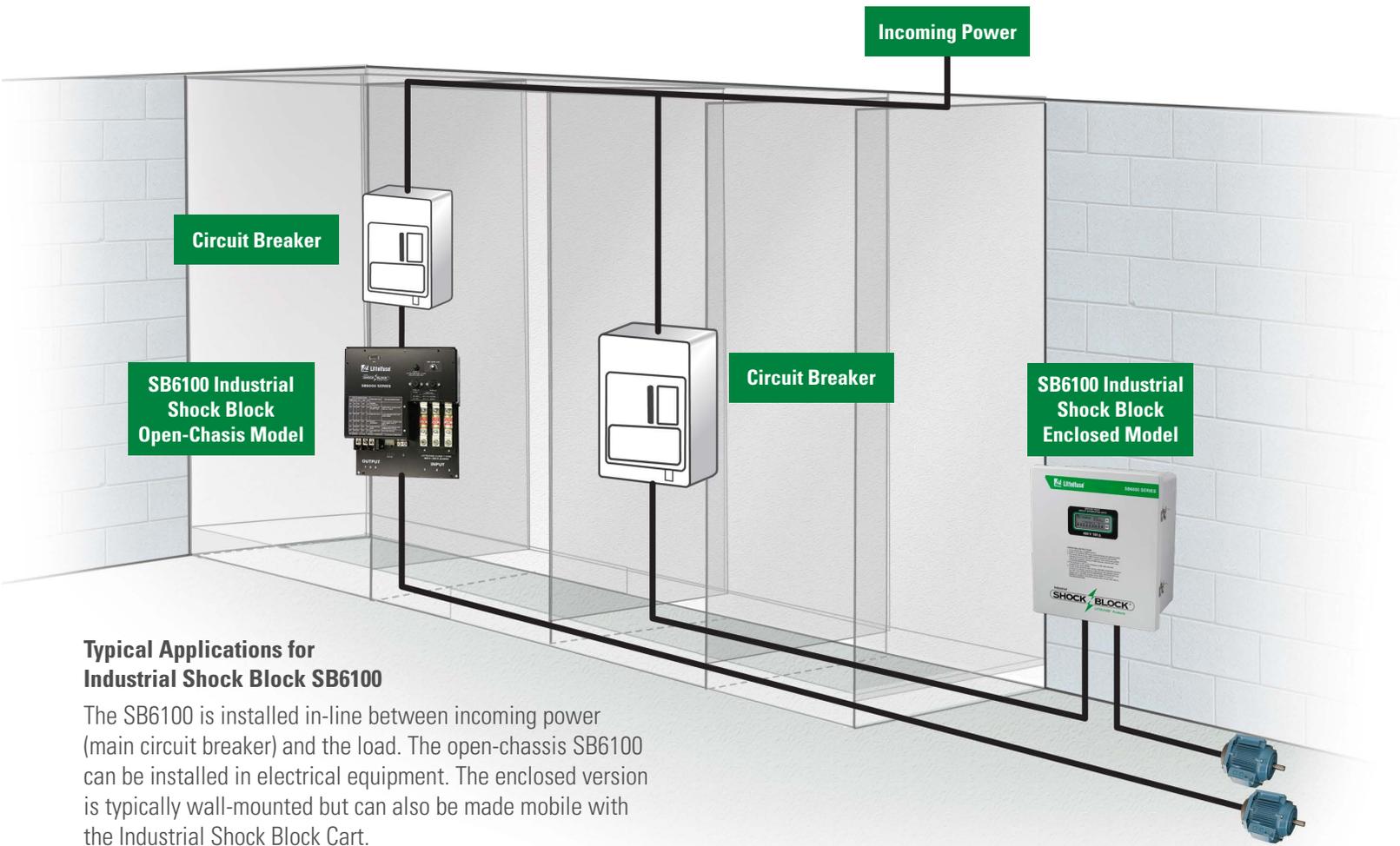
AC6000-CART-00 Two-Wheeled Cart

Dimensions	H 1064 mm (42") W 648 mm (25.5") D 662 mm (26")
Weight	9 kg (22 lbs.)
Material/Finish	Aluminum/Powder Coat
Wheels	Solid Polypropylene (maintenance free)

AC6000-MNT-00 Mounting Frame

Dimensions	H 705 mm (28") W 648 mm (25.5") D 152 mm (6")
Weight	1 kg (2.2 lbs.)
Material/Finish	Aluminum/Powder Coat

Connection Diagram

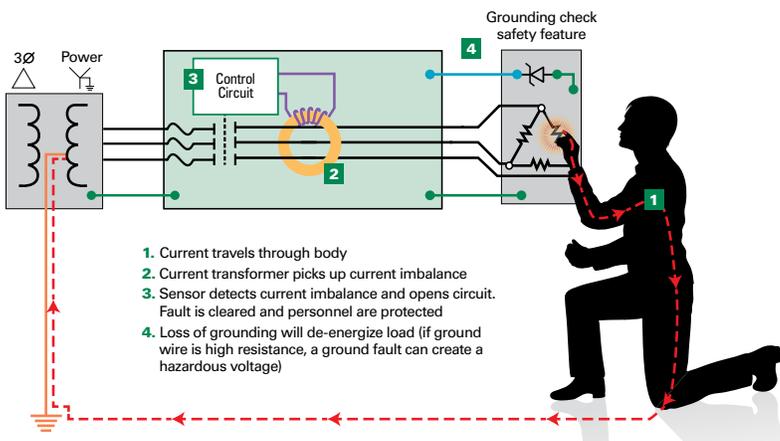


Typical Applications for Industrial Shock Block SB6100

The SB6100 is installed in-line between incoming power (main circuit breaker) and the load. The open-chassis SB6100 can be installed in electrical equipment. The enclosed version is typically wall-mounted but can also be made mobile with the Industrial Shock Block Cart.

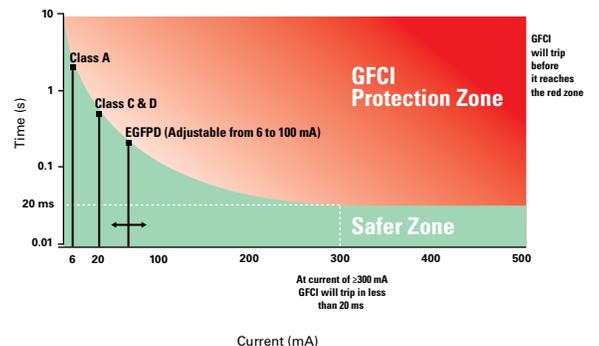
How the Industrial Shock Block Works

The SB6100 detects leakage current and interrupts the circuit, significantly reducing or eliminating the shock potential. One key part of the additional safety features is that the SB6100 also monitors the ground wire from the SB6100 to the load for continuity. If the wire is broken or becomes loose, the SB6100 will signal an alarm and interrupt power.



Shock Block SB6100 Special-Purpose GFCI Protection Curve

The UL 943 inverse-time curve allows momentary transient conditions to enable operations in real world installations. The boundary between the green and the red zone defines the maximum trip time allowed by UL 943. Therefore, for any given fault current, the device must operate before that time is exceeded to prevent dangerous current from flowing through the body.



The Industrial Shock Block Cart was designed to add mobility, allowing you to move the unit wherever it is needed. The cart is used with the enclosed model only.



Ordering Information

SB6100 Industrial Shock Block

Available for voltages from 208 to 600 V and a maximum full load current of 100 A.



ORDERING NUMBER	VOLTAGE (V)	TRIP LEVEL (mA)	UL CATEGORY/CLASS
SB6100-00x-0	208	20 (Fixed)	UL 943C Class C special-purpose GFCI
SB6100-10x-0	240		
SB6100-20x-0	480		
SB6100-30x-0	600	6, 10–100 in increments of 10	UL 943C Class D special-purpose GFCI
SB6100-01x-0	208		
SB6100-11x-0	240		
SB6100-21x-0	480		
SB6100-31x-0	600	6 (Fixed)	UL 943 Class A GFCI
SB6100-02x-0	208		

Note: x = 0 for open-chassis models and 1 for enclosed models. All models have CSA certification.

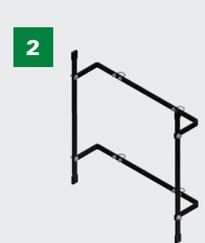
Accessories

1. AC6000-CART-00 Industrial Shock Block Cart

Cart offers mobility, allowing you to move the Industrial Shock Block wherever it is needed.



AC6000-CART-00



AC6000-MNT-00

2. AC6000-MNT-00 Industrial Shock Block Mounting Frame

Sold separately for mounting the Industrial Shock Block to a cart or wall. Included with AC6000-CART-00.



AC6000-OPI-00



SE-TA6

3. AC6000-OPI-00 Operator Interface

Shows unit status, alarm types, % of leakage current and also allows for test and reset capabilities. Included with all models.

4. SE-TA6 Termination Assembly

Termination assembly with terminals and mounting holes.



SE-TA6-SM



1N5339B



SE-TA6ASF-WL

5. SE-TA6-SM Stud-Mount Termination Assembly

Ground-check termination for submersible pumps.

6. 1N5339B Termination Device

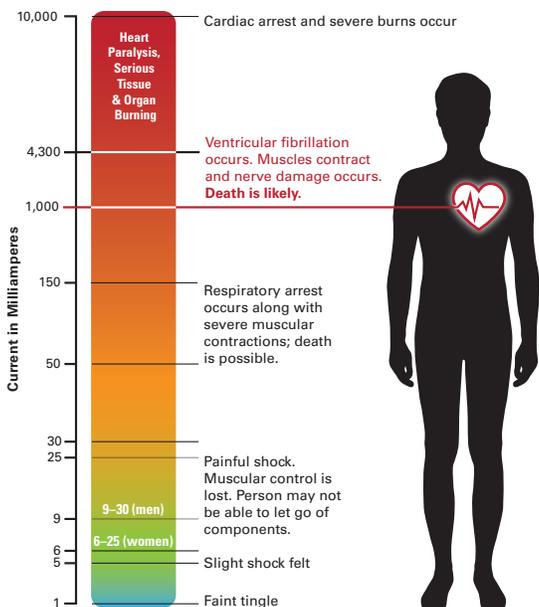
Axial-lead ground-check termination, included with SB6000 series.

7. SE-TA6ASF-WL Termination Assembly

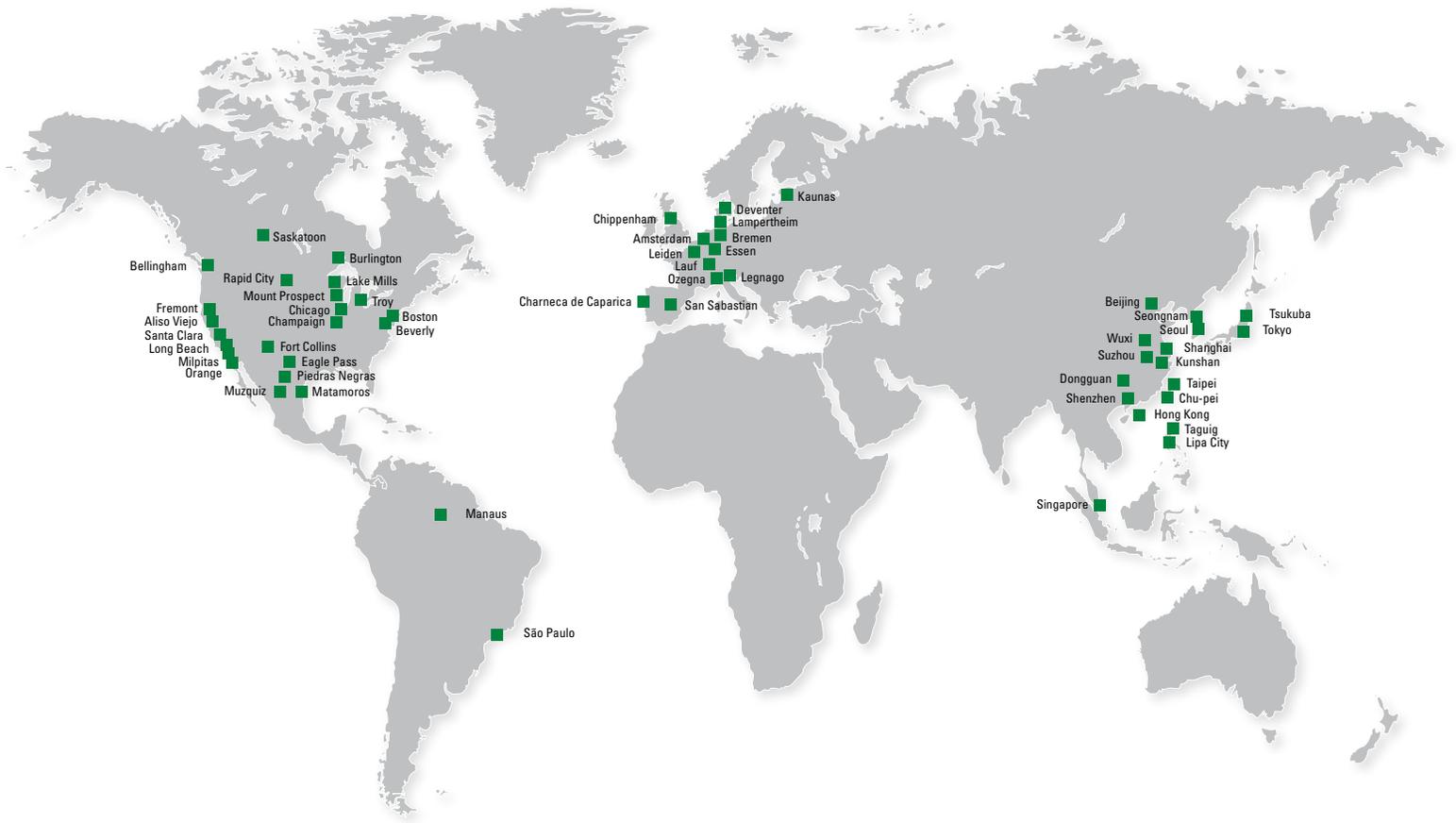
Compact 12 W ground-check termination assembly with convenient mounting holes and wire leads.

ACCESSORIES	REQUIREMENT
AC6000-CART-00	Optional
AC6000-MNT-00	Optional
AC6000-OPI-00	Included
SE-TA6	Optional
SE-TA6-SM	Optional
1N5339B	Included
SE-TA6ASF-WL	Optional

Physiological Effects of 50/60 Hz Current Flowing Through the Body



LOCAL RESOURCES FOR A **GLOBAL** MARKET



Littelfuse.com/ShockProtection

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.

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