
Littelfuse®
Expertise Applied | Answers Delivered
GFCI AND SPGFCI
FOR COMMERCIAL, INDUSTRIAL,
AND RESIDENTIAL APPLICATIONS
Industrial
SHOCK BLOCK®
LITTELFUSE® Products

Shock Protection
for Larger Loads and Higher Voltages

1. NEMA 4X & IP69K Rated Enclosure
Prevents access to hazardous parts and provides protection against water, humidity and corrosion.

2. Lockable Latch
Allows for a tamper resistant installation so that settings can only be changed by authorized personnel.

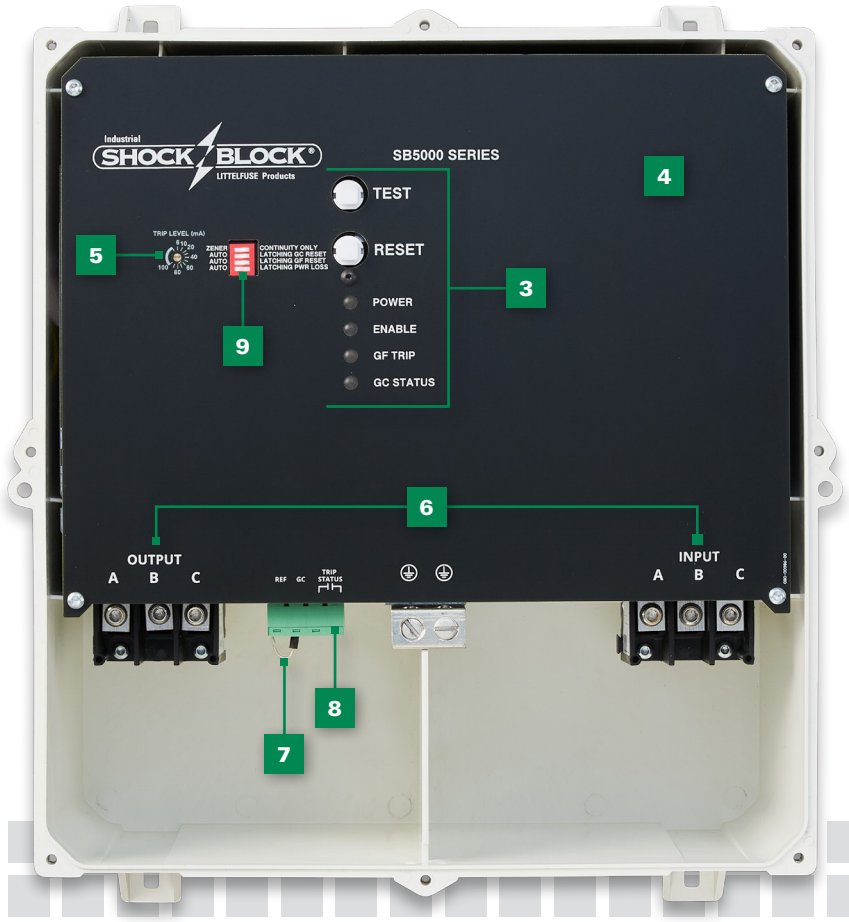
3. Hygenic Stainless Steel Enclosure
The 10 degree sloped top and FDA compliant silicone gasket facilitate sanitation in food processing facilities.

The Shock Block® SB5000

The Industrial Shock Block SB5000 series is a personnel protection device designed to meet the requirements for GFCIs and special-purpose GFCIs defined by UL 943 and UL 943C, and:

- Protects personnel from electrical shock where standard GFCI breakers and receptacles are not available
- Offers an comprehensive solution to detect leakage current and isolate electrical hazards to prevent fatal shocks from occurring
- Monitors the continuity of the ground circuit to isolate electrical hazards before they lead to shock events
- 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

Inside view of SB5100



3. Operator Interface
Shows unit status, alarm types and also has TEST and RESET capabilities.

4. 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.

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

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

7. Ground Check
Monitors continuity of ground wire between Shock Block and load. Built-in on all SB5000 models for proactive protection.

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

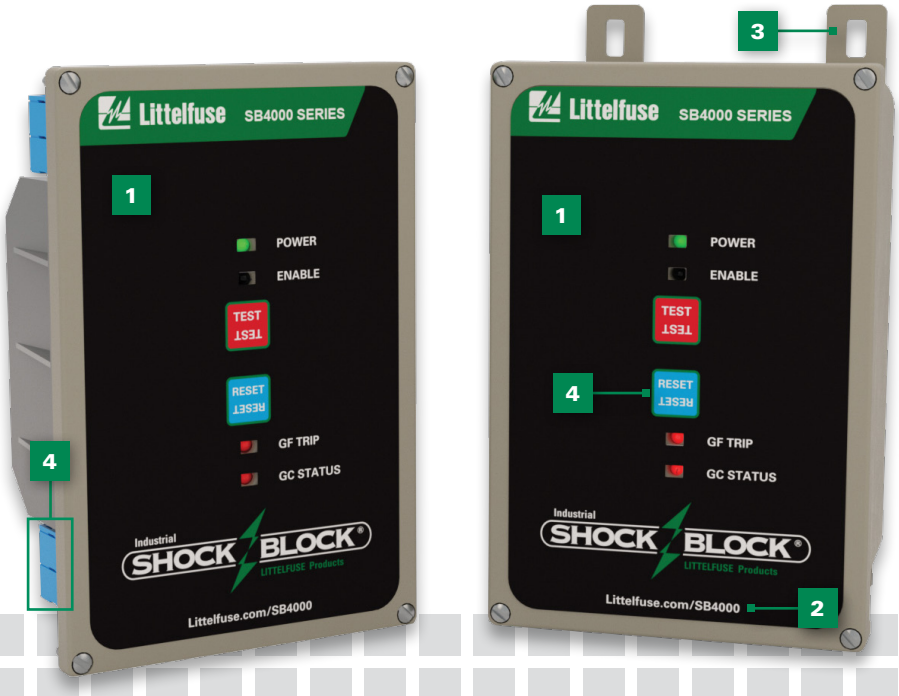
9. Flexible Configuration
Selectable manual reset or auto-reset for brownout, power-up, and ground monitor interruptions to fit plant safety protocols

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

The SB5000 meets all UL 943 and 943C requirements and more:

- Reliable performance
  - 85%, 100%, and 110% of the rated voltage
  - -35 °C (-31 °F) to +66 °C (+151 °F)
- Leakage-current return path – ground-wire monitor
- SCCR of 10 kA for 32 and 60 A models, and 50 kA for 80 and 100 A models
- Environmental considerations
  - NEMA 4X and IP69K rated enclosure
- UL 943 inverse time trip curve
- UL 943 fixed trip level (GFCI 6 mA)
- UL 943C fixed trip level (SPGFCI 20 mA)

Shock Protection
for Lighter Loads



1. NEMA 4X, IP69K, and Outdoor Rated
Prevents access to hazardous parts and provides protection against water, humidity and corrosion.

2. One part number to accommodate various system voltages and configurations
- 2P, 3P, 2P+N, 3P+N
- 208 or 240 V
- Manual or auto-reset
- 30A branch circuit applications and below

3. Space-saving Design
Mounting feet are adjustable and there are no flying leads to take up precious wall space. Knockouts can be placed where you want them.

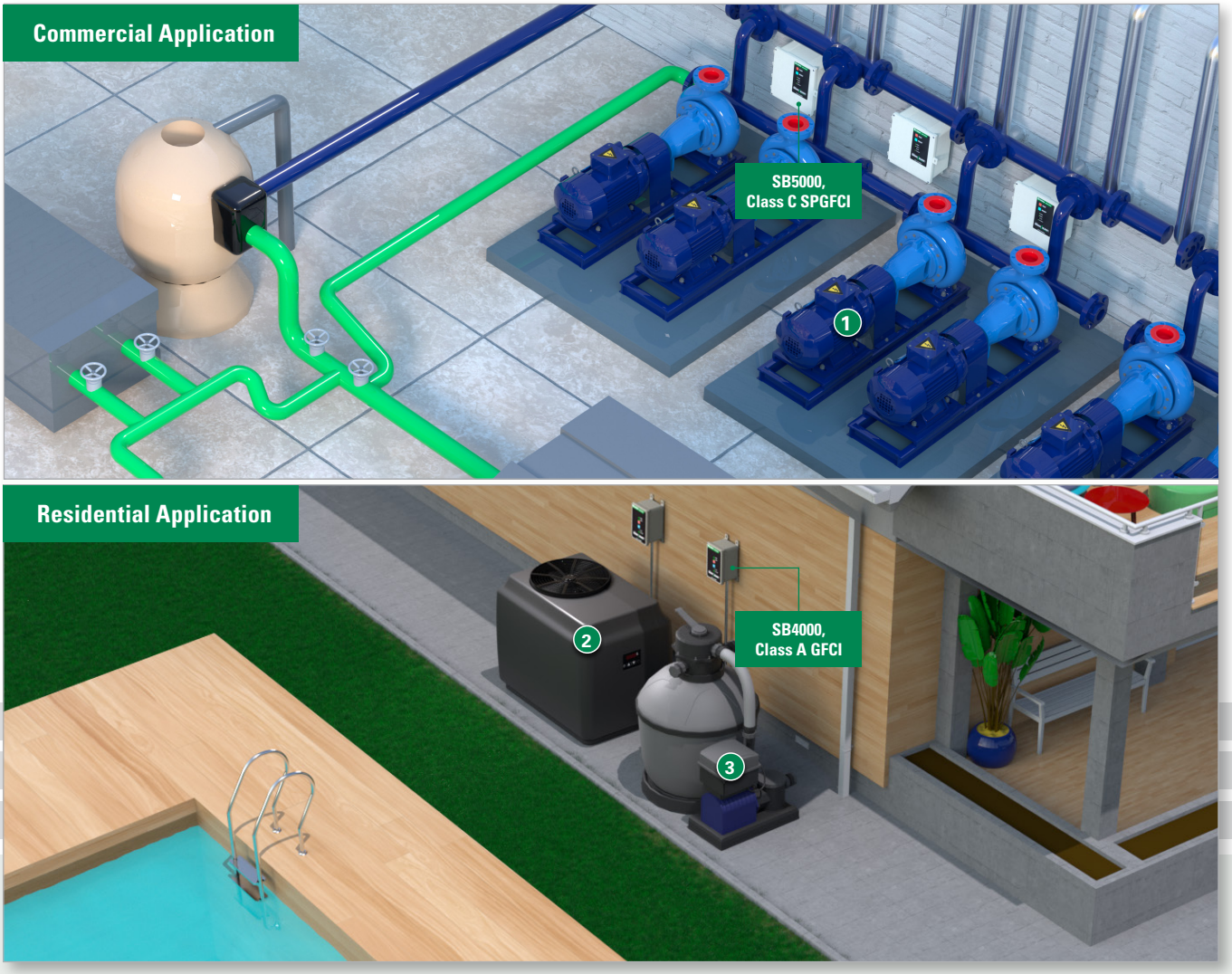
4. Quick Installation and Configuration
Screwless terminal blocks make wiring fast and easy. Selectable manual reset or auto-reset for brownout and power-up to fit any plant safety protocols.

The Shock Block® SB4000

The Industrial Shock Block SB4000 series is a personnel protection device designed to meet NEC 210.8 and 680.5 requirements in new construction and retrofit projects.

- Protects personnel from electrical shock where standard GFCI breakers and receptacles are not available
- Fixed 6 mA (UL 943) trip level for industrial, commercial, and residential loads on 30 A circuits
- UL 943 inverse time trip curve and advanced digital filtering protects people while eliminating nuisance trips due to harmonics
- Equipped with conformally coated circuit boards to protect against corrosion and moisture
- Continuous automatic self-test checks unit health and will trip if there's an internal failure

Shock Block
in Pool and Spa Applications



1 Circulation Pump 2 Heater 3 Filter Pump

Common Appliances in Pool and Spa

The combination of people, water, and electrical equipment can create unsafe conditions that are ripe for electrical shock events. For this reason swimming pools, fountains, hot tubs, and splash pads must use Class A GFCIs or Class C SPGFCIs to ensure protection.

The equipment - motors, pumps, heaters, lighting systems, receptacles, and lifts - must comply with Section 680.5 of the NEC. If existing pool pumps are repaired or replaced, the branch circuit must be updated with proper GFCI/SPGFCI protection as well per 680.21(D) of the 2020 NEC.

Shock Block
in Food & Beverage Processing

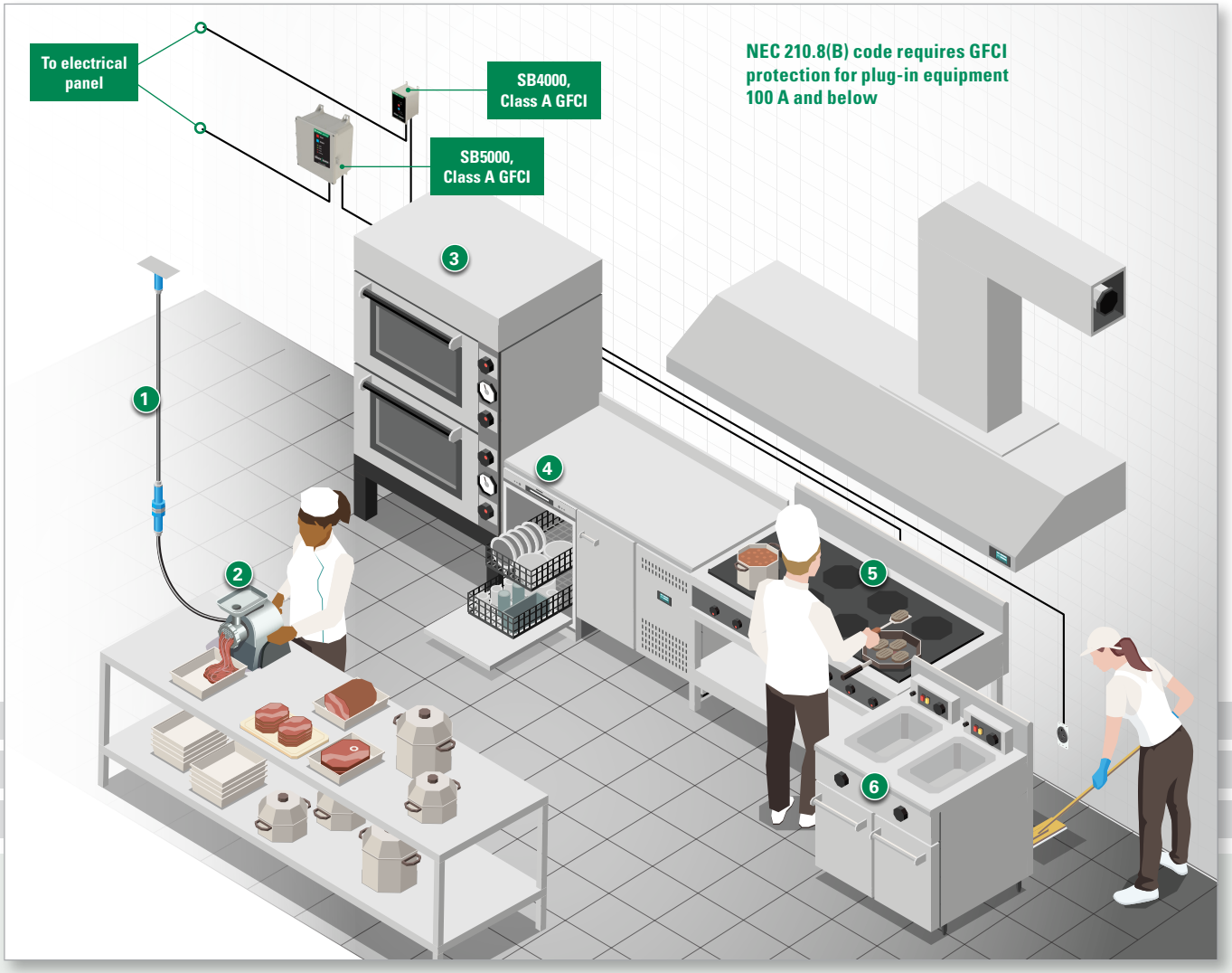
1 Bandsaw 2 Mixing/Grinding Appliances 3 Drop-Down Receptacles for Prep 4 Conveyor

Common 3-Phase Loads in Food Manufacturing

In food and beverage processing, the environment is similar to the kitchen, except with even larger loads, harsher wash down requirements, and even higher voltages. So the cables for all the heavy portable equipment are prone to wear and tear, the cable couplers are more susceptible to water ingress from the wet environment, and the shock hazards are just as lethal at the higher industrial voltages.

The SB5000's NEMA 4X and IP69K rated enclosures allow for protection and operation out on the production floor instead of complicated installations in dry electrical rooms. Utilizing the ground check feature available on every model of the Shock Block, is a proactive way to isolate the hazard caused by damaged cords and plugs before someone gets shocked.

Shock Block
in Commercial Kitchens



1 Drop-Down Receptacles for Prep
2 Mixing/Grinding Appliances
3 Electric Oven/Pizza Oven
4 Dishwasher
5 Electric Range
6 Deep Fryer

Common 208 V Appliances in Commercial Kitchens

In commercial kitchens, the combination of a wet environment, stainless steel equipment and conductive surfaces creates a situation where shock is more likely to occur. Cooking equipment must be movable to meet sanitation standards, requiring appliances to be connected via plug and cord. Flexible cables are prone to wear and tear, and when the loads get larger, so do the cables. Larger conductors are less flexible, and the portable equipment they supply are larger and heavier too.

While dishwashers are often permanently installed – they are always required to be GFCI protected because of their proximity to water, heat, and electricity. The NEC only requires GFCI protection for 60 A and below, but Littelfuse offers additional protection all the way up to 100 A.

Shock Block
in Residential HVAC

1 Condenser Unit

2 Mini-split Inverter

Common Appliances in Residential HVAC

Safety incidents and downtime increase costs; failing to provide Class A GFCI where required can jeopardize NEC compliance and inspections.

Make residential service safer and faster. SB4000 delivers Class A protection that stands up to weather, reduces nuisance trips, and helps you stay NEC-ready—on the 30 A, 208–240 V circuits HVAC runs on. If existing HVAC equipment is replaced, the branch circuit must be updated with proper GFCI/SPGFCI protection as well per 210.8(F) of the 2023 NEC.

Shock Block
in Commercial Garages, Service Bays, & Maintenance Shops

1 Wheel Balancers 2 Pressure Washing Equipment 3 Lifts 4 Compressors 5 Welders

Common 208 V Appliances in Garages, Service Bays, & Maintenance Shops

In Commercial Garages, Service Bays, and Maintenance Shops, the frequent use of portable equipment and the everchanging environment to accommodate different tasks can create situations where shock is more likely to occur. With so much portable equipment, and each worker focused on the task in front of them, leakage current from damaged cords and cables can present itself to those unsuspecting personnel.

For welding applications if the "working ground" lead is damaged or not setup properly then welding current will take alternate paths through facility structure, ground conductors, and conduit fittings. When this stray current runs through conduit or control panels, it causes the conductors to heat up and melt insulation. Use the SB5000's built-in ground monitoring to make sure the effective ground-fault current path stays intact and proactively prevents future shock hazards from occurring.

Safeguarding your people in other **Wet Environments**

GFCIs AND SPECIAL-PURPOSE GFCIs ARE VITAL WHERE PEOPLE, ELECTRICAL EQUIPMENT, AND WATER ARE PRESENT

Industrial SHOCK BLOCK® LITTELFUSE® Products

1. Waste Water Facilities
2. General Manufacturing
3. Movie Sets
4. Amusement Parks/Swimming Pools
5. Fountains
6. Oil and Gas
7. Mining
8. Greenhouses

Success Stories

Commercial Kitchens

One of the top fast-food chains in America dedicated to a people-first workplace, uses five Shock Block GFCIs per location. When the NEC updated 210.8(B) requiring shock protection on three-phase 208 V plug-in equipment 100 A and below, the company didn't hesitate to add the protection. To them, this was more than code compliance. The Shock Block provides invisible shock protection to workers ensuring their safety. That's a good recipe for business.

Food & Beverage Processing

A global food manufacturer with a goal to send everyone home safe from work every day uses Shock Block GFCI as a failsafe method to prevent electrical shock and eliminate risk to workers. In their manufacturing process, they use stainless equipment that is subject to frequent wash downs. The combination of electricity, metal, and water is a recipe for dangerous electrical incidents. Safety training and proper use of PPE are stressed, but there's a still a risk of human error. This manufacturer uses the engineering control, SB5000, to remove the risk of human error and keep workers safe.

Automotive Service Garages

When you have over 400 service stations nation-wide and growing, keeping business and the cars they service running is critical. Service garages are vulnerable because sharp tools used can damage cords and stray currents from welding can heat up conduit and melt conductors inside. This leads to leakage currents and compromised ground conductors—a hazardous situation. This partner was an early adopter when the NEC 210.8(B) required GFCI protection for any plug and cord equipment that is 208 V three-phase 100 A or below. They use 6 Shock Block GFCI for each location to not only meet code, but also drive a safer workplace.

Television and Film Production

The Rental Shock Block GFCI was designed for the motion picture, television, and film industry. For film crews and cast, our high current rental GFCI provides the ultimate protection for people and equipment working in dangerous environments where electricity must coexist with water. Winner of the 1999 Academy Award® for Scientific and Engineering Achievement and is currently being used on several popular productions.

General Manufacturing

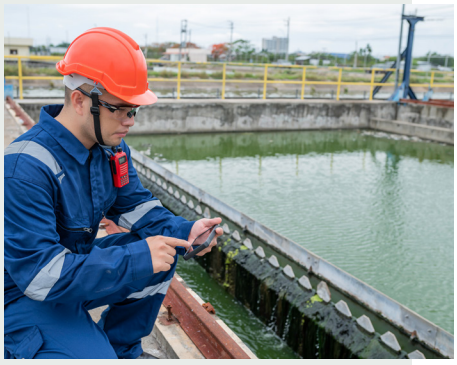
When industrial equipment rolls over electrical cords, electrical shock incidents become a risk. A global manufacturer of window treatments took a proactive approach to ensure worker safety so they wouldn't have to face an electrical injury or fatality. The manufacturer went above the minimum code requirement of PPE alone to install the SB5000 for three-phase systems, where the line-to-line voltage is 480 V or less, as an engineering control to proactively protect personnel from shock.

Greenhouses

The indoor farming market is rapidly growing to meet the ever-increasing food demand. The horticultural lighting equipment and watering systems used in these applications have flexible cords with connectors and plugs. This setup is common in the industry and now requires GFCI and SPGFCI protection to safeguard workers from electrical shock. Littelfuse Shock Block is the preferred solution for a system integrator that has been servicing the greenhouse industry for multiple generations.

Fountains and Water Parks

When the most visited vacation resort in the world needed to comply with new NEC updates requiring GFCI protection for fountains they contacted Littelfuse. The Shock Block is installed on 250 V 60 A outlets around the resort to keep little—and big-kids safe while they splash in the fountains on hot summer days.

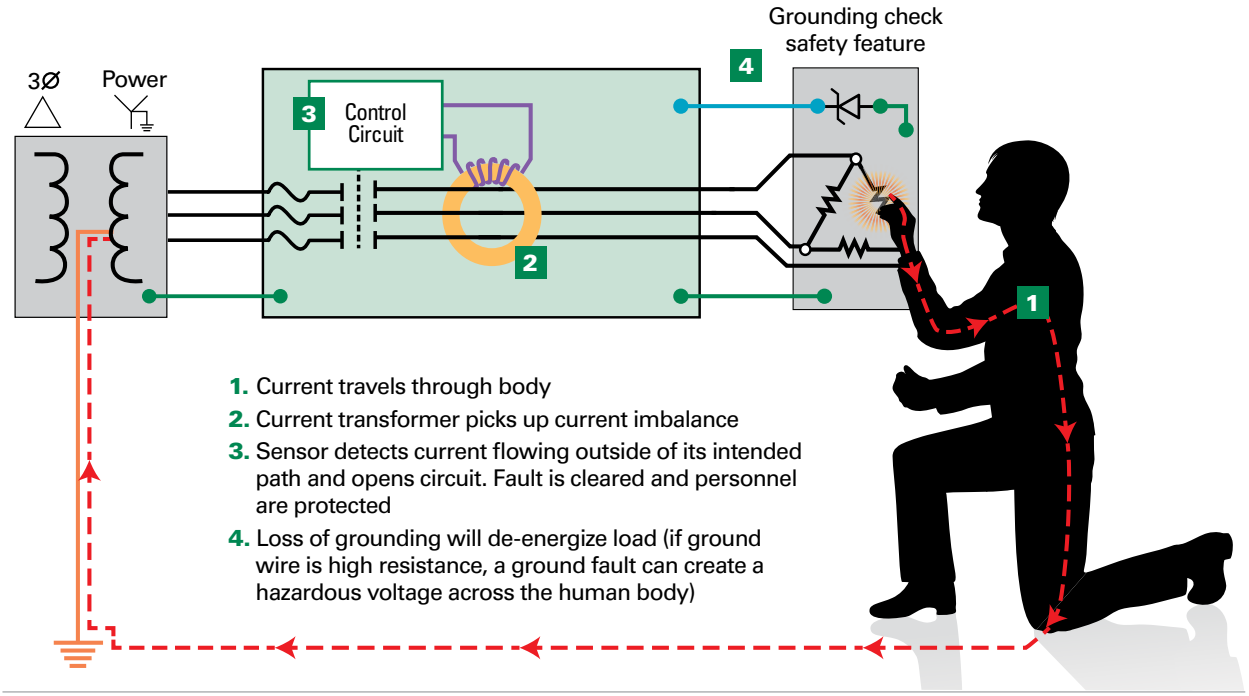


Water/Wastewater

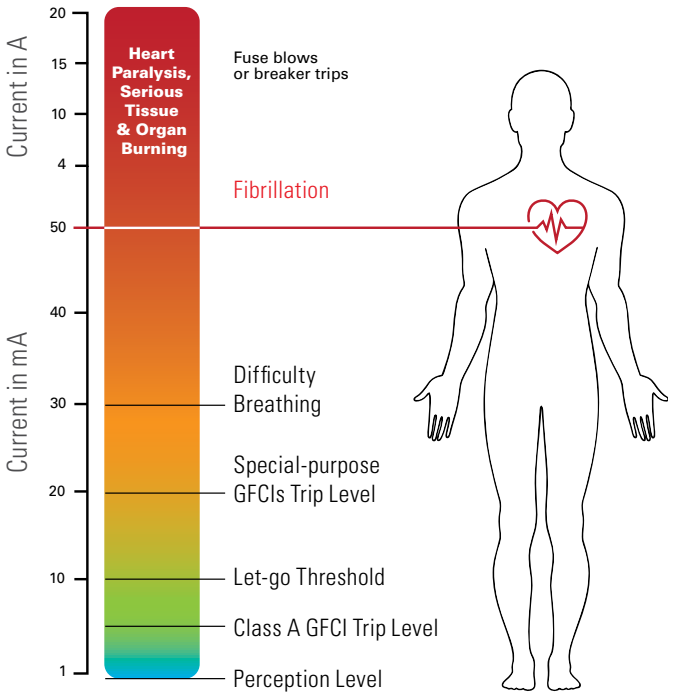
A municipal water utility company that supplies water to more than three million residents wanted to protect its workers from shock hazards. The facility has two tanks the size of Olympic swimming pools. The tanks must be manually cleaned requiring workers to enter while water is still present, and the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

How the Shock Block Works

The Shock Block 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 Shock Block also monitors the ground wire from the Shock Block to the load for continuity. If the wire is broken or becomes loose, the Shock Block will signal an alarm and de-energize the circuit in less than half of a second.

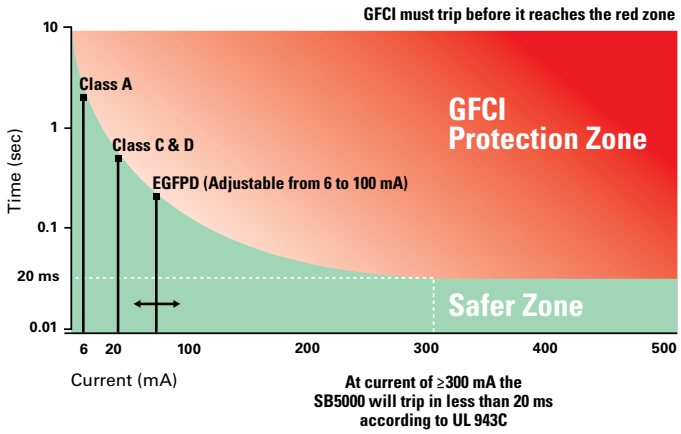


Physiological Effects of 50/60 Hz Current Flowing Through the Body



Shock Block SB5000 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.



Technical Specifications

SB5000 Industrial Shock Block

Voltage Rating	208 V, 480 V, 600 V
Current Rating	32, 60, 80, or 100 A
System Type	Three-phase, 3-wire (no neutral), 60 Hz; Single-phase, 2-wire (no neutral), 60 Hz; Single-phase, 3-wire (with neutral), 60 Hz for EGFPD versions only
Short-Circuit Current Rating	10,000 A (for SB5032 and SB5060); 50,000A (for SB5080 and SB5100)
Trip Level Settings	Fixed at 6 mA (Class A models); Fixed at 20 mA (Class C/D models) Selectable 6, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 mA (EGFPD models)
Trip Time Setting	Inverse time curve according to UL 943
Ground Monitoring Circuit	Selectable short or Zener termination; Fail-safe; CSA M421 compliant
Enclosure	IP 69K and NEMA 4X (Outdoor), Polycarbonate, Lockable
Operating Temperature	-35 °C (-31 °F) to 40 °C (104 °F), up to 66 °C (151 °F) with derating
Dimensions	For 32 A and 60 A: **H** 285.6 mm (11.25 in.); **W** 244.4 mm (9.62 in.); **D** 119.6 mm (4.71 in.)
	For 80 A and 100 A: **H** 383.4 mm (15.09 in.); **W** 327.1 mm (12.88 in.); **D** 137.4 mm (5.5 in.)

Ordering Information

Polycarbonate Enclosure

*GFCI (UL 943 CLASS A)		
6mA Fixed Trip Level		
Load Rating (A)	Voltage (V)	Ordering Number
32	208	SB5032-021-0
60	208	SB5060-021-0
80	208	SB5080-021-0
80	240	SB5080-121-0
100	208	SB5100-021-0
100	240	SB5100-121-0

* Most Popular Models

SPGFCI (UL 943C CLASS C)		
20mA Fixed Trip Level		
Load Rating (A)	Voltage (V)	Ordering Number
32	208	SB5032-001-0
32	480	SB5032-201-0
60	208	SB5060-001-0
60	480	SB5060-201-0
80	208	SB5080-001-0
80	240	SB5080-101-0
80	480	SB5080-201-0
100	208	SB5100-001-0
100	240	SB5100-101-0
100	480	SB5100-201-0

SPGFCI (UL 943C CLASS D)		
20mA Fixed Trip Level		
Load Rating (A)	Voltage (V)	Ordering Number
32	600	SB5032-301-0
60	600	SB5060-301-0
80	600	SB5080-301-0
100	600	SB5100-301-0

EGFPD (UL 943/1053 SELECTABLE)		
Adjustable Trip Level 6, 10-100mA		
Load Rating (A)	Voltage (V)	Ordering Number
32	208	SB5032-011-0
32	480	SB5032-211-0
32	600	SB5032-311-0
60	208	SB5060-011-0
60	480	SB5060-211-0
60	600	SB5060-311-0
80	208	SB5080-011-0
80	240	SB5080-111-0
80	480	SB5080-211-0
80	600	SB5080-311-0
100	208	SB5100-011-0
100	240	SB5100-111-0
100	480	SB5100-211-0
100	600	SB5100-311-0

Stainless Steel Enclosure

GFCI (UL 943 CLASS A)		
6mA Fixed Trip Level		
Load Rating (A)	Voltage (V)	Ordering Number
32	208	SB5032-022-0
60	208	SB5060-022-0

SPGFCI (UL 943C CLASS C)		
20mA Fixed Trip Level		
Load Rating (A)	Voltage (V)	Ordering Number
32	208	SB5032-002-0
32	480	SB5032-202-0
60	208	SB5060-002-0
60	480	SB5060-202-0

SPGFCI (UL 943C CLASS D)		
20mA Fixed Trip Level		
Load Rating (A)	Voltage (V)	Ordering Number
32	600	SB5032-302-0
60	600	SB5060-302-0

EGFPD (UL 943/1053 SELECTABLE)		
Adjustable Trip Level 6, 10-100mA		
Load Rating (A)	Voltage (V)	Ordering Number
32	208	SB5032-012-0
32	480	SB5032-212-0
32	600	SB5032-312-0
60	208	SB5060-012-0
60	480	SB5060-212-0
60	600	SB5060-312-0

Ordering Information (Continued)

Stainless Steel, Class II, Division 2 Enclosure

GFCI (UL 943 CLASS A)		
6mA Fixed Trip Level		
Load Rating (A)	Voltage (V)	Ordering Number
32	208	SB5032-023-0
60	208	SB5060-023-0

SPGFCI (UL 943C CLASS D)		
20mA Fixed Trip Level		
Load Rating (A)	Voltage (V)	Ordering Number
32	600	SB5032-303-0
60	600	SB5060-303-0

SPGFCI (UL 943C CLASS C)		
20mA Fixed Trip Level		
Load Rating (A)	Voltage (V)	Ordering Number
32	208	SB5032-003-0
32	480	SB5032-203-0
60	208	SB5060-003-0
60	480	SB5060-203-0

EGFPD (UL 943/1053 SELECTABLE)		
Adjustable Trip Level 6, 10-100mA		
Load Rating (A)	Voltage (V)	Ordering Number
32	208	SB5032-013-0
32	480	SB5032-213-0
32	600	SB5032-313-0
60	208	SB5060-013-0
60	480	SB5060-213-0
60	600	SB5060-313-0

Accessories

1. 1N5339B Termination Device (Included)
Axial-lead ground-check termination, included with SB5000 series.

2. SE-TA6 Termination Assembly (Optional)
Termination assembly with terminals and mounting holes.

3. SE-TA6-SM Stud-Mount Termination Assembly (Optional)
Ground-check termination for submersible pumps.

4. SE-TA6ASF-WL Termination Assembly (Optional)
Compact 12 W ground-check termination assembly with convenient mounting holes and wire leads.

5. AC5000-MNT-01
Stainless steel mounting hardware, 1" hygienic spacer with FDA compliant gasket, threaded, (kit of 4).

6. AC5000-MNT-02
Stainless steel mounting brackets, flat, (kit of 4).

7. AC5000-MNT-03
Stainless steel mounting brackets, 1" standoff/offset, (kit of 4).

Technical Specifications

SB4000 Industrial Shock Block

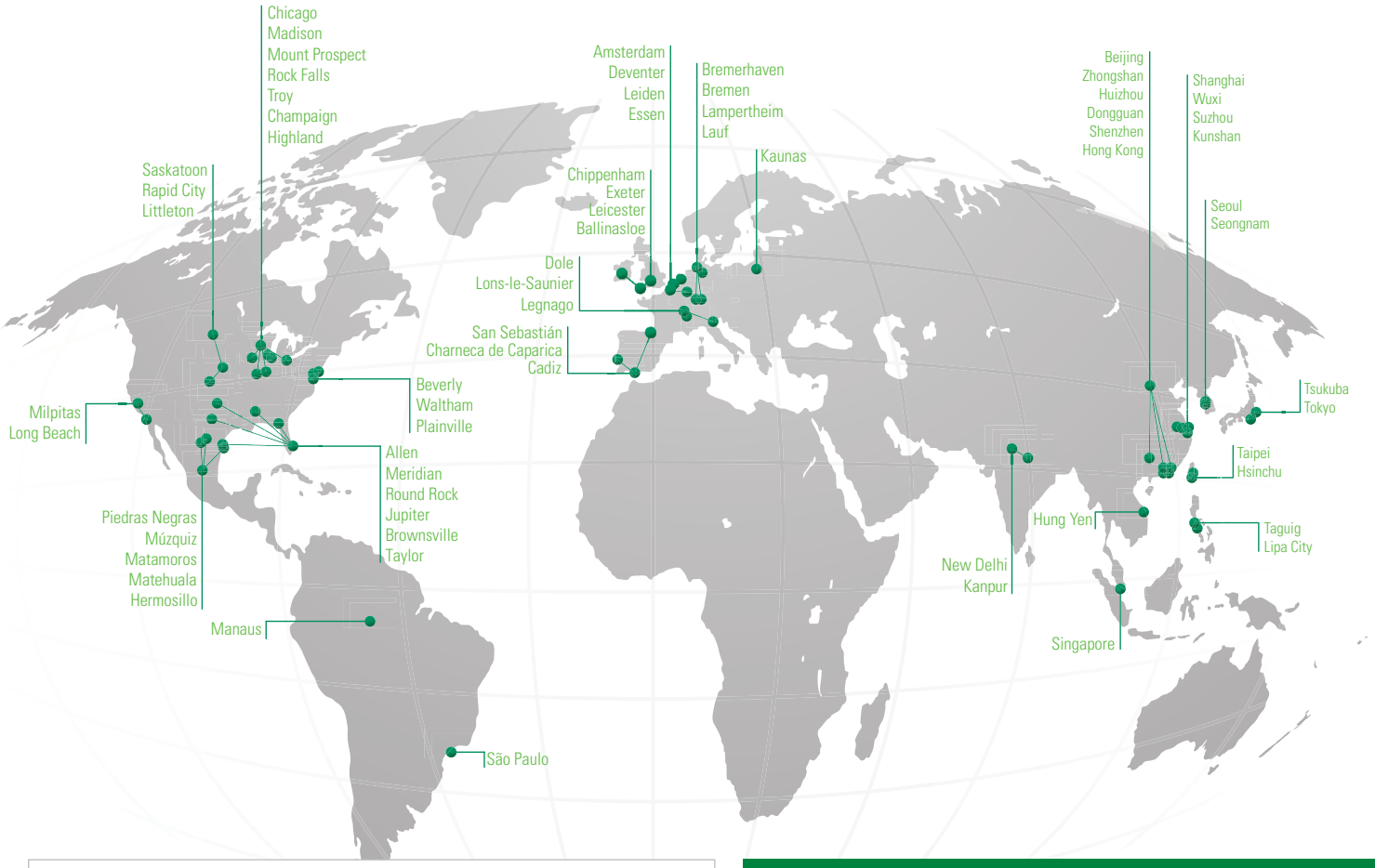
Voltage Rating	208/120 V, 240/120 V, 208 V, 240 V
Current Rating	For use on 30 A branch circuits. Maximum continuous FLA of 26 A
System Type	Three-phase, 3-wire, 60 Hz; Three-phase, 4-wire, 60 Hz; Split-phase, 3-wire, 60 Hz; Single-phase, 2-wire, 60 Hz
Short-Circuit Current Rating	10,000 A
Trip Level Settings	Fixed at 6 mA (Class A models)
Trip Time Setting	Inverse time curve according to UL 943
Enclosure	Polycarbonate: IP 69K and NEMA 4X (Outdoor), Polycarbonate
Operating Temperature	-35 °C (-31 °F) to 40 °C (104 °F), up to 66 °C (151 °F) with derating
Dimensions	**H** 164.2 mm (6.47 in.); **W** 109.4 mm (4.31 in.); **D** 96.28 mm (3.79 in.) – with enclosure and mounting feet **H** 164.2 mm (6.47 in.); **W** 109.4 mm (4.31 in.); **D** 72.7mm (2.86 in.) – without enclosure

Ordering Information

Permanent Versions Include NEMA 4X & IP69K Rated Enclosure

GFCI (UL 943 CLASS A)			
6mA Fixed Trip Level			
Circuit Rating (A)	Voltage (V)	System Config	Ordering Number
30	208-240	2P+N, 3P+N	SB4030-521-00

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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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.

FORM PF137
Rev: 5-B-041726