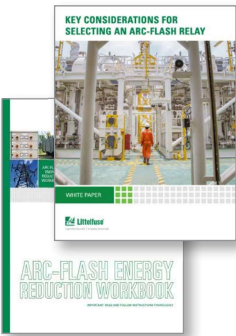


ARC-FLASH PROTECTION

Rapidly detects developing Arc-Flash incidents and sends a trip signal to interrupt power before significant damage occurs.

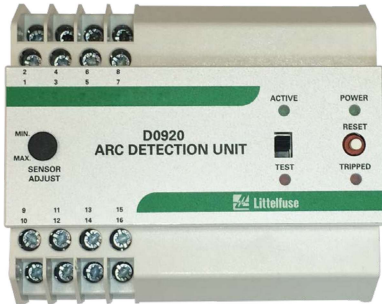
D0920	Arc Detection Unit	90
PGR-8800 Series	Arc-Flash Relay	91
AF0500 Series	Arc-Flash Relay	93
AF0100 Series	Arc-Flash Relay	95
A0220 Series	Light Sensor	96
PGA-1100	Diode Logic.....	97



For More Information...
and to download our White Paper on
Key Considerations for Selecting an
Arc-Flash Relay or our Arc-Flash Energy
Reduction Workbook, visit
[Littelfuse.com/ArcFlash](https://www.littelfuse.com/ArcFlash)

D0920 ARC DETECTION UNIT

Arc Detection Unit



Description

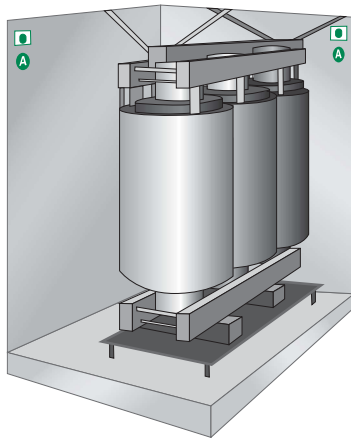
The D0920 Arc-Flash relay provides a simple and cost effective solution for Arc-Flash monitoring. Two light sensors can be connected directly to one relay.

Light Sensors react to light and have a 180° detection zone. Sensors are supplied with 10 or 15 m of cable. 1-2 sensors are recommended per cubicle or drawer.

Installation Diagram

5

ARC-FLASH PROTECTION



Install sensors in line of sight to possible arc faults.

Ordering Information

ORDERING NUMBER	DESCRIPTION
D0920.0060	230 V AC +15, -30%, remains powered on after trip, slide switch instead of key switch, electronic reset button instead of mechanical reset button, CCC approved

Features & Benefits

FEATURES	BENEFITS
Compact module	Fits into wide range of Arc-Flash applications
Trip time <1 ms	Limits Arc-Flash damage and risk of injury
Two optical sensor cable lengths	Point sensors with 10 or 15 m of cable
Inputs for two sensors	Single Arc-Flash relay can monitor 2 sensors
Adjustable light sensitivity	Allows operation in bright environments and maximum sensitivity in dark environments
Service mode	Allows relay and sensor test without tripping system

Accessories

A



A0220 Light Sensors

Line-of-sight light sensor detects an arc as small as 3 kA within a 2-m half-sphere. Available with 10 or 15 m cable.



PGA-1100/D1100 Diode Logic Unit

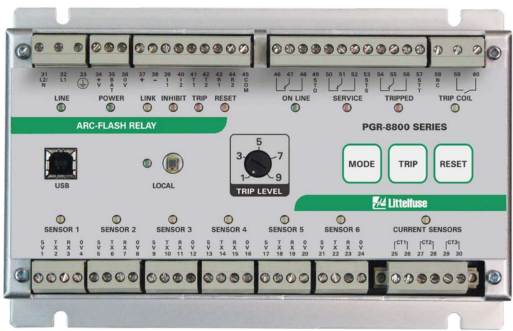
For tripping one circuit breaker with multiple D0920 Relays

Specifications

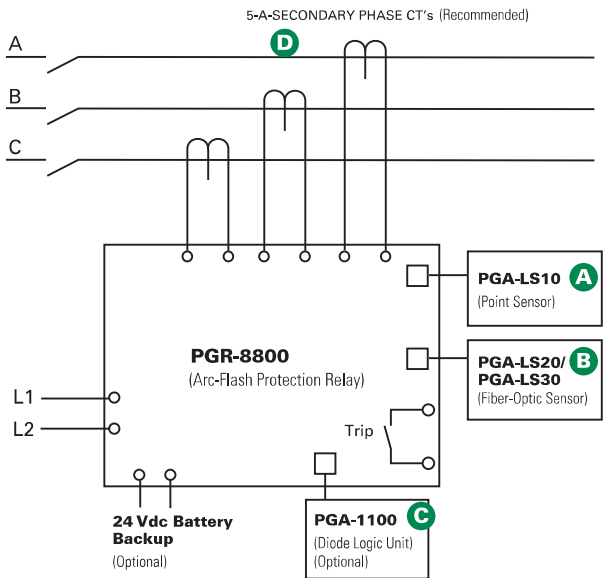
Supply Voltage	230 V AC +15,-30%
Thyristor Output	325 V DC from charged capacitor, nominal energy 3.5 J
Sensitivity	Adjustable 2 - 24 klux
Number of Sensors	Max. 2
Response Time	Less than 1 ms
Power Consumption	3.5 VA
Ambient Temperature	-25°C to 70°C
Dimensions	H 90 mm (3.5"); W 105 mm (4.1"); D 61 mm (2.4")
Certification	CE, CCC

PGR-8800 SERIES (D1000)

Arc-Flash Relay



Simplified Circuit Diagram



For detailed wiring diagram, see adjacent page.

Ordering Information

ORDERING NUMBER	DESCRIPTION
PGR-8800-00 (UL, CE, CSA, RCM)	Arc-Flash Relay
PGR-8800-00-CC (UL, CE, CSA, RCM)	Arc-Flash Relay, Conformally Coated
ACCESSORIES	REQUIREMENT
PGA-LS10	Required*
PGA-LS20, PGA-LS30	Required*
PGA-1100	Optional
Current Transformer	Recommended

*At least one sensor is required. However, the exact number of sensors for proper coverage depends on the application.

Description

The PGR-8800 Series is a microprocessor-based relay that limits arc-fault damage by detecting the light from an arc flash and rapidly tripping. Phase-current-transformer inputs are provided for current-constrained arc-flash protection and, when so equipped, a programmable definite-time overcurrent function can be enabled. An optical sensor on the PGR-8800 and adjustable trip level reduce the chance of nuisance tripping by setting a threshold for ambient light. Sensors, inputs, and connections are monitored to ensure fail-safe operation. A secondary solid-state trip circuit provides a redundant trip path. A USB port is used for configuration and access to event logs and graphs.

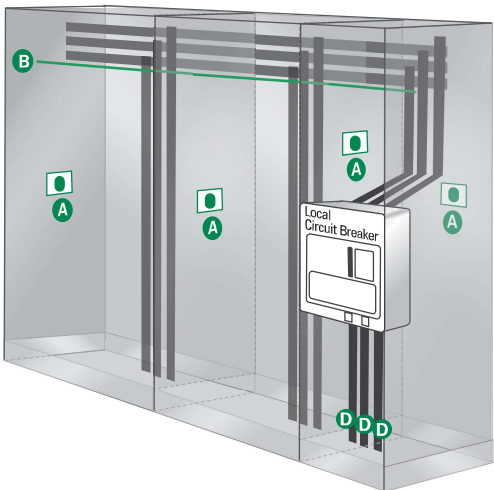
Optical Sensors

The PGR-8800 accepts both PGA-LS10 and PGA-LS20/PGA-LS30 optical sensors, designed to collect light over a wide angle and with high sensitivity. For fast fault location, front-panel and sensor LED's indicate sensor health and which sensor detected an arc fault.

Sensor Placement

The PGR-8800 Arc-Flash Relay and sensors are easily installed in retrofit projects and new switchgear with little or no re-configuration. Even elaborate systems with multiple power sources take minutes to configure using the relay's built-in USB interface software.

Generally, it is recommended to mount 1 or 2 sensors per cubicle to cover all horizontal and vertical bus bars, breaker compartments, drawers, and anywhere that there is potential for an arc-fault. Threading a fiber-optic sensor through the cabinets and in areas where point-sensor coverage is uncertain results in complete coverage and an added level of redundancy. Even if policy is to only work on de-energized systems, all maintenance areas should be monitored to prevent potential damage and additional cost. At least one sensor should have visibility of an arc fault if a person blocks the other sensor(s).

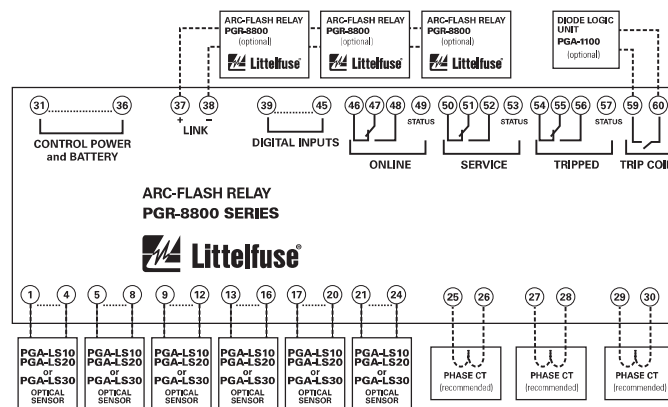


PGR-8800 SERIES (D1000)

Features & Benefits

FEATURES	BENEFITS
Arc-Flash trip time <1 ms	Limits arc-flash damage and risk of injury
Multiple sensors (up to 24)	Single module can monitor 6 sensors. Up to 4 PGR-8800 units can be linked into one system
Fail-safe system	Continuous monitoring of optical sensors and inputs ensures protection
Redundant trip circuit	Solid-state backup arc-detection circuit adds a second layer of safety
Adjustable light sensitivity	Allows for operation in bright environments and maximum sensitivity in dark environments
LED indication (on unit and each sensor)	18 LEDs provide at-a glance status for module and I/O state
Current detection	Phase-CT inputs provide overcurrent protection and prevent nuisance trips
Optical detection	Point and fiber-optic sensors provide wide detection area with sensor health trip indication
Digital inputs (6)	Two each: remote trip, inhibit, and reset inputs
Service mode	Allows for system test without tripping
Trip coil contact	Solid-state 24-300 Vdc/24-300 Vac IGBT
Indication contacts	Form C and status outputs
USB interface	Data logging and configuration software uses a USB interface with no drivers or software installation
Built-in sensor	Can be used in single-sensor systems, as a seventh sensor, and for calibration
Universal power supply/Battery backup	100-240 Vac, 14-48 Vdc, or 110-250 Vdc supply accepted. Ability to charge and run off an external, user-supplied 24 Vdc battery
Data logging	On-board event recorder helps with system diagnostics
Modbus	Remotely view measured values, event records & reset trips
Upstream Tripping	Ability to trip upstream device if the local breaker fails to clear the fault

Wiring Diagram



Accessories

- A** **PGA-LS10 Point Sensor**
Line-of-sight light sensor detects an arc as small as 3 kA within a 2-m half-sphere. Sensor health and trip indication. Dimensions: See PGR-8800 Manual
- B** **PGA-LS20/PGA-LS30 Fiber-Optic Sensor**
360° light sensor for tricky installations with many shadows or to run along bus bars. Sensor health and trip indication. Dimensions: See PGR-8800 Manual
- C** **PGA-1100 Diode Logic Unit**
This module allows multiple PGR-8800 relays to trip the same breaker, for example an upstream or a tie-breaker. Dimensions: **H** 80mm (3.15"); **W** 20mm (0.79"); **D** 70mm (2.76")
- D** **Current Transformers**
Eliminate nuisance arc-flash trips and use for overcurrent protection.

Specifications

IEEE Device Numbers
Input Voltage
Dimensions
Optical Trip Settings
Current Trip Setting (A)
Indication Contact Mode
Trip Coil Voltage⁽¹⁾
Trip Coil Contact Mode
Redundant Trip Circuit
Input Monitoring
USB Interface
Trip, Reset, Service Buttons
Expandable System
Warranty
Mounting
Approvals

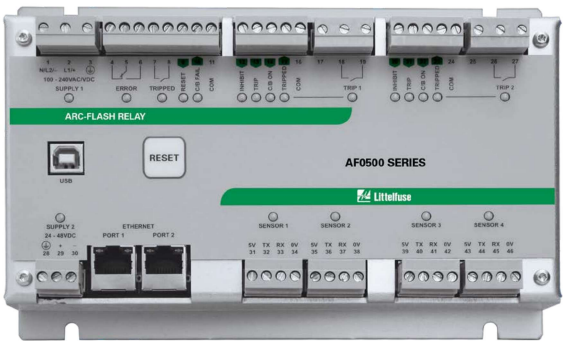
Overcurrent (50), Arc Flash (AFD)
100-240 Vac, 14-48 Vdc, and 110-250 Vdc
H 130 mm (5.1"); **W** 200 mm (7.9"); **D** 54 mm (2.1")
9-25 klux, 800 µs-20 s
Programmable
Fail-safe
24-300 Vdc, 24-300 Vac
Selectable fail-safe or non-fail-safe
Standard feature
Standard feature
Standard feature
Link up to 4 PGR-8800 units
5 years
Surface, DIN (with D0050 adapter clips)
UL, CE, CSA, RCM, FCC, DNV type approval, ABS type approval

NOTE (1) - Contact Littelfuse for trip coil voltages higher than 300 Vdc/Vac.

Littelfuse reserves the right to make product changes, without notice. Material in this document is as accurate as known at the time of publication. Visit Littelfuse.com for the most up-to-date information.

AF0500 SERIES

Arc-Flash Relay



Features & Benefits

FEATURES	BENEFITS
4 arc sensor inputs	Supports both point and fiber sensors
Arc-Flash trip time <1ms	Limits arc-flash damage and risk of injury
2 IGBT high speed trip outputs	Supports applications such as upstream breaker tripping or tie breaker tripping
Universal Power Supply	100-240 Vac, 24-48 Vdc, or 110-250 Vdc supply
Fail-safe system	Continuous monitoring of optical sensors and inputs ensures protection
LED indication (on unit and each sensor)	Trip and sensor status indicated both on relay and sensors
Discrete wire networking	Multiple AF0500 units can be interconnected to form a system
USB interface	Data logging and configuration software uses a USB interface with no drivers or software installation
Data logging	On-board event recorder for system diagnostics (2048 log lines)
Ethernet interface	Modbus® TCP communication

Ordering Information

ORDERING NUMBER	DESCRIPTION
AF0500-00	Arc-Flash Relay
AF0500-00-CC	Arc-Flash Relay, Conformally Coated

ACCESSORIES	REQUIREMENT
PGA-LS10	Required*
PGA-LS20, PGA-LS30	Required*
PGA-1100	Optional

Description

The AF0500 is a microprocessor-based arc-flash relay that limits arc-fault damage by detecting the light from an arc flash and rapidly tripping the feeder breaker. The unit is well suited for switchgear, transformer and power converter applications.

Sensors, inputs, and connections are health monitored to ensure fail-safe operation. A secondary solid-state trip circuit provides a redundant trip path. A USB port is used for configuration and access to event logs.

AF0500 includes an Ethernet interface and supports Modbus® TCP communication. Zone tripping, upstream breaker tripping and tie breaker tripping applications can be easily configured.

A number of control inputs allows interconnection of multiple AF0500 units to form a system.

Optical Sensors

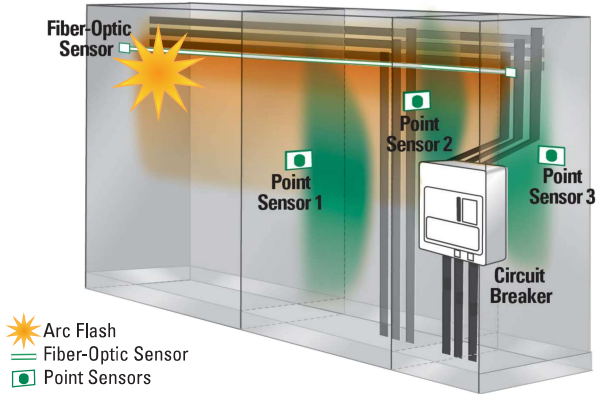
The AF0500 accepts both PGA-LS10 point sensors and PGA-LS20/PGA-LS30 fiber-optical sensors. Thus any combination of fiber or point sensors is supported.

For fast fault location, front-panel and sensor LEDs indicate sensor health and which sensor detected an arc fault.

Sensor Placement

The AF0500 Arc-Flash Relay and sensors are easily installed in retrofit projects and new switchgear with little or no re-configuration. Simple applications work straight out of the box with no need of PC configuration. More complex systems with multiple power sources are configured using the relay's built-in USB interface software.

Generally, it is recommended to mount 1 or 2 sensors per cubicle to cover all horizontal and vertical bus bars, breaker compartments, drawers, and anywhere that there is a risk for an arc fault. Threading a fiber-optic sensor through the cabinets and in areas where point-sensor coverage is uncertain results in complete coverage and an added level of redundancy. Even if policy is to only work on de-energized systems, all maintenance areas should be monitored to prevent potential damage and additional cost.

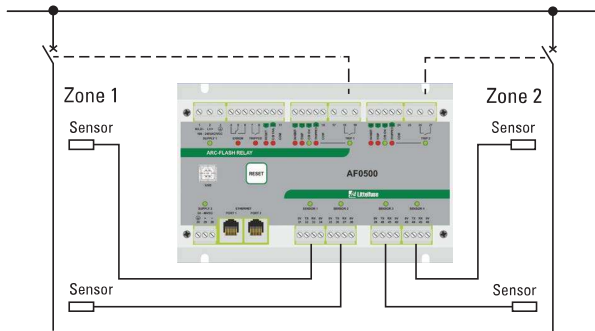


AF0500 SERIES

Applications

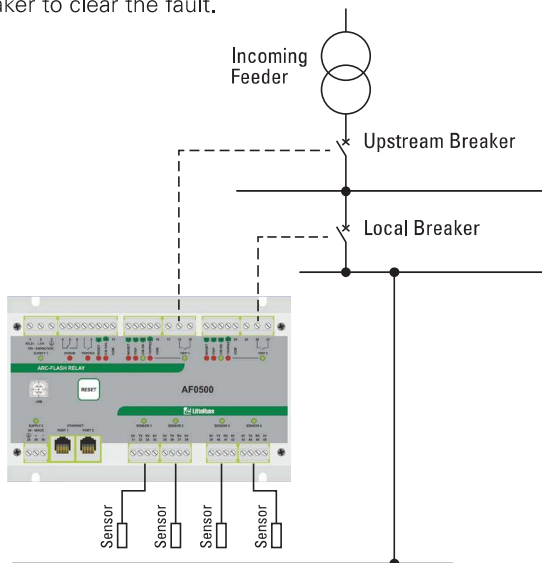
Zone Tripping

AF0500 can trip 2 separate zones. Sensors can be assigned to the zones individually through PC configuration.



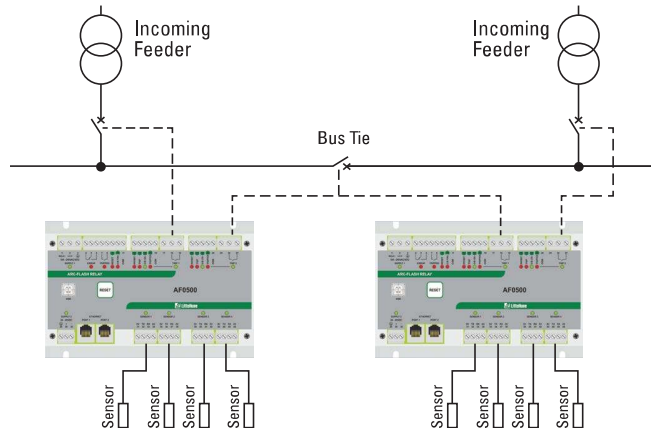
Upstream Breaker Tripping

In case of failure of the local circuit breaker to open, another trip command is sent after a short delay to an upstream breaker to clear the fault.



Tie Breaker Tripping

In case of an arc in one section of the switchboard, the AF0500 can trip both the incoming feeder and the tie breaker simultaneously. Thus the affected part of the switchboard is isolated from the non-affected part.



Accessories



PGA-LS10 Point Sensor

Line-of-sight light sensor detects an arc as small as 3 kA within a 2-m half-sphere. Includes Sensor health and trip indication.



PGA-LS20/PGA-LS30 Fiber-Optic Sensor

360° light sensor to run along bus bars. Sensor health and trip indication.



PGA-1100 Diode Logic Unit

This module allows multiple arc-flash relays to trip a common breaker, for example a tie-breaker.

Specifications

Power Supply

Universal

100 to 240 Vac (+10%, -15%) 50/60 Hz, 20 VA,
110 to 250 Vdc (+10%, -20%) 8 W

Low Voltage

Sensor Inputs

24 to 48 Vdc (+10%, -20%), 4 W
4 light sensor inputs for PGA-LS10, PGA-LS20
and PGA-LS30 sensors

Trip Outputs

2 IGBT switches

UL Rating

120/240 Vac, 1800 VA, 0.75 A maximum continuous,
125/250 Vdc, 138 VA, 0.75 A maximum continuous

Supplemental Rating

Make/Carry

30 A for 0.2s

Voltage Rating

24 to 300 Vac, 24 to 300 Vdc

Current Rating

20 A for 2 s, 10 A for 5 s

Communication

Ethernet, 2 ports with internal Ethernet switch,
Modbus® TCP

Dimensions

H 130 mm (5.1"); **W** 200 mm (7.9"); **D** 54 mm (2.1")

Shipping Weight

0.9 kg (2 lb)

Operating Temp.

-40°C to +70°C (-40°F to 158°F)

Approvals

UL Listed (UL508), CE, RCM, FCC, CSA

Warranty

5 years

Mounting

Surface, DIN (with optional D0050 adapter clips)