



GARD

Unparalleled Protection



- Ground faults cause havoc on plant production processes, shutting down power to equipment and critical loads.
- Ground faults disrupt the flow of products through manufacturing processes and cause data loss in computer centers leading to hours or even days of lost productivity.
- Ground faults pose health and safety risks to personnel, creating hazards such as equipment malfunctions, fire and electric shock.

GARDIAN

The Gardian is a revolutionary step forward in electrical system protection combining the recognized safety and reliability benefits of high-resistance grounding with the incident energy reduction capabilities of arc mitigation, all in a single product.

With HRG reducing the frequency of arc flash incidents and optical detection reducing the impact, a safer more reliable electrical system is guaranteed with the Gardian.

When a ground fault occurs, the Gardian controls and limits the fault current, provides an alarm that indicates an active fault, enabling electrical personnel to follow a simple sequence to locate and isolate the fault without interrupting the circuit or opening circuit breakers.

When an arc flash occurs, the optical detection system recognizes the hazard initiating the trip signal in less than one millisecond, reducing incident energy levels as well as PPE requirements.



NEMA 3R enclosure containing current limiting resistor and ground fault relay and optical arc detection sensor

Available with artificial neutral for use on ungrounded systems

Visual indication of system normal, active ground fault, pulsing active and arc flash

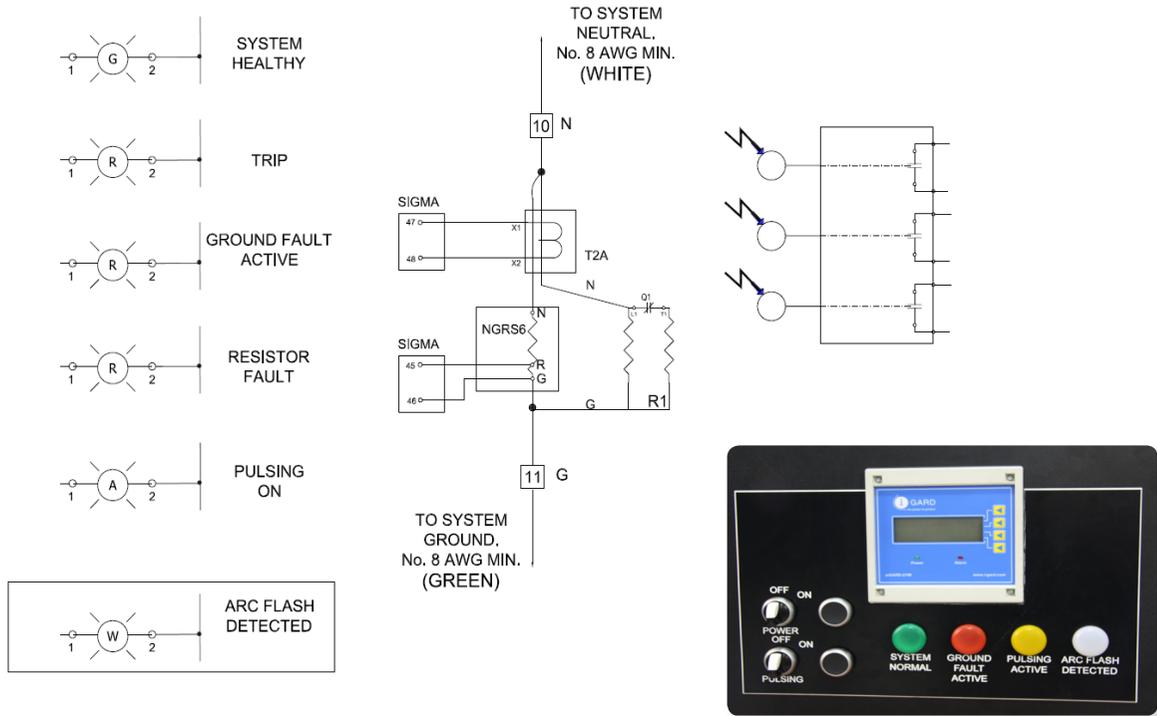
Available for 480V, 600V and 4160V distribution systems

Step 1 in protection is to limit damaging fault currents through the use of a high-resistance grounding system.

Step 2 requires the fault to be located and repaired before a second fault occurs.

Step 3 full time optical arc detection protecting against arc flash hazard and limiting incident energy to a safer level.

GARDIAN



BENEFITS OF HAVING A GARDIAN

NFPA Clause: 120.3FPN No.3	"High resistance grounding of low voltage and 5 kV (nominal) (systems),... are techniques available to reduce the hazard of the system."		
IEEE Standard 242-1986 7.2.5	Ungrounded systems offer no advantage over high-resistance grounded systems in terms of continuity of service and have the disadvantages of transient overvoltages, locating the first fault and burn downs from a second ground fault. For these reasons, they are being used less frequently today than high-resistance grounded systems, and existing ungrounded systems are often converted to high-resistance grounded systems by resistance grounding the neutral.		
Reduces PPE with optical arc detection	Protection Type	Clearing Time (seconds)	Incident Energy (Cal/cm2)
	51 Overcurrent	2.000	211
	50 Instantaneous	0.450	47
	I-Gard Gardian System	0.084	9

- Assume breaker clearing time of 5 cycles
- 480V and 65kA bolted fault current, 18 inches

High-resistance grounding (HRG) is becoming more prevalent in industrial and commercial electrical power systems because it eliminates un-scheduled downtime due to ground faults, and improves personnel safety by

preventing ground faults from escalating into arc-flash incidents. Resistance grounding is highly recommended for generators, to protect them from damage due to excessive ground fault currents.