

MADE IN  
USA

## AG SERIES Ground Fault (Earth Leakage) Sensors

### Applications

#### Personnel Protection (typically 5mA)

- Detects sensitive ground fault conditions, which may be injurious to personnel and processes.
- Functions as sensor and alarm trigger when part of an overall ground fault protection system.

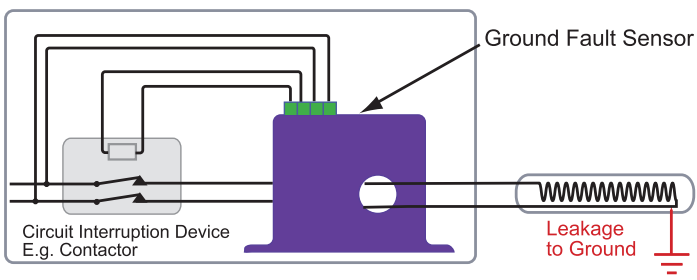
#### Equipment Protection (typically 10mA or 30mA)

- For applications where personal protection is not the primary concern, higher setpoint capability helps eliminate nuisance tripping while still providing adequate ground fault detection to protect machine electronics.

#### Regulatory

- Meets requirements as stipulated by governmental and industrial regulatory groups for ground fault sensing.

#### Insulation Breakdown Monitoring



**AG Series** Ground Fault Sensors help protect people, products, and processes from damage by ground fault conditions by monitoring all current-carrying conductors in grounded single- and three-phase delta or wye systems.

**“Zero Sum” Operating Principle:** In three-phase delta and wye systems, under normal conditions current in the ‘hot’ leg of a two-wire load is equal in magnitude but opposite in sign to the current in the neutral leg. As a result, the electromagnetic fields surrounding these two conductors cancel, producing a “zero sum current.” As soon as current leaks to ground (fault condition) the two currents become imbalanced and a net magnetic field results. AG Series sensors monitor this field and trip alarm contacts when the leakage rises above setpoint.

### Features

#### Broad Range of Options to Match Application Needs

- N.O./N.C. solid-state switch or mechanical relay outputs.
- Normally energized or normally de-energized contacts.
- Noise Immunity option for use in EMI/RFI sensitive environments.

#### Setpoint Options Maximize Ease-of-Use

- Field selectable 5mA, 10mA or 30mA setpoints on the AG3 “Tri-set” model makes user adjustments fast, sure and convenient.
- Single factory calibrated setpoints available from 5mA to 950mA.

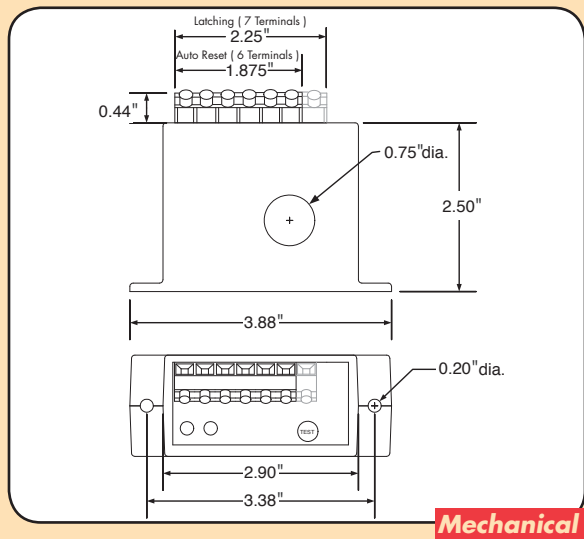
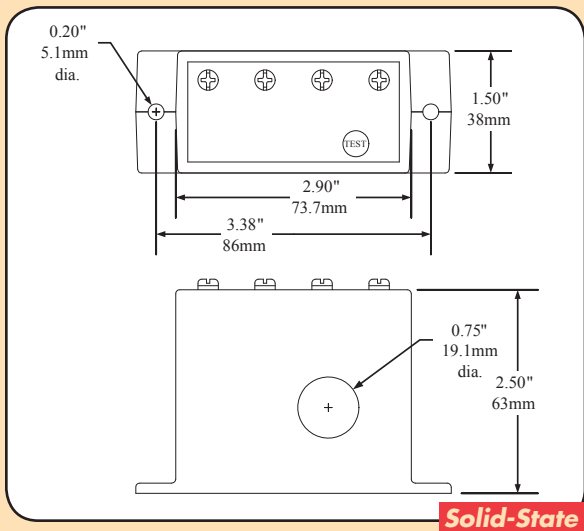
#### Compatible with Standard Equipment

- Applicable on single- and three-phase systems.
- Ideal for use with shunt trip breakers.
- Magnetically isolated from monitored circuit and control power.

#### Agency Approved

- UL, CE approved.

## Dimensions



## Specifications

<b>Setpoint Range</b>	Factory calibrated models (specify when ordering):	
	<ul style="list-style-type: none"> <li>● AG1: 5–100mA (005–100)</li> <li>● AG2: 80–950mA (080–950)</li> </ul>	
	TR3 "Tri-set" models (field jumper select):	
	<ul style="list-style-type: none"> <li>● AG3: 5, 10, or 30mA</li> </ul>	
	<b>Solid-state Output Models</b>	<b>Mechanical Output Models</b>
<b>Output</b>	Isolated Dry Contact	Mechanical Relay
<b>Output Rating</b>	<ul style="list-style-type: none"> <li>● Solid-state AC Switch 1A @ 240VAC</li> <li>● Solid-state DC Switch 0.15A @ 30VAC</li> </ul>	<ul style="list-style-type: none"> <li>● Auto Reset: SPDT Relay 1A @ 125VAC, 2A @ 30VDC</li> <li>● Latching: SPST Relay 1A @ 125VAC, 2A @ 30VDC</li> </ul>
<b>Off State Leakage</b>	<ul style="list-style-type: none"> <li>● &lt;10 micro Amps (N.O.)</li> <li>● &lt;2.5mA (N.C.)</li> </ul>	None
<b>Response Time</b>	<ul style="list-style-type: none"> <li>● 200ms @ 5% above trip point</li> <li>● 60ms @ 50% above trip point</li> <li>● 15ms @ 500% above trip point</li> </ul>	
<b>Isolation Voltage</b>	5,000 VAC (tested)	
<b>Frequency Range</b>	50–400 Hz (monitored circuit)	
<b>Noise Immunity Option</b>	N/A	<ul style="list-style-type: none"> <li>● EMI/RFI Shielding</li> <li>● Power supply noise filtering</li> </ul>
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>● 120VAC (55–110% of nominal voltage)</li> <li>● 24VAC/VDC (+/- 20%)</li> <li>● Green LED = Power On indication</li> </ul>	
<b>Loading</b>	2VA Max.	
<b>Case</b>	UL94 V0 Flammability Rated	
<b>Environmental</b>	-4 to 122°F (-20 to 50°C), 0–95% RH, non-condensing	
<b>Listings</b>	UL 1053, Class 1 Recognized, CE	





*Solid-state Outputs*



*Mechanical Outputs*



## AG SERIES Ground Fault (Earth Leakage) Sensors

### Output Tables

#### Normally Energized Models (-FS Option and -ENE Option)

Protection from faults and control power loss.

	No Power	Control Power Applied	
		No Fault	Fault
N.C. Normally Closed	closed	open	closed
N.O. Normally Open	open	closed	open

#### Normally De-energized Models (-NF and -DEN Options)

Protection from faults only when power is applied.

	No Power	Control Power Applied	
		No Fault	Fault
N.C. Normally Closed	closed	closed	open
N.O. Normally Open	open	open	closed

#### Latching Models (-LA Option)

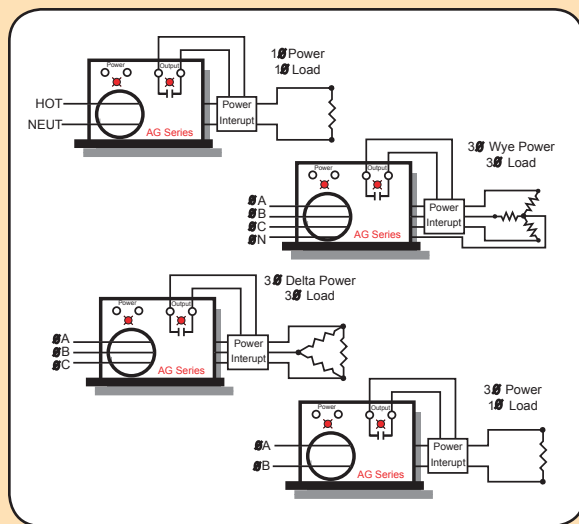
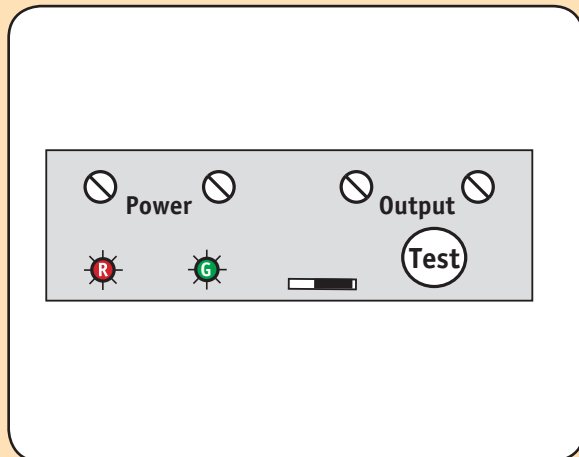
Latching models power up initially in the rest (normal) mode. If there is a fault condition or the test button is pushed, the output contacts will change state and latch. The output will remain latched regardless of whether the fault is cleared or control power is removed. To reset the output apply a momentary contact across "reset" terminals.

**AG Series** with Solid-state Outputs offer the benefit of reliable, long-lasting solid-state switches. Solid-state design provides unlimited switch operating life, superior resistance to shock and vibration, zero off-state leakage, high switch speeds and high input-output isolation. Available in solid-core case with screw terminals.

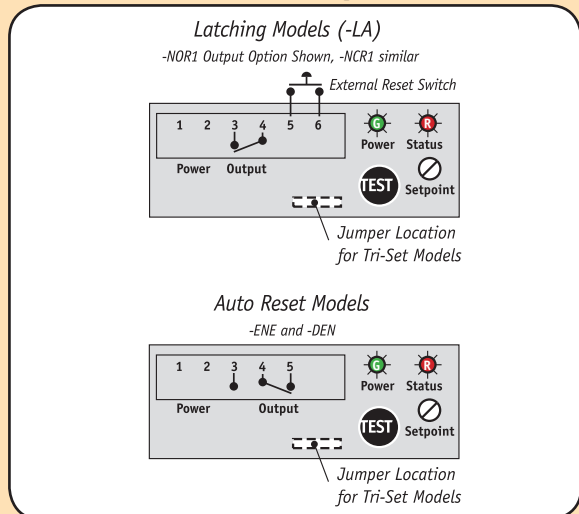
**AG Series** with Mechanical Outputs are available in solid-core enclosures with a choice between a N.O. or N.C. SPST latching relay and a SPDT Form C relay with auto-reset. All mechanical models can be ordered with factory adjustable setpoint or with a "Tri-set" option, which provides three factory-set, field adjustable setpoints. A noise immunity option is available for applications in harsh EMI/RFI environments.

## Connections

### AG Series Solid-State Sensor



### AG Series Mechanical Relay

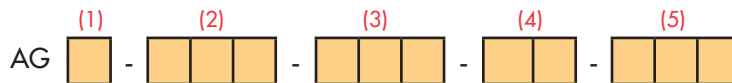


## Ordering Information

### Solid-state Output Models

Sample Model Number: AG1-NOAC-120-FS-005

Ground fault sensor with normally open solid-state contact output, 120VAC power supply, 5mA trip point, fail safe version.



#### (1) Setpoint Range

1	5–100mA factory set
2*	80–950mA factory set
3	5/10/30mA jumper set

\*Not UL recognized in any configuration.

#### (2) Output Type

NOAC	Normally Open, 1A @ 240VAC
NCAC	Normally Closed, 1A @ 240VAC
NCDC	Normally Open, 0.15A @ 30VDC
NODC	Normally Closed, 0.15A @ 30VDC

#### (3) Power Supply

120	120VAC
24U*	24VAC/VDC

\*Not UL recognized in any configuration.

#### (4) Options

FS	Normally Energized
NF	Normally De-energized

#### (5) Setpoint

TR3	Tri-set
005 to 950	Factory set trip point in mA

### Mechanical Output Models

Sample Model Number: AG1-NOR1-120-LA-005

Ground fault sensor with normally open SPST latching relay output, 120VAC power supply and 5mA trip point.



#### (1) Setpoint Range

1	5–100mA factory set
2	80–950mA factory set
3	5/10/30mA jumper set

#### (2) Output Type

NCR1	Normally Closed SPST Relay Form B (Available only with -LA option)
NOR1	Normally Open SPST Relay Form A (Available only with -LA option)
SDT1	SPDT Relay (Form C) with auto-reset (available only with -DEN and -ENE options)

#### (3) Power Supply

120	120VAC
24U	24VAC/VDC

#### (4) Options

ENE	Normally Energized, auto-reset (SDT1 output only)
DEN	Normally De-energized, auto-reset (SDT1 output only)
LA	Latching (NOR1 and NCR1)

#### (5) Setpoint

TR3	Tri-set
005 to 950	Factory set trip point in mA

#### (6) Noise Immunity

N	Noise Immunity
	None (blank)