

# AGV SERIES

## Ground Fault (Earth Leakage) Relay Designed for Variable Speed Driven Loads

AGV Series Ground Fault Detectors help protect products and processes from damage due to ground fault conditions by monitoring all current-carrying conductors in grounded single- and three-phase delta or wye systems.

### Ground Fault Relay Applications

#### Process Protection

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

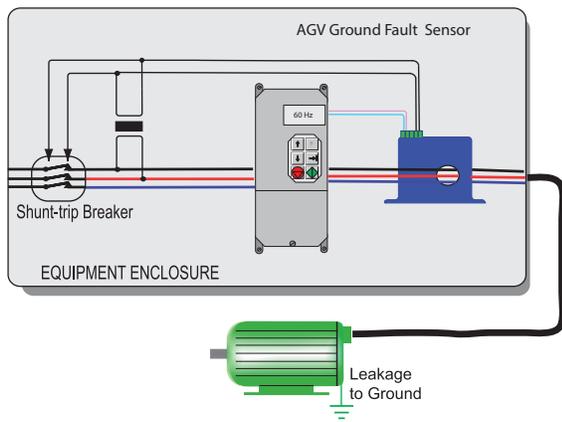
#### Equipment Protection

- For applications where equipment protection is desired, a higher setpoint capability and a settable delay from 0-10 seconds 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.

#### Ground Fault Protection When Using A VFD



With the growing number of motors driven with a variable frequency drive, detecting low level ground fault current to protect the equipment being used is growing. Whether the motor is driving a submersible pump or a conveyor belt, large faults to earth are all that a drive system alone can detect. Insulation deterioration and moisture ingress produce much smaller currents to earth which are dangerous to personnel and can cause arcing in equipment. Adding an NK Technologies ground fault sensor will help keep the process as safe as possible without the spurious tripping that occurs when other ground fault detection products are used.



### Ground Fault Relay Features

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

- N.O./N.C. mechanical relay outputs.
- Normally energized or normally de-energized contacts.
- Latching or automatically resetting outputs available.

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

- Field-selectable 30 mA, 50 mA, or 100 mA setpoints makes user adjustments fast, sure and convenient.

#### Compatible with Standard Equipment

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

#### Designed for UL/cUL and CE Approval

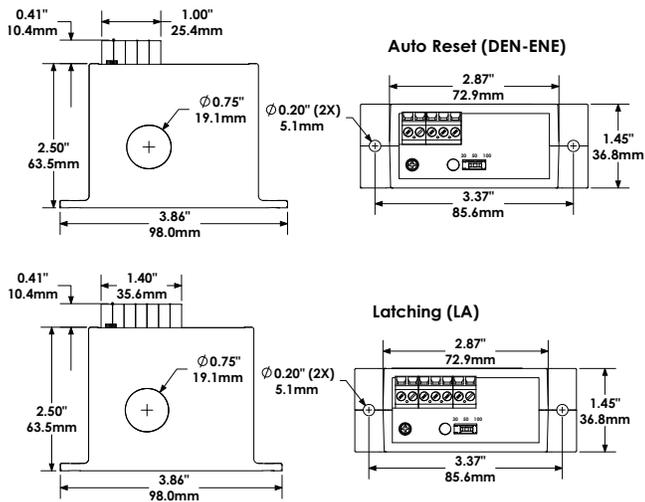
- Accepted worldwide.

#### “Zero Sum” Operating Principle:

In single- and three-phase AC systems, under normal conditions current flows from the power source to the load and back to the source. As a result, the electromagnetic fields surrounding the conductors cancel, producing a “zero sum current” even when the current in each phase are not equal. As soon as current leaks to ground (fault condition) the current become imbalanced and a net magnetic field results. AGV Series detectors monitor this field and trip alarm contacts when the leakage rises above the setpoint.

Note: Only the current carrying conductors pass through the sensing window, not the grounding bond wire.

## Ground Fault Relay Dimensions



## Output Tables

### Normally Energized Models

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

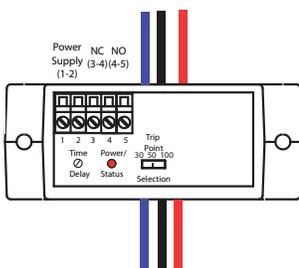
### Normally De-energized Models

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

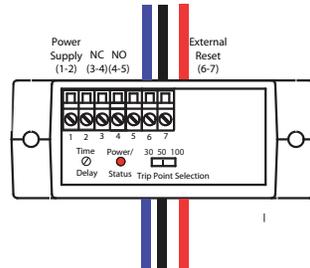
**Latching Models (-LA Option)** From factory, power up initially in the reset (normal) mode. If there is a fault condition or the test button is pushed, the output contacts will change state and latch. The output will remain latched regardless of whether the fault is cleared or control power is removed. To reset the output apply a momentary contact across "reset" terminals. Do not apply voltage to reset terminals.

## Ground Fault Relay Connections

### Auto-Reset Connection



### Latching Connection

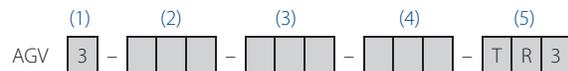


## Ground Fault Relay Specifications

<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• 120 VAC (90–130 V)</li> <li>• 24 VAC/DC (19–24 V)</li> </ul>
<b>Power Indication</b>	<ul style="list-style-type: none"> <li>• Green LED: Power untripped</li> <li>• Red LED: Output tripped</li> </ul>
<b>Power Consumption</b>	2.4 VA max. 24 V powered, 3.0 VA max. 120 V powered
<b>Setpoint Range</b>	TR3 "Tri-set" models (field switch select): AGV3: 30, 50, or 100 mA
<b>Output</b>	Electromechanical SPDT relay
<b>Output Rating</b>	SPDT Relay 1 A @ 120 VAC, 2 A @ 30 VDC
<b>Off-state Leakage</b>	None
<b>Response Time</b>	<ul style="list-style-type: none"> <li>• &lt;17 Hz: &lt;140 ms</li> <li>• 17–32 Hz: &lt;75 ms</li> <li>• &gt;32 Hz: &lt;45 ms</li> </ul>
<b>Time Delay</b>	0–10 seconds plus response time
<b>Isolation Voltage</b>	1240 VAC, tested to 5 KV
<b>Frequency Range</b>	12–398 Hz (monitored circuit)
<b>Noise Immunity</b>	Power supply and monitored circuit filtering
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	Designed for UL/cUL, CE

## Ground Fault Relay Ordering Information

Sample Model Number: AGV3-SDT-120-LA-TR3  
Ground fault detector with SPDT latching relay output, 120 VAC power supply and 30/50/100 mA trip point.



### (1) Setpoint Range

3	30/50/100 mA slide switch set
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### (2) Output Type

SDT	SPDT Relay (Form C)
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### (3) Power Supply

120	120 VAC
24U	24 VAC/DC

### (4) Options

ENE	Normally energized, auto-reset
DEN	Normally de-energized, auto-reset
LA	Latching

### (5) Setpoint

TR3	Tri-set 30/50/100 mA
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