Specifications

Power Supply		120 VAC (108-132 V) or 24 VAC/VDC (22-28 V) AC power must be 50 or 60 Hertz
Power Consumption		<4 VA
Output (Resistive Ratings)		SPDT Relay, 1 A @ 120 VAC resistive, 2 A @ 30 VDC resistive
Bicolor Power/Trip Indicator		Green: Power on, current <setpoint Orange: Power on, current >set-point Off: No power
Response Time		100ms (Current 90% over setpoint)
Trip Delay		0.1 to 8.0 seconds
Isolation Voltage		UL listed to 2200 VAC
Frequency (Monitored Circuit)		40-60 Hz
Dimensions	OD (Ring)	5.5”x 5.8” (140.0 x 146.6 mm)
	ID (Ring)	4.00” (101.6 mm)
	Max height	7.26” (184.4 mm)
	Depth	3.92” (96.6 mm)
	Base	3.9”L x 3.1”W x 1.5”H (96.6 x 79.3 x 38.1 mm)
Environmental		-4 to 122°F (-20 to 50°C) 0-95% RH, Non-condensing Pollution Degree 2 Altitude to 6561 ft (2000 meters)
Listings		UL/cUL Listed

NK Technologies

Phone:
Fax:

Model Number Key

AG1 - SDT - 120 -DEN - (sss) - LC

Housing Type

Factory Set Only:
AGC - 030-150 trip point (mA)
AGD - 080-400 trip point (mA)

Contact Action:
DEN - Normally De-energized, Auto reset
ENE - Normally Energized, Auto reset
LA - Latching, Normally De-energized

Power Supply:
24U - 24 VAC/VDC
120 - 120 VAC

Output Type:
SDT - SPDT (One Norm. Open & One Norm. Closed Contact)

Range:
1 - 30-150 mA Field Adjustable
2 - 80-400 mA Field Adjustable
3 - 300-1500 mA Field Adjustable
4 - 1.0-5.0 A Field Adjustable
C - 30-150 mA Factory Set
D - 80-400 mA Factory Set

AG Series Ground Fault Relay

Description

AG-LC Series relays monitor all current carrying wires in single or three phase systems to detect ground faults. They provide a contact output that can operate relays, contactors or signal automation systems.

Power Supply Notes

All low-current Ground-Fault Relays are sensitive devices that require reasonable care in system design to avoid false trips caused by high electrical noise levels. Keep in mind that the best way to reduce noise in a system is to suppress it at its source.

1. Keep the relay power isolated from noisy circuits.
2. Do not power the relay with the same circuit that switches contactors or other high current, inductive loads.

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INSTRUCTIONS



AG-LC SERIES

Large Ground Fault Sensors with Adjustable Trip and Delay

Quick “How To” Guide

1. Run all current carrying conductors through ring window
A. Do not include the grounded conductor, but do include the neutral if the load uses one.
B. For best accuracy, tie wrap the wire bundle to the **top** of the sensing ring.

2. Mount the relay to a surface if needed
A. Snap onto a DIN rail, or attach with screws through the corner holes, or both.

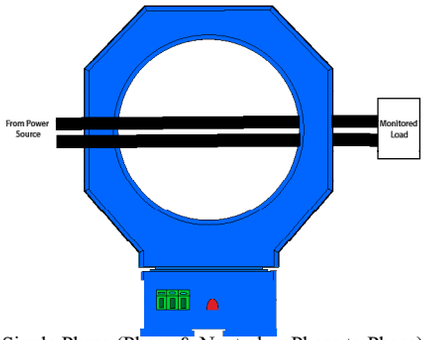
3. Connect output & power wiring
A. Use 22-12 AWG copper conductors only rated 60/75°C and tighten to 6 inch pounds.
B. Make sure power supply matches and controlled load does not exceed the limits shown on the sensor’s label.

4. Power up
A. The Green LED display will light when the sensor is powered.
B. Energize the monitored circuit.

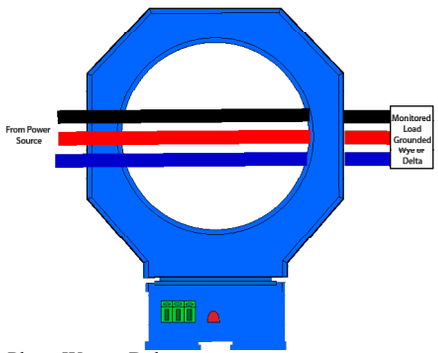
5. Test
A. Pressing the “TEST” button tests the relay internal circuits. CAUTION: The output and any connected loads will switch after the delay time has elapsed! The LED will change color from Green to Orange.
B. Auto-rest Models: Reset by releasing the TEST button on the sensor.
C. Latching Models: Short between terminals 6-7 or press the RESET button on the sensor base.

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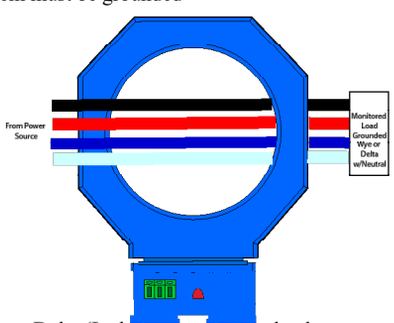
Mod-Tronic Instruments Limited
www.mod-tronic.com | sales@mod-tronic.com | 1-800-794-5883



Single Phase (Phase & Neutral or Phase to Phase)



3 Phase Wye or Delta
System must be grounded



3 Phase Delta (Include neutral if the load uses neutral)

Principal of Operation

Under normal conditions, the current in one wire of a two wire load is equal in strength but opposite in sign to the current in the other wire. The two wires create magnetic fields that cancel, a condition known as "Zero Sum Current". If any current leaks to ground (Ground Fault), the two currents become unbalanced and there is a net resulting magnetic field. The AG-LC relay detects this minute field and changes the output state. This concept extends to three phase circuits such as 3 or 4 wire Delta and 3 or 4 wire Wye. The sensor is not designed for use on ungrounded systems.

Installation & Wiring

AG-LC Series relays work in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures. They can be mounted in any position or hung directly on wires with a wire tie. Just leave at least one inch distance between relay and other magnetic devices. Run all current carrying conductors through the opening in the relay. (See "Principal of Operation") Be Sure all wires are oriented so current flows to and from the load. Tie wrap the wire bundle to the top of the sensing ring with the distance from the sensor base as great as possible.

Wiring

Use 22-12 AWG copper wire and tighten terminals to 6 inch-pounds torque. See Diagrams.

Power

Connect power wiring to Terminals 1-2. Be sure that the power supply matches the power rating on the relay label. Green LED will light with power applied. The power supply input is not polarity sensitive.

Output

Connect output wiring to Terminals 3-4 (NO) or 4-5 (NC)

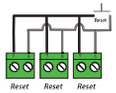
DEN and LA contacts change ONLY when current is detected over the setpoint.

ENE and ELA contacts change state when power is applied and revert when current is detected over the setpoint or power is removed.

Latching reset

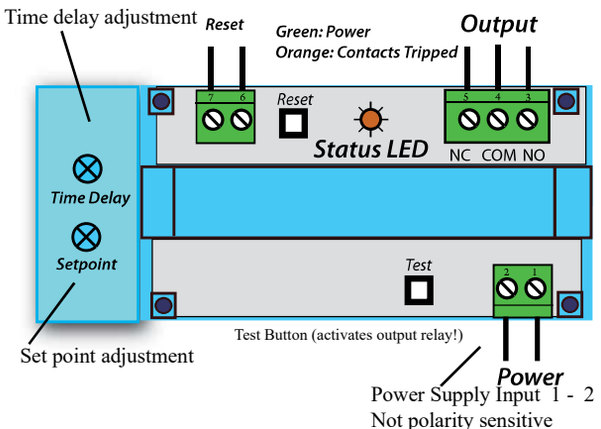
Use the reset button on the sensor circuit board to unlatch the tripped sensor contact, or attach a remote, voltage free button between terminals 6-7 to allow resetting the sensor without opening the cabinet.

Multiple sensors can be reset with one button by connecting in parallel.



Connect all terminal 6's and all terminal 7's in parallel to one button.

Operation



Contact Action	No Power Applied	Power Applied	Fault Detected
DEN	NO = Open	NO = Open	NO = Closed
	NC = Closed	NC = Closed	NC = Open
ENE	NO = Open	NO = Closed	NO = Open
	NC = Closed	NC = Open	NC = Closed
LA	NO = Open	NO = Open	NO = Closed
	NC = Closed	NC = Closed	NC = Open
ELA	NO = Open	NO = Closed	NO = Open
	NC = Closed	NC = Open	NC = Closed

AG-LC Series Ground fault relays operate in one of two states: Normally de-energized (DEN or LA) or Normally energized (ENE or ELA). Normally de-energized sensors produce a change in the relay contacts ONLY when there is a fault over the trip point and unit is powered. Normally energized sensors provide contact action when the sensor is powered, so the contact state will return to the original condition with fault detected or with a loss of power to the sensor (auto-reset). Latching Normally energized model contacts change state when power is applied to the sensor, latching in the original condition when a fault is detected.

Testing

To test operation, gently press the TEST button. This simulates a fault and tests the internal switching circuits. The TEST button must be pressed for a period of time longer than the delay setting.

CAUTION: Any circuit connected to the relay will be operated.

The open contact closes on sensed fault current over the set point (or test), and the closed contact opens on detected fault.

Upon detecting a fault or when the TEST switch is pressed, the output will switch.

The output will reset to the original (energized) state after the TEST button has been released. With the latching models, the RESET button (external or on the sensor) must be used to unlatch the contacts.

To indicate that the sensor has sensed a fault, the LED will show orange rather than green.

Field Setpoint Adjustment

The AG-LC sensors provide an easy method to set the amount of fault current which will cause the output to change state. There is a pale blue slotted adjustment knob on the side of the sensor base. This is a linear, half turn potentiometer allowing the trip point to be set at a minimum of the sensor range by turning counterclockwise, and the maximum of the range by turning clockwise. Use the markings on the label.

Factory Setpoint

The AGC and AGD models trip points are factory set, no adjustment.

Time Delay Adjustment

The delay adjustment is located on the same side of the sensor base. Turning the slotted knob fully counterclockwise to set the delay to the minimum (100 ms to activate the output contacts) and delay can be set up to 8 seconds. Use the markings on the label.

Monitored Circuit Size Information

The AG-LC sensor provides a window with ID of 4.00 inches (102 mm).

Measure the OD of one wire. Use this measurement multiplied by 2.15 to obtain the OD of a bundle of three, and by 2.41 for the OD of bundle of four wires. ***Please contact the factory for more information.***

As an example, 500 MCM THHN has an OD of 1.00 inches. A bundle of three will have a minimum OD of 2.15 inches, and a bundle of four wires will have a minimum OD of 2.41 inches.

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