Specifications

Setpoint Range	See Model number key
Monitored Circuit	600VAC line-to-line max. ,50-60Hz
Output Description:	Electromechanical latching relay 1.0A @ 120 VAC, 2A @ 30 VDC
Status (Red) LED	Relay has tripped (relay operated)
Response Time	200 ms @ 5% over setpoint. 60 ms @ 50% over setpoint. 15 ms @ 500% over setpoint
Power Supply	120 VAC (66-132 VAC) 50/60hz 24 VAC/DC (19.2-28.8 V)
Power (Green) LED	Power supply energized
Power Consumption	2.5 Watts
Dimensions	4.25"H x 3.0"W x 3.25"D, (108x76x83mm), aperture 1.82" (46mm) inside diameter
Case	UL 94V-O Flammability Rated
Environmental	-4 to 122 °F (-20 to 50° C), 0-95% RH, Non Condensing Pollution Degree 2 Altitude to 2000 meters
Terminal torque	5.3 inch-pounds
Agency Approvals	UL/cUL, CE

For products intended for the EU market, the following is applicable to the CE compliance of the product:
The AGL1, 2 and 3 Series comply with EN 61010-1 CAT III 300V max line-to-neutral measurement category. If insulated cable is used for the primary circuit, the voltage rating of the measurement category can be improved according to the characteristics given by the cable manufacturer.
Use twisted pair for all connections. De-energize power before changing set point jumper position.

24 Volt AC or DC Power Supply	120 VAC 50/60Hz Power Supply
Fuse at 5 amps maximum	Fuse at 5 amps maximum
Overvoltage Category I	Overvoltage Category II

Warning! Risk of danger

Safe operation can only be guaranteed if the sensor is used for the purpose it was designed for and within limits of the technical specifications. When this symbol is used, it means you must consult all documentation to understand the nature of potential hazards and the action required to avoid them.

Warning! Risk of shock

When operating the sensor certain parts may carry hazardous live voltage (e.g. primary conductors, power supply). The sensor should not be put into operation if the installation is not complete.

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Model Number Key

AGL1 - NOR1 - 120 - LA - 005-N

Options
None (Blank)
N Electical Noise Immun.

Setpoint
005 to 950 Factory Setpoint
TR3 Tri-Set, 5, 10 & 30 mA, Jumper Select

Options
LA Normally De-energized

Power Supply
24U 24 VAC/DC
120 120 VAC

Output Type
NOR1 SPST (Normally open, closes on fault)
NCR1 SPST (Normally closed, opens on fault)

Setpoint Range
1 5-100mA, Adjustable
2 80-950mA, Adjustable
3 Tri-Set, 5, 10 & 30 mA, Jumper Select

AGL Series Ground Fault Relay

Description

AGL 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.

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 AGL relay detects this minute field and changes the output state. This concept extends to three phase systems such as 3 wire Delta and to 4 wire Wye. The sensor is not designed for use on ungrounded Delta 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.

NK Technologies

INSTRUCTIONS

AGL1, 2 & 3 SERIES

Ground Fault Relays with Latching Relay Outputs

Quick "How To" Guide

1. Run all current carrying conductors through relay window

A. set range selection jumper before installing any power or output conductors.

2. Mount the relay to a surface if needed.

3. Connect output & power wiring.

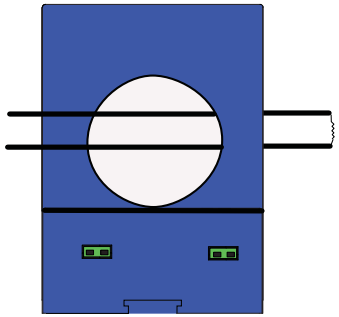
A. Use up to 14 AWG insulated to 75/90°C copper wires.
B. Make sure power and load matches those shown on the senors' label.

4. Power up

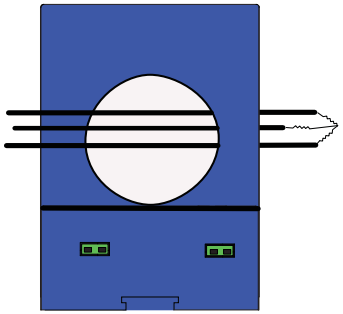
A. The Green LED will light when the sensor is powered.
B. Energize the monitored circuit.

5. Test

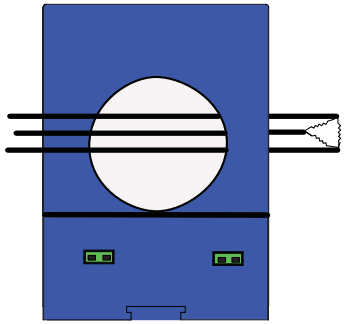
A. Pressing the "TEST" button tests the relays internal circuits. CAUTION: The output and any connected loads will switch!
B. Reset by shorting between term. 1-2, use an insulated push button or similar with no voltage connected.



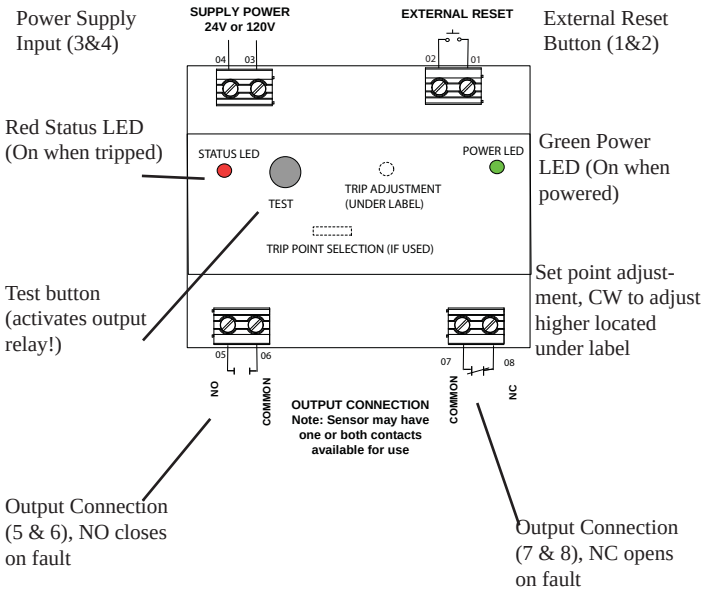
Single Phase (Phase & Neutral or Phase to Phase)



3 Phase Wye (Include neutral if load uses neutral)



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



Installation & Wiring

AGL 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 in the same direction.

Reset Switch

Connect a momentary dry contact to the reset terminals (1& 2) using an insulated operator. Limit wire run to 200' of 18 AWG or larger wire.

Wiring

Use up to 14 AWG copper wire and tighten terminals to 5.3 inch-pounds torque. See Diagram.

Power

Connect power wiring to Terminals 3 & 4. Be sure that the power supply matches the power rating on the relay label. Green LED (Power) will light with power applied.

Output

Connect output wiring to Terminals 5-6 (NO) or 7-8 (NC)

Operation

AGL Series Latching Ground fault relays operate in one of two states: Reset or Latched. If control power is removed, the relay remains in its last state (latched or reset). The relay will reset if the power supply is cycled off and then on again.

To test operation, gently press the TEST button. This simulates a fault and tests the internal switching circuits.

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

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

Reset

The relay has not detected a fault and the output is in the "normal" position.

For -NOR1 suffix, the contact is normally open in the reset condition.

For -NCR1 suffix, the contact is normally closed in the reset condition.

Latched

Upon detecting a fault or when the TEST switch is pressed, the output will switch and "latch". The output will remain latched until the ground fault is removed and the output is reset by a momentary dry contact on Terminals 5 & 6.

Testing

To test operation, gently press the TEST button. This simulates a fault and tests the internal switching circuits. After the test is complete, reset the relay with a momentary dry contact on Terminals 1-2. **CAUTION: Any circuit connected to the relay will be operated.**

Momentary Reset

The relay will not work properly if the reset terminals are closed (shorted) continuously. Only close the reset terminals momentarily.

Parallel Reset Connection

Multiple relays may be connected to the same reset switch in parallel. Only the relays that have detected a fault and have latched will be reset. A relay will not reset unless the fault has dropped below setpoint.

The output will also reset if the power supply voltage is cycled off and then on again.

The triple range, field selectable models use a jumper to select the trip point. With the jumper off the pins, the relay will trip at the lowest set point. The jumper can be placed over two pins to set the trip point at the medium level, or the other two pins to be set at the highest trip point.

Field Setpoint Adjustment

While not as precise as having it set at the factory, the set point can be adjusted in the field through use of the small potentiometer located beneath the label to the right of the leads exiting the case. Though not recommended, if a field adjustment of setpoint is desired, the suggested steps are as follows:

1. Develop a load of the magnitude at which you want the relay to trip; e.g., a 4000 ohm resistor at 120 VAC should provide a load of 30 mA while 4 watt "night light" bulb would create a load of approximately 33.33 mA.

2. With the load energized and passing through the sensing aperture, turn the potentiometer counterclockwise (CCW) until the relay trips. Then turn the pot back (CW) one eighth of a turn. CW raises the trip point.

NOTE: The tri-set models cannot be adjusted higher nor lower than the factory settings.

When used with an external CT, the relay will be set to trip at a point much lower than without the CT. This set point adjustment should be done with the load passing through the CT in that application.