



# INSTALLATION INSTRUCTIONS CAH, COH & CUH SERIES CURRENT SENSING RELAYS

March, 2017 Rev B (Replaces May, 2011)

901-0000-287

## DANGER!



Potentially hazardous voltages are present. Electrical shock can cause death or serious injury. Installation should be done by qualified personnel following all National, State & Local Codes.



**BE SURE TO REMOVE ALL POWER SUPPLYING THIS EQUIPMENT BEFORE CONNECTING OR DISCONNECTING WIRING. READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.**



**IMPORTANT: READ THIS FIRST IF REPLACING A CAH SERIES PRODUCT WITH DATE CODE OF 1711 OR EARLIER**

Macromatic made a product design change on all CAH Series products manufactured with Date Code of 1712 or later (March 20, 2017). The style of 2-position switch used to select either Overcurrent or Undercurrent was changed. Basic functionality has been retained. For more information, please contact Macromatic.

### Operation

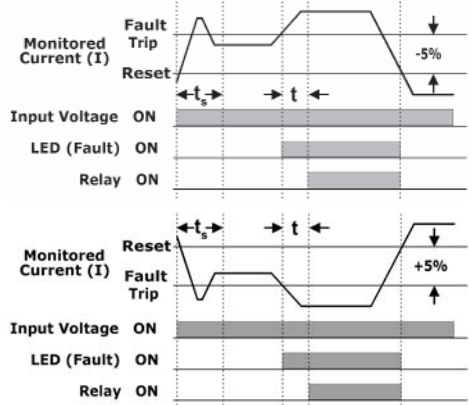
The CAH Series products can be used as either an Overcurrent or Undercurrent Sensing Relay. The COH Series is an Overcurrent function only & the CUH Series is Undercurrent only.

### Overcurrent Sensing

Input voltage must be supplied at all times. After the sensing delay on power-up ( $t_s$ ) is completed, the unit will begin sensing for a fault condition. A fault will occur when the monitored AC current (I) goes above the Fault Trip Current setting & remains above the Reset level for a period longer than the adjustable time delay period (t). The LED will turn ON immediately and the relay will energize after the time delay on pick-up (t) is completed. The relay will de-energize & the LED will turn OFF when the monitored AC current goes below the Reset level.

### Undercurrent Sensing

Input voltage must be supplied at all times. After the sensing delay on power-up ( $t_s$ ) is completed, the unit will begin sensing for a fault condition. A fault will occur when the monitored AC current (I) goes below the Fault Trip Current setting & remains below the Reset level for a period longer than the adjustable time delay period (t). The LED will turn ON immediately and the relay will energize after the time delay on pick-up (t) is completed. The relay will de-energize & the LED will turn OFF when the monitored AC current goes above the Reset level.



### Installation & Setup

- Mount the unit in a suitable enclosure with two (2) #6 screws.
- (CAH Series only) Set the selector switch to either the Overcurrent Sensing setting or Undercurrent Sensing setting.
- Pass the current-carrying wire to be monitored through the current sensor.
- Set the Fault Trip Current setting (I) at the current level where the relay should energize, indicating a fault condition. **NOTE: the maximum allowable current:**  
**0.5-5A Range: Steady-25A Turns; 150A Inrush for 10 Seconds**  
**2-20A & 5-50A Ranges: Steady-50A Turns; 300A Inrush for 10 Seconds**
- Set the time delay on pick-up (t) at a value long enough to prevent nuisance tripping but short enough to provide adequate over or undercurrent protection.
- Make all connections per the diagram shown at right. All electrical connections are made with 0.25" male quick-connect terminals.
- NOTE:** if a fault is sensed (LED ON) and is then corrected (LED OFF) before the trip delay (t) is completed, the relay will not energize and the trip delay is reset to 0.

### Multiple Loops to Increase Sensitivity

To increase sensitivity, multiple loops of the wire may be made through the toroidal current sensor of the relay. Divide the Fault Trip Current range by the actual number of loops of the wire through the current sensor to create a new range. For example, a relay with a standard trip range of 2 to 20A would have a new trip range of 1 to 10A with two loops of the wire through the current sensor, or 0.5 to 5A with four loops.

### Connection of an External CT

An external CT can be utilized to extend the range of the product beyond the maximum monitored trip range. Connect one end of a wire to the secondary of the external CT. Pass the wire through the current transformer on the CxH relay & connect the other end to the remaining secondary terminal on the external CT.

### Troubleshooting

If the product fails to operate properly, check that all connections are correct per the diagram above. Use the descriptions of how each function operates above as a guide to determine if the product is operating properly. If problems continue, contact Macromatic at 800-238-7474 for assistance.

### Warranty

All catalog-listed CAH, COH & CUH Series products manufactured by Macromatic are warranted to be free from defects in workmanship or material under normal service and use for a period of five (5) years from date of manufacture.

