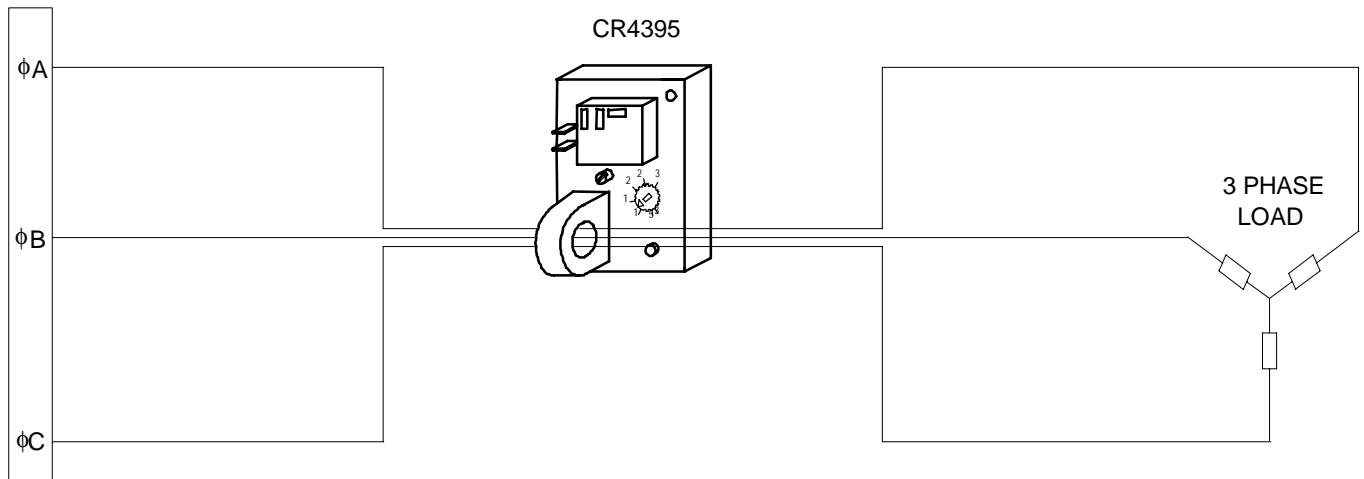


APPLICATION SHEET ANCR4395-3

3 Phase Imbalance and Ground Fault Detection Using the CR4395 Relay

One of the most important applications of the CR4395 relay is to monitor 3 phase imbalances and ground faults. This application can help protect sensitive equipment and minimize losses from equipment failure. All three phases, plus neutrals as shown, are routed through the sensor window.

3 PHASE



APPLICATION AND LIMITATIONS

- 3 Phase Y phase currents by definition must cancel when the loads are equal. Passing all three phases of the Y through the sensor will normally result in zero amperage reading. When an imbalance occurs, the phases do not cancel, and the relay trips.
- This type of imbalance scheme works best due to the fact that all fault conditions, leg to leg, leg to neutral, and leg to ground can be sensed. Sensing only neutral currents will not necessarily indicate a ground fault condition.
- Ground fault indication can only be sensed in a Delta configuration. Leg to leg imbalances are not detectable due to the absence of a neutral return path.
- The CR4395 comes standard with a mechanical relay that provides a Form C single pole contact. Other outputs such as transistor and triac switches are available as options. Typically, the mechanical relay is used to provide higher current switching for other motors and loads, and the solid state options are used to interface with digital and PLC circuitry, which eliminates switch bouncing.
- A latching version is available that can be used to force reset when a trip occurs. The relay, once tripped, stays tripped regardless of current level sensed, until power is reset.
- The CR4395 Current Sensing Relay is in no way to be considered adequate protection from injury to operators, animals, or other electrically sensitive assets. These devices provide signals and indications that can be applied with other equipment for complete systems. **Other fuses and/or electrical devices are required for complete circuit protection.**