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PHASE FAILURE RELAY-PHASE PHEE

PRINCIPLES OF OPERATION

Prok Dv's **PHASE PHEE** works on the principle of negative phase sequence voltage detection of the incoming supply. Monitoring of unbalance in the supply voltage is the proven technique which has been adopted in phase phee.

DESCRIPTION

For large motors, thermal overload relays provide inadequate protection against overheating of rotor due to unbalance voltages. Unbalancing of voltages may be due to single phase loading, imperfect transposition of feeders or blown fuses in power factor correction plant. Overloading cause by unbalance voltages or phase failures conditions due to fuse failure, loose condition or loss of phase from supply itself is not detected by conventional bimetallic over load relays, and most of the motor burnouts are because of phase failure(single phasing). The detection of phase failure by sensing the negative phase sequence components of voltage or currents.

PHASE PHEE is a fully static and quality products which is time-tested and safely implemented for a large number of motor applications. The relay also provides a certain degree of under voltage protection when there is a dip in the balanced motor supply voltage.

PHASE PHEE is currently available with a user selection of unbalance voltage settings and selection of manual/auto mode of operation in the front fascia of the relay. The reset button has soft membrane keypad which is operational in the manual mode which is highly reliable and easy to operate. There are two LEDs provided on the front fascia of the unit, the green LED glows under Healthy conditions, the red LED glows during single phasing, phase reversal or unbalanced voltage condition. After isolating/rectifying the fault by resetting the relay unit, the green LED glows indicating the system is healthy and red LED goes off. The unit is compact in size and is suitable DIN rail or surface mounting.

The negative phase sequence components do not contribute to power output but generator losses in motor PHASE PHEE helps in saving the motor from burn-out and in turn reducing the maintenance cost, if the negative phase sequence components are monitored continuously thus tripping the motor circuit when it exceeds dangerous levels.

The condition of an open circuit in one line causes the worst form of voltage unbalance resulting in the overheating of the machine winding. To protect the motors against the damage caused due to unbalance supply conditions, monitoring of the unbalance in the supply voltage is one of the well proven techniques and is time tested.

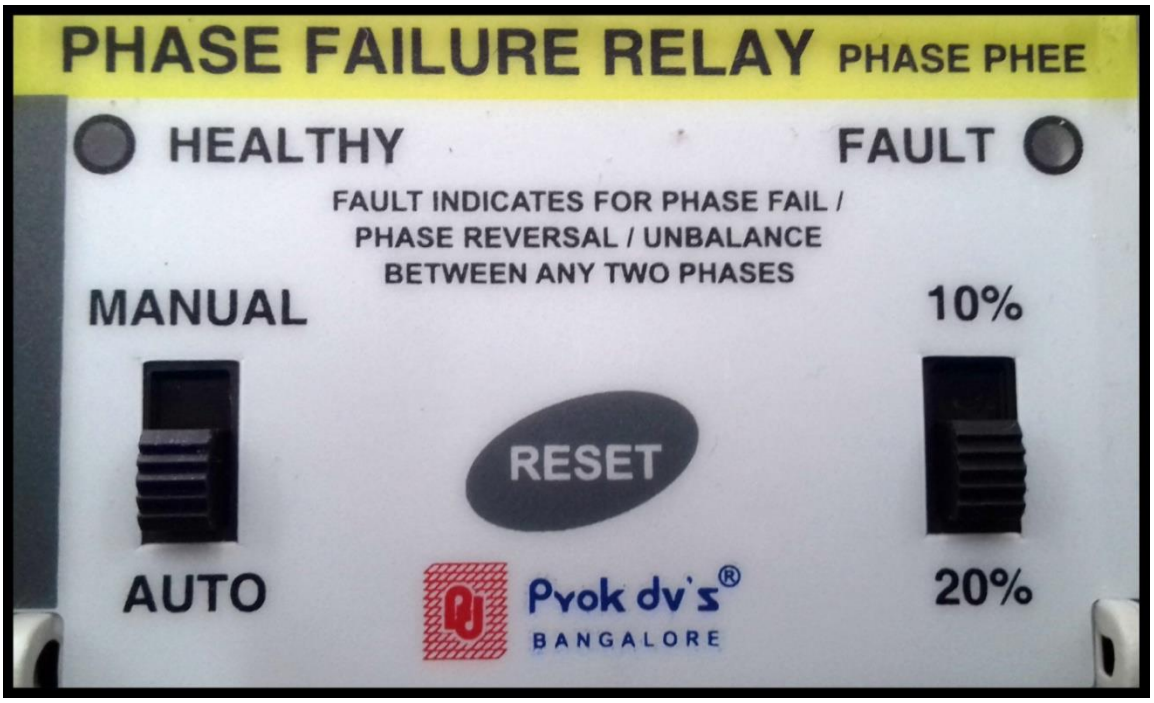
Prok Dv's PHASE PHEE is designed to protect as a phase failure relay(single phasing) and unbalance preventer for all LT motors. It works on the principle of negative phase sequence voltage detection in the incoming supply.

SPECIFICATIONS:

1. **SYSTEM VOLTAGE:** 415V AC 3 Phase 50Hz
2. **FIXED TRIPPING TIME DELAY:** 2.5 +/- 0.5sec
3. **UNBALANCE VOLTAGE SETTING:** 10%/20% (user selectable)
4. **RESET:** Manual/Auto
5. **RELAY CONTACTS:** 2 C/O, Potential free contacts
   Normally energized (Fail safe)
6. **AUXILIARY VOLTAGE:** 110/220/415V AC, 50Hz
7. **MOUNTING:** Fixing on 35mm Din channel Din type/surface
8. **DIMENSIONS:** L75xH95xD75mm +/-1mm tolerance

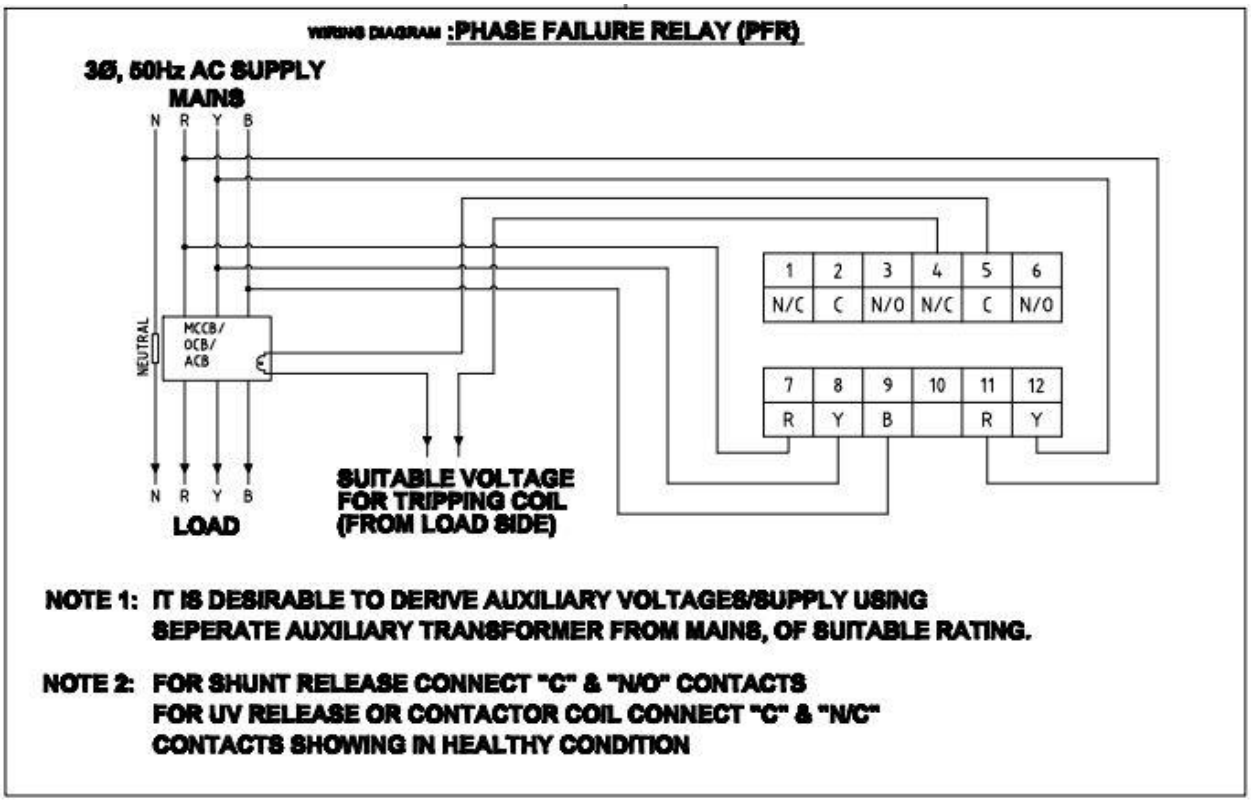
SETTING PROCEDURE:

- The Phase Failure relay has two dip switches:
  1. **AUTO/MANUAL** reset option
  2. **System Voltage Unbalance** 10% / 20%



- It also has two LED indications
  1. **HEALTHY**- **Green LED**
  2. **FAULT- RED LED** (in case there is a failure(Loss of phase)/reversal of phase/Unbalance between any two phases)

WIRING DIAGRAM



DIMENSIONAL DETAILS