



PRM Phase Rotation Module

A00830

Manual Version 1.1

PRM Version D

Operation Manual

PRM Manual

Part number:

A00830 Phase Rotation Module 110VAC

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1 OVERVIEW

The Bramco Phase Rotation Module has been designed to monitor phase rotation and phase voltage. The PRM gives visual indication of status and electrical contacts for control.

It is for use on 415-1100VAC three phase systems.

The PRM is enclosed in a standard form factor DIN rail mounted polycarbonate housing.

1.1 Features

- Monitors system voltage
- Determines phase rotation
- Pickup/dropout time is 2 seconds
- Provides normally open contacts for:
 - System voltage OK
 - Clockwise phase rotation
 - Counter clockwise phase rotation
- LED feedback is given for:
 - System voltage OK
 - Clockwise phase rotation
 - Counter clockwise phase rotation
 - Phase A / Phase B / Phase C dropout

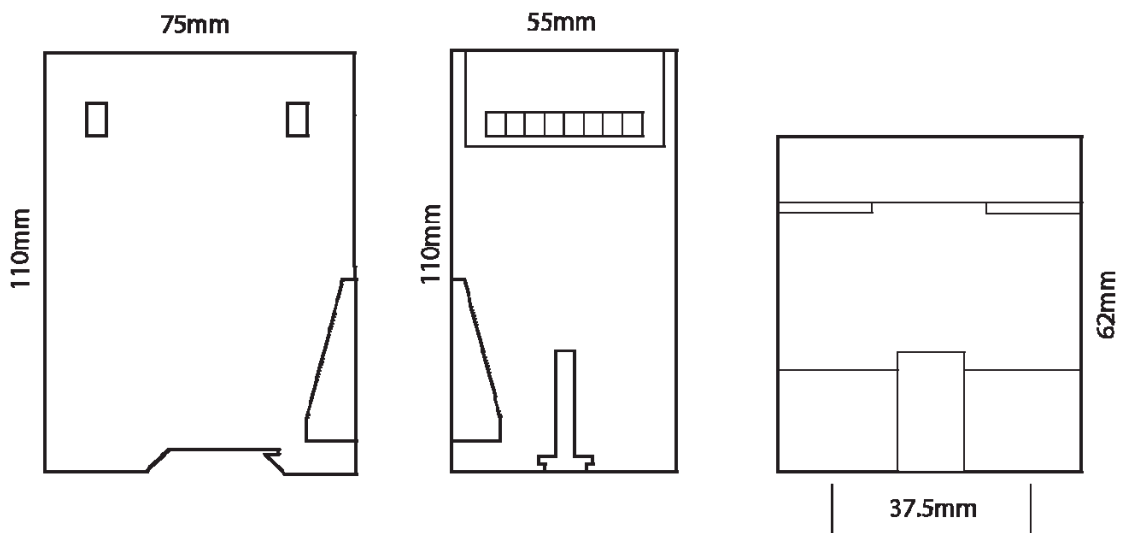
1.2 Physical Layout

The PRM uses a DIN-rail mounted polycarbonate enclosure, with terminal strips for electrical connections.

PRM Front View



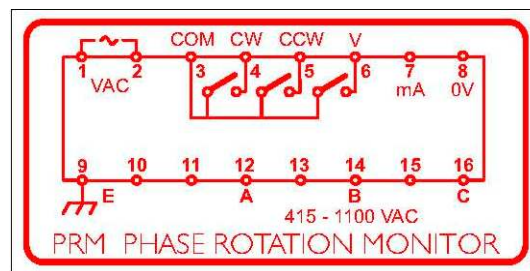
PRM Basic Enclosure Dimensions



1.3 Terminal Connections

| Terminal Number | Terminal Function |
|-----------------|----------------------------|
| 1 | AC power |
| 2 | AC power |
| 3 | Common |
| 4 | Clockwise Rotation |
| 5 | Counter Clockwise Rotation |
| 6 | System Voltage OK |
| 7 | |
| 8 | |

| Terminal Number | Terminal Function |
|-----------------|-------------------|
| 9 | System Earth |
| 10 | |
| 11 | |
| 12 | Phase A |
| 13 | |
| 14 | Phase B |
| 15 | |
| 16 | Phase C |



2 PRM OPERATION

The PRM monitors the three phases of a system with reference to earth. The system is monitored for healthy phase – earth voltages and positive phase rotation.

The indication and output contacts are non-failsafe and non-latching. The indication and contacts will pick up or drop out only after a system change has been steady for two seconds.

2.1 System Voltage

When the phase – earth voltage is greater than 210VAC for a given phase, that phase is considered to be healthy.

With all three phases healthy, the VOK contact (on terminals 3 – 4) will close. The VOK LED will be illuminated, and the three phase LEDs will be extinguished.

If any one or more of the phases is considered to be unhealthy (i.e. below 210VAC), the VOK contact will open, the VOK LED will extinguish, and the phase LED corresponding to the unhealthy phase will illuminate.

2.2 Phase Rotation

There are three conditions that must be met for the phase rotation indication and contacts to positively pick up:

- The frequency of each phase must be between 40Hz and 60Hz
- The phase differences must be approximately uniform – if the phases are considered to be ‘in phase’ with one another, the PRM will not indicate phase rotation
- The phase rotation must be consistent for a minimum of 15 full 50Hz cycles

Once the phase rotation is established, the 2 second changeover period will elapse and the CW or CCW contact will close (terminals 3 – 5 or 3 – 6 respectively), and the CW or CCW LED will illuminate.

If any of the above conditions are not met, the CW and CCW contacts will remain open, and the CW and CCW LEDs will remain extinguished.

3 SPECIFICATIONS FOR PRM

| | |
|------------------------|--|
| Supply Voltage | 120VAC 50Hz standard, 240VAC 50Hz optional 2VA loading |
| System Voltage | 415VAC – 1100VAC 40Hz – 60Hz |
| Phase Voltage | 240VAC – 635VAC 40Hz – 60Hz Phase – Earth |
| Phase to Earth Loading | 6.8M Ω , AC/DC |
| Changeover delay | 2 seconds |
| Relay Contacts | 3 x 2A 120VAC 30VA max |
| Voltage Detection | Pickup at 210VAC |
| Phase Rotation | 40Hz – 60Hz, Clockwise/Counter Clockwise In-phase detection |

4 INSTALLATION

4.1 Mounting

The PRM is DIN-rail mounted. See section 1.2 for dimensions.

Where possible, the relay should be mounted away from high-current switching devices (breakers etc).

4.2 Cabling

Use appropriately rated cabling for three-phase system power. Ensure that these conductors are properly insulated, and that the terminations are likewise insulated correctly.

Connect 120VAC control power to terminals 1 – 2.

Connect system monitoring devices to PRM contacts, terminals 3 – 6. Follow manufacturers' instructions for this cabling.

5 PRM TYPICAL CONNECTIONS

