

Order Number

Serial Number

## PRODUCT/TEST MANUAL

**2P45K4**

**POTENTIAL SELECTOR**

<b>Issue Level</b>	<b>Date</b>	<b>Summary of changes</b>
A	29/04/1999	Initial issue.

Due to RMS continuous product improvement policy this information is subject to change without notice.

<b>Document updated</b>	<b>Checked</b>	<b>Registered</b>	<b>.pdf file created</b>	<b>.pdf uploaded to web site</b>

## 1. DESCRIPTION OF OPERATION

The 2P45 is designed to provide automatic changeover of incoming voltage supplies should a loss of phase or an under voltage condition exist on the primary voltage source for the relay. This relay will detect this condition and will select the secondary input voltage source. There is a delay of approximately one half second for the relay to drop out. This operation will be indicated by LED's on the front panel of the relay.

## 2. SPECIFICATIONS

Auxiliary Supply	110 volts AC 50 Hz
Time Delay on dropout	Approx 0.3 - 0.5 seconds (fixed)
Undervoltage	80% of nominal (factory set)
Phase imbalance	5 to 15% $\pm$ 2% of nominal voltage expressed as a phase to phase voltage difference as a percentage of nominal voltage when two phase to phase voltages are reduced equally with the third at nominal voltage.

Note : The LED front panel indicators indicate total loss of phase only.

Operation Indicators	LED indicating healthy incoming phases. LED indicating outgoing phases. LED indicating an Undervoltage condition
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## 3. TEST EQUIPMENT REQUIRED

Three phase adjustable Supply  
Digital Multimeter

## 4. ASSOCIATED DRAWINGS

162-045-104	Wiring diagram
690-200-204	Circuit diagram, Phase PCB
690-201-201	Circuit diagram, LED PCB

## 5. HIGH VOLTAGE TESTING

- Apply 2KV 50Hz test for 1 minute between terminal Groups A and B.
- Apply three 5KV 1/50 impulses of each polarity between terminal Groups A and B.

### Group A

All terminals

### Group B

Frame

## 6. CALIBRATION & TEST PROCEDURE

- Connect the DVM between PT 6 and PT 1 with range set to 100 V.

- b) Apply 110 V 3 Phase to the 2P45 as per the connection label. The output relay should be picked up. The LED indicators for each of the input phases should be illuminated, if the relay is operated then the output LED indicators will also be illuminated.
- c) Adjust Balance trimpot (R3) for a minimum reading between TP6 & TP1  Checked
- d) Connect the DVM between PT 5 and PT 1 with range set to 20 V. Decrease yellow phase so that the BLUE-YELLOW line voltage is 95 % of the normal line voltage. Adjust trimpot R8 while monitoring TP5. Set R8 so that TP5 gives a maximum reading.  Checked

**6. CALIBRATION & TEST PROCEDURE (Cont)**

- e) Set the three-phase supply to the nominal line voltage. Decrease all three phases slowly to 80 % (88 volts) of nominal voltage. Adjust trimpot R14 until the relay just drops out.. Slowly increase voltage until the relay picks up. The pick up voltage should be in the range of 85 to 93%. (94 to 102 volts). Return all phases to normal line voltage.

	Nominal	Actual
Drop out	88 volts	
Pick up	94 - 102 volts	

- f) Set front panel potentiometer to 15 % (fully clockwise). Decrease yellow phase so that the BLUE-YELLOW line voltage 85% (93.5) of normal line voltage. Adjust R21 until the relay drops out. Increase voltage and check that the relay picks up at between 90 and 93% of normal line voltage.

	Nominal	Actual
Drop out	93.5 volts	
Pick up	96 - 102 volts	

- g) Set front panel potentiometer to 5% (fully anti clockwise). Decrease yellow phase so that the BLUE-YELLOW line voltage is 95% (104.5)of the nominal line voltage. Adjust R23 until the relay drops out at 95 % of line voltage. Pick up should be 95 to 98% of nominal line voltage.

	Nominal	Actual
Drop out	104.5 volts	
Pick up	105 - 108 volts	

**7. GENERAL & FUNCTIONAL**

- a) Check operation of the LED indicators for each of the incoming and outgoing phases.

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- b) Check that there is a delay of 0.3 - 0.5 seconds between loss of phases and operation of the output contacts
- b) Check that the relay is electrically sound and mechanically robust as per Standard Inspection & Test Schedule 903-000-026.

PASS

TESTED BY : \_\_\_\_\_ DATE : \_\_\_\_\_

### 8. CONNECTION DIAGRAM

