



159-048-982  
Issue A (29/11/94)  
Sheet 1 of 5

Order Number

Serial Number

## 2C48K382 TEST PROCEDURE

### INSTANTANEOUS OVERCURRENT RELAY

#### 1. TEST EQUIPMENT REQUIRED

DC Auxiliary Supply, AC Variable Current Supply, Ammeter, Oscilloscope, HV Test Equipment, Electronic Counter (for measuring operate & release times).

#### 2. ASSOCIATED DRAWINGS:

- 159-048-082 Descriptive Manual 2C48K382
- 159-048-182 Circuit Diagram 2C48K382
- 651-293-201 Circuit Diagram PCB Current Sensing
- 651-293-301 Loading Diagram PCB Current Sensing
- 660-009-301 Loading Diagram Mother Board

#### 3. HIGH VOLTAGE TESTING

- (a) Apply 3 5KV 1/50us impulses of each polarity between terminal groups 1 and 2 in table 1 below.

<b>TABLE 1</b>	
<b>GROUP 1</b>	<b>GROUP 2</b>
1 - 6 incl, joined	frame
1 - 6 incl, joined	9 & 10 joined
7, 8, 11 - 20 incl joined	frame
7, 8, 11 - 20 incl joined	9 & 10 joined

- (b) Apply 3 5KV 1/50 impulses of each polarity across Auxiliary Supply terminals (9 and 10).
- (c) Apply 2KV RMS 50Hz for 1 minute between all terminals excluding 9 & 10, tied together, and frame.

#### 4. CALIBRATION PROCEDURE

- \* NOTE. The calibration of only one phase of the circuit will be described in full (Input A). Component references are for Circuit Diagram 651-293-201.
- (a) Adjust pot knob for equal over travel at scale ends if necessary.
  - (b) Apply 0.25A through input A (terminals 1 & 2).
  - (c) Connect an oscilloscope between the junction of D2 and R19 (651-293-201 reference) and pin 10 of the plug-in board to monitor the 3-phase bridge output.
  - (d) Connect a decade box across R4 avlugs located on Current Sensing Board, and adjust until the most even three phase full wave rectified type ripple is achieved (as observed on CRO)
  - (e) Replace decade box with nearest preferred value of fixed resistor and re-check waveform.
  - (f) Connect 125V DC Auxiliary power supply to terminals 9 (+) and 10 (-).
  - (g) Connect decade boxes across R19x and R21x avlugs.
  - (h) Set input current and dial pot setting to 0.4A.
  - (i) Set R21 decade box to approximately 20K and adjust R19 decade box until output relay just picks up at 0.4A.
  - (j) Set input current and dial pot setting to 0.1A.
  - (k) Adjust R19 decade box so that relay just picks up at 0.1A.
  - (l) Repeat steps (h) to (m) until calibration of the scale is achieved.
  - (m) Replace decade boxes with nearest preferred value of fixed 0.5W resistors, and check the following scale calibration points:





**CALIBRATION PROCEDURE (Cont'd)**

SETTING	MIN	MAX	NOM	ACTUAL	UNITS
0.1	.09	.11	.10	_____	A
0.2	.19	.21	.20	_____	A
0.3	.29	.31	.30	_____	A
0.4	.39	.41	.40	_____	A

(n) Check that hysteresis is between 80% and 87%. Repeat (d) if not.

MIN	MAX	NOM	ACTUAL	UNITS
80	87	80	_____	

(o) Set input A dial to 0.4A and input A current to 2A, and record pickup and dropout times

TIME	Vaux	MAX	ACTUAL	UNITS
PU	77V	30	_____	ms
DO	150V	30	_____	ms

(p) Repeat steps (a) to (m) for input B:  
 Ref (b) Terminals 3 & 4  
 Ref (c) D8 & R22  
 Ref (d) R5  
 Ref (g) R22 & R24

SETTING	MIN	MAX	NOM	ACTUAL	UNITS
0.1	.09	.11	.10	_____	A
0.2	.19	.21	.20	_____	A
0.3	.29	.31	.30	_____	A
0.4	.39	.41	.40	_____	A



**CALIBRATION PROCEDURE (Cont'd)**

- (q) Check that hysteresis is between 80% and 87%. Repeat (f) if not.

MIN	MAX	NOM	ACTUAL	UNITS
80	87	80	_____	%

- (r) Set input B dial to 0.4A and input B current to 2A, and record pickup and dropout times

TIME	Vaux	MAX	ACTUAL	UNITS
PU	77V	30	_____	ms
DO	150V	30	_____	ms

- (s) Repeat steps (a) to (m) for input C:  
 Ref (b) Terminals 5 & 6  
 Ref (c) D14 & R25  
 Ref (d) R6  
 Ref (g) R25 & R27

SETTING	MIN	MAX	NOM	ACTUAL	UNITS
0.1	.09	.11	.10	_____	A
0.2	.19	.21	.20	_____	A
0.3	.29	.31	.30	_____	A
0.4	.39	.41	.40	_____	A

- (t) Check that hysteresis is between 80% and 87%. Repeat (f) if not.

MIN	MAX	NOM	ACTUAL	UNITS
80	87	80	_____	%

### CALIBRATION PROCEDURE (Cont'd)

- (u) Set input C dial to 0.4A and input C current to 2A, and record pickup and dropout times

TIME	Vaux	MAX	ACTUAL	UNITS
PU	77V	30	_____	ms
DO	150V	30	_____	ms

### 5. GENERAL & FUNCTIONAL

Check that unit operates satisfactorily over the range of 77 to 150 Volts Auxiliary Supply.

Check that the relay is electrically sound and mechanically robust as per Standard Inspection & Test Schedule 903-000-026

PASS

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