

159-058-943  
Issue A 06.04.1995  
Sheet 1 of 4



Order Number

Serial Number

## 2C58K43 TEST PROCEDURE

### INSTANTANEOUS OVERCURRENT RELAY

#### 1. TEST EQUIPMENT REQUIRED

- DC Supply
- AC Current Supply
- AC Ammeter
- Electronic timer
- Decade box
- Oscilloscope
- High Voltage Test Equipment.

#### 2. ASSOCIATED DRAWINGS

- |             |                     |
|-------------|---------------------|
| 159-058-143 | Wiring Diagram      |
| 660-093-201 | PCB circuit diagram |
| 660-093-301 | PCB Loading         |

#### 3. HIGH VOLTAGE TESTING

- a) Apply 2KV RMS. between the terminal groups as listed in A & B below for 1 minute.
- b) Apply three 5KV 1/50usec pulses of each polarity as listed in A & B below.

##### GROUP A

All terminals

1,2,9,10,11,12,19,20

(Inputs)

##### GROUP B

Frame

3,4,5,6,7,8,13,14

(Outputs)



#### 4. CALIBRATION PROCEDURE

##### 4.1 Current Sensing

**\*Note.**

The calibration of only one phase of the circuit will be described (input no.A). Component reference numbers refer to 660.093.201.

- a) Adjust pot knob for equal overtravel at scale ends if necessary.
- b) Apply scale minimum current through input A (terminals 9 & 10).
- c) Connect a decade box across R1 (159.058.143 reference) avlugs located on mother board 660/105.1. The value of R1 determines the value of pickup current at a particular dial setting.
- d) Apply auxiliary supply voltage of 125 V DC.
- e) Check that TP"E" waveform is clean, and varies by a factor of four to one in amplitude as the dial pot is moved from min to max setting. R3 may be decreased if the scale span is too small or increased if the scale span is too large.
- f) Check that TP"F" waveform is as smooth as possible (ie symmetrical 3 phase ripple). If percentage ripple is too great, C5 may be altered to achieve best symmetry.
- g) Adjust decade box so that relay just picks up at 0.4A for dial setting of 0.4A.
- h) Check that at the 0.1A dial setting, pickup occurs at this value.
- i) Replace decade box with nearest preference value of fixed resistor, and check the following scale calibration points.

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNIT
84	116	100		mA
184	216	200		mA
284	316	300		mA
384	416	400		mA

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

**Actual**

--

%



**4.1 Current Sensing (cont)**

- k) Repeat steps (a)-(i) for input B :  
 Ref (b) Terminals 19 & 20 (c) R2  
 (e) TP'C' R21 (f) TP'D' C15

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNIT
84	116	100		mA
184	216	200		mA
284	316	300		mA
384	416	400		mA

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

- m) Repeat steps (a)-(i) for input C :  
 Ref (b) Terminals 11 & 12 (c) R3  
 (e) TP'A' R39 (f) TP'B', C25

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNIT
84	116	100		mA
184	216	200		mA
284	316	300		mA
384	416	400		mA

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

**4.2 OPERATE TIME CHECK**

- a) Set input A dial to 0.1A and input A current to 2A.

PU time < 19ms @ aux supply 80V	<input type="text"/>	ms
DO time < 14 ms @ aux supply 150V	<input type="text"/>	ms

- b) Set input B dial to 0.1A and input A current to 2A.

PU time < 19ms @ aux supply 80V	<input type="text"/>	ms
DO time < 14 ms @ aux supply 150V	<input type="text"/>	ms



**4.2 OPERATE TIME CHECK (Cont)**

- c) Set input C dial to 0.1A and input A current to 2A.

PU time < 19ms @ aux supply 80V	<input type="text"/>	ms
DO time < 14 ms @ aux supply 150V	<input type="text"/>	ms

**5. GENERAL & FUNCTIONAL**

- a) Check that unit operates satisfactorily over the range of 87.5% to 137.5% auxiliary supply.
- b) Check that R7 and R8 have been correctly loaded on mother board.
- c) Check that quiescent current at 110 V is 26ma +10% with output relay dropped out and 100mA with output relay picked up.
- d) Check that the relay is electrically sound and mechanically robust as per Standard Inspection & Test Schedule 903-000-026

PASS

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