



159-058-918
Sheet 1 of 8

Order Number

Serial Number

PRODUCT/TEST MANUAL

2C58K18

INSTANTANEOUS OVERCURRENT RELAY

Issue Level	Date	Summary of changes
A	30/05/1996	Initial issue.

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

Document updated	Checked	Registered	.pdf file created	.pdf uploaded to web site

1. DESCRIPTION OF RELAY

The 2C58K18 is a triple-pole single output instantaneous overcurrent relay having less than 20ms operate and 15ms release times at 20X setting current. Heavy duty output contacts capable of breaking 0.5A at 110V DC resistive are provided. Air-cored current transformers are used to enable fast operate times to be maintained regardless of previous current offsets which may have occurred.

2. SPECIFICATION

Auxiliary Supply Voltage	125V DC +20% -30%
Auxiliary Supply Burden (at 125V)	<3W output relay dropped out <11W output relay picked up
Nominal Input Current	1A
Sensing Supply Burden (at 1A)	<0.5VA
Nominal Setting Range	10% - 40% continuously variable per pole
Number of Poles	3 (with common output)
Frequency Tolerance	-6% to +2% of 50Hz
Ambient Temperature Range	-5°C to 55°C
Accuracy	<±5% of maximum setting
Dropout/Pickup Ratio	70% Nominal
Withstand Current (independent of setting)	2.5A continuous 10A for 3 seconds
Operate Time	<20ms Symmetrical or fully offset
Release Time	<15ms Symmetrical or fully offset with current interruption at a zero current crossing

2. SPECIFICATION (Cont)

Output Relay Contact Ratings

Make and Carry Continuously

2200 VA AC resistive with maximums of 440 Volt and 10 Amp
2200 VA DC resistive with maximums of 440 Volt and 10 Amp

Make and Carry of 0.5 Second

7500 VA AC resistive with maximums of 440 Volt and 30 Amp
7500 VA DC resistive with maximums of 440 Volt and 30 amp

AC Break Capacity

2200 VA AC resistive with maximums of 440 Volt and 10 Amp

DC Break Capacity (Amps)

Voltage			24V	48V	125V	250V
Resistive rating		a b	12 12	1.5 12	0.5 10	0.25 5
L/R=4 0mS	Maximum break	a b	12 30	1 15	0.4 5.5	0.2 3.5
	1K operations (N3 Rating)	b	12	12	5	2.5

a = Without magnetic blowouts b = With magnetic blowouts
* As tested by Powernet Yarraville laboratories in Victoria.

3. TEST EQUIPMENT REQUIRED

DC Auxiliary Supply
AC Current Supply
AC Ammeter
Electronic Counter (for measuring operate and release times)
Oscilloscope
Decade Boxes
High Voltage Test Equipment

4. ASSOCIATED DRAWINGS

159-058-118	2C58K18 Wiring Diagram
660-093-204	Circuit Diagram Current Sensing PCB
660-093-301	Loading Diagram Current Sensing PCB

5. HIGH VOLTAGE TESTING

- a) Apply 2KV RMS 50 Hz between terminal groups as listed in A & B below for 1 minute.
- b) Apply 3 5KV 1/50us pulses of each polarity as listed in A & B below.

Group A
7,8,10,11,18,22
10,11,25,26,43,44
7,8,25,26,40,41

Group B
25,26,40,41,43,44,E
7,8,18,22,40,41,E
18,22,43,44,E

6. CALIBRATION & TEST PROCEDURE

6.1 Current Sensing

Note: The calibration of only one phase of the circuit will be described (Input A). Component reference numbers refer to 660.093.204.

- a) Adjust pot knob for equal overtravel at scale ends if necessary.
- b) Apply scale minimum current through input A (terminals 25 & 26).
- c) Connect a decade box across R1 (158.058.118 reference) avlugs located on Motherboard 660/94-2. The value of R1 determines the value of pickup current at a particular dial setting.
- d) Apply auxiliary supply voltage of 125V 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 minimum to maximum 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 a dial setting of 0.4A.
- h) Check that at the 0.01A dial setting pickup occurs at this value.

6.1 Current Sensing (Cont)

- i) Replace decade box with nearest preferred value of fixed resistor and check the following scale calibration points.

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNIT
84	116	100	<input type="text"/>	mA
184	216	200	<input type="text"/>	mA
284	316	300	<input type="text"/>	mA
384	416	400	<input type="text"/>	mA

- j) Check that hysteresis is between 67% and 74%. Repeat f) if not.

Actual %

- k) Repeat steps a) to i) for Input B:

Ref b) Terminals 43 & 44 c) R2
 e) TP"C", R21 f) TP"D", C15

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNIT
84	116	100	<input type="text"/>	mA
184	216	200	<input type="text"/>	mA
284	316	300	<input type="text"/>	mA
384	416	400	<input type="text"/>	mA

- l) Check that hysteresis is between 67% and 74%. Repeat (f) if not.

Actual %

- m) Repeat steps a) to i) for input C:

Ref b) Terminals 40 & 41 c) R3
 e) TP"A", R39 f) TP"B", C25

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNIT
84	116	100	<input type="text"/>	mA
184	216	200	<input type="text"/>	mA
284	316	300	<input type="text"/>	mA
384	416	400	<input type="text"/>	mA

- n) Check that hysteresis is between 67% and 74%. Repeat (f) if not.

Actual %

6.2 Operate Time Check

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

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

- b) Set input A dial to 0.4A and input A current to 8A.

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

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

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

- d) Set input B dial to 0.4A and input B current to 8A.

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

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

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

- f) Set input C dial to 0.4A and input C current to 8A.

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

7. 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 : _____

8. CONNECTION DIAGRAM

