

Order Number

Serial Number

PRODUCT/TEST MANUAL

2C59K14

OVER CURRENT AND TIME DELAY

Issue Level	Date	Summary of changes
C	07/06/1996	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. BROAD DESCRIPTION

The 2C59K14 contains a 2C58 Single Phase Instantaneous Current Check Relay and a 2T649 Delay Operate Timer mounted in an FTD40 enclosure. The basic operation of the overcurrent element is if the input current exceeds the front panel settings the output relay will change state signalling that an overcurrent condition exists. Should this overcurrent reduce to below the dial settings the relay will reset. The setting range of the relay is continuously adjustable from 0.2 to 0.8 Amps. The output relay is fitted with magnetic blowouts to enhance the current breaking capability. The time delay relay has a setting time range of 3 to 30 minutes, operation is initiated by applying auxiliary voltage. If the auxiliary voltage is removed prior to the set time elapsing the relay will reset without operating.

2. SPECIFICATIONS

Overcurrent Module

Auxiliary Supply Voltage	125 Volts DC +20% - 30%
Auxiliary Supply Burden	<6 Watts
Number of elements	One
Nominal Input Current	1 Amp
Nominal Setting Range	20% to 80%
Ambient Temperature Range	-5°C to 55 °C
Pickup/Dropout Ratio	70% to 75%
Accuracy	±5% of maximum setting
Operate Time	<20ms symmetrical or fully offset

Time Delay Module

Auxiliary Supply Voltage	125 Volts DC +20% -30%
Auxiliary Supply Burden	<10 Watts
Time Delay Range	3 to 30 minutes
Output Contacts	2 changeover

Output Relay Contact Ratings

Make and Carry Continuously

3000 VA AC resistive with maximums of 660 Volt and 12 Amp
3000 VA DC resistive with maximums of 660 Volt and 12 Amp

Make and Carry of 0.5 Second

7500 VA AC resistive with maximums of 660 Volt and 30 Amp
7500 VA DC resistive with maximums of 660 Volt and 30 amp

2. SPECIFICATIONS (Cont)

AC Break Capacity

3000 VA AC resistive with maximums of 660 Volt and 12 Amp

DC Break Capacity (Amps)

Voltage			24V	48V	125V	250V
Resistive rating		a	12	1.5	0.5	0.25
		b	12	12	10	5
L/R=40mS	Maximum break	a	12	1	0.4	0.2
		b	30	15	5.5	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 Supply
AC Current Supply
AC Ammeter
Electronic Timer
Decade Box
Oscilloscope
High Voltage Test Equipment.
Frequency counter

4. ASSOCIATED DRAWINGS

159-059-114	Wiring Diagram
660-093-210	PCB circuit diagram
660-093-303	PCB Loading
660-093-410	Parts List
660-022-400	Timer PCB Parts List

5. 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 A terminals

All A & C terminals

A9,A10,C1,C2,C9&C10

GROUP B

All C terminals

Frame

A4-A7 & C3-C8,C13&C14

6. CALIBRATION PROCEDURE

6.1 Current Sensing

- a) Adjust pot knob for equal overtravel at scale ends if necessary.
- b) Apply scale minimum current through input terminals C9 & C10.
- c) Connect a decade box across R2 (660.093.210 reference) avlugs located on mother board 660/105-401. The value of R2 determines the value of pickup current at a particular dial setting.
- d) Apply auxiliary supply voltage of 125 V DC.
- e) Check that TP"C" 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. R21 may be decreased if the scale span is too small or increased if the scale span is too large.
- f) Check that TP"D" waveform is as smooth as possible (ie symmetrical 3 phase ripple). If percentage ripple is too great, C15 may be altered to achieve best symmetry.
- g) Adjust decade box so that relay just picks up at 0.8A for dial setting of 0.8A.
- h) Check that at the 0.2A dial setting, pickup occurs at this value.

6.1 Current Sensing (Cont)

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

MINIMUM	MAXIMUM	NOMINAL	ACTUAL
170	230	200	<input type="text"/> mA
370	430	400	<input type="text"/> mA
570	630	600	<input type="text"/> mA
770	830	800	<input type="text"/> mA

- j) Check that hysteresis is between 70% and 75%. Repeat (f) if not.

Actual %

6.2 Operate Time Check

Set input dial to 0.2A and input A current to 4A.

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

6.3 Definite Time Relay

- a) Cut links A,D and E on 660/022 PCB.
- b) Connect frequency counter probe to G & T.
- c) Set period according to spec sheet 660-021-100
- d) Check that pick up time at the following settings is within tolerance.

Minimum	Maximum	Nominal	Actual	Unit
2.85	3.15	3.0	<input type="text"/>	min
15.75	14.25	15.0	<input type="text"/>	min
31.5	28.5	30.0	<input type="text"/>	min

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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 110V 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

