

Order Number

Serial Number

## PRODUCT/TEST MANUAL

**2C62K1**

**INSTANTANEOUS OVERCURRENT**

<b>Issue Level</b>	<b>Date</b>	<b>Summary of changes</b>
A	24/03/1999	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. BROAD DESCRIPTION

The 2C62K1 is a triple-pole single or phase segregated output definite time overcurrent relay having less than 20ms operate and 15ms release times at 20X setting current. Air-cored current transformers are used to enable fast operate times to be maintained regardless of previous current offsets which may have occurred. For the output contacts to operate requires an input current which exceeds the dial setting

## 2. SPECIFICATIONS

Auxiliary Supply Voltage 40 - 300 V DC  
 Auxiliary Supply Burden (at 125V) 3W output relay dropped out  
 11W output relay picked up

### CURRENT SECTION

Nominal Input Current 1A  
 Sensing Supply Burden (at 1A) 0.5VA  
 Nominal Setting Range 10 - 40 % of nominal continuously variable  
 Number of Poles 3  
 Frequency Tolerance -6% to +2% of 50Hz  
 Ambient Temperature Range -5°C to 55°C  
 Accuracy ±5% of maximum setting  
 Dropout/Pickup Ratio < 85% Nominal  
 Withstand Current >5x maximum continuous  
 (independent of setting) >20x maximum 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.

### Output Relay Contact Ratings

#### Make and Carry Continuously

1700 VA AC resistive with maximums of 380 Volt and 8 Amp  
 1700 VA DC resistive with maximums of 250 Volt and 8 Amp

#### AC Break Capacity

1700 VA AC resistive with maximums of 380 Volt and 8 Amp

#### Maximum Contact Capacity (Amps)

Voltage	DC			AC		
	30	125	250	110	220	250
Resistive	10	2.4	1.2	10	7	6.6
Inductive L/R 7 ms	7.5	1.8	.9	7.5	5	4.4

### 3. TEST EQUIPMENT REQUIRED

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

### 4. ASSOCIATED DRAWINGS

159-062-101	Wiring Diagram
660-292-202	PCB circuit diagram
660-292-302	PCB Loading
678-030-201	Power supply

### 5. HIGH VOLTAGE TESTING

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

#### GROUP A

ØA, ØB, ØC,A1,A2  
ØA, ØC,A3,A4,C5 - C8  
ØA, ØB,A3,A4,C1 - C4  
ALL TERMINALS

#### GROUP B

A3,A4,C1 - C12  
ØB,C1 - C4,C9 - C12,A1,A2  
ØC,A1,A2,C5 - C10  
FRAME

### 6. CALIBRATION PROCEDURE

#### 6.1 Current Sensing

Prior to calibration check the DC levels on the following test points using TP02F as common reference.

TP02-F	Common	TP02-B	+ 24	TP02-J	- 24
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TP02-H	+ 12	TP02-L	- 12	Check	<input type="checkbox"/>
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#### **\*Note.**

The calibration of only one phase of the circuit will be described (input no. A). Component reference numbers refer to 660.292.201

- Adjust pot knob for equal overtravel at scale ends if necessary.
- Apply scale minimum current through input A (terminals ØA).
- Connect a decade box across R01 TP01-H & TP01-J located on board 660.292.101. The value of R01 determines the value of pickup current at a particular dial setting.

### 6.1 Current Sensing (Cont)

- d) Apply nominal auxiliary supply voltage (125VDC).
- e) Check that TP01-D 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. R13 may be decreased if the scale span is too small or increased if the scale span is too large.
- f) Check that TP01-B waveform is as smooth as possible (ie symmetrical 3 phase ripple). If percentage ripple is too great, C22 may be altered to achieve best symmetry.
- g) Apply scale maximum current and adjust decade box so that relay just picks up at 0.4 A for dial setting of 0.4 A
- h) Apply minimum scale current and check that at the 0.1 A 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
0.08	0.12	0.1	A
0.18	0.22	0.2	A
0.28	0.32	0.3	A
0.38	0.42	0.4	A

- j) Check that hysteresis is between 80% and 85%. Repeat (f) if not.

**Actual**  %

- k) Repeat steps (a)-(i) for input B :

Ref (b) Terminals Ø B (c) R02 TP01-G & TP01-K  
 (e)TP01-F, R14 (f) TP01-A, C23

MINIMUM	MAXIMUM	NOMINAL	ACTUAL
0.08	0.12	0.1	A
0.18	0.22	0.2	A
0.28	0.32	0.3	A
0.38	0.42	0.4	A

- l) Check that hysteresis is between 80% and 85%. Repeat (f) if not.

**Actual**  %

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

Ref (b) Terminals ØC (c) R03 TP01-I & TP01-L  
 (e) TP01-E, R15 (f) TP01-C, C24

MINIMUM	MAXIMUM	NOMINAL	ACTUAL
0.08	0.12	0.1	A
0.18	0.22	0.2	A
0.28	0.32	0.3	A
0.38	0.42	0.4	A

- n) Check that hysteresis is between 80% and 85%. 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 <19ms @ aux supply 40V  | ms |
| DO time <14ms @ aux supply 300V | ms |
- b) Set input B dial to 0.1A and input A current to 2A.
- |                                 |    |
|---------------------------------|----|
| PU time <19ms @ aux supply 40V  | ms |
| DO time <14ms @ aux supply 300V | ms |
- c) Set input C dial to 0.1A and input A current to 2A.
- |                                 |    |
|---------------------------------|----|
| PU time <19ms @ aux supply 40V  | ms |
| DO time <14ms @ aux supply 300V | ms |
- d) Set input A dial to 0.4A and input A current to 8A.
- |                                 |    |
|---------------------------------|----|
| PU time <19ms @ aux supply 40V  | ms |
| DO time <14ms @ aux supply 300V | ms |
- e) Set input B dial to 0.4A and input A current to 8A.
- |                                 |    |
|---------------------------------|----|
| PU time <19ms @ aux supply 40V  | ms |
| DO time <14ms @ aux supply 300V | ms |
- f) Set input C dial to 0.4A and input A current to 8A.
- |                                 |    |
|---------------------------------|----|
| PU time <19ms @ aux supply 40V  | ms |
| DO time <14ms @ aux supply 300V | ms |

## 7. GENERAL & FUNCTIONAL

- a) Check that unit operates satisfactorily over the range of 40 to 300 volts auxiliary supply.
- 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

