

Order Number

Serial Number

## PRODUCT/TEST MANUAL

**2V171K3**

**DEFINITE TIME UNDERVOLTAGE RELAY**

<b>Issue Level</b>	<b>Date</b>	<b>Summary of changes</b>
B	11/10/99	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 2V171 is a delay release AC voltage measuring relay with both instantaneous and delayed outputs. All power to operate the relay is obtained from the voltage sensing input. The voltage sensing circuit incorporates a solid state level detector with an instantaneous output relay, which in turn energises the solid state timer. The relay commences timing out at dropout of the voltage sensing circuit and at the end of the timer period a magnetic latching output relay is operated.

## 2. SPECIFICATIONS

Nominal Voltage Supply	110V 50Hz (Max 132V)
Dropout Voltage Range	50-100V 50Hz
Pickup/Dropout Ratio	90% nominal
Timer Range	0.5 - 10 seconds
Set Time	Minimum 1 second (relay must be in PU condition in order to energise the no power timing element)
Accuracy	±5% of maximum setting
Temperature Range	-5° C to +55° C
Nominal Supply Burden	10VA

## 2. SPECIFICATIONS (Cont.)

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

### AC Break Capacity

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

### DC Break Capacity (Amps)

Voltage			24V	48V	125 V	250V
Resistive rating		a	12	1.5	0.5	0.25
		b	12	12	10	5
L/R=40 mS	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

AC Adjustable power source  
Digital Voltmeter  
Frequency/Period measuring instrument with a 10 Megohm probe  
Decade box

#### 4. ASSOCIATED DRAWINGS

165-171-003	2V171K3 Descriptive Manual	
660-101-201	Schematic Diagram	Timer
660-045-206	Schematic Diagram	Voltage Sensing

#### 5. HIGH VOLTAGE TESTING

- a) Apply 3 pulses at 5KV of each polarity between the terminals listed in Table 1.
- b) Apply 2000 volts RMS between the terminals listed in Table 1.

**TABLE 1**

5, 6, 7, 8, 9, 10	13, 14, 15, 16, Earth
5, 6, 13, 14	7, 8, 9, 10, 15, 16, Earth
7, 8, 15, 16	9, 10, Earth

#### 6. CALIBRATION & TEST PROCEDURE

##### 6.1 Timer Initialisation

Cut links E and C on Timer PCB 660-101-1.

##### 6.2 Undervoltage Calibration

- a) Apply nominal volts to relay (110 Volts AC)
- b) Set scale to 100 (maximum setting), connect a decade box across R42, set front panel dial to 100 %. Reduce voltage slowly and adjust R42 until the relay drops out at 100 volts.
- c) Check pickup dropout ratio is 90% adjust R32 if necessary.
- d) Replace value of R42 with the nearest preferred value and check scale linearity. Tabulate results.

Minimum	Maximum	Nominal	Actual	Units
45	55	50		Volts
70	80	75		Volts
95	105	100		Volts

##### 6.3. No Power Timer Calibration

- a) Refer drawing 660-101-201

- b) Apply voltage to timer PCB by ensuring that RL1 is energised, for initial calibration.
- c) Short TPA to TPB ensuring reset pin IC2 - 6 is held low, this allows the timer to oscillate.
- d) Adjust trimpot R9 for a 10 : 1 ratio irrespective of absolute values across the main timer control as it is varied between minimum and maximum setting.
- e) Set the main control to maximum setting and pad C12a/C12b to achieve an oscillator period of 8 - 80 milliseconds for minimum and maximum settings. Tabulate results:

Minimum	Maximum	Nominal	Actual	Units
0.5	1.5	1.0		Seconds
4.5	5.5	5.0		Seconds
9.5	10.5	10.0		Seconds

**7. GENERAL & FUNCTIONAL**

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

