

Order Number

Serial Number

PRODUCT / TEST MANUAL

2T101K1

MULTI-RANGE TIMER

Issue Level	Date	Summary of Changes
C	08/02/1996	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 2T101 time delay on energisation relay is particularly suitable for use in protection and control schemes where precision time delays are required.

A crystal oscillator and digital dividing circuit are employed to provide the timebase for a pre-settable down counter chain. When power is applied to the timer, the down counter is loaded with the thumbwheel switch setting and begins counting down. When zero is detected, the output relay picks up and the down counter stops. Time ranges are selected via a front panel switch which changes the divide ratio of the timebase circuit.

2. SPECIFICATIONS

ACCURACY	The setting and repeat accuracy is: $\pm 0.5\%$ of setting (plus the inherent minimum time).
BURDEN	(110V DC nominal supply) Less than 6 watts during timing. Less than 8 watts whilst output relay is energised.
RESET TIME	Electronic reset time is between 20 and 50 millisecond. Output relay dropout time is less than 10 millisecond and removal of auxiliary supply will reset the relay in this time.
INSULATION WITHSTAND	In accordance with AS2481-1981 (clause 5-4), IEC 255-5: 2KV RMS between input and frame, output and frame, and output and input. 1.2/50 5KV impulse between each terminal and earth, between circuits not normally connected together and between terminals of the same circuit.
NOISE IMMUNITY	Withstands the high frequency interference test detailed in AS2481-1981 (clause 5-5 App. D), IEC 255-22-1.
STANDARD OUTPUT CONTACTS	The output relay is fitted with 2 changeover self reset gold flashed contacts as standard.
STANDARD OUTPUT RELAY CONTACT RATINGS	
Make & Carry Continuously	1,700 VA AC resistive with maximums of 380V & 8A 1,700 VA DC resistive with maximums of 250V & 8A
Make & Carry for 0.5 Seconds	2,500 VA AC resistive with maximums of 380V & 12A 2,500 VA DC resistive with maximums of 250V & 12A

2. SPECIFICATIONS (Cont)

AC Break Capacity

1,700 VA AC resistive with maximums of 380V & 8A

DC Break Capacity (Amps)

Voltage		24V	48V	125V	250V
Resistive rating		8	1	0.4	0.2
L/R=40ms	1,000 (N3) operations	8	0.3	.01	0.05

OPERATION INDICATOR

The standard relay has a hand resettable magnetic disc (permanent memory) indicator fitted to give visual indication that the output relay element has operated. Note that a continuous auxiliary supply is required for the flag circuitry.

3. TEST EQUIPMENT REQUIRED

DC Auxiliary Supply
Frequency Counter
Digital Voltmeter
Oscilloscope
Electronic Counter (for measuring operate times)
High Voltage Test Equipment

4. ASSOCIATED DRAWINGS

164-101-001 Descriptive Manual 2T101
164-101-201 Circuit Diagram 2T101
650-154-301 Loading Diagram PCB Power Supply
660-155-301 Loading Diagram PCB Timing & Logic

5. HIGH VOLTAGE TESTING

- a) Apply 2KV RMS 50 Hz between terminal groups 1 and 2 in Table 1 for 1 minute.
- b) Apply 3 5KV 1/50us pulses of each polarity between terminal groups 1 and 2 in Table 1.

TABLE 1

Group 1	Group 2
4, 5, 6, 8, 9, 10	1, 2, 3, E
1, 2, 3, 8, 9, 10	4, 5, 6, E

6. CALIBRATION & TEST PROCEDURE

- a) Connect timing apparatus to measure interval between energisation of unit and output

relay contact closure.

- b) Connect frequency counter probe to TP1 (0V to TP2).
- c) Energise unit and check that the frequency at this point is within limits.

Minimum	Maximum	Nominal	Actual	Unit
5.119	5.121	5.120	<input type="text"/>	MHz

- d) Set range switch to range 1 and time to 000.
- e) Record pick-up time for auxiliary voltage of 82.5V.

Minimum	Maximum	Nominal	Actual	Unit
20	32		<input type="text"/>	ms

- f) Record times for the following settings (range 1) at auxiliary voltage of 110V.

Setting	Minimum	Maximum	Nominal	Actual	Unit
111	125	137	131	<input type="text"/>	ms
222	236	248	242	<input type="text"/>	ms
444	457	471	464	<input type="text"/>	ms
888	901	915	908	<input type="text"/>	ms

- g) Set time to 100 and set range to 2.

Minimum	Maximum	Nominal	Actual	Unit
1.016	1.026	1.02	<input type="text"/>	s

- h) Set range switch to 3 and record pick-up time.

Minimum	Maximum	Nominal	Actual	Unit
10.01	10.03	10.02	<input type="text"/>	s

7. GENERAL & FUNCTIONAL

- a) Check for correct operation of magnetic disc flag. (Note that the flag circuitry must be continuously energised.)

OK

- 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

