Order Number | | Serial Number | |

PRODUCT / TEST MANUAL

2T102K1

DIGITAL TIMER

Issue Level	Date	Summary of Changes
A	23/01/1997	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 2T102 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 positive supply is applied to the control input, 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. The three time ranges can be selected via a front panel switch which changes the divide ratio of the timebase circuit. Front panel LED's indicate the relay status.

2. SPECIFICATIONS

ACCURACY — The setting and repeat accuracy is: ±0.5% of setting (plus the inherent minimum time).

BURDEN — 110V DC (-25% to +20%)
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 20 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

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

2. SPECIFICATIONS (Cont)

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..

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

164-102-001 Descriptive Manual 2T102
164-101-202 Circuit Diagram 2T102
660-278-301 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 the initiate input and output relay contact closure.

b) Set range switch to range A and time to 000.

c) Record pick-up time for auxiliary voltage of 82.5V.

Maximum	**Actual**	**Unit**
20		ms

6. CALIBRATION & TEST PROCEDURE (Cont)

d) Record drop-out time for auxiliary voltage of 132V.

Maximum	Actual	Unit
20		ms

e) Record times for the following settings (range A) at auxiliary voltage of 110V.

Setting	Minimum	Maximum	Nominal	Actual	Unit
111	121	131	123		ms
222	232	242	234		ms
444	454	464	456		ms
888	898	908	900		ms

f) Set time to 100 and set range to B.

Minimum	Maximum	Nominal	Actual	Unit
1.01	1.02	1.01		s

g) Set range switch to C and record pick-up time.

Minimum	Maximum	Nominal	Actual	Unit
10.01	10.02	10.01		s

7. GENERAL & FUNCTIONAL

a) Check for correct operation of magnetic disc flag.

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