



Order Number

Serial Number

PRODUCT / TEST MANUAL

2T103K2

DIGITAL TIMER

| Issue Level | Date | Summary of changes |
|--------------------|-------------|---------------------------|
| A | 12/11/1998 | 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 2T103 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

| | |
|--|---|
| INITIATE INPUT | 110 Volts DC +/- 10% Energise initiate input to actuate timer functions |
| ACCURACY | The setting and repeat accuracy is: ±0.5% of setting (plus the inherent minimum time). |
| AUXILIARY SUPPLY RESET TIME | 40 - 275 V DC Switchmode power supply 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. |
| OUTPUT CONTACTS | The output relay is fitted with 2 normally open and 2 normally closed self reset contacts as standard. |
| 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 | |
| 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

164-103-002 Descriptive Manual
164-103-102 Wiring Diagram
660-283-202 Circuit Diagram
660-283-301 Loading Diagram

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 |
| All terminals | Frame |
| Inputs | Outputs |

6. CALIBRATION & TEST PROCEDURE

Connect timing apparatus to measure interval between energisation of the initiate input and output relay contact closure. Set JO5 jumper N/O (Pins 1 & 2)

Note : The instantaneous operate time of the relay has to be added to the time setting thumbwheel

- b) Set range switch to range A and time to 000.
- c) Record pick-up time for auxiliary voltage of 40 V.

| | | |
|----------------|--|-------------|
| Maximum | Actual | Unit |
| 50 | <input style="width: 100px; height: 20px;" type="text"/> | ms |

- d) Record drop-out time for auxiliary voltage of 275 V

| | | |
|----------------|--|-------------|
| Maximum | Actual | Unit |
| 20 | <input style="width: 100px; height: 20px;" type="text"/> | ms |

- e) Record times for the following settings (range A)

| Setting | Minimum | Maximum | Nominal | Actual | Unit |
|---------|---------|---------|---------|--|------|
| 111 | 121 | 161 | 151 | <input style="width: 100px; height: 20px;" type="text"/> | ms |
| 222 | 232 | 272 | 262 | <input style="width: 100px; height: 20px;" type="text"/> | ms |
| 444 | 454 | 494 | 484 | <input style="width: 100px; height: 20px;" type="text"/> | ms |
| 888 | 898 | 938 | 928 | <input style="width: 100px; height: 20px;" type="text"/> | ms |

6. CALIBRATION & TEST PROCEDURE (Cont)

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

| Minimum | Maximum | Nominal | Actual | Unit |
|---------|---------|---------|----------------------|------|
| 1.03 | 1.05 | 1.04 | <input type="text"/> | s |

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

| Minimum | Maximum | Nominal | Actual | Unit |
|---------|---------|---------|----------------------|------|
| 10.03 | 10.05 | 10.04 | <input type="text"/> | s |

7. GENERAL & FUNCTIONAL

- a) Check for correct operation of magnetic disc flag.

OK

- b) Check operation of the relay fail alarm

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

