



Order Number

Serial Number

PRODUCT / TEST MANUAL

2TD770K20

THERMISTOR RELAY

Issue Level	Date	Summary of changes
A	12/10/1999	Initial issue.
B	04/08/2008	Update for new PCB

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Author	Checked & Registered	.pdf file created	Released
ERL	MW	MW	

1. BROAD DESCRIPTION

The 2TD770K20 is a temperature sensing relay for use in motor protection. Three PTC (positive temperature co-efficient) thermistors (one for each phase) are connected in series to the input terminals of the relay. An increase in the local temperature of the motor causes an increase of resistance in the corresponding thermistor. The relay senses the change of resistance and the output relay operates when this resistance exceeds the string. An LED indicates operation of the output relay.

2. SPECIFICATIONS

AUXILIARY SUPPLY 110 VDC +15% -25%

THERMISTOR VOLTAGE 4.5 VDC

BURDEN (110V DC nominal supply)
approx 3 Watts

**RESISTANCE INPUT
TO OPERATE** 2800 Ohms +/- 5%

**RESISTANCE INPUT
TO RELEASE** 1500 Ohms (Approx)

INSULATION In accordance with AS2481-1981 (clause 5-4), IEC 255-5:
2KV RMS between input and frame output and frame. 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 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)

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)

	DC			AC		
Voltage	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

OPERATION INDICATOR Red LED.

3. TEST EQUIPMENT REQUIRED

DC Auxiliary Supply
 Digital Voltmeter
 High Voltage Test Equipment

4. ASSOCIATED DRAWINGS

168-770-301 Loading Diagram
 168-770-101 Connection 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 three 5kV 1/50us pulses of each polarity between terminal Groups 1 and 2 in Table 1.

TABLE 1

Group 1	Group 2
1 - 6	7,8,10,11

- c) Apply 1KV RMS for one minute between the terminals listed in Table 2

TABLE 2

Group 1	Group 2
3 & 4	2&5 (Relay energised)
1 & 6	2 & 5 (Relay de-energised)



6. CALIBRATION & TEST PROCEDURE

- a) Rotate the trimpot on the PCB fully anti-clockwise
- b) Connect 110 VDC to terminals 10 & 11 (10 is positive)
- c) Measure the voltage across terminals 7 & 8
- d) Connect a 5k potentiometer to terminals 7 & 8
- e) Set the potentiometer to 2800 Ohms then slowly rotate the trimpot clockwise until the output relay just operates.
- f) Reduce the potentiometer and check that the relay de-energises in the range of 1000 to 1500 Ohms.
- g) Increase the potentiometer and check that the output relay operates in the range of 2700 to 2900 Ohms.
- h) Record results.
- i) Repeat the above steps with the auxiliary voltage set to 82 volts (min op) and 126 volts (max op). Apply red sealing paint to the trimpot.

Minimum	Maximum	Nominal	Actual	Unit
2700	2900	2800	<input type="text"/>	Ohms

7. GENERAL & FUNCTIONAL

- a) Check for correct operation of output contacts and LED

OK
- b) Check that the relay is electrically sound and mechanically robust as per Standard Inspection & Test Schedule 903-000-026.
- c) Check that a Yellow Star has been fitted to the relay cover and the relay base.

PASS

TESTED BY : _____ DATE : _____

8. CONNECTION DIAGRAM

