



COMPONENT MAINTENANCE MANUAL  
B7050

DESCRIPTION AND OPERATION

1. DESCRIPTION

The Temperature Anticipator Sensor consists of two pairs of calibrated thermistors, which are enclosed within a stainless steel housing. These thermistors are terminated in a 3-pin hermetically sealed receptacle, which connects to the external temperature control system. Mounting of the unit is accomplished via a triangular shaped flange, which has three, 0.19" diameter mounting bolt clearance holes. (See Figure 1).

2. OPERATION

One of the pairs of series-connected thermistors is exposed to the ambient temperature, the remaining pair are thermally impeded by virtue of the fact that they are located within an inner sheath. The exposed elements respond immediately to any change in ambient temperature, whereas the reaction of the thermally impeded elements is delayed. The difference in response between the exposed and impeded elements is proportional to the rate of change of temperature.

The thermistor-to-receptacle connections are as illustrated in Figure 1.

3. SPECIFICATIONS

Nominal Sensor Resistance:	
At 77°F (25°C)	2000 ohms
Receptacle:	MS27034H12B3EN (or equivalent per MIL-C-26500)
*Mating Bayonet Plug:	MS24266R12B3S (or equivalent)
Weight:	7.5 oz (0.213 kg)
Size:	
Probe Diameter:	0.87 in. (21.97 mm) maximum
Probe (Insertion) Length:	3.2 in. (81.20 mm) maximum

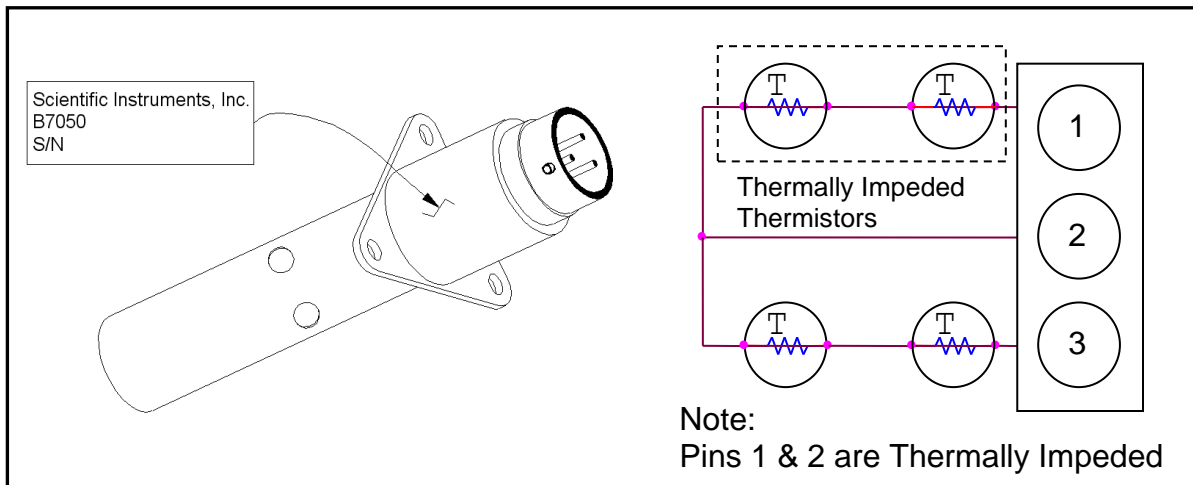


SCIENTIFIC INSTRUMENTS  
COMPONENT MAINTENANCE MANUAL  
B7050

Overall Length: 4.83 in. (122.68 mm) maximum

Mounting Thread: Flange Mounted

\* This plug is listed for test purposes only, and is not necessarily used on the aircraft.



Outline and Schematic Drawing

Figure 1

TESTING AND FAULT ISOLATION

4. TESTING AND FAULT ISOLATION

A. The data that follows permits the testing of the sensor to insure correct operation.

B. Special Tools and Test Equipment

- 1) A megohmmeter capable of reading 5 megohms and greater at 500 VDC (AEMC Model 1000, or equivalent)
- 2) Temperature-controlled environmental test chamber. Accuracy 1%.
- 3) Thermometer with temperature accuracy  $\pm 0.2^{\circ}\text{F}$  ( $\pm 0.11^{\circ}\text{C}$ )



COMPONENT MAINTENANCE MANUAL  
B7050

4) Ohmmeter with:

Current: <0.1 mA

Accuracy: 0.05%

Range: 0-100 k $\Omega$

C. Visual Check

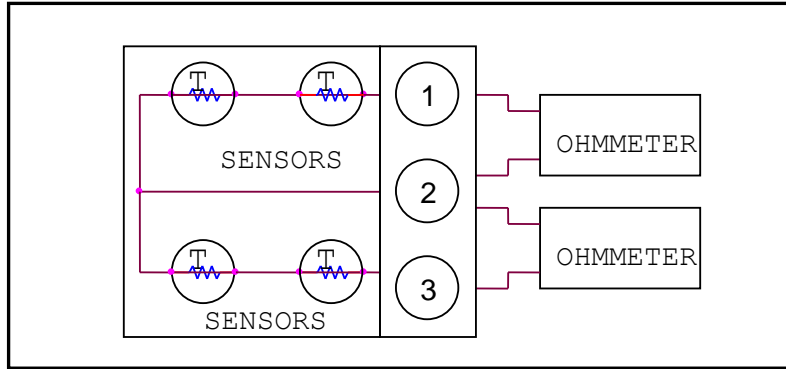
- 1) Visually check the sensor for obvious damage.

D. Insulation Resistance

- 1) Using the megohmmeter, measure the resistance between all receptacle pins and the housing. The reading should exceed 5 megohms @ 500 VDC.

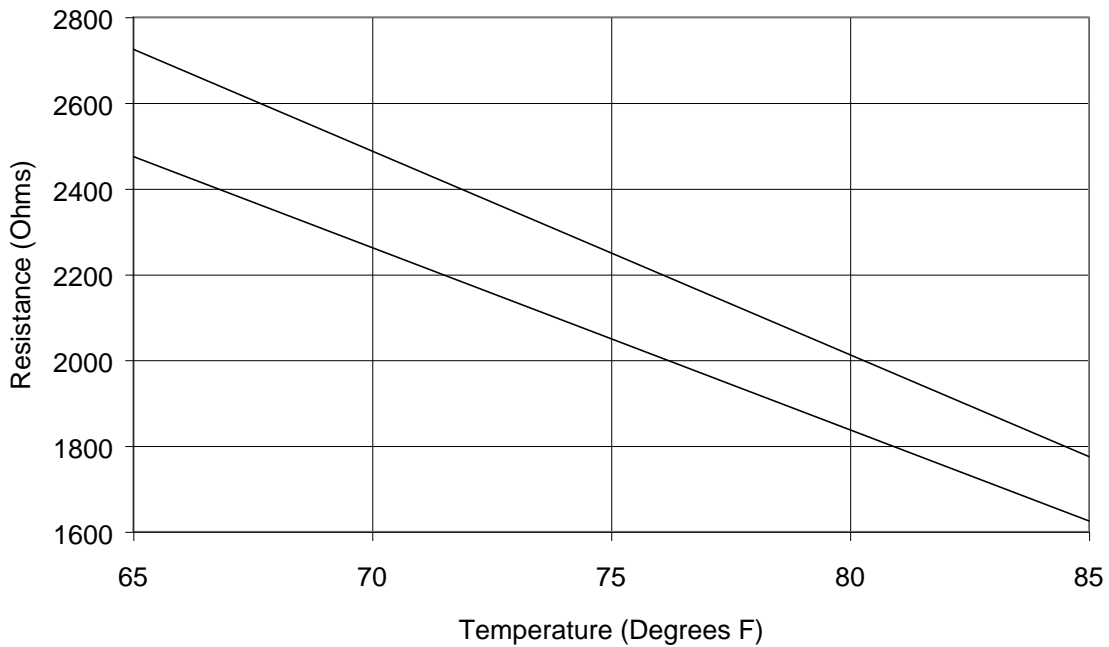
E. Electrical Test (refer to Figure 2)

- 1) Connect the Ohmmeter to pins 1 & 2 of the temperature sensor. Hold the sensor at a temperature of  $75^{\circ}\text{F} \pm 10^{\circ}\text{F}$  ( $23.9^{\circ}\text{C} \pm 5.5^{\circ}\text{C}$ ), within the environmental test chamber. With the thermometer at a stable temperature and located within approximately 1/2 in. (12.7 mm) of the tip of the sensor, measure the temperature. Compare this value to that indicated on Figure 3. The value must be within the limits shown on the drawing.
- 2) Connect the Ohmmeter to pins 2 & 3 of the temperature sensor. Hold the sensor at a temperature of  $75^{\circ}\text{F} \pm 10^{\circ}\text{F}$  ( $23.9^{\circ}\text{C} \pm 5.5^{\circ}\text{C}$ ), within the environmental test chamber. With the thermometer at a stable temperature and located within approximately 1/2 in. (12.7 mm) of the tip of the sensor, measure the temperature. Compare this value to that indicated on Figure 3. The value must be within the limits shown on the drawing.



Schematic for Electrical Test  
Figure 2

Resistance vs Temperature



Resistance vs Temperature  
Figure 3



COMPONENT MAINTENANCE MANUAL  
B7050

5. DISASSEMBLY

A. Not Applicable

6. CLEANING

A. Remove dirt, stains, moisture, etc. with a clean, dry, lint-free cloth.

B. Use a soft bristle brush moistened in isopropyl alcohol to remove any foreign matter from between the receptacle pins.

7. CHECK

A. Visually inspect the sensor probe for obvious wear or damage.

B. Check for bent, broken or missing receptacle pins.

C. Check probe housing for scratches or cracks.

8. REPAIR

The temperature sensor is considered non-repairable. Bent receptacle pins may be carefully straightened. For other defects or incorrect operation, the temperature sensor should be discarded.

9. ASSEMBLY

A. Assembly

(1) Not Applicable

B. Storage

(1) Install a protective cap on the electrical connector.

(2) The sensor must be stored in a clean and dry room open to the air. The temperature must be between 64°F and 82°F (18°C and 28°C) and the relative humidity between 25% and 65%.



COMPONENT MAINTENANCE MANUAL  
B7050

- (3) Keep the sensor in its initial packaging. If other containers are put on the sensor container, be careful to prevent damage caused by too much weight.
- (4) Do not keep the sensor near heat, fluids or other sources that can cause corrosion.

10. FITS AND CLEARANCES

No dimensional check of the sensor is necessary.

11. SPECIAL TOOLS, FIXTURES AND EQUIPMENT

No other special tools are necessary.

12. ILLUSTRATED PARTS LIST

Since the unit is non-repairable, no parts list is provided.