SCIENTIFIC INSTRUMENTS

COMPONENT MAINTENANCE MANUAL
B7110

DESCRIPTION AND OPERATION

1. DESCRIPTION

The Compartment Temperature Sensor, Model B7110, consists of a calibrated thermistor, which is enclosed within a stainless steel housing. The thermistor is terminated in a 6-pin hermetically sealed bayonet-coupled receptacle, which connects to an external temperature control system. Mounting of the unit in the aircraft is accomplished via an external ¾ - 16 threaded section and hex head configuration, as illustrated in Figure 1.

2. OPERATION

The Component Temperature Sensor is employed as one of a bridge circuit in the associated temperature control system. When the compartment temperature is at the set point, the bridge is balanced. Should the compartment temperature deviate from the set point, the sensor will detect this deviation, unbalance the bridge, and signal the control system to return the compartment temperature to the set point.

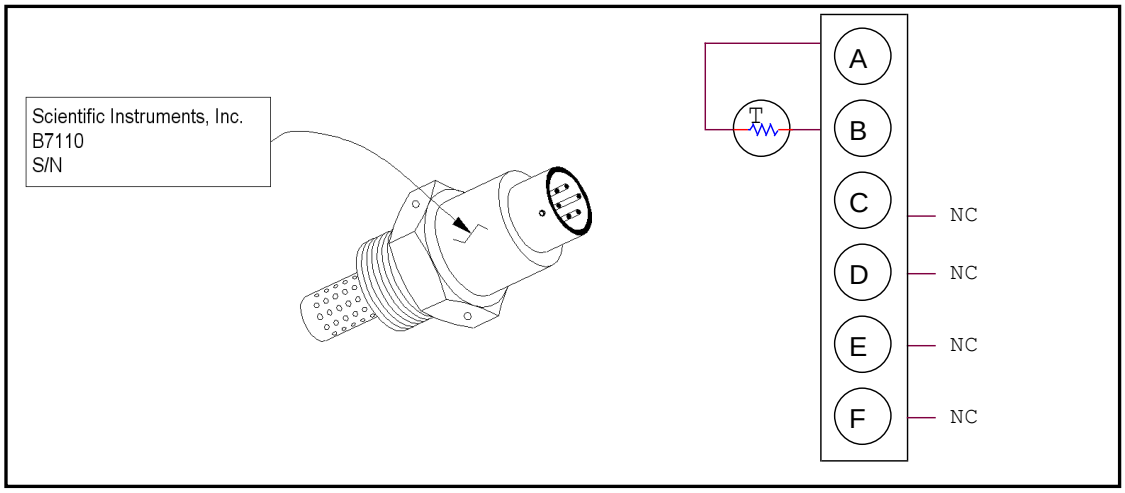
The thermistor-to-receptacle connections are as shown in Figure 1.

3. SPECIFICATIONS

Operating Ambient Temperature Range	-65°F to 160°F (-54°C to 71°C)
Sensor Resistance	
At 77°F (25°C)	4002 ohms ± 120 ohms
Receptacle	MS3113H106P (or equivalent per MIL-C-26482)
*Mating Connector	MS3116F106S (or equivalent)
Weight:	3.5 oz (0.1 kg)
Size:	
Probe Diameter:	0.39 in. (9.91 mm) maximum
Overall Length	2.55 in. (64.77 mm) (NOM)

Mounting Thread	3/4 – 16 UNF 3A
Mounting Hexagon	1.00 in. (25.4 mm) across flats

* 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 megohmeter 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 ± 0.2°F (± 0.11°C)

(4) Ohmmeter with:

Current: <0.1 mA

Accuracy: 0.05%

Range: 0-100 KΣ

C. Visual Check

(1) Visually check the sensor for obvious damage.

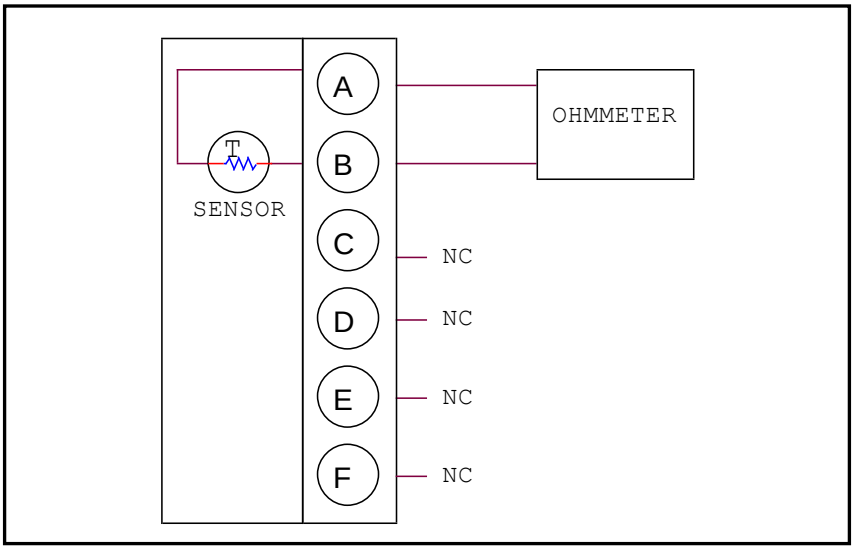
D. Insulation Resistance

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

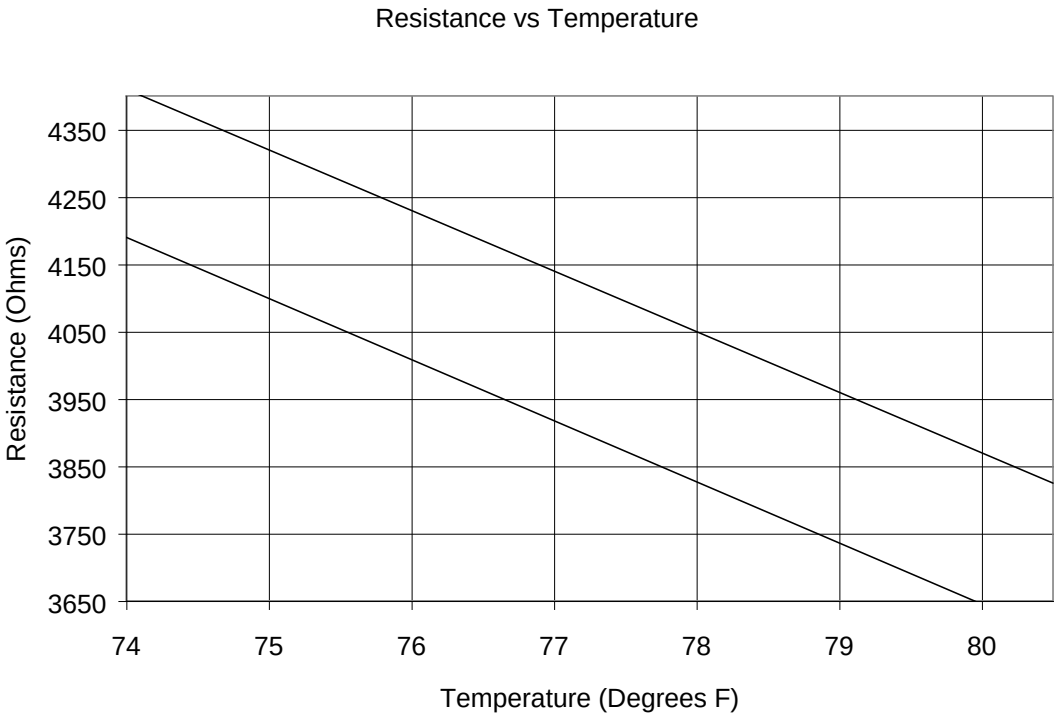
E. Electrical Test (refer to Figure 2)

(1) Connect the Ohmmeter to pins A & B of the temperature sensor. Hold the sensor at a temperature of 77°F ± 3°F (25°C ± 1.7°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.

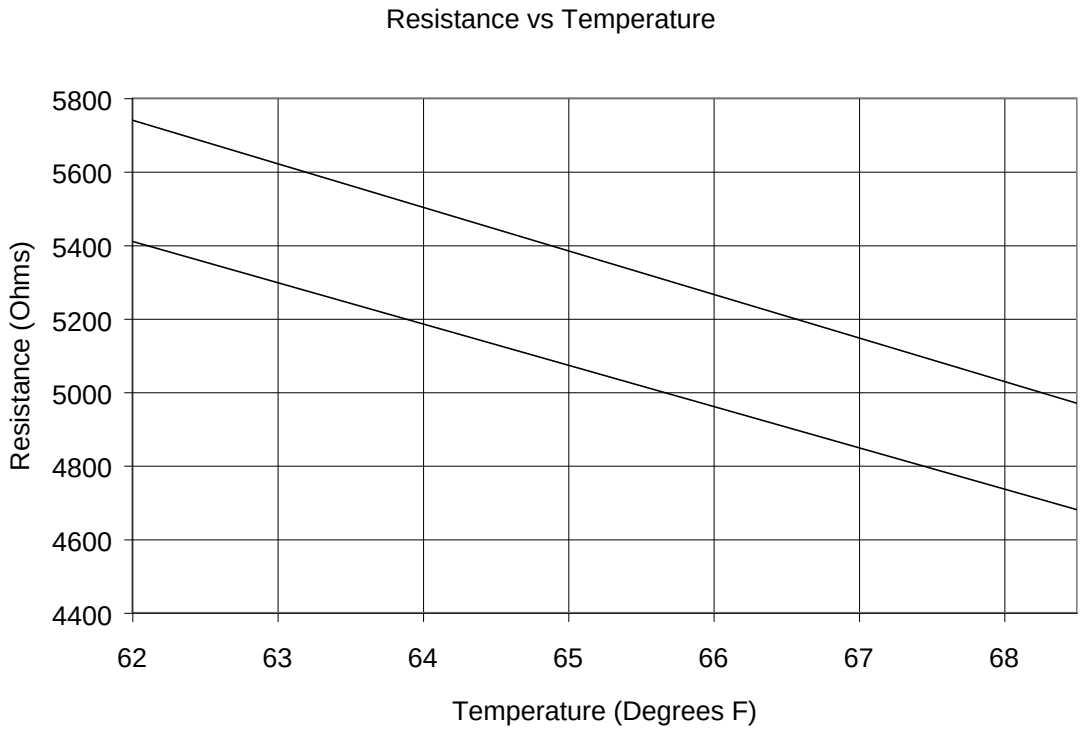
(2) Decrease the temperature of the environmental test chamber to 65°F ± 3°F (18.3°C ± 1.7°C). Measure the temperature. Note the value of the resistance from the ohmmeter. Compare this value to that indicated on Figure 4. The value must be within the limits shown on the drawing.



Schematic for Electrical Test
Figure 2



Resistance vs Temperature
Figure 3



Resistance vs Temperature
Figure 4

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 INCLUDING STORAGE

A. Assembly

(1) Not Applicable

B. Storage

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

(2) You must keep the sensor 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%.

(3) Keep the sensor in its initial packaging. If you put other containers 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.