ORIGINAL

REVISIONS				
SYMBOL	PREP BY	DESCRIPTION	DATE	APPROVAL
A		RN A008 INACTIVATES DWG FOR NEW DESIGN	9/20/50	

INACTIVE FOR NEW DESIGN;
(REFER TO GSFC S-311-641 GENERAL REQUIREMENT FOR THERMOSTATIC SWITCHES)

PREPARED BY John P. Lawrence	DATE 8/15/84	TITLE Procurement Specification for a Thermostatic Switch (3BT-DG-33)
APPROVED George P. Kramer, Jr.	8/16/84	
APPROVED		
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		# S-311-348

Branch – Parts
Division –
Project –

GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

520-23 (3/64)

1.0 SCOPE

This specification covers the procurement requirements for a bimetallic, subminiature, heremtically sealed, snap action, single pole, single throw, one ampere thermostatic switch.

1.1 Maximum Ratings--The ratings are as listed in Table I.

Table 1. Ratings

Operating Temperature Range	-30°F to +350°F
Weight	approximately 1.2 grams
Dielectric Withstanding Voltage	500 Vac at atmospheric pressure 250 Vac at 70,000 feet
Operating Temperature Tolerance	±8°F
Operating Temperature Differential	30°F
Electrical ratings: at 115 Vac, 60 Hz at 28 Vdc	1.0 ampere; resistive 0.5 ampere, resistive
Endurance	10,000 cycles

2.0 APPLICABLE DOCUMENTS

The following documents, of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein.

SPECIFICATIONS

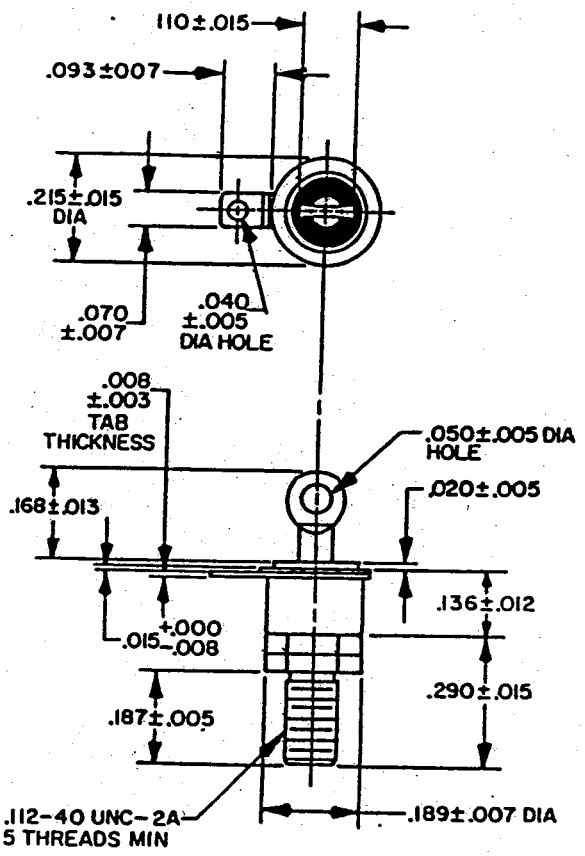
MIL-S-24236 Switches, Thermostatic (Metallic and Bimetallic), General Specification for

3.0 REQUIREMENTS

3.1 Design and Construction--Switches supplied to this specification shall be of the design, construction and physical dimensions delineated by part number M24236/19 EMB per MIL-S-24236/19, except they shall be supplied with gold contacts. Figure 1 depicts the switch configuration, and is included for reference.

3.1.1--Workmanship--Thermostats shall be processed in such a manner as to be uniform in quality and shall be free from cracked or displaced parts, sharp edges, burrs, and other defects which will affect life, servicability, or appearance.

3.2 Temperature Setting--The switch shall close on increasing temperature at +160°F ±8°F and open on decreasing temperature at +130°F ± 8°F.



INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
.003	.08	.015	.38	.093	2.36	.187	4.75
.005	.13	.020	.51	.110	2.79	.189	4.80
.007	.18	.040	1.02	.112	2.84	.203	5.16
.008	.20	.045	1.14	.136	3.45	.215	5.46
.010	.25	.050	1.27	.156	3.96	.250	6.35
.012	.30	.060	1.52	.168	4.27	.281	7.14
.013	.33	.070	1.78	.170	4.32	.290	7.37

NOTES:
1. Dimensions are in inches.
2. Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.

FIGURE 1. Switch

3.3 Inspection and Testing--All thermostats shall be screened on a 100 percent basis in accordance with 4.1.

3.4 Part Number--The manufacturer shall establish a unique part number which reflects all the requirements of this specification.

3.5 Date Code Identification--Each thermostat shall be identified by a date code that shows the year and the week of manufacture.

3.6 Part Marking--Each thermostat shall be marked with the part number and date code established under 3.4 and 3.5.

3.7 Approved Manufacturers--Procurements to this specification shall be limited to the manufacturers listed in paragraph 6.0.

3.8 Pre-cap Visual--Pre-cap visual shall be performed in accordance with 4.2.

3.9 Run-in Cycling--Run-in cycling shall be performed per 4.3 to verify proper switch function.

3.10 Calibration--When thermostats are tested as specified in 4.4 the operating points for the opening and closing temperature shall be within the tolerance specified. (See 3.2.)

3.11 Creepage--When thermostats are tested as specified in 4.5, the opening and closing of contacts shall occur simultaneously with and as a result of the disc snap.

3.12 Seal--When thermostats are tested as specified in 4.6 the leakage rate shall not exceed 1×10^{-8} standard atmospheric cubic centimeters per second (atm cc/sec).

3.13 Dielectric Withstanding Voltage--When thermostats are tested as specified in 4.7, there shall be no flashover, arcing or current flow in excess of 500 microamps.

3.14 Contact Resistance--When measured as specified in 4.8, the contact resistance shall not exceed 20 milliohms.

4.0 QUALITY ASSURANCE

4.1 Screening--All thermostats shall be subjected to the screening tests and inspections per Table 2, in the order shown. Thermostats not meeting all screening requirements shall be rejected.

Table 2. Screening

Test or Inspection	Requirement Paragraph	Test Method Paragraph
Pre-cap visual	3.8	4.2
Run-in Cycling	3.9	4.3
Calibration	3.10	4.4
Creepage	3.11	4.5
Seal	3.12	4.6
Dielectric Withstanding Voltage	3.13	4.7
Contact Resistance	3.14	4.8
Visual Examination	3.1.1 - 3.6	4.9

4.2 Pre-Cap Visual--Pre-cap visual inspection shall be performed with 10X magnification and bright light. Immediately, prior to enclosing the parts in the case, the assembly shall be thoroughly examined for design, cleanliness and good workmanship. Parts shall be rejected if any of the following defects are found:

a. Cracks in glass,
b. Foreign materials,
c. Burrs along edges,
d. Angular or dimensional misalignment of interacting parts greater than drawing allowable tolerances,
e. Blistering or flaking of plating,
f. Transfer pins or insulators which have sharp peaks, cracks or plating,
g. Loose material or particles greater than 25 microns.

4.3 Run-in Cycling--An operating run-in of 500 cycles at a load of 100 milliamperes and 6 Vdc shall be perfomred. Monitoring and failure criteria shall be at the manufacturers option. However, all switches shall be capable of meeting all subsequent screening tests and examinations.

4.4 Calibration--Thermostats shall be tested as specified in MIL-S-24236.

4.5 Creepage--Thermostats shall be tested as specified in MIL-S-24236.

4.6 Seal--Thermostats shall be tested as specified in MIL-S-24236, for hermetic devices.

4.7 Dielectric Withstanding Voltage--Thermostats shall be tested in accordance with MIL-S-24236; sea level condition only.

4.8 Contact Resistance--Thermostats shall be tested in accordance with the provisions of MIL-S-24236.

5.0 PREPARATION FOR DELIVERY

5.1 Preparation for Delivery--The manufacturer shall be responsible for packaging and packing thermostats in a manner which prevents degradation, corrosion, deterioration or physical damage, and for ensuring the packages have a safe delivery and are in good condition.

5.2 Data--As a minimum, summary screening inspection and test data shall be shipped with each thermostat lot.

6.0 NOTES

6.1 Approved Manufacturers--Texas Instruments, Control Products Division, Attleboro, Massachusetts, 02703.

6.2 Part Number Similarity--The parts supplied to the requirements of this specification are similar to those supplied by the source in 6.1, under part number 3BT-D6-33, except for the added screening requirements (see 4.1).

Custodian:

NASA/Goddard Space Flight Center
Code 311
Greenbelt, Maryland, 20771