



Sensata Technologies

M2 SERIES



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M2 SERIES THERMOSTATS

0°F to 240°F, Narrow Differential, Hermetically Sealed ½"

Introduction

The Klixon® M2 thermostat is constructed with a snap-acting bimetal disc that serves as the actuating element. As the temperature reaches a predetermined calibration point, the disc snaps to reverse its curvature, producing the crisp, positive switching action inherent to Klixon® thermostats. This feature assures precision temperature accuracy and long life reliability in any position.

The M2 thermostat is engineered to provide reliable, narrow differential switching in the most demanding applications. Prior to final weld, finished assemblies are vacuum baked and back-filled with dry nitrogen. The inert, dry atmosphere eliminates moisture and other volatiles to prevent condensation at low temperatures or possible contact contamination at high temperatures. This back-fill also improves the dielectric characteristics of the device and prevents oxidation of the contacts. The M2 thermostat is the ideal choice where reliable, narrow differential switching is a must.



Precision temperature accuracy and long life reliability are achieved through the use of the well known Klixon® snap-acting disc. This unique mechanism multiplies the motion of the temperature sensor and actuates a switch capable of handling high power. Welded closed after accurate calibration, the M2 is tamperproof.

Features

- Hermetically sealed
- Vacuum baked and back-filled with dry nitrogen
- Single pole, single throw (SPST)
- Normally open or normally closed
- Low profile
- Narrow differential
- Preset, non-adjustable calibration
- Long cycle life (250,000 cycles)
- Qualified to MIL-S-24236/20
- Qualified to NASA S-311-641/02

PERFORMANCE

Contact Ratings (Resistive)

Based on standard differential

30 VDC	120 VAC	Life Cycles
2.0 Amps	2.0 Amps	250,000 cycles

Characteristics

Switch Action	SPST, normally open or normally closed
Contact Resistance	0.050 ohms maximum, per MIL-STD-202, Method 307
Dielectric Strength	1250 VAC, rms, 60 cycles for 1 minute, terminal to case per MIL-STD-202, Method 301

Characteristics (continued)

Vibration Resistance	10-2000 Hz, 10G, per MIL-STD-202, Method 204, Condition D, (monitored)
Shock Resistance	100G, 6 milliseconds, per MIL-STD-202, Method 213
Hermeticity	1 X 10 ⁻⁸ atm cc/sec. maximum, per MIL-STD-202, Method 112, Condition C
Salt Spray Resistance	Per MIL-STD-202, Method 101, Condition B, 5% solution
Weight	5.4 grams (average)
Ambient Temperature Range	-65°F to 400°F (-53.9°C to +204.4°C), depending on calibrated temperature. Exposure is limited to 100°F above operating temperature for close on rise devices or 100°F below operating temperature for open on rise devices. Consult factory if you need to exceed these limits and we can adjust the switch build to accommodate your needs.
Operating Temperature Range	0°F to 240°F, (-17.8°C to +115.6°C)

The standard operating temperatures, differential and tolerances are shown in the table below, but can be customized to meet your specific requirements.

Closing Temperature Range	Opening Temperature Differential	Closing Temperature Tolerance	
		Standard	Spec.
0 to 240°F (-17 to 115.6°C)	2 to 5°F (1.1 to 2.8°C)	± 4°F (± 2.2°C)	± 3°F (± 1.7°C)

The standard operating temperatures, differential and tolerances are shown in the table below, but can be customized to meet your specific requirements.

CONFIGURATIONS

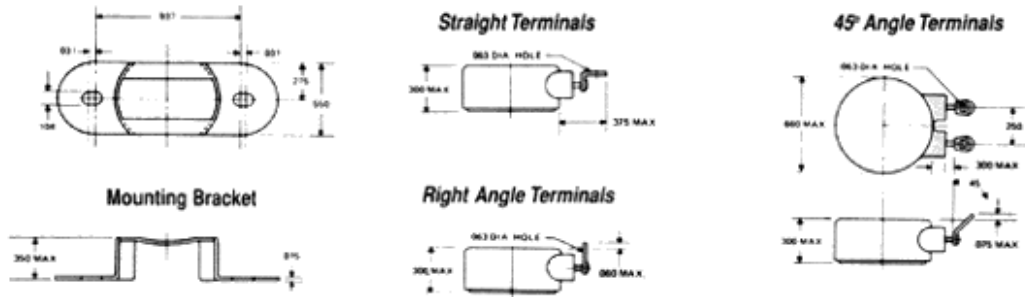
The M2 is available in standard and special configurations. The standard configurations provide options for straight, right angle, and 45° terminals as well as a loose mounting bracket. To order a standard M2 thermostat, please use the "Standard M2 Thermostat Part Number Builder".

Special physical constructions of the M2 thermostat are available to provide different mounting options such as a mounting stud, mounting brackets, or wire leads with STYCAST overmold. Some of the common physical constructions include M2S-18, M2S-31, M2S-35, and M2S-39. These are shown below. To order an M2 thermostat with a special physical construction, please use the part number builder labeled "Special M2 Thermostat Part Number Builder".

Both part number builders allow you to specify the complete production part number at time of the component selection.

CONFIGURATIONS (CONTINUED)

Standard M2 Thermostat Configurations



Special M2 Thermostat Configurations





ORDERING OPTIONS - STANDARD M2 THERMOSTAT

Example : M211L163030521

	M2	1	1	L	163	03	05	2	1
Part Series									
M2									
Bracket									
1 = No Bracket 2 = Loose Bracket									
Terminal									
1 = Straight 2 = 45° 3 = Right angle									
Operation									
L = Open on rise F = Close on rise									
Closing Temperature*									
Use 3 digits (°F)									
Tolerance*									
03 = +/-3 04 = +/-4 05 = +/-5									
Differential*									
04 = 2 to 4°F 05 = 2 to 5°F 07 = 3 to 7°F 09 = 5 to 9°F									
Plating									
2 = Copper-nickel (standard)									
Contacts									
1 = Silver 2 = Gold plated									

* See temperature table for standards

For applications that require thermostat certified to the M24236, customers must order to the M24236/20 part number.

For applications that require the thermostat to be certified to NASA S-311-P641/02, customers should contact the factory to ensure the correct part number

ORDERING OPTIONS - SPECIAL M2 THERMOSTAT

Example : M2SL163030539

Part Series	M2S	L	163	03	05	39
M2S						
Operation						
L = Open to temp. rise F = Close on temp. rise						
Temperature						
Closing temperature °F						
Tolerance						
Closing temperature tolerance (±°F)						
Differential						
05 = 2-5°F 07 = 3-7°F						
Style Select						
e.g.: -39						

WARNINGS



RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE

- The product's side panels may be hot, allow the product to cool before touching
- Follow proper mounting instructions including torque values
- Do not allow liquids or foreign objects to enter this product

Failure to follow these instructions can result in serious injury, or equipment damage.



HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power before installing or working with this equipment
- Verify all connections and replace all covers before turning on power

Failure to follow these instructions will result in death or serious injury.

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