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.

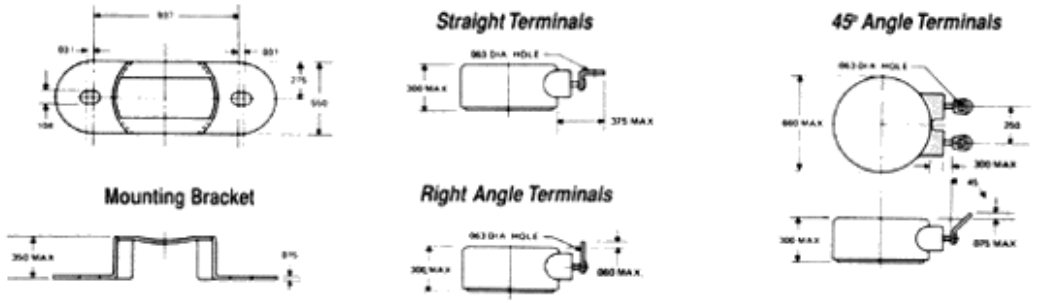
CONFIGURATIONS

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".

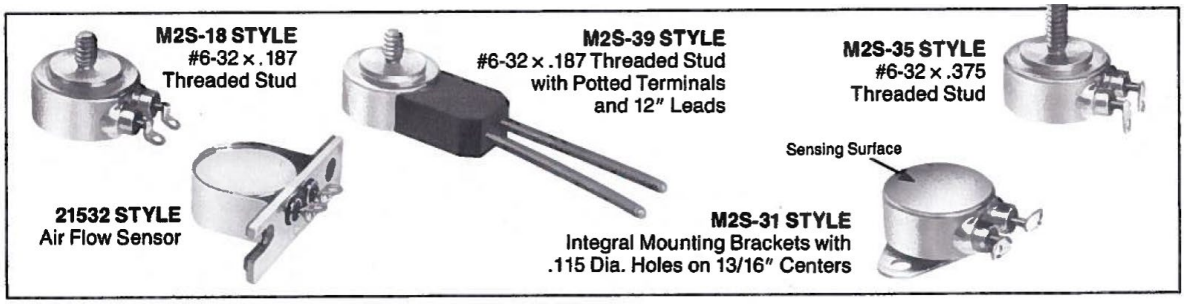
Special physical constructions of the M2 thermostat are available to provide different mounting options such as a mounting stud, mounting brackets, or wire leads with STYCAST overmold. Some of the common physical constructions include M2S-18, M2S-31, M2S-35, and M2S-39. These are shown below. To order 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.

Standard M2 Thermostat Configurations

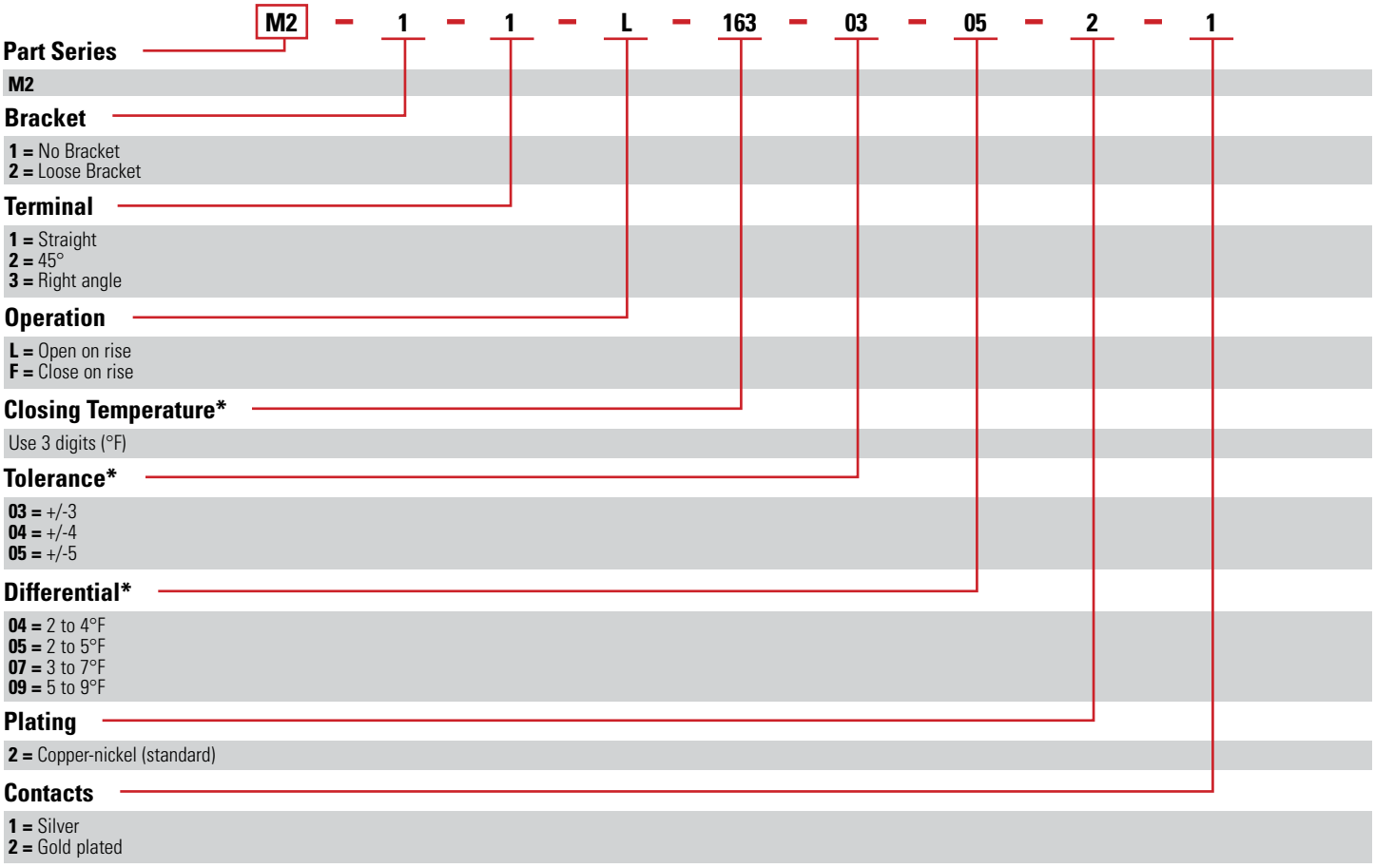


Special M2 Thermostat Configurations



ORDERING OPTIONS - STANDARD M2 THERMOSTAT

Example : 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 : M2SL1630305-39

M2S **L** **163** **03** **05** **-** **39**

Part Series

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.

CONTACT US

AUTHORIZED DISTRIBUTORS

Americas

Flame Enterprises
Contact Name:
Bob Correa, Director of Product Management
Direct Phone: +1 (240) 236-9802
E-mail: bcorrea@flamecorp.com
info@flamecorp.com | Web
Tel: 1-800-854-2255 or 1-818-700-2905
Fax: 1-818-407-5080

Peerless Electronics
Contact Name:
Steve Gunther, National Sales Manager
Direct Phone: +1 (516) 594-3509
E-mail: sgunther@peerlesselectronics.com
nysales@peerlesselectronics.com | Web
Tel: 1-800-285-2121
Fax: 1-800-222-8096

Europe, Middle East & Africa

Flame Enterprises
Contact Name:
Bob Correa, Director of Product Management
Direct Phone: +1 (240) 236-9802
E-mail: bcorrea@flamecorp.com
info@flamecorp.com | Web
Tel: 1-800-854-2255 or 1-818-700-2905
Fax: 1-818-407-5080

AUTHORIZED SALES REPRESENTATIVES

Country	Representative	Contact	e-mail	Phone
Brazil	Sonnensys Technologies	Maury Sampaio	maury.sampaio@sonnensys.com	+55 12 99768 1100
Austria	Telemeter	Robert Jall	rjall@telemeter.de	49 906 70693-26
Belgium	JB Controls	Jean Jacques Boher	jboher@jbcontrols.com	33 (0)1 46 91 93 30
Czech Republic	Telemeter	Robert Jall	rjall@telemeter.de	49 906 70693-26
Denmark	Sensor Control Nordic	Peter BJÖRKDAHL	peter.bjorkdahl@scn.se	46 (0)8 122 006 92
Estonia	Sensor Control Nordic	Peter BJÖRKDAHL	peter.bjorkdahl@scn.se	46 (0)8 122 006 92
Finland	Sensor Control Nordic	Peter BJÖRKDAHL	peter.bjorkdahl@scn.se	46 (0)8 122 006 92
France	JB Controls	Jean Jacques Boher	jboher@jbcontrols.com	33 (0)1 46 91 93 30
Germany	Telemeter	Robert Jall	rjall@telemeter.de	49 906 70693-26
Greece	PanSystem	Stefano Vitone	stefano.vitone@pansystem.com	39 335 7169958
Israel	Admati	Dori Shifman	dori@admati.com	972 (0)50 331 4700
Italy	PanSystem	Stefano Vitone	stefano.vitone@pansystem.com	39 335 7169958
Latvia	Sensor Control Nordic	Peter BJÖRKDAHL	peter.bjorkdahl@scn.se	46 (0)8 122 006 92
Lithuania	Sensor Control Nordic	Peter BJÖRKDAHL	peter.bjorkdahl@scn.se	46 (0)8 122 006 92
Luxembourg	JB Controls	Jean Jacques Boher	jboher@jbcontrols.com	33 (0)1 46 91 93 30
Netherlands	TBD			
Norway	Sensor Control Nordic	Peter BJÖRKDAHL	peter.bjorkdahl@scn.se	46 (0)8 122 006 92
Poland	Radiotechnika	Tomasz Półtoraczyk	tpoltoraczyk@radiotechnika.com.pl	48 7132 70 765
Portugal	PanSystem	Stefano Vitone	stefano.vitone@pansystem.com	39 335 7169958
Slovakia	Telemeter	Robert Jall	rjall@telemeter.de	49 906 70693-26
Spain	PanSystem	Stefano Vitone	stefano.vitone@pansystem.com	39 335 7169958
Sweden	Sensor Control Nordic	Peter BJÖRKDAHL	peter.bjorkdahl@scn.se	46 (0)8 122 006 92
Switzerland	JB Controls	Jean Jacques Boher	jboher@jbcontrols.com	33 (0)1 46 91 93 30
Turkey	Eltronik	Ergn Kosem	ergun@eltronik.com	90 312 440 7815
UK	Charcroft	Julie Protheroe	julie.protheroe@charcroft.com	01591 612240
Australia	AeroDefense	Trent Ralph	trent@aerodefence.com.au	+61 7 5503 0552
China	Pomic Ltd.	James Cai	James.cai@pomicltd.com	+1 (360) 915-7806
China (ACCBs only)	Shanghai Jin Feng Electronics & Inst Co	Wang Min-Gang	yonghuqian@vip.sina.com	+86-21-62712648
India	Hical Technologies	VB Venkatesh	venkatesh.vb@hical.com	+91 98450-12341
Indonesia	Precision Technologies	Aaron Lim	aaronlim@pretech.com.sg	+65 (62) 73 45 73 x125
Japan	Intertek Industries	Masa Ikeda	masai@intertekindustries.com	+1 (310) 309-9661
Korea	Aero Sensors Corp.	Jonathan Jo	jangcho@aerosensors.co.kr	+82 2 557 5355
Malaysia	Precision Technologies	Aaron Lim	aaronlim@pretech.com.sg	+65 (62) 73 45 73 x125
New Zealand	AeroDefense	Trent Ralph	trent@aerodefence.com.au	+61 7 5503 0552
Singapore	Precision Technologies	Aaron Lim	aaronlim@pretech.com.sg	+65 (62) 73 45 73 x125
Taiwan	Sensata Technologies	Bob Jacques	bjacques@sensata.com	+1 (805) 716-0586

Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA.

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