

# 5 AMP. SERIES FOR ORDINARY TEMPERATURE

(AC125V/5A, AC250V/3A, DC12V/5A, DC24V/3A) [-10°~110°C]

## Ratings and Characteristics:

Tolerance of Setting Temperature and Differential vs. Setting Temperature

Setting Temperature	-10°C ~ 1°C		0°C ~ 50°C		51°C ~ 65°C		66°C ~ 75°C		76°C ~ 110°C	
Diff. Contact configuration	X	Y	X	Y	X	Y	X	Y	X	Y
A (2°C~5°C)	/	/	±3	±3	/	/	/	/	/	/
B (3°C~6°C)	±4	±4	±3	±3	±4	±4	/	/	/	/
C (5°C~8°C)	±4	±4	±3	±3	±4	±4	±5	±5	/	/
D (8°C~12°C)	±4	±4	±4	±4	±4	±4	±5	±5	±5	±5

Note: 1. Above list shows the standard tolerance.

2. Special tolerance such as ±1.5 or ±2 will be available.

Table of contact capacity by voltage used and by DIFF. ranking (100,000 times life as standard)

Voltage / Current		M3 / M3 Z / 5S / 5SZ		M2 / M2F	
		Differential rank	Current(unit power factor 1)	Differential rank	Current(unit power factor 1)
—	DC 48V	A	0.1A ~ 0.3A		
		B	0.1A ~ 0.5A		
		C	0.1A ~ 0.8A		
		D	0.1A ~ 0.8A	D	0.1A ~ 0.8A
AC 250V	DC 24V	A	0.5A ~ 1.5A		
		B	0.5A ~ 2A		
		C	0.5A ~ 3A		
		D	0.5A ~ 3A	D	0.5A ~ 3A
AC 125V	DC 12V	A	0.5A ~ 3A		
		B	0.5A ~ 4A		
		C	0.5A ~ 5A		
		D	0.5A ~ 5A	D	0.5A ~ 5A

NOTE: 1. "5 Ampere Series" represents the standard maximum current of M3 Model at AC 125V.

2. Maximum current is limited slightly lower for M3 and 5S Models due to heat generated inside the switches.

3. Crossbar contact is not available for the 5 Ampere Series.

4. In the case of DC voltage, spark quenching will be required between contacts depending on the load level. (provide a spark killer)

Maximum operating voltage : AC250V max., DC48V max.

Temperature setting range : -10°C~110°C (tolerance/differential will be changed in the higher temp.) (see the above table )

Differential : rank A ..... 3.5 ± 1.5 (2~5) °C  
 rank B ..... 4.5 ± 1.5 (3~6) °C  
 rank C ..... 6.5 ± 1.5 (5~8) °C  
 rank D ..... 10 ± 2 (8~12) °C

Contact configuration : 1b(X), or 1a(Y)  
 1c(XZ or YZ) for M3(Z)/5S(Z)

Operating temperature range : -30°C~85°C(standard), -30°C~125°C(special) (no icing, no condensing)  
 (use within 60 degrees above the set temperature.)

Insulation resistance : 100M Ω or more

Contact resistance : 70m Ω or less (including lead wire resistance)

Withstanding voltage : AC2000V for 2sec.(600V for 1minute between contacts)

Vibration resistance : Selected from JIS C 0911-1984

Constant vibration; 50Hz fixed/0.2 mm fixed (1G)  
 Sweep vibration; 10~55Hz/0.35 mm fixed (0.1~2.2G)  
 Withstands 2 hour each in directions X, Y and Z.

Impact resistance : No damage when dropped three times from the height of 40cm onto a concrete floor (about 70G).  
 No damage for double sealed model when dropped three times from the height of 1m onto a concrete floor (about 240G).  
 Withstands substantial impact after being put in a package or mounted in equipment.

Life : 2 million mechanical operations, 100,000 electrical operations at rated load.( see page 15 for details.)


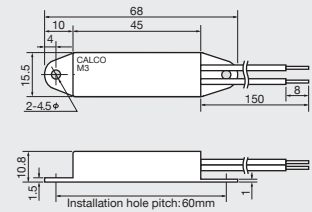

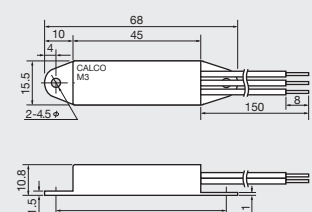

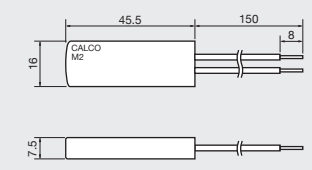

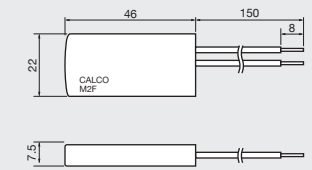

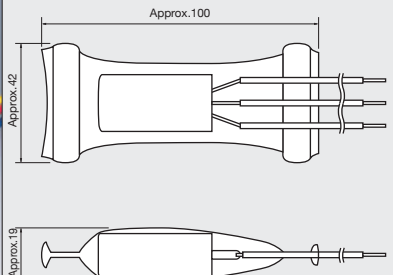
Handling precautions : The thermostat withstands vibration and impact applied along Y and Z axis, but does not tolerate impact from X direction.  
 (see the illustration below.) It is recommended that the thermostats be installed to minimize stresses applied along the X axis.



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<p><b>M3</b></p> <p>(Two mounting holes Two lead wires X or Y contact)</p> 	 <p>Regarding the lead; AWM1015AWG20 black 150mm length is the standard for 75°C or lower AWM3271AWG20 gray 150mm length is the standard for 76°C or higher</p>	<p><b>Features:</b></p> <ol style="list-style-type: none"> <li>1.) 5 Amp. capacity in a compact body.</li> <li>2.) Epoch making low price for a long life and small differential thermostat.</li> </ol>
<p><b>M3(Z)</b></p> <p>(Two mounting holes Three lead wires XZ or YZ)</p> 	 <p>Regarding the lead; AWM1015AWG20 black 150mm length is the standard for 75°C or lower AWM3271AWG20 gray 150mm length is the standard for 76°C or higher</p>	<p><b>Features:</b></p> <ol style="list-style-type: none"> <li>1.) 5 Amp. capacity (main contact) in a compact body.</li> <li>2.) Back contact capacity: 60% of main contact capacity.</li> <li>3.) Epoch making low price for a long life and small differential thermostat.</li> <li>4.) Main contact painted in black, movable contact in white and back contact in red as standard.</li> </ol>
<p><b>M2</b></p> <p>(No mounting hole Two lead wires D rank only)</p> 	 <p>Regarding the lead; AWM1015AWG20 black 150mm length is the standard for 75°C or lower AWM3271AWG20 gray 150mm length is the standard for 76°C or higher</p>	<p><b>Features:</b></p> <ol style="list-style-type: none"> <li>1.) It is a thin 5 Amp. version and has no back contact.</li> <li>2.) Only D rank DIFF. available.</li> <li>3.) Other specifications are the same as the M3 Model.</li> </ol>
<p><b>M2F</b></p> <p>(Fuse installed No mounting hole Two lead wires D rank only)</p> 	 <p>Regarding the lead; AWM1015AWG20 black 150mm length is the standard for 75°C or lower AWM3271AWG20 gray 150mm length is the standard for 76°C or higher</p>	<p><b>Features:</b></p> <ol style="list-style-type: none"> <li>1.) A fuse connected in series with the M2 Model to secure safety.</li> <li>2.) Other specifications are the same as the M2 Model.</li> <li>3.) For fuse operating temperature, consult us.</li> <li>4.) Choose a fuse temperature of 25 higher than the thermostat set temperature.</li> </ol>
<p><b>MQT5S / MQT5S (Z)</b></p> <p>(Sealed type 3 leads for MQT5S(Z))</p> 	 <p>Standard lead wires are SVHF, 500mm long.</p>	<p><b>Features:</b></p> <ol style="list-style-type: none"> <li>1.) While a near complete seal is achieved by double sealing (DS), moisture intrusion by capillary action at the tip of the lead cannot be avoided. Be careful not to have water splash on to the lead tip.</li> <li>2.) Back contact capacity: 60% of main contact capacity.</li> </ol>

Each model is available in a double sealed construction.

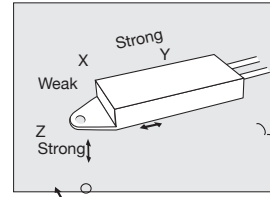
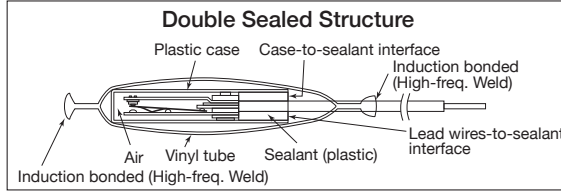
NOTE: All drawings are in 40% of full size to help you compare the sizes of products.

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## Double Sealed Construction

(Improvement in waterproof and impact resistance performance)



### 1. Increased waterproof

Covering a thermostat with a plastic case and sealing its lead wires with plastic sealant is a widely accepted approach to achieve a dust-proof and water-resistant structure. Our thermostats, such as the MQT series in this catalogue, are of this design. Repeated material expansion and contraction, and internal air pressure changes caused by thermal cycle may lead to wear of plastic case and sealant, which consequently deteriorates sealing performance. Our double sealed design, using a vinyl tube, withstands severe environmental conditions for long periods of time.

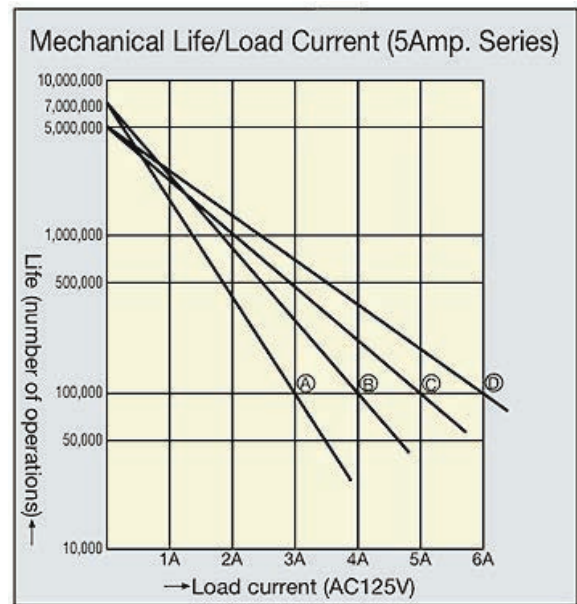
- NOTES: 1. The soft vinyl tube must be taken care of to avoid damage.  
2. Do not expose vinyl tube to the direct sunlight.

### 2. Increased impact resistance

Electrical components such as relays and motors are not very resistant against shocks. Dropping electrical components usually results in damage and subsequent malfunction. Products in the MQT Series are no exception. MQT Series products are fragile to impacts in X direction and more resistive to Y and Z direction impact. However, with the double sealing method using soft vinyl tubes, impact resistance is guaranteed for regular usage. Impact resistance: 240G

## Relationship between life & load

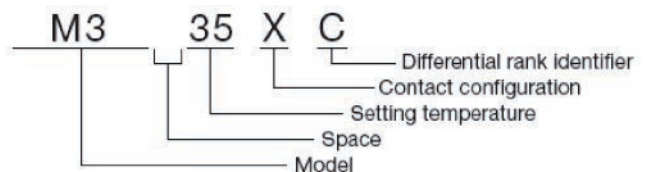
Temperature Power Sensor, TPS can perform more than 2 million mechanical operations. However, under heavy loads, the life will be reduced due to the wear of contacts. A life of 100,000 cycles of operation is guaranteed at the rated load current. Under reduced loads, the life lasts longer. See the graph to the right.



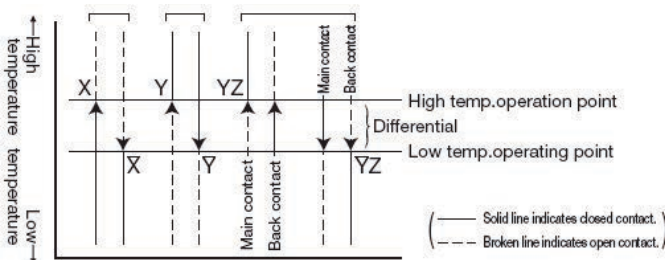
## Contact type indication

- Contacts which open when the temperature rises are designated as X, and those which close when the temperature rises are designated as Y. Shown in the diagram is the temperature at which the contacts operate when the temperature rises (the high temperature side).
- X [Xbar] and Y [Ybar] are used for contacts that operate when the temperature falls (the low temperature side). X [Xbar] indicates the contact that closes when the temperature falls. [Ybar] indicates the contact that opens when the temperature falls. Z indicates transfer contacts. XZ is the main contact that opens when the temperature rises. XZ [Xbar Z] is the main contact that closes when the temperature falls.
- C is the standard rank designation for X contacts and B is standard for Y contacts. Please consider X is C ranked and Y is B ranked, unless otherwise indicated.

## Model designation method



For 5 Amp. Series with a back contact, a model name will be, for example, M3 70XZB, where Z means contact with the back contact.



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