

CONTROL THERMOSTATS

Small differential/Long life

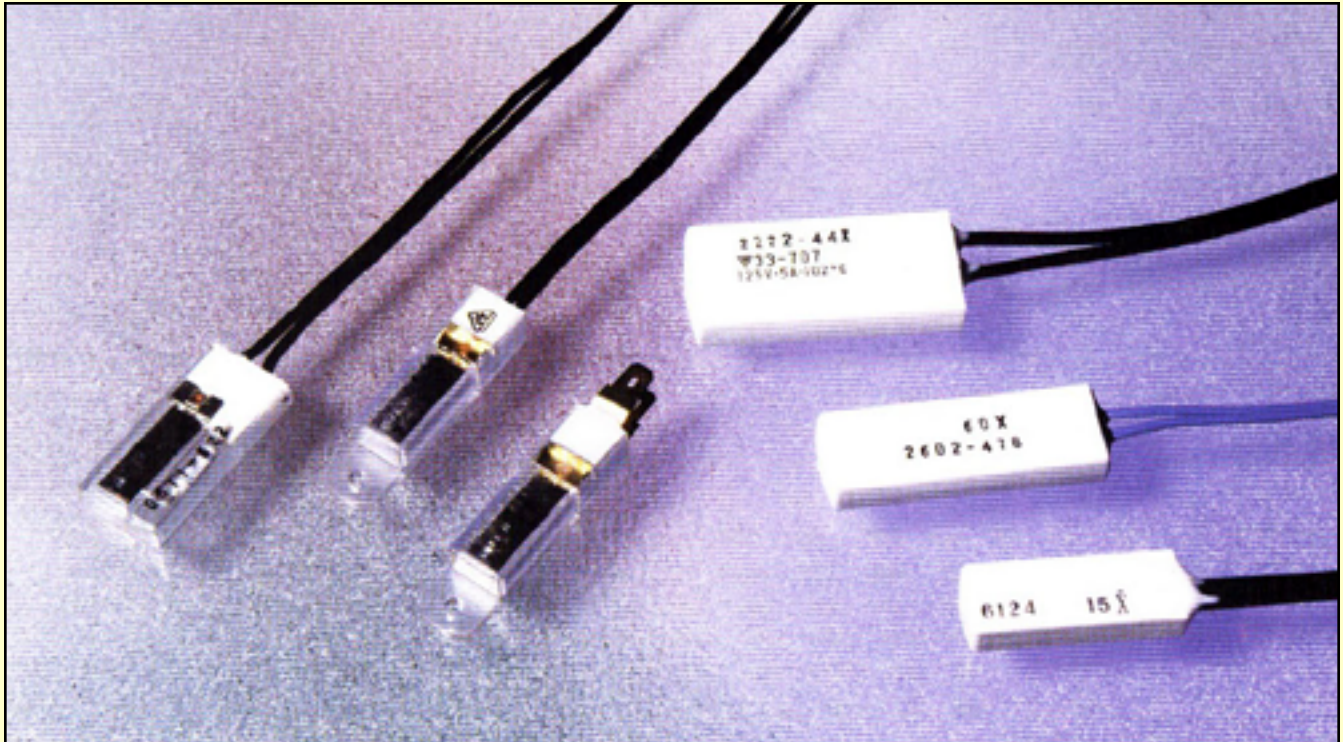
ADVANTAGES

- High Precision
- Snap Action
- Narrow Differential
- Water resistant
- Extreme long life

APPLICATIONS

- Heating appliance
- Water bed heaters
- Blanket heaters
- Anti freeze sensors
- Medical applications

MQT-TYPE



DESCRIPTION

These thermostats were developed as a small, inexpensive, high performance bimetal thermostat which can be used as a controller. These thermostats use a sharp, semipermanent, snap spring with a flat non-distorting bimetal. Two bimetals are used for increased sensitivity.

CANTHERM



Supplying high-quality bimetal and thermal sensor products.

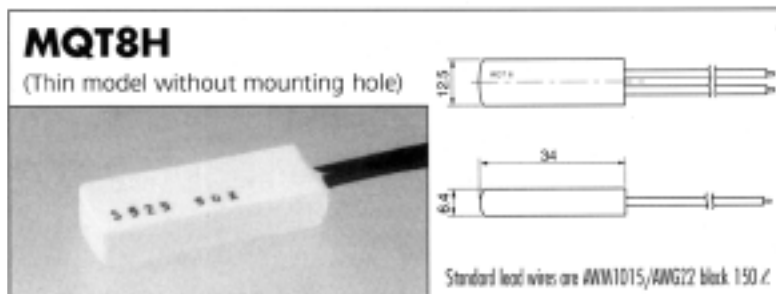
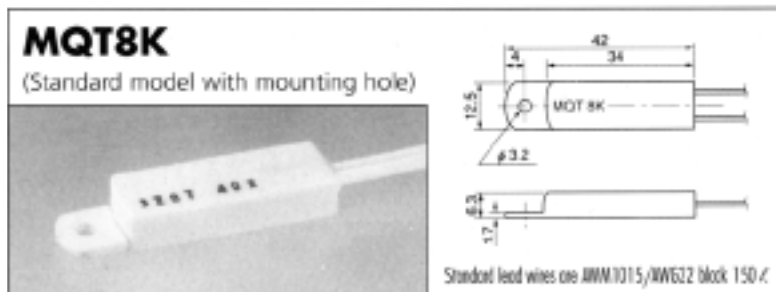
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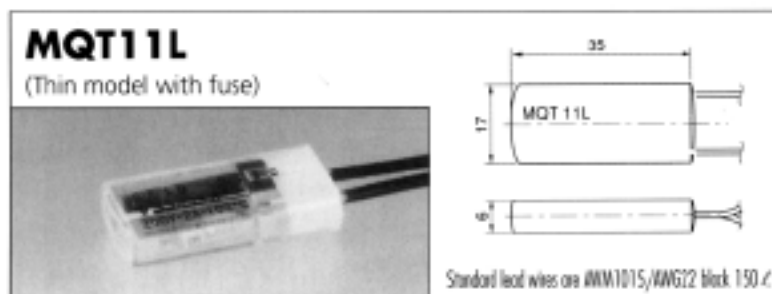
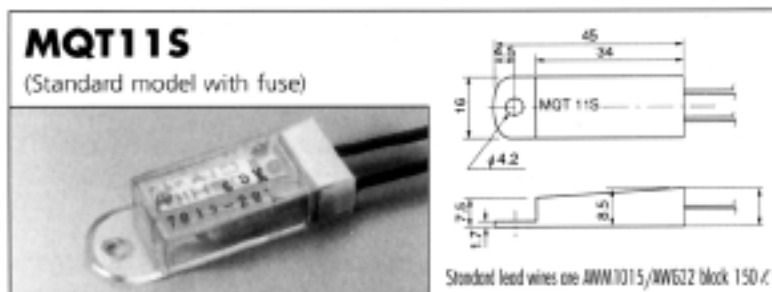
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TECHNICAL DATA 2 AMP THERMOSTATS

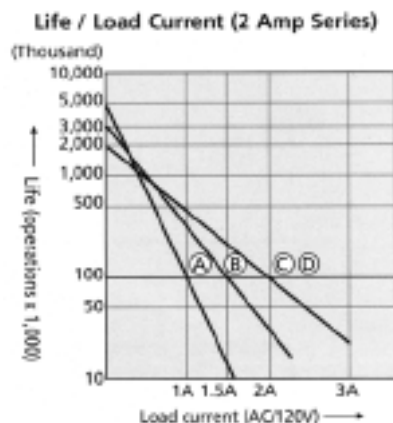
2 Amp Thermostats - Thin model



2 Amp Thermostats with fuse



- (1) Choose fuse temperature 25° higher than thermostat set temperature.
- (2) Standard fuse temperatures are 76°C, 102°C, 115°C and 130°C.



Ratings, Characteristics

Voltage: 250 V AC max.

Set Temperature Range: -10°C to 100° C
(Temperatures over 75°C are D rank)

Differential: A (2 to 4 degrees), B (3 to 6 degrees), C (5 to 8 degrees), D (10 degrees approx.) (see page 4 for ranking details)

Contact capacity: 2A/120 V AC, 1.3A/220 V AC, 2A/12 V DC, please specify cross bar contacts for applications of 30 mA or less.

Contact configuration: 1b (X) or 1a (Y) (See page 4)

Operating temperature range: — 20°C to 105°C (standard), — 20°C to 130°C (special) Please do not exceed 60° above the set temperature)

Set temperature tolerance: ± 3 degrees (standard)
(Set temperatures up to 50°C. See page 4 for details)

Insulation resistance: At least 100 MW

Contact point resistance: Below 30 mW between contacts (initial value)

Voltage tolerance: 1500 V AC for 1 minute

Vibration tolerance: Selected from JIS-C-0911-1984

Constant vibration: 50 Hz fixed/0.2 mm fixed (1 G)

Sweep vibration: 10 to 55 Hz/0.35 mm fixed (0.1 to 2.2 G) Withstands experimental vibration for 1 hour each in X, Y and Z directions

Impact tolerance: Unaffected when dropped three times from a height of 40 cm onto a concrete floor (70 G). Double sealed model unaffected when dropped three times from a height of 1 m onto a concrete floor (240 G). Withstands substantial impact after being packaged or mounted on equipment.

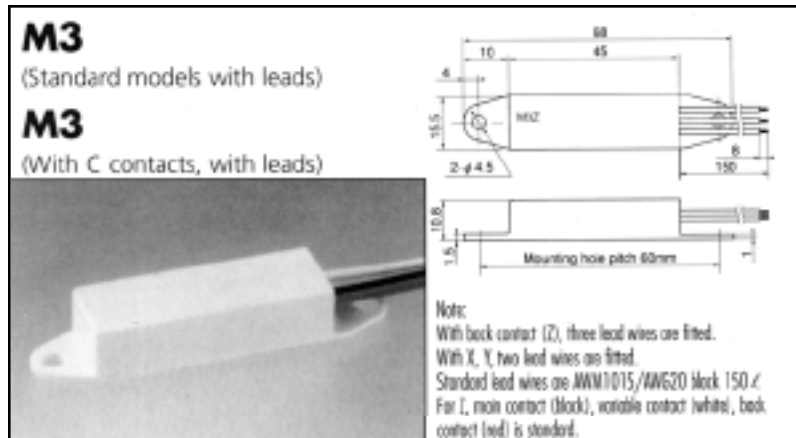
Life: 2 million times mechanically, 100,000 times under rated max. load. (refer to page 4 diagram)

Life for various loads

Mechanically, the life of a control thermostat easily exceeds 2 million operations but, when used under heavy loads, the life is shortened by contact wear. An indication of standard life is 100,000 operations under rated max load. Below the rated load the life is longer. Please refer to the diagrams on the left.

TECHNICAL DATA 6 AMP THERMOSTATS

6 Amp Thermostats - Std models



- (1) 6A capacity in a compact body
- (2) Back contact capacity is 3A.
- (3) Astonishingly low cost for a long life, small differential thermostat.

Ratings, Characteristics

Voltage: 250 V AC max.

Set Temperature Range: -10°C to 100°C
(Temperatures over 75°C are D rank)

Differential: A (2 to 4 degrees), B (3 to 6 degrees),
C (5 to 8 degrees), D (10 degrees approx.) (see page
for ranking details)

Contact capacity: 6A/120 V AC, 4A/220 V AC,
6A/12 V DC (back contact is 1/2 of main contact)

Contact configuration: 1b (X) or 1a (Y) or 1c (z)
(See page 4)

Operating temperature range: -20°C to
 105°C (standard), -20°C to 130°C (special) Please
do not exceed 60° above the set temperature)

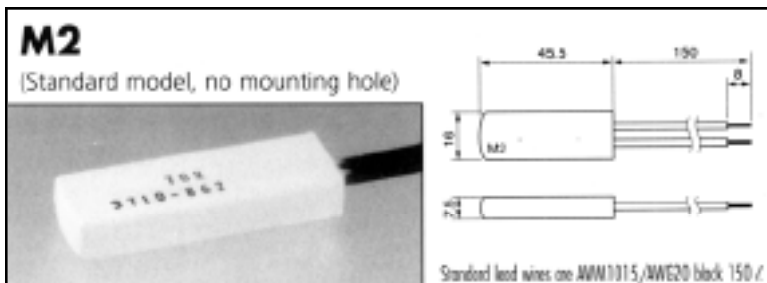
Set temperature tolerance: ± 3 degrees (stan-
dard) (Set temperatures up to 50°C , See page 4 for
details)

Insulation resistance: At least 100 MW

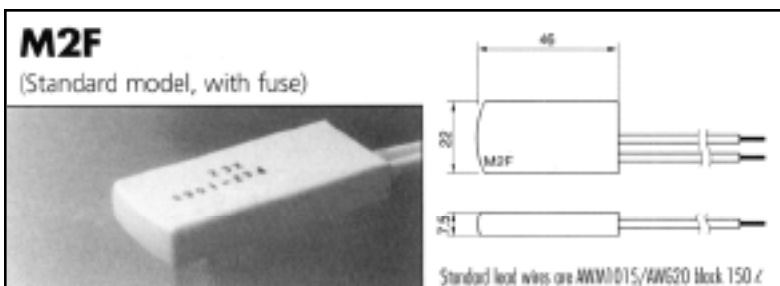
Contact point resistance: Below 30 MW
between contacts initial value)

Voltage tolerance: 1500 V AC for 1 minute

6 Amp Thin Models



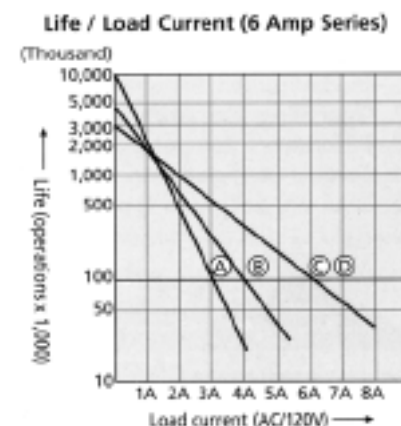
6 Amp with Fuse



- (1) Choose fuse temperature 25° higher than thermostat set temperature.
- (2) Standard fuse temperatures are 76°C , 102°C , 115°C and 130°C .

Life for various loads

Mechanically, the life of a control thermostat easily
exceeds 2 million operations but, when used under
heavy loads, the life is shortened by contact wear.
An indication of standard life is 100,000 operations
under rated max load. Below the rated load the life
is longer. Please refer to the diagrams below.



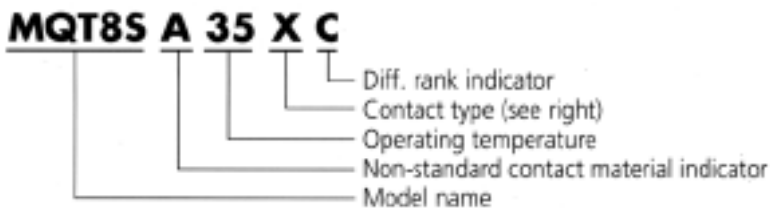
Relation between Differential Rank Indicator and Terminal contact capacity

2 Amp Series (MQT8/MQT11)					6 Amp Series (M3,M2)				
Rank Symbol	A	B Y type standard model	C X type standard model	D	Rank Symbol	A	B Y type standard model	C X type standard model	D
Differential	3 (2 ~ 4)	4 (3 ~ 6)	6 (5 ~ 8)	10 (8 ~ 13)	Differential	3 (2 ~ 4)	4 (3 ~ 6)	6 (5 ~ 8)	10 (8 ~ 13)
Contact capacity	0.05 A ~ 1 A	0.1 A ~ 1.5 A	0.1 A ~ 2 A	0.1 A ~ 2 A	Contact capacity	0.05 A ~ 1 A	0.1 A ~ 4 A	0.1 A ~ 6 A	0.1 A ~ 6 A
Applicable set temperature	-10°C ~ 75°C	-10°C ~ 75°C	-10°C ~ 75°C	-10°C ~ 100°C	Applicable set temperature	-10°C ~ 75°C	-10°C ~ 75°C	-10°C ~ 75°C	-10°C ~ 100°C

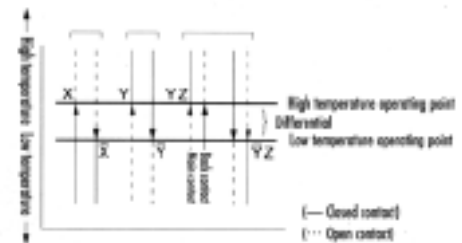
Set temperature tolerances / differentials for various set temperatures

	Set temperature ranks			
	-10°C ~ 0°C	1°C ~ 50°C	51°C ~ 75°C	76°C ~ 100°C
Setting tolerances (Standard)	± 3	± 3	± 4	± 5
Setting tolerances (Special)	Feasible to ± 2 deg	Feasible to ± 1 deg	Feasible to ± 2 deg	Feasible to ± 3 deg
Differential (Standard)	X...C, Y...B	X...C, Y...B	X...C, Y...B	X...D, Y...D
Differential (Special)	A, B, C and D all feasible	A, B, C and D all feasible	B, C and D feasible	C and D feasible
Notes	D setting tolerance becomes ± 5 deg	D setting tolerance becomes ± 5 deg	D setting tolerance becomes ± 5 deg	C is feasible only for MQT8S and M3

Model Designation Method



Contact Type Indication



Because of the way we manufacture thermostats to be used as controllers, their designation becomes more complicated than is the case with protectors. An explanatory diagram appears above and a text explanation follows.

• Contacts which open when the temperature rises are designated X, and those which close when the temperature rises are designated Y. The temperature at which the contacts operate when the temperature rises (the high temperature side) is shown in the diagram.

Similarly, the symbols $\bar{X}$ [Xbar] and $\bar{Y}$ [Ybar] are used for contacts which operate when the temperature falls (the low temperature side). $\bar{X}$ [Xbar] closes when the temperature falls,

$\bar{Y}$ [Ybar] opens when the temperature falls. Z and $\bar{Z}$ [Zbar] are transfer contacts. XZ indicates a main contact which opens when the temperature rises, $\bar{XZ}$ [XbarZ] closes when the temperature falls.

• C is the standard rank designation for X contacts and B is standard for Y contacts. If there is no designation, consider X to be C rank and Y to be B rank.

Guidelines for Ordering (when ordering, please indicate the following details)

1. Model name
2. Operating temperature and setting tolerance
3. Differential (temperature difference between on and off)
4. Contact configuration (X, Y, X [Xbar], Y [Ybar])
5. Load capacity and type
6. Rate of change of ambient temperature, wind velocity, etc.
7. Power supply voltage, whether AC or DC
8. Please indicate other data, such as purpose and operating conditions, in as much detail as possible.