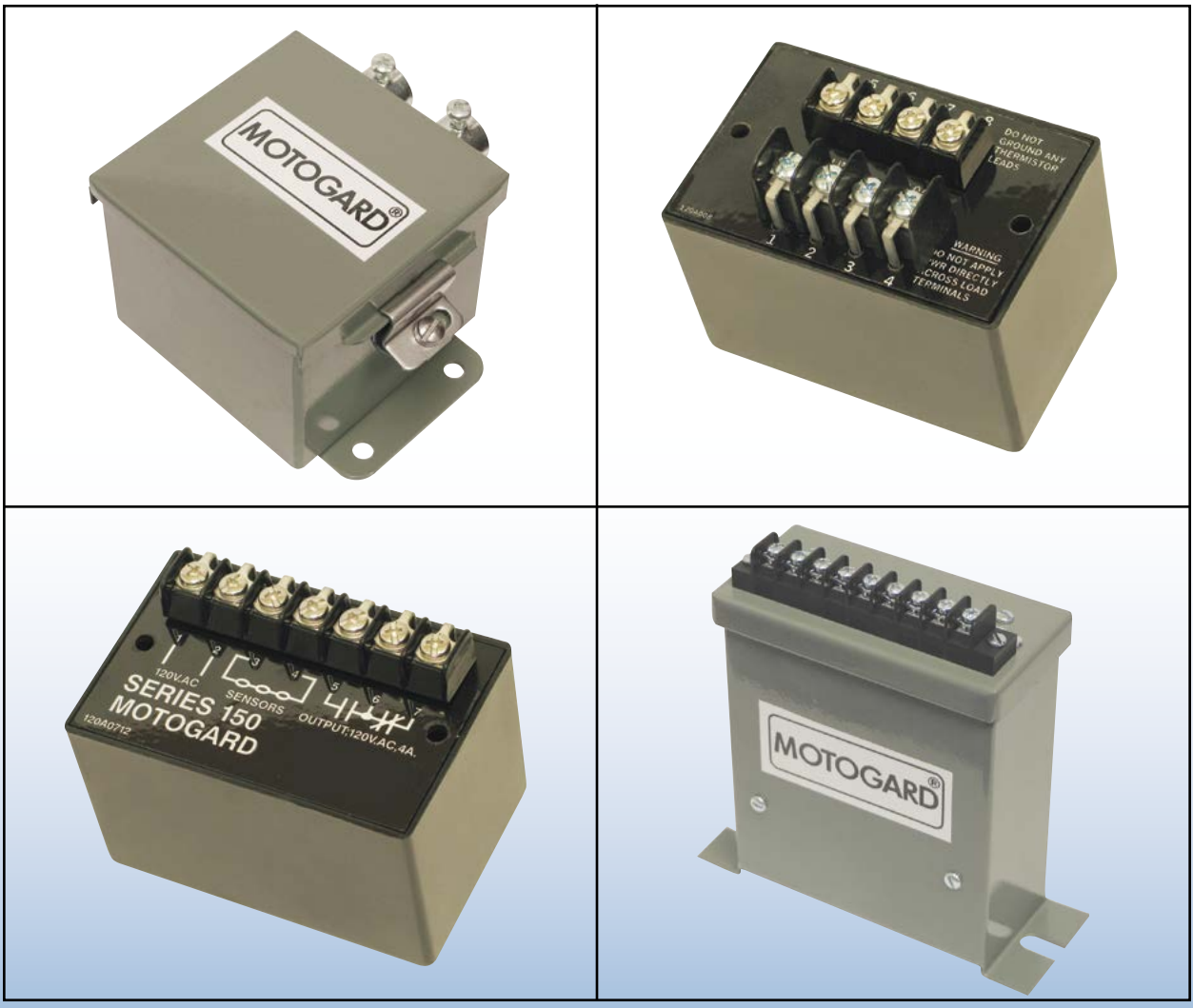
GEMCO®

Motogard™

Over – Temperature Protection System

Ordering Guide and Technical Information



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FACTORY AUTOMATION

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General Information

Motogard Over-Temperature Protection Systems provide immediate overheating protection for: motors, equipment enclosures, semiconductor heatsinks, sleeve bearings, and other related machinery.

All Motogard systems fully conform to the NEC requirements for integral motor thermal protection. The temperature inside of the motor is monitored at all times.

Using Positive Temperature Coefficient (PTC) Thermistors embedded in or in contact with the surface, the Motogard system is able to continually sense when the equipment exceeds the pre-selected temperature limits.

Motogard systems are recommended for applications requiring high reliability under conditions of heavy duty or severe ambient contamination. Minimum RFI interference, absence of arcing, and maintenance-free long life are built into the Motogard systems.

Applications

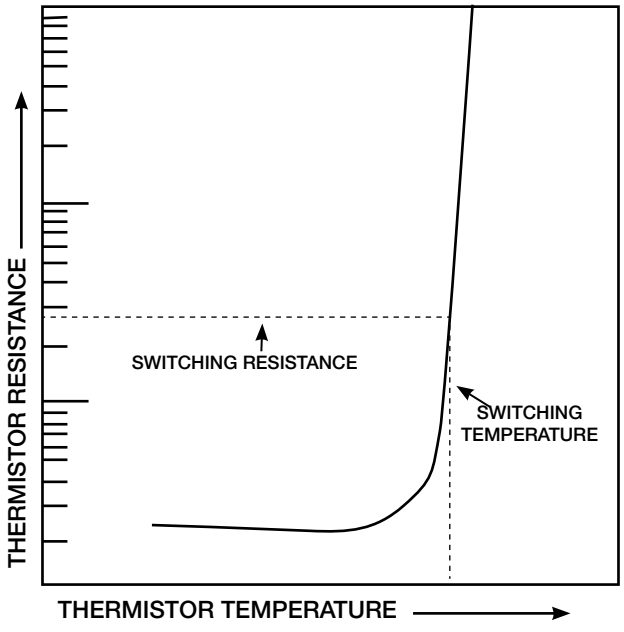
1. Safeguard's motor against: overloads caused by single phasing, frequently repeated overloads, voltage unbalance, plugging or reversing duty, too frequent starting, locked rotor or bearing seizure, ventilation failures or abnormally high ambient temperatures.
2. Bearing protection systems for machine tool drives, compressors, pumps or motor-generator sets.
3. Over-temperature protection of process vats, furnaces and ovens.
4. Simple fire protection systems for equipment enclosures or material handling storage systems.
5. Insulation over-temperature protection for electromagnets and transformer windings.
6. Over-temperature protection of semiconductor heatsinks.

Key Features

- Solid state logic circuitry assuring rapid, spark free noiseless operation with no drift or chatter
- "Fail Safe" operation protecting against sensor lead breakage or loss of power
- Protection against sensor lead short circuit (series 135 and 150 only)
- Solid state or electro-mechanical outputs (Triac in series 115 and 120, Form C electromechanical relay in series 135 and 150)

Operation

The Motogard Over-Temperature Protection System uses PTC Thermistors to indicate when the equipment has exceeded the set temperature. These thermistors act as a switch, which when reaching the pre-selected temperature will cause the resistance to increase to virtually infinity. This causes the controller to change the state of the contacts. As the equipment cools the "switching action" reverses and the controller will then change the state of the contacts back indicating an "OK" circumstance.



Note: This device does not monitor the actual temperature but protects against over-temperature conditions.

On Motogard series 115, 120, and 135 thermistors are placed in parallel allowing independent monitoring of 3-6 points in the equipment. On series 150, the three thermistors are wired in series reacting as a single switching point. Although there is a higher resistance switching point on the series 150, each separate thermistor will pass 3500 ohms on over-temperature.

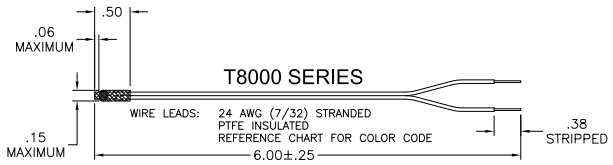
PTC Thermistors

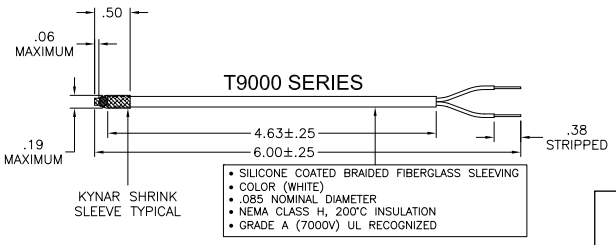
Motogard controllers are designed for use with positive temperature coefficient thermistors. PTC's are unlike other thermistors as they increase their resistance sharply when reaching their switch point temperature. This provides "snap" action response and allows remotely locating the controller without modifications.

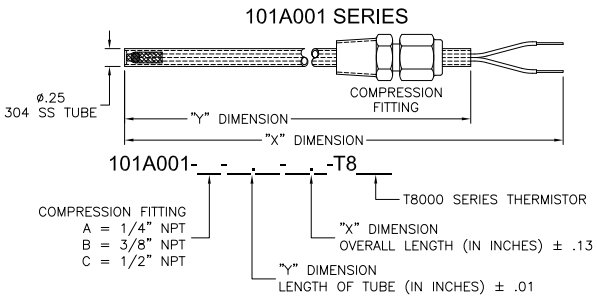
All PTC thermistors feature high speed over-temperature sensing with no switch point drift or aging. Each Thermistor is encapsulated in a special epoxy for rugged mechanical duty, severe environments, and good thermal conductivity.

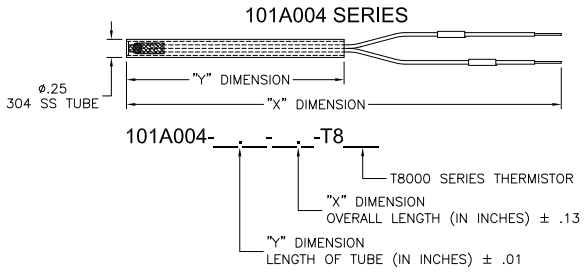
Switching temperatures (Nominal)

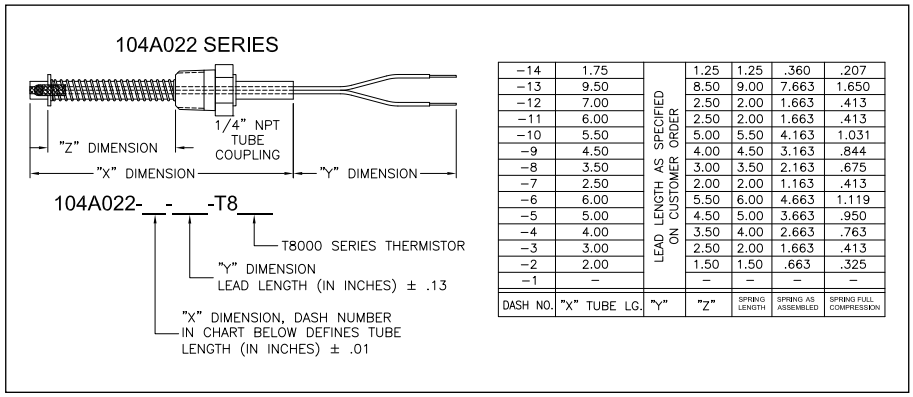
Item Identification														
Part Number	T8060*	T8070*	T8080*	T8090	T8100	T8110	T8120*	T8130	T8140	T8150	T8160	T8170	T8180*	T8190*
	T9060**	T9070**	T9080**	T9090**	T9100**	T9110**	T9120**	T9130**	T9140**	T9150**	T9160**	T9170**	T9180**	T9190**
Centigrade °C+/-5°	60	70	80	90	100	110	120	130	140	150	160	170	180	190
Fahrenheit °F+/-9°	140	158	176	194	212	230	248	266	284	302	320	338	356	374
Identifying wire colors	White / Gray	White / Brown	White / White	Green / Green	Red / Red	Brown / Brown	Grey / Grey	Blue / Blue	White / Blue	Black / Black	Blue / Red	White / Green	White / Red	Black / Grey
*Consult factory - Non-stocked temperatures. Consult factory for mimimums														
**Consult factory - Special order item. Consult factory for mimimums														











DASH NO.	"X" TUBE LG.	"Y"	"Z"	SPRING LENGTH	SPRING AS ASSEMBLED	SPRING FULL COMPRESSION
–14	1.75	LEAD LENGTH AS SPECIFIED ON CUSTOMER ORDER	1.25	1.25	.360	.207
–13	9.50		8.50	9.00	7.663	1.650
–12	7.00		2.50	2.00	1.663	.413
–11	6.00		2.50	2.00	1.663	.413
–10	5.50		5.00	5.50	4.163	1.031
–9	4.50		4.00	4.50	3.163	.844
–8	3.50		3.00	3.50	2.163	.675
–7	2.50		2.00	2.00	1.163	.413
–6	6.00		5.50	6.00	4.663	1.119
–5	5.00		4.50	5.00	3.663	.950
–4	4.00		3.50	4.00	2.663	.763
–3	3.00		2.50	2.00	1.663	.413
–2	2.00		1.50	1.50	.663	.325
–1	–		–	–	–	–

Available in numerous designs from a simple thermistor to a spring loaded bearing probes. Consult factory for special applications.

Motogard Relay Models

Model No.	Series 115	Series 120	Series 135	Series 150
	115201-2	120101	135101	150101
Operating Characteristics	6 Inputs 2 Triac Outputs 1 N.O.* 1 N.C.*	3 Inputs Single Triac Output N.C.*	3 Inputs Form C Relay Output	1 Input Form C Relay Output
Input Rating	120VAC± 10%, Single Phase, 50/60 Cycles			
Output Rating	120/240 Volts AC 5 amp continuous	120/240 Volts AC 3 amp continuous	120/240 Volts AC or 28 Volts DC 5 amp continuous	120/240 Volts AC 4 amp continuous
Input Resistance Control	Controller ON with 500 ohms or less - OFF with approx. 1500 ohms or more	Controller ON with 500 ohms or less - OFF with approx. 1500 ohms or more	Controller ON with 100 to 500 ohms or less - OFF with approx. 1500 ohms or more	Controller ON with 100 to 500 ohms or less - OFF with approx. 3500 ohms or more
Isolation	Controller output, excitation, and sesor input electrically isolated from each other	Controller excitation only isolated from output and sensors	Controller output, excitation, and sesor input electrically isolated from each other	Controller output, excitation, and sesor input electrically isolated from each other
Reset	Automatic			
Dimensions	5.50" W x 4.25" L x 3.12"H	3.24" W x 2.25" L x 2.50" H	5.75" W x 2.0" L x 5.68" H	3.25" W x 2.25" L x 2.50" H
Enclosure	Potted in "NEMA" 12 steel case	Potted in polyester case	Mounted in welded steel case	Potted in polyester case

* Series 115 and 120 Motogard Controllers use output Triacs that have been specifically selected to operate directly in series with main line contactors. If a small interposing relay must be used, the sealed VA rating of the interposing relay should be greater than 10VA.

Other Products

B/W Controls™ LIQUID LEVEL TECHNOLOGY

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PLC INTERFACE PRODUCTS
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ROTARY LIMIT SWITCHES
RESOLVERS
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