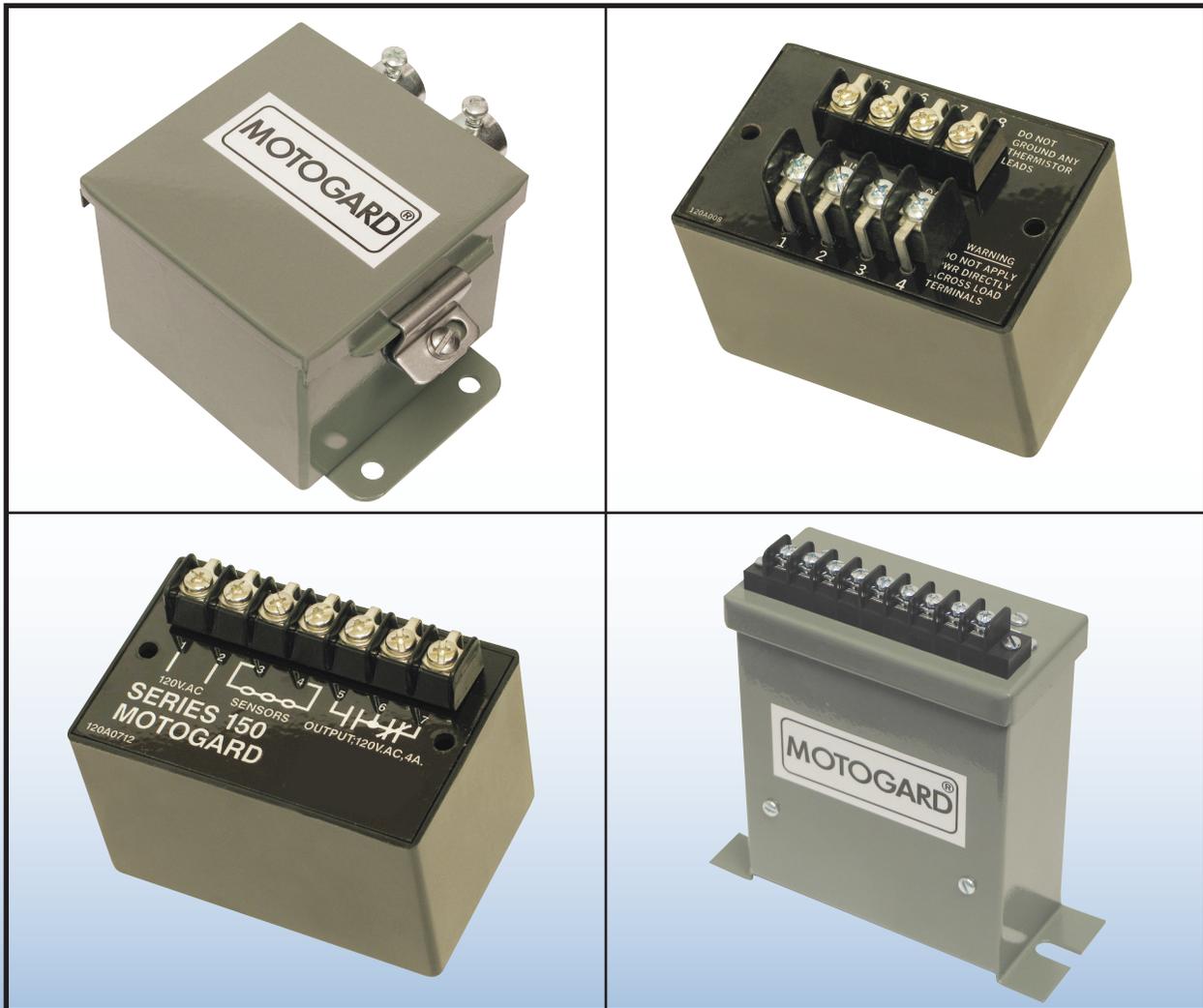




Motogard™

## Over – Temperature Protection System Installation Instructions



## Motogard™

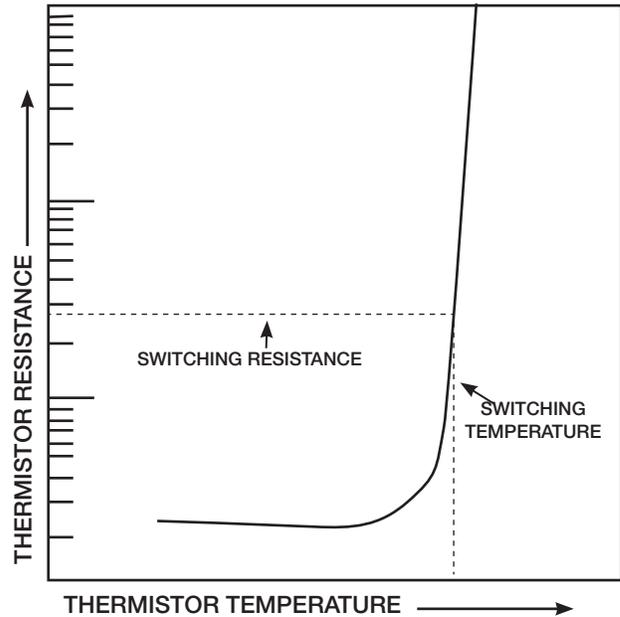
### General Information

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 by using Positive Temperature Coefficient (PTC) Thermistors embedded in or in contact with the surface.

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 Relays the Thermistors are placed in parallel allowing independent monitoring of 3-6 points in the equipment. On Series 150 Relays, 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.



## Series 115 Motogard™

The Series 115 Motogard is designed to take in up to 3 Thermistors wired in Parallel, and has two Triac output relays.

### Connections

#### Power Connections:

The standard 115 Series Motogard relay is designed to operate off of 120VAC +/-10%, Single Phase, 50/60Hz, and is sold under part number 115101-2. There is a special 230VAC input power version available and sold under part number 115202-2.

On terminals 1 & 2 connect incoming AC power.

#### Thermistor Connections:

1. Connect one lead of each Thermistor to terminals 6, 7, 8, 9, 10, and 11 respectively.
2. Connect other leads of each Thermistor to Common, terminal 5.
3. Maximum number of Thermistors in parallel: Six (6)
4. Note: If using less than 6 Thermistors. Any unused input – Install a 150 Ohm 1/2W resistor from sensor common (terminal 5) to any unused input.

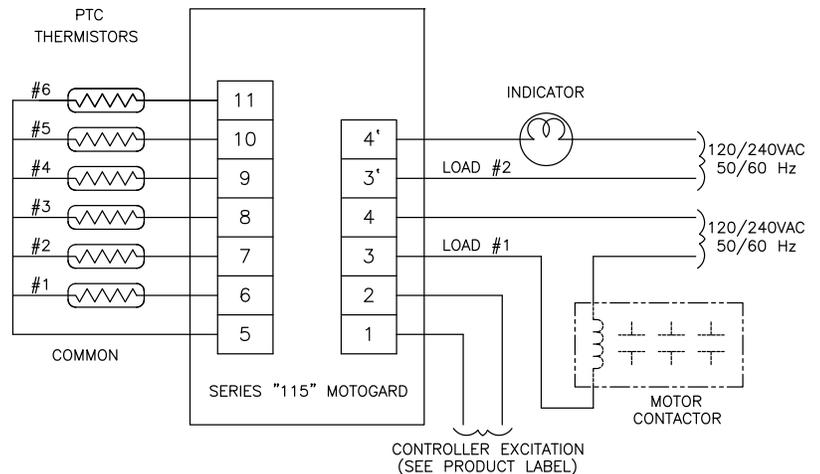
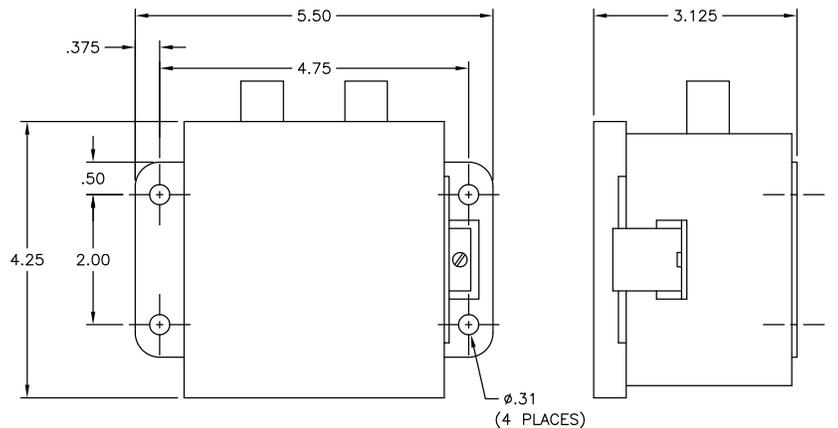
#### Output Load Connections:

1. With power applied to the controller and all input sensors in their low impedance states. Terminal 3 and 4 become the equivalent to a closed contact of an electromechanical relay.
2. With power applied to the controller and all input sensors in their high impedance states. Terminal 3' and 4' become the equivalent to an open contact of an electromechanical relay.

3. Be sure power is never applied directly across the contact but always in series with the load.
4. Maximum allowable load – 5 Amps at 120/240VAC.
5. The closed output of the Motogard Over temperature Protection System has been specifically designed to operate directly in series with most main line contactors. If a small interposing relay must be used, the sealed burden shall be greater than 10VA.
6. The open output of the Series 115 relay can be used for trip indication.

### Series "115" Motogard

Six (6) Thermistors in parallel





## Series 135 Motogard

The Series 135 Motogard is designed to take in up to 3 Thermistors wired in Parallel, and has a Form C Mechanical Output relay.

### Connections

#### Power Connections:

The 135 Series Motogard relay is designed to operate off of 120VAC +/-10%, Single Phase, 50/60Hz. Connect 120VAC to input terminals 1 and 2.

#### Thermistor Connections:

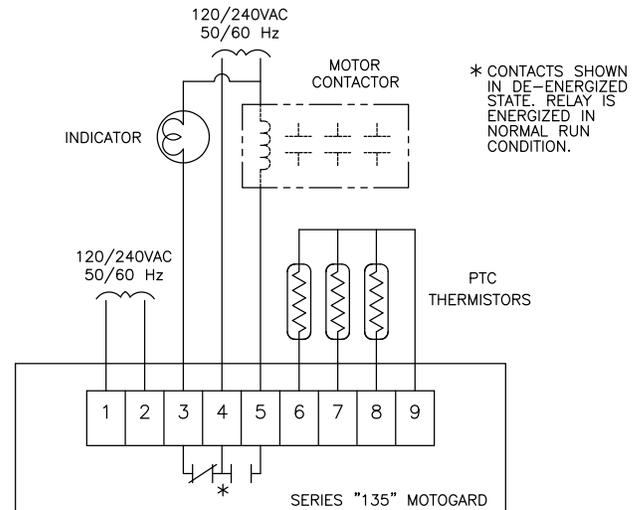
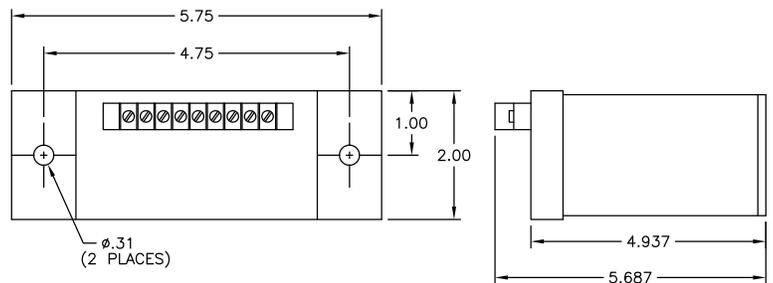
1. Connect one lead of each Thermistor to terminals 6, 7, and 8 respectively.
2. Connect other leads of each Thermistor to Common terminal 9.
3. Maximum number of Thermistors in parallel: Three (3)
4. Note: If using less than 3 Thermistors. Any unused input – Install a 150 Ohm 1/2W resistor from sensor common (terminal 9) to any unused input.

#### Output Load Connections:

1. Terminals 3, 4 and 5 comprise a set of “Form C” contacts with terminal 4 common, Terminal 5 is the open side and terminal 3 is the closed side.
2. Be sure power is never applied directly across the contact but always in series with the load.
3. Maximum allowable load – 5 Amps at 120/240VAC or 28VDC.
4. The closed output of the Motogard Over temperature Protection System has been specifically designed to operate directly in series with most main line contactors. If contact current is greater than 5 Amps at 115VAC, an interposing relay must be used.
5. The open output of the Series 135 relay can be used for trip indication.

### Series "135" Motogard

Three (3) Thermistors in parallel





## Series 150 Motogard

The Series 150 Motogard is designed to take in up to 3 Thermistors wired in Series (1 input), and has a Form C Mechanical Output relay.

### Connections

#### Power Connections:

The 150 Series Motogard relay is designed to operate off of 120VAC +/-10%, Single Phase, 50/60Hz. Connect 120VAC to input terminals 1 and 2.

#### Thermistor Connections:

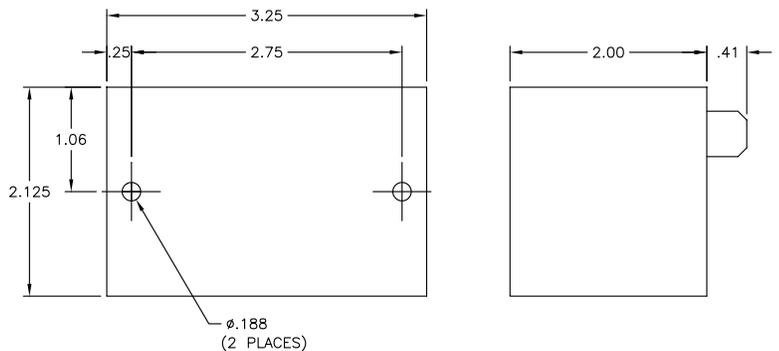
1. Connect one lead of the series Thermistor to 3.
2. Connect other lead of the series Thermistor to terminal 4.
3. Maximum number of Thermistors in series: Three (3)
4. Note: Resistance input across terminals 3 and 4 should be between 100 Ohm to 500 Ohm in ambient conditions. If the resistance measures less than 100 Ohms a 150 Ohm 1/2W resistor should be installed in series with the Thermistors to prevent false trips.

#### Output Load Connections:

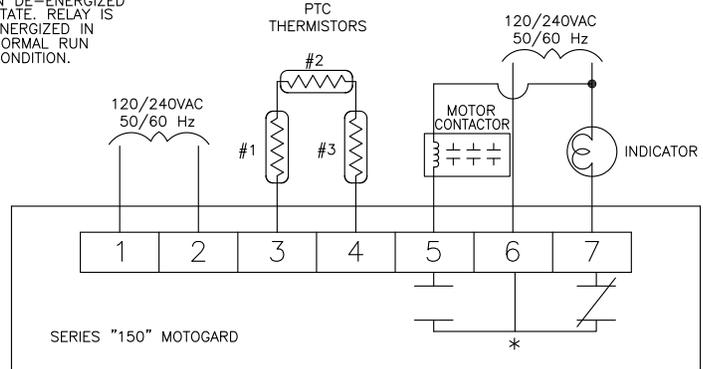
1. Terminals 5, 6 and 7 comprise a set of "Form C" contacts with terminal 6 common, Terminal 5 is the open side and Terminal 7 is the closed side.
2. Be sure power is never applied directly across the contact but always in series with the load.
3. Maximum allowable load - 4 Amps at 120/240VAC.
4. The closed output of the Motogard Over temperature Protection System has been specifically designed to operate directly in series with most main line contactors. If contact current is greater than 4 Amps, an interposing relay must be used.
5. The open output of the Series 150 relay can be used for trip indication.

## Series "150" Motogard

Three (3) Thermistors in parallel



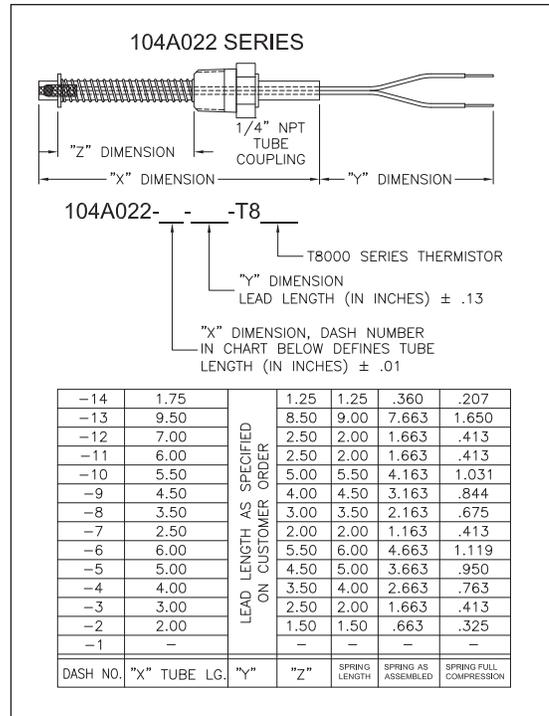
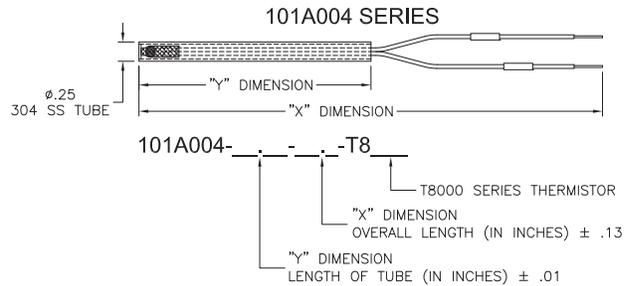
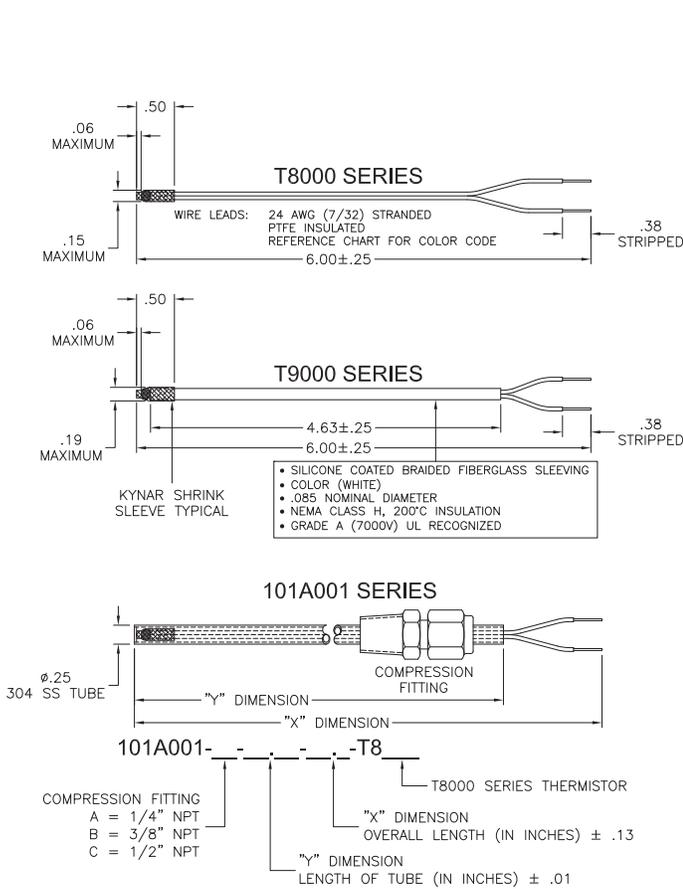
\* CONTACTS SHOWN IN DE-ENERGIZED STATE. RELAY IS ENERGIZED IN NORMAL RUN CONDITION.





## 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 minimums														
**Consult factory - Special order item. Consult factory for minimums														



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
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



- LINEAR DISPLACEMENT TRANSDUCERS
- PLC INTERFACE PRODUCTS
- ROTARY POSITION PRODUCTS
- PROGRAMMABLE LIMIT SWITCHES
- EXTREME DUTY CABLE REEL PRODUCTS
- ROTARY LIMIT SWITCHES
- RESOLVERS
- MILL DUTY ENCLOSURES
- ULTRA HIGH SPEED PLS
- SAFETY PRODUCTS



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