59T, 66T Series
Electric Water Heater Controls

Snap-Action Bimetal Discs in Both Controls

The 59T and 66T series controls are designed to meet the high electrical capacity requirements of electric water heaters. Both use a temperature sensitive bimetal disc to deliver snap-action to the contacts. The speed and force of contact separation provides long-dependable control life at high electrical loads.

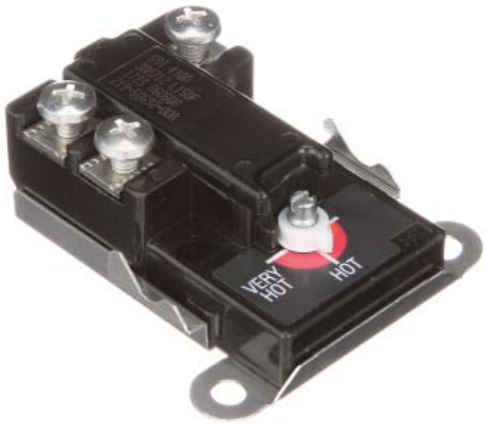
Features and Benefits

The 59T and 66T series features include:

- The 59T mounting tabs snap into the customer's bracket to mount the thermostat on the surface of the tank
- The M2 trip free manual reset 66T limit control is available with non-adjustable calibrations from 160° to 235°F (71° to 113°C)
- The 59T has an adjustable range of approximately 60°F (33°C)The lowest adjustable limit is 90°F (32°C) and the highest adjustable limit is 200°F (93°C)
- Controls are 100% operation checked

Therm-O-Disc

Switch Actions



The 59T is available in two switch actions:

Automatic reset SPST – The switch opens the normally closed contacts on temperature rise. The contacts automatically return to the closed position when temperatures return to the reset point.

Automatic reset SPDT – This operation is the same as the SPST with the addition of an auxiliary set of contacts, which make circuit upon opening of the normally closed contacts and breaks this circuit upon automatic reset.

The 66T is a manual reset DPST – The switch opens two sets of normally closed contacts on temperature rise to provide full power disconnect of both conductors. The contacts will reset to the closed position when the reset button is depressed after the control has cooled to 90°F. Once opened, until the reset button is pressed, the contacts will not automatically reset at control temperatures above 32°F (0°C).

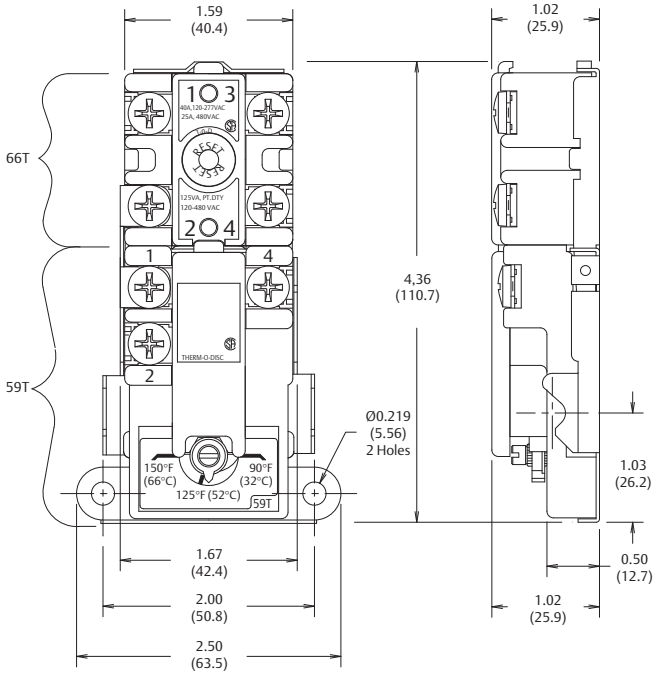
The construction is classifi ed as “M2 Trip Free” by the approval agencies. This design holds the contacts open in
the event the reset button is held in the depressed position in an attempt to defeat the manual reset function of
the thermostat.

Typical Application

The thermostats and wiring diagram (shown on next page) are typical of a residential electrical storage water heater installation using two heating elements for non-simultaneous operation. The upper electrical control is a combination 59T SPDT regulating thermostat and a 66T DPST manual reset limiting thermostat. The lower electrical control is a 59T SPST thermostat. All the thermostats sense the surface temperature of the water heater tank.

The 66T function is to provide full power disconnect (through both power conductors) in the event of an overheat condition. The 59T SPDT normally closed contacts route power to the upper heating element. When the 59T SPDT control reaches its set temperature, its switch action breaks power to the upper heating element and switches power to the lower heating element through the normally closed contacts of the 59T SPST. When its set point is satisfi ed, the switch action breaks power to the lower heating element.

59T SPDT, 66T DPST



Dimensions are shown in inches and (millimeters)

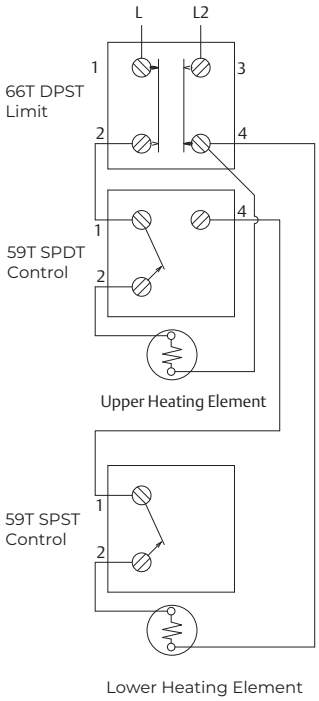
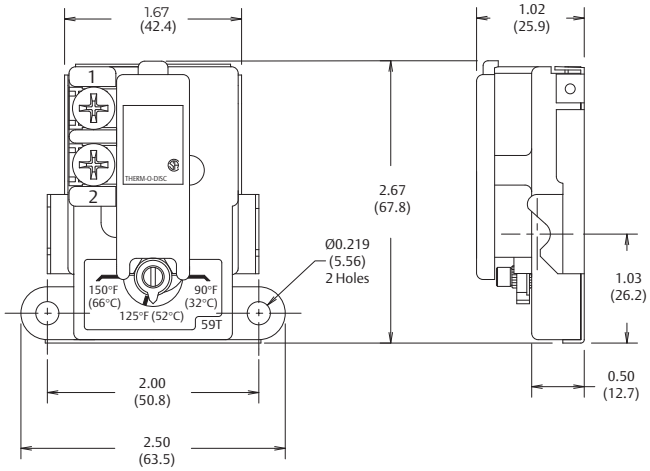


Figure 1

Double element limited demand circuit for full power disconnect through both power conductors.

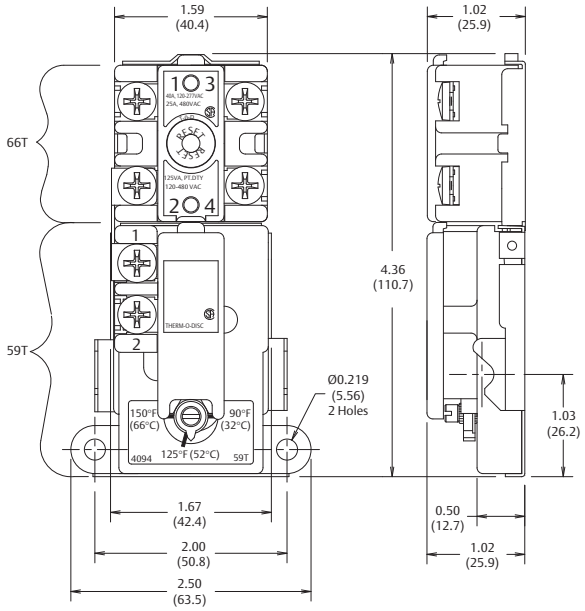
59T SPST



Dimensions are shown in inches and (millimeters)

The thermostats and wiring for single element water heaters are shown below. The combination 59T SPST and 66T DPST is used in residential 240VAC applications, as well as in commercial electric water heater applications where each element may be independently controlled (see Figure 2 below). The combination 59T SPST and 66T DPST can also be used in 120VAC single element installations by leaving terminals 3 and 4 of 66T not utilized.
(see Figure 3 below)

59T SPST, 66T DPST



Dimensions are shown in inches and (millimeters)

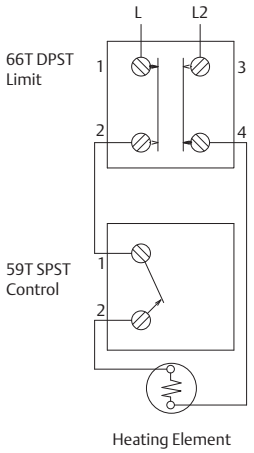


Figure 2
240VAC Single element circuit for full power disconnect through both power conductors.

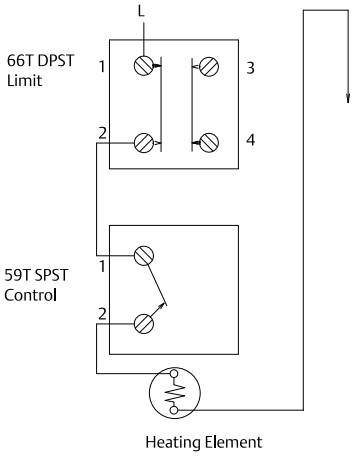


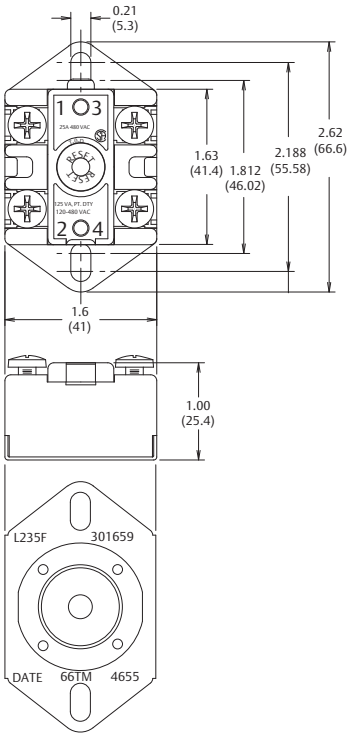
Figure 3
120VAC single element circuit for full power disconnect.

66TM Option

The 66T DPST is available with the 66TM mounting option shown below. The fl anges on the backplate allow the 66TM to be screw or stud-mounted.

Temperature Calibration

Type	Thermal Range	Factory Calibration Temps	Lowest Dial Setting	Highest Dial Setting	Temperature Differential
59T SPST	60°F (34°C)	Minimum 100°F +/- 5°F (38°C +/- 3°C) Maximum 170°F +/- 5°F (77°C +/- 3°C)	90°F (32°C)	200°F (93°C)	5-15°F (3-8°C)
59T SPDT	60°F (34°C)	Minimum 100°F +/- 5°F (38°C +/- 3°C) Maximum 170°F +/- 5°F (77°C +/- 3°C)	90°F (32°C)	200°F (93°C)	17-27°F (9-15°C)
66T DPST 66TM DPST	N/A	Minimum 160°F +/- 5°F (71°C +/- 3°C) Maximum 235°F +/- 5°F (113°C +/- 3°C)	N/A	N/A	N/A



Dimensions are shown in inches and (millimeters)

General Electrical Ratings

The 59T, 66T series of controls has been rated by major agencies throughout the world. The agency ratings can be used as a guide when evaluating specifi c applications. However, the mechanical, electrical, thermal and environmental conditions to which a control may be exposed in an application may differ significantly from agency test conditions. Therefore, the user must not rely solely on agency ratings, but must perform adequate testing of the product to confi rm that the control selected will operate as intended in the user's application.

Thermostat Type	Maximum Calibration Temperature	Cycles	Pilot Duty VA	Resistive Amps	Volts AC	Agency & File #
59T SPST	181°F/83°C	30,000		13.5	480	UL File # E19279 CSA File # LR10281
	200°F/93°C	100,000		30	250	
		30,000		25	277	
		30,000		12.5	480	
		30,000	125		120/480	
59T SPDT	181°F/83°C	30,000		13.5	480	UL File # E19279 CSA File # LR10281
	200°F/93°C	30,000		30	250	
		30,000		25	277	
		30,000		12.5	480	
		30,000	125		120/480	
66T or 66TM DPST	235°F/113°C	6,000		40	277	UL File # E19279 CSA File # LR10281
		6,000		25	480	
		6,000	125		120/480	
59T SPST	212°F/100°C	30,000		30	250	VDE File # 121213
		100,000		16	480	
66T or 66TM DPST	248°F/120°C	30		40	250	VDE File # 40014721
		30		30	400	
		100		30	250	
		100		16	480	
59T SPST 59T SPDT	181°F (83°C)	10,000		25	240	Intertek CB Report # 102503546DAL-001
		10,000		28.8	208	
		10,000		21.67	277	
		10,000		15.8	380	
		10,000		14.7	408	
		10,000		12.5	480	
66T DPST	200°F (93°C)	30		25	240	Intertek CB Report # 102503546DAL-001
		30		28.8	208	
		30		21.67	277	
		30		15.8	380	
		30		14.7	408	
		30		12.5	480	