



### Super Sentinel Diagnostics and Repair

Rheem introduced the Super Sentinel electronic control in February 2014. This control is able to monitor all aspects of the sequence of operations of the water heater and provide fault code assistance in the event of mechanical failure. It can also predict a potential dry fire situation. The control also has the ability to communicate via an RS-485 port for network connectivity.



The control provides for two thermistor inputs – upper tank temperature and lower tank temperature. Thermistors are Therm-O-Disc 10,000 ohms @ 25C. They have a temperature sensing range of 32° to 210°F with +/-2.0°F accuracy.

The Super Sentinel also detects the presence of water thru a rope sensor– for example in the drain pan. The Water Sensor is attached to the electronic control and measures/calculates the resistance in ohms. Based on the water sensor's "resistance" properties, the control will introduce an alarm if water is detected. Drying the water sensor will cause the alarm to clear automatically allowing the unit to operate. The water heater can operate without the rope sensor attached.



The Super Sentinel control has three operating modes: Vacation, Energy Saver and Performance. The unit can also be turned ON or OFF at the control.

**CAUTION: For your safety DO NOT attempt repair of electrical wiring, temperature sensor, electronic control, heating elements or other safety devices. Refer repairs to qualified service personnel.**

Code	Scrolling Message	Troubleshooting
A100	Lower temperature thermistor failure	Electronic control has detected lower temperature sensor is bad. Conduct OHMS resistance check of the thermistor. Replace thermistor. Replace electronic control.
A101	Upper temperature thermistor failure	Electronic control has detected upper temperature sensor is bad. Conduct OHMS resistance check of the thermistor. Replace thermistor. Replace electronic control.
A102	Water sensor alarm (Unit will operate without sensor while it is drying.)	Electronic control has detected water in the drain pan. Check the pan for water. If water is not present, disconnect the sensor, dry and reinstall it to reset the error.
A103	Fill tank with water	Electronic control has detected no water in the tank. Please fill the tank with water and recycle power.
A104	Emergency cut off alarm	The high temperature electrical cut off device (ECO) has been tripped. Reset ECO. Replace ECO.
A105	Lower element error	Verify wiring to heating element is tight. Conduct OHMS check on element; Replace element.
A106	Upper element error	Verify wiring to heating element is tight. Conduct OHMS check on element; Replace element.
A107	Element wire routing error	Verify wire routing with use and care manual diagram. Replace control board.
A108	Lower element relay stuck on error	Replace control board.
A109	Upper element relay stuck on error	Replace control board.
A110	Lower temperature conversion error	Replace control board.
A111	Upper temperature conversion error	Replace control board.
A112	Upper and or lower Temp Conversion Error	Replace control board.



**Super Sentinel Diagnostics and Repair**

A113	Conversion Drift Error	Replace control board.
A114*	Safety Temperature Protection	Replace water heater
A500	Control Failure	Replace control board.

**\*A114 Safety Temperature Protection**

A temperature sensor is attached to the control board as thermal protection. The sensor determines ambient temperature of the control cavity and assists the controller in determining if control board components are operating within the specified temperature range.

If the controller determines operation outside of the specified temperature range (>185°F), the unit follows a three-strike methodology:

- Strike 1: shut down 30 minutes...then allow to heat again
- Strike 2: shut down 30 minutes...then allow to heat again
- Strike 3: set the alarm...water heater is locked out

Power cycling the unit will immediately clear the alarm. Have water heater replaced immediately. Do not send out any control boards in an attempt to repair the unit.

If there is a triangle warning flashing above the thermostat setting, the unit is in ALARM mode. You should also hear the unit's audible alarm BEEP.

Press the Back / Status button one time to make the alarm turn off. Then press the Back / Status button again to show the fault code.



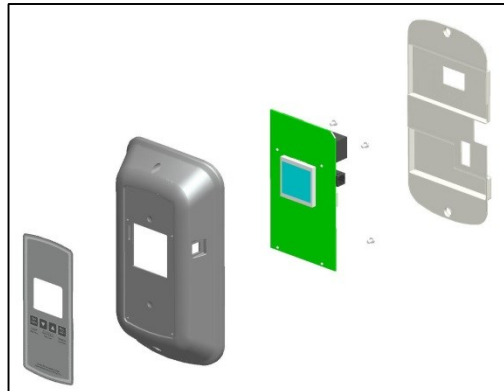


## Super Sentinel Diagnostics and Repair

### Repair Parts

Part Description	Part Number
Cover, Electronic Control Feb 2014 to Dec 11, 2014	AP16732
Cover, Electronic Control Dec 15 2014 and later	AP17399
Rope, Water Sensor	AP16678
Upper Thermistor / ECO	SP15100
Lower Thermistor	SP15228
Heating Element SS 5500w	AP10869PH
Dip Tube, Dispersion Tip-41 inches	AP16787A
Dip Tube, Dispersion Tip-51 inches	AP16787B
Dip Tube, Dispersion Tip-53 inches	AP16787C

### Electronic Control Replacement Part Components



Energy Saver Mode: If there is no demand (change in either upper or lower thermistor) for 30 minutes, then the control reduces the set to down 1<sup>o</sup>F to save energy. It will stop at 118<sup>o</sup>F.

Performance Mode: Applies only to unit when set point is between 130<sup>o</sup>F and 140<sup>o</sup>F. Control brings on the upper heating element sooner than normal and leaves it on thru the current demand cycle.