

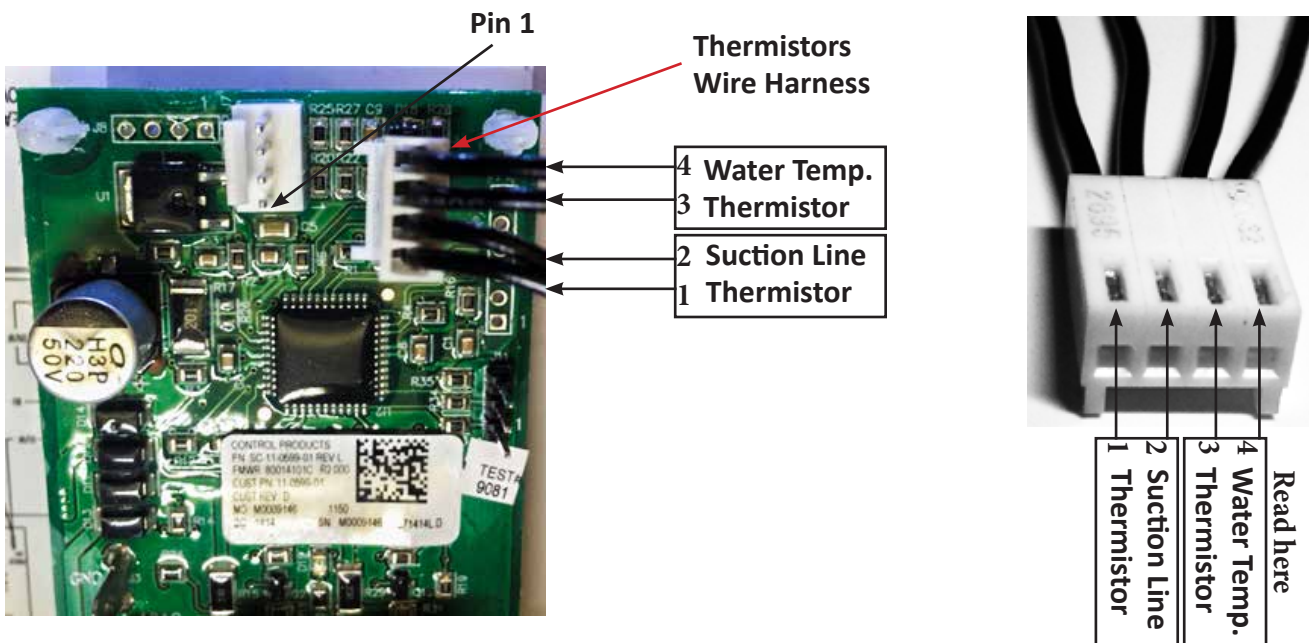
Control System And Long Harvest Cycles

The Essential units have two thermistors. There is one located at the suction line leaving the evaporator. It is used to initiate & terminate the harvest cycle. The other thermistor is located in the hose coming off the water pump and it is used for turning the pump off momentarily in order to initiate the Anti_Slush function. It is crucial that the thermistors do not get reversed. If they do get reversed, the unit will typically function, but not that well.

Below is an easy check that can be done to confirm proper location of thermistors.

Thermistor location check:

1. Disconnect power from the ice machine.
2. Disconnect power from the water pump.
3. Disconnect the thermistors from the circuit board. (Four black wires with white plug)
4. Return power to the ice machine and turn the switch to the on position. Note: After a short delay the green lights will flash. This is normal, and indicates that the thermistor input is open.
5. After the blue freeze light comes ON, wait approximately 5 minutes.
6. Check the resistance values at the four wires.
7. If the thermistors are properly positioned, pins 1 and 2 should show with significantly higher resistance than pins 3 and 4.



Thermistor and controller operational check:

Harvest is terminated by the evaporator thermistor reaching it's Harvest setpoint. The setpoint is adjustable by the +/- keys on the circuit board. If the unit is not harvesting with harvest setpoint at the maximum setting, you can confirm the circuit board and thermistor operation by following the below steps.



1. Use the + key and adjust the harvest time to maximum.
2. Locate the evaporator thermistor on the suction line in the rear of the unit. Ensure that it is well insulated and has good thermal contact to the suction line.
3. Add a thermocouple or a thermometer to monitor suction line temperature. Ensure that it is well insulated and has good thermal contact to the suction line.
4. Turn the machine ON and observe normal ice making operation.
5. As the unit continues through the freeze cycle, the suction line temperature should be decreasing. Once the setpoint temperature has been achieved, the unit will start to finish the freezing cycle. The amber light will be illuminate, and the freeze cycle will continue for 7 more minutes.
6. Once in harvest the suction line temperature should be increasing in temperature. Once the setpoint temperature of ~56 (+/- 3) degrees Fahrenheit is reached, the amber light should illuminate. **This would confirm that the control system is working properly.**

If the control system is confirmed to be working properly then next steps would be to check the evaporator. Any imperfections or mineral deposits will increase harvest time.

Setpoint	Evaporator Thermistor Freeze Temperature (deg F).	Thermistor Resistance (K ohms)	Evaporator Thermistor Harvest Temperature (deg F).	Thermistor Resistance (K ohms)
1 Min. Shortest Harvest & Freeze	20.0	43.4	37.2	28.2
2	16.7	47.8	39.3	26.5
3	13.3	52.9	41.4	25.1
4	10.0	58.4	43.5	23.7
5	6.7	64.8	45.6	22.3
6	3.3	71.7	47.7	21.2
7	0.0	79.8	49.8	20.0
8	-3.3	88.4	51.9	18.8
9	-6.7	98.6	54.0	17.9
10 Max, Longest Harvest & Freeze	-10.0	109.5	56.1	16.9

Other Parameters:

Initial power up harvest time will be 2 Min
 Harvest Finish Time: 20 Sec.
 Min. Harvest Time: 35 Sec.
 Freeze Finish Time: 7 Min.
 Anti-Slush Time: 30 Sec.

If the thermistors are unplugged, the green lights will blink and the Freeze time will be fixed at 20 Min. and the Harvest will be fixed to 2 Min.

Essential Links:

[Service Manual](#)
[Parts List](#)
[Interactive Train Module](#)
[Thermistor Resistance Values](#)
[Essential Test Mode \(YouTube\)](#)

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