

Standard 1-Zone Control

The 1-Zone Control is a single stage, electronic temperature control with a wide range of applications. The control provides isolated SPDT relay contacts which are controlled by comparing the temperature sensor to a selected setpoint. The control allows the installer to select either a Heat or Cool mode. Power for the control can be provided from 120VAC. The relays are isolated so the output can switch any load up to 5 amps regardless of the control power source.

Mounting

The control is designed for mounting indoors and protected from the weather with a non-condensing humidity. For installing in a greenhouse or outdoors, use of a weather tight enclosure is required (optional).

Power Input

The control requires external power to operate. You may connect 120VAC to the terminals marked 120VAC.

Sensor Wiring

The sensor connects to terminals 1 & 2 on connector J1. This will be pre-wired in Benchwarmer Controllers.

Output Wiring

The control has isolated (dry) contacts which are ideal for many control applications. If you are directly controlling a load, you must connect a source of power through the output relay. **NO** is a normally open contact which closes when the control output is on, **NC** is a normally closed contact which opens when the output is on.

Configuration

Set switch ST1 to the heat mode position.

Setpoint

Adjust the setpoint and temperature differential to your desired settings. The recommended differential setting is 1.5°F.

Operation

No operator intervention is required after installation. There is a power indicator light which should remain on and an output indicator light which reflects the status of the output relay. In **Heat** mode, the output will **turn on** when the temperature falls to the setpoint **minus** the differential. The output will **turn off** when the sensor temperature reaches setpoint.

NOTE

Controllers purchased in conjunction with our Heating Systems will have custom drawings that should be followed. If further assistance is required, please call our technical assistance line:

1-800-438-4328

Testing Sensors for Accuracy and Operation

To test a sensor, the resistance of the sensor needs to be measured and compared to the chart below. Disconnect the sensor from the control and any other wire it may be connected to. Place the sensor in a glass or ice water (lots of ice) and let it stabilize for a few minutes. Using an ohm meter (digital preferred), measure the resistance across the sensor, making sure the meter is set on the proper scale. If you get a reading, compare it to the chart. At 32°F, the reading should be close to 32,600 ohms. If the reading is off any more than 2,000 ohms or if you didn't get a reading at all, the sensor should be replaced. If the reading does match properly, re-connect the sensor to the sensor wire and repeat the same test, measuring the resistance at the other end of the wire (at the control). This check will ensure that there aren't any problems along the sensor wire. If you don't get a reading, or if the reading is too far off, then check along the sensor line for any breaks, shorts, or bad connections. Corrosion and moisture on the sensor connections will cause the reading to be off by a few degrees or more.

Temperature vs. Resistance (°F vs. Ohms) 10,000 Ohm Thermistor @ 77°F

°F	Ohms	°F	Ohms	°F	Ohms	°F	Ohms
30	34678	50	19903	70	11833	90	7333
31	33636	51	19380	71	11591	91	7164
32	32654	52	18873	72	11307	92	6999
33	31742	53	18381	73	11031	93	6839
34	30859	54	17903	74	10762	94	6683
35	30003	55	17439	75	10501	95	6530
36	29174	56	16988	76	10247	96	6382
37	28371	57	16550	77	10000	97	6238
38	27592	58	16126	78	9760	98	6097
39	26837	59	15715	79	9526	99	5960
40	26105	60	15315	80	9298	100	5827
41	25936	61	14925	81	9077	101	5697
42	24709	62	14546	82	8862	102	5570
43	24402	63	14179	83	8652	103	5446
44	23395	64	13822	84	8448	104	5326
45	22768	65	13476	85	8249	105	5213
46	22160	66	13139	86	8056	106	5100
47	21570	67	12811	87	7868	107	4984
48	20998	68	12493	88	7685	108	4873
49	20442	69	12184	89	7507	109	4767
						110	4663

