



Model 200TS – Temperature Sensor

The 200TS Temperature Sensor is a precision thermistor encased in epoxy potting compound for direct burial applications. It is ideally suited for measurement of soil temperature. If used for air temperature measurements, care must be observed to properly expose the sensor in a shaded housing, such as a solar radiation shield, to provide airflow around the sensor and minimize direct exposure to sunlight, rain and snow, so that the air temperature inside the shield is a good representation of the outside air. Also, the potting compound will have an insulating effect that will delay the sensor's response to temperature changes, which are more rapid in air environments than when buried.

Shown here
actual size

Features:

- **High Accuracy**
- **Fast Thermal Response**
- **Low Cost**
- **Small Size**
- **Epoxy Encapsulated**
- **High Stability**
- **Long Life**

OPERATING PRINCIPLE: The Model 200TS Temperature Sensor is a resistive device that responds to changes in temperature. As the temperature gets warmer, the resistance lowers. Once planted in the soil, it will change its resistive value as the soil temperature changes. The protective encapsulating material will tend to insulate and slow the response time if used for ambient measurements.

The relationship of ohms of resistance to temperature is constant and built into the reading devices that are used to interrogate the sensor. The 200TS Temperature Sensor is a precision thermistor encased in epoxy potting compound for direct burial applications.

SPECIFICATION INFORMATION: The soil temperature measurement device, or sensor, shall represent temperature in degrees, using either the Fahrenheit or Celsius scale, when read with a compatible reading device. Its construction shall be durable, long-lasting, not subject to deterioration in a wet soil environment with an outer surface of epoxy potting and a corrosion resistant plastic sleeve. It shall be the Model 200TS as manufactured by the IRRROMETER Company, Inc. of Riverside, California.

Specifications –

MAXIMUM POWER RATING: 30 mW at 25°C derated to 1 mW at 125°C

MAXIMUM OPERATING TEMPERATURE = +150°C

MAXIMUM STORAGE AND OPERATION TEMPERATURE
FOR BEST LONG-TERM STABILITY = +120°C

ACCURACY: $\pm 0.2^\circ\text{C}$

MATERIALS: Epoxy potting compound with a corrosion resistant plastic sleeve

DIMENSIONS – DIAMETER: .4375 in. (12 mm)

LENGTH: 2.25 in. (57 mm)

WEIGHT: 2.7 oz. (75.7 g)

WIRE LEADS: AWG 20, 2 leads

WARRANTY: One year

ORDERING INFORMATION: **Catalog #200TS**

Standard length lead: **-15** = 15 ft. (4.5 m),
also available with custom length leads

MODEL 200TS - Temperature Sensor

200TS
Resistance vs.
Temperature Table

WATERMARK

200TS — Resistance vs. Temperature Table

Temp (°F)	Temp (°C)	Resistance (Ω) 10,000 Ω @ +25°C	Temp (°F)	Temp (°C)	Resistance (Ω) 10,000 Ω @ +25°C	Temp (°F)	Temp (°C)	Resistance (Ω) 10,000 Ω @ +25°C	Temp (°F)	Temp (°C)	Resistance (Ω) 10,000 Ω @ +25°C
-67	-55	963849.00	8.6	-13	65246.1	84.2	29	8408.21	159.8	71	1693.06
-65.2	-54	895318.87	10.4	-12	61735.2	86	30	8056.61	161.6	72	1636.65
-63.4	-53	832108.29	12.2	-11	58433.93	87.8	31	7721.63	163.4	73	1582.4
-61.6	-52	773771.65	14	-10	55328.6	89.6	32	7402.39	165.2	74	1530.21
-59.8	-51	719903.28	15.8	-9	52406.53	91.4	33	7098.07	167	75	1480
-58	-50	670133.66	17.6	-8	49665.89	93.2	34	6807.91	168.8	76	1431.69
-56.2	-49	624125.96	19.4	-7	47095.7	95	35	6531.17	167	75	1480
-54.4	-48	581573	21.2	-6	44625.72	96.8	36	6267.17	168.8	76	1431.58
-52.6	-47	542194.46	23	-5	42326.42	98.6	37	6015.25	170.6	77	1384.99
-50.8	-46	505734.38	24.8	-4	40159.95	100.4	38	5774.8	172.4	78	1340.17
-49	-45	471958.91	26.6	-3	38115.02	102.2	39	5545.25	174.2	79	1297.04
-47.2	-44	440654.27	28.4	-2	36186.93	104	40	5326.04	176	80	1255.51
-45.4	-43	411624.95	30.2	-1	34366.5	105.8	41	5116.67	177.8	81	1215.54
-43.6	-42	384692	32	0	32650	107.6	42	4916.63	179.6	82	1177.04
-41.8	-41	359691.55	33.8	1	31029.25	109.4	43	4725.47	181.4	83	1139.97
-40	-40	336473.5	35.6	2	29498.39	111.2	44	4542.75	183.2	84	1104.25
-38.2	-39	314900.23	37.4	3	28051.95	113	45	4368.06	185	85	1069.84
-36.4	-38	294845.52	39.2	4	26684.81	114.8	46	4201	186.8	86	1036.68
-34.6	-37	276193.56	4	5	25392.19	116.6	47	4041.21	188.6	87	1004.71
-32.8	-36	258838	42.8	6	24169.64	118.4	48	3886.33	190.4	88	973.89
-31	-35	242681.16	44.6	7	23012.98	120.2	49	3742.03	192.2	89	944.18
-29.2	-34	227633.25	46.4	8	21918.31	122	50	3602	194	90	915.52
-27.4	-33	213611.71	48.2	9	20881.97	123.8	51	3467.93	195.8	91	887.88
-25.6	-32	200540.58	50	10	19900.54	125.6	52	3339.55	197.6	92	861.21
-23.8	-31	188349.94	51.8	11	18970.82	127.4	53	3216.59	199.4	93	835.48
-22	-30	176975.41	53.6	12	18099.82	129.2	54	3098.79	201.2	94	810.64
-20.2	-29	166357.65	55.4	13	17254.73	131	55	2985.91	203	95	786.67
-18.4	-28	156441.97	57.2	14	16462.9	132.8	56	2877.72	204.8	96	763.52
-16.6	-27	147177.92	59	15	15711.88	134.6	57	2774	206.6	97	741.18
-14.8	-26	138518.96	60.8	16	14999.34	136.4	58	2674.55	208.4	98	719.59
-13	-25	130422.13	62.6	17	14323.12	138.2	59	2579.18	210.2	99	698.74
-11.2	-24	122847.74	64.4	18	13681.17	140	60	2487.89	212	100	678.6
-9.4	-23	115759.11	66.2	19	13071.57	141.8	61	2399.91	213.8	101	659.14
-7.6	-22	109122.35	68	20	12482.53	143.6	62	2315.68	215.6	102	640.33
-5.8	-21	102906.11	69.8	21	11942.36	145.4	63	2234.83	217.4	103	622.15
-4	-20	97081.38	71.6	22	11419.48	147.2	64	2157.21	219.2	104	604.57
-2.2	-19	91621.3	73.4	23	10922.37	149	65	2082.67	221	105	587.58
-0.4	-18	86501	75.2	24	10449.66	150.8	66	2011.09	222.8	106	571.14
1.4	-17	81697.45	77	25	10000	152.6	67	1942.32	224.6	107	555.25
3.2	-16	77189.28	78.8	26	9572.16	154.4	68	1876.25	226.4	108	539.87
5	-15	72956.7	80.6	27	9164.98	156.2	69	1812.76	228.2	109	524.99
6.8	-14	68981.32	82.4	28	8777.34	158	70	1751.73	230	110	510.6

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