

RANGE -55° to +85°C

This Linear Response Thermistor Network is a composite device consisting of resistors and precise thermistors which produce an output voltage linear with temperature, see Fig. 1, or a linear resistance with temperature, see Fig. 2.

Equations which describe the behavior of the device are: (Refer to Fig. 1)

$$E_{out1} = (-0.005068 E_{in})T + 0.6589 E_{in}$$

$$E_{out2} = (+0.005068 E_{in})T + 0.3411 E_{in}$$

(Refer to Fig. 2)

$$R_T = (-17.99)T + 2339$$

$$T = ^\circ\text{C}$$

	Voltage Mode	Resistance Mode
Thermistor Absolute Accuracy and Interchangeability:	± 0.4°C (0 to +85°C) ± 0.8°C (0 to -55°C)	± 0.4°C ± 0.8°C
Linearity Deviation:	± 1.1°C	± 20.4Ω
*E_{in} Max	2 Volts	
*I_T Max		833 μA
Sensitivity:	0.005068 E _{in} /°C	17.99Ω/°C
Load Resistance:	10 Megohm min.	
Time Constant:	The time required for the thermistor to indicate 63% of a new impressed temperature, in 'well stirred' oil, 1 sec.; in free still air, 10 sec.	
Storage Temperature:	- 80 to + 50°C (- 112° to + 122°F)	

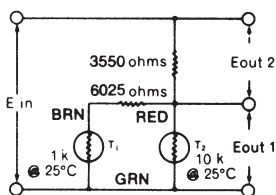


Fig. 1

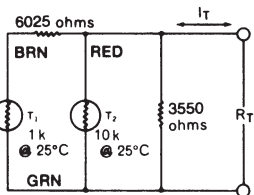


Fig. 2

***E_{in} Max. I_T Definition:**

E_{in} Max. I_T Max values have been assigned to control the thermistor self-heating errors so that they do not enlarge the component error band; i.e., the sum of the linearity deviation plus the probe tolerances.

E_{in} Max, I_T Max values are assigned using a thermistor dissipation constant of 8MW/°C in stirred oil. If better heat-sink methods are used or if an enlargement of the error band is acceptable, E_{in} Max, I_T Max values may be exceeded without damage to the thermistor probe.

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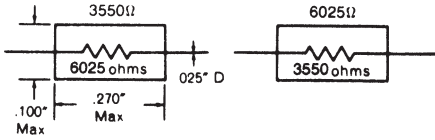
WARRANTY: OMEGA[®] warrants only that the parts manufactured by it will be as specified and free of defects upon receipt by purchaser. OMEGA MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED. THE REMEDIES OF PURCHASER SET FORTH HEREIN SHALL NOT EXCEED THE PURCHASE PRICE OF THE PRODUCT. IN NO EVENT SHALL OMEGA BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, OR SPECIAL DAMAGES.

WARNING

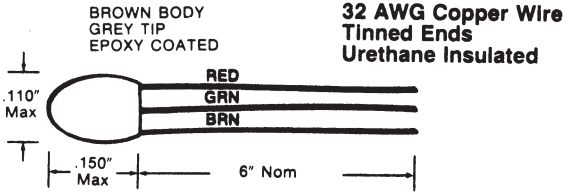
Use heat sinks when soldering or welding to thermistor leads.

Not recommended for long term continuous use above 50°C (122°F).

OMEGA RESISTOR COMPOSITE 44311A



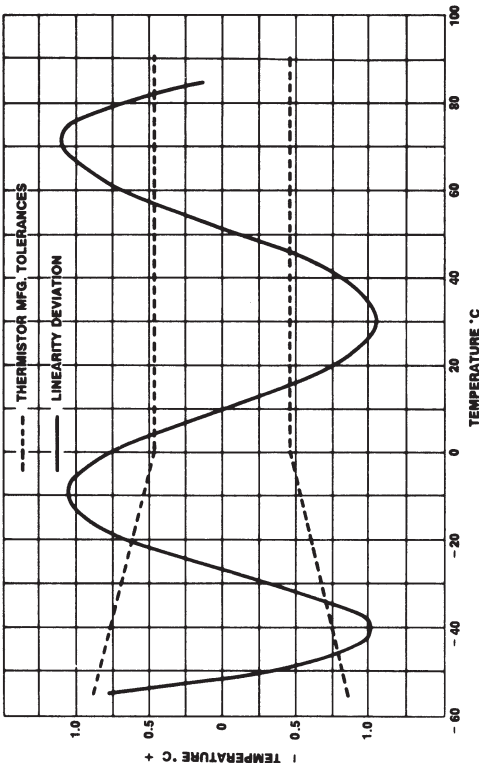
OMEGA THERMISTOR COMPOSITE 44019A



#44211A
 $R_T = (-17.99) T + 2339$
 -55° to +85°C

TEMPERATURE °C	RESISTANCE Ohms
-55	3314.2
50	3245.7
45	3166.6
40	3078.6
35	2983.7
30	2884.8
25	2785.1
20	2686.4
15	2590.7
10	2498.6
5	2410.3
0	2325.1
+5	2242.1
10	2160.1
15	2077.5
+20	1993.8
25	1908.3
30	1819.8
35	1728.6
40	1634.8
45	1539.0
50	1441.7
55	1344.0
60	1247.2
65	1151.9
70	1059.3
75	970.4
80	885.9
85	806.2

The values tabulated above are compiled using nominal thermistor values and may differ from values calculated by the stated equation. The differences constitute the Linearity Deviation Curve.



The maximum error at any point is the algebraic sum of the thermistor manufacturing tolerances plus the linearity deviation, a fixed network behavior. Since the linearity deviation is a known quantity, it may be eliminated from the error statement by consulting the linearity deviation curve at the temperature in question, and making the appropriate adjustment.