

Applications

NTC Type P20, P25 and P30

Miniature bead-in-glass probes feature high reliability, ease of handling and very fast response time. The longer body length makes them particularly well-suited for applications where fast response and immersion in fluids are the major requirements.

NTC Type P60, P65, P85 and P100

Thermoprobes are recommended for all low cost, general purpose applications involving temperature measurement and control, circuit temperature compensation, liquid level sensing or fluid flow sensing. They are ideally suited for applications, that require a reliable, low cost sensor.

Descriptions

NTC Type P20, P25 and P30

The Type P20, P25 and P30 miniature thermoprobes consist of a small bead thermistor hermetically sealed in the tip of a shock-resistant solid glass rod. The miniature thermoprobes have improved stability over glass coated and ruggedized glass bead thermistors.

NTC Type P60, P65, P85 and P100

The Type P60, P65, P85 and P100 thermoprobes consist of a large bead thermistor hermetically sealed in the tip of a shock resistant solid glass rod. They have excellent long-term stability.

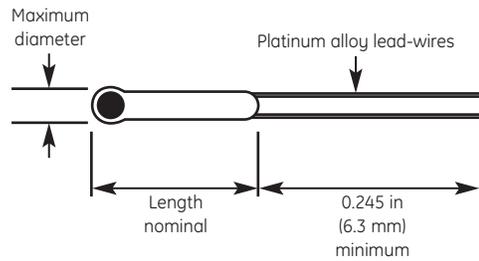
NTC Miniature Series

Thermometrics Thermoprobes

NTC Miniature Series are a Thermometrics product. Thermometrics has joined other GE high-technology sensing businesses under a new name—GE Industrial, Sensing.



Type P20/25/30 Specifications



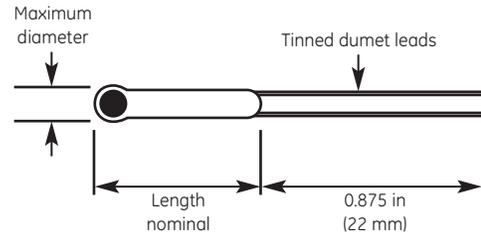
NTC Types P20/25/30 dimensions

Thermal and Electrical Properties (All Definitions and Test Methods are Per MIL-PRF-23648)

Body			Thermistor Type:	P20	P25	P30
Dimensions:						
			Maximum Diameter:	.020 in (.51 mm)	.025 in (.64 mm)	.030 in (.76 mm)
			Standard code "AA"	.063 in (1.6 mm)	—	—
			Body "L" code "A"	.125 in (3.2 mm)	.125 in (3.2 mm)	.125 in (3.2 mm)
			Lengths code "B"	.250 in (6.3 mm)**	.250 in (6.3 mm)	.250 in (6.3 mm)
Lead-wires:						
			Nom. Diameter:	.0011 in (.03 mm)	.002 in (.05 mm)	.003 in (.08 mm)
			Minimum Lead Length:	.250 in (6.3 mm)	.250 in (6.3 mm)	.250 in (6.3 mm)
			Lead Material:	Platinum Alloy	Platinum Alloy	Platinum Alloy
Material System:				Nominal Resistance Range @ 77°F (25°C)	Nominal Resistance Range @ 77°F (25°C)	Resistance Range @ 77°F (25°C)
Code Letter	R-vs-T Curve	25/125 Ratio				
E	0	5.0	—	—	—	—
A	1	11.8	300 Ω to 680 Ω	300 Ω to 680 Ω	100 Ω to 300 Ω	
A	2	12.5	680 Ω to 1.6 kΩ	680 Ω to 1.6 kΩ	300 Ω to 750 Ω	
A	3	14.0	1.6 kΩ to 3.6 kΩ	1.6 kΩ to 3.6 kΩ	750 Ω to 1.5 kΩ	
A	4	16.9	3.6 kΩ to 6.8 kΩ	3.6 kΩ to 6.8 kΩ	1.5 kΩ to 3.0 kΩ	
A	5	19.8	6.8 kΩ to 27 kΩ	6.8 kΩ to 27 kΩ	3.0 kΩ to 6.8 kΩ	
A	6	22.1	—	—	6.8 kΩ to 13 kΩ	
A	7	22.7	27 kΩ to 75 kΩ	27 kΩ to 75 kΩ	13 kΩ to 18 kΩ	
B	8	29.4	75 kΩ to 130 kΩ	75 kΩ to 130 kΩ	18 kΩ to 51 kΩ	
B	9	30.8	130 kΩ to 240 kΩ	130 kΩ to 240 kΩ	51 kΩ to 82 kΩ	
B	10	32.3	240 kΩ to 360 kΩ	240 kΩ to 360 kΩ	82 kΩ to 150 kΩ	
B	11	35.7	360 kΩ to 820 kΩ	360 kΩ to 820 kΩ	150 kΩ to 330 kΩ	
B	12	38.1	820 kΩ to 1.3 MΩ	820 kΩ to 1.3 MΩ	330 kΩ to 680 kΩ	
B	13	45.0	1.3 MΩ to 3.3 MΩ	1.3 MΩ to 3.3 MΩ	680 kΩ to 1.5 MΩ	
B	14	48.1	3.3 MΩ to 6.8 MΩ	3.3 MΩ to 6.8 MΩ	1.5 MΩ to 3.0 MΩ	
B	15	56.5	6.8 MΩ to 10 MΩ	6.8 MΩ to 10 MΩ	3.0 MΩ to 6.2 MΩ	
D	16	75.6	—	—	6.2 MΩ to 10 MΩ	
D	16	81.0	—	—	—	
Thermal Time Constant:						
			Still Air at 77°F (25°C):	1.6 sec	2.0 sec	3.0 sec
			Plunge into Water:	18 msec	23 msec	60 msec
Dissipation Constant:						
			Still Air at 77°F (25°C):	.14 mW/°C	.16 mW/°C	.30 mW/°C
			Still Water at 77°F (25°C):	.70 mW/°C	.80 mW/°C	1.50 mW/°C
Power Rating: (in air)						
			Maximum Power Rating:	.020 Watts	.025 Watts	.035 Watts
			100% Max. Power to:	302 (150°C)	302 (150°C)	302 (150°C)
			Derated to 0% at:	572°F (300°C)	572°F (300°C)	572°F (300°C)

Resistance vs temperature characteristics: The nominal resistance range for the zero-power resistance at 77°F (25°C) is shown for each miniature bead-in-glass thermoprobe type and each available material system. Each material system is denoted by an ordering code letter, a referenced curve number and the nominal 77°F/257°F (25°C/125°C) resistance ratio.

Type 60/65/85/100 Specifications



NTC Types P20/25/30 dimensions

All thermoprobes are aged for extended periods of time. As such, they exhibit excellent stability for all service temperatures at or below the aging temperature. Thermoprobes that are manufactured with material system "E" are aged at 221°F (105°C); those manufactured with a material system having a 77°F (25°C)/257°F (125°C) ratio of 16.9 or less are aged at 392°F (200°C); and all other material systems are aged at 572°F (300°C). Intermittent operation at temperatures up to 1112°F (600°C) is permissible, however, degraded stability will result when the aging temperature is exceeded. This applies to the NTC Type P20/25/30 also.

Probe Length Codes

Probe Length Code Letter	A	B	C	D	F	H	K	M	P	R
Tolerance	0.125	0.25	0.375	0.5	0.75	1	1.25	1.5	1.75	2
Length in (mm)	(3.17)	(6.35)	(9.52)	(12.7)	(19.05)	(24.4)	(3.75)	(38.1)	(44.45)	(50.8)

Thermal and Electrical Properties (All Definitions and Test Methods are Per MIL-PRF-23648)

Body	Thermistor Type:	P60	P65	P85	P100
Dimensions:					
	Maximum Diameter:	.060 in (1.5 mm)	.065 in (1.7 mm)	.085 in (2.2 mm)	.100 in (2.5 mm)
	Standard Length Code "B"	.250 in (6.3 mm)	.250 in (6.3 mm)	.250 in (6.3 mm)	.250 in (6.3 mm)
	Standard Length Code "D"	.500 in (12.7 mm)	.500 in (12.7 mm)	.500 in (12.7 mm)	.500 in (12.7 mm)
	Length Codes Available (Special Order Only)	"A", "C"	"A", "C"	"A", "C", "F", "H"	"A", "C", "F", "H"
Lead-wires:					
	Nom. Diameter:	.008 in (.20 mm)	.008 in (.20 mm)	.012 in (.30 mm)	.012 in (.30 mm)
	Minimum Lead Length:	.875 in (22 mm)	.875 in (22 mm)	.875 in (22 mm)	.875 in (22 mm)
	Lead Material:	Tinned Dumet	Tinned Dumet	Tinned Dumet	Tinned Dumet
Material System:					
Code Letter	R-vs-T Curve	Nominal Resistance 25/125 Ratio	Nominal Resistance Range @ 77°F (25°C)	Nominal Resistance Range @ 77°F (25°C)	Nominal Resistance Range @ 77°F (25°C)
E	0	5.0	30 to 51 Ω	30 to 51 Ω	30 to 51 Ω
A	1	11.8	51 to 150 Ω	51 to 150 Ω	51 to 150 Ω
A	2	12.5	150 to 360 Ω	150 to 360 Ω	150 to 360 Ω
A	3	14.0	360 to 750 Ω	360 to 750 Ω	360 to 750 Ω
A	4	16.9	750 to 1.5 kΩ	750 to 1.5 kΩ	750 to 1.5 kΩ
A	5	19.8	1.5 k to 3.6 kΩ	1.5 k to 3.6 kΩ	1.5 k to 3.6 kΩ
A	6	22.1	3.6 k to 6.2 kΩ	3.6 k to 6.2 kΩ	3.6 k to 6.2 kΩ
A	7	22.7	6.2 k to 9.1 kΩ	6.2 k to 9.1 kΩ	6.2 k to 9.1 kΩ
B	8	29.4	9.1 k to 27 kΩ	9.1 k to 27 kΩ	9.1 k to 27 kΩ
B	9	30.8	27 k to 43 kΩ	27 k to 43 kΩ	27 k to 43 kΩ
B	10	32.3	43 k to 75 kΩ	43 k to 75 kΩ	43 k to 75 kΩ
B	11	35.7	75 k to 160 kΩ	75 k to 160 kΩ	75 k to 160 kΩ
B	12	38.1	160 k to 360 kΩ	160 k to 360 kΩ	160 k to 360 kΩ
B	13	45.0	360 k to 750 kΩ	360 k to 750 kΩ	360 k to 750 kΩ
B	14	48.1	750 k to 1.5 MΩ	750 k to 1.5 MΩ	750 k to 1.5 MΩ
B	15	56.5	1.5 M to 3.0 MΩ	1.5 M to 3.0 MΩ	1.5 M to 3.0 MΩ
D	16	75.6	3.0 M to 8.2 MΩ	3.0 M to 8.2 MΩ	3.0 M to 8.2 MΩ
D	16	81.0	8.2 M to 20 MΩ	8.2 M to 20 MΩ	8.2 M to 20 MΩ
Thermal Time Constant:					
	Still Air at 77°F (25°C):	12 sec	13 sec	16 sec	22 sec
	Plunge into Water:	300 msec	320 msec	400 msec	600 msec
Dissipation Constant:					
	Still Air at 77°F (25°C):	.60 mW/°C	.65 mW/°C	.85 mW/°C	1.00 mW/°C
	Still Water at 77°F (25°C):	3.00 mW/°C	3.30 mW/°C	4.00 mW/°C	5.00 mW/°C
Power Rating: (in air)					
	Maximum Power Rating:	.060 Watts	.065 Watts	.085 Watts	.100 Watts
	100% Max Power to:	392°F (200°C)	392°F (200°C)	392°F (200°C)	392(200°C)
	Derated to 0% at:	572°F (300°C)	572°F (300°C)	572°F (300°C)	572(300°C)

Resistance vs temperature characteristics: The nominal resistance range for the zero-power resistance at 77°F (25°C) is shown for each miniature bead-in-glass thermoprobe type and each available material system. Each material system is denoted by an ordering code letter, a referenced curve number and the nominal 77°F/257°F (25°C/125°C) resistance ratio.

Type P20/25/30
Ordering Information

The code number to be ordered may be specified as follows:

P Miniature bead-in-glass thermoprobe structure	
Code	Maximum Probe Diameter
20	20 mil
25	25 mil
30	30 mil
Code	Probe Length
AA	0.063 in (1 mm) ±0.015 in (±0.381 mm)
A	0.125 in (3 mm) ±0.032 in (±0.81 mm)
B	0.25 in (6 mm) ±0.05 in (±1 mm)
Code	Material System Code
X	See thermal and electrical properties table
Code	Zero-Power
103	Resistance at 77°F (25°C)**
Code	Toleranc Code Letter
F	±1%
G	±2%
J	±5%
K	±10%
L	±15%
M	±20%
N	±25%
P	±30%
Q	±40%
R	±50%
S	Non standard-consult GE

P - - - - - Typical model number.

*Special tolerances are available on request. Consult GE for special resistance tolerances, non-standard resistances and/or non-standard temperatures.

**The zero-power resistance 77°F (25°C), expressed in Ω, is identified by a three digit code number. The first two digits represent significant figures, and the last digit specifies the number of zeros to follow. Example: 10 kΩ = 103.

The standard resistance values are from the 24-value series decade as specified in Military Standards MS90178.

1.0/1.1/1.3/1.5/1.6/1.8/2.0/2.2/2.4/2.7/3.0
3.3/3.6/3.9/4.3/4.7/5.1/5.6/6.2/6.8/7.5/8.2/9.1

Type P60/65/85/100
Ordering Information

The code number to be ordered may be specified as follows:

P Miniature bead-in-glass thermoprobe structure	
Code	Nominal Diameter
60	60 mil
65	65 mil
85	85 mil
100	100 mil
Code	Probe Length (see probe length codes table for restrictions)
B	0.25 in (6 mm) ±0.05 in (±1 mm)
D	0.5 in (12 mm) ±0.063 in (±1 mm)
Code	Material System Code
X	See thermal and electrical properties table
Code	Zero-Power
104	Resistance at 77°F (25°C)**
Code	Toleranc Code Letter
F	±1%
G	±2%
J	±5%
K	±10%
L	±15%
M	±20%
N	±25%
P	±30%
Q	±40%
R	±50%
S	Non standard-consult GE

P - - - - - Typical model number.

*Special tolerances are available on request. Consult GE for special resistance tolerances, non-standard resistances and/or non-standard temperatures.

**The zero-power resistance 77°F (25°C), expressed in Ω, is identified by a three digit code number. The first two digits represent significant figures, and the last digit specifies the number of zeros to follow. Example: 100 kΩ = 104.

The standard resistance values are from the 24-value series decade as specified in Military Standards MS90178.

1.0/1.1/1.3/1.5/1.6/1.8/2.0/2.2/2.4/2.7/3.0
3.3/3.6/3.9/4.3/4.7/5.1/5.6/6.2/6.8/7.5/8.2/9.1

