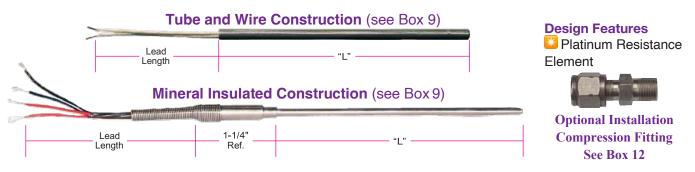


Style RTD1 — Straight Probes



Ordering Information

RTDs are offered with the options listed in the worksheet below. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements, and a part number will be assigned.

Two Construction Styles to Suit Any Application

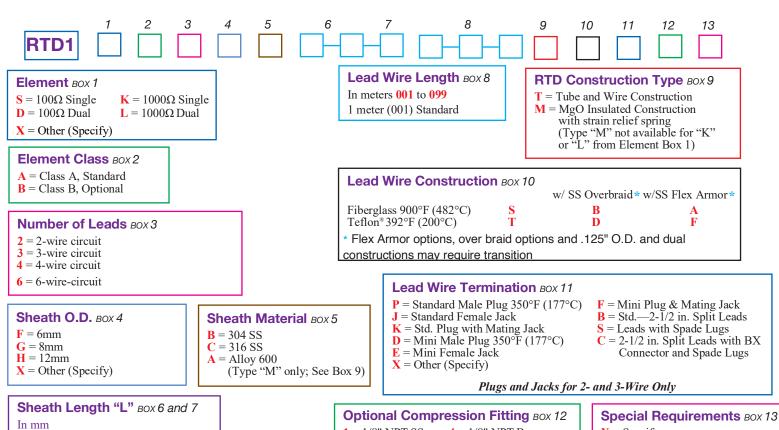
(See Ordering Code Box 9)

- Standard Industry Tube and Wire construction with fiberglass 900°F (482°C) or Teflon® 392°F (200°C) lead wires
- Mineral Insulated construction rated up to 1200°F (650°C). This construction type allows forming and bending the sheath to meet design requirements.

Ordering Code:

001 to 999

For lengths over 99 in. consult HK.



1 = 1/8" NPT SS

2 = 1/4" NPT SS

3 = 1/2" NPT SS **0** = None Required **4** = 1/8" NPT Brass

5 = 1/4" NPT Brass

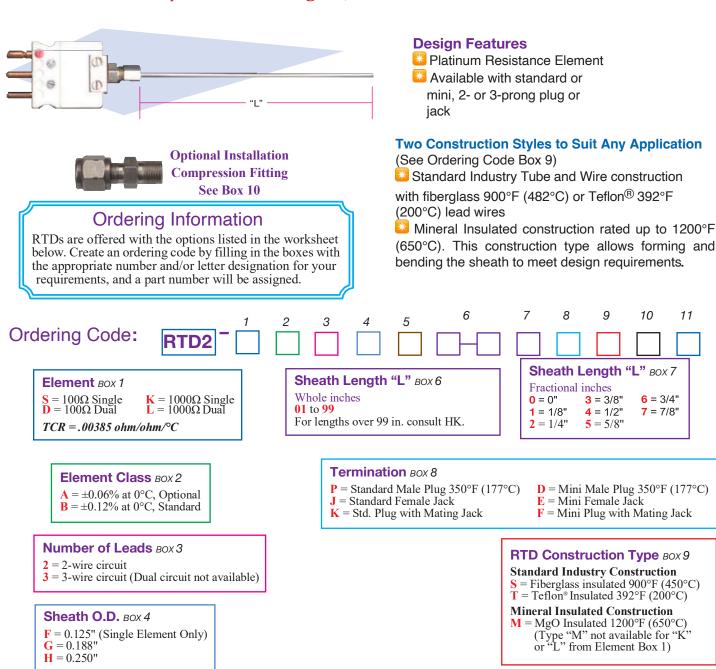
6 = 1/2" NPT Brass

X = Specify

0 = None



Style RTD2 — Plug or Jack Termination



Special Requirements BOX 11

Optional Compression Fitting BOX 10

4 = 1/8" NPT Brass

5 = 1/4" NPT Brass 6 = 1/2" NPT Brass

1 = 1/8" NPT SS

 $\frac{1}{2} = \frac{1}{4}$ " NPT SS

3 = 1/2" NPT SS

0 = None Required

X = Specify 0 = None

Sheath Material BOX 5

(Style M only; See Box 9)

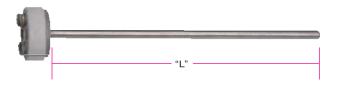
B = 304 SS

C = 316 SS

 $\mathbf{A} = \text{Alloy } 600$



Style RTD3 — Open Disc Termination



Design Features

- Platinum Resistance Element
- Ceramic disc 1-1/8" O.D. for 2-, 3- and 4-wire designs, 2-1/32" O.D. for dual 6-wire design (.188" and .250" O.D. sheath); consult factory for 1/8" sheath O.D.



Optional Installation Compression Fitting See Box 9

Two Construction Styles to Suit Any Application

Ordering Information

RTDs are offered with the options listed in the worksheet below. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements, and a part number will be assigned.

- (See Ordering Code Box 8) Standard Industry Tube and Wire construction with fiberglass 900°F (482°C) or Teflon® 392°F (200°C) lead wires
- Mineral Insulated construction rated up to 1200°F (650°C). This construction type allows forming and bending the sheath to meet design requirements.

Ordering Code:



5

Element BOX 1

- $S = 100\Omega$ Single $\mathbf{D} = 100\Omega$ Dual
- $K = 1000\Omega$ Single $L = 1000\Omega$ Dual

2

3

4

 $TCR = .00385 ohm/ohm/^{\circ}C$

Element Class BOX 2

 $A = \pm 0.06\%$ at 0°C, Optional $\mathbf{B} = \pm 0.12\%$ at 0°C, Standard

Number of Leads BOX 3

- 2 = 2-wire circuit
- 3 = 3-wire circuit
- 4 = 4-wire circuit
- 0.125" O.D. (Dual circuit not available)

Sheath O.D. BOX 4

- F = 0.125"
- G = 0.188"
- H = 0.250"

Sheath Material BOX 5

- B = 304 SS
- C = 316 SS
- $\mathbf{A} = \text{Alloy } 600$
 - (Type "M" Only; See Box 8)

Sheath Length "L" BOX 6

Whole inches

01 to 99

For lengths over 99 in. consult HK.

6

Sheath Length "L" BOX 7

Fractional inches

- 0 = 0" 3 = 3/8" 6 = 3/4"
- 1 = 1/8" **4** = 1/2" 7 = 7/8"
- 2 = 1/4" 5 = 5/8"

RTD Construction Type BOX 8

Standard Industry Construction

- S = Fiberglass insulated 900°F (450°C)
- $T = Teflon^{\circ}$ Insulated 392°F (200°C)

Mineral Insulated Construction

M = MgO Insulated 1200°F (650°C) (Type "M" not available for "K" or "L" from Element Box 1)

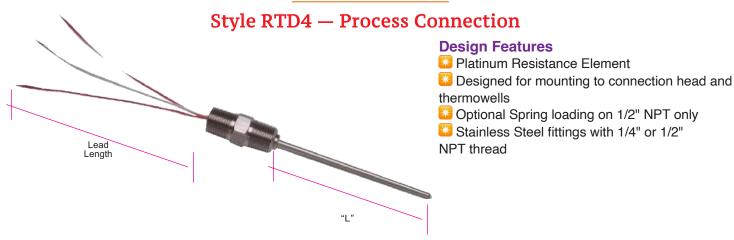
Optional Compression Fitting BOX 9

- 1 = 1/8" NPT SS
- 2 = 1/4" NPT SS
- **4** = 1/8" NPT Brass **5** = 1/4" NPT Brass
- 3 = 1/2" NPT SS
- **6** = 1/2" NPT Brass 0 = None Required

Special Requirements BOX 10

- X = Specify
- $\mathbf{0} = \hat{\text{None}}$





Ordering Information

RTDs are offered with the options listed in the worksheet below. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements, and a part number will be assigned.

Ordering Code:



Element BOX 1

 $S = 100\Omega$ Single $D = 100\Omega$ Dual

 $K = 1000\Omega$ Single $L = 1000\Omega$ Dual

TCR = .00385 ohm/ohm/°C

Element Class BOX 2

 $A = \pm 0.06\%$ at 0°C, Optional $B = \pm 0.12\%$ at 0°C, Standard

Number of Leads BOX 3

2 = 2-wire circuit

3 = 3-wire circuit $\frac{3}{4} = 4$ -wire circuit

0.125" O.D. (Dual circuit not available)

Sheath O.D. BOX 4

F = 0.125"

G = 0.188"

 $\mathbf{H} = 0.250$ "

X = Other (Specify)

Sheath Material BOX 5

B = 304 SS

C = 316 SS

 $\mathbf{A} = \text{Alloy } 600$

(Type M Only; See Box 11)

Sheath Length "L" BOX 6

Whole inches

01 to **99**

For lengths over 99 in. consult HK.

Lead Wire Length BOX 8

In inches 001 to 999 12" (012) Standard

Thread BOX 9

4 = 1/4" NPT

2 = 1/2" NPT

Spring-Loaded Probe BOX 10

O = Not Required

 $Y = Yes, 1/2^{\dagger}$ NPT only

RTD Construction Type BOX 11

T = Tube and Wire Construction

M = MgO Insulated Construction (Type "M" not available for "K" or "L" from Element Box 1)

Lead Wire Construction BOX 12

Fiberglass Stranded 900° (482°C) Teflon® Stranded 392°F (200°C)

w/ SS Braid w/ SS Armor В F

D

Two Construction Styles to Suit any Application

Standard Industry Tube and Wire construction

1200°F (650°C). This construction type allows forming and bending the sheath to meet design

Sheath Length "L" BOX 7

3 = 3/8"

4 = 1/2"

5 = 5/8"

6 = 3/4"

7 = 7/8"

Fractional inches

0 = 0"

1 = 1/8"

2 = 1/4"

with fiberglass 900°F (482°C) or Teflon® 392°F

Mineral Insulated construction rated up to

(See Ordering Code Box 11)

(200°C) lead wires.

requirements.

Special Requirements BOX 13

X = Specify

 $0 = \hat{\text{None}}$



Style RTD5 — Handheld Probe



Design Features

- Platinum Resistance Element
- Cround conical point for easy meat penetration
- 💴 Large handle makes penetration and removal easy
- $^{ igotimes 2 }$ Teflon $^{ igotimes 2 }$ insulated lead wire construction good to 392°F (200°C)
- Fiberglass lead wire construction good to 900°F (482°C)
- 3-wire coil cord construction good to 221°F (105°C). Not available with over braid or flex armor. Extended length 5 or 15 ft. (standard).



Ordering Information

RTDs are offered with the options listed in the worksheet below. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements, and a part number will be assigned.

Ordering Code:



Element BOX 1

 $S = 100\Omega$ Single $D = 100\Omega$ Dual

 $K = 1000\Omega$ Single $L = 1000\Omega$ Dual

 $TCR = .00385 ohm/ohm/^{\circ}C$

Element Class BOX 2

 $A = \pm 0.06\%$ at 0°C, Optional $B = \pm 0.12\%$ at 0°C, Standard

Number of Leads BOX 3

- 2 = 2-wire circuit
- 3 = 3-wire circuit
- $\frac{3}{4} = 4$ -wire circuit

0.125" O.D. (Dual circuit not available)

Sheath O.D. BOX 4

- F = 0.125"
- G = 0.188"
- H = 0.250"

X = Other (Specify)

Sheath Material BOX 5

- B = 304 SS
- C = 316 SS

Sheath Length "L" BOX 6

Whole inches

01 to **99**

For lengths over 99 in. consult HK.

Lead Wire Length BOX 8

In inches **012** to **999** 60" (060) Standard

For Coil Cords Enter 060 or 180

Sheath Length "L" BOX 7

Fractional inches

3 = 3/8" 6 = 3/4" 0 = 0" 7 = 7/8"

1 = 1/8" **4** = 1/2"

2 = 1/4" 5 = 5/8"

Lead Wire Construction BOX 9

Standard w/ SS Overbraid

w/ Flex Armor

Coil Cord 221°F (105°C)

Fiberglass Stranded 900°F (482°C) Teflon® Stranded 392°F (200°C)

В D

A F

Lead Wire Termination BOX 10

- P = Standard Male Plug 350°F (177°C)
- J = Standard Female Jack
- **K** = Std. Plug with Mating Jack
- D = Mini Male Plug 350°F (177°C)
- **E** = Mini Female Jack

- **F** = Mini Plug with Mating Jack
- $\mathbf{B} = \text{Split Leads}$
- S = Leads with Spade Lugs
- = 2.5 in. with BX Connector and Spade Lugs

Plugs and Jacks for 2- and 3-Wire Only

Handle Type BOX 11

- 1 = Stainless Steel
- $2 = \text{Teflon} \cdot 500^{\circ} \text{F} (260^{\circ} \text{C})$
- 3 = Bakelite 400°F(204°C)

Special Requirements BOX 12

- X = Specify
- 0 = None



Style RTD6 — Connection Head



Design Features

- Platinum Resistance Element in single or dual circuit.
- HK's connection heads are gasketed to seal against moisture, dust and corrosive or hostile atmospheres.
- Screw covers are attached to body with a stainless steel chain and screws.
- HK's connection heads are available in die cast aluminum, cast iron, stainless steel and Bakelite. Explosion proof heads are also available in aluminum and stainless steel.



Optional Installation Compression Fitting See Box 10

Ordering Information

RTDs are offered with the options listed in the worksheet below. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements, and a part number will be assigned.

Two Construction Styles to Suit Any Application

(See Ordering Code Box 9)

- Standard Industry Tube and Wire construction with fiberglass 900°F (482°C) or Teflon® 392°F (200°C) lead wires
- Mineral Insulated construction rated up to 1200°F (650°C). This construction type allows forming and bending the sheath to meet design requirements.

Ordering Code:



















Element BOX 1

- $S = 100\Omega$ Single
- $K = 1000\Omega$ Single
- $\mathbf{D} = 100\Omega$ Dual
- $L = 1000\Omega$ Dual
- X = Others (Specify)

Element Class BOX 2

- A = Class A, Standard
- **B** = Class B, Optional
- **X** = Others (Specify)

Number of Leads BOX 3

- 2 = 2-wire circuit
- 3 = 3-wire circuit
- 4 = 4-wire circuit
- 6 = 6-wire circuit

Sheath O.D. BOX 4

- $\mathbf{F} = 6 \text{ mm}$
- G = 8 mm
- H = 12 mm

Sheath Material BOX 5

- B = 304 SS
- C = 316 SS
- \mathbf{A} = Inconel 600

(Type "M" Only; See Box 9)

Sheath Length "L" BOX 6 and 7

In mm

001 to 999

For lengths over 999 mm. consult HK

Connection Head BOX 8

- A = Standard Size Aluminum
- **B** = Medium Size Aluminum
- **C** = Miniature Aluminum
- **H** = Standard Cast Iron **F** = Standard Bakelite
- P = Polypropylene
 N = Miniature Nickel-Plated Steel
- S = Stainless Steel
- **E** = Explosion Proof (Aluminum)
- T = Explosion Proof (Stainless Steel)

Note: Conduit connection for A, F, H & S is 1/2" (3/4" available); for B & C is 3/8"; and for P is 3/4" NPT.

Please refer to Pg. 7 for all types of head

RTD Construction Type BOX 9

Standard Industry Construction

- S = Fiberglass insulated 900°F (450°C)
- $T = Teflon^{\circ} Insulated 392^{\circ}F (200^{\circ}C)$

Mineral Insulated Construction

 $\mathbf{M} = \text{MgO Insulated } 1200^{\circ}\text{F } (650^{\circ}\text{C})$ (Type "M" not available for "K" or "L" from Element Box 1)

Optional Compression Fitting BOX 10

- 1 = 1/8" NPT SS
- 4 = 1/8" NPT Brass **5** = 1/4" NPT Brass
- 2 = 1/4" NPT SS 3 = 1/2" NPT SS
- **6** = 1/2" NPT Brass
- 0 = None Required

Special Requirements BOX 11

- X = Specify
- 0 = None

onnection Head(Temperature Sensor Enclosure)



Mini Head 1



Mini Head 2



Mini Head 3



Plastic Head



Small Bakelite Head











Weather Proof Head Weather Proof Head(BIG) Hinge Type Head

Imported Head 1

Imported Head 2



Imported Head 3



Imported Head 4



Flame Proof Head 1



Flame Proof Head 2 (II C APPROVED)



IP-65 HEAD



SS Head



SS Head (SMALL)



Stainless Steel(SS) Head 1



Stainless Steel(SS) KNE Type Head Head 2



Contact: +91-22-26773837 Telefax: +91-22-66954779 Mobile: +91-9967642914



Style RTD7 — Connection Head with 1/2" NPT Hex Nipple



Two Construction Styles to suit any application

(See Ordering Code Box 10)

- Standard Industry Tube and Wire construction with fiberglass 900°F (482°C) or Teflon® 392°F (200°C) lead wires.
- Mineral Insulated construction rated up to 1200°F (650°C). This construction type allows forming and bending the sheath to meet design requirements.

Design Features

- Platinum Resistance Element.
- HK's connection heads are gasketed to seal against moisture, dust and corrosive or hostile atmospheres.
- Screw covers are attached to body with a plated chain.
- Covers have lugs for tightening or loosening with a screwdriver or wrench.
- 💴 Available in single or duplex.
- 💴 HK's connection heads are available in die cast aluminum, Bakelite and cast iron in a variety of sizes from miniature for confined areas, to the large universal head designed for heavy process and industrial applications. Please refer to Pg 2 for different types of connection heads

Ordering Information

RTDs are offered with the options listed in the worksheet below. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements, and a part number will be assigned.

0 = 0"

S = Stainless Steel

F = Standard Bakelite

1 = 1/8"

2 = 1/4"

10 11 3 4 6 Ordering Code: RTD7 Sheath Length "L" BOX 7 Sheath Length "L" BOX 6 Element BOX 1 $S = 100\Omega$ Single $K = 1000\Omega$ Single Fractional inches Whole inches 3 = 3/8" 6 = 3/4"

 $\mathbf{D} = 100\Omega$ Dual

 $L = 1000\Omega$ Dual

 $TCR = .00385 ohm/ohm/^{\circ}C$

Element Class BOX 2

 $A = \pm 0.06\%$ at 0°C, Optional $\mathbf{B} = \pm 0.12\%$ at 0°C, Standard

Number of Leads BOX 3

- 2 = 2-wire circuit
- 3 = 3-wire circuit
- 4 = 4-wire circuit (Dual circuit not available)

0.125" O.D. (Dual circuit not available)

Sheath O.D. BOX 4

- F = 0.125"
- G = 0.188"
- H = 0.250"

Sheath Material BOX 5

- B = 304 SS
- C = 316 SS
- $\mathbf{A} = \text{Alloy } 600$

(Type "M" Only; See Box 10)

01 to 99

For lengths over 99 in. consult HK.

Connection Head BOX 8

A = Standard Size Aluminum

B = Medium Size

C = Miniature

H = Standard Cast Iron

Note: Conduit connection for A, F, H & S is 1/2" (3/4" available); for B & C is 3/8"; and for P is 3/4"

Spring-Loaded Probe BOX 9

- O = Not Required
- $\mathbf{Y} = \text{Required}$

RTD Construction Type BOX 10

Standard Industry Construction

4 = 1/2"

5 = 5/8"

7 = 7/8"

S = Fiberglass insulated 900°F (450°C) $T = Teflon^{\circ} Insulated 392^{\circ}F (200^{\circ}C)$

Mineral Insulated Construction

M = MgO Insulated 1200°F (650°C (Type "M" not available for "K" or "L" from Element Box 1)

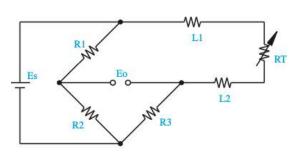
Special Requirements BOX 11

X = Specify

0 = None

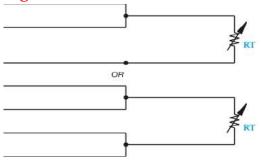


RTD Wiring Diagrams



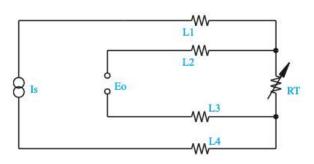
2-wire circuit

Shown is a 2-wire RTD connected to a typical Wheatstone bridge circuit. Es is the supply voltage; Eo is the output voltage; R1, R2, and R3 are fixed resistors; and RT is the RTD. In this uncompensated circuit, lead resistance L1 and L2 add directly to RT.



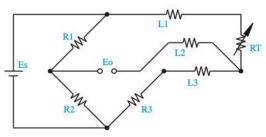
2-wire circuit for a 3 or 4-wire circuit

If necessary, you can connect a 2-wire RTD to a 3-wire circuit or 4-wire circuit, as shown. As long as the junctions are near the RTD, as in a connection head, errors are negligible.



4-wire circuit

4-wire RTD circuits not only cancel lead wires but remove the effects of mismatched resistances such as contact points. A common version is the constant cur- rent circuit shown here. Is drives a precise measuring current through L1 and L4; L2 and L3 measure the voltage drop across the RTD element. Eo must have high impedance to prevent current flow in the potential leads. 4-wire circuits may be usable over a longer distance than 3-wire, but you should consider using a transmitter in electrically noisy environments.



3-wire circuit

In this circuit there are three leads coming from the RTD instead of two. L1 and L3 carry the measuring current while L2 acts only as a potential lead. No cur- rent flows through it while the bridge is in balance. Since L1 and L3 are in separate arms of the bridge, resistance is canceled. This circuit assumes high impedance at Eo and close matching of resistance between wires L2 and L3. TEMPCO matches RTD leads within 5%. As a rule of thumb, 3-wire circuits can handle wire runs up to 100 feet.



RTD Temperature vs. Resistance Table

100 Ohm RTD

DIN 43760 with Temperature Coefficient of .00385 JIS 1604-1989 with Temperature Coefficient of .00392

	°C	DIN	JIS		°C	DIN	JIS
	-100	60.26	59.54	-	290	208.48	210.45
	-90	64.30	63.66		300	212.05	214.08
	-80	68.33	67.76		310	215.61	217.70
	-70	72.33	71.84		320	219.15	221.31
	-60	76.33	75.90		330	222.68	224.91
	-50	80.31	79.95		340	226.20	228.49
	-40	84.27	83.99		350	229.71	232.06
	-30	88.22	88.01		360	233.21	235.63
	-20	92.16	92.02		370	236.70	239.18
	-10	96.09	96.02	.	380	240.17	242.72
	0	100.00	100.00		390	243.64	246.24
	10	103.90	103.97		400	247.09	249.76
	20	107.79	107.93		410	250.53	253.26
	30	111.67	111.88		420	253.96	256.75
	40	115.54	115.82	╢.	430	257.38	260.23
	50	119.40	119.75		440	260.78	263.70
	60	123.24	123.66		450	264.18	267.16
	70	127.07	127.56		460	267.56	270.60
	80	130.90	131.45		470	270.93	274.03
	90	134.71	135.33	.	480	274.29	277.46
	100	138.51	139.20		490	277.64	280.87
	110	142.29	143.06		500	280.97	284.26
	120	146.07	146.90		510	284.30	287.65
	130	149.83	150.73		520	287.61	291.02
	140		154.55			290.91	
	150	157.32	158.36		540	294.20	297.74
	160	161.05	162.16		550	297.48	301.08
	170	164.77	165.94		560	300.75	304.40
	180	168.48	169.71		570	304.01	307.72
	190	172.17	173.48	.	580	307.25	311.02
	200	175.85	177.23		590	310.48	314.31
	210	179.53	180.96		600	313.70	317.59
	220	183.19	184.69		610	316.91	320.86
	230	186.83	188.41		620	320.11	324.12
_	240	190.47	192.11	-	630	323.30	327.36
	250	194.10	195.80		640	326.47	330.60
	260	197.71	199.48		650	329.64	333.82
	270	201.31	203.15		660	332.79	337.03
	280	204.90	206.80		670	335.93	340.23

۰F	DIN	JIS	°F	
-200	48.46	47.54	580	2
-180	53.02	52.18	600	2
-160	57.55	56.79	620	2
-140	62.06	61.37	640	2
-120	66.54	65.94	660	
-100	71.00	70.48	680	2
-80	75.44	75.00	700	2
-60	79.87	79.50	720	2
-40	84.27	83.99	740	2
-20	88.66	88.46	760	
0	93.03	92.91	780	2
20	97.39	97.34	800	2
40	101.74	101.77	820	2
60	106.07	106.17	840	2
80	110.38	110.57	860	
100	114.68	114.95	880	2
120	118.97	119.31	900	2
140	123.24	123.66	920	2
160	127.50	128.00	940	2
180	131.74	132.32	960	
200	135.97	136.62	980	2
220	140.19	140.91	1000	2
240	144.39	145.19	1020	2
260	148.58	149.46	1040	3
280	152.75	153.70	1060	
300	156.91	157.94	1080	3
320	161.05	162.16	1100	3
340	165.18	166.36	1120	3
360	169.30	170.55	1140	3
380	173.40	174.73	1160	
400	177.49	178.89	1180	3
420	181.56	183.04	1200	3
440	185.62	187.17	1220	3
460	189.66	191.29	1240	3
480	193.69	195.39	1260	
500	197.71	199.48	1280	3
520	201.71	203.55	1300	3
540	205.70	207.61	1320	3
560	209.67	211.66	1340	3

°F	DIN	JIS	
580	213.63	215.69	
600	217.58	219.71	
620	221.51	223.71	
640	225.42	227.70	
660	229.32	231.67	
680	233.21	235.63	
700	237.09	239.57	
720	240.94	243.50	
740	244.79	247.42	
760	248.62	251.32	
780	252.44	255.20	
800	256.24	259.07	
820	260.03	262.93	
840	263.80	266.77	
860	267.56	270.60	
880	271.30	274.42	
900	275.03	278.21	
920	278.75	282.00	
940	282.45	285.77	
960	286.14	289.52	
980	289.82	293.27	
1000	293.47	296.99	
1020	297.12	300.70	
1040	300.75	304.40	
1060	304.37	308.09	
1080	307.97	311.75	
1100	311.56	315.41	
1120	315.13	319.05	
1140	318.69	322.67	
1160	322.24	326.28	
1180	325.77	329.88	
1200	329.28	333.46	
1220	332.79	337.03	
1240	336.28	340.58	
1260	339.75	344.12	
1280	343.21	347.64	
1300	346.65	351.15	
1320	350.09	354.65	
1340	353.50	358.13	

Tolerance °C

Class A: ±(0.15+0.002T)°C
Class B: ±(0.30+0.005T)°C
NOTE: "T" is the actual temperature, in °C of the platinum element.



Note: For 1000 ohm RTDs multiply resistance shown in table by 10.