

INDUSTRIAL PROBES

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Quality • Performance • Solutions

General Purpose Thermocouple Probes with One Inch of Bare Leads

Il replacement thermocouple probes can be supplied with either spring-loaded or fixed mounting fittings. The fittings are 304 stainless steel with 1/2 NPT threads for mounting into walls, connector heads or thermowells. The spring-loaded units (SL) allow up to 3/4 inch of travel. The welded units (W) have the 1/2 NPT fitting brazed to the probe. All replacement units are supplied with one (1) inch of bare leads.





304 Stainless Steel Sheath Units - Pricing

NOTES:

- When ordering, specify: Part No. and length (Standard length is 12 inches, specify your requirement).
 Ex.: A8-1A-12
- When ordering springloaded (SL) or welded (W) fitting units, add the suffix (SL) or (W) to the part number and add \$15 to the unit price.
 Ex.: A8-1A-16-SL
- Keep in mind that the bushing accounts for approximately 2 inches of the sheath length. Please account for this when specifying length
- Duplex junction units are available on all models except 1/16" diameter units. Contact factory for more information

Exposed Junction Grounded Junction Ungrounded Junctior Exposed Junction Grounded Junction Ungrounded Junction Price Per ANSI Sheath Price Per Diameter (In.) Add'l Foot Add'l Foot Type Part No. Price Part No. Price Part No Price Part No. Price Part No. Price Part No Price 0.062 A8-1A \$16.36 A8-17 \$16.36 A8-33 \$20.71 \$2.00 A8-49 \$21.20 A8-65 \$21.20 A8-81 \$20.71 \$3.00 A8-2A A8-18 A8-34 A8-50 A8-66 0 1 2 5 18 29 18 29 21 56 2 50 23 13 23 13 A8-82 21.56 3 75 J 0.187 A8-3A 19.62 A8-19 19.62 A8-35 22.89 3.50 A8-51 24.46 A8-67 24.46 A8-83 22.89 4.50 0.250 A8-4A 20.71 A8-20 20.71 A8-36 24 53 A8-52 25.55 A8-68 25.55 A8-84 5 50 4.50 24.53 0.062 A8-5A \$16.36 A8-21 \$16.36 A8-37 \$20.71 \$2.00 A8-53 \$21 20 A8-69 \$21.20 A8-85 \$20.71 \$3.00 0.125 A8-6A 18.29 A8-22 18.29 A8-38 21.56 2.50 A8-54 23.13 A8-70 23.13 A8-86 21.56 3.75 Κ 0.187 A8-7A 19.62 A8-23 19.62 A8-39 22.89 3.50 A8-55 24.46 A8-71 24.46 A8-87 22.89 4.50 0.250 A8-8A 20.71 A8-24 20.71 A8-40 24.53 4.50 A8-56 A8-72 A8-88 5.50 25 55 25 55 24 53 0.062 \$20.71 \$3.00 A8-9A \$16.36 A8-25 \$16.36 A8-41 \$20.71 \$2.00 A8-57 \$21 20 A8-73 \$21.20 A8-89 A8-10A 18.29 A8-26 18.29 A8-42 21.56 0.125 2 50 A8-58 23 13 A8-74 23.13 A8-90 21 56 3.75 Ε A8-27 A8-43 0.187 A8-11A 19.62 19.62 22.89 3.50 A8-59 24.46 A8-75 24.46 A8-91 22.89 4.50 0.250 A8-12A 20.71 A8-28 20.71 A8-44 24.53 4.50 A8-60 25.55 A8-76 25.55 A8-92 24.53 5.50 0.062 A8-13A \$16.36 A8-29 \$16.36 A8-45 \$20.71 \$2.00 A8-61 \$21.20 A8-77 \$21.20 A8-93 \$20.71 \$3.00 0.125 A8-14A 18.29 A8-30 18.29 A8-46 21.56 2.50 A8-62 23.13 A8-78 23.13 A8-94 21.56 3.75 Т A8-31 A8-47 A8-79 24 46 0 187 A8-15A 19.62 19.62 22.89 3.50 A8-63 24 46 A8-95 22.89 4.50 0.250 A8-16A 20.71 A8-32 20.71 A8-48 24.53 4.50 A8-64 25.55 A8-80 25.55 A8-96 24.53 5.50

Inconel 600 Sheath Units - Pricing

Thermocouple Assemblies with Standard Size Connector



his thermocouple probe comes with the appropriate, color coded, male connector attached and the female connector (not shown) furnished with a cable clamp. Maximum service temperature of connectors is 450 deg. F. If other connectors are required, contact the factory.



304 Stainless Steel Sheath Units - Pricing

Inconel 600 Sheath Units - Pricing

ANSI	Sheath	Exposed	I Junction	Grounded Junction		Ungrounded Junction		Price Per	Exposed Junction		Grounded Junction		Ungrounded Junction		Price Per
Туре	Diameter (In.)	Part No.	Price	Part No.	Price	Part No.	Price	Add'l Foot	Part No.	Price	Part No.	Price	Part No.	Price	Add'l Foot
J	0.062	A8A-1	\$25.02	A8A-5	\$25.02	A8A-9	\$28.98	\$2.00	A8A-49	\$29.20	A8A-53	\$29.20	A8A-57	\$33.16	\$3.00
	0.125	A8A-2	26.85	A8A-6	26.85	A8A-10	29.72	2.50	A8A-50	30.93	A8A-54	30.93	A8A-58	33.90	3.75
	0.187	A8A-3	27.99	A8A-7	27.99	A8A-11	30.96	3.50	A8A-51	32.17	A8A-55	32.17	A8A-59	35.14	4.50
	0.250	A8A-4	28.98	A8A-8	28.98	A8A-12	32.94	4.50	A8A-52	33.16	A8A-56	33.16	A8A-60	37.12	5.50
К	0.062	A8A-13	\$25.02	A8A-17	\$25.02	A8A-21	\$28.98	\$2.00	A8A-61	\$29.20	A8A-65	\$29.20	A8A-69	\$33.16	\$3.00
	0.125	A8A-14	26.85	A8A-18	26.85	A8A-22	29.72	2.50	A8A-62	30.93	A8A-66	30.93	A8A-70	33.90	3.75
	0.187	A8A-15	27.99	A8A-19	27.99	A8A-23	30.96	3.50	A8A-63	32.17	A8A-67	32.17	A8A-71	35.14	4.50
	0.250	A8A-16	28.98	A8A-20	28.98	A8A-24	32.94	4.50	A8A-64	33.16	A8A-68	33.16	A8A-72	37.12	5.50
E	0.062	A8A-25	\$25.02	A8A-29	\$25.02	A8A-33	\$28.98	\$2.00	A8A-73	\$29.20	A8A-77	\$29.20	A8A-81	\$33.16	\$3.00
	0.125	A8A-26	26.85	A8A-30	26.85	A8A-34	29.72	2.50	A8A-74	30.93	A8A-78	30.93	A8A-82	33.90	3.75
	0.187	A8A-27	27.99	A8A-31	27.99	A8A-35	30.96	3.50	A8A-75	32.17	A8A-79	32.17	A8A-83	35.14	4.50
	0.250	A8A-28	28.98	A8A-32	28.98	A8A-36	32.94	4.50	A8A-76	33.16	A8A-80	33.16	A8A-84	37.12	5.50
T	0.062	A8A-37	\$25.02	A8A-41	\$25.02	A8A-45	28.98	\$2.00	A8A-85	\$29.20	A8A-89	\$29.20	A8A-93	\$33.16	\$3.00
	0.125	A8A-38	26.85	A8A-42	26.85	A8A-46	29.72	2.50	A8A-86	30.93	A8A-90	30.93	A8A-94	33.90	3.75
	0.187	A8A-39	27.99	A8A-43	27.99	A8A-47	30.96	3.50	A8A-87	32.17	A8A-91	32.17	A8A-95	35.14	4.50
	0.250	A8A-40	28.98	A8A-44	28.98	A8A-48	32.94	4.50	A8A-88	33.16	A8A-92	33.16	A8A-96	37.12	5.50

Thermocouples with Miniature Plugs

ANMAC's Miniature Thermocouple Probe Assemblies come completely assembled with miniature color-coded thermoset plastic connectors with flat polarized prongs. Female connector is included with each unit. Both stainless steel and Inconel 600 sheaths are available. The standard sheath length is 6 inches, specify your length if other than 6 inches and adjust price accordingly.





NOTES:

- List prices are for sheath lengths up to 6 inches
- All assemblies use Magnesia (MgO) internal insulation. Call factory if other types of insulation are required.
- Duplex and multiple units also available – call factory.
- When ordering, specify Part No. and Length "L"; Ex. P/N-A8F-1-6.

Inconel 600 Sheath Units - Pricing

304 Stainless Steel Sheath Units - Pricing

ANSI	Sheath	Exposed Junction		Grounded Junction		Ungrounded Junction		Price Por Add'l	Price Sheath		Exposed Junction		Grounded Junction		Ungrounded Junction	
Туре	(In.)	Part No.	Price	Part No.	Price	Part No.	Price	Foot	(In.)	Part No.	Price	Part No.	Price	Part No.	Price	Foot
J	0.040	A8F-1	\$43.04	A8F-4	\$43.04	A8F-7	\$48.49	N/A	0.062	A8F-37	\$48.46	A8F-40	\$48.46	A8F-43	\$54.31	N/A
	0.062	A8F-2	21.15	A8F-5	21.15	A8F-8	25.99	\$2.20	0.125	A8F-38	27.20	A8F-41	27.20	A8F-44	32.04	\$2.20
	0.125	A8F-3	22.36	A8F-6	22.36	A8F-9	25.99	2.75	0.187	A8F-39	28.41	A8F-42	28.41	A8F-45	32.04	2.75
K	0.040	A8F-10	\$43.04	A8F-13	\$43.04	A8F-16	\$48.49	N/A	0.062	A8F-46	\$48.46	A8F-49	\$48.46	A8F-52	\$54.31	N/A
	0.062	A8F-11	21.15	A8F-14	21.15	A8F-17	25.99	\$2.20	0.125	A8F-47	27.20	A8F-50	27.20	A8F-53	32.04	\$2.20
	0.125	A8F-12	22.36	A8F-15	22.36	A8F-18	25.99	2.75	0.187	A8F-48	28.41	A8F-51	28.41	A8F-54	32.04	2.75
E	0.040	A8F-19	\$43.04	A8F-22	\$43.04	A8F-25	\$48.49	N/A	0.062	A8F-55	\$48.46	A8F-58	\$48.46	A8F-61	\$54.31	N/A
	0.062	A8F-20	21.15	A8F-23	21.15	A8F-26	25.99	\$2.20	0.125	A8F-56	27.20	A8F-59	27.20	A8F-62	32.04	\$2.20
	0.125	A8F-21	22.36	A8F-24	22.36	A8F-27	25.99	2.75	0.187	A8F-57	28.41	A8F-60	28.41	A8F-63	32.04	2.75
Т	0.040	A8F-28	\$43.04	A8F-31	\$43.04	A8F-34	\$48.49	N/A	0.062	A8F-64	\$48.46	A8F-67	\$48.46	A8F-70	\$54.31	N/A
	0.062	A8F-29	21.15	A8F-32	21.15	A8F-35	25.99	\$2.20	0.125	A8F-65	27.20	A8F-68	27.20	A8F-71	32.04	\$2.20
	0.125	A8F-30	22.36	A8F-33	22.36	A8F-36	25.99	2.75	0.187	A8F-66	28.41	A8F-69	28.41	A8F-72	32.04	2.75





hese thermocouples are available with either stainless steel or inconel sheaths. Fitted with a transition from the sheath to 36 inches of fiberglass insulated (insulation code 828) flexible leads, they are available in thermocouple types J, K, E and T as a standard assembly. Other thermocouple calibrations as well as various lead wire insulation materials are available upon request. Maximum service temperature of the transition adaptor 400 deg. F. Maximum use temperature of the thermocouple is determined by considering the sheath material being used and the thermocouple calibration. Standard units are 12 inches long, units can be made as short as 1-1/2 inches long without any special consideration.

NOTES:

- List prices are for sheath lengths up to 12 inches
- All assemblies use Magnesia (MgO) internal insulation. Call factory if other types of insulation are required.
- Duplex and multiple units also available – call factory.
- When ordering, specify Part No. and Length "L"; Ex. P/N-A8B-1-12.

to	A8B Series
le 9	Length (12" standard) 2-1/2" 36" standard 3" Fiberglass insulation
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304 Stainless Steel Sheath Units - Pricing

Inconel 600 Sheath Units - Pricing

ANSI	Sheath	Exposed	Junction	Grounde	d Junction	Unground	ed Junction	Price Per	Exposed	Junction	Grounded Junction		Ungrounded Junction		Price Per
Туре	Diameter (In.)	Part No.	Price	Part No.	Price	Part No.	Price	Add'l Foot	Part No.	Price	Part No.	Price	Part No.	Price	Add'l Foot
J	0.062	A8B-1	\$25.63	A8B-5	\$25.63	A8B-9	\$29.98	\$2.20	A8B-49	\$30.22	A8B-53	\$30.22	A8B-57	\$34.58	\$3.30
	0.125	A8B-2	27.53	A8B-6	27.53	A8B-10	30.80	2.75	A8B-50	32.13	A8B-54	32.13	A8B-58	35.39	4.13
	0.187	A8B-3	28.90	A8B-7	28.90	A8B-11	32.16	3.85	A8B-51	33.49	A8B-55	33.49	A8B-59	36.76	4.95
	0.250	A8B-4	29.98	A8B-8	29.98	A8B-12	34.34	4.95	A8B-52	31.44	A8B-56	31.44	A8B-60	38.94	6.05
К	0.062	A8B-13	\$25.63	A8B-17	\$25.63	A8B-21	\$29.98	\$2.20	A8B-61	\$30.22	A8B-65	\$30.22	A8B-69	\$34.58	\$3.30
	0.125	A8B-14	27.53	A8B-18	27.53	A8B-22	30.80	2.75	A8B-62	32.13	A8B-66	32.13	A8B-70	35.39	4.13
	0.187	A8B-15	28.90	A8B-19	28.90	A8B-23	32.16	3.85	A8B-63	33.49	A8B-67	33.49	A8B-71	36.76	4.95
	0.250	A8B-16	29.98	A8B-20	29.98	A8B-24	34.34	4.95	A8B-64	31.44	A8B-68	31.44	A8B-72	38.94	6.05
E	0.062	A8B-25	\$25.63	A8B-29	\$25.63	A8B-33	\$29.98	\$2.20	A8B-73	\$30.22	A8B-77	\$30.22	A8B-81	\$34.58	\$3.30
	0.125	A8B-26	27.53	A8B-30	27.53	A8B-34	30.80	2.75	A8B-74	32.13	A8B-78	32.13	A8B-82	35.39	4.13
	0.187	A8B-27	28.90	A8B-31	28.90	A8B-35	32.16	3.85	A8B-75	33.49	A8B-79	33.49	A8B-83	36.76	4.95
	0.250	A8B-28	29.98	A8B-32	29.98	A8B-36	34.34	4.95	A8B-76	31.44	A8B-80	31.44	A8B-84	38.94	6.05
Т	0.062	A8B-37	\$25.63	A8B-41	\$25.63	A8B-45	\$29.98	\$2.20	A8B-85	\$30.22	A8B-89	\$30.22	A8B-93	\$34.58	\$3.30
	0.125	A8B-38	27.53	A8B-42	27.53	A8B-46	30.80	2.75	A8B-86	32.13	A8B-90	32.13	A8B-94	35.39	4.13
	0.187	A8B-39	28.90	A8B-43	28.90	A8B-47	32.16	3.85	A8B-87	33.49	A8B-91	33.49	A8B-95	36.76	4.95
	0.250	A8B-40	29.98	A8B-44	29.98	A8B-48	34.34	4.95	A8B-88	31.44	A8B-92	31.44	A8B-96	38.94	6.05

Thermocouple Probes with Armored Cable

hese thermocouples are available with either stainless steel or inconel sheaths. Fitted with a transition from the sheath to 36 inches of fiberglass insulated flexible leads which are enclosed within stainless steel armor for use in rugged applications. These units are available in thermocouple types J, K, E and T as a standard assembly. Other thermocouple calibrations as well as various lead wire insulation materials are available upon request. Maximum service temperature of the transition adaptor 400 deg. F. Maximum use temperature of the thermocouple is determined by considering the sheath material being used and the thermocouple calibration. Standard units are 12 inches long, units can be made as short as 1-1/2 inches long without any special consideration



NOTES:

- List prices are for sheath lengths up to 12 inches
- All assemblies use Magnesia (MgO) internal insulation. Call factory if other types of insulation are required.
- Duplex and multiple units also available – call factory.
- When ordering, specify Part No. and Length "L"; Ex. P/N-A8C-1-12.

304 Stainless Steel Sheath Units - Pricing

Inconel	600	Sheath	Units	-	Pricing
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ANSI	Sheath	Exposed	Junction	Grounded Junction		Ungrounded Junction		Price Per	Exposed Junction		Grounded Junction		Ungrounded Junction		Price Per
Туре	Diameter (In.)	Part No.	Price	Part No.	Price	Part No.	Price	Add'l Foot	Part No.	Price	Part No.	Price	Part No.	Price	Add'l Foot
J	0.062	A8C-1	\$39.89	A8C-5	\$39.89	A8C-9	\$33.25	\$2.20	A8C-49	\$30.45	A8C-53	\$30.45	A8C-57	\$34.41	\$3.30
	0.125	A8C-2	30.80	A8C-6	30.80	A8C-10	34.06	2.75	A8C-50	32.18	A8C-54	32.18	A8C-58	35.15	4.13
	0.187	A8C-3	32.16	A8C-7	32.16	A8C-11	35.43	3.85	A8C-51	33.42	A8C-55	33.42	A8C-59	36.39	4.95
	0.250	A8C-4	33.25	A8C-8	33.25	A8C-12	37.61	4.95	A8C-52	34.41	A8C-56	34.41	A8C-60	38.37	6.05
K	0.062	A8C-13	\$39.89	A8C-17	\$39.89	A8C-21	\$33.25	\$2.20	A8C-61	\$30.45	A8C-65	\$30.45	A8C-69	34.41	\$3.30
	0.125	A8C-14	30.80	A8C-18	30.80	A8C-22	34.06	2.75	A8C-62	32.18	A8C-66	32.18	A8C-70	35.15	4.13
	0.187	A8C-15	32.16	A8C-19	32.16	A8C-23	35.43	3.85	A8C-63	33.42	A8C-67	33.42	A8C-71	36.39	4.95
	0.250	A8C-16	33.25	A8C-20	33.25	A8C-24	37.61	4.95	A8C-64	34.41	A8C-68	34.41	A8C-72	38.37	6.05
E	0.062	A8C-25	\$39.89	A8C-29	\$39.89	A8C-33	\$33.25	\$2.20	A8C-73	\$30.45	A8C-77	\$30.45	A8C-81	\$34.41	3.30
	0.125	A8C-26	30.80	A8C-30	30.80	A8C-34	34.06	2.75	A8C-74	32.18	A8C-78	32.18	A8C-82	35.15	4.13
	0.187	A8C-27	32.16	A8C-31	32.16	A8C-35	35.43	3.85	A8C-75	33.42	A8C-79	33.42	A8C-83	36.39	4.95
	0.250	A8C-28	33.25	A8C-32	33.25	A8C-36	37.61	4.95	A8C-76	34.41	A8C-80	34.41	A8C-84	38.37	6.05
T	0.062	A8C-37	\$39.89	A8C-41	\$39.89	A8C-45	\$33.25	\$2.20	A8C-85	\$30.45	A8C-89	\$30.45	A8C-93	\$34.41	3.30
	0.125	A8C-38	30.80	A8C-42	30.80	A8C-46	34.06	2.75	A8C-86	32.18	A8C-90	32.18	A8C-94	35.15	4.13
	0.187	A8C-39	32.16	A8C-43	32.16	A8C-47	35.43	3.85	A8C-87	33.42	A8C-91	33.42	A8C-95	36.39	4.95
	0.250	A8C-40	33.25	A8C-44	33.25	A8C-48	37.61	4.95	A8C-88	34.41	A8C-92	34.41	A8C-96	38.37	6.05

Thermocouple Probes with Seamless Construction



NOTES:

inches.

he construction of this thermocouple is a one-piece design which does not utilize any transition fitting. Advantages of this construction is that there are no splices from thermocouple to lead wire and no transition adaptors having a diameter greater than that of the thermocouple sheath. Units can therefore be mounted from the inside out of a chamber, pushed into a drilled hole, etc.

Inconel 600 Sheath Units - Pricing



304 Stainless Steel Sheath Units - Pricing

Exposed Junction Grounded Junction Ungrounded Junction Exposed Junction Grounded Junction Ungrounded Junction ANSI Sheath Price Per Price Per Diameter (In.) Add'l Foot Add'l Foot Туре Part No. Part No. Price Price Part No. Price Part No. Price Part No. Price Part No. Price 0.062 A8D-1 \$26.97 A8D-5 \$26.97 A8D-9 \$31.32 N/A A8D-49 \$29.15 A8D-53 \$29.15 A8D-57 \$33.44 N/A 27.79 0 1 2 5 A8D-2 27 79 A8D-6 A8D-10 31.32 \$2 75 A8D-50 A8D-54 A8D-58 \$4 13 29.96 29.96 33 44 J 0.187 A8D-3 30.23 A8D-7 30.23 A8D-11 33 50 3.85 A8D-51 32.42 A8D-55 32.42 A8D-59 35.68 4 95 A8D-52 0.250 A8D-4 31.32 A8D-8 31.32 A8D-12 34.04 4.95 31.32 A8D-56 31.32 A8D-60 36.22 6.05 0.062 A8D-13 \$26.97 A8D-17 \$26.97 A8D-21 \$31.32 N/A A8D-61 \$29.15 A8D-65 \$29.15 A8D-69 \$33.44 N/A 0.125 A8D-14 27.79 A8D-18 27.79 A8D-22 31.32 \$2.75 A8D-62 29.96 A8D-66 29.96 A8D-70 33.44 \$4.13 Κ A8D-19 0 187 A8D-15 30.23 30.23 A8D-23 33 50 3 85 A8D-63 32 42 A8D-67 32 42 A8D-71 35.68 4 95 A8D-16 A8D-64 A8D-72 0.250 31.32 A8D-20 31.32 A8D-24 34.04 4.95 31.32 A8D-68 31.32 36.22 6.05 0.062 A8D-25 \$26.97 A8D-29 \$26.97 A8D-33 \$31.32 A8D-73 \$29.15 A8D-77 \$29.15 A8D-81 \$33.44 N/A N/A 0.125 A8D-26 27.79 A8D-30 27.79 A8D-34 31.32 \$2.75 A8D-74 29.96 A8D-78 29.96 A8D-82 33.44 \$4.13 Ε 0.187 A8D-27 A8D-31 A8D-35 33.50 A8D-75 32.42 A8D-79 32.42 A8D-83 35.68 4.95 30.23 30.23 3.85 A8D-76 0 250 A8D-28 31.32 A8D-32 31.32 A8D-36 34 04 4 95 31.32 A8D-80 31.32 A8D-84 36.22 6.05 0.062 A8D-37 \$26.97 A8D-41 \$26.97 A8D-45 \$31.32 N/A A8D-85 \$29.15 A8D-89 \$29.15 A8D-93 \$33.44 N/A 0.125 A8D-38 27.79 A8D-42 27.79 A8D-46 31.32 \$2.75 A8D-86 29.96 A8D-90 29.96 A8D-94 33.44 \$4.13 Τ 0.187 A8D-39 30.23 A8D-43 30.23 A8D-47 33.50 3.85 A8D-87 32.42 A8D-91 32.42 A8D-95 35.68 4.95 0 250 A8D-40 31.32 A8D-44 31.32 A8D-48 34 04 4.95 A8D-88 31.32 A8D-92 31.32 A8D-96 36.22 6.05

Thermocouple Assemblies with General Purpose Heads

he standard probe contains an ungrounded thermocouple assembly with a General Purpose Aluminum Head. A terminal block is mounted on the interior of the GP Head. The GP Head has 1/2" NPT mounting threads & conduit outlet. This assembly is available with a 4" long stainless steel support tube for use with adjustable mounting fittings. The support tube is 1/8" larger in diameter than the sheath diameter.





NOTES:

- All assemblies use Magnesia (MgO) internal insulation. Call factory if other types of insulation are required.
- Duplex and multiple units also available call factory.
- When ordering, specify Part No., Length "L" and Calibration type; Ex. P/N-A8E-1-12-K.
- When ordering a unit with the optional stainless steel support tube, add suffix (ST) to the part number and add \$25.00 to the unit price

Part No.	Sheath Diameter	Sheath Material	Base Price For Initial 12 Inches	Additional 6 Inches Or Fraction Thereof
A8E-1	.062	SS304	\$69.10	\$4.00
A8E-2	.125		69.10	5.00
A8E-3	.187		70.62	7.00
A8E-4	.250		71.83	9.00
A8E-5	.062	Inconel 600	\$97.95	\$6.00
A8E-6	.125		97.95	7.50
A8E-7	.187		99.60	9.00
A8E-8	.250		99.60	11.00
A8E-9	.187	Quartz	\$88.77	\$8.00
A8E-10	.250		90.40	10.00
A8E-11	.375		100.80	12.00
A8E-12	.187	AI ₂ O ₃ -99.5%	\$106.90	\$12.00
A8E-13	.250		112.97	14.00
A8E-14	.375		119.00	16.00

General Use Thermowells



Pressure-Temperature Rating - PSI

Motorial	Temperature - °F									
Wateria	70°	200°	400°	600°	800°	1000°	1200°			
Brass	5000	4200	1000							
Carbon Steel	5200	5000	4800	4600	3500	1500				
A.I.S.I 304	7000	6200	5600	5400	5200	4500	1650			
A.I.S.I - 316	7000	7000	6400	6200	6100	5100	2500			
Monel	6500	6000	5400	5300	5200	1500				

NOTES:

- When ordering, order by Part No. as indicated in the pricing table.
- Stainless Steel or Brass Compression fittings are available for mounting probes into these thermowells.
- Brass cap and chain available for keeping well bore clean when not in use. If cap and chain is desired add "-BRcap" to Part No. and \$10.00 to unit cost.
- If stainless steel cap and chain is desired, add "-SScap" to Part No. and \$15.00 to unit cost.

A21A Series	
Cut away view	h
U 2-1/2" 1/2" Q P 1/4"	

Specifica	ations	and	Pricin	a*
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				Bore Diameter B260"									
Ext Thread P	Stem Length A	Insertion Length U	Shank Diameter Q	Material - SS304		Material - SS316		Material -C	arbon Steel	Material - Brass			
	_			Part No.	Unit Cost	Part No.	Unit Cost	Part No.	Unit Cost	Part No.	Unit Cost		
1/2" NPT	4 9 12 15 18 24	2 1/2 4 1/2 7 1/2 10 1/2 13 1/2 16 1/2 22 1/2	5/8"	A21A-1 A21A-2 A21A-3 A21A-4 A21A-5 A21A-6 A21A-7	\$21.50 25.80 38.10 51.70 74.50 88.90 114.70	A21A-22 A21A-23 A21A-24 A21A-25 A21A-26 A21A-27 A21A-27 A21A-28	\$28.90 34.70 51.30 69.85 100.30 118.60 154.25	A21A-43 A21A-44 A21A-45 A21A-46 A21A-46 A21A-47 A21A-48 A21A-49	\$15.70 19.40 30.50 43.95 57.10 67.20 80.05	A21A-64 A21A-65 A21A-66 A21A-67 A21A-68 A21A-69 A21A-70	\$15.70 19.40 30.50 43.95 57.10 67.20 80.05		
3/4" NPT	4 9 12 15 18 24	2 1/2 4 1/2 7 1/2 10 1/2 13 1/2 16 1/2 22 1/2	3/4"	A21A-8 A21A-9 A21A-10 A21A-11 A21A-12 A21A-13 A21A-14	\$21.50 25.80 38.10 51.70 74.50 88.90 114.70	A21A-29 A21A-30 A21A-31 A21A-32 A21A-33 A21A-33 A21A-34 A21A-35	\$28.90 34.70 51.30 69.85 100.30 118.60 154.25	A21A-50 A21A-51 A21A-52 A21A-53 A21A-54 A21A-55 A21A-55 A21A-56	\$15.70 19.40 30.50 43.95 57.10 67.20 80.05	A21A-71 A21A-72 A21A-73 A21A-74 A21A-75 A21A-76 A21A-77	\$15.70 19.40 30.50 43.95 57.10 67.20 89.00		
1" NPT	4 9 12 15 18 24	2 1/2 4 1/2 7 1/2 10 1/2 13 1/2 16 1/2 22 1/2	7/8"	A21A-15 A21A-16 A21A-17 A21A-18 A21A-19 A21A-20 A21A-21	\$28.15 33.85 50.10 61.25 88.00 104.70 135.35	A21A-36 A21A-37 A21A-38 A21A-39 A21A-40 A21A-41 A21A-42	\$37.90 45.50 67.40 81.55 118.30 140.80 177.05	A21A-57 A21A-58 A21A-59 A21A-60 A21A-61 A21A-62 A21A-63	\$20.60 25.45 37.25 49.65 65.75 76.90 89.30	A21A-78 A21A-79 A21A-80 A21A-81 A21A-82 A21A-83 A21A-84	\$20.60 25.45 37.25 49.65 65.75 76.90 89.30		

* Prices subject to change without notice

Thermowells with Lagging Extension

Pressure-Temperature Rating - Lbs. per sq. in.

Motorial		Temperature - °F						
material	70°	200°	400°	600°	800°	1000°	1200°	
Brass	5000	4200	1000	-	-	-	-	
Carbon Steel	5200	5000	4800	4600	3500	1500	-	
A.I.S.I 304	7000	6200	5600	5400	5200	4500	1650	
A.I.S.I - 316	7000	7000	6400	6200	6100	5100	2500	
Monel	6500	6000	5400	5300	5200	1500	-	





NOTES:

- When ordering, order by Part No. as indicated in the pricing table.
- Stainless Steel or Brass Compression fittings are available for mounting probes into these thermowells.
- Brass cap and chain available for keeping well bore clean when not in use. If cap and chain is desired add "-BRcap" to Part No. and \$7.00 to unit cost.
- If stainless steel cap and chain is desired, add "-SScap" to Part No. and \$10.00 to unit cost.

Specification	is and	Pricina*
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Lagging Ext. T	Ext Thread P	Stem Length A	Stem Insertion Shank Diam- ength A Length U eter Q		Bore Dia. B260" Bore D Material - SS304 Materi		Bore Dia Material	ia B260" Bore Di: al - SS316 Material -		ı. B260" Carbon Steel	Bore Dia B260" Material - Brass	
					Part No.	Unit Cost	Part No.	Unit Cost	Part No.	Unit Cost	Part No.	Unit Cost
2 3 3 3 3 3	1/2" NPT	6 9 12 15 18 24	2 1/2 4 1/2 7 1/2 10 1/2 13 1/2 19 1/2	5/8"	A22A-1 A22A-2 A22A-3 A22A-4 A22A-5 A22A-5 A22A-6	\$25.80 38.20 52.00 74.50 88.90 114.70	A22A-19 A22A-20 A22A-21 A22A-22 A22A-22 A22A-23 A22A-24	\$34.70 51.30 69.80 100.30 118.55 154.25	A22A-37 A22A-38 A22A-39 A22A-40 A22A-41 A22A-42	\$19.70 30.55 44.00 57.05 68.20 80.00	A22A-55 A22A-56 A22A-57 A22A-58 A22A-59 A22A-60	\$19.70 30.55 44.00 57.05 68.20 80.00
2 3 3 3 3 3	3/4" NPT	6 9 12 15 18 24	2 1/2 4 1/2 7 1/2 10 1/2 13 1/2 19 1/2	3/4"	A22A-7 A22A-8 A22A-9 A22A-10 A22A-11 A22A-12	\$25.80 38.20 52.00 74.50 88.90 114.70	A22A-25 A22A-26 A22A-27 A22A-28 A22A-29 A22A-30	\$34.70 51.30 69.80 100.30 118.55 154.25	A22A-43 A22A-44 A22A-45 A22A-46 A22A-47 A22A-48	\$19.70 30.55 44.00 57.05 68.20 80.00	A22A-61 A22A-62 A22A-63 A22A-64 A22A-65 A22A-66	\$19.70 30.55 44.00 57.05 68.20 80.00
2 3 3 3 3 3	1" NPT	6 9 12 15 18 24	2 1/2 4 1/2 7 1/2 10 1/2 13 1/2 19 1/2	7/8"	A22A-13 A22A-14 A22A-15 A22A-16 A22A-17 A22A-18	\$33.85 50.05 61.30 88.00 104.70 135.35	A22A-31 A22A-32 A22A-33 A22A-34 A22A-35 A22A-35 A22A-36	\$45.50 67.40 82.40 118.33 140.80 177.05	A22A-49 A22A-50 A22A-51 A22A-52 A22A-53 A22A-54	\$25.45 37.30 49.65 65.75 76.90 89.25	A22A-67 A22A-68 A22A-69 A22A-70 A22A-71 A22A-72	\$25.45 37.30 49.65 65.75 76.90 89.25

* Prices subject to change without notice

Adjustable Compression Fittings

NOTES:

- If a brass adjustable compression fitting is desired, list the part number and BR Ex.: P/N-A10-1-BR.
- If a stainless steel adjustable compression fitting is desired, add the suffix SS to the part number Ex.: P/N-A10-1-SS.



Specifications and Pricing

	Pipe Thread Fittings								
Part No.	Part No Tube		А	В	С	Unit Price			
	OD T	Size P				Brass	SS316		
A10-1 A10-2 A10-3 A10-4 A10-4A	1/16 1/16 1/8 3/16 3/16	1/16 1/8 1/8 1/8 1/8 1/4	15/16 1 1 3/16 1 15/64 1 5/16	3/8 3/8 3/8 3/8 9/16	7/16 7/16 5/8 21/32 23/32	\$5.65 5.50 4.75 4.60 8.35	\$14.65 15.30 10.15 10.15 11.00		
A10-5 A10-6 A10-7 A10-8 A10-9	1/4 1/4 1/4 1/4 5/16	1/8 1/4 3/8 1/2 1/8	1 5/16 1 1/2 1 17/32 1 3/4 1 23/64	3/8 9/16 9/16 3/4 3/8	23/32 23/32 23/32 23/32 23/32 3/4	\$4.45 4.45 5.30 6.80 4.75	\$9.30 10.15 14.70 15.50 16.05		
A10-10 A10-11 A10-12 A10-13 A10-14	5/16 3/8 3/8 3/8 3/8 3/8	1/4 3/4 1/4 3/8 1/2	1 35/64 1 13/16 1 19/32 1 19/32 1 13/16	9/16 3/4 9/16 9/16 25/32	3/4 3/4 25/32 25/32 25/32	\$4.75 9.75 5.15 5.50 6.95	\$11.55 25.05 13.45 13.85 16.50		
A10-15 A10-16 A10-17 A10-18 A10-19	1/2 1/2 1/2 1/2 5/8	1/4 3/8 1/2 3/4 3/8	1 23/32 1 23/32 1 29/32 1 15/16 1 3/4	9/16 9/16 3/4 3/4 9/16	7/8 7/8 7/8 7/8 7/8 7/8	\$7.75 7.75 8.05 9.75 8.05	\$17.45 18.00 19.65 25.05 25.80		
A10-20 A10-22 A10-23 A10-25	5/8 3/4 7/8 1	1/2 3/4 3/4 1	1 15/16 2 2 2 7/16	3/4 3/4 3/4 15/16	7/8 7/8 7/8 1 1/32	\$8.25 10.45 15.00 17.85	\$20.35 28.55 48.20 48.80		

O-Ring Fittings								
Dart No	Tube	Thread	٨	D	C	Unit	Price	
Faitinu.	OD T	Size S	А	D	0	Brass	SS316	
A10.26	1/16	5/16 24	1 1/16	11/32	7/16	call	¢27.45	
A10-20 A10-27	1/10	5/16-24	1 5/16	11/32	5/8	\$7.90	φ27.45 16.50	
A10-28	3/16	3/8-24	1 3/8	3/8	21/32	7.95	16.70	
A10-29	1/4	7/16-20	1 17/32	13/32	23/32	12.50	20.30	
A10-30	5/16	1/2-20	1 5/8	7/16	3/4	8.05	17.70	
A10-31	3/8	9/16-18	1 11/16	15/32	25/32	\$8.80	\$19.65	
A10-32	1/2	3/4-16	1 13/16	15/32	7/8	10.20	27.25	
A10-33	5/8	7/8-14	1 29/32	15/32	7/8	call	call	
A10-34	3/4	1 1/16-12	2 1/16	9/16	7/8	call	37.80	
A10-35	7/8	1 1/16-12	2 1/16	9/16	7/8	call	call	
A10-36	1	1 1/16-12	2 9/32	9/16	1 1/32	call	call	

ANMAC offers two styles of adjustable compression fittings for use in mounting Thermocouples into thick or thin walls. One style uses a standard (NPT) pipe thread while the other uses a straight thread with O -ring seal. Both are available in either brass or stainless steel. Both styles are available for probe diameters from 1/16" to 1.0" OD. (other sizes upon request). The O-ring style is also ideal for use in thin-wall applications, glass containers, jar lids, etc. Simply put a jam nut on other side of container lid.



Thermocouple Extension Assemblies

ANMAC's Extension Assemblies feature #20 gage fiberglass insulated wire with flexible stainless steel armor. Solid #20 gage Thermocouple grade wires are used for Thermocouple Types J, K, E, and T. Extension grade #20 gage solid wires are used for Types R, S, B and C Thermocouples. Other insulation types are available, contact factory with your specific requirement. Standard length "Y" is 36 inches +/- 1 inch.





NOTES:

- When ordering, specify part number and length
 Ex.: A8H-1-36, specifies a type J, single jack vs: spade lugs, 36" long
- RTD cables also available

	<u> </u>			
Style No.	Part No.	Calibration Type	Unit Price	Add'l 12"
1	A8H-1 A8H-2 A8H-3 A8H-4 A8H-5 A8H-5	J K E T R/S/B C	\$44.25 45.95 44.95 44.95 44.95 48.38	\$1.66 1.94 1.66 1.66 1.66 2.39
2	A8H-7 A8H-8 A8H-9 A8H-10 A8H-11 A8H-12	J K E T R/S/B C	\$43.35 44.35 43.35 43.35 43.35 43.35 46.68	\$1.66 1.94 1.66 1.66 1.66 2.39
3	A8H-13 A8H-14 A8H-15 A8H-16 A8H-17 A8H-17	J K E T R/S/B C	\$43.85 44.85 43.85 43.85 43.85 43.85 47.18	\$1.66 1.94 1.66 1.66 1.66 2.39
4	A8H-19 A8H-20 A8H-21 A8H-22 A8H-23 A8H-24	J K T R/S/B C	\$69.00 71.00 69.00 69.00 69.00 75.66	\$1.66 1.94 1.66 1.66 1.66 2.39
5	A8H-25 A8H-26 A8H-27 A8H-28 A8H-29 A8H-30	J K E T R/S/B C	\$67.40 69.40 67.40 67.40 67.40 74.06	\$1.66 1.94 1.66 1.66 1.66 2.39
6	A8H-31 A8H-32 A8H-33 A8H-34 A8H-35 A8H-36	J K E T R/S/B C	\$67.90 69.90 67.90 67.90 67.90 74.06	\$1.66 1.94 1.66 1.66 1.66 2.39

High Temperature Thermocouple Probes with Standard Connector

Up to 4200 Deg. F



he standard NANMAC high temperature Thermocouple probe consists of an ungrounded thermal junction within a closed end sheath. It also includes a set of standard matching plug and jack connectors with the male connector attached and the female connector (not shown) furnished with a cable clamp. Maximum service temperature of connector is 450 degrees Fahrenheit. The standard HTP Thermocouple is also available with a thick wall, 4" long support tube attached to the connector end. The purpose of the

support tube is to eliminate any damage to the refractory sheath that may be caused by the mounting bushing. The support tube is 1/8" larger in diameter than the Thermocouple sheath. If a support tube is desired, add \$25.00 to base price and add the suffix ST onto the Catalog Number.



David No.	Sheath	Sheath	Base Price - 12" o	r Fraction Thereof	Price for Each	Additional Inch
Part NO.	Diam.	Material	ANSI Types G,D,C	ANSI Types S,R,B	ANSI Types G,D,C	ANSI Types S,R,B
A12-1 A12-2 A12-3 A12-5 A12-6 A12-7 A12-10 A12-11 A12-12 A12-12 A12-14 A12-15 A12-16 A12-17 A12-18	.125 .187 .250 .125 .187 .250 .187 .250 .375 .250 .375 .250 .375 .188 .250 .375	Molybdenum Tantalum Alumina Zirconia Quartz	\$275.20 292.80 312.60 \$295.20 312.80 332.80 \$212.50 218.00 223.50 \$388.50 475.40 \$212.50 223.50 223.50 223.50 234.50	Call Factory for Current Pricing	\$13.89 14.17 14.37 \$15.89 16.17 16.37 \$10.95 11.95 12.95 \$15.42 18.42 \$10.95 11.95 11.95 12.95	Call Factory for Current Pricing

High Temperature Thermocouple Probes with Aluminum Connector Heads

Up to 4200 Deg. F

he standard probe contains an ungrounded Thermocouple assembly with a General Purpose Aluminum Head. A terminal block is mounted in the interior of the GP Head. The GP Head has a 1/2" NPT conduit outlet. This Thermocouple assembly is also available with a 4" long stainless steel support tube for use with adjustable mounting fittings. The support tube is 1/8" larger in diameter than the sheath diameter. When ordering this unit, add suffix ST to Part No. and increase the unit price by \$25.00.





NOTES:

- All of the above thermocouples use #24 gage (0.020") size elements.
- All platinum assemblies use high purity alumina insulation. All tungsten assemblies use magnesia insulation. Beryllia and hafnia insulation also available – call factory.
- Duplex and multiple units also available – call factory.
- When ordering, specify Part No., Length "L" and ANSI Type; Ex. P/N-A12A-1-12-R.

Destable	No Sheath Sheath		Base Price - 12" o	or Fraction Thereof	Price for Each	Additional Inch
Part No.	Diam.	Material	ANSI Types G,D,C	ANSI Types S,R,B	ANSI Types G,D,C	ANSI Types S,R,B
A12A-1 A12A-2 A12A-3 A12A-5 A12A-6 A12A-7 A12A-7 A12A-9 A12A-10 A12A-11 A12A-13 A12A-14	.125 .187 .250 .125 .187 .250 .187 .250 .375 .250 .375	Molybdenum Tantalum Alumina Zirconia	\$288.40 306.00 325.80 \$308.40 326.00 345.80 \$225.70 231.20 236.70 \$400.80 488.60	Call Factory for Current Pricing	\$13.89 14.17 14.37 \$15.89 16.17 16.37 \$10.95 11.95 12.95 \$15.42 18.42	Call Factory for Current Pricing
* Du	e to rapid	lly changing m	aterial costs, please	contact the factory	for current pricing	on types S, R & B

High Temperature Thermocouple Probes with Transition to Flex Leads



he standard probe contains an ungrounded Thermocouple assembly with a transition junction, a stress relief spring and 36 inches of fiberglass insulated #20 gage (0.032") extension leads. The extension leads are shielded with a stainless steel overbraid. The standard HTP Thermocouple is also available with a thick wall, 4' long support tube attached to the transition end. The purpose of the support tube is to eliminate any damage to the refractory sheath that may be caused by the mounting bushing. The support tube is 1/8" larger in diameter than the Thermocouple sheath. If a support tube is desired, add \$25.00 to base price and insert the suffix (ST) onto the Catalog number.

NOTES:

- All of these thermocouples use #24 gage (0.020") size elements.
- All platinum assemblies use high purity alumina insulation. All tungsten assemblies use magnesia insulation. Beryllia and hafnia insulation also available – call factory.
- Duplex and multiple units also available – call factory.
- When ordering, specify Part No., Length "L" and ANSI Type; Ex. P/N-A12B-1-12"-R.



David No.	Sheath	Sheath	Base Price - 12" o	or Fraction Thereof	Price for Each	Additional Inch
Part No.	Diam.	Material	ANSI Types G,D,C	ANSI Types S,R,B	ANSI Types G,D,C	ANSI Types S,R,B
A12B-1 A12B-2 A12B-3 A12B-5 A12B-6 A12B-6 A12B-7 A12B-9 A12B-10 A12B-11 A12B-13 A12B-14	.125 .187 .250 .125 .187 .250 .187 .250 .375 .250 .375	Molybdenum Tantalum Alumina Zirconia	\$288.40 306.00 325.80 \$308.40 326.00 345.80 \$225.70 231.20 236.70 \$400.80 488.60	Contact Factory for Pricing	\$13.89 14.17 14.37 \$15.89 16.17 16.37 \$10.95 11.95 12.95 \$15.42 18.42	Contact Factory for Pricing
* Due to	rapidly cha	nging Platinum &	Rhodium metal costs,	you must contact the f	factory for current prici	ng on types S, R & B

High Temperature Thermocouple Probes with Tungsten Coated Sheath

Extended Lifespan in Graphite Furnaces

ften times a molybdenum sheathed thermocouple is immersed into a furnace with graphite liners or heating elements. At temperatures above 1600 deg. C, the graphite dust attacks the sheath and rapidly carburizes the sheath. This causes the sheath to become crystallized and porous. The thermal elements lose their protection and they also become crystallized and then break during cycling. Coating a thick layer of tungsten onto the sheath minimizes



this carburization process and extends the life of the probes significantly. Field tests at 2000 deg. C using the coated probes produced continuous temperature data up to 2 months, even during cycling, whereas the uncoated probes failed immediately. Longer life times were also experienced at temperatures below 2000 deg. C but above 1600 deg. C.



Ν	0	T	E	S

- All of the above thermocouples use #24 gage (0.020") size elements.
- All platinum assemblies use high purity alumina insulation. All tungsten assemblies use hafnia insulation wherever tungsten coating is applied also available.
- Duplex and multiple units also available - call factory.
- When ordering, specify Part No. and Length "L"; Ex. P/N-A12d-1-10-C.

Due to the complex nature of this design, we recommend that you contact the factory for current pricing

Specifications								
Series Number	Thermocouple Calibration	D1 diameter (inch) nominal	D2 diameter (inch)					
A12D-1	с	.150	.250					
A12D-2		.220	.250					
A12D-3		.285	.375					
A12D-4	S	.150	.250					
A12D-5		.220	.250					
A12D-6		.285	.375					
A12D-7	R	.150	.250					
A12D-8		.220	.250					
A12D-9		.285	.375					
A12D-10	В	.150	.250					
A12D-11		.220	.250					
A12D-12		.285	.375					

Bare Wire Thermocouple Elements



NOTES:

requirement

All standard units have a twisted and welded junction, if no twist is required specify by adding the suffix NT. Ex,: A13-K-12-NT Elements with ceramic insulators are also available, contact factory with your

ANMAC offers a wide variety of bare wire thermocouples elements in a large selection of wire sizes. All base metal bare wire thermocouples (types J,K,E T) come with a standard length of 12-inches leads. Noble metal and refractory wire elements (types S,R,B,G,D and C) come with a standard element length of 6-inches. Other sizes and/ or lengths are available - consult factory. Minimum order per line item: \$25.00, these can be combined to reach our minimum total order amount of \$100.00



Part Thermocouple Wire Dia Unit Price No. Туре (in) \$4.40 4.40 4.40 A13-1 0.003 A13-2 A13-3 0.005 0.010 A13-4 0.015 4.40 A13-5 A13-6 A13-7 4.40 4.40 J 0.020 0.032 5.50 0.050 A13-8 6.60 7.70 0.064 A13-9 0.128 A13-10 A13-11 A13-12 0.003 \$4.40 4.40 4.40 4.40 0.005 0.010 т A13-13 0.015 4.40 A13-14 A13-15 0.020 4.40 0.032 5.50 0.003 A13-16 \$4.40 A13-17 0.005 4.40 A13-18 0.010 4.40 A13-19 A13-20 A13-21 A13-22 A13-23 0.015 4.40 Κ 0.032 4.40 0.050 6.60 7.73 12.38 0.064 A13-24 0.128 A13-25 0.003 \$4.40 A13-26 A13-27 4.40 0.005 0.010

Е

4.40 4.40

5.50

0.015 0.020

0.032

A13-28 A13-29

A13-30

Part No.	Thermocouple Type	Wire Dia (in)	Unit Price					
A13-31 A13-32 A13-33 A13-34	S	0.005 0.010 0.015 0.020	Contact Factory					
A13-35 A13-36 A13-37 A13-38	R	0.005 0.010 0.015 0.020	Contact Factory					
A13-39 A13-40 A13-41 A13-42	G	0.005 0.010 0.015 0.020	\$15.60 20.55 32.80 38.35					
A13-43 A13-44 A13-45 A13-46	D	0.005 0.010 0.015 0.020	\$16.90 21.00 36.90 46.30					
A13-47 A13-48 A13-49 A13-50	С	0.005 0.010 0.015 0.020	\$16.90 21.00 36.90 46.30					
A13-51 A13-52 A13-53 A13-54	В	0.005 0.010 0.015 0.020	Contact Factory					

Industrial Thermocouple Elements with Ceramic Insulators



Choose One Option From Each Column

Α	В	С	D
Style	Wire Gage	ANSI-Type	Length
1-single element	8	J	
2-duplex element	14	К	in inches
	20	Т	III IIIches
	24	E	

Specifications and Pricing

Style	Wire Gage /	Price for 12	Price for each Add'l 6 inches,
	Diameter	inch Assembly	or fraction thereof
1	8 (.128)	\$ 17.60	\$ 6.70
	14 (.064)	15.30	3.80
	20 (.032)	12.00	3.45
	24 (.020)	12.00	3.40
2	8 (.128)	\$27.40	\$9.00
	14 (.064)	26.30	5.45
	20 (.032)	19.90	5.45
	24 (.020)	19.90	4.65

NOTES:

- Length does not include approximately one inch of bare wire at the terminating end.
- These units are also available with short Ball & Socket insulators for units required to bend, curve, etc.
- Contact factory with your specific requirements. Typically a sketch is required to quote these unique designs
- When ordering, specify series (A14A) and part number by specifying each of the four characteristics from columns A-B-C-D

Ex.: A14A-2-14-K-24 specifies a duplex, 14 gage, type K, 24 inch long element

 All units come standard with a twisted and welded junction. If you require no twist, specify by adding the suffix NT. Ex.: A14A-2-14-K-24-NT





hermocouples and Extension Leads with End Preparations offer rapid solutions to many temperature measurement applications at economical costs. All contain one pair of solid conductors and are insulated with fiberglass over each leg and overall. ANSI color codes and premium grade elements are used throughout. Thermocouple types include J, K, E and T.

Choose One Option From Each Column

Α	B	С	D
Style	Calibration	Wire Gage	Length
1	J	16	
2	K	20	
3	E	24	in inchos
4	Т		
5			
6			

Call Factory for current pricing



Bolt-Down & Washer Thermocouples with Flexible Leads

he A7 series 'Bolt-Down' Thermocouple uses #20 gage (0.032") solid conductors and is available with various insulation materials: Fiberglass or Teflon. Four standard eyelet sizes are available: #6 (0.146 hole), #8 (0.170), #10 (0.195 hole) and 1/4" (0.260 hole). In addition to bolting the Thermocouple to a wall, it can also be hooked to a traveling conveyor or hung from a ceiling. Available in thermocouple calibrations - Types J, T, K and E. Standard length of the A7 series unit is 36 inches, longer lengths as well as stainless steel overbraid and various terminations are also available to suit your particular requirement.

NANMAC washer thermocouples are designed to measure true average temperature of the washer. Conduction errors are eliminated by welding the thermocouple elements at 180 deg.

A6 Series Washer Thermocouple 36" is Standard Ö.D I.D 3″

A6 Series Notes:

- · If lead lengths longer than 36 inches are desired, specify length required and add \$1.00 per each additional foot of length to the base price.
- Standard wire insulation is fiberglass, which is good to 700 deg. F operation. For other insulation, consult factory.

All belieb oppenheadene and i henry									
Part	TC	Was	sher	Duine	Part	TC	Was	sher	Duine
No.	Туре	ID (in)	OD (in)	Price	No.	Туре	ID (in)	OD (in)	Price
A6-1 A6-2 A6-3 A6-4 A6-5		1/8 3/16 1/4 3/8 1/2	5/16 7/16 5/8 7/8 1 1/4	\$18.59	A6-11 A6-12 A6-13 A6-14 A6-15	<u>кккк</u> к	1/8 3/16 1/4 3/8 1/2	5/16 7/16 5/8 7/8 1 1/4	\$18.59
A6-6 A6-7 A6-8 A6-9 A6-10	T T T T	1/8 3/16 1/4 3/8 1/2	5/16 7/16 5/8 7/8 1 1/4	\$18.59	A6-16 A6-17 A6-18 A6-19 A6-20	E E E	1/8 3/16 1/4 3/8 1/2	5/16 7/16 5/8 7/8 1 1/4	\$18.59

A6 Series Specifications and Pricing

A7 Series Pricing Notes:

- When ordering, specify Part No. by selecting a code from each column A thru F, then add length in inches Ex.: A7-2-1-2-2-3-D-120 specifies a type K, Teflon insulated, stainless steel overbraid, un-grounded, spade lug unit with a 1/4" clearance hole, 120 inches lona. Unit price is \$57.00.
- 36" Long base price: \$36.00
- Price per foot over 36 inches: \$1.00
- Add \$1.00 per foot for stainless steel overbraid
- Add \$4.00 for Un-grounded junction
- Add \$5.00 for Plug
- Add \$4.00 for spade lugs



F В D С Ε Δ **Stainless Steel** Thermocouple Insulation Junction Termination EyeletSize Overbraid A=#6 1 = Grounded 1=Bare Leads 1 = J1=Fiberglass 1 = No(.145") B=#8 2=Standard Plug 2 = K2=Teflon 2=Yes 2=Ungrounded (.170") C=#10 3=T3=Nextel 3=Spade Lugs (.195") D = 1/44 = E4=Mini Plug (.260")

Choose One Option From Each Column

Spring Loaded Ribbon Thermocouples



his spring-loaded thermocouple is designed for threaded blind-hole measurements, or for surfaces subject to vibration/oscillation, or any application where positive contact for good measurement is required.

The sensing tip of this device consists of a thin ribbon thermocouple element overlapped onto a phenolic rod. This rod is spring-loaded within the threaded stainless steel thermowell body. Thus, the sensing tip can be depressed up to 1/8 inch while it continuously maintains good thermal contact to the object

whose temperature is being measured. The combination of the thin ribbon thermocouple and low thermal conductivity of the phenolic rod yield response times of less than 200 milliseconds. This combination also provides temperature measurement without conduction errors and thus the true temperature of the test item is monitored.

All units come with a Delrin locking-element (slug) which when used, resists loosening due to vibration. However, this limits the upper temperature limit to 300 F. The Delrin slug can easily be removed with a pair of pliers, thus increasing the upper temperature limit to 450 F. There are several other techniques one can use to resist vibration, contact the factory to discuss these options. Also, if higher temperatures are required, please contact the factory with your particular requirement.

NOTES:

- Available in thermocouple calibrations J, K, E, T and N each with 48 inches of teflon insulated lead wire
- All units come with wrench flats for ease of installation.
- Other lead wire lengths as well as standard or mini connectors are available.
- All dimensions are in inches, some metric sizes are available. Contact the factory with your requirement
- When ordering, specify thermocouple calibration with model number.
 Ex.: B9-2-K, designates model

B9-2 with type K thermocouple.



Pricing and Specifications

Model Number	A Thread size	B Thread length	C Rod length	D Rod diameter	Contact Force - Ibs (min - max)	Price
B9-1	1/4-28	1	3/16	0.125	1.0 - 4.0	\$175.00
B9-2	3/8-16	1-1/8	3/16	0.187	2.8 - 7.2	
B9-3	1/2-13	1-1/4	1/4	0.238	2.7 - 9.3	
B9-4	5/8-11	1-1/2	5/16	0.310	10.5 - 25.5	

Hose Clamp Thermocouples

N

ANMAC'S line of hose clamp thermocouples consists of three basic styles which vary by the addition of a stem and/or stainless steel overbraid.

Style 1: Has a 1/8" O.D. by 6 inches long stainless steel sheath. The thermocouple wires inside the sheath are insulated with a high temperature mineral oxide insulation. Standard units have a grounded junction which is brazed to the stainless steel pipe clamp. Two (2) versions of the attachment are available: i.e. tangential and perpendicular. Unless otherwise specified, we will furnish the tangential style. (The perpendicular style is available upon request at no additional cost). The style 1 units have five feet of fiberglass insulated extension wire connected to the stainless steel sheath.

Style 2: The same as Style 1, except that the stainless steel sheath is deleted. The fiberglass insulated thermocouple wires are welded directly to the stainless steel pipe clamp.

Style 3: The same as style 2, except that the fiberglass insulated thermocouple wires have a stainless steel overbraid which reduces stray, unwanted electromagnetic pickup and increases lead wire durability.



NOTES:

- All units come with 5 feet of 20 gage fiberglass insulated extension leads (other materials available).
- All thermocouples are mounted in "tangential" style as shown above, unless "perpendicular" style is specified.
- All thermocouples are grounded to hose clamp for fast response. Contact factory for un-grounded units.
- All units are available in thermocouple types T, E, J, K and N
- Options include: Un-grounded thermal junction, stainless steel overbraid on the fiberglass wire, as well as various wire terminations.
- When ordering, specify Part No. and thermocouple type Ex.: D6-5-J
- To specify un-grounded junction add the suffix "-U" to the part number and \$3.00 to the base price
- To specify perpendicular style (versus tangential) add suffix "-P" to part number

Shecui	calions a	IIIU FIIGII	iy
	Style 1	Style 2	Style 3
Pipe OD (in.)	Part No.	Part No.	Part No.
• • /			
7/32→5/8	D6-5	D6-53	D6-522
3/0→1/2	D6-6	D6-63	D6-62
3/8→5/8	D6-8	D6-83	D6-82
1/2→5/8	D6-10	D6-103	D6-102
5/8→3/4	D6-12	D6-123	D6-122
3/4→1	D6-16	D6-163	D6-162
1→1-1/4	D6-20	D6-203	D6-202
1-1/4→1-1/2	D6-24	D6-243	D6-242
1-1/4→1-3/4	D6-28	D6-283	D6-282
1-1/2→2	D6-32	D6-323	D6-322
1-3/4→2-1/4	D6-36	D6-363	D6-362
2-1/16→3	D6-40	D6-403	D6-402
2-5/16→3-1/4	D6-44	D6-443	D6-442
3→3-1/4	D6-52	D6-523	D6-522
3-1/4→3-1/2	D6-60	D6-603	D6-602
4→4-1/2	D6-68	D6-683	D6-682
4-1/6→5	D6-72	D6-723	D6-722
4-5/8→5-1/2	D6-80	D6-803	D6-802
5-1/8→6	D6-88	D6-883	D6-882
5-7/8→6-3/4	D6-104	D6-104	D6-1042
Unit Price	\$34.70	\$24.80	\$27.55

Spring-Loaded Ribbon Bayonet Thermocouples



anmac has developed special thermocouples using the Bayonet mounting design which have been designed for high performance requirements. These Ribbon Bayonet thermocouples provide Millisecond response times and have no conduction error regardless of insertion depth.

Specifications and Pricing

Part No.	Model	Length "A"	Price
A5-1 A5-2 A5-3 A5-4 A5-5 A5-6 A5-7 A5-8 A5-9	00	2 2 1/2 3 3 1/2 4 4 1/2 5 5 1/2 6	\$29.83 29.83 30.44 30.44 31.04 31.65 31.65 32.25
A5-10	45	2	\$31.04
A5-11		2 1/2	31.04
A5-12		3	31.65
A5-13		3 1/2	31.65
A5-14		4	32.25
A5-15		4 1/2	32.25
A5-16		5	32.86
A5-17		5 1/2	32.86
A5-18		6	33.46
A5-19	90	2	\$31.04
A5-20		2 1/2	31.04
A5-21		3	31.65
A5-22		3 1/2	31.65
A5-23		4	32.25
A5-24		4 1/2	32.25
A5-25		5	32.86
A5-26		5 1/2	32.86
A5-27		6	33.46

Mounting Adaptors

Part No.	Model	Length "A"	Price
A5-28	1/8 NPT	7/8	\$8.05
A5-29		1 3/8	9.26
A5-30		2 1/2	11.68
A5-31	3/8-24 NF	7/8	\$6.48
A5-32		1 3/8	7.20
A5-33		2 1/2	8.66

Instructions for Hole Depths & Adaptors

Donth "P"	Length "A"						
(in.)	7/8" long adapter	1 3/8" long adapter	ng 2 1/2" long adapter				
1/2 to 1	2	2 1/2	3 5/8				
1 to 1 1/2	2 1/2	3	4 1/8				
1 1/2 to 2	3	3 1/2	4 5/8				
2 to 2 1/2	3 1/2	4	5 1/8				
2 1/2 to 3	4	4 1/2	5 5/8				
3 to 3 1/2	4 1/2	5	6 1/8				
3 1/2 to 4	5	5 1/2	6 5/8				
4 to 4 1/2	5 1/2	6	7 1/8				
4 1/2 to 5	6	6 1/2	7 5/8				

NOTES:

- Types J, K, E, T, N
- Specify Tc calibration as follows: A5-1-K A5-1-J
- All standard units have grounded junctions. If ungrounded junctions are desired, add (U) to part number and increase base price by \$3.30
- All standard units have 36" armored extension leads. If longer lengths are required, add \$1.65 per foot and specify accordingly
- All bayonet thermocouples are supplied without adaptors and connectors





Right Angle Thermocouple Probes

he "Right Angle" Thermocouple features thermal elements which consist of thin thermocouple alloy ribbons welded together at the sensing tip. These ribbon elements are brought out from opposing sides of the probe along the interface of a high temperature - thermally isolating rod and cone assembly. The ribbons in the vicinity of the thermal junction are parallel to the plane of heat source thus both the thermal junction and the ribbons are heated simultaneously and conduction errors are minimized. The ribbon elements, due to their mass to surface-area relationship, provide fast response times to equilibrium temperatures since maximum surface contact area is offered to the heat source



Close Up Of Sensing Tip —

NOTES:

- Response times of 18
 milliseconds.
- Pressure ranges to 10,000 P.S.I., temperature ranges to 3200°F
- Easily designed into Sanitary mounting devices for food, drug, explosives measuring.
- Mounting may be adjustable compression fittings, bayonet mount, machined-fixed mounting or a mounting design which is intrinsically built into the machinery.
- All standard thermocouple calibrations and connectors available.
- Various mounting designs are available for your particular application

Flush Mounted Unit

Contact Factory with any Mounting Requirement

Adjustable Probe Unit

Right Angle Ribbon Thermocouples

The **Adjustable Probe** unit includes an adjustable compression filling with standard pipe threads. The probe may be from 3/16" OD and up, though standard sizes are 1/4 and 3/8 inch. Length can be from 1 inch to as much as 24 inches long, with a standard length of 4 inches. Probe may be made from most any metal, plastic or phenolic compound. This style is ideally suited for gas and liquid surface and immersion applications.

The **Surface Mounted** unit contains the "Right Angle" thermocouple on the end of the threaded thermowell. The thermowell is of stainless steel with straight threads (7/16-20 NF-2 by 13/32" long). It also contains an O-ring seal, the O-ring good to 450 Deg. F maximum. At higher temperatures, the 0-ring must be removed and replaced by a copper washer. This flush mounted unit is ideal for applications requiring gas or liquid temperatures at the inner surface of a container wall.

The **Fixed Probe** unit contains a 1/4" O.D stainless steel probe on the end of a straight thread mounting bushing (Size of threads 1/2-20 NF x 3/4" length) The fixed probe unit is ideal for measuring gas or liquid temperatures inside a container under high pressures.



			Standard Longth		Max Proceuro	Base	Price
Part No.	Probe Material	Diameter "A"	"L"	Type Mounting	P.S.I.	Thermocouple Type J, T, K, E, N	Thermocouple Type S, R, B, C
C2-1	304SS	1/4" OD	4″	1/8 NPT	3000	\$209.00	\$319.00
C2-2	304SS	3/8" OD	4"	1/4 NPT	3000	239.00	349.00
C2-3	Inconel	1/4" OD	4"	1/8 NPT	3000	239.00	349.00
C2-4	Copper	1/4" OD	4"	1/8 NPT	3000	249.00	359.00
C2-5	316SS	-	-	7/16-20NF by 13/32"	5000	249.00	359.00
C2-7	304SS	1/4" OD	4"	1/2-20NF by 3/4"	10,000	279.00	389.00



LOW-THRU temperature sensors use either the NANMAC Right-Angle Ribbon Thermocouple sensor, or a Pt-100 Ohm RTD. The Right-Angle thermocouple utilizes a special ribbon element which eliminates conduction error due to shallow immersion in to the flowing gas or liquid within the pipeline. Additionally, this ribbon design also provides response times in the low milliseconds. All Pt-100 RTD devices are of sanitary design as the sensor is separated from the material within the pipeline by a 0.015 inch thick stainless steel diaphragm. Thermocouples requiring sanitary design are also



available by adding the diaphragm. to the thermocouple, contact the factory for more information. Termination - 3/8 O.D. stainless steel tube with standard size 2 pin male plug attached. Only RTD models come standard with sanitary design which features a 0.015 inch thick diaphragm. Thermocouple types with diaphragm are available. All units come standard with thermal junction flush to inner wall surface. If junction is to protrude into the stream, specify dimension " E" in increments of 1/16 inch, up to 1/4 inch. Ex.: D4A-10-K-M-E=1/16, Tolerance on "E" is 0.010.



NOTES:

- Temperature Range is from -320° to 1250° F.
- Pressures up to 4000 PSI.
- Response Time Thermocouple = 20 ms. RTD = 3 seconds
- Available in thermocouple types J, K, E and T; RTD is Pt100, 2 wire standard.
- Union Type 316 Stainless steel male or female NPT union
- Special designs having ports of different dimensions are also available.
- When ordering, specify Part No., Thermocouple Type or RTD and either Male (M) or Female (F) union.
 Ex.: D4A-4-K-M or D4A-12-RTD-F

Dort No.	Pipe	Dm	Цm	۸m	D4	Цf	٨4	Maxim	um PSI	Unit Price	Unit Drice DTDe
Fart NU.	Size	וווע		AIII	וע		AI	Male	Female	Thermocouples	UIIIL FIICE KTDS
D4A-2	1/16	1/8	5/16	31/32	NA	NA	NA	4000	NA	\$264.50	\$304.50
D4A-4	1/8	3/16	7/16	1-7/32	11/32	9/16	13/16	4000	4000	\$264.50	\$304.50
D4A-6	1/4	9/32	9/16	1-19/32	7/16	3/4	1-1/8	4000	4000	\$264.50	\$304.50
D4A-8	3/8	3/8	11/16	1-5/8	37/64	7/8	1-1/4	4000	3500	\$264.50	\$304.50
D4A-10	1/2	15/32	7/8	2	23/32	1-1/16	1-1/2	4000	3500	\$264.50	\$304.50
D4A-12	3/4	5/8	1-1/16	2	59/64	1-1/4	1-9/16	4000	3500	\$275.50	\$315.50
D4A-16	1	7/8	1-3/8	2-1/4	1-1/64	1-5/8	2	4000	3000		-
D4A-20	1-1/4	1-3/32	1-3/4	1-13/32	1-1/2	2-1/8	2-3/8	3000	2000	CALL F/	ACTORY
D4A-24	1-1/2	1-11/32	2-1/8	1-21/32	1-3/4	2-3/8	2-5/8	2500	1000	FOR CURRE	ENT PRICES
D4A-32	2	1-13/16	2-3/4	1-29/32	2-7/32	2-7/8	2-5/8	2500	1000		

Extruder Thermocouples for Plastic Melt Temperatures



NOTES:

- All of these standard melt thermocouples have a grounded iron/constantan (Type J) junction. Contact factory for ungrounded units and other calibrations.
- If longer than 12 inches of armor flexible leads are needed, specify length required when ordering. Add \$2.00 for each 12 inches or fraction thereof.

Flexible Design Pricing								
Part No.	Diameter"A"	Diameter"B"	Price					
COP 11	Eluch	2						
C2B-11 C2B-12	1/4	3						
C2B-13	1/2	3						
C2B-14	3/4	3						
C2B-55	1	3	\$10 00					
C2B-16	Flush	6	*40.00					
C2B-17	1/4	6						
C2B-18	1/2	6						
C2B-19	3/4	6						
C2B-20	1	6						

Rigid Design Pricing						
Part No.	Diameter"A"	Diameter"B"	Price			
C2B-1 C2B-2 C2B-3 C2B-4	Flush 1/4 1/2 3/4	3 3 3 3 3				
C2B-5 C2B-6 C2B-7	1 Flush 1/4	3 6	^{\$} 42.00			
C2B-8 C2B-9 C2B-10	1/2 3/4	6 6 6				

ANMAC's plastic melt thermocouples are designed for use in extruder heads or die adaptors of injection molding machines with the Thermocouple sensor either flush or immersed into the plastic melt. The thermowell and sensor sheath are made of stainless steel. Standard units have an ANSI Type J (iron/constantan) thermal junction electrically grounded to the thermowell. The rigid unit has a standard two-prong plug connector, the flexible design has a flexible 12-in. armored extension, plus a connector plug. Ungrounded units, duplex units or other calibrations are available. If you require the True Plastic Melt Temperature, with no conduction errors caused by the thermowell and millisecond response time, refer to these specially designed Plastic Melt Probes.



Thermocouple Assemblies with Metal Alloy Protection Tubes

ANMAC's standard assembly consists of the metal alloy protection tube with a general purpose aluminum connector head attached. The connector head has a 1/2 NPT outlet port. This unit is assembled with a Heavy Gage (#14) ungrounded thermocouple with ceramic insulators and is connected to a two-wire terminal block in the connector head. This unit can be combined with cold leg extension assembly if necessary. For special designs or requirements contact factory.





Specifica	tions and	Pricing
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Part No.	Sheath Material	Max. Sheath Length	Sheath O.D. x I.D. (inches)	Unit Price (12")	Price per add'l 6 inches
A33-10 A33-11 A33-12 A33-13	Inconel 601	60"	.540 x .364 .840 x .622 1.050 x .824 1.315 x 1.049	\$120.24 114.51 134.88 160.74	\$18.70 20.45 24.65 34.25
A33-14 A33-15 A33-16 A33-17	SS304	60"	.540 x .364 .840 x .622 1.050 x .824 1.315 x 1.049	\$87.85 89.43 90.26 95.96	\$9.05 9.05 9.50 10.80
A33-18 A33-19 A33-20 A33-21	SS446	60"	.540 x .364 .840 x .622 1.050 x .824 1.315 x 1.049	\$102.30 105.30 113.00 127.85	\$20.10 21.20 25.00 31.10
A33-22 A33-23 A33-24 A33-25	Carbon Steel	60"	.540 x .364 .840 x .622 1.050 x .824 1.315 x 1.049	\$74.65 76.75 76.85 77.95	\$6.60 7.70 8.80 9.90
A33-26 A33-27 A33-28 A33-29	Hastelloy C	60"	.540 x .364 .840 x .622 1.050 x .824 1.315 x 1.049	Contac for p	t Factory pricing

NOTES:

- Available in types J,K,E,T and N
- All units use ungrounded junctions, for grounded or exposed junctions consult factory.
- Duplex junctions are available, consult factory.
- Specify Part No. and Length when ordering.
 Ex.: A33-21-24-K
- Contact the factory for mounting hardware, or for any special design requirements.

Advanced Thermocouple Assembly for Molten Aluminum



ANMAC's NC-12 protection tube is a dense, sintered ceramic especially designed for use in many molten non-ferrous metals and corrosive chemicals. It is very strong, thermally shock resistant and dimensionally stable. Additionally NC-12 is vacuum-tight and it has high electrical resistance. Mechanical strength is retained at extremely high temperatures (over 1000C in air). These features together with very low wear resistance, makes NC-12 an ideal Thermocouple protection tube for applications such as molten aluminum, lead, tin and zinc. Preheating is not necessary because NC-12 has very low thermal expansion coefficient. NANMAC'S NC-12 Protection tubes are also recommended for use in oxidizing environments to 2200 Deg. F. Most acids, such as hydrochloric, nitric, sulphuric, and phosphoric, do not attack NC-12. This material is also resistant to hydrogen gas. It is not recommended for use with caustic solutions and hydrofluoric acid.



NOTES:

- Standard Units come with an ANSI-K Thermocouple installed.
- For duplex units or other calibrations, contact factory
- Standard support tube is 5" long stainless steel. This support tube is of universal design. It comes in either 1 inch or 1-1/4 inch NPT pipe threads (depending on length of protection tube.) wrench flats for ease of installation and can also accept flanges.
- Longer length support tubes are available, contact factory.

opcomotatione and i fioling							
Part Diameter No. "D"		Length "L"	NPT "N"	Unit Cost			
A38-1	1.0	19 1/2	1" NPT	\$745.00			
A38-2	1.0	25 1/2	1" NPT	875.00			
A38-3	1 1/4	37 1/2	1-1/4" NPT	1195.00			
A38-4	1 1/4	49 1/2	1-1/4" NPT	1688.00			
A38-5	1 1/4	56 1/2	1-1/4" NPT	2178.00			

Specifications and Pricing

Typical Test Results of NC-12 Resistance to Molten Metals

Material	deg. F	deg. C	Holding Time in Hours	Remarks
A 1	1000	007	2000	No otherali
Aluminum	1800	987	3000	NO ATTACK
Lead	752	400	144	No attack
Tin	872	300	144	No attack
Zinc	1022	850	500	No attack
Magnesium	1382	750	20	Slightly attacked
Copper	2120	1150	7	Badly attacked

Heavy Duty Protection Tubes



NOTES:

- All of these protection tubes can be made with thermocouple elements installed and in various configurations for your convenience.
- Typically, the materials shown are used for temperature below 2400 Deg F. For temperatures above this range, please contact the factory.

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Part No.	Material	I.D. x O.D. (inches)	NPT	Max length (inches)	Style	Unit Price (12" length)	Price per add'l 6"
A32-1 A32-2 A32-3	Inconel 601 Inconel 601 Inconel 601	.622 x .840 .824 x 1.050 1.049 x 1.315	1/2" 3/4" 1"	60 60 60		\$53.00 61.90 83.40	\$15.95 20.15 29.75
A32-4 A32-5 A32-6	SS304 SS304 SS304	.622 x .840 .824 x 1.050 1.049 x 1.315	1/2" 3/4" 1"	60 60 60	Plain Pipe with	\$30.80 31.50 36.65	\$4.55 5.00 6.30
A32-7 A32-8 A32-9	SS446 SS446 SS446	.622 x .840 .824 x 1.050 1.049 x 1.315	1/2" 3/4" 1"	60 60 60	THEAUS	\$55.60 66.40 77.25	\$16.70 20.45 26.60
A32-10 A32-11	Silicon Carbide Silicon Carbide	1 x 1 3/4 1 x 1 3/4	-	48 48	Plain Pipe w/Collar	\$70.50 76.00	\$13.10 13.10
A32-30	Silicon Carbide Molded to steel	059 x 2.0	1/2"	48	Pipe with	\$57.00	\$9.90
A32-31	Silicon Carbide Molded to steel	.79 x 2.0	3/4"	48	Threads	61.00	12.00

*Contact NANMAC for special design requirements, or for complete temperature sensors utilizing these protection tubes





he standard NANMAC RTD probe uses 100 ohm Pt elements with Alpha-0.00385. Sheath material is 304SS and can be either 3/16" or 1/4" diameter, and is 5 inches long. Units are available with either a standard size plug, or Teflon insulated lead wire. When ordered with a plug it will come with a three prong plug. Units with lead wire can be either 2 or 3 conductor and are available with stainless steel overbraid for added durability.



Specifications	and Pricing
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Part	Probe	Termination	SS	Price	Additional Per
No.	O.D.	Style	Overbraid		6" of Sheath
16-20	3/16	2 - Wire Leads	No	\$74.90	\$4.00
16-21	1/4		No	77.10	4.00
16-22	3/16		Yes	77.10	4.00
16-23	1/4		Yes	79.30	4.00
16-23A	1/8		No	84.00	4.00
16-23B	1/8		Yes	87.00	4.00
16-23C	1/16		No	125.00	4.00
16-23D	1/16		Yes	128.00	10.00
16-24	3/16	3 - Wire Leads	No	\$77.10	\$4.00
16-25	1/4		No	78.20	4.00
16-26	3/16		Yes	79.30	4.00
16-27	1/4		Yes	80.40	4.00
16-27A	1/8		No	87.00	4.00
16-27B	1/8		Yes	90.00	4.00
16-27C	1/16		No	128.00	4.00
16-27D	1/16		Yes	131.00	10.00
16-28 16-29 16-31A 16-31B	3/16 1/4 1/8 1/16	3 Prong Plug		\$94.70 95.80 104.60 121.70	\$4.00 4.00 4.00 10.00

NOTES:

- Various size mounting bushings are available for these units.
- Typical construction does not allow for bending, contact factory if your requirement involves bending.



he Standard probe contains an RTD assembly with a General Purpose Aluminum Head. A terminal block is mounted on the interior of the GP Head. The GP Head has 1/2" NPT threads where the probe is mounted and a 1/2" NPT conduit outlet for your wire connections. This RTD assembly is also available with a 4" long stainless steel support tube for use with ceramic sheaths and adjustable mounting fittings. The support tube is 1/8" larger in diameter than the sheath diameter.





Standard with 100 Ohm Pt

NOTES:

- Types available: 100 ohm Pt., 1000 ohm Pt., 100 ohm Ni, 120 ohm Ni.
- · List prices are for sheath lengths up to 6 inches.
- Typical construction does not allow for bending, contact factory if your requirement involves bending.
- All sensors use 2-wire leads, 3 or 4 wire assemblies are also available.
- When ordering with support tube, add suffix (-ST) to part number, and add \$25.00 to the base price.
- Standard support tube is 4 inches long, support tube can be made to most any length required. Contact the factory with any special requirement.

	Specifications and Pricing							
Part No.	Sheath Diameter	Sheath Material	Base Pricefor Initial 12 Inches of Dim. (L) or Fraction Thereof	Add To Base Price for Each Add'l 6 Inches or for Fraction Thereof				
7-1 7-2 7-3 7-4	.062 .125 .187 .250	SS304	\$139.00 109.00 109.00 109.00 109.00	\$10.00 4.00 4.00 4.00				
17-5 17-6 17-7 17-8	.062 .125 .187 .250	Inconel 600	\$139.00 109.00 109.00 109.00 109.00	\$10.00 4.00 4.00 4.00				
17-9 17-10 17-11	.187 .250 .375	Quartz	\$147.50 147.50 147.50	\$6.00 7.00 8.00				
7-12 7-13 7-14	.187 .250 .375	Al ₂ 0 ₃ -99.5%	\$164.00 164.00 164.00	\$7.00 8.00 9.00				

RTD Cable Assemblies

NOTES:

- NANMAC RTD cable assemblies feature either fiberglass (FIB) insulation rated at 700 Deg. F or Teflon (TEF) insulation rated at 400 Deg. F. Available in 2, 3 or 4 conductors. The standard plugs and jacks are rated to 400 Deg. F continuous use.
- For high temperature plugs and jacks rated to 800 Deg. F, specify by adding the suffix HT.
- Standard length (Y) is 36 inches (+/-1 inch), if your length requirement is different, specify length and adjust price accordingly. The pigtails use Teflon shrink tubing.
- Custom design units also available, contact the factory with your requirement.
- When ordering, specify part number and length.
 Ex.: A8H-RTD-31-72 specifies a 3 wire, fiberglass insulated assembly with standard plug & jack, 72 inches long.





Style	Part No.	# Of Wires	Туре	Unit Price	Add For Ht	Price / Add'l Foot
	A8H-RTD-10	2		\$44.95	\$5	\$2
	A8H-RTD-11	3	FIB	67.45	7	3
4	A8H-RTD-12	4		79.45	10	4
I	A8H-RTD-13	2		46.45	5	2
	A8H-RTD-14	3	TEF	68.95	7	3
	A8H-RTD-15	4		80.95	10	4
	A8H-RTD-20	2		\$44.95	\$5	\$2
	A8H-RTD-21	3	FIB	67.45	7	3
0	A8H-RTD-22	4		79.45	10	4
2	A8H-RTD-23	2		46.45	5	2
	A8H-RTD-24	3	TEF	68.95	7	3
	A8H-RTD-25	4		80.95	10	4
	A8H-RTD-30	2		\$46.95	\$7	\$2
	A8H-RTD-31	3	FIB	69.45	9	3
2	A8H-RTD-32	4		81.45	12	4
3	A8H-RTD-33	2		48.45	7	2
	A8H-RTD-34	3	TEF	70.95	9	3
	A8H-RTD-35	4		82.95	12	4

Standard 2-Pole and 3-Pole Connectors

rongs and inserts match ANSI calibrations to maintain sensing accuracy. Alloy and polarity are identified by symbols molded into body. Molded from glass filled thermoset compound for high strength. These connectors are color coded to ANSI calibration and can be used in ambient temperatures to 400°F continuous, and 500°F intermittent. Hi-temperature connectors are all colored RED and can be used to 800°F continuous, and 1000°F intermittent. Inserts are spring loaded collets type to assure positive full contact with the negative insert larger making it virtually impossible to mismatch.



*for type C calibration plugs or jacks, add \$3.00 to unit price



Insert thermocouple calibration: J,K,T,E,N,S,R,B,C
 Specify sizes: 0.062, 0.125, 0.187, 0.250, 0.375

3-Pole Plug, 800° F Max

3-Pole Plug, 800° F Max

Tube Adapter for 3-Pole Plug

Cable Clamp for 3-Pole Jack

11.25

13.85

2.75

1.92

F2-10-(•)

F2-11-(•)

F2-12(#)

F2-13

Miniature Plugs and Jacks





ANMAC miniature plugs and jacks provide dependable, quick and easy installation of thermocouple wires and sheaths. They accept wire from .001" diameter to 20 gauge. Polarized pins minimize mismatching. The large double wipe jacket inserts assure tight grip and positive contact. Rubber grommets are supplied with plugs and jacks. Molded from glass-filled thermoset compound for high strength. These connectors are color coded to ANSI calibration and can be used in ambient temperatures to 400°F continuous, and 500°F intermittent. Hi-temp connectors are all colored RED and can be used to 800°F continuous, and 1000°F intermittent.



Specifications and Pricing

Part No.	Description	Unit Price
F3-1-(•)	Plug, 400° F Max	\$3.10
F3-2-(•)	Plug, 400° F Max	3.80
F3-3-(•)	Plug, 800° F Max	5.10
F3-4-(•)	Plug, 800° F Max	6.40
F3-5	Mini Cable Clamp	1.87
F3-7(#)	Crimp Adapter	2.60

• = Insert thermocouple calibration: J,K,T,E,N,S,R,B,C

=Specify size: 0.062 or 0.125

NOTES:

- When ordering plugs or jacks, specify thermocouple type: J,K,E,T,S,CU (copper) or C. For type C add \$1.50 to base price
- When ordering Crimp Adaptors, specify size: 0.040", 0.062" or 0.125" as follows: F3-7-062 for 0.062 (1/16 inch) adapter

Thermocouple Extension Wire

hermocouple extension-grade wire has approximately the same thermoelectric properties as thermocouple wire but is only guaranteed accurate within a limited temperature range, typically under 400 degrees Fahrenheit. Extension grade wire is denoted with the letter "X".

When selecting insulation; moisture, abrasion, flexing, chemical attack, temperature extremes and any other adverse environmental considerations must be evaluated. Insulations are rated for a maximum continuous use temperature.*

*This use temperature is for the insulation material , not the temperature at which the thermocouple is measuring. That temperature limit is based on the thermocouple design and calibration.

Type C, E, J, K Thermocouples								
Insulation Material	CX	price/foot	E	price/foot	J	price/foot	K	price/foot
PVC over each/overall (801)		1						
rated to 175 Deg F			801EX20	\$0.468	801JX20	\$0.432	801KX20	\$0.900
PVC, shielded w/drain wire	805CX20	\$1.884		•				
(805) rated to 175 Deg F					805JX20	0.828	805KX20	0.690
Teflon FEP extruded (809)			809E30	0.432	809J30	0.360		
rated to 400 Deg F			809E24	0.432	809J24	0.432	809K24	0.540
		1			010120	0.930	809K20 010K20	1.044
Teflon TFE wrapped (810)	810CX24	1 200	810E2/	1 200	810127	0.720	010K30 810K2/	0.540
rated to 500 Deg F	0100724	1.200	810E20	1.200	810J20	0.720	810K20	1.256
Nextel braided (820) rated to							812K20	3.750
2000 Deg F				1	828 130	0.479	828K30	0.720
Fiberglass braided (828)					020000	0.415	828K28	1.155
rated to 900 Deg F			828E24	1.260	828J24	0.468	828K24	0.900
, in the second	828CX20	1.467	828E20	1.425	828J20	0.792	828K20	1.044
		Type N	I,R,S,T TI	iermocoup	les			
Insulation Material	N	price/foot	RX	price/foot	SX	price/foot	T	price/foot
PVC over each/overall (801)				40.000		40.000	801T24	\$0.360
rated to 175 Deg F	00511/00	¢0.000	801RX20	\$0.828	801SX20	\$0.828	0057/00	0.400
PVC, shielded w/drain wire	805NX20	\$0.890	805RX20	0.580	805SX20	0.580	8051X20 805TV20	0.468
		I					809T30	0.400
Teflon FEP extruded (809)			809BX24	1 200	809SX24	1 200	809T24	0.612
rated to 400 Deg F			809RX20	1.200	809SX20	1.200	809T20	0.828
Tefler TEE unerged (010)							810T30	0.540
rated to 500 Deg E	810N24	1.800	810RX24	1.200	810SX24	1.200	810T24	0.850
Taled to 500 Deg I			810RX20	1.200	810SX20	1.200	810T20	0.684
Nextel braided (820) rated to 2600 Deg F	812N20	3.750						
Fiberglass braided (828)	000104	4 5 7 7	00000/04	0.004	0000000	0.001	828T28	0.540
rated to 900 Deg F	828N24	1.577	828KX24	2.267	8285X24	2.261	828T20	0.360
			02011/20	1.100	0203720	1.100	020120	0.000

2 Wire Transmitter for Thermocouples and RTDs



NOTES:

- This non-isolated device should not be used in situations where multiple, grounded junction thermocouple signals are input into each their own transmitter, then all signals are input into the same data acquisition system. Contact the factory for these situations.
- Thermocouple Types:
- B, C (W5), E, J, K, N, R, S, and T.

RTD Ranges (3 or 4 wire connection)
 Pt100 (IEC60751, a = 0.00385)
 -200 to +1000 °C / -328 to +1832 °F

- Pt 100 (JIS1604, a = 0.003916)
 -200 to +1000 °C / -328 to +1832 °F
- Pt 100 (US, a = 0.003902)
 -200 to +1000 °C / -328 to +1832 °F
- Pt 1000 (IEC60751, a = 0.00385) -200 to +200 °C / -328 to +392 °F
- Ni 100 (DIN 43760)
 -60 to +250 °C / -76 to +482 °F
- Ni 1000 (DIN 43760)
 -100 to +150 °C / -148 to +302 °F

User Specified information (programmed by NANMAC)

- 1) Input sensor type
- 2) Cold junction (Tc only, default is 32°F / 0 °C)
- 3) Temperature scale °F or °C
- 4) Temperature range (see Temperature ranges & specifications below)
- 5) Sensor break protection: upscale or downscale

Feel free to contact the factory with any questions

ANMAC's F11-40 is a basic, non-isolated, easy-to-use 2-wire transmitter for in-head mounting in DIN B and similar heads. Reduced height simplifies mounting in low profile connection heads. Needing no external power supply other than your LOOP Power, the F11-40 can be used for 3 or 4 wire RTD's, as well as thermocouple types B, C (W5), E, J, K, N, R, S, and T. RTD inputs can be any of the following standardized RTD's such as Pt100, Pt500 and Pt1000 according to IEC 60751 (a=0.00385), Pt100 to JIS C 1604 (a=0.003916) and (a=0.003902) as well as Ni100 and Ni1000 to DIN 43760. Thermocouple input Cold Junction Compensation (CJC) is fully automatic by means of an accurate measurement of the terminal temperature. Alternatively, the CJC can be disabled upon request (see User Specified Information below).

Part Number: F11-40 Price: \$89.00

Temperature output	Fully temperature linear 4-20 mA output for RTD's and thermocouples.					
Accuracy	Linearity RTD ± 0.1 % 1) T/C ± 0.2 % 1) Calibration RTD Max. of ± 0.2 °C/ ± 0.4 °F or ± 0.1 % 1)					
Mounting and wiring	 F11-40 is designed to mount inside connection heads type DIN B or larger. The large center hole (0.28 inch / 7mm), the robust terminals and the low height simplify the mounting and wiring procedure. Maximum sensor wire resistance is 500 Ohms (total loop). The device can accept single or stranded wires, maximum size of 16 AWG. Designed for harsh conditions, this rugged device is tested for 5 g vibrations. 					
Monitoring	Sensor failure monitoring Upscale or downscale action (user specified)					
Zero adjustment:	All inputs - any value within sensor limits (user specified) Minimum spans: RTDs - 18 °F / 10 °C, thermocouples - 2 mV					
Output	Analog 4-20 mA, temperature linear Resolution 5 μ A					
Minimum output signal	Measurement/Failure 3.8 mA / 3.5 mA					
Maximum output signal	Measurement/Failure 20.5 mA / 21.6 mA					
Operating temperature	Ambient, storage and operation -40 to $+185~^\circ\text{F}$ / -40 to $+85~^\circ\text{C}$					
Diameter - 1.73 inch (44 mm) Height - 0.75 inch (~19 mm) Mounting holes - (2) 1.3 inch (33 mm) on center, 0.165 inch (~4.2 mm) th Center hole - 0.28 inch (7 mm) I.D.						
eneral data Update time ~ 1.5 second Isolation In - Out Non-isolated Humidity - 0 to 100 % RH Power supply, polarity protected Supply voltage 8 to 36 VDC 2-wire Permissible ripple 4 V p-p @ 50/60 Hz Pt10- Pt1000 Sensor current ~ 0.4 mA						
Temperature Ranges & Specifications	NOTE: By default, these devices are scaled to the limitations of the RTD or thermo- couple type selected, though they may be scaled to a user defined span. Example: Type T thermocouple has a calibrated range of (-)300 to 700 Deg F. The transmitter may be scaled to 100 to 500 Deg F upon user request. This means that the device will have a 4mA output at 100 Deg F and a 20mA output at 500 Deg.F The minimum span in any case is 100 units (Deg. F or C)					

H3 Series Digital Display and Controller

Field selectable inputs

4-20 mA, ± 10 V, Thermocouple types E, J, K, & T and PT 100 RTD inputs

- NEMA 4X, IP65 front panel
- Shallow depth case 3.6" behind panel
- 85-265 VAC universal power input
- Serial communication adapter options
- Two Form C 3 A relays option
- Selectable fail-safe operation
- Latching or non-latching
- Pump alternation control
- On & off time delays
- 24 VDC @ 200 mA supply option
- Modbus® RTU option
- 4-20 mA output option
- Dual 24 VDC supplies option





Sunlight Readable Display

- Standard feature no extra charge
- · Viewable under direct sunlight
- Mount outside or inside

Serial Communications are available

- RS-232 & RS-422/485 adapters
- RS-232 to RS-422/485 converters
- USB to RS-422/485 converters
- Data acquisition & programming

Part Number	Installed Options	Power Required	Price
	Nono	05 265 VAC	¢100
N3-PD/03-0N0-00	NOTE	00-200 VAC	\$199
H3-PD765-6R0-10	24 VDC Supply Output	85-265 VAC	239
H3-PD765-6R2-00	2 Relays	85-265 VAC	259
H3-PD765-6R2-10	2 Relays & 24 VDC Supply Output	85-265 VAC	299
H3-PD765-6R3-00	4-20 mA Output	85-265 VAC	299
H3-PD765-6R3-10	4-20 mAOutput & 24 VDC Supply Output	85-265 VAC	339
H3-PD765-6R3-20	4-20 mA Output & Dual 24 VDC Output	85-265 VAC	389
H3-PD765-7R0-00	None	12-36 VDC	249
H3-PD765-7R2-00	2 Relays	12-36 VDC	309
H3-PD765-7R3-00	4-20 mA Output	12-36 VDC	349

Accuracy and Range of Thermocouples and RTDs

	Thermocouple Type							RTD			
Range	В	С	D	E	J	K	Ν	R	S	Т	Pt100
Degrees C Degrees F	0/1700 32/3092	0/2320 32/4230	0/2320 32/4230	-200/900 -328/1652	0/750 32/1382	-200/1250 -328/2282	-270/1300 -454/2372	0/1450 32/2642	0/1450 32/2642	-200/350 -328/662	-200/850 -328/1562
Degrees C/F	F Accuracy (tolerance) is +/- the values stated below. Values are percent of temperature, unless otherwise specified										
-200/-328 -100/-148 0/32 200/392 400/752 600/1112 800/1472 1000/1832 1200/2192 1400/2552 1600/2912 1800/3272 2000/3632 2300/4172	0.5 0.5 0.5 0.5 0.5	4.5 Deg C 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	4.5 Deg C 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	1.0 1.0 0.5 0.5 0.5 0.5	0.75 0.75 0.75 0.75	2.0 2.0 0.75 0.75 0.75 0.75 0.75 0.75 0.75	2.0 2.0 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.	.25 .25 .25 .25 .25 .25 .25 .25 .25	.25 .25 .25 .25 .25 .25 .25 .25 .25	1.5 1.5 1.5 1.0 1.0	0.65 0.8 0.3 0.55 0.55 0.55 0.55

Temperature Range And Accuracy Tolerance Of Commonly Used Thermocouples & RTDs

Resistance Temperature Detectors

Il metals will change in resistance when subjected to a temperature change. This relationship can be predicted by use of a constant (alpha)—the temperature coefficient of resistance. No two different metals have the same alpha and if the properties of the metal are known, a resistance vs. temperature curve may be established which can be accurately duplicated.

A metal's alpha may be changed by alloying it with another material or by mechanically stressing it. Thus, only a few materials are used for resistance temperature detectors (RTD). Other factors which limit the use of some metals and alloys as RTDs include: low electrical resistance, difficulty in forming coils, availability in the pure state, linearity of resistance vs. temperature curve, long-term drift and stability characteristics, resistance to contamination and chemical attack, etc. When all of these factors are considered, the most commonly used materials for RTDs are platinum and nickel. On special applications, tungsten and copper are also used.

The sensing element of a RTD may consist of a coil, foil or thin film deposited material. This sensing element may be wound or deposited onto a suitable insulating core and then encapsulated with an insulating material. RTD extension leads may be of any convenient material (typically copper wire with insulation requirements to suit the environment of use) provided all leads are of the same material. The number of extension wires can consist of two, three or four wires. Two extension leads are used where the lead wire resistance is not very important. Higher accuracy is achieved if three wires are used, the third wire compensating for the lead wire resistance. Four leads are typically used only with dual element RTDs.

An RTD system consists of the sensor, lead wire and an instrument/readout device. This system is balanced at some convenient reference temperature (usually 68° F) before the sensor is exposed to the temperature of the test item. When the sensor is heated (or cooled), the bridge circuit is unbalanced by an amount directly proportional to the temperature of the test item.

NOTES:

- Values are in an accordance with NIST Monograph 175, Revised to ITS 90.
- · Accuracy Values for Pt100 RTD are "not to exceed values".
- All values shown are for Standard Limits of Error a.k.a. Class B Limits.

Certified Calibration Services

ANMAC calibration procedure is done in accordance with the ASTM International test method designated E220-02 Standard Test Method for Calibration of Thermocouples By Comparison Techniques. All test standards used in our laboratory are traceable to the National Institute of Standards and Technology (NIST).

In addition to temperature calibration, NANMAC offers certified vacuum testing to 10-7 Torr, and hydrostatic pressure testing to 25,000 PSI. Also, in cases where exact thermocouple junction location is critical, NANMAC can provide X-ray photos of your unique sensor. Please contact the factory for information on any of these services.

Nanmac's calibration laboratory will calibrate and certify bare or insulated thermocouple wire, thermocouple assemblies built by Nanmac, as well as temperature sensors that you may already have.







Series 1 Calibration - Up to 2192 Deg F

Temperature range	300 to 2192 F / 150 to 1200 C
Length	Sheath or probe length as short as eight inch- es up to 96 inches (21cm to 252cm)
Diameter	Maximum sheath or probe diameter is 1/2 inch (note 1)

Series 2 Calibration - Up to 2950 Deg F

Temperature range	575 to 2950 F / 330 to 1620 C				
Length	Sheath or probe length as short as 18 inches up to 96 inches (48 cm to 252cm)				
Diameter	Maximum sheath or probe diameter is one inch (note 1)				

- In some cases the sheath material may require a secondary protection tube to be used during the calibration process. This secondary tube is installed by Nanmac Corporation and will be removed prior to sending the sensor to the customer. This tube in no way effects the sensor and is only used during the calibration process. If a secondary tube is required, this must be accounted for in the maximum diameter. Typically, the secondary tube is 1/4 inch larger in diameter than the test item.
- 2. The capabilities shown here are for standard type devices. The NANMAC lab can accommodate various other configurations too numerous for listing here. If you require a special calibration, please contact the factory with your special requirement.
- 3. Sensor types: Thermocouples B, C, D, E, G, J, K, N, PT-II, R, S and T.
- 4. Data format: Calibration data format can be supplied in either degrees F or C, or millivolt.
- 5. Pricing varies greatly based on the following factors: Number of sensors being calibrated, number of temperature points you require, minimum and maximum temperature points, thermocouple configuration and design. For a prompt proposal on your particular certified calibration or if you have questions on calibration, please contact the factory. Be sure to include the aforementioned information.

Terms & Conditions of Sale

PRICES: Prices are those in effect at time of order, prices are subject to change without notice. Quoted prices and discounts apply only to the specific quantities of items or specific services stated and do not include any taxes, transportation charges, special packaging or labeling or other miscellaneous items or services not specified. Prices are subject to corrections for errors. When so stated on the quotation, prices invoiced will be those in effect at the time of shipment.

TAXES: The amount of tax or government charges upon the production, sale shipment and/or use of goods sold hereunder, now imposed by any governmental authority or hereafter becoming effective shall be added to the prices herein provided, and shall be paid by the buyer.

PAYMENT TERMS: Payment terms are net cash 30 days from the date of the invoice once an open account has been established through the Seller's credit application process, or Visa or MasterCard at the time of order, or C.O.D., unless otherwise stated in a quotation or agreed to in writing by both the Seller and Buyer. Buyer agrees to pay a late payment charge of 1-1/2% per month on any amount or balance owed for more than 30 days. Buyer also agrees to pay all charges, fees and legal fees in addition to the aforementioned late charge arising out of the Seller's efforts to collect any amount or balance owed.

DELIVERY: All shipment dates quoted are after receipt and acceptance of order, unless otherwise specified. The Seller shall not be liable for delays, losses or failures of performance caused by fires, explosions, floods, other actions of the elements, strikes or other labor disputes from whatever cause arising, embargoes, riots, accidents, acts of public enemies, and/or rules, regulations, orders or acts of government, delays of carriers, lack of transportation facilities, shortages of available fuel or other sources of energy, or of basic raw materials or any other causes beyond the reasonable control of Seller. the Seller shall not in any event be liable for consequential or special damages arising out of delay due to any cuase or for failure to give notice of any delay.

SHIPMENT: All shipments will be made F.O.B. place of shipment unless otherwise specified or agreed to by the Seller. In the absence of specific instructions, the Seller will select the carrier. Title to the material and risk of loss shall pass to the Buyer upon delivery thereof by the Seller to the carrier or delivery service. All packages will be shipped insured for full product value unless specified otherwise in writing by the customer at the time of order. In the event that something is damaged in shipment, it is up to the customer/receiving party to initiate a damage claim with the carrier within 48 hours. Damaged items should be immediately repackaged in the original packaging exactly as the customer/receiving party received them.

SHORTAGES: Claims against Seller for shortages in the amount shipped must be made within seven (7) days after arrival of shipment.

RETURNS: Most items are made to order; therefore, it is up to the Seller's discretion to accept any item for return. No returns will be accepted without seller's prior authorization. All authorized returns are subject to a restocking charge.

VARIATION IN QUANTITY: On orders for Insulated Wire, cable, mineral insulated wire, or bare wire, Seller reserves the right to ship, and invoice accordingly, plus or minus ten percent (10%) of the total amount ordered.

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WARRANTY: Any liability of Seller resulting from any defect in workmanship or material in the product covered by this document shall be limited to and fully dischared by replacement or repair or such item at Seller's option without charge. The warranty provided in this cluase is in lieu of all other warraties, express or implied, arising by law or otherwise, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, and shall not be modified except by an arrangement signed by both parties specifically referencing this clause. In no event shall Seller be liable for consequential damages or extend beyond the repair or replacement of the defective purchased items. the Buyer must give notice of any defect in workmanship or material to the Seller within seven (7) days after delivery to Buyer. In the event the Buyer fails to give notice within the specified period, the Seller will be relieved of all liability hereunder and Buyer agrees to accept goods as is. Any action for breach of this warranty or other action arising out of this contract must be commenced within one year after delivery.

ACCEPTANCE: Quoted prices will remain firm for thirty (30) days from the date of quotation and are contingent upon the acceptance of all terms and conditions listed herein, unless otherwise stated in the quotation. All orders are subject to review and final acceptance by the Seller at its home office in Framingham, MA - USA.

CANCELLATIONS: Seller's acceptance of order cancellation or order reduction requests is conditioned upon receiving buyer's written agreement to assume Seller specified termination charges and/or price adjustments. As most items are made to order, once an order has been placed and processed it canot be cancelled. Items cannot be returned; there is no provision in the seller's terms for restocking any items.

CHANGES: Seller may from time to time change their terms and conditions of sale. By agreeing to these terms and conditions, Buyer agrees to changes that may occur from time to time. Any changes to terms and conditions will be available to Buyer upon request and are not broadcast, printed or sent to Buyer as a matter of course.

USE & PERFORMANCE: The determination as to the performance and/or adaptability of any of the Seller's products or materials to the specific needs and requirements of the purchaser is solely the purchaser's responsibility. The seller's engineering department will gladly offer suggestions and provide physical and electrical characteristics of commonly used materials, as they are available.



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NOTES



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