

Conax Buffalo thermocouple assemblies represent the culmination of 50 years experience in the design and manufacture of temperature sensors. Conax Buffalo thermocouple designs have proven their durability and reliability in applications ranging from large industrial processing plants to highly specialized laboratory testing and validation. Our extensive knowledge of the science of temperature measurement and the physical properties of materials used for sheathing and insulation enables our sales engineers to recommend the most effective solutions to your application needs.

Conax Buffalo thermocouple assemblies offer a wide variety of termination styles and mounting fittings, as well as extensive

choices in sensor calibration, sheath diameter and sheath material. This section outlines the key choices needed to specify the correct Conax Buffalo part description for your needs. In each case, you will be asked to select the:

- sensor calibration
- sheath material and size
- tip configuration
- termination style
- optional mounting configuration
- sheath length

If at any time you require assistance, call 1-800-223-2389 or your local Conax sales representative.

Thermocouple Types

Choose the thermocouple type from the temperature range table below. Minimum requirements for all Conax Buffalo thermocouples are standard limits of error, denoted by a

single letter (eg. J). Special limits of error are also available above 32° F (0° C) and are designated by a double calibration letter (eg. JJ).

ANSI/ASME Designation	Calibration	Service Temperatures (Bare/Exposed Wire*)	Remarks
J	Iron vs. Constantan	32° F to 1400° F (0° C to 760° C)	For use in reducing atmospheres. Iron may oxidize if unprotected in oxidizing atmospheres. Limited use possible in oxidizing atmospheres at high temperatures; not recommended at low temperatures.
K	Chromel® vs. Alumel®	-328° F to 2300° F (-200° C to 1260° C)	For use in oxidizing atmospheres. Not recommended for reducing atmospheres.
E	Chromel vs. Constantan	-328° F to 1600° F (-200° C to 870° C)	Good for use in oxidizing atmospheres. Highest EMF output of the common thermocouples.
T	Copper vs. Constantan	-328° F to 700° F (-200° C to 370° C)	For use in oxidizing, reducing and inert atmospheres. Capable of cryogenic temperature service. Good where moisture is present.
N	Nicrosil vs. Nisil	32° F to 2300° F (0° C to 1260° C)	Less affected by the order/disorder transformation that causes calibration shifts in Type K. For use in oxidizing atmospheres.
S	Platinum-10% Rhodium vs. Platinum	32° F to 2700° F (0° C to 1480° C)	For use in oxidizing atmospheres. Alumina protection tubes are recommended to resist contamination at elevated temperatures.
R	Platinum-13% Rhodium vs. Platinum	32° F to 2700° F (0° C to 1480° C)	For use in oxidizing atmospheres. Alumina protection tubes are recommended to resist contamination at elevated temperatures.
B	Platinum-30% Rhodium vs. Platinum-6% Rhodium	1600° F to 3100° F (870° C to 1700° C)	For use in oxidizing, inert or vacuum atmospheres. Alumina protection tubes are recommended to resist contamination at elevated temperatures.
C	Tungsten-5% Rhenium vs. Tungsten-26% Rhenium	32° F to 4200° F (0° C to 2315° C)	For use in hydrogen, inert or vacuum atmospheres.

- Supplied environment data for bare or exposed wire, less protective sheath.
 - For more technical and ordering information on Type S, R, B & C assemblies, request Conax High Temperature Thermocouples Bulletin 6008.
 - Type C not available in special limits of error.

Sheath Materials and Sizes

Catalog Code	Sheath Diameter	Sheath Wall Thickness	Wire Gauge	Sheath Material	Upper Service Temperature	Melting Point	Remarks
SS4	0.040	0.004 to 0.005	34-35	304 SST (standard stocked probe sheath material available in all sizes)	1650° F (900° C)	2600° F (1430° C)	Standard, most economical sheath material. Resists oxidation to 1650° F (900° C).
SS6	0.062	0.006 to 0.008	30-31				
SS12	0.125	0.012 to 0.015	24-25				
SS18	0.187	0.019 to 0.023	20-21				
SS25	0.250	0.025 to 0.030	18-19				
SS37	0.375	0.037 to 0.045	14-15				
310SS		Consult Factory		310 SST	2000° F (1090° C)	2600° F (1430° C)	Excellent resistance to oxidizing and carburizing atmospheres.
316SS4	0.040	0.004 to 0.005	34-35	316 SST (stocked probe sheath material available in all sizes)	1650° F (900° C)	2600° F (1430° C)	Good weldability. Resistant to carbide precipitation.
316SS6	0.062	0.006 to 0.008	30-31				
316SS12	0.125	0.012 to 0.015	24-25				
316SS18	0.187	0.019 to 0.023	20-21				
316SS25	0.250	0.025 to 0.030	18-19				
316SS37	0.375	0.037 to 0.045	14-15				
321SS		Consult Factory		321 SST	1650° F (900° C)	2570° F (1410° C)	Excellent resistance to intergranular corrosion. Immune to organic chemical attack.
INC4	0.040	0.004 to 0.005	34-35	INCONEL 600 (standard stocked probe sheath material available in all sizes)	2100° F (1150° C)	2525° F (1390° C)	Excellent resistance to stress corrosion cracking. Used in chemical and aircraft industries.
INC6	0.062	0.006 to 0.008	30-31				
INC12	0.125	0.012 to 0.015	24-25				
INC18	0.187	0.019 to 0.023	20-21				
INC25	0.250	0.025 to 0.030	18-19				
INC37	0.375	0.037 to 0.045	14-15				
188HN		Consult Factory		HAYNES 188	2100° F (1150° C)	2400° F (1315° C)	Excellent high temperature strength and oxidation resistance to 2100° F (1150° C).
214HN		Consult Factory		HAYNES 214	2200° F (1200° C)	2475° F (1360° C)	Excellent oxidation, carbonization and chlorination resistance.
230HN		Consult Factory		HAYNES 230	2100° F (1150° C)	2440° F (1340° C)	Excellent high temperature strength and oxidation resistance to 2100° F (1150° C). Excellent resistance to nitriding environments.
HC		Consult Factory		HASTELLOY C	2000° F (1090° C)	2380° F (1300° C)	Excellent corrosion resistance to 2000° F (1090° C). Good chlorine resistance.
HX		Consult Factory		HASTELLOY X	2200° F (1200° C)	2380° F (1300° C)	Good strength to 2200° F (1200° C). Used as sheath material in aircraft industries.
TI12	0.125	0.017 to 0.023	22-24	TITANIUM	2000° F (1090° C)	3035° F (1670° C)	Resistant to acid and chemical attack. Primary uses in aircraft applications.
TA6	0.062	0.008 to 0.012	29-30	TANTALUM	4500° F (2480° C)	5425° F (3000° C)	Resistant to acids and liquid metals, except for fuming sulphuric and hydrochloric. Subject to hydrogen and nitrogen embrittlement. Limited to 500° F (260° C) in air or oxidizing atmospheres.
TA12	0.125	0.017 to 0.023	22-24				
TA18	0.187	0.025 to 0.031	19-20				
TA25	0.250	0.035 to 0.041	17-18				
PLT4	0.040	0.004 to 0.005	34-35				
PLT6	0.062	0.006 to 0.008	30-31				
PLT12	0.125	0.012 to 0.015	24-25	PLATINUM-10% RHODIUM	3200° F (1760° C)	3360° F (1850° C)	Stronger than pure platinum. Excellent in oxidizing atmospheres.

Note: Information provided is for 2-wire material only. For 4-wire and 6-wire material, consult factory.



For more information call: 1-800-223-2389 • e-mail: conaxbuf@conaxbuffalo.com • visit our website: www.conaxbuffalo.com



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