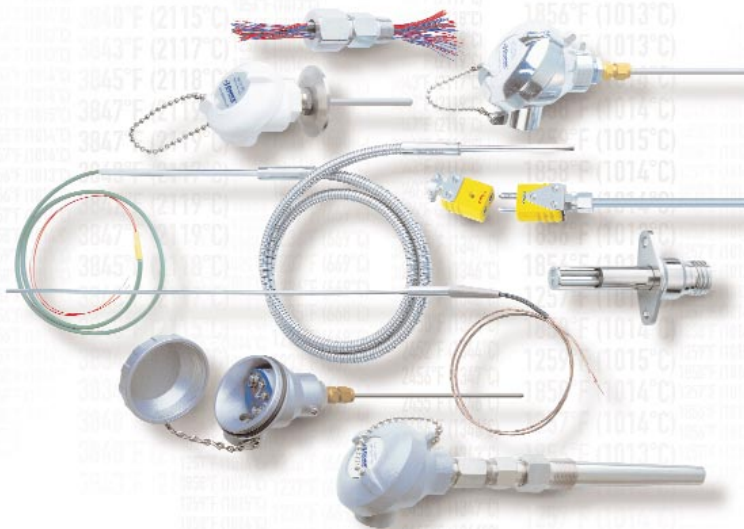

TEMPERATURE SENSORS & ASSEMBLIES



 **Conax**
Buffalo Technologies

PHARMACEUTICAL AND FOOD INDUSTRY APPLICATIONS

Conax Buffalo delivers exactly what you need for your temperature sensor applications. Conax Buffalo is the industry leader in the custom design and fabrication of temperature sensor assemblies for a wide variety of industries and uses. We are committed to providing the finest quality temperature sensors, at an affordable price, with an easy ordering system to speed delivery of our product.

Conax Buffalo offers an extensive selection of sensor calibrations, sheath materials, termination types, assembly configurations and mounting styles to create the ideal assembly for your requirements. Every Conax sensor delivers rugged, reliable service with accurate, precision performance.

1. T13 Head: The T13 Termination Head is an FDA-compliant RTD and thermocouple termination head for sanitary, corrosive or general purpose applications. Molded of white, unpigmented polypropylene with an epichlorohydrin, non-asbestos gasket and stainless steel chain and pins, the T13 meets NEMA 4 requirements for indoor or outdoor non-hazardous applications. The head protects against dust, rain, splashing water and hose-directed water and provides good resistance to most acid solutions, alkalines and salt water. It provides a 6-post termination. Shown with sanitary endcap.

2. High-Density (HD), Mechanically Sealed and TG Gland with 24 AWG Wire-Feedthrough Assemblies: The high-density assembly consists of a stainless steel tube swaged over 24 bundled, Teflon[®]-coated thermocouple wires, with or without junctions, and/or copper wires, providing a continuous wire feedthrough for thermocouples, RTDs and low voltage

instrumentation. These assemblies are available in single (24-wire) or multiple (up to 96-wire) configurations. Conax Buffalo TG "soft seal" glands for pressure or vacuum sealing of wire transducers incorporate 24-gauge Teflon[®]-insulated wires. These provide multiple insulated wires for chamber profiling and high accuracy applications.

3. Sterimaster[™] Chamber/Load Sensor Assembly: Specifically designed for the extreme environmental conditions found in pharmaceutical autoclave chambers, the Sterimaster[™] Chamber/Load Sensor withstands the leakage of steam/condensate into the sensor and offers a higher reliability than previously attainable with any sensor apparatus. The sensor assembly is available with a Conax Buffalo sealing gland assembly that withstands the extreme environment, and its rugged design stands up to frequent operator handling. It is available in RTD and thermocouple configurations.



RTD & THERMOCOUPLE ASSEMBLIES FOR INDUSTRY

COMMON MOUNTING STYLES:

Direct-mount - Male threads screw directly into the vessel, securing the sensor assembly. Multiple mounting configurations are shown.

PG Series Packing Glands (PG) - Single bore compression sealing glands of stainless steel construction include a "soft sealant" that allows adjustable immersion, securing of probe, and environment sealing.

Midlock Fitting (MK) - This all stainless steel assembly is used for gas or liquid sealing and may be opened and resealed at a fixed immersion depth.

W-Fitting (W) - A stainless steel fitting is brazed or welded to the probe for a rugged leak-tight mounting.

Nipple-Union-Nipple Configuration (NUN) - This configuration allows the terminal head to be positioned for easy assembly and alignment with conduit. Optional spring-loaded nipple is supplied for use with thermowell assemblies.

Thermowells (T/W) are available in varying configurations in stainless steel, alumina oxide (Al₂O₃) or brass for additional protection of your sensor assembly.

A weld pad (F) can be provided to allow easy welding of a sensor hot junction directly to a pipe or other surface.

Adjustable fittings may be installed onto any terminal/probe assembly, allowing probe adjustment and environmental sealing.

TERMINATION HEADS:

1. T7 Terminal Box: The weatherproof gasketed aluminum T7 terminal box can accommodate up to 40 terminals and is ideal for multiple probe or extra long thermocouple assemblies.

2. T11 Screw Cover Head: The T11 termination provides a screw cover with chain leash and a 6-post terminal block. The T11 is available in cast aluminum (AL) or plastic (PL). An optional spring loaded assembly allows

complete disassembly and removal of the sensor probe without dismantling the terminal head from the conduit or vessel.

3. T8E Explosion-Proof Head (CSA/NRTL/C & UL): T8E assemblies can be supplied to meet CSA/NRTL/C standards with UL terminations for use in hazardous locations.

4. T8E Explosion-Proof Head (NEMA 7): The T8E explosion-proof head features a gray iron body with an aluminum screw cover. It accommodates up to 8 leads. This termination meets NEMA 7 requirements.

5. T5 Terminal Head (NEMA 4): The T5 (°O°-ring sealed) is a highly versatile NEMA 4-rated head featuring 6 terminal posts. It is available in aluminum, cast iron and stainless steel.

6. T8 Screw Cover Head: The T8 is our standard, weatherproof cast iron, gasket-sealed screw cover head with black epoxy-coated (E-COAT) exterior for corrosion prevention. This head accepts up to 8 leads.



7. T12 Camlock Head: The T12 features an easy-to-open globe design with camlock. A simple flick of the lock provides easy access to this weatherproof aluminum head. The T12 accepts up to 4 leads.

8. P4 Miniature Plastic Head: Miniature, weatherproof terminal head for corrosive environment applications provides 4 terminals.

9. Roll Temp Assemblies: Roll Temp assemblies are ideal for sensing surface temperature on drums, rollers or other moving surfaces. These are designed to detect temperature variations in continuous process applications for relative temperature measurement. These include high temperature assemblies (HTRT), sliding contact assemblies (RT) and high-speed assemblies (HSRT).



T SERIES TERMINATION STYLES

Conax Buffalo offers a number of sensor termination styles. The **T1** basic configuration features a standard 1-inch bare wire lead, with ISA-designated color-coded Teflon®-sleeves. The probe end is impregnated with silicone compound to prevent liquid or gas penetration. The **T2**

configuration features a silicone-impregnated glass braid insulation combination swaged approximately 3/4-inch into the sheath. The **T3** is epoxy-filled, with an exclusive Conax Buffalo strain harness design providing a practically unbreakable connection between the lead wire and probe lead.

The **T4** adds a stainless steel overbraid to the T3 configuration. This protects lead wires and offers maximum flexibility and resistance to abrasion. The T2, T3 and T4 terminations feature a standard lead wire length of 24 inches with longer leads available on request.



PLUG AND JACK ASSEMBLIES

The PJ Series of polarized plug and jack assemblies are made of molded, glass-filled thermoset compounds with contacts made of thermocouple alloys. They are available as male only (PJ) female only (PF), male/female assemblies (PJF) and male/female assemblies with cable clamp (PJFC). High temperature assemblies are available for applications above 400F.

1. Dual Plug & Jack assemblies offer four-wire configuration.

2. 3-Prong versions are available for RTD assemblies.

3. Miniature Plug & Jack assemblies are ideal for laboratory use.



ADDITIONAL TERMINATION STYLES

1. Pipe Clamps: Stainless steel Pipe Clamp assemblies are available for use with all Conax Buffalo probes for accurate reading of outside pipe temperatures. They can be used with any terminal head or with wire alone.

2. Type B Terminations: Compact, lightweight Type B heads make terminating probes easy and convenient. Available in 2-, 3- and 4-wire post configurations, these corrosion-resistant heads offer easy and convenient hookup of customer's extension wire. An "O" ring seal prevents moisture intrusion.

3. Type C Terminations: C Series terminations provide a convenient, compact method to terminate one or more sensors within a single probe. Screw posts securely fasten lead wires in position. Metal parts are stainless steel, with black anodized aluminum covers.

4. Type D Terminations: The Type D disc-type terminations feature a stainless steel base brazed to the sensor sheath. The terminal block uses an exclusive Conax Buffalo design with up to 6 barrier-type terminals on a ceramic block.

5. Basic Sensor: Conax Buffalo supplies the most basic sensor configuration, consisting of thermocouple wire surrounded with hard-fired alumina oxide (Al₂O₃) insulators. A one-inch lead termination is provided.



SENSOR ACCESSORIES

SIGNAL CONDITIONERS:

Conax Buffalo offers multiple types of temperature transmitters, including:

1. The Model HPTI is a small, 4-20 mA output, isolated 2-wire transmitter for RTD or thermocouple sensors. This will fit into any T5, T11 or T12 series terminal head.

2. The Model PTH-400 is a small, PC-programmable, 2-wire transmitter with a state-of-the-art microprocessor-based design. This is fully configurable with simple, user-friendly software.

3. The Model HST HART® Smart isolated 2-wire transmitter features universal input capability to accept most of today's process parameters, including thermocouples, RTDs, DCmV, potentiometers, resistance sensors, DCmA, DCA, AC amps, frequency and pulse. It is fully software driven and programmable.

4. The Model DRT2-RTD and DRT4-RTD are compact, DIN rail-mounted transmitters for 2-, 3- and 4-wire RTD sensors. The output is linear with respect to the sensor's temperature. The 4-wire input circuitry provides near-perfect compensation for the effect of long leadwire resistance. These units are powered by a standard industrial-loop power supply and provide a 4-20mA output on a 2-wire transmitter system (DRT2-RTD) or any standard current or voltage output on a 4-wire system (DRT4-RTD).

5. Conax Buffalo Con-O-Clad®: Conax Buffalo produces in-house our exclusive mineral insulated (MgO) Con-O-Clad bulk material for single and multiple pair wires. This is available in all ISA base metal calibrations for thermocouples in sizes from 0.040 to 0.375 inch diameters. Other non-standard material combinations can be furnished for special requirements.

6. Thermocouple Extension Wire:

Conax supplies bulk wire in a variety of insulation materials and ISA calibrations for use in various environments, including indoor, outdoor, corrosive, non-corrosive and electrical noise areas.

7. Conax Pressure and Vacuum Sealing Assemblies: Conax manufactures a complete line of pressure/vacuum compression sealing glands for wires and probes. In addition to our wide range of standard products, virtually unlimited customized designs are available.

All designs feature Conax-developed "soft sealant" technology that provides unequalled adaptability to meet the application needs of any industry.



CUSTOM ASSEMBLIES

Conax Buffalo can custom engineer special sensors, mountings and assemblies for virtually any application, with nearly limitless combinations of termination styles, mounting methods and sealing assemblies. Here are just a few examples of Conax Buffalo special assemblies:

1. Thermocouple assembly is ruggedized for high impact applications with a sheath bend, armor cable and heavy-duty spring-load bayonet mounting.
2. A sensor is embedded in a bolt-down ring-tongue connector for monitoring surface temperature. The connection style provides secure mounting.
3. This thermocouple features a flattened, contoured and bent oversheath to match the contour of a copier drum. It is used by service technicians to test the operating temperature of the drum.
4. Integral sheath to mounting/leadwire terminal in a sealed sensor assembly features a Teflon-insulated wire with stainless steel braid covering for service in a hostile manufacturing environment.
5. This small, screw-in RTD sensor has a low mass for exceptionally fast response.
6. This large-diameter, reduced-tip RTD assembly provides fast response and maximum rigidity.
7. Thermistor assembly features a unique Conax Buffalo capability - molding the connector to the protected leads to form a completely waterproof assembly. In this case, a bolt-in thermistor achieves positive contact with the element whose temperature must be accurately sensed.
8. High-density thermocouple feedthrough assembly with high-vacuum flange mount permits 24 conductors (12 thermocouples) into a restricted port.
9. Fixed-position temperature sensor with silicone-sheathed leads and multi-pin connector is tightly sealed for a food process application and associated washdown environment.
10. An inert-gas backfilled, sealed tungsten-rhenium sensor is used for high temperature applications. The assembly features three sensors at discrete locations and is used for thermal profiling. Its sheath is tube-formed for ease of positioning and installation.
11. This multiple pair thermocouple (2 pair shown) features a sealed sensor and six-pin connector assembly designed for high vibration, high humidity and high reliability. The sheath and cable length can be varied depending on the application.
12. A simple T1 termination sensor features a Teflon®-coated oversheath to protect against acid corrosion.
13. A high-temperature platinum wire thermocouple assembly includes a sheath probe with a plug-in jack.



SPECIAL APPLICATION ASSEMBLIES

Conax Buffalo is leading the way in the development of engineered solutions for today's challenging applications. Our technical design and development staff has set engineering standards in traditional temperature sensing applications for years. Today, they put this temperature engineering expertise to work to develop effective solutions to the temperature sensing challenges of new industries and applications. If you are facing a tough challenge, call on the Conax Buffalo team for an innovative solution to your special application needs.



THE EXPERIENCE AND INGENUITY TO MEET ANY APPLICATION REQUIREMENTS...

The examples shown in this brochure represent just a sampling of what Conax Buffalo can do for you. Today we manufacture more than 100,000 standard assemblies in our state-of-the-art production facilities.

In most cases, our wide variety of off-the-shelf products can be combined to meet the needs of your application.

For those truly unique requirements, our engineers are standing by to put more than 40 years of experience to work designing the



perfect solution for your application. Many of our custom designs have now become industry standards.

Our knowledgeable, experienced staff would welcome the opportunity to discuss your application and recommend solutions.

Call Conax Buffalo today at 1-800-223-2389!



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