Temperature Sensors and Seals

for the Fuel Cell Industry

Conax™ TECHNOLOGIES

Ideas. Solutions. Success.

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At the forefront of innovation

Fuel cell technology plays a vital role in helping to build a cleaner and more sustainable world for future generations. Conax Technologies is dedicated to supporting the rapidly advancing fuel cell industry with effective and reliable means of temperature measurement and pressure/vacuum sealing.

Conax high-performance solutions are used both within the fuel cell stack and in the balance of the plant, including energy storage systems, to improve efficiency and profitability. And fuel cell developers rely on Conax solutions to help get their products to market faster.

As a key component supplier to the power industry, we understand your need for accurate temperature measurement in energy production. We offer standard and customized thermocouples, RTDs and thermistors designed to meet your precise needs and withstand challenging environments, such as corrosive gases and acidic electrolyte.

Conax also manufactures a complete line of pressure/vacuum sealing devices that feature the "soft sealant" technology pioneered by Conax. We remain the leading manufacturer of this type of sealing device for wires, electrodes and probes, providing solutions that maintain the containment barrier and provide environmental protection for workers, equipment and the environment.

Our engineers welcome the opportunity to discuss and develop solutions to challenging applications.

If you don't see the exact product you need, please contact us or visit our website.

Temperature measurement devices for critical applications

Conax temperature sensors provide accurate temperature measurement in temperatures ranging from subzero to 4200° F (2315° C). Whether measuring process temperatures within the fuel cell stack or in the balance of plant, Conax RTD and thermocouple sensor assemblies ensure the accurate measurement needed for maximum operating efficiency.

RTD and thermocouple assemblies

RTD assemblies can be provided with a wide variety of termination styles and mounting fittings to meet the needs of your application. Conax Technologies also offers numerous sensor tolerances, sheath diameters, and sheath materials.

Conax manufactures thermocouples in a wide range of assemblies, with an emphasis on reliable measurement devices that withstand challenging environments.

ISO/IEC 17025:2017 accredited and AMS 2750 compliant calibration lab

With a calibration laboratory that is ISO/IEC 17025:2017 accredited and ILAC MRA certified, Conax is fully capable of producing calibration data that's compliant with the latest AMS 2750F standards. ISO/IEC 17025:2017 sets the national standard of excellence for the competence of testing and calibration laboratories and recognizes Conax as fully competent to produce valid and reliable results.

Conax Technologies' commitment to quality

Quality fuel cells rely on quality component parts. Conax Technologies is committed to providing the fuel cell industry with the highest quality products, fast turnaround and on-time delivery. Here are a few reasons why top researchers, fuel cell manufacturers and manufacturers of hydrogen reformers are using Conax Technologies products:

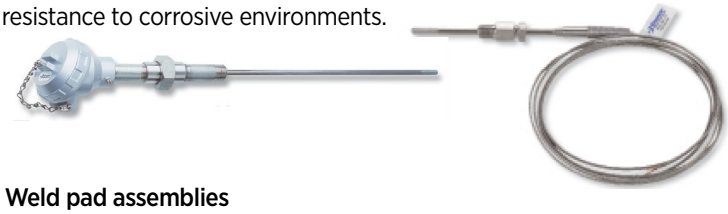
- **AS9100D with ISO 9001:2015**
- **Metrology laboratory to NIST standards**
- **Pressure test capabilities to 100,000 psi**
- **Leak test by helium mass spectrometer**
- **Vibration test – Unholtz Dickie**

Sensor termination styles

Conax RTD and thermocouple assemblies can be supplied with a wide variety of termination styles to meet your application needs. (A plug and jack termination style is shown below.)

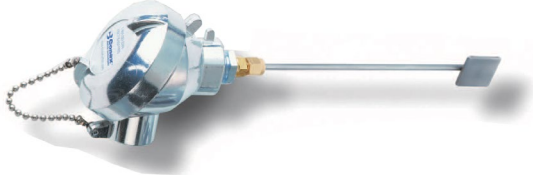
Sensor assemblies for environmental challenges

Conax sensor assemblies can be provided with various sheath materials to meet environmental challenges. The assembly shown below features a 310SST sheath for corrosion resistance and a stainless steel overbraid for physical protection of leadwires. Support tube with adjustable mounting fitting and alumina oxide tubewell on this thermocouple assembly provides exceptional resistance to corrosive environments.



Weld pad assemblies

Weld pad assemblies facilitate surface temperature measurement. Pads are provided in various configurations to meet application needs.

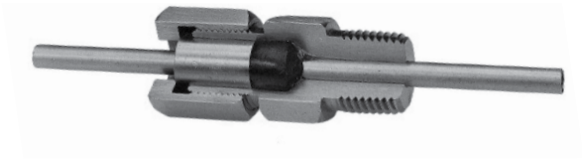


Fittings and feedthroughs for vacuum and pressure sealing

Conax feedthroughs are used whenever probes, electrodes, wires or sensors pass through a pressure or environmental boundary. They serve as mounting devices and/or environmental seals. The compression of the soft sealant creates a seal on the element, restraining it from moving under pressure or vacuum and barring movement of gas or liquids along the element. In most cases, the sealants are replaceable and the seal fitting can be loosened and retorqued to allow adjustment in immersion length. Compression seal fitting assemblies can be customized with special mountings, threads and materials of construction to meet your unique needs.

Tube or probe sealing

Conax PG compression seal fittings are ideal for sealing temperature probes, tubing and cable. They're easy to assemble and allow probe re-adjustment. Midlock seal fittings (MK) use a stainless steel ferrule as the method of sealing.

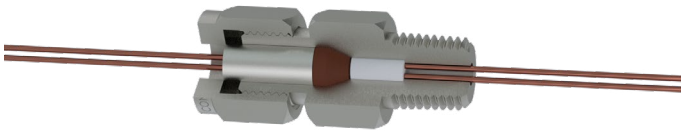


Split seal fittings facilitate installation and maintenance

SPGA multi-hole split compression seal fittings are used when the process tip is larger than the diameter of the wire or element to be sealed, or in applications where the elements are long and difficult to handle.

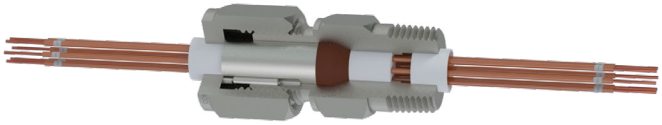
Multiple tube or probe sealing

Multi-hole ceramic (MHC) and multi-hole metal (MHM) compression seal fittings allow multiple tubes, probes or sensors of varying diameters to pass through a single fitting. Probes can be electrically isolated, and immersion lengths are individually adjustable.



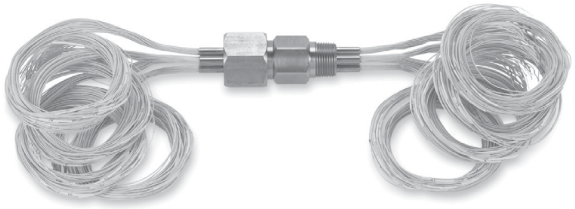
Insulated power lead feedthrough

PL compression seal feedthroughs feature Kapton®-insulated copper wire in wire gauges from 26-6 AWG. These are ideal to feed power leads to instrumentation. Also available with 18 AWG thermocouple wire.



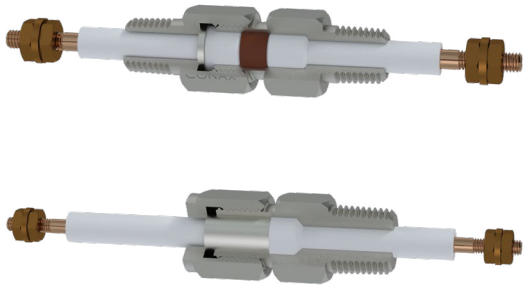
High-density feedthroughs

Conax high-density (HD) mechanically sealed feedthrough assemblies permit multiple insulated wires to be installed through a single port. The assembly consists of a stainless steel tube swaged over bundled insulated thermocouple wires or copper wires to form a continuous wire feedthrough. Up to 60 wires (30 thermocouple pairs) can pass through a PG-style feedthrough. When configured with a Conax MHM feedthrough, the high density assembly will accommodate up to 240 conductors (120 pairs) through a single feedthrough.



Electrode sealing

EG compression seal feedthroughs and EGT feedthroughs serve as bare electrical feedthroughs for higher current and voltage applications. They electrically and/or thermally isolate an electrode or sensor. EGT feedthroughs feature a one-piece PTFE insulator sealant. EG feedthroughs offer a choice of replaceable sealants with ceramic insulators and are available with or without an electrode.



Supporting the power source of the future

Temperature measurement

Accurate temperature measurement is critical to effective fuel cell operation, whether for testing and validation in development stages or in active production. Conax provides a wide range of sensors from small diameter probes to fit tight spaces between plates to assemblies with exotic materials to resist environmental challenges. Our temperature sensor assemblies can be used to monitor:

- Air discharge passage
- Fuel cell stack
- Air manifold heater
- Oxidizer exhaust
- Anode exhaust
- Cathode air inlet
- Cathode discharge
- Reformer water inlet
- ATO air inlet
- Outdoor air
- Power terminals

Pressure and vacuum sealing devices

Conax's broad range of feedthroughs and sealing devices with "soft sealant" technology are used throughout the fuel cell as terminals, power lead feedthroughs and bulkhead seals on:

- Cathode electrodes
- Anode electrodes
- Cathode conductors
- Anode conductors
- Instrument wires
- Humidity sensor lead seals
- Thermocouple or RTD lead seals
- Thermocouple or RTD sheath seals

Custom design

Our engineers welcome the opportunity to design special assemblies for your most challenging applications. Call us today to discuss your application needs.

Our ideas and solutions help you succeed

Conax Technologies is a leader in the design and manufacture of temperature sensors, compression seal fittings, and cable and harness assemblies for a broad range of industries and applications worldwide. For over 65 years, our customers have relied on our experience and technical expertise to provide both standard products and one-of-a-kind solutions.

Innovative ideas come from collaboration. By taking the time to understand your unique challenges, we develop the ideal solutions that help you—and your customers—succeed. Our commitment to providing quality, innovative products on time and at a competitive cost continue to make us your indispensable partner.

For more information, visit **ConaxTechnologies.com**.

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