

MODEL HTX THERMOCOUPLE FOR CLAUS REACTION FURNACE AND SULFUR BURNING PROCESSES

00-HTX01



FEATURES

- Worldwide standard for protecting Claus Thermal Reaction Furnaces.
- ATEX Compliant flameproof design
- PED Compliant as a pressure component in a Category IV Safety Accessory
- Maintenance free
- Remains accurate under extreme conditions.
- Protects and extends the useful life of refractory and improves reactor up-time.
- Over 30 years of proven results in hundreds of installations worldwide.
- Keeps working accurately in sulfur service long after other thermocouple designs and infrared devices fail or become inaccurate.
- Safe; triple sealed; block valve optional.
- Accuracy is continuously verified; self-diagnostic.
- Optional integral refractory dryout thermocouple reads accurately to 1°F (0.6°C).
- Also used in process incinerators, POX units, and coal gassifiers.

APPLICATION

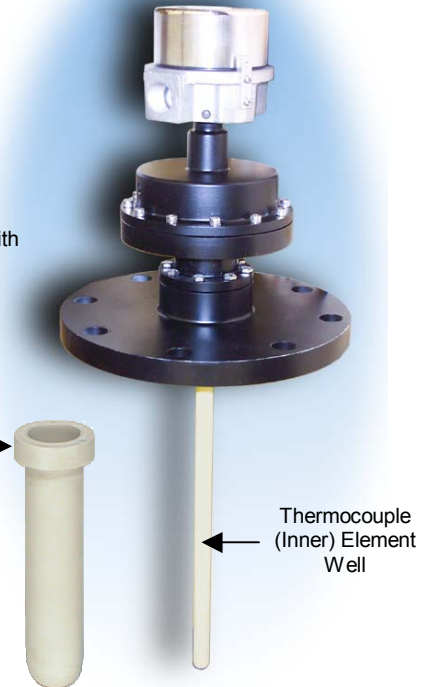
The Type HTX Thermocouple is designed to measure high temperatures under the extremely severe conditions of a Claus Thermal Reaction Furnace. The atmospheres to be measured may contain hydrogen, sulfur, sulfur oxides, chlorides, acid gases, etc. Operating temperatures may be in excess of 3000°F and under pressure. The HTX is designed to withstand the vibration and shifting refractory normally encountered in the Claus Furnace.

The most common application is to protect the refractory in Claus thermal reactors and sulfur burners in sulfur acid plants. Other applications include hydrogen burner systems, water gas generators, coal gassifiers and various POX units.

The design of the Model HTX is a result of careful attention to design detail, 25 years of experience, and many field installations. Materials used in the HTX are critical; for example, the ceramic parts exposed to the process are various blends of Alumina, Zirconia, MgO, and other materials. All conceivable care is taken during the application and fabrication of these units. The is designed to provide long term accuracy and reliability.




Basic Model HTX with
6"/150# Flange

Refractory
Outer Protective
Well

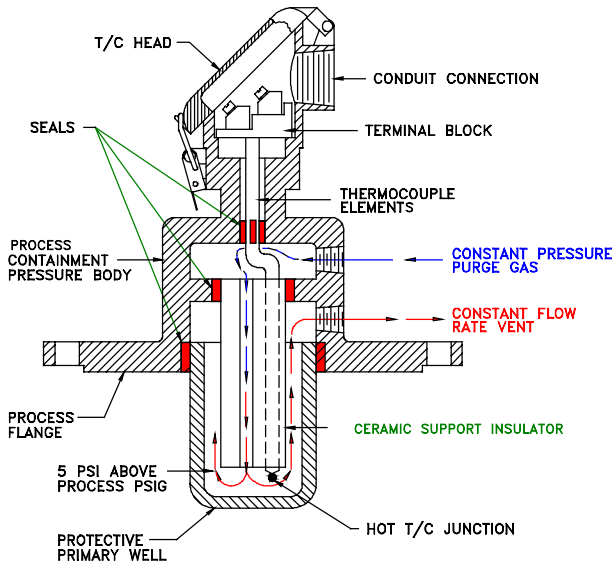


Thermocouple
(Inner) Element
Well

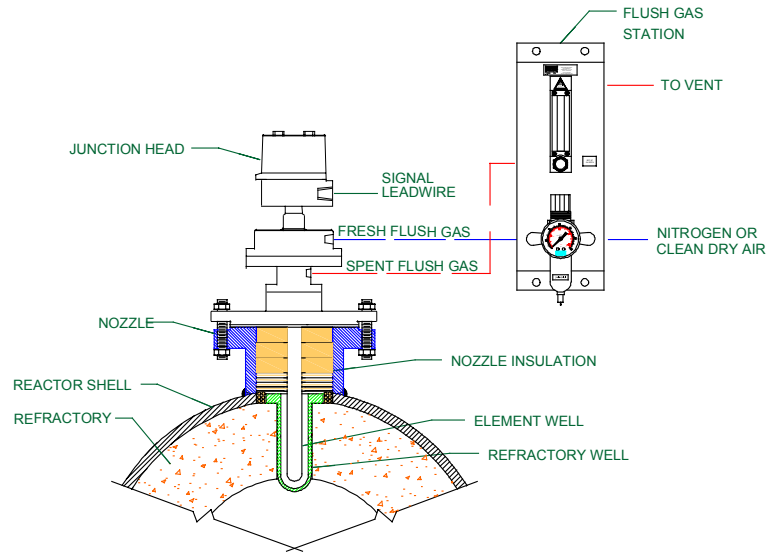
SPECIFICATIONS

| | |
|----------------------------------|---|
| Thermocouple Types: | B, R, C, & T (others available) |
| Body/Flange Material: | A-106B & A-105 Carbon Steel |
| Trim, Bolting, and Seats: | Stainless Steel |
| Protective Well: | Blended alumina ceramic See Document 00-HRW01 |
| Certification: |  CL I Div 1 Gr BCD Encl4X  II 2 G/D, EEx d IIB+H ₂ IP65  0575 |
| Mounting Flange: | ANSI 6"/150# (150mm) (Std.) Other sizes, types, ratings available |
| Flush Gas: | N ₂ or clean, dry air. |
| Working Pressure: | 150 PSIG (10 Bar) at vessel skin temperature of 500°F (260°C) |
| Working Temperature: | 0 to 3100°F (1700°C) basic; 0 to 4000°F (2200°C) optional. |
| Required Auxiliary Equipment: | Model HNP Nozzle insulation kit Model HRW Refractory Well |
| Recommended: | Model HFS Purge Panel Model H6G Refractory Drill Kit |
| Optional: | <ul style="list-style-type: none"> • Nozzle block valve for emergency shut-in • 316L SS body, flange, and head housing • Thermocouple extension lead wire • Refractory diamond drills and casting mandrels • Infrared temperature transmitter; for use as a backup |

OPERATING SCHEMATIC OF THE HTX

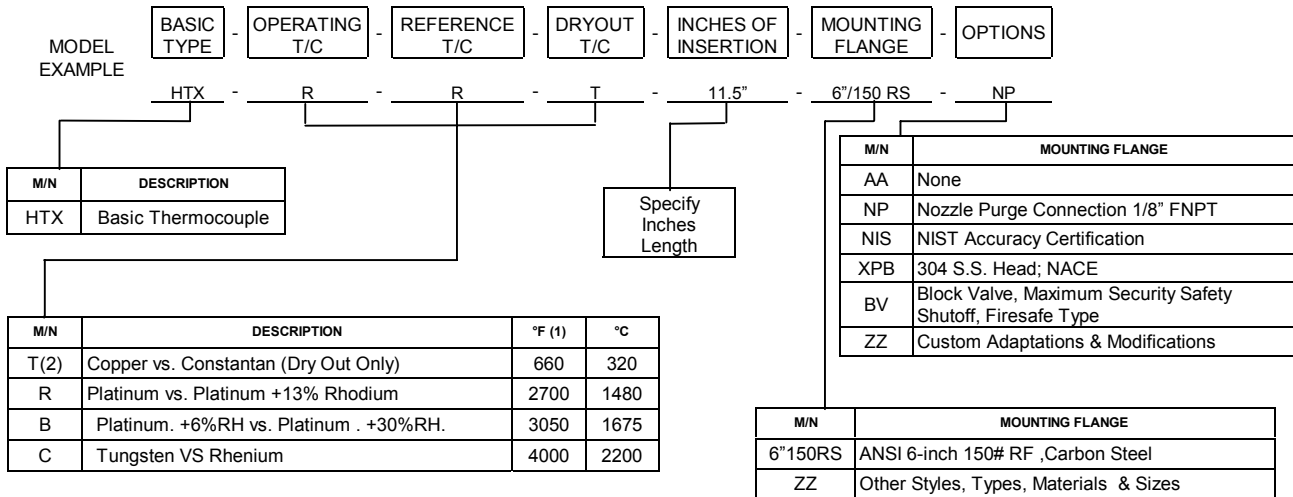


HTX INSTALLED IN A CLAUS REACTOR



Clean flush gas flows through the HTX and scavenges hydrogen, sulfur compounds, and corrosive gases that may migrate through the sealed inner element well. The gas flows into the upper chamber, down an annulus, over the hot junction, back up the inside the inner protective well, and out through the vent connection to the flow control panel (Model HFS), which is set to maintain a positive pressure inside the HTP of approximately 3 to 5 PSI (28 kPa) above the maximum operating pressure of the reactor. This pressure is set by adjusting the control on the flush gas control panel. The flow rate through the unit is set at approximately 0.4 SCFH (190cc/m). This low flow rate is controlled by the flush gas control station and does not cool the T/C element.

MODEL NUMBERING SYSTEM



Notes:

- (1) Temperature shown is the maximum recommended for continuous service.
- (2) Accuracy of type "T" dryout T/C: $\pm 0.9^{\circ}\text{F}$ (0.5°C) or better at 212°F (100°C); limited to 400°F (200°C) in air; to 660°F (320°C) in nitrogen

AUXILIARY EQUIPMENT REQUIRED

| M/N | DESCRIPTION - SEE SEPARATE DETAILED DATA SHEETS |
|-----|---|
| HFS | Flush Gas Control Station, Zinc, Ss Trim Or All SS |
| H6G | Diamond Bits, Guides and Adapters for Drilling Refractory |
| HRM | Mandrel for Casting Hole Thru Refractory |
| HRW | Refractory Protective Well |
| HNP | Reactor Nozzle Insulation Packing Kit |
| HIR | Infrared Temperature Transmitter, Secondary |

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