



CLAUS THERMAL REACTOR INFRARED PYROMETER Model HIR

- Measures refractory hot face temperature
- Operates accurately and reliably with up to 100% oxygen enrichment
- Stable electronics, no periodic factory re-calibration required; no “back-up unit” required
- Eliminates sulfur coating of lens window
- No build-up of sulfur in vessel nozzle
- No high flow nozzle purge or cooling
- Insensitive to reaction gas infrared radiation, absorption or flame luminosity
- Dual wavelength sensing allows accurate temperature measurement even if the sight path is partially blocked by buildup or debris. (F range)
- Loop powered design
- Programmable alarm output

OPERATION AND TECHNOLOGY

The Model HIR “looks” into the Claus Thermal Reaction Furnace and senses the amount and spectrum of the infrared energy being emitted by the refractory hot face to accurately display the refractory hot face temperature. The infrared energy being sensed must pass through the reacting gases without being absorbed by them and the HIR “looks” through those same gases without seeing them or sensing their high temperatures. This is accomplished using notch optical filters and special sensors. The selected sensing spectrums avoid significant errors due to luminosity and absorption.

The Model HIR is nearly maintenance free. The lens, sighting window, and nozzle are kept at a high temperature to avoid sulfur buildup and the need to perform frequent periodic maintenance. This is accomplished by the steam jacketed lens assembly design that prevents sulfur from condensing onto the lens window or building up in the nozzle. In addition, the HIR utilizes stable electronics, which do not require frequent re-calibrations.

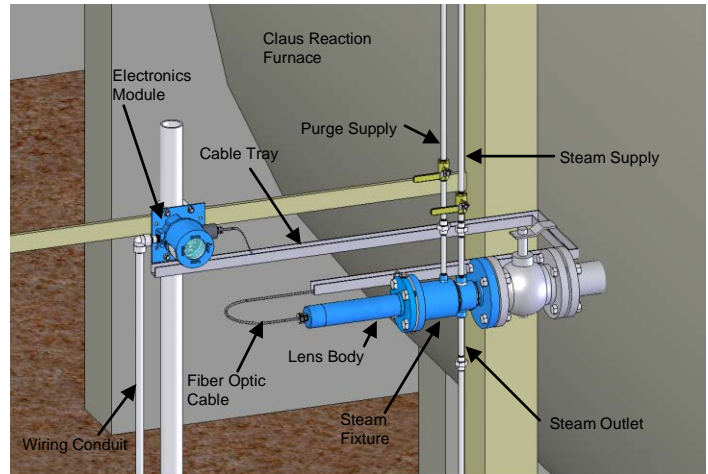
Because of the high temperatures at the lens window, the electronics are mounted away from the furnace and connected to the lens body by a 10ft (3m) armored fiber optic cable, eliminating the need to provide cooling. If it is impractical to mount the electronics within 10ft of the furnace mounting nozzle, the fiber optic adapter wires can be extended up to an additional 25ft (8m) using the “RS” option.

Two-Color Measurement

The HIR F range transmitter measures the intensity of light at two different wavelengths to determine the temperature. This allows the measurement to be accurate even if there is a partial blockage of light due to buildup of material on the window or in the nozzle. In essence, the measurement is based on the color of the light, instead of the intensity of the light, as is usually done with a single wavelength measurement. In addition to the temperature, the amount of blockage can also be measured and used to generate an alarm signal. Note that at temperatures below 800 °C, there is not enough infrared light at both wavelengths to make a two color measurement. Therefore temperatures between 300 °C and 800 °C are only measured with a single wavelength. In that case, the amount of blockage cannot be determined.

SYSTEM USAGE

The Delta Model HIR operates standalone or ideally in conjunction with either the Delta Controls Model HTP or HTX Claus Furnace thermocouple systems to achieve turnaround-to-turnaround reliability with minimum maintenance. This is particularly advantageous when supplemental oxygen is employed or even during upset conditions. The use of both technologies eliminates common cause errors and vastly improves overall system reliability.



SPECIFICATIONS

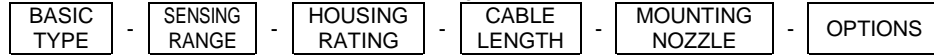
Ranges:	“C”	800°C to 1700°C (1472°F to 3092°F)
	“D”	300°C to 1700°C (572°F to 3092°F)
	“F”	Dual Wavelength 700°C-1700°C (1472°F-3092°F) Single Wavelength down to 300°C (572 °F)
Accuracy:		±5°C (9°F) or 0.5% of reading, whichever is higher.
Display:		High Contrast LCD with backlight
Output Signal:		4-20 mADC, 2 wire loop
Alarm Output:		Programmable optoisolated phototransistor output (30V, 100mA max)
Power:		24 VDC loop
Steam:		50-100 # supply required
Lens Sweep:		Approx. 25 LPM (N ₂ recommended) See: www.claustemp.com/00-HFI.pdf Control Panel
Fiber Optic Interconnecting Cable:		PTFE jacketed over SS armor; 3m (10') length standard. (See “RS” option)
Electronics Enclosure:		Cast aluminum, stainless steel mounting hardware
Conduit Connection:		1 x ¾” NPT
Process Connection:		Carbon Steel Steam Jacketed Body 2” or 3” ANSI flange standard; other types & sizes available
Materials:		Steam Fixture & Lens Flange: Carbon Steel Mounting Hardware: Stainless Steel Lens Assembly: Stainless Steel
Lens Cable:		High Temp Armored Fiber Optic, PTFE Jacketed
Ambient Temperature Limits:		
	Fiber Optics & Lens:	-30°C to 200°C (-20°F to 400°F)
	Fiber Optic Adapter:	-20°C to 85°C (-4°F to 185°F)
	Electronics:	-20°C to 70°C (-4°F to 158°F)
Approvals:		Class I, Div 1, Groups B, C and D; Class II, Div 1, Groups E, F and G; Class III, Div1 Class I, Zone 1, Ex d IIB+H2 Class I, Zone 1, AEx d IIB+H2 II 2 G Ex ‘d’ 2C T6 IP65



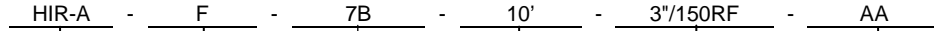
DELTA CONTROLS
CORPORATION

CLAUSTEMP™ Model HIR Infrared Pyrometer

Model Number System



Model example



M/N	Description
HIR-A	Infrared Pyrometer for Claus Thermal Reaction Furnace

M/N	Description
10'	10 feet fiber optic cable

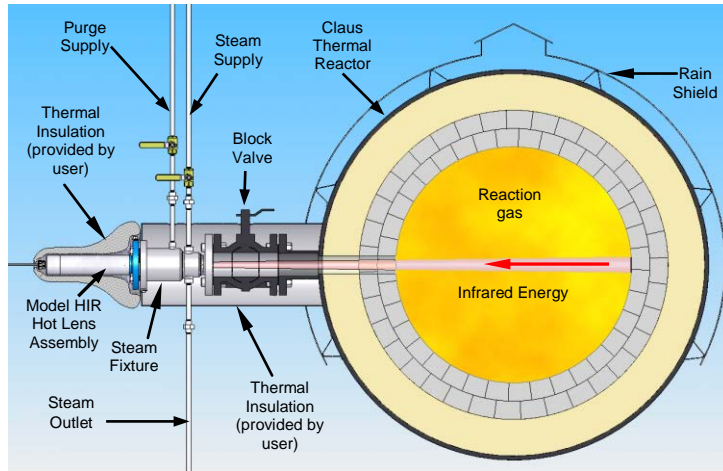
M/N	Description
AA	None
RS	Remote Sensor
ZZ	Special

M/N	Description
C	800°C TO 1700°C
D	300°C TO 1700°C
F	800°C TO 1700°C (Two-Color) Down to 300°C (Single Color)

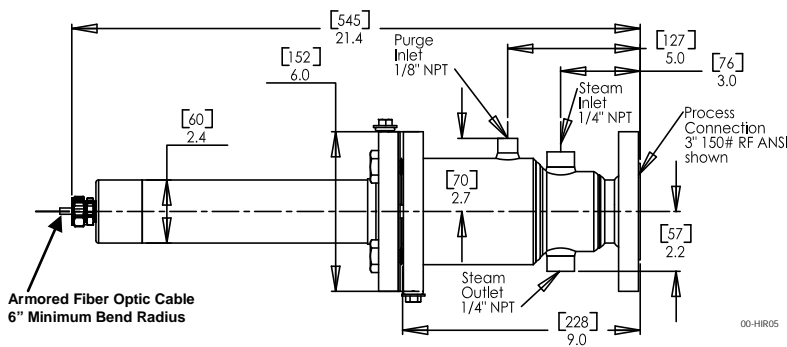
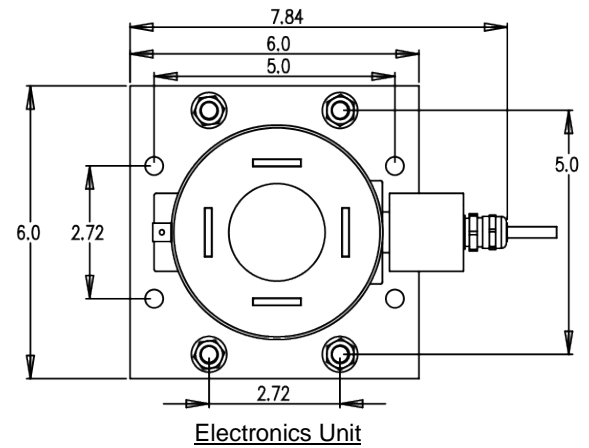
M/N	Description
7B	FLAMEPROOF Ex d 2C T6 IP65

M/N	Description
3"/150 RF	3" 150# R.F. ANSI
2"/150 RF	2" 150# R.F. ANSI
3"/300 RF	3" 300# R.F. ANSI
2"/300 RF	2" 300# R.F. ANSI
ZZ	Other, DIN, JIS, etc

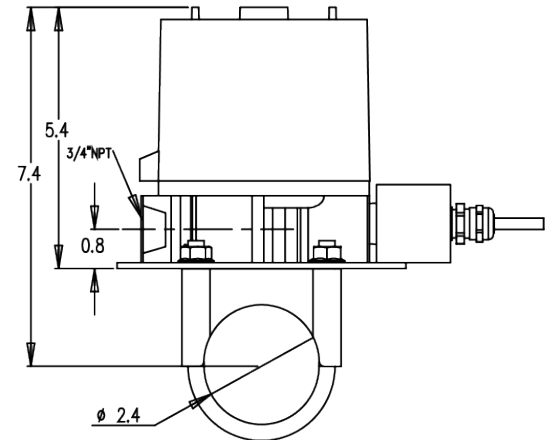
REACTOR MONITORING SYSTEM SCHEMATIC



DIMENSIONS



Hot Lens Assembly / Steam Fixture / Process Connection Orientation



Pipe Stand Mounting Configuration



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