Exergen Product Overview

Adjustable IRt/c™ Sensors

Where Used

- Extrusions
- Oven control
- Molten metals
- Small objects
- High temperature
- Low and varying emissivities

Features

- User calibrated to match user specific t/c output and temperature range
- Provides choice of optimized temperature ranges
- Available in range of FOV
- Includes focused models to view targets through tight openings
- Choice in emissivity range to match target material
- Conventional t/c output signals available (J, K, R/S, etc.)

Adjustable IRt/c Sensor Models

Family	Model Selection	Features
Standard Adjustable	IRt/c.10A (10 to 1 FOV) IRt/c.20A (20 to 1 FOV) IRt/c.100A (100 to 1 FOV)	Stainless steel housing Built in air purge cooling system Rated for use up to 85 °C (185 °F) ambient
Close Focused Adjustable	IRt/c.2ACF (2.9 mm spot dia.) IRt/c.4ACF (5.0 mm spot dia.) IRt/c.8ACF (8.5 mm spot dia.) IRt/c.2/15ACF (2.9 x 8.7 mm rectangular focal slot)	Focal point at 43 mm from sensor Approximate 30° view angle beyond focal point Target temperature -18 to 1370 °C (0 to 2500 °F)*
Medium Focused Adjustable	IRt/c.3AMF (3 mm spot dia.) IRt/c.6AMF (6.5 mm spot dia.) IRt/c.12AMF (11.1 mm spot dia.) IRt/c.2/18AMF (4.5 x 12.8 mm rectangular focal slot)	Focal point at 76 mm from sensor Approximate 13° view angle beyond focal point Target temperature -18 to 1370 °C (0 to 2500 °F)*
Long Focused Adjustable	IRt/c.4ALF (3.5 mm spot dia.) IRt/c.7ALF (7.2 mm spot dia.) IRt/c.2/15ALF (3 x 7.2 mm rectangular focal slot)	Focal point at 105 mm from sensor Approximate 11° view angle beyond focal point Target temperature 150 to 1930 °C (300 to 3500 °F)*
Extra Long Focused Adjustable	IRt/c.2AXLF (1.8 mm spot dia.) IRt/c.4AXLF (4.8 mm spot dia.) IRt/c.10/38AULF (10 x 38 mm rectangular focal slot)	Focal point at 200 mm from sensor (except .10) IRt/c.10/38AULF 250 mm focal point Approximate 5° view angle beyond focal point IRt/c.10/38AULF HI E model only Target temperature -18 to 1930 °C (0 to 3500 °F)*

Adjustable IRt/c™ Model Code

Use the following model code selection guide to configure the appropriate sensor. Pick one selection from each group.

A B C

IRt/c._____-_____-_____

Example: IRt/c.10A-K-LoE

A. IRt/c Model

	FOV	HiE Sensing Range	LoE Sensing Range
10A	10:1	-50 to 2500°F, -45 to 1370°C	500 to 2500°F, 260 to 1370°C
20A	20:1	500 to 3000°F, 260 to 1650°C	1000 to 3500°F, 540 to 1930 °C
100A	100:1	1000 to 5000°F, 540 to 2760°C	1500 to 5000°F, 820 to 2760°C
2ACF	0.11" at 1.7" (43 mm)	500 to 2500°F, 260 to 1370°C	1000 to 2500°F, 540 to 1370°C
2/15ACF	0.11" x 0.35" (2.9 x 8.7 mm) at 1.7" (43 mm)	0 to 2500°F, -18 to 1370°C	500 to 2500°F, 260 to 1370°C
4ACF	0.20" (5 mm) at 1.7" (43 mm)	0 to 2500°F, -18 to 1370°C	600 to 2500°F, 320 to 1370°C
8ACF	0.33" (8.5 mm) at 1.7" (43 mm)	Not available	300 to 2500°F, 150 to 1370°C
2/18AMF	0.18" x 0.5" (4.5 x 12.8 mm) at 3" (76 mm)	0 to 2500°F, -18 to 1370°C	600 to 2500°F, 320 to 1370°C
3AMF	0.15" (3.7 mm) at 3" (76 mm)	500 to 2500°F, 260 to 1370°C	1100 to 2500°F, 590 to 1370°C
6AMF	0.26" (6.5 mm) at 3" (76 mm)	0 to 2500°F, -18 to 1370°C	700 to 2500°F, 370 to 1370°C
12AMF	0.48" (11.1 mm) at 3" (76 mm)	Not available	400 to 2500°F, 200 to 1370°C
2/15ALF	0.12" x 0.28" (3 x 7.2 mm) at 4.1" (105 mm)	700 to 3000°F, 370 to 1650°C	1200 to 3500°F, 650 to 1930°C
4ALF	0.14" (3.5 mm) at 4.1" (105 mm)	700 to 3000°F, 370 to 1650°C	1200 to 3500°F, 650 to 1930°C
7ALF	0.28" (7.2 mm) at 4.1" (105 mm)	300 to 3000°F, 150 to 1650°C	900 to 3500°F, 480 to 1930°C
2AXLF	0.07" (1.8 mm) at 8" (200 mm)	1100 to 3500°F, 590 to 1930°C	2200 to 3500°F, 1200 to 1930°C
4AXLF	0.19" (4.8 mm) at 8" (200 mm)	900 to 3500°F, 480 to 1930°C	1700 to 3500°F, 930 to 1930°C
10/38AULF	0.4" x 1.5" (10 x 38 mm) at 10" (250 mm)	0 to 2500°F, -18 to 1370°C	Not available

B. Thermocouple type

J	J type thermocouple
K	K type thermocouple
R/S	R/S type thermocouple (.100A's and AXLF's)

C. Target surface material

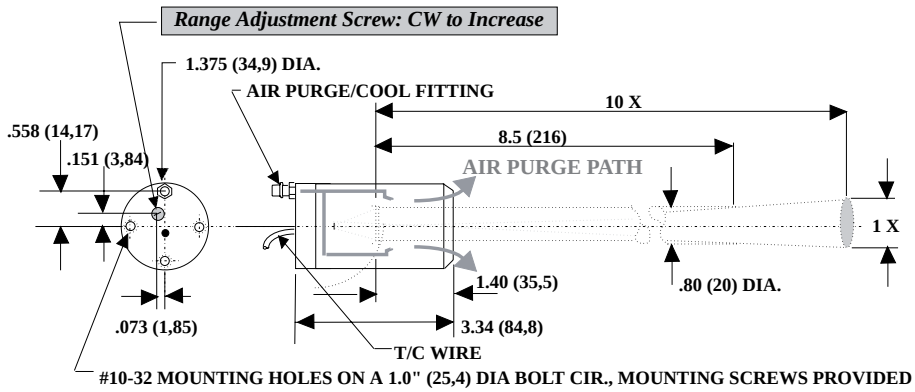
HiE	High emissivity (non metals, coated metal surfaces)
LoE	Low emissivity (metal surfaces)

Optional Custom Factory Calibration of Adjustable IRt/c Sensors

Exergen offers NIST traceable factory calibration of adjustable IRt/c sensors to meet the customers measurement range. This option simplifies multiple same sensor installations for factory automation and OEMs. mV signal output curves and mV tables are available.

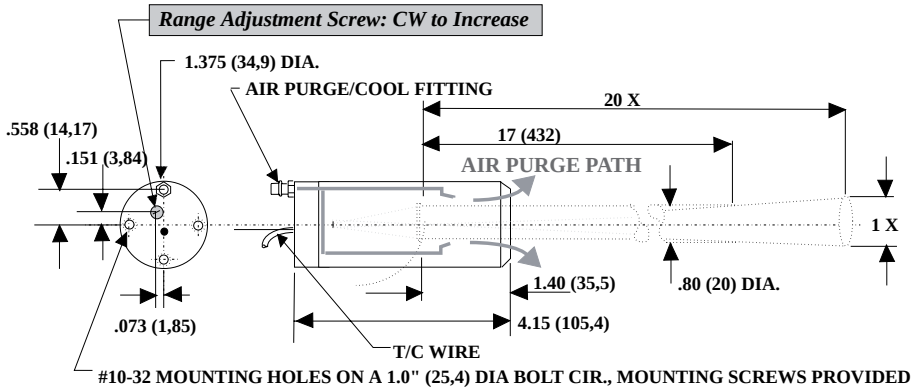
IRt/c.10A

10:1 Field-of-View



IRt/c.20A

20:1 Field-of-View

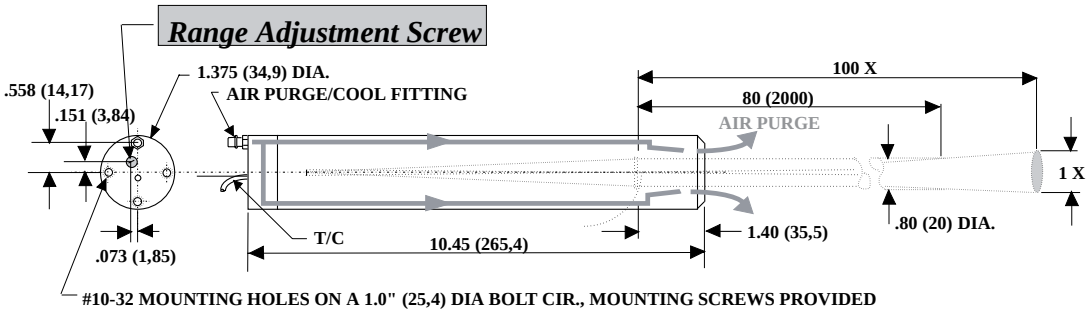


	IRt/c.10A		IRt/c.20A	
Target Surface Type	Hi E (non-metal)	Lo E (metal)	Hi E (non-metal)	Lo E (metal)
Sensing Range	-50 to 2500°F (-45 to 1370°C)	500 to 2500°F (260 to 1370°C)	500 to 3000°F (260 to 1650°C)	1000 to 3500°F (540 to 1930°C)
Optimum Range Selections	One model each J, K: adjustable over entire sensing range, output tables available			
Minimum Spot Size at dist. (with supplied apertures)	No Aperture: 0.8" (20 mm) at <7" (180 mm) ½" Aperture: 0.5" (13 mm) at <3.5" (90 mm) ¼" Aperture: 0.25" (6 mm) at <1" (25 mm)		No Aperture: 0.8" (20 mm) at <16" (400 mm) ½" Aperture: 0.5" (13 mm) at <9" (230 mm) ¼" Aperture: 0.25" (6 mm) at<3.5" (90 mm)	
Field-of-View at > min. spot	10:1 (6°) approximately		20:1 (3°) approximately	
Spectral Response	2 to 20 µ	0.1 to 5 µ	2 to 20 µ	0.1 to 5 µ
Output Impedance	6 to 13 Kohms approx	9 to 18 Kohms approx	6 to 13 Kohms approx	9 to 18 Kohms approx
Cable	Twisted shielded pair of base thermocouple material (J,K,etc.), 3 ft (.9 m) std length, Teflon sheathed, rated to 392°F (200°C) continuous service.			
Dimensions	3.34" x 1.375" Dia. (85 x 35 mm)		4.15" x 1.375" Dia. (105 x 35 mm)	
Weight	8.0 oz (230 g) with cable		8.7 oz (248 g) with cable	
Housing	Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.			
Air Purge	Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided			

Adjustable Models

IRt/c.100A

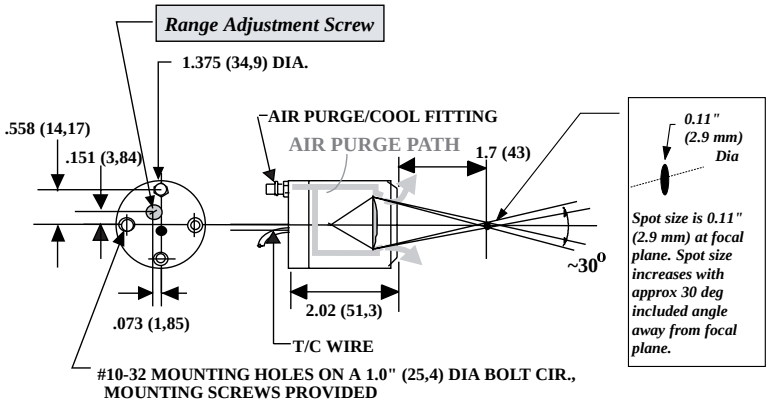
100:1 Field-of-View



	IRt/c.100A	
Target Surface Type	*Hi E (non-metal)*	*Lo E (metal)*
Sensing Range	*1000 to 5000°F (540 to 2760°C)*	*1500 to 5000°F (820 to 2760°C)*
Optimum Range Selections	*One model each R,S: adjustable over entire sensing range, output tables available*	
Minimum Spot Size	*At distance, with supplied apertures: No Aperture: 0.8" (20 mm) at <80" (2000 mm) ½" Aperture: 0.5" (13 mm) at <50" (1270 mm) ¼" Aperture: 0.25" (6 mm) at <25" (635 mm)*	
Field-of-View	*At > min. spot: 100:1 (0.6°) approximately*	
Spectral Response	*2 to 20 µ*	*0.1 to 5 µ*
Output Impedance	*6 to 13 Kohms approx*	*9 to 18 Kohms approx*
Cable	*Twisted shielded pair of base thermocouple material (R,S,etc.), 3 ft (.9 m) std length, Teflon sheathed, rated to 392°F (200°C) continuous service.*	
Dimensions	*10.5" x 1.375" Dia. (265 x 35 mm)*	
Weight	*20 oz (570 g) with cable*	
Housing	*Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.*	
Air Purge	*Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided*	

IRt/c.2ACF

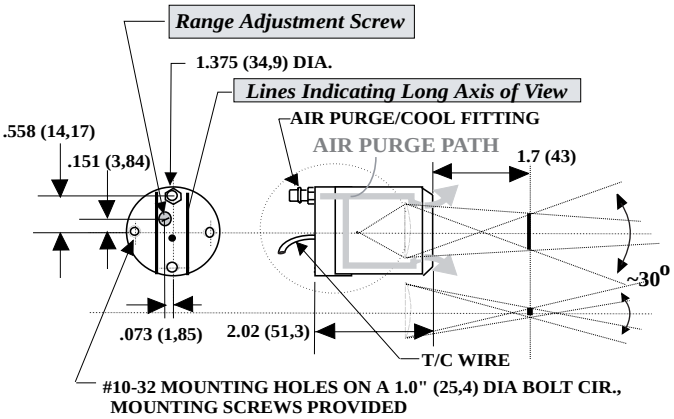
Close Focus, 0.11" (2.9 mm) Spot

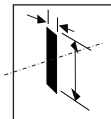


Spot size is 0.11" (2.9 mm) at focal plane. Spot size increases with approx 30 deg included angle away from focal plane.

IRt/c.2/15ACF

Close Focus "Slot Spot"





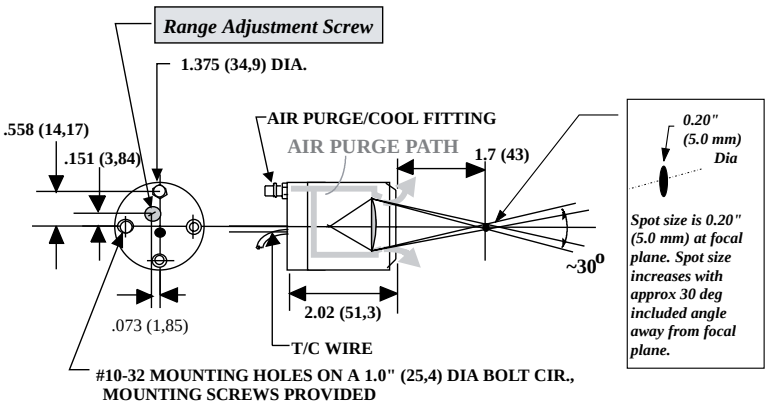
Spot size is 0.11 x 0.35" (2.9 x 8.7 mm) rectangle at focal plane. Spot size increases with approx 30 deg included angle away from focal plane.

	IRt/c.2ACF		IRt/c.2/15ACF	
Target Surface Type	*Hi E (non-metal)*	*Lo E (metal)*	*Hi E (non-metal)*	*Lo E (metal)*
Sensing Range	*500 to 2500°F (260 to 1370°C)*	*1000 to 2500°F (540 to 1370°C)*	*0 to 2500°F (-18 to 1370°C)*	*500 to 2500°F (260 to 1370°C)*
Optimum Range Selections	*One model each J, K: adjustable over entire sensing range, output tables available*			
Minimum Spot Size	*At focus: 0.11" (2.9 mm) at 1.7" (43 mm) from sensor*		*0.11 x 0.35" (2.9 x 8.7 mm) at 1.7" (43 mm) from sensor*	
Field-of-View	*Non-focus: 30° approximately*		*30° approximately*	
Spectral Response	*2 to 20 µ*	*0.1 to 5 µ*	*2 to 20 µ*	*0.1 to 5 µ*
Output Impedance	*4 to 8 Kohms (varies by model)*		*10 Kohms approx*	
Cable	*Twisted shielded pair of base thermocouple material (J,K,etc.), 3 ft (.9 m) std length, Teflon sheathed, rated to 392°F (200°C) continuous service.*			
Dimensions	*2.02" x 1.375" Dia. (51.3 x 35 mm)*		*2.02" x 1.375" Dia. (51.3 x 35 mm)*	
Weight	*6.8 oz (192 g) with cable*		*6.8 oz (192 g) with cable*	
Housing	*Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.*			
Air Purge	*Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided*			

Adjustable Models

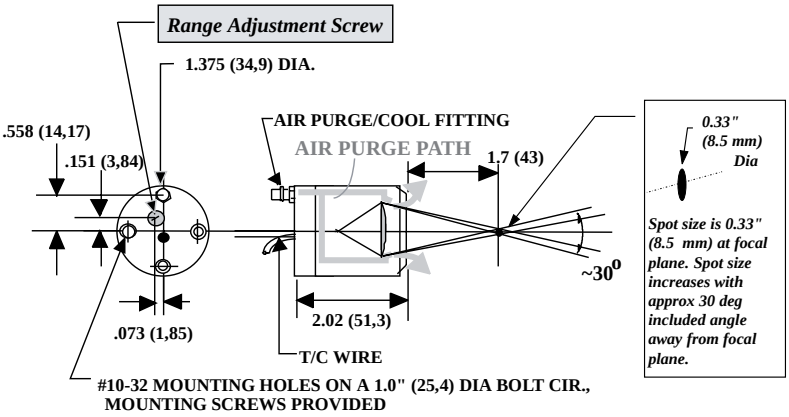
IRt/c.4ACF

Close Focus
0.20" (5.0 mm) Spot



IRt/c.8ACF

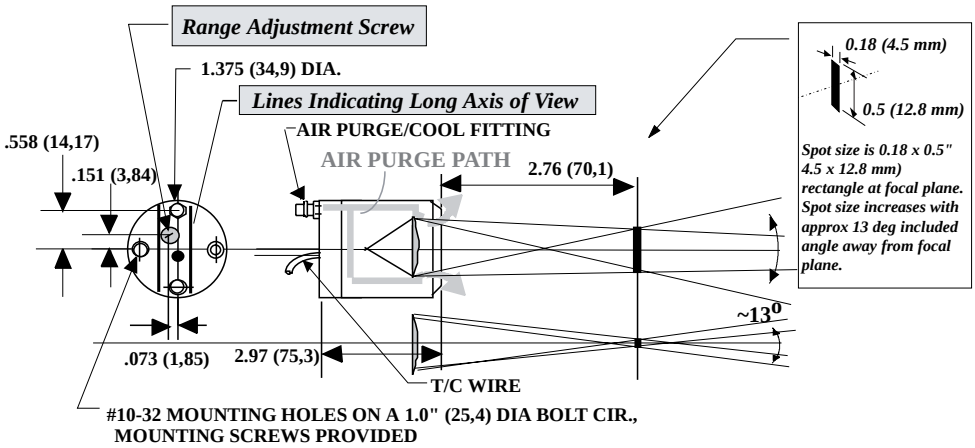
Close Focus
0.33" (8.5 mm) Spot



	IRt/c.4ACF		IRt/c.8ACF
Target Surface Type	*Hi E (non-metal)*	*Lo E (metal)*	*Lo E (metal)*
Sensing Range	*0 to 2500°F (-18 to 1370°C)*	*600 to 2500°F (320 to 1370°C)*	*300 to 2500°F (150 to 1370°C)*
Optimum Range Selections	*One model each J, K: adjustable over entire sensing range, output tables available*		
Minimum Spot Size at Focus	*0.20" (5.0 mm) at 1.7" (43 mm) from sensor*		*0.33" (8.5 mm) at 1.7" (43 mm) from sensor*
Field-of-View (non-focus)	*30° approximately*		*30° approximately*
Spectral Response	*2 to 20 µ*	*0.1 to 5 µ*	*0.1 to 5 µ*
Output Impedance	*4 to 8 Kohms (varies by model)*		*10 Kohms approx*
Cable	*Twisted shielded pair of base thermocouple material (J,K,etc.), 3 ft (.9 m) std length, Teflon sheathed, rated to 392°F (200°C) continuous service.*		
Dimensions	*2.02" x 1.375" Dia. (51.3 x 35 mm)*		
Weight	*6.8 oz (192 g) with cable*		
Housing	*Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.*		
Air Purge	*Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided*		

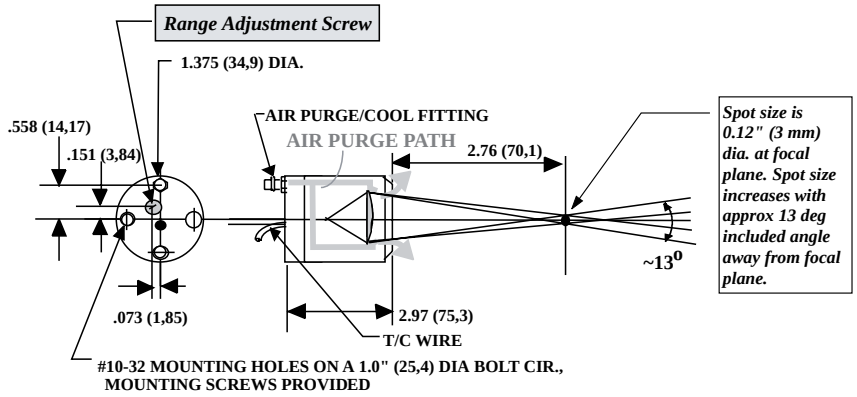
IRt/c.2/18AMF

Medium Focus
"Slot Spot"



IRt/c.3AMF

Medium Focus
0.12" (3 mm) Spot

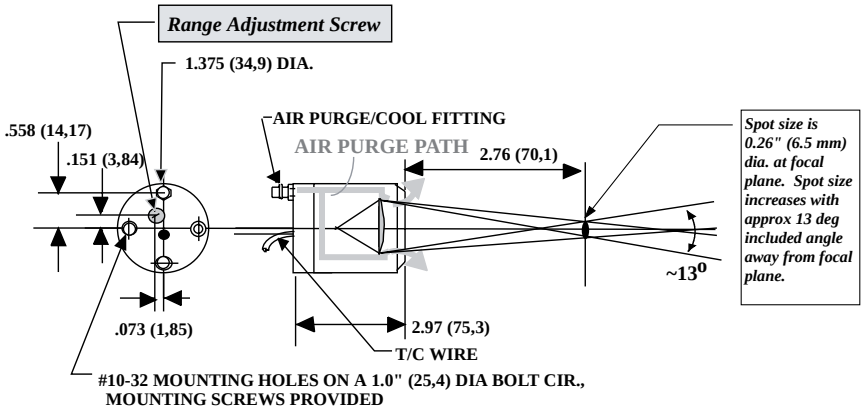


	IRt/c.2/18AMF		IRt/c.3AMF	
Target Surface Type	*Hi E (non-metal)*	*Lo E (metal)*	*Hi E (non-metal)*	*Lo E (metal)*
Sensing Range	*0 to 2500°F (-18 to 1370°C)*	*600 to 2500°F (320 to 1370°C)*	*500 to 2500°F (260 to 1370°C)*	*1100 to 2500°F (590 to 1370°C)*
Optimum Range Selections	*One model each J, K: adjustable over entire sensing range, output tables available*			
Minimum Spot Size at Focus	*0.18 x 0.5" (4.5 x 12.8 mm) at 3" (76 mm) from sensor*		*0.15" (3.7 mm) at 3" (76 mm) from sensor*	
Field-of-View (non-focus)	*13° approximately*			
Spectral Response	*2 to 20 µ*	*0.1 to 5 µ*	*2 to 20 µ*	*0.1 to 5 µ*
Output Impedance	*10 Kohms approx*			
Cable	*Twisted shielded pair of base thermocouple material (J,K,etc.), 3 ft (.9 m) std length, Teflon sheathed, rated to 392°F (200°C) continuous service.*			
Dimensions	*2.97" x 1.375" Dia. (75.3 x 35 mm)*			
Weight	*6.8 oz (192 g) with cable*			
Housing	*Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.*			
Air Purge	*Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided*			

Adjustable Models

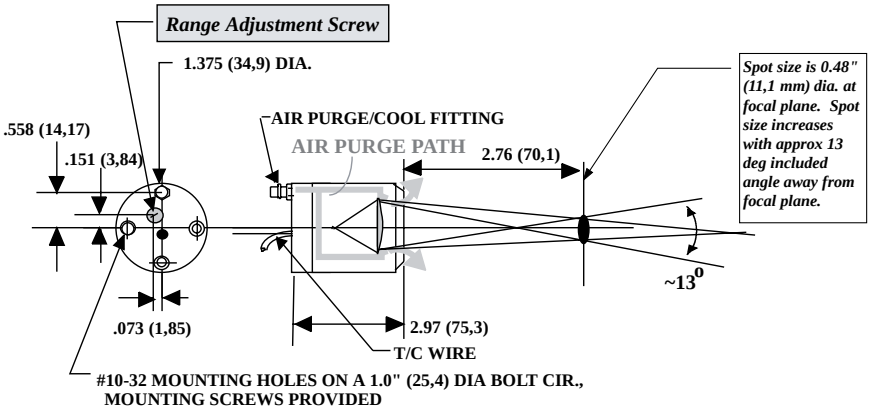
IRt/c.6AMF

Medium Focus
0.26" (6.5 mm) Spot



IRt/c.12AMF

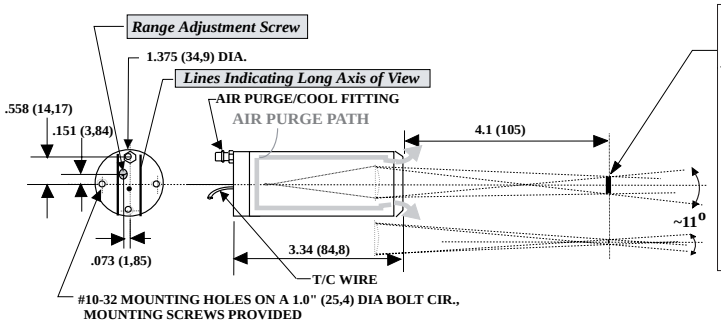
Medium Focus
0.48" (11.1 mm) Spot



	IRt/c.6AMF		IRt/c.12AMF
Target Surface Type	*Hi E (non-metal)*	*Lo E (metal)*	*Lo E (metal)*
Sensing Range	*0 to 2500°F (-18 to 1370°C)*	*700 to 2500°F (370 to 1370°C)*	*400 to 2500°F 200 to 1370°C)*
Optimum Range Selections	*One model each J, K: adjustable over entire sensing range, output tables available*		
Minimum Spot Size at Focus	*0.26" (6.5 mm) at 3" (76 mm) from sensor*		*0.48" (11.1 mm) at 3" (76 mm) from sensor*
Field-of-View (non-focus)	*13° approximately*		
Spectral Response	*2 to 20 µ*	*0.1 to 5 µ*	*0.1 to 5 µ*
Output Impedance	*10 Kohms approx*		
Cable	*Twisted shielded pair of base thermocouple material (J,K,etc.), 3 ft (.9 m) std length, Teflon sheathed, rated to 392°F (200°C) continuous service.*		
Dimensions	*2.97" x 1.375" Dia. (75.3 x 35 mm)*		
Weight	*6.8 oz (192 g) with cable*		
Housing	*Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.*		
Air Purge	*Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided*		

IRt/c.2/15ALF

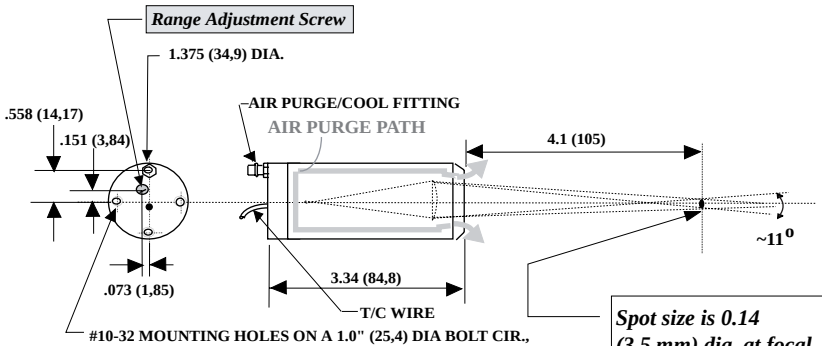
Long Focus
"Slot Spot"



Spot size is 0.12 x 0.28" (3 x 7.2 mm) rectangle at focal plane. Spot size increases with approx 11 deg inlcluded angle away from focal plane.

IRt/c.4ALF

Long Focus
0.14" (3.5 mm) Spot



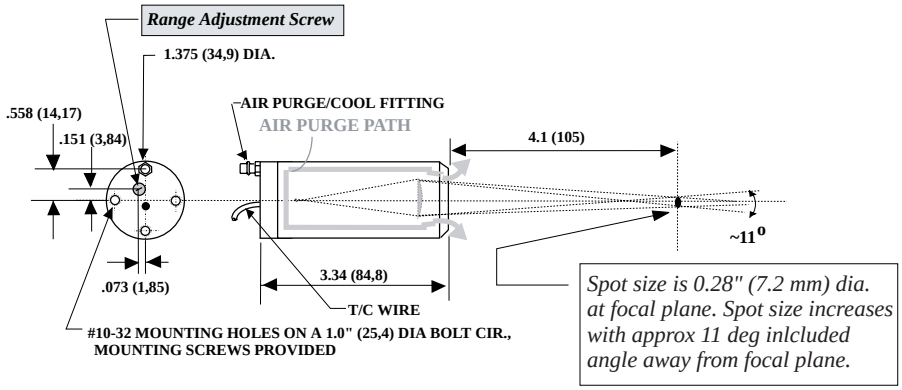
Spot size is 0.14 (3.5 mm) dia. at focal plane. Spot size increases with approx 11 deg included angle away from focal plane.

	IRt/c.2/15ALF		IRt/c.4ALF	
Target Surface Type	*Hi E (non-metal)*	*Lo E (metal)*	*Hi E (non-metal)*	*Lo E (metal)*
Sensing Range	*700 to 3000°F (370 to 1650°C)*	*1200 to 3500°F (650 to 1930°C)*	*700 to 3000°F (370 to 1650°C)*	*1200 to 3500°F (700 to 1930°C)*
Optimum Range Selections	*One model each J, K: adjustable over entire sensing range, output tables available*			
Minimum Spot Size at Focus	*0.12 x 0.28" (3 x 7.2 mm) at 4.1" (105 mm) from sensor*		*0.14" (35 mm) at 4.1" (105 mm) from sensor*	
Field-of-View (non-focus)	*11° approximately*			
Spectral Response	*2 to 20 µ*	*0.1 to 5 µ*	*2 to 20 µ*	*0.1 to 5 µ*
Output Impedance	*10 Kohms approx*			
Cable	*Twisted shielded pair of base thermocouple material (J,K,etc.), 3 ft (.9 m) std length, Teflon sheathed, rated to 392°F (200°C) continuous service.*			
Dimensions	*3.34" x 1.375" Dia. (84.8 x 35 mm)*			
Weight	*8.7 oz (248 g) with cable*			
Housing	*Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.*			
Air Purge	*Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided*			

Adjustable Models

IRt/c.7ALF

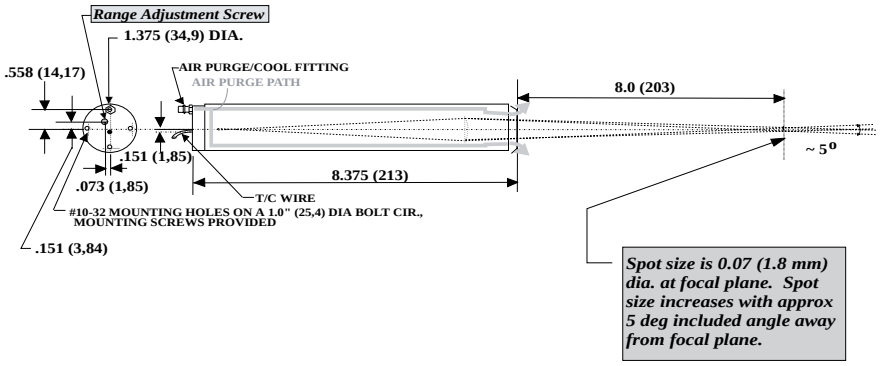
Long Focus
0.3" (7 mm) Spot



	IRt/c.7ALF	
Target Surface Type	*Hi E (non-metal)*	*Lo E (metal)*
Sensing Range	*300 to 3000°F (150 to 1650°C)*	*900 to 3500°F (480 to 1930°C)*
Optimum Range Selections	*One model each J, K: adjustable over entire sensing range, output tables available*	
Minimum Spot Size at Focus	*0.28" (7.2 mm) at 4.1" (105 mm) from sensor*	
Field-of-View (non-focus)	*11° approximately*	
Spectral Response	*2 to 20 µ*	*0.1 to 5 µ*
Output Impedance	*10 Kohms approx*	
Cable	*Twisted shielded pair of base thermocouple material (J,K,etc.), 3 ft (.9 m) std length, Teflon sheathed rated to 392°F (200°C) continuous service.*	
Dimensions	*3.34" x 1.375" Dia. (84.8 x 35 mm)*	
Weight	*8.7 oz (248 g) with cable*	
Housing	*Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.*	
Air Purge	*Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided*	

IRt/c.2AXLF

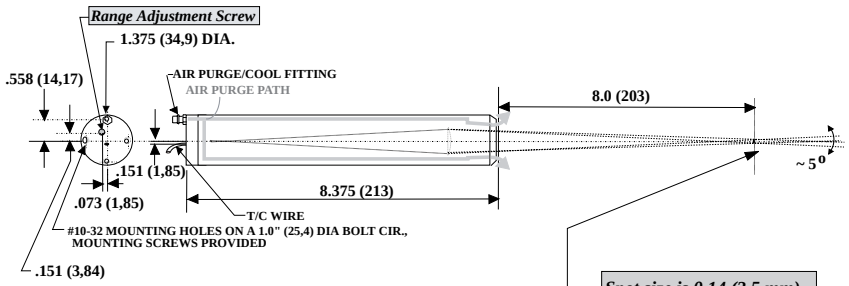
Extra Long Focus
0.07" (1.8 mm) Spot



Spot size is 0.07 (1.8 mm) dia. at focal plane. Spot size increases with approx 5 deg included angle away from focal plane.

IRt/c.4AXLF

Extra Long Focus
0.19" (4.8 mm) Spot



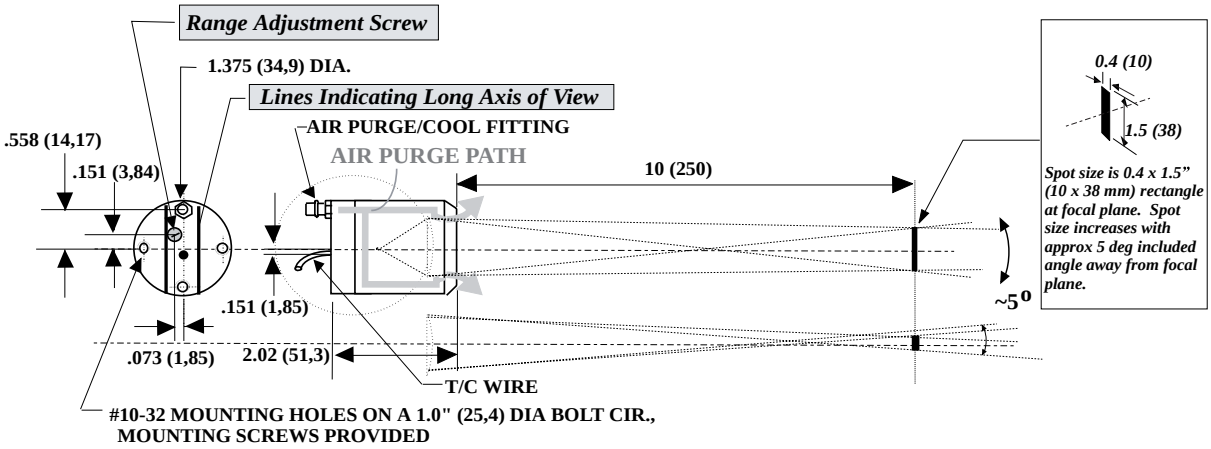
Spot size is 0.14 (3.5 mm) dia. at focal plane. Spot size increases with approx 5 deg included angle away from focal plane.

	IRt/c.2AXLF		IRt/c.4AXLF	
Target Surface Type	*Hi E (non-metal)*	*Lo E (metal)*	*Hi E (non-metal)*	*Lo E (metal)*
Sensing Range	*1100 to 3500°F (590 to 1930°C)*	*2200 to 3500°F (1200 to 1930°C)*	*900 to 3500°F (480 to 1930°C)*	*1700 to 3500°F (930 to 1930°C)*
Optimum Range Selections	*One model each R, S: adjustable over entire sensing range, output tables available*			
Minimum Spot Size at Focus	*0.07" (1.8 mm) at 8" (200 mm) from sensor*		*0.19" (4.8 mm) at 8" (200 mm) from sensor*	
Field-of-View (non-focus)	*5° approximately*			
Spectral Response	*2 to 20 µ*	*0.1 to 5 µ*	*2 to 20 µ*	*0.1 to 5 µ*
Output Impedance	*10 Kohms approx*			
Cable	*Twisted shielded pair of base thermocouple material (J,K,etc.), 3 ft (.9 m) std length, Teflon sheathed, rated to 392°F (200°C) continuous service.*			
Dimensions	*8.375" x 1.375" Dia. (213 x 35 mm)*			
Weight	*20 oz (570 g) with cable*			
Housing	*Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.*			
Air Purge	*Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided*			

Adjustable Models

IRt/c.10/38AULF

Long Focus "Slot Spot" Adjustable Range



	IRt/c.10/38AULF
Target Surface Type	*Hi E (non-metal)*
Sensing Range	*0 to 2500°F (-18 to 1370°C)*
Linear Range Selections	*One model each J, K: adjustable over entire sensing range, output tables available*
Minimum Spot Size at Focus	*0.4 x 1.5" (10 x 38 mm) at 10" (250 mm) from sensor*
Field-of-View (non-focus)	*5° approximately*
Spectral Response	*6.5 to 14 µ (filters reflected radiant heater energy)*
Output Impedance	*10 Kohms approx*
Cable	*Twisted shielded pair of thermocouple extension wire, 3 ft. (.9 m) std length. Teflon sheathed rated to 392°F (200°C) continuous service.*
Dimensions	*2.02" x 1.375" Dia. (51.3 x 35 mm)*
Weight	*6.8 oz (192 g) with cable*
Housing	*Stainless steel, hermetically sealed, exceeds NEMA 4,4x; IP65,67, intrinsically safe, cable shield grounded to housing and electrically isolated from signal.*
Air Purge	*Built-in; cooling capacity to 400°F (200°C) ambient; 3' (0.9 m) polyurethane tubing provided*