STANDARD RADIATION THERMOMETER

PERFORMANCE SPECIFICATION
CHINO

Model IR-RST series

Standard Radiation Thermometer IR-RST series has been developed under collaborative research with the National Metrology Institute of Japan (NMIJ). The IR-RST series as Standard Radiation Thermometers are applicable for traceability of calibrating conventional radiation thermometers.

Based on Japan Industrial Standard JIS C 1612 (Test methods for radiation thermometers), two models of 0.9μm and 0.65μm in measuring wavelength are prepared.

0.9μm model supplies JCSS** calibration which certifies temperature range from 400 to 2000ºC by fixed point calibration method with fixed point blackbody furnace IR-R0 (Zn 420ºC to Cu 1085ºC) and comparison calibration method with comparison blackbody furnace IR-R8.

0.65μm model supplies calibration upto 3000ºC by fixed point calibration method and comparison calibration method with high-temperature fixed point blackbody furnace IR-R80 utilizing metal-carbon eutectics fixed points (upto 2474ºC) developed by NMIJ.

1.6μm models supplies calibration which certifies temperature range from 150 to 1100ºC by fixed point calibration method with fixed point blackbody furnace (In 157ºC to Cu 1085ºC).

JCSS** = Japan Calibration Service System

■ FEATURES

- Undertaking collaborative research with NMIJ, specifications and performance as high-precise standard radiation thermometer is realized.
- By utilizing three models of 0.9μm, 0.65μm and 1.6μm units, calibration from 150 to 3000ºC with the small uncertainty is realized.
- 0.9μm unit is applicable for 4-fixed points calibration by JCSS.
- 0.65μm unit can be calibrated on high-temperature fixed point furnace utilizing metal-carbon eutectics fixed points. (Φ0.6mm at 400mm)
- 1.6μm unit is applicable for low to mid temperature calibration.
- Embedded internal temperature control eliminates the need for output variation compensation against ambient temperature.
- Prepare various calibration tests in accordance with uncertainty.

■ APPLICATIONS

- Standard Radiation Thermometer for National Standard Laboratories, or Calibration Agencies
- High-precise Radiation Thermometer for the purpose of delivery inspection, periodical check and quality control at blackbody furnace user, high-temperature furnace manufacturer and user.

■ MODELS

Models	Measuring Wavelength	Models	Measuring Wavelength
IR-RST90H	0.9μm	IR-RST16H	1.6μm
IR-RST65H	0.65μm		

■ SPECIFICATIONS

Models	IR-RST90H	IR-RST65H	IR-RST16H
Measuring method	Monochromatic Radiation Thermometer		
Detecting Element	Silicon Photo Diode		InGaAs Photo Diode
Measuring Wavelength	0.90μm (half-width 80nm)	0.65μm (half-width 12nm)	1.6μm (half-width 150 nm)
Measuring Range	400 to 2000ºC (3-step selection)	1000 to 3000ºC (3-step selection)	150 to 1100ºC (3-step selection)
Range : L	400 to 750ºC	1000 to 1800ºC	150 to 390ºC
: M	600 to 1100ºC	1300 to 2500ºC	300 to 620ºC
: H	1000 to 2000ºC	1700 to 3000ºC	500 to 1100ºC
Resolution	0.1ºC (at 420ºC)	0.1ºC (at 1000ºC)	0.1ºC (at 150ºC)
Response Time (95%)	2 sec or less		
Optical System	Focusable lens type		
Lens Aperture	Φ 40mm		
Measuring Distance	400mm to ∞		
Distance factor (Minimal target size)	125 (Φ 3mm at 400mm)	650 (Φ 0.6mm at 400mm)	125 (Φ3mm at 400mm)
Targeting	Direct View Finder		
Output	Radiation luminance: 0 to 10V DC (with zero adjustment) Internal temperature: 0 to 5V DC (0 to 50ºC)		
Power Supply	24V DC ± 10%		
Working Temperature Range	5 to 35ºC		
Casing	Aluminum		
Weight	Approx 2.8Kg		
Mounting	Tripod mounting or 4-pc of M5 screws		
CE approval	EMC directive EN61326+A1+A2 Emission Class A, Immunity AnexA		-
Output stability under test condition of EMC directives	5ºC or less		-
	*Applicable conditions: Utilize exclusive power supply (IR-ZFEP), exclusive cable & output cable		-

■ CALIBRATION TEST (OPTION)

Classification	JCSS calibration			CHINO calibration		
Code	JCS-10A	JCS-10B	JCS-15	P-3	RA-3	-
Calibration for	IR-RST90H	IR-RST90H	IR-RST65H			IR-RST16H
Calibration Method	Fixed point cal	Fixed point cal + Comparison cal	Fixed point cal + Comparison cal	Fixed point cal	Comparison cal	Fixed point cal
Calibration Range	400 to 1100ºC	400 to 2000ºC	1000 to 2000ºC	1000 to 3000ºC	1000 to 3000ºC	400 to 1100ºC
Calibration Points	Zn (420ºC) Al (660ºC) Ag (962ºC) Cu (1085ºC)	Zn (420ºC) Al (660ºC) Ag (962ºC) Cu (1085ºC) 1400,1700,2000ºC	Cu (1085ºC) 1400ºC 1700ºC 2000ºC	Cu (1085ºC) Pt-C (1738ºC) Re-C (2474ºC)	1100ºC 1500ºC 2000ºC 2600ºC	*In (157ºC) *Sn (232 ºC) Zn (420ºC) Al (660ºC) Ag (962ºC) Cu (1085ºC)
Uncertainty	± 0.4K	Zn,Al,Ag,Cu± 0.4K 1400ºC· · · ± 2K 1700ºC· · · ± 4K 2000ºC· · · ± 4K	Cu· · · ± 0.4K 1400ºC· · · ± 3K 1700ºC· · · ± 4K 2000ºC· · · ± 5K	1000 to 2000ºC · · · ± 2K 2000 to 3000ºC · · · ± 5K	1000 to 2000ºC · · · ± 4K 2000 to 3000ºC · · · ± 10K	Contact CHINO
Documentation	JCSS calibration certificate Temperature output characteristic table			CHINO test certificate Temperature output characteristic table		CHINO test certificate Temperature output characteristic table

* IR-RST16H fixed point calibrations (In 157ºC and Sn 232ºC) will conducted by NMIJ.

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