

STANDARD RADIATION THERMOMETER



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), three models of 0.9 μ m, 0.65 μ m and 1.6 μ m in measuring wavelength are prepared.

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

0.65 μ m model supplies calibration upto 3000°C 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 2474°C) developed by NMIJ.

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



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 0.9 μ m, 0.65 μ m and 1.6 μ m units, calibration from 150 to 3000°C with the small uncertainty is realized.
- 0.9 μ m unit is applicable for 4-fixed points calibration by JCSS.
- 0.65 μ m unit can be calibrated on high-temperature fixed point furnace utilizing metal-carbon eutectics fixed points. (Φ 0.6mm at 400mm)
- 1.6 μ m 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	0.9 μ m	IR-RST16H	1.6 μ m
IR-RST65H	0.65 μ m		

■ 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 2000°C (3-step selection)	1000 to 3000°C (3-step selection)	150 to 1100°C (3-step selection)
Range : L	400 to 750°C	1000 to 1800°C	150 to 390°C
: M	600 to 1100°C	1300 to 2500°C	300 to 620°C
: H	1000 to 2000°C	1700 to 3000°C	500 to 1100°C
Resolution	0.1°C (at 420°C)	0.1°C (at 1000°C)	0.1°C (at 150°C)
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 50°C)		
Power Supply	24V DC ± 10%		
Working Temperature Range	5 to 35°C		
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	5°C or less		-
	*Applicable conditions: Utilize exclusive power supply (IR-ZFEP), exclusive cable & output cable		-

■ CALIBRATION TEST (OPTION)

Classification	JCSS calibration				CHINO calibration	
	JCS-10A	JCS-10B	JCS-15	JCS-10C	P-3	RA-3
Code	IR-RST90H	IR-RST90H	IR-RST65H	IR-RST16H	IR-RST65H	
Calibration for	IR-RST90H	IR-RST90H	IR-RST65H	IR-RST16H	IR-RST65H	
Calibration Method	Fixed point cal	Fixed point cal + Comparison cal	Fixed point cal + Comparison cal	Fixed point cal	Fixed point cal	Comparison cal
Calibration Range	400 to 1100°C	400 to 2000°C	1000 to 2000°C	400 to 1100°C	1000 to 3000°C	1000 to 3000°C
Calibration Points	Zn (420°C) Al (660°C) Ag (962°C) Cu (1085°C)	Zn (420°C) Al (660°C) Ag (962°C) Cu (1085°C) 1400,1700,2000°C	Cu (1085°C) 1500°C 2000°C 2400°C 2800°C	Zn (420°C) Al (660°C) Ag (962°C) Cu (1085°C)	Cu (1085°C) Pt-C (1738°C) Re-C (2474°C)	1100°C 1500°C 2000°C 2600°C
Uncertainty (CMC: Calibration and Measurement Capabilities)	± 0.4°C	Zn,Al,Ag,Cu± 0.4°C 1400°C...± 2°C 1700°C...± 4°C 2000°C...± 4°C	Cu...± 0.4°C 1500°C...± 3°C 2000°C...± 4°C 2400°C...± 4°C 2800°C...± 6°C	± 0.4°C	1000 to 2000°C ...± 2°C 2000 to 3000°C ...± 5°C	1000 to 2000°C ...± 4°C 2000 to 3000°C ...± 10°C
Documentation	JCSS calibration certificate Temperature output characteristic table				CHINO test certificate Temperature output characteristic table	

* IR-RST16H fixed point calibrations of In 157°C and Sn 232°C will be conducted by CHINO standard upon additional requests.

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