

# 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), two models of 0.9 $\mu$ m and 0.65 $\mu$ m in measuring wavelength are prepared.

0.9 $\mu$ 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 $\mu$ 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.



JCSS\*\* = Japan Calibration Service System

## ■ FEATURES

- Undertaking collaborative research with NMIJ, specifications and performance as high-precise standard radiation thermometer is realized.
- By utilizing two models of 0.9 $\mu$ m and 0.65 $\mu$ m units, calibration from 400 to 3000°C with the small uncertainty is realized.
- 0.9 $\mu$ m unit is applicable for 4-fixed points calibration by JCSS.
- 0.65 $\mu$ m unit can be calibrated on high-temperature fixed point furnace utilizing metal-carbon eutectics fixed points. ( $\Phi$ 0.6mm at 400mm)
- Embedded internal temperature control eliminates the need for output variation compensation against ambient temperature.
- Prepare various calibration test 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
IR-RST90H	0.9 $\mu$ m
IR-RST65H	0.65 $\mu$ m

## ■ SPECIFICATIONS

Models	IR-RST90H	IR-RST65H
Measuring method	Monochromatic Radiation Thermometer	
Detecting Element	Silicon Photo Diode	
Measuring Wavelength	0.90μm (half-width 80nm)	0.65μm (half-width 12nm)
Measuring Range	400 to 2000°C (3-step selection)	
Range : L	400 to 750°C	1000 to 1800°C
: M	600 to 1100°C	1300 to 2500°C
: H	1000 to 2000°C	1700 to 3000°C
Resolution	0.1°C (at 420°C)	0.1°C (at 1000°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)
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

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

Specifications subject to change without notice.

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