

OL Series 454

Integrating Sphere Calibration Source



The source is calibrated for luminance or radiance with the variable aperture completely open. The variable aperture can be used to attenuate the output of the sphere source over a range of six decades. The sphere has a highly reflecting, diffusely reflecting PTFE based coating. The in-line sphere port geometry, with an intermediate spider baffle in the middle of the sphere, provides for exceptional uniformity in the near normal luminance over the entire radiating port of the sphere. A shutter is located between the lamp and the entrance port of the sphere. A filter holder, mounted at the exit port, accommodates optional spectral shaping filters for simulation of various sources such as Illuminants A, B, C, D65, etc.

Controller

The OL 53 is a highly regulated constant current DC power supply that optimizes source stability and accuracy. The lamp current is displayed on a 4 digit ammeter and can be adjusted via a 10 turn control pot from 0 to 6.5000 amperes. The uncertainty in the current setting is $\pm 0.05\%$. In order to enhance the stability and life of the lamp, a current ramp up/ramp down circuit is employed which prevents thermal shock to the lamp. An elapsed time meter is provided with a maximum range of 9999.99 hours to accurately monitor the calibration life of the source. In addition, an automatic shut down circuit is employed which turns off the unit in case of excessive current due to system malfunction or accidental setting of too high a lamp current by the user.

General

The OL Series 454 Integrating Sphere Source is designed for calibrating telephotometers or microphotometers. It is a stable, large area, highly diffuse sphere source consisting of an OL 454 Series Optics Head and a separate OL 53 Constant Current Source. Calibration options include luminance, color temperature and spectral radiance. The separate Optics Head and Current Source enables remote location of either unit which facilitates alignment or positioning of the source with respect to the device to be calibrated. The Optics Head is designed such that it can be configured with integrating spheres having diameters of 4, 6, 8, 12 and 18 inches with exit (radiating) ports of 1, 1 $\frac{1}{2}$, 2, 3, and 6 inches respectively.

Source Module/Optics Head

The Source Module/Optics Head uses a 150-W tungsten-halogen reflectorized lamp with a micrometer-controlled variable aperture between the lamp and the integrating sphere.

OL SERIES 454 SPECIFICATIONS

OL 454-OH OPTICS HEAD

Luminance Uncertainty (FS).....	± 3% relative to NIST
Color Temperature Range	2000 to 3000 K
Color Temperature Uncertainty	±35 K
Source Stability @ 2856 K	
Short Term	± 1.0%
Long Term.....	± 3% 50 hours/1 year
Spectral Radiance Uncertainty @ 550 nm.....	± 4% relative to NIST
Sphere Coating (reflectance)	> 99% (350 to 1100 nm)
Shutter	Open/ Closed

OL 53 CONTROLLER

Current Display (4 digits).....	Amperes
Current Adjustment Range.....	0 to 6.5 amps DC
Current Accuracy (amps DC)	± 0.05% (4 digits)
Current Regulation (amps DC).....	± 0.01% for 10% line variation
Lamp Power Cycle.....	60 second ramp function
Current Temperature Regulation.....	± 0.025% / 10° C
Operating Temperature Range	15° to 35° C
Operating Humidity Range	10% to 85% (non-condensing)
Elapsed Time Meter	0 to 9999.99 hours
Power (user selectable)	115 VAC or 230 VAC ±10%, 50/60 Hz

LUMINANCE LEVELS (nominal)

Model Number	Sphere Diameter	Exit Port Diameter	Uniformity	Maximum Luminance	
				@ 2856 K	@ 3000 K
OL 454-4	4"	1"	±0.5%	22,000 fL	35,000 fL
OL 454-6	6"	1½"	±0.5%	12,000 fL	20,000 fL
OL 454-8	8"	2"	±0.5%	9,000 fL	13,000 fL
OL 454-12	12"	3"	±0.5%	4,000 fL	6,400 fL
OL 454-18	18"	6"	±1.0%	700 fL	1,100 fL

Other configurations available upon request.

CALIBRATION OPTIONS

OL 454-X.....	luminance, color temperature
OL 454-X-1	luminance, color temperature, ^{1/} spectral radiance (350 to 1100 nm)
OL 454-X-2	luminance, color temperature, ^{1/} spectral radiance (350 to 2500 nm)
OL 454-X-U	uncalibrated

* **Note:** "X" designates the diameter of the integrating sphere.

^{1/}Spectral radiance measured at a color temperature of ~3000K unless otherwise specified.