

OL Series 454 Integrating Sphere Source



General

The OL Series 454 Integrating Sphere Source is designed to produce a high intensity Lambertian distribution. It is useful as a highly uniform illumination source for contrast measurements, linearity tests, flat-fielding of devices for response uniformity, and device MTF with the optional filter holder and the desired resolution target. It consists of an OL 454 Series Optics Head and a separate OL 53 Constant Current Source. The source is also available with a color temperature calibration over the 2000 – 3000K range. The source module/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, 1½, 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.

The variable aperture can be used to attenuate the output of the sphere source over a range of up to six decades.

The sphere has a highly reflective, diffuse 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. An optional filter holder, mounted at the exit port, accommodates alignment targets, filters, de-coupling diffusers etc. for specific user requirements. Spectral shaping filters can be utilized to simulate various sources such as illuminates 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 6.500 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 that 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.

OL SERIES 454 SPECIFICATIONS

OL 454-OH OPTICS HEAD

Correlated Color Temperature Range	2000 to 3000 K
Correlated Color Temperature Uncertainty	± 25 K
Luminance Stability @ 2856 K	
Short Term	± 1.0% (after 15 minute warm-up)
Long Term	± 3% 50 hours/ 1 year
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 amperes 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%	22000 fL	35000 fL
OL 454-6	6"	1½"	± 0.5%	12000 fL	20000 fL
OL 454-8	8"	2"	± 0.5%	9000 fL	13000 fL
OL 454-12	12"	3"	± 0.5%	4000 fL	6400 fL
OL 454-18	18"	6"	± 1.0%	700 fL	1100 fL

Other configurations available upon request.

CALIBRATION OPTIONS

OL 454-X-K..... color temperature (2000 - 3000K)
 OL 454-X-U uncalibrated

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