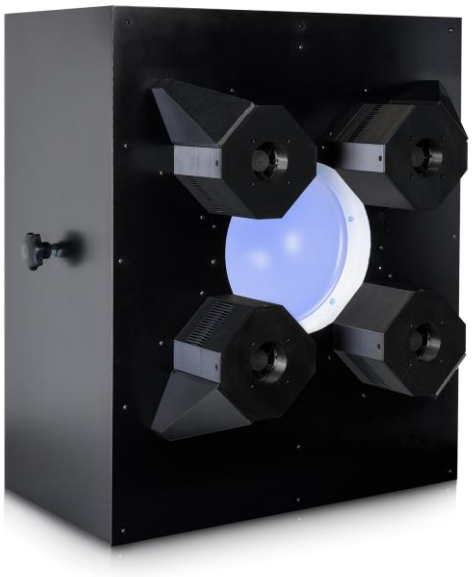


Overview

Product name	CAL3XL
Principle	Integrating sphere designed as calibration light source for cameras with a large field of view and based on iQ-LED technology (includes micro spectrometer), software controlled. The iQ-LED technology is optimized for best spectral match and allows CRI values up to 99, depending on illuminant and intensity.

Features

Integrating sphere

Diameter integrating sphere	500 mm
Output window	Circular output window with bowl shaped diffusor, 196mm diameter

Illumination

Light source	4 x iQ-LED V2 Image Engineering iQ-LED V2 technology: 41 SMD high power LEDs / separated in 20 color channels / Spectral range: 380 – 820 nm / Intensity controlled via 4000 steps per channel and 32 kHz PWM (switchable to 1000 steps with 128 kHz) / an approx. lifetime of 10.000 hrs. / Typical LED spectra on request
Control functionality without PC	Storage of up to 44 different illuminants and one sequence on the device, default light source, controllable via micro switches on the device without PC
Uniformity	> 90%* at a depth of approx. 65 - 85 mm inside diffuser
Illumination stability	+/- 1% when stabilized (2% after switching D illuminants in the first 5 seconds)
Response time (switch illuminant)	< 50 ms
Maximum / Minimum illumination level	Up to 4500 lx for standard D illuminants Min. down to 10 lx for standard D illuminants

Dim function	Software based by presetting of intensity (lux / watt)
Predefined standard illuminants	D50, D55, D65, D75, A, B, C Planckian spectral curve by selected temperature (1900 - 18,000 K)
Service life	10,000 h

Spectrometer

Construction	Built-in spectrometer
Spectral range	350 – 860 nm
Pixel resolution	2048 pixel
FWHM	2.4 nm
Output data	Real time measurement of spectral trend and radiant power via control software
Calibration	NIST traceable Yearly calibration required independent of working hours (contact Image Engineering)

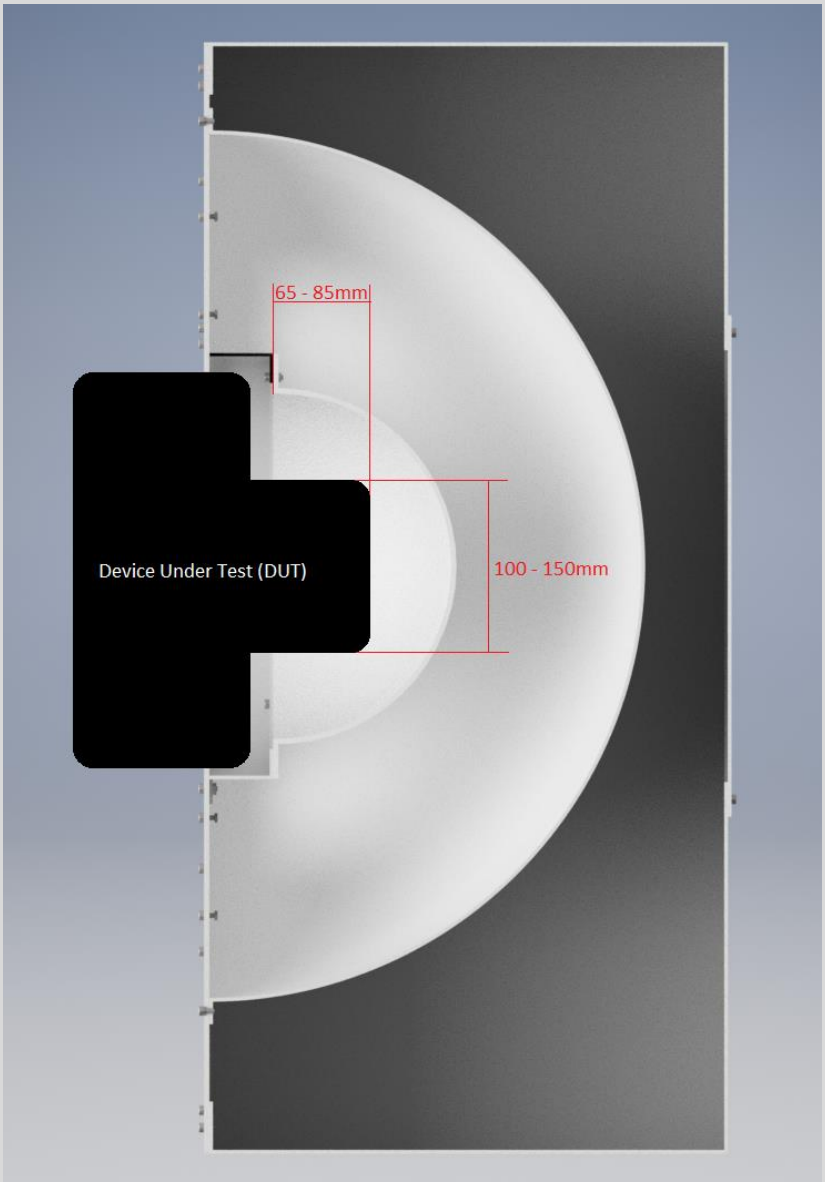
Software

System requirements	PC with Windows 7 operating system (or higher) USB port
Functions	• Auto generation of external measured spectra • Creation or adaptation of spectral trends via 20 LED channels • Save and load function of self-defined spectral arrangements or intensities • Storage of illuminants/sequences on device • Creation of test sequences • Real time display of spectral measurement • Real time calculation of CCT, CRI, illumination level (lux / watt)
API (C++)	Optionally available (iQ-LED API)

General description hardware

Power supply / consumption	110 V / 230 V, 200 W
Ports	1 x USB for software control 1 x port for power adaptor
Dimension [W x H x D]	535 x 643 x 330 mm
Weight	Approx. 15 kg
Operating conditions	Optimal: 22 - 26 degrees Celsius, maximum: 18 - 28 degrees Celsius
Warm up time	< 2 min. at optimal ambient temperature
Scope of delivery	Integrating sphere, spectrometer (built-in), power cord, USB cable, control software, calibration protocol Optional: iQ-Align XL for quick and easy camera alignment

Requirements on device under test (DUT)

Recommended max. dimensions	The maximum device diameter inside the diffuser should be between 150 and 100 mm, depending on the depth at which it is positioned.
Max. field of view	180°
Recommended depth inside diffuser	min. 65 mm, max. 85 mm
Positioning of DUT	 Please note: for accurate results, the optical axis of the DUT lens needs to be aligned with the center of the diffuser.

* Measurement performed in the center of diffuser, standard illuminant D65