



## Overview

Product name	CAL1 V2
Principle	An integrating sphere designed as a calibration light source based on iQ-LED technology (includes micro spectrometer) and software controlled.

## Features

### Integrating sphere

Diameter integrating sphere	290 mm
Output window	Circular output window with diffuser plate, 70 mm diameter

### Illumination

Light source	<p>1 x iQ-LED V2</p> <p>Image Engineering iQ-LED V2 technology:</p> <p>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) / approx. lifetime of 10000 hours / Typical LED spectra on request</p>
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 a PC
Uniformity	> 98% (70 mm diameter circle)
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	8000 lx for standard D illuminants Minimum down to 25 lx, depending on illuminant and required curve fit / CRI
Dim function	Software-based by presetting the intensity or by selecting different pre-stored intensity illuminants directly on the device
Predefined standard illuminants	D50, D55, D65, D75, A, B, C, E Planckian spectral curve by selected temperature (1900 - 18000 K)
Service life	10000 h

## Spectrometer

Construction	Built-in spectrometer
Spectral range	305 – 1100 nm
Pixel resolution	2048 pixel
FWHM	2.5 nm
Output data	Real-time measurement of spectral trend and radiant power via control software
Calibration	NIST traceable yearly calibration is required independent of working hours (contact Image Engineering)

## Software

System requirements	PC with Windows 7 operating system (or higher) USB port
Functions	<ul style="list-style-type: none"> <li>• Auto generation of standard illuminants or externally measured spectra</li> <li>• Creation or adaptation of spectral trends via 20 LED channels</li> <li>• Save and load function of self-defined spectral arrangements or intensities</li> <li>• Storage of illuminants/sequences on the device</li> <li>• Creation of test sequences</li> <li>• Real-time display of spectral measurement</li> <li>• Real-time calculation of CCT, CRI, curve fit, and illumination level (lux/watt)</li> </ul>
API (C++)	Available as a separate option (iQ-LED API)



## Optional features

---

### Filter Adapter

---

Thread	M77 x 0.75 filter thread
Output window	70 mm diameter
Compatible filters	Commercially available filters include: Neutral density filters Polarization filters

## General description hardware

---

Power supply/consumption	110 V / 230 V, 200 W
Ports	1 x USB for software control 1 x port for the power adaptor 1 x 3.5 mm jack for trigger output
Dimension [W x H x D]	300 x 400 x 300 mm
Weight	2.7 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	CAL1 V2, spectrometer (built-in), power cord, USB cables, control software, calibration protocol. Optional: iQ-align for a quick and easy camera alignment