CAL3 V2 data sheet

Overview

Product name	CAL3 V2
Principle	Integrating sphere designed as calibration light source for high field of view cameras based on iQ-LED technology (includes micro spectrometer). 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	290 mm
Output window	circular output window with bowl shaped diffuser, 38 mm diameter

Illumination

Light source	1 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 10000 hours / 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	> 95%* for FOV < 160° at min. 10 mm depth inside diffuser for 160°-180° FOV at min. 20 mm depth 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	7000 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 required independent of working hours (contact Image Engineering)

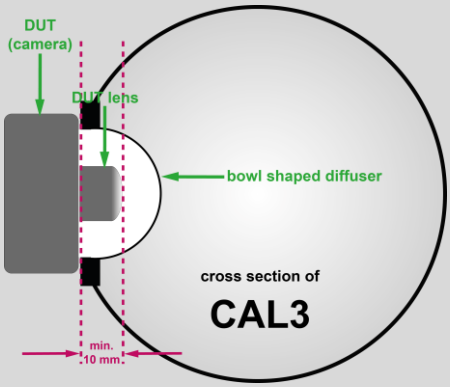
Software

System requirements	PC with Windows 7 operating system (or higher) USB port
Functions	• Auto generation of standard illuminants or 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, curve fit and illumination level (lux / watt)
API (C++)	Available as a separate option (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 1 x 3.5 mm jack for trigger output
Dimension [W x H x D]	290 x 300 x 400 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	integrating sphere, spectrometer (built-in), power cord, USB cable, control software, calibration protocol. Optional: iQ-align for a quick and easy camera alignment

Requirements on device under test (DUT)

Max. lens diameter	37 mm
Min. lens length	10 mm
Max. field of view	180°
Positioning of DUT	

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