Image Engineering CAL4-E Illumination Device User Manual

Contents

Image Engineering

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INTRODUCTION

Important information: Read the manual carefully before using this device. Inappropriate utilization may cause damage to the device, to the DUT (device under test), and/or other components of your setup. Keep these instructions in a safe place and pass them on to any future user.

Conformity

We, Image Engineering GmbH & Co. KG, hereby declare that the CAL4-E corresponds to the essential requirements of the following EC directive in its current version:

- Electromagnetic Compatibility – 2014/30/EU

Intended use

The integrating sphere is designed to measure color, resolution, OECF, dynamic range, and noise when using the endoscopy light source.

- Only suitable for indoor use.
- Place your system in a dry, constant tempered environment without light interference.
- The optimal ambient temperature range is 22 to 26 degrees Celsius.

General safety information

- Do not look directly at the open sphere or light source when using high intensities.
- Do not open the device without prior instructions from the Image Engineering support team.

GETTING STARTED

Scope of delivery

- CAL4-E – 30 cm integrating sphere (without light source)

- Four adapters for various types of endoscopes
- High temperature resistant cold-light cable, XENON approved

OPERATING INSTRUCTIONS HARDWARE

Requirements

- Endoscope
- Projector

Connection to the projector
Connect the CAL4-E to your projector by using one of the four adapters with the fiber.

Starting the system
Use the brackets to place a test chart on the CAL4-E opening and turn on the projector’s light source.

NOTE
The CAL4-E device can only operate with high precision when the projector’s light source is ready to use. Please consult the user manual of your projector to get the information about the warmup time for constant illuminance.

Endoscopy positioning
Please verify that:

- The image height includes the test chart height.

- The lens is precisely in the middle of the test chart

Not fulfilling these requirements will lead to a non-uniform illuminated field of view and might provide questionable measurement results.

ADDITIONAL INFORMATION

Care instructions

- Do not touch, scratch, or pollute the diffuser.
- If there is any dust on the diffuser, clean it with an air blower.
- If the fiber is removed from the CAL4-E, the illumination is invalid
- Store and transport the CAL4-E only in the delivered hard case.

Disposal instructions

After the service life of CAL4-E, it must be disposed of properly. Observe your national regulations and ensure that CAL4-E cannot be used by third parties after disposing of it. Contact Image Engineering if assistance for disposal is required.

TECHNICAL DATASHEET

See annex for the technical data sheet. It can also be downloaded from the website of Image Engineering: **https://image-engineering.de/support/downloads**.

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Documents / Resources

	**Image Engineering CAL4-E Illumination Device** [pdf] User Manual CAL4-E Illumination Device, CAL4-E, Illumination Device

References

- Image Engineering - Solutions to test image Quality
- Downloads