



LG4

User Manual

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1 INTRODUCTION

Important information: Read the manual carefully before using the 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.

1.1 Conformity

We, Image Engineering GmbH & Co. KG, hereby declare that the LG4 corresponds to the essential requirements of the following EC directive:

- Electromagnetic Compatibility - 2014/30/EU
- Photobiological safety of lamps and lamp systems - IEC 62471:2009

1.2 Intended use

The LG4 is a high intensity illuminator for transparent charts based on LED technology. The device can be controlled over the integrated rotary knob and over the LG Software.

- Only suitable for indoor use.
- Place your system in a dry and constant tempered environment without any interfering light.
- The optimal ambient temperature range is 22 to 26 degrees Celsius. The maximum ambient temperature range is 18 to 28 degrees Celsius.
- **The system has an internal temperature management system, if there is any error regarding the internal temperature the system automatically turns off to avoid any damage.**

1.3 General safety information

Do not open the device without any instructions from the Image Engineering support team or when connected to the power supply.

1.3.1 Eye safety

The LEDs used in the LG4 can be classified as belonging to the Exempt Group or Risk Group 1 according to IEC 62471:2009.



2 GETTING STARTED

2.1 Scope of Delivery

- LG4
- Tripod handle
- Power supply
- USB cable
- Control software
- User manual
- Calibration protocol

Optional equipment:

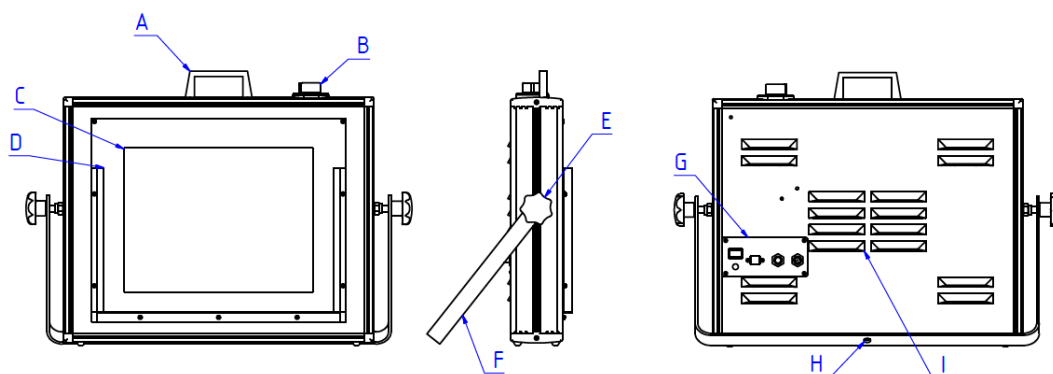
- LG C++ API.

2.2 Commissioning

Keep all ventilation slits of the LG4 illumination unit free of foreign objects. The minimum clearance is 15 cm.

3 OPERATING INSTRUCTIONS HARDWARE

3.1 Overview

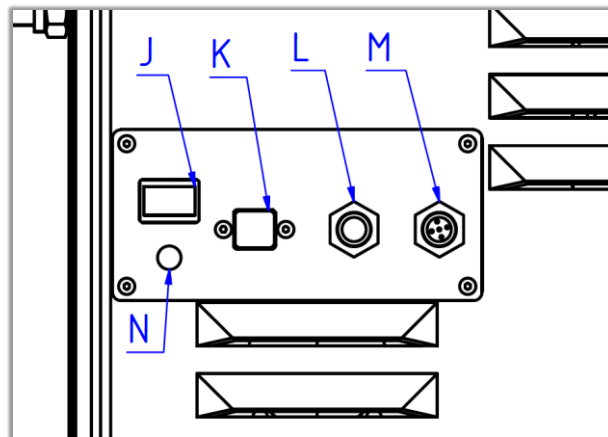


1. Hardware Overview

A. Handle



- B. Multifunctional rotary/push knob
- C. Diffuser
- D. Chartholder
- E. Tripod support adjustment
- F. Tripod support
- G. Connection ports
- H. Tripod connection
- I. Ventilation grill



2. I/O Interface

- J. Main power switch
- K. USB 2.0 Type B
- L. CAN in
- M. CAN out
- N. 24 V DC

3.2 Connecting the hardware

Connect the original 24 V DC power supply to the power socket (N) of the LG4. Never use a third-party power supply.

3.2.1 CAN connection

If you have more than one LG4 and want to connect them over CAN (Controlled Area Network), select the master LG4 and connect it to your PC.



3.3 Starting the system

The powerswitch (F) is located on the upper side of the control unit.

3.3.1 Power modes

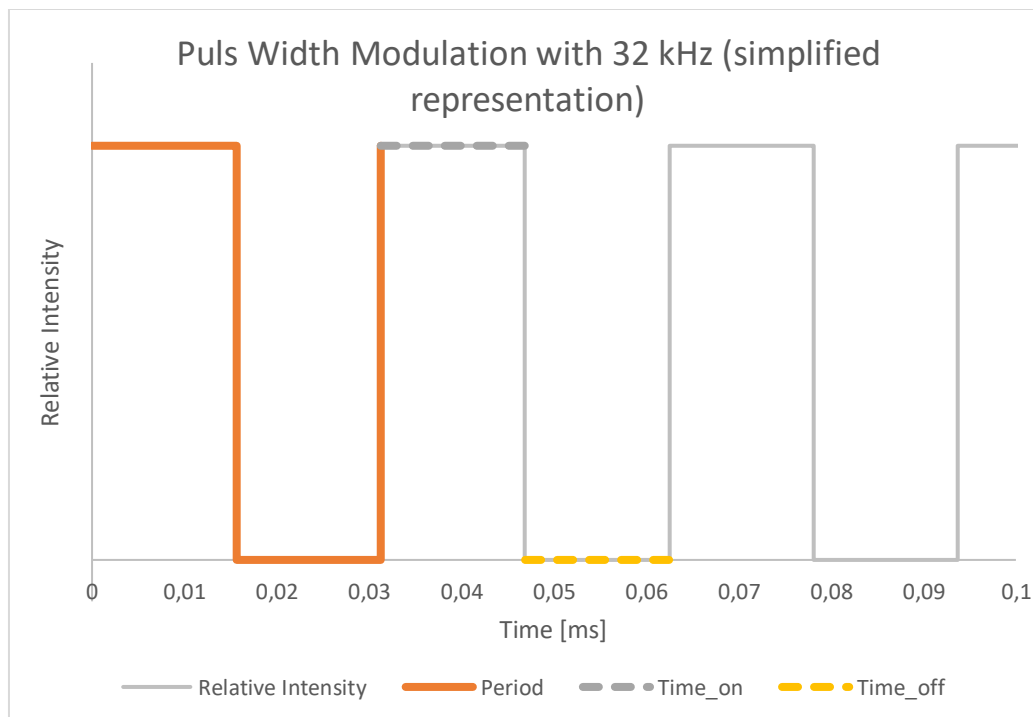
The LG4 provides two intensity modes for the illumination

- **NORM:** 32 kHz PWM, variable duty cycle
- **LOW:** 32 kHz PWM, variable duty cycle approximately 1/10 of the NORM Mode power output

Switch between the power modes by pushing and holding the rotary knob (B)

3.3.2 PWM (Pulse Width Modulation)

The LG4 uses pulse width modulation (PWM) to control illumination levels. The high frequency of 32 kHz allows a flicker-free image acquisition for most cameras. The constant current has the benefit of a constant correlated color temperature.



LED intensity over time at 32 kHz pulse width modulation with 50% duty cycle

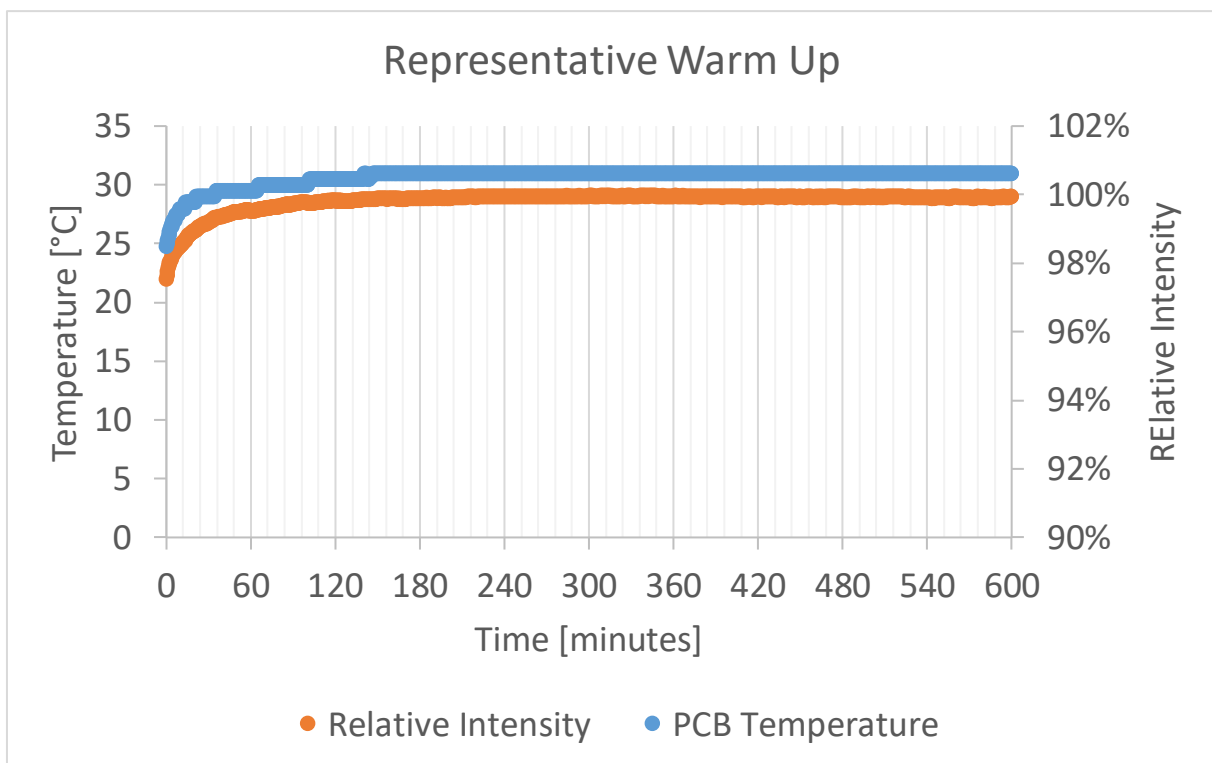


3.3.3 Setting the illumination level

Push and release the multifunctional rotary knob (B) to turn the illumination on and off. Turn (B) to set the illumination level. Push and hold (B) to switch between the LOW and NORM power modes.

3.3.4 Warm-up time

The intensity of continuous illumination in the LOW and NORM modes is not actively stabilized. The efficiency of LEDs correlates to their temperature. Depending on the selected illumination level and stability of the ambient temperature, the LG4 regularly reaches a stable temperature after up to 10 minutes. The Illumination level will not fluctuate at a constant temperature.



4 ADDITIONAL INFORMATION

4.1 Maintenance

- Do not touch, scratch, or pollute the diffuser.
- If there is any dust on the diffuser, clean it with compressed air or an air blower.



4.2 Storage and Transport

Store and transport the LG4 only in a suitable package, providing sufficient protection to the device.

The LG3 flight case fits the LG4 and can be ordered from Image Engineering.

4.3 Disposal Instructions

The LG4 must be adequately disposed of after the service life is over. Electrical and electromechanical components are included in LG4. Observe your national regulations and ensure that third parties cannot use LG4 after disposing of it.

Contact Image Engineering if assistance for disposal is required.

5 TECHNICAL DATA SHEET

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