

RAPID SPECTRO CUBE LED

MANUAL

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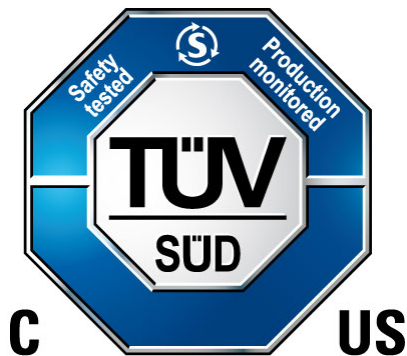
1 Basic device information

This chapter contains the following information about the device:

- **Technical specifications:** see page [6](#)
- NRTL TÜV SÜD-Mark
- **Technical specifications:** see page [6](#)
- **Nameplate:** see page [6](#)
- **Scope of delivery:** see page [6](#)
- **Intended Use:** see page [12](#)
- **Components:** see page [12](#)

1.1 NRTL TÜV SÜD-Mark

The production of the RSC LED is monitored and its safety tested and therefore certified by NRTL TÜV SÜD¹.



¹Nationally Recognized Testing Laboratory, a program of the OSHA (Occupational Safety & Health Administration)

1.2 Technical specifications

Physical Dimensions

- **Physical Dimensions:** 410 mm x 510 mm x 610 mm
- **Weight (empty):** 14.8 kg

Electrical power supply

- **Supply voltage:** 100 to 240 V AC 50/60Hz
- **Rated current:** 1 A (max. 6 A)
- **Protection class:** I
- **IP Code:** IP20

1.3 Environmental conditions

- **Altitude:** Max. 2000 m
- **Ambient temperature:** Max. 40°C
- **Relative humidity:** 10-80%
- **Mains supply voltage fluctuations:** $\pm 10\%$
- **Overvoltage category:** II
- **Pollution degree:** PD2

1.4 Nameplate


The nameplate is located on the back of the device:


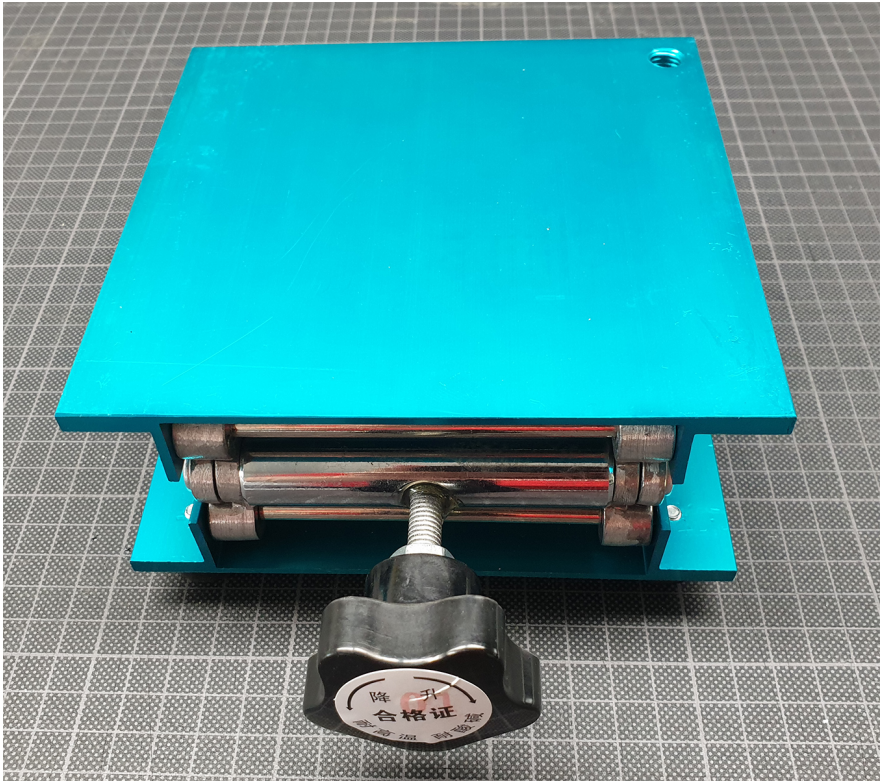


1.5 Scope of delivery

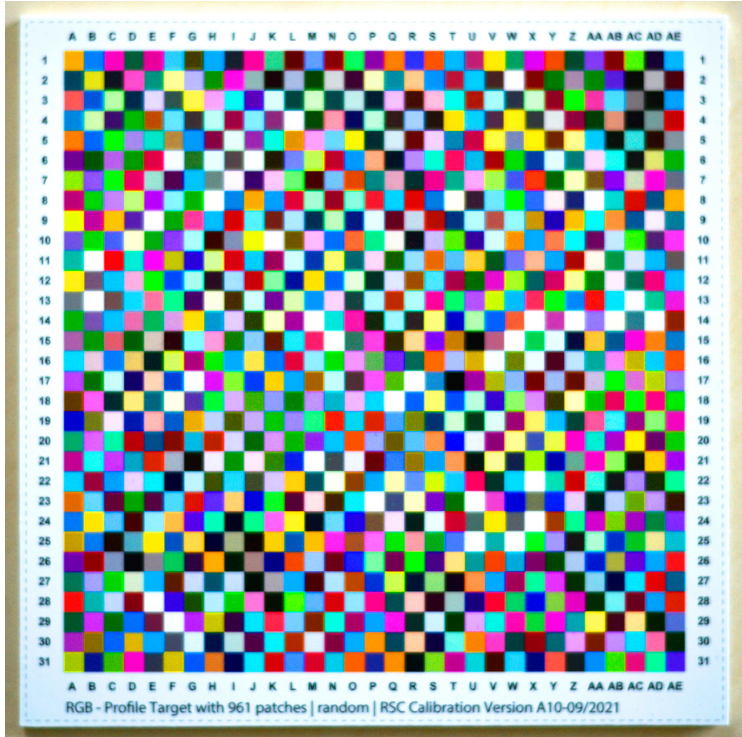

Hardware



The scope of delivery for the Rapid Spectro Cube includes the parts listed below:

Position	Description	Image
1	Rapid Spectro Cube LED main unit	 A photograph of the Rapid Spectro Cube LED main unit. It is a cube-shaped device with a silver metal frame. The front face is black with a grid of orange squares. The top face is black with the ColorGATE logo and the text 'RSCLED' in white and orange. A red emergency stop button is located on the top face. A black handle is visible on the right side of the cube.

Position	Description	Image
②	Drawer section with connection elements	
③	Lift table	

Position	Description	Image
4	Camera (Nikon D780)	
5	USB cable (2x)	

Position	Description	Image
6	Calibration chart	
7	White plate	

Position	Description	Image
8	Black plate	
9	USB cable rectangular	

Software

Additionally, the following software products are required to operate the RSC LED:

- ColorGATE Productionserver 21
- RSCCaptureV2 software package for Productionserver

You can download the software in our [Service & Support Area](#) under **Download > Software & Updates** (registration required). Please refer also to our Getting Started Guide for Productionserver. You can download it from our [website](#).

Note: The use of the black and white plate and calibration chart is explained in the RSCaptureV2 software manual.

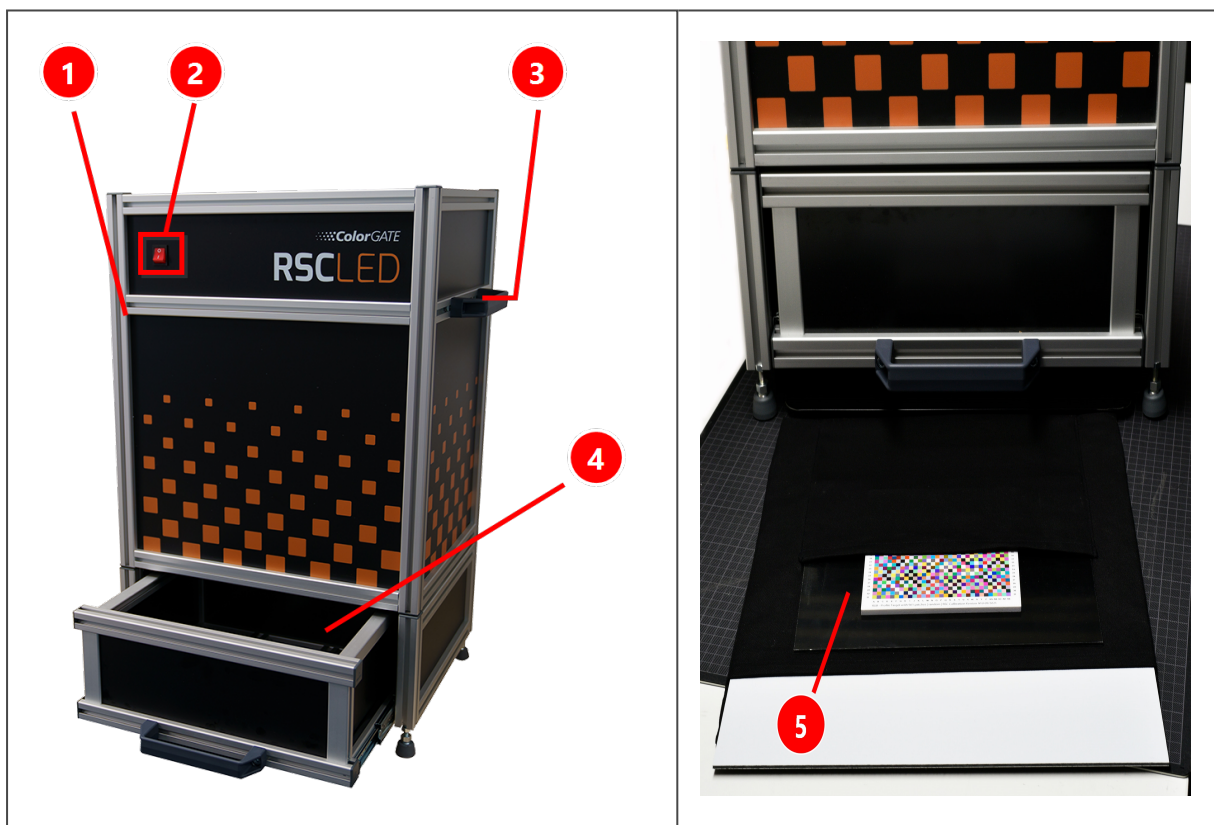
1.6 Intended Use

The Rapid Spectro Cube LED is an optical, electrical measurement device. Its intended use is the measurement of color on various printable substrates in order to create an ICC output profile for different color models. The device is a product in the sense of the Low Voltage Directive 2014/35/EU and the Electromagnetic Compatibility (EMC) Directive 2014/30/EU.

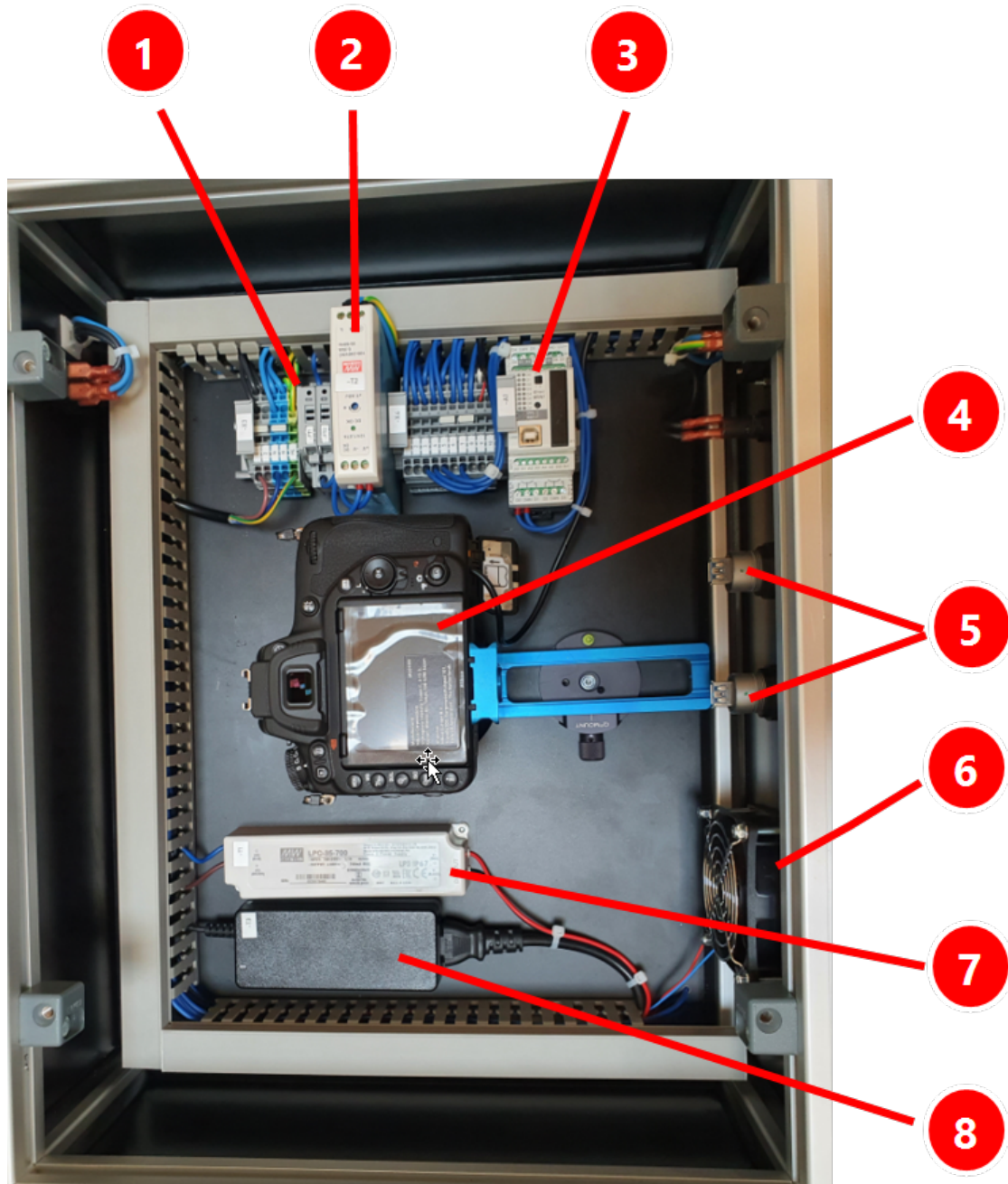
To prevent personal injury or property damage, use the device only as described in the user documentation. Any other use is considered to be improper. ColorGATE will assume no liability for damages resulting from improper use.

1.7 Components

Main unit with drawer section - front view



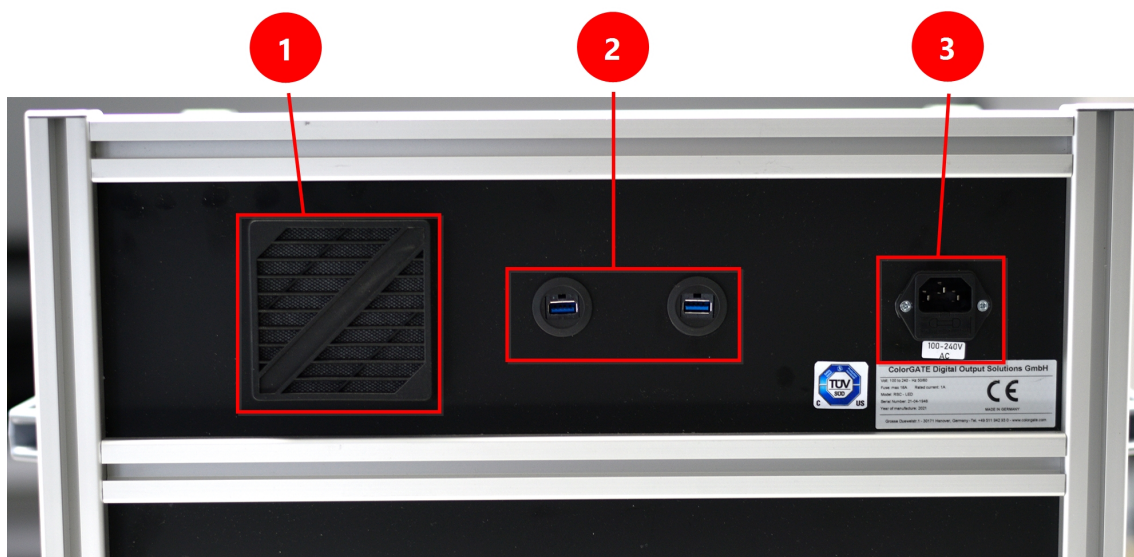
Position	Description
①	Casing
②	Main switch
③	Carrying handles
④	Drawer
⑤	Storage below the drawer for black and white plate and calibration chart below the drawer

Main unit - top view with removed lid

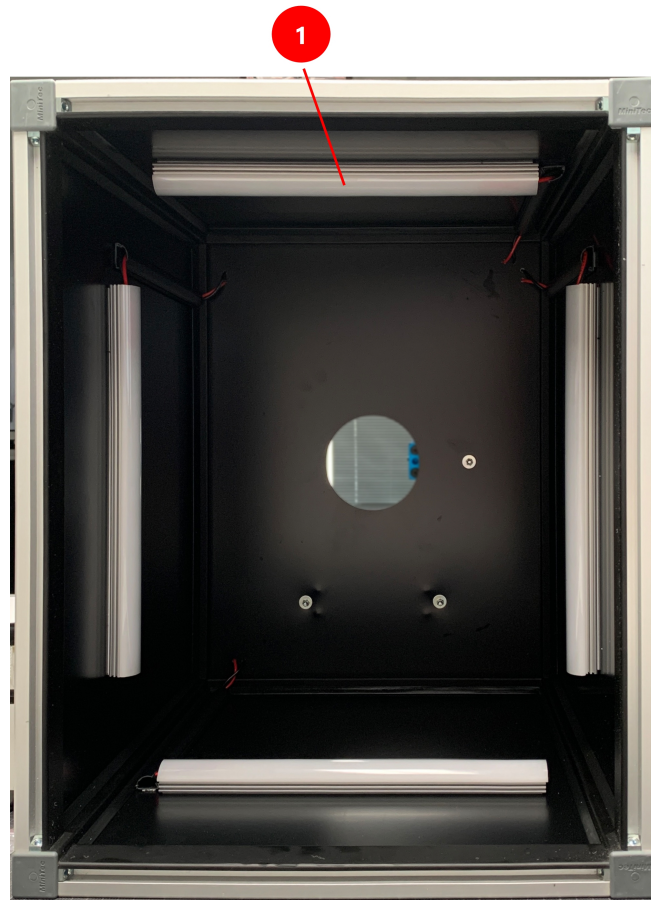
Position	Description
1	Automatic circuit breaker
2	Fan/controller supply

Position	Description
③	LED controller
④	Camera (Nikon D780)
⑤	USB connections for the LED controller and for data transferred to the PC (position 3)
⑥	Fan
⑦	LED power supply
⑧	Power supply unit

Main unit - rear view



Position	Description
①	Fan
②	USB ports
③	Power supply



1	LED light strips
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2 About this manual

This chapter contains the following information about using this manual:

- **Scope:** see page [17](#)
- **Warning signs:** see page [17](#)

2.1 Scope

This manual provides you with information about the Rapid Spectro Cube LED. It gives you information regarding:

- Safety
- Initial setup
- Operation
- Maintenance
- Disposal

The operating company is responsible for the safekeeping of all manufacturer's documents including this manual. The manual must always be available to the user.


This manual is supplemented by the following additional documentation:

- RSCCapture V2 Software Manual
- Nikon D780 Camera Manual

2.2 Warning signs

The warnings in these operating instructions are marked with warning signs and signal words. The type of danger is indicated by the warning sign and the signal words.





The preceding warnings are structured as follows:

	Warning
	Nature and source of the hazard, possible consequences <ul style="list-style-type: none">• Measures to avoid the hazard

Meaning of the signal words

- DANGER: immediate risk of danger to life or serious physical injury
- WARNING: possible risk of fatal injury or serious bodily harm
- CAUTION: possible risk of minor or moderate bodily injury
- NOTICE: Possible risk of property damage

Meaning of the pictograms

	General warning sign
	Warning against electrical hazards
	Warning against hand injuries
	Wear personal protective equipment

3 Safety

This chapter contains the following information on operating the device safely:

- **Preliminary notes on safety:** see page [19](#)
- **Safety instructions:** see page [19](#)
- **Personal protective equipment:** see page [21](#)
- **Protective devices:** see page [21](#)

3.1 Preliminary notes on safety

The Rapid Spectro Cube LED was designed and manufactured according to the state of the art. The results of the risk assessment were taken into account in the design.

If the Rapid Spectro Cube LED is used as intended, the hazards that can arise from normal operation are reduced to a minimum.

3.2 Safety instructions

3.2.1 General safety instructions

- The Rapid Spectro Cube LED is intended for indoor use only. The device must not be used outdoors or in tropical climates.
- To ensure trouble-free operation of the unit, damaged and/or worn parts must be replaced in good time.
- The device must be switched off for maintenance and repair work.
- Dirt and objects lying around cause slipping and tripping hazards. Injuries can be caused in the event of a fall. Keep the work area clean and eliminate tripping hazards.


3.2.2 Safety instructions for the mechanical system

- Do not use the Rapid Spectro Cube LED if you do not know how to operate it.
- Only install or work on the Rapid Spectro Cube LED if you have been trained and instructed in its operation.

- Even though the Rapid Spectro Cube LED has been designed and built safely and is equipped with safety precautions, hazards may still arise from the device. This is particularly the case if specified operating sequences and safety instructions are disregarded. Protect yourself and others by working according to regulations.
- Do not climb on the Rapid Spectro Cube LED and do not use it as a climbing aid or as a shelf.
- Keep the area around the Rapid Spectro Cube LED as well as the escape routes free of objects that pose a tripping hazard and may hinder rapid evacuation.
- Pay attention to unusual behavior during operation of the Rapid Spectro Cube LED, as this may indicate an imminent malfunction that could result in a potentially dangerous situation.
- Some parts of the Rapid Spectro Cube LED pose an increased risk of injury due to crushing and entrapment of limbs and impact with protruding components.
- Never dismantle, bypass or render protective devices unusable. Electrical equipment poses a danger to life!
- When working with heavy parts, use suitable lifting equipment to avoid spinal injuries.
- Wear appropriate personal protective equipment during assembly, maintenance and cleaning work.
- Injecting liquids into the device when it is connected to the power supply can cause a short circuit.
- When working with and on the Rapid Spectro Cube LED, use only compatible and intact tools and suitable equipment. Defective tools can cause injuries.
- Do not make any unauthorized changes to the device, or the Rapid Spectro Cube LED will lose its conformity as a result.
- Do not leave any tools or objects on the Rapid Spectro Cube LED after work. They could impair the function of the device.

3.2.3 Safety instructions for electrical systems

- Only qualified electricians may work on the electrical equipment of the Rapid Spectro Cube LED.
- When replacing electrical components, only install parts with the same specification.

	Warning
	Injuries from electric shock when using wrong mains power supply cord <ul style="list-style-type: none"> • Do not use a mains power supply cord with insufficient rating. • Before switching on the Rapid Spectro Cube LED, make sure the correct mains power supply cord is connected. • If the mains power supply cord needs to be replaced, make sure to switch off the power supply and replace the cord with a cord that has the correct rating.

3.2.4 Information regarding repairs

Note: In case the Rapid Spectro Cube LED needs to be repaired, please contact ColorGATE for further details on how to proceed.

3.3 Personal protective equipment

The operating company is responsible for the provision of appropriate protective equipment and for its use. The operating company monitors the wearing of the PPE.




3.4 Protective devices

- Insulation, protection against electric shock (ensures protection against accidental contact with active parts): casing, drawer, interior where LEDs are located
- IEC 320 C13 plug corresponding to IEC 320 C14 socket for easy disconnection
- Lighting supplied by a class I power supply unit
- Dependent on the regulations of overvoltage category II in an office environment: residual current circuit breaker, rated at 30mA and current tripping circuit breaker, (RCD) rated at max. 16A.

4 Assembly

Info: The Rapid Spectro Cube LED may only be used for its intended purpose in dry indoor areas.

Safety instructions for the assembly and commissioning at the place of use

 	<p>Warning</p> <p>Injuries to hands and fingers from being caught on moving, heavy and unwieldy components if they fall, tip or come loose during assembly.</p> <ul style="list-style-type: none"> • Use 2 persons or suitable lifting equipment to assemble heavy and/or unwieldy components. • Work carefully and wear personal protective equipment if necessary.
	<p>Warning</p> <p>Injuries from electric shock when touching electrically live parts or /and burns to uncovered skin from arcing during short circuits.</p> <ul style="list-style-type: none"> • Do not touch damaged cables (damaged insulation) or cables that have been stripped bare. • Before carrying out any work on the electrical equipment of the Rapid Spectro Cube LED, disconnect the power plug and switch off the power supply.

- Avoid breakage of device parts during assembly, cleaning and maintenance work by acting carefully.
- For the installation of the supplied components, the installation and operating instructions in the respective manuals of the component manufacturers (see camera, software) must be applied. The safety instructions contained therein must be observed.

Work on the electrical equipment of the Rapid Spectro Cube LED and its components may only be carried out by qualified electricians in accordance with the electrotechnical regulations!

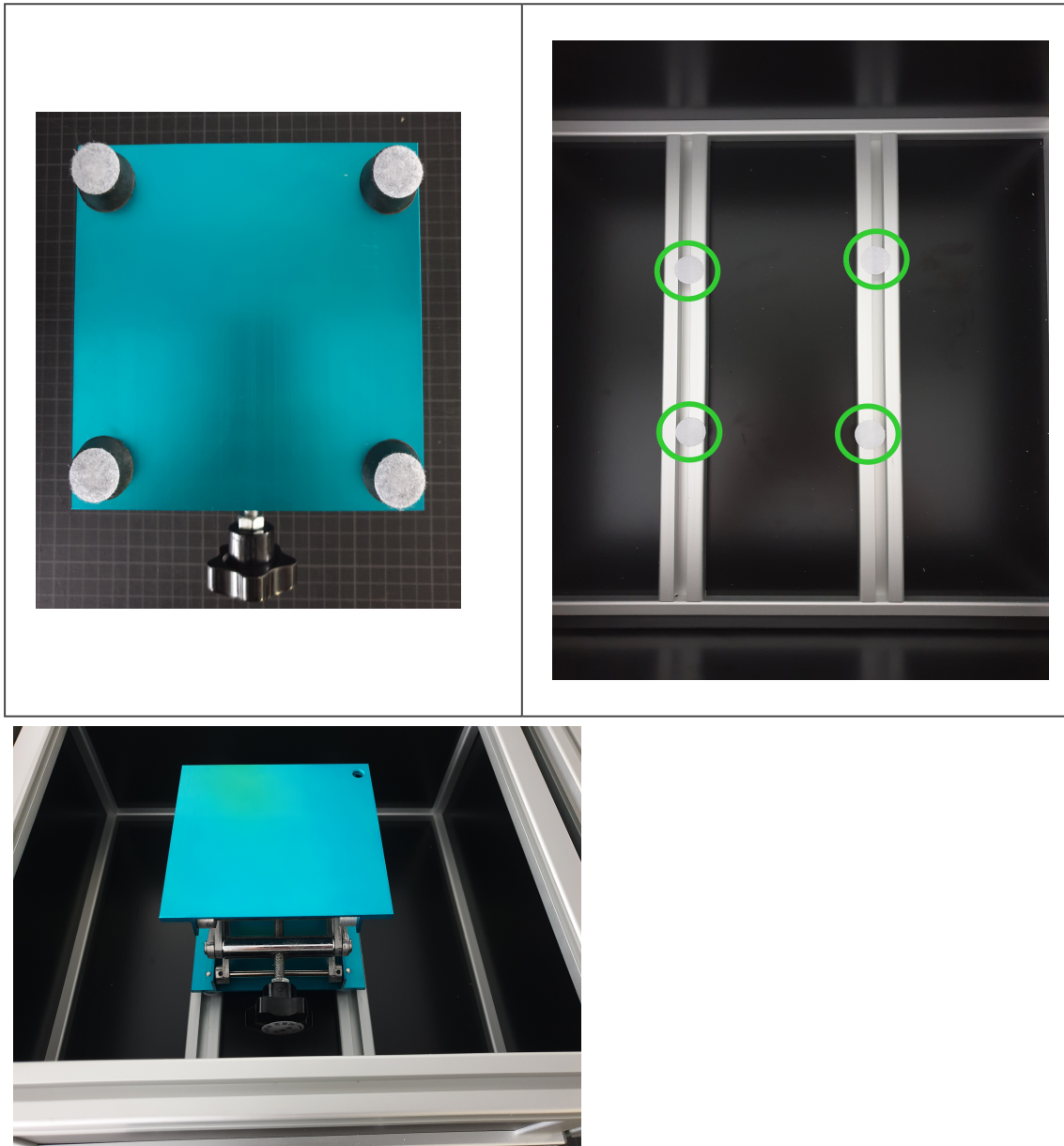
Assembly of the components

The RSC LED consists of two parts: The main part with electronics, camera and lighting, and the drawer section as template holder.

1. Place the RSC LED on a flat surface.

Take care that the fan on the rear side of the RSC LED has at least 10 centimeters distance to a wall and is not obstructed.

2. The drawer in the drawer section is fixed with adhesive tape as a transport lock. Please remove the adhesive tape carefully to make the drawer section functional.
3. Place the drawer section on a flat surface. Use the adjustment screws to extend the unit horizontally if necessary.
4. Open the drawer of the RSC LED and attach the lift table to the bottom of the drawer using the provided velcro dots:



5. Place the cover plate of the drawer section on the lift table.
6. If the camera is already mounted in the RSC LED, remove the lens cap from the lens.

7. There are four clamping strips with eight Allen screws. Insert two Allen screws in one clamping strip each.
8. Insert two clamping strips on the left side and two clamping strips on the right side of the drawer section and slide them down:



9. Place the main part on top of the drawer part.
10. Position the clamping strips (red rectangles) in the slots of the aluminum profiles as shown in the picture below.
11. Tighten the Allen screws (green circles) with an Allen key size 4:



12. If the camera is not mounted in the RSC LED please follow steps 13 to 20, else jump to step 21.
13. Unpack the camera and mount the supplied lens according to the camera manual. Please observe, that with Nikon cameras you must turn the lenses counterclockwise for mounting.

14. Mount the supplied lens shade according to the lens manual.
15. Set the AF switch on the lens to 'M'



16. Set the AF Switch on the camera to 'M'



17. Set the Mode Dial on the camera to 'M'.



18. Mount the camera to the camera holder in a way that the lens hood is completely in the inner part of the main unit. Make sure that the camera is vertically aligned. You may later change the camera position according to your needs.
19. Instead of a rechargeable battery, the camera in the RSC LED is equipped with a battery adapter to provide electric energy to the camera. Insert the adapter to the battery compartment in the camera in the same way you would put a rechargeable battery into the camera and close the battery compartment. Make sure that the cable is connected to the according PSU.



20. Use one of the USB connections inside the RSC LED (position 5, page 9) to connect the rectangular USB cable to the LED controller.



21. Turn the power switch on the camera to the 'ON' position.



22. Connect your RSC LED to your PC with both USB cables. Avoid using USB hubs.
23. Put the top lid on.
24. Connect the power cable to the inlet on the RSC LED and a 220V wall connector, 50 or 60 Hz.
25. Turn on the main switch on the main unit.



5 Operation

Prerequisites

The Rapid Spectro Cube LED (RSC LED) can only be used in conjunction with ColorGATE Productionserver and the additional RSCCaptureV2 software module.

Please make sure that the latest Productionserver 21 build as well as the latest RSCCaptureV2 build are installed. Please refer to our Getting Started Guide for Productionserver and the RSCCapture manual for further instructions.

Measuring

 	Warning Injuries to hands and fingers from being caught on heavy and unwieldy workpieces when they fall, tip, or come loose and crush upper limbs during loading. <ul style="list-style-type: none">• Act carefully when inserting and preparing heavy and/or unwieldy workpieces for measuring.• Work carefully and wear personal protective equipment if necessary.
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Info: It is recommended to switch on the RSC LED at least 20 minutes before the measurement. In order to obtain reliable results, please leave the printed target to dry for at least eight minutes before the measurement.

Info: When measuring the target, please make sure that the RSC LEDcamera is plugged in and turned on. This is checked automatically when you click Start. If the Acquire image button remains grayed out for three seconds after you clicked Start, the camera is not turned on or not connected. In this case, please connect the camera or turn it on.

The printed sample with the calibration target is loaded via the built-in drawer or placed directly on a flat, solid surface. When using the drawer, the distance of the sample to the camera can be adjusted with the lift table.

For the measurement, the RSC LED is controlled by the RSCCapture software module. The software controls the acquisition cycle while analyzing the results to create a specific ICC profile. Please see our RSCCapture software manual for detailed instructions on how to calibrate the RSC LED and perform measurements.

6 Cleaning

The device may only be cleaned with:

- A cleaning agent mixture of Isopropanol (IPA) diluted with distilled water
 - A lint-free cloth
1. Clean the outside of the Rapid Spectro Cube LED casing with a lint-free cloth slightly soaked with the cleaning agent mixture.
 2. When cleaning the inside of the Rapid Spectro Cube LED, use only a lint-free cloth to remove dust.

7 Spare Parts

Some of the components included in the scope of delivery of the Rapid Spectro Cube LED can be exchanged for spare parts.

Note: Each RSC LED is individually calibrated by ColorGATE before delivery. Only the original components included in the scope of delivery may be used as replacements. This ensures that the replacement does not affect the measurement quality. Replacements may only be carried out after consultation with ColorGATE Support and may require recalibration.

If it is necessary to replace parts of the RSC LED, please contact the ColorGATE Support.

8 Disposal

The device may only be dismantled by qualified personnel in compliance with the relevant safety regulations.

For disposal, the applicable national and regional regulations must be observed. The device and accessories must not be disposed of with household waste.

9 Appendix

Please see the RSC LED circuit diagram on the following page.

Unberechnunglich geschützt. Die Weitergabe sowie Vervielfältigung dieses Dokuments, Verwertung und Mitteilung seines Inhalts sind verboten, soweit nicht ausdrücklich gestattet.

