Eurolux-LED
Contact exposure unit

Translation of the original instructions

Table of Content

Leaflet

Precision vacuum exposure unit for single-sided contact exposure of photo-coated base material, copying films etc.

Properties

- LED grid exposure
- Exposure area approx. 250x380 mm
- Integrated vacuum pump with vacuum frame
- Vacuum film also ideal for cliché exposure
- digital timer (1 - 99 seconds, switchable to 1-99 minutes) with countdown and end signal function
- Maintenance-free steel structure
- Ventilation base plate made of plastic

Application areas

With the vacuum exposure unit Eurolux-LED you can process all light-sensitive products whose spectral sensitivity is in the near UV range (360-400nm). These are in particular positive or negative photo-coated pcbs, printing clichés made of nylon, aluminium, steel as well as diazo and transfer films.

Technical Data

Dimensions (LxWxH):	480 x 454 x 130 mm³
Weight:	ca. 13 kg
Electr. connection:	108-230 V / 50 -60 Hz, ca. 45 W
Max. exposure area:	ca. 380 x 250 mm², recommended 360 x 230 mm²
Number of LEDs:	35 pieces

Technical changes reserved

EG-Declaration of Conformity

EG-Konformitätserklärung/Declaration of Conformity

Hersteller / Supplier:	Bungard Elektronik GmbH & Co. KG Rilkestraße 1 51570 Windeck Germany
Bevollmächtigte Person für die Zusammenstellung der technischen Unterlagen: Person in charge	Jürgen Bungard, Geschäftsführer /general director Rilkestraße 1 51570 Windeck Germany
Produkt:	Exposure Unit Eurolux LED

Hiermit erklären wir, dass die oben beschriebenen Maschinen allen einschlägigen Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.

Die oben genannte Maschine erfüllt die Anforderungen der nachfolgend genannten Richtlinien und Normen:

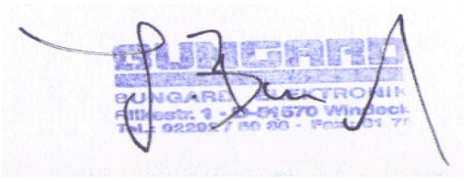
We hereby declare that the machines described above complies with all relevant provisions of the Machinery Directive 2006/42/EC.
The above machine meets the requirements of the following guidelines and standards:

- **Maschinenrichtlinie 2006/42/EG / Machinery Directive 2006/42/EC**
- **EMV-Richtlinie 2014/30/EG / EMC Directive 2014/10830EC**
- **Niederspannungsrichtlinie 2014/35/EG / Low Voltage Directive 2014/35/EC**

- **DIN EN 60204-1** Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen / Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- **DIN EN ISO 14121-1** Sicherheit von Maschinen - Risikobeurteilung - Teil 1: Leitsätze / Safety of machinery - Risk assessment - Part 1: Principles
- **DIN EN ISO 12100-1** Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze, Risikobeurteilung und Risikominderung / Safety of machinery - Basic concepts, risk assessment and risk reduction
- **DIN EN 55014-1 2012-05** Elektromagnetische Verträglichkeit, Anforderungen an Haushaltsgeräte, Elektrowerkzeuge und ähnliche Elektrogeräte, Teil 1: Störaussendung / Electromagnetic compatibility Requirements for household appliances, electric tools and similar electrical appliances Part 1: Emission
- **DIN EN 55014-2-2009-06** Elektromagnetische Verträglichkeit - Anforderungen an Haushaltgeräte, Elektro-werkzeuge und ähnliche Geräte - Teil 2: Störfestigkeit - / Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity
- **Niederspannungsrichtlinie / Low Voltage Directive 2014/35/EG**
- **Maschinenrichtlinie / Machinery Directive 2006/42/EG/37/EG**

Windeck, 20.1.2022

Jürgen Bungard Geschäftsführer



Intended Use

Exposure of positive or negative developing photoresist, solder mask and Alucorex.

All other application need our written consent or happen on risk of the operator.

The Bungard GmbH & Co. KG accepts no liability for damages incurred in non-authorised use or application of the machine.

Safety instructions

Please read the following text carefully and pay particular attention to the information on occupational safety and commissioning.

Please keep this folder carefully. It contains information that is also important for later maintenance or cleaning work.

The machines are not intended for integration or interconnection with other machines or systems. They may only be operated in rooms equipped for this purpose and may only be operated by qualified specialist personnel. Keep children and pets away!

The Eurolux LED is designed for laboratory use only. The device may only be serviced by a qualified specialist. The user should never try to do more for the maintenance of his device than is allowed to do according to the operating instructions. He should always consult a specialist for maintenance work that is beyond his authority.

Transport

Use only suitable lifting and transport equipment such as forklifts or pallet trucks. Secure the machine against slipping / tipping. Risk of damage!

Location

The machine needs a flat table of approx. 500 x 650mm. There must be sufficient space around the machine for operation and maintenance.

Do not place the device near heat sources such as radiators, warm air ducts, ovens and the like.

The installation environment is crucial for problem-free work with the Eurolux LED. You must therefore place particular emphasis on a room that is as dust-free as possible and room air free of corrosive vapors in order to ensure that it functions properly.

Electrical

The machine is manufactured using tested parts according to the usual guidelines for electrical safety. However, this does not release the user from his duty of care when handling electrically operated devices.

Only connect the device to the power source marked in the operating instructions or on the device. We assume that the power source will be protected on-site. The connection to the power supply may only be carried out by a specialist.

The circuit and the fault circuit must be protected by the customer.

Before starting any work on the machine (cleaning, etc.) and when not in use for a long time, switch off the machine and pull out the mains plug.

LEDs

Do not look into the switched on LEDs! Intended use is with cover closed to avoid eye injuries!

Regularly check the function of the lid switch, that turns off the exposure when the lid is opened!

Avoid contamination with iron chloride. Because of its reddish-brown color, they lead to a partial absorption of UV light.

Cleaning

Follow the manufacturer's recommendations when cleaning the device.

Vacuum

The thickness of the workpieces to be processed should not exceed 3 mm, as otherwise the vacuum may be impaired or the vacuum film may even be damaged. For this reason, no sharp objects may lie between the glass plate and the vacuum film when the vacuum is switched on. Also make sure that the vacuum hose, which opens into the PVC plate at the front left, is not blocked by objects.

Work safety

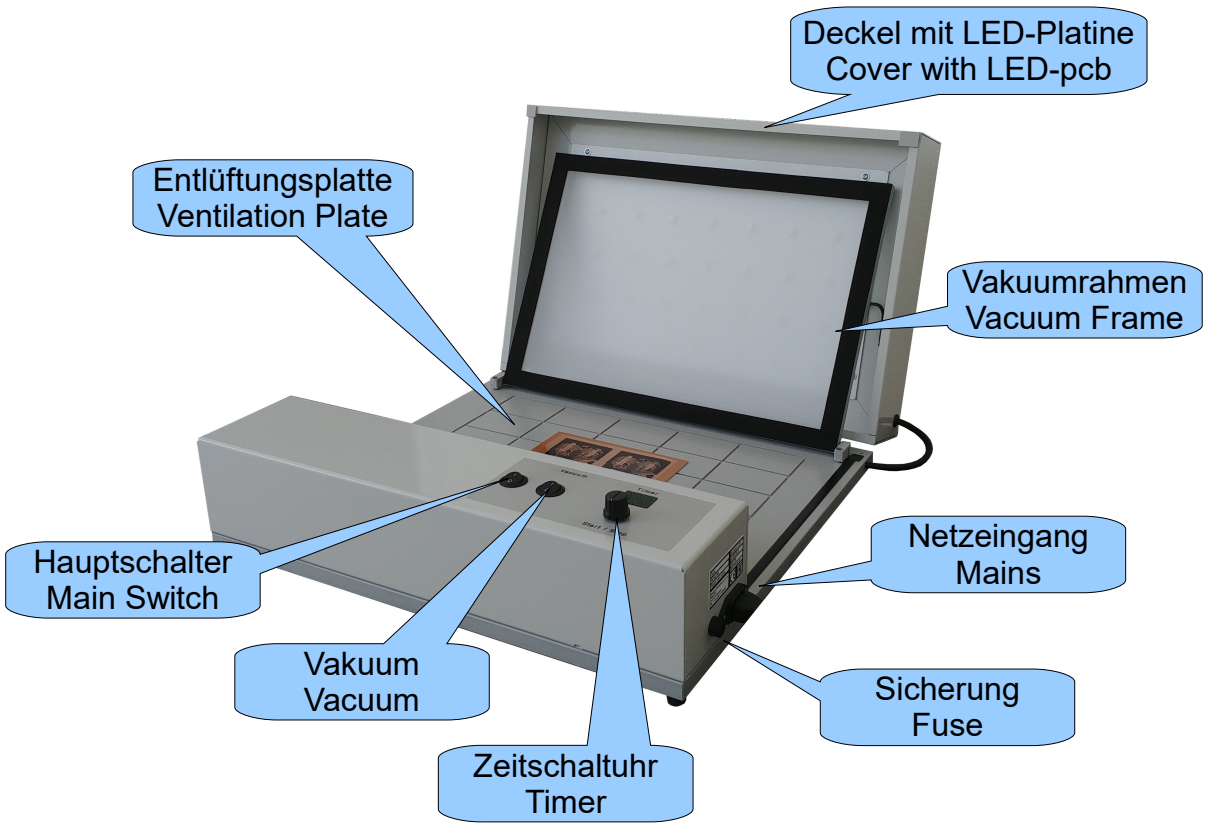
Do not look into the UV lamps! Intended use is carried out in the closed state to avoid eye injuries.

Protect from moisture.

Protect against falling.

Only open the lid briefly for loading (prevent it from falling).

Overview



Set up

After you have removed the device from the box, please place it on a flat work surface so that it is freely accessible from the front, at least 30 cm away from radiators or similar at the rear and the device lid is unobstructed can be opened upwards.

Remove the transport straps that secure the lid. Afterwards, please make sure that the device was not damaged during transport. To do this, lift the lid of the device on the handle mounted at the front and position it vertically so that it rests on the rear support feet.

Please also make sure that the vacuum foil that spans the exposure level in the lower part of the device is undamaged. To do this, please lift the vacuum frame at the front and swing it backwards. If necessary, remove dust from the ventilation plate and the vacuum foil by wiping these parts with a dry cloth.

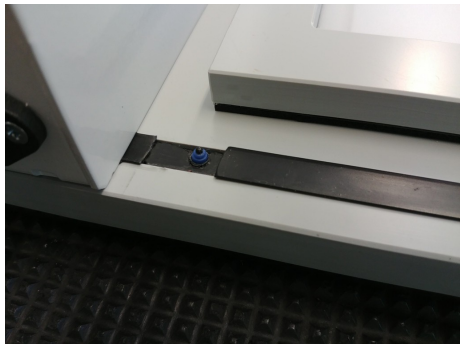
Report any transport damage to us and the freight forwarder immediately.

Please carry out the electrical function test using the following explanation, which describes working with the device.

Operating

Open the lid of the device and set it upright. Also open the vacuum frame. Now place the pcb together with your layout film on the ventilation plate. Pay attention to the correct arrangement. Avoid dust inclusions between the layout film and the pcb. The emulsion side of the film should come to rest on the pcb in order to rule out under-exposure.

Now carefully fold the vacuum frame down so that it lies loosely on the ventilation plate. If the template has slipped, repeat the process and make sure to lower the frame slowly.



The main switch is on the left and the vacuum pump switch is next on the right. If you press this switch, the vacuum pump starts. The space between the ventilation plate and the film is now evacuated within a few seconds. The vacuum is then about 0.6 bar.

The special structure of the vacuum foil ensures that it lies evenly and without bubbles anywhere. Nevertheless, you can briefly stroke the back of the foil from the top to remove any dust that may be adhering to it.

Now close the lid of the device by grasping the handle mounted on the front and gently bringing it to the horizontal.

The cover switch is located on the right side of the ventilation plate. The LEDs may only turn on when the lid is closed. Check this safety function regularly.

Now set the desired exposure time on the timer and start the exposure process.

The operation of the timer is described in the following section.

Please do not switch off the vacuum while the exposure is not yet completed, as otherwise under-radiation can influence the result.

After the time has elapsed, remove the exposed plate by opening the lid, switching off the vacuum and then lifting the vacuum frame. Always turn off the vacuum pump first before lifting the frame; otherwise the lifespan of the film covering would be shortened unnecessarily.

Do not look into the switched on LEDs! Intended use is in the closed state to avoid eye injuries!

Avoid contamination with iron chloride. Because of its reddish-brown color, they lead to a partial absorption of UV light.

Setting the timer

As soon as the main switch is switched on, the display field of the timer lights up and the previously set time appears.

If you turn the time delay encoder clockwise, the exposure time increases. If you turn counterclockwise, the exposure time is reduced.

Pressing the time delay encoder starts the exposure time and the timer starts to counts down.

When the timer reaches 00, a signal sounds, the exposure switches off and the originally set time appears on the display again.

If you want to interrupt the exposure, press the time delay encoder for more than one second. If you press for less than a second, the exposure simply continues.

You can set a minimum of 00 seconds and a maximum of 99 seconds.

If the timer is set to 00, you can set the time unit from seconds to minutes by pressing the time delay encoder. A green dot appears at the bottom right of the display.

As long as the green dot appears, the numbers in the display mean an exposure time in minutes. If you want to reset to seconds, set the timer to 00 and press the button. The green dot turns off and all the numbers you set now mean an exposure time in seconds.

Exposure times:

Bungard photo-positive coated base material: approx. 45 s

Alucorex: approx. 90 s

Negative tenting resist: approx. 9 s

Negative solder mask: approx. 18 s

Note: Exposure times are reference values for your own tests. The exposure time may vary due to aging or changing the batch.

Cleaning / Maintenance

Maintenance

There is only little maintenance necessary for the Eurolux LED exposure set.

We would like to recommend that you care for the vacuum foil carefully. Be sure to keep this film clean from the top and bottom. This is best done with a mild detergent solution or `window cleaner 'and a lint-free (paper) cloth. Even the slightest contamination from iron chloride leads to a partial absorption of UV light due to its reddish-brown color and thus to underexposed areas on the circuit board.

The foam rubber seals on the underside of the frame should only be treated dry to avoid loosening. Should the vacuum frame become unusable despite maintenance, you can have it re-covered by us.

Spare part list

Article	German	English	Pic
	Eurolux-LED Vakuumrahmen	Eurolux-LED Vacuum frame	
	Eurolux-LED Reparatur Vakuumrahmen	Repair of Eurolux-LED vacuum frame	
	Eurolux-LED Vakuumpumpe	Eurolux-LED vacuum pump	
	Schaumklebeband für Eurolux-LED Glasplatte/Vakuumrahmen 2 m	Foam tape for Eurolux-LED glass plate / vacuum frame 2 m	
	Eurolux-LED Reparatur-Kit Vakuumrahmen(Folie+Dichtung)	Repair set of Eurolux-LED vacuum frame(black rubber tape & transparent plastic sheet)	
	Eurolux-LED Belichtunseinheit	Eurolux-LED LED unit	
	Eurolux-LED Zeitschaltuhr	Eurolux-LED timer	
	Eurolux-LED Netzteil für Vakuumpumpe	Eurolux-LED power supply for vacuum pump	
	Eurolux-LED Netzteil für LED	Eurolux-LED power supply for LED	
	Eurolux-LED Deckelschalter	Eurolux-LED cover switch	

Guarantee

All machines are submitted before distribution to examination on function and continuous operation firmness. On the machine we grant a work warranty of 12 months to our customers starting from purchase date on accuracy in material and processing. We warrant at our choice by exchange of incorrect parts or by repair of the machine in our house. Old parts change into our possession.

Disclaimer of Warranty

Bungard GmbH & Co.KG reserves the right to change or enhance its machines or machine specifications according to its judgement, if necessary. Bungard cannot be held responsible to implement aforesaid changes into machines sold already.

Bungard products and services are liable to the current prices and conditions, which are subject to change.

The instructions and definitions in this document are also subject to change and mark no assurance on the part of Bungard.

This manual contains informations of the Bungard Eurolux LED and is the translated English version.

Please regard the “Sales terms and delivery conditions”. These are available after fulfilment of the contract. We don't furnish a guarantee or warranty in cause of damages at material or hurts of people because of

Incorrect use of the machine

Wrong setup, installing and operating of the machine or incapable service

Use of the machine with defective safety equipment

Non-observance of the service manual in regard to transport, stocking, setup, installation and service of the machine

Unlicensed modifications at the machine

Incorrect or incomplete repairs

Destructive force effect at the machine in cause of foreign objects or external use of force

Use of non-original spare parts

normal wear parts.

We cannot accept subsequent claims from damage or destruction of work pieces worked on in the machine, because we have no knowledge or control over the operating conditions at your site. This is valid in a general manner also for requirements from damage to articles, buildings and persons as well as the environment.

We do not warrant that the function of the machine will meet the customer's requirements or that the operation of the machine will to this regard be error free.

In no event will we be liable to the customer for any incidental, consequential, or indirect damages of any kind, including loss of profit and prosecution for environmental pollution, even if we could have been aware of the possibility of such damages.

All information was arranged with great care. We reserve ourselves however mistake and technical changes without previous announcement.

Running the machine in corroding, humid, dusty, extremely hot or explosive atmosphere happens at the operator's own risk and responsibility.

We explicitly exclude any warranty for damages resulting from running the machine in in corroding, humid, dusty, extremely hot or explosive atmosphere.

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