

EXP3040LED - Vacuum exposure unit

Instructions for usage



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catalog

The EXP 3040 LED is our latest development for fast and high-precision, double-sided exposure in the circuit board, cliché or template production for small and medium-sized series. Two 100 W UV LED lamps optimized for this purpose ensures almost parallel light.

Construction

- Stable aluminum profile chassis with an exposure drawer.

Functionality

The EXP 3040 LED guarantees perfect exposure with low energy requirements and an extremely short exposure time. Simple and effective work also enables a touch display on which the most important data can be easily entered and read out.

A UV emission control is almost superfluous in the LED system, in contrast to classic mercury lamps, because the LED is a life expectancy of more than Provide 10,000 hours with very constant beam performance. A vacuum facility ensures the contact between film and plate. The LED lamps are cooled via powerful fans.

Characteristics

- Max. Work area: 350 mm x 450 mm (recommended: 300 mm x 400 mm)
- vacuum exposure drawer, extendable
- developed especially for fine -tuning resolutions
- Alternatively, we also offer the Exp3040 as a one -sided exposure device.

Technical details

EXP3040LED	EXP3040LED	EXP3040LED-E
Dimension (WxLxH):	820 x 780 x 1620 mm ³	820 x 780 x 850 mm ³
Weight	ca. 120 kg	85 kg
Electrical connection	110-230 V / 50 /60Hz, ca. 800 W	110-230 V / 50 /60Hz, ca. 700 W
fuses	5 A	5 A
Max. exposure area	300 x 400 mm ²	300 x 400 mm ²
Vacuum	-0.6 bar	-0.6 bar

Technical details are subject to change without notice

CE declaration of conformity



Declaration of Conformity

Supplier:	Bungard Elektronik GmbH & Co. KG Rilkestraße 1 51570 Windeck Germany
Person in charge	Jürgen Bungard, Geschäftsführer /general director Rilkestraße 1 51570 Windeck Germany
Product:	Belichtungsgerät EXP3040LED + EXP3040LED-E Exposure Unit EXP3040LED + EXP3040LED-E

We hereby declare that the machines described above complies with all relevant provisions of the Machinery Directive 2006/42/EC.

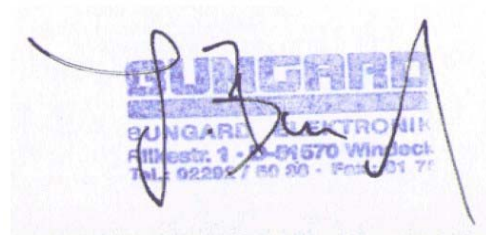
The above machine meets the requirements of the following guidelines and standards:

- **Machinery Directive 2006/42/EC**
- **EMC Directive 2014/10830EC**
- **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, 10.6.2024

Jürgen Bungard Geschäftsführer



Intended use

The machines are intended for the exposure of positive and negative photo resists, solder stop masks and Alucorex™. All other applications require our written consent or occurrence at full risk of the user. Bungard GmbH & Co. KG assumes no liability for damage caused by the machine.

Security advice

Generally

Please read the following text carefully and particularly note the information on labor and commissioning.

Please keep the present folder carefully. It contains clues that are also important for later maintenance or cleaning work. The machines are not intended for integration or switching together with other machines or systems. They may only be operated in rooms equipped and only operated by qualified specialist staff. Children and pets can be kept away!

The EXP3040 LED is designed for use in the laboratory. The device may only be serviced by the qualified specialist. The user should never try to do more to maintain his device himself than he can do according to the operating instructions. For maintenance work that is outside of his authority, he should always use a specialist.

transport

Use only suitable lifts and means of transport such as forklifts or lifting cars. Secure the machine against sliding/tipping. Danger of damage!

Location

There must be enough space for operation and maintenance work around the machine. Do not attach the device near heat sources such as radiators, warm air shafts, oven and the like. The installation environment is crucial for the problem-free work with the Exp3040LED. You must therefore place special importance on the most dust-free space and a room air free of corrosive dampens in order to ensure the perfect function.

Electrics

The machine is manufactured using the usual guidelines for electrical **safety** using tested parts. However, this does not release the user from his duty of care when using 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 is secured in the house. The end of the power supply may only be carried out by a specialist. The securing of the circuit and the fault current circuit must be carried out on the site. Before all work on the machine (cleaning, etc.) and switch off the machine and pull the mains plug in the event of a long non-use.

Luminaire

Due to the high intensity of the emitted light, **it is strictly not allowed to look into the switched on LED lamps.** The intensity of the emitted UV light is not combined with other light spectra, which is why the pupil of the eye does not close. **A look into the current system must therefore be avoided.** Determined use is carried out in the closed state to avoid eye injuries

Cleaning

When cleaning the device, keep the manufacturer's recommendations.

Vacuum

The thickness of the workpieces to be processed should not exceed 5 mm, otherwise a functional impairment of the vacuum or even damage to the vacuum foil is possible. For this reason, no sharp-edged objects must not be between the glass plate and the vacuum area if the vacuum is switched on. Also make sure that the vacuum hose, which flows into the glass plate at the front left, is not clogged by objects.

Occupational safety

Under no circumstances look into the UV lamps! Determined use is in the closed state to avoid eye injuries.

Protect against moisture from falling off

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

Environmental protection



Disposal of devices and accessories at the end of their useful life

On the basis of the EU directive (WEEE 2012/19/EU) on waste electrical and electronic equipment, we would like to point out that this product is not subject to this directive, but can still be disposed of in a special disposal facility within Europe.

Attention: LED lights must be treated carefully and disposed of as special waste in accordance with the rules of the removal.

Commissioning

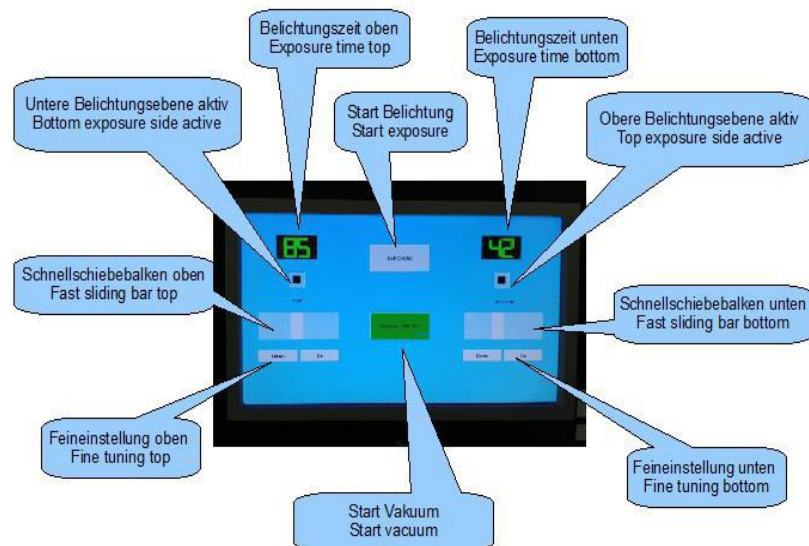
The machine is delivered in a special wood packaging. Check the condition of the package immediately at the reception. Goods delivered by a freight forwarder and understood as "preserved in good condition" cannot be returned as "transport damage". If you determine damage after the displacement, you must report this transport man immediately in writing and orally to the freight forwarder. In this case, please notify us too.

To unpack the side wall of the wood packaging. Don't just roll off the palette due to the weight and the risk of damage. Take the device off the palette with a fork stable and place it on a flat floor. From then on, the machine can be moved on its roles.

The installation location of the machine is of particular importance. They should choose a mostly dust-free space with a non-corrosive atmosphere. The floor should be flat and rade. Place the device from the wall at a distance, so that you always have access to the back and the lower exposure level.

Follow the operating instructions below to check whether the electrical components of the device work properly. The device requires a mains voltage of 110-230 V, 50-60 Hz.

After connecting the machine to the building's power supply, you can switch on the red main switch
The Commissioning of the Exp3040LED-E is carried out accordingly.



How to operate

To start exposure, pull out the exposure cassette.

Vacuum:

Open the vacuum frame

Place your circuit board on the glass plate. Place the template film on the circuit board. For double-sided boards, we recommend that you arrange the upper and lower film via an L-shaped carrier to a film bag. Alternatively, you can use adjustment holes with fixing pins.

They achieve the best results when the emulsion of the image material (films) is located directly on the photo paint. Make sure that there are no dust particles between the plate and the film.

Now slowly close the vacuum frame. (When the film is shifting, lift the frame again and reorganize the image material.)

If the machine switched on, tap the touch display to activate the operation.

Press the vacuum button. The button becomes green and the vacuum pump starts. Within a few seconds, the pump has sucked out the air between the frame and the plate. The vacuum display shows about 0.6 bar..

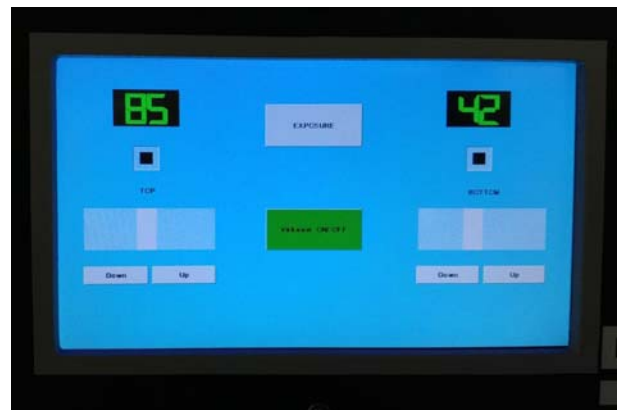
The polyester film is structured in such a way that a simple and complete evacuation the entire surface is possible. Nevertheless, an air cushion between film and board cans remain. Wipe your hand or soft cloth over the polyester film, to remove any leftover.



Exposure time:

First activate the exposure level (-n) that you want to use. A black square for top (left on the display) or for unions (right on the display) indicates that this Exposure level is active.

Set the exposure time now. With the slider you can set the approximate time very quickly and adjust the time with the up and down keys



Exposure energie:

The exposure energy can also be regulated individually between 10% and 100% per side. This is done analogously to the time setting.

Start operation

After everything is set, push the drawer into the device and press **Exposure**. The lamps light up and the timer counts down

Do not switch off the vacuum during exposure! If the film loses contact with the circuit board, this can lead to strong sub -radiation.

After completing the exposure, open the cover, switch off the vacuum and open the frame.

Never lift the frame when vacuum pump is running.

The intensity and the spectrum of the UV light of the LED unit is dangerous

Be sure to avoid looking in the UV light at any time

If you want to stop vacuum or exposure for some reason, you must switch off the machine at the main switch.

Operation of EXP3040LED-E is accordingly**Cleaning / care**



The vacuum pump device only requires a very low maintenance. In particular, the vacuum pump is extremely inconsistent against wear and will reliably perform your service for many years. Particles have been stuck into the air hose are held back by a filter inside the device.

In contrast, we would like to recommend careful care of the vacuum foil in your interest. Make sure to keep this film clean from top and bottom. This is best done with a mild detergent solution or `window cleaner 'and a lint-free (paper) cloth. The slightest dirt leads to a partial absorption of the UV light and thus to errors on the board.

You should only dry clean the moss rubber seals on the underside of the frame to avoid resolution.

If the vacuum frame has become unusable despite care, you can have it reinforced by us. We also keep replacement spotlights for you.

List of spare parts

640001	EXP3040 LED Vakuumrahmen	EXP3040 LED Vacuum frame	
640002	EXP3040 LED Reparatur Vakuumrahmen	Repair of EXP3040 LED vacuum frame	
640003	EXP3040 LED Vakuumpumpe	EXP3040 LED vacuum pump	
640005	EXP3040 LED Glasplatte	EXP3040 LED Glasplatte	
640010	EXP3040 LED Manometer	EXP3040 LED Manometer	
6000	Schaumklebeband für EXP3040 LED Glasplatte/Vakuumrahmen 2 m	Foam tape for EXP3040 LED glass plate / vacuum frame 2 m	
	EXP3040 LED Reparatur-Kit Vakuumrahmen(Folie+Dichtung)	Repair set of EXP3040 LED vacuum frame(black rubber tape & transparent plastic sheet)	

warranty

All machines are subordinate to the function and continuous operating strength before delivery of an examination. On the machine we grant our customers a factory guarantee of 12 months from purchase - date with regard to error -free material and processing. After our choice by exchanging faulty parts or by repairing the machine in our house, we guarantee. Old parts pass into our possession.

Disclaimer

Bungard GmbH & Co. KG reserves the right to make changes or improvements to machines or machine specifications, which you consider as necessary at your own discretion and assumes no obligation regarding the implementation of said changes in previously sold machines.

Bungard products and services are subject to the prices and conditions applicable at the time. Changes are reserved for these prices and conditions.

Subject to changes in this document and do not represent any guarantee on the part of bungard.

This manual contains information for the Exp3040 LED and is the translation from the German language.

Sales and delivery conditions: The buyer is available to the buyer at the latest when the contract is fulfilled. We do not assume any guarantee or liability for damage to the material or for injuries to people if they were caused by one of the following reasons:

Improper use of the machine Building,
setting up and operating the machine or inadequate service
Use of the machine with damaged safety devices

Non -follows of the manual regarding transport, storage, assembly, furnishings and service of the machine

Unauthorized changes to the machine improper or incomplete repairs

Destructive force effects on the machine as a result of foreign bodies or by strong external use of violence
Use of non-original spare parts

Wear parts are excluded from the guarantee. We cannot recognize replacement or follow-up claims from damage or destruction of work-related workpieces, since the influencing factors are largely evident when operating the machine.

This also applies to claims from damage to objects, buildings and people - like the environment.

All information was assembled with care. However, we reserve errors and technical changes, even without prior notice. Operation in aggressive, dust-containing, humidity, extremely hot or explosive environment – takes place at the user's own danger and responsibility.

The user has to ensure appropriate precautions and protective devices. Any liability for damage caused by the operation in such surroundings is hereby excluded.

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