

Safety instruction:



It's not allowed to switch ON the exposure box (start the timer) if lid of the device is not closed.

(UV-A exposing can be dangerous on prolonged contact to skin and eyes and lead to sustained skin damage or eyes injuries)

2. Declaration of Conformity



Declaration of Conformity
according „EC-Machinery Directive“
2006/42/EG

Manufacturer: **Gie-Tec GmbH**
An der Schlierbach 18
36132 Eiterfeld

Description and part no. :
UV-Exposure Box 1
Part no. 140007
UV-Exposure Box 2
Part no. 140017

This device is produced according the directives

- **Low Voltage Directive** (2006/95/EG)
- **EMI Directive** (2004/108/EG)

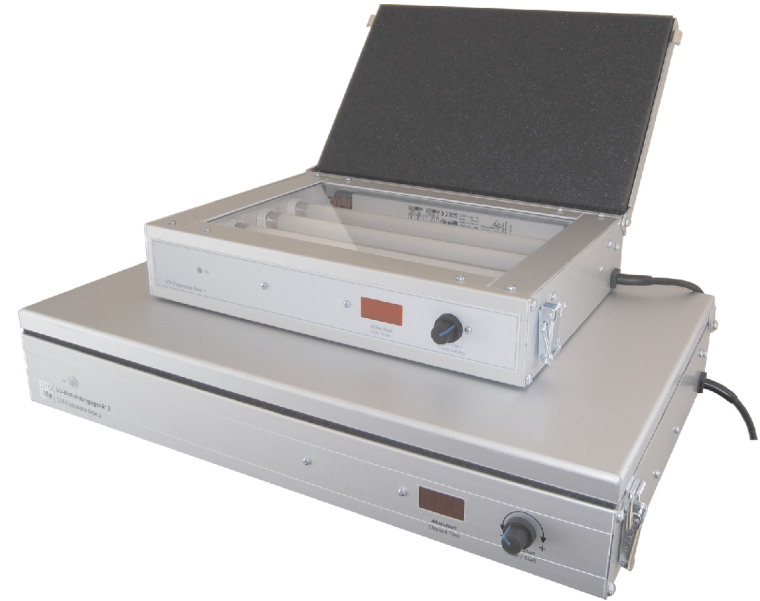
Quality system **ISO 9001:2015**
Certificate: A1888GER

Eiterfeld, 15.01.2017
Place, Date


Rainer Giebel, General Manager Gie-Tec GmbH

UV-Exposure Box

...for making single-side PCB



UV Exposure Boxes are used for exposure foto sensitive materials such as base materials, printed plates, front plates or foto sensitive films. Using the devices is very easy and user-friendly. The oscillator-based electronic timer allows the precise adjustment of the exposure time, only with 1-knob operation (mode, time, Start/Stop). The seven-segment LED display is showing the adjusted time and while the device is active the remaining time. The Exposure Boxes are designed for using in dry rooms, schools, office, as well for laboratory and small factories

- Housing of anodised aluminum profiles and plates.
- Grinded glas plate with high UV transparency for UV-A wave length
- Special flourescent lamps (type: ACTINIC), wave length 350 - 400nm (UV-A)
- Evenly illumination all of the lighting area
- Evenly contact pressure between lid and glas plate by 22mm cellular material in lid.
- Electronic timer, selectable ranges 1-600seconds, or 1-100minutes, 1-knob operation, seven-segment LED display
- Electronic ballast according EN60929, EN-EC 03, EI=A2, no stroboscopic effect, no flicker, power factor >0,92
- Leading bar for exact adjustment of films and pl

Technical data		
Part no.	140007	140017
Dimension (WxDxH)	317 x 225 x 90 mm	473 x 310 x 93 mm
Mounting area	160 x 250 mm	240 x 365 mm
Power consumption	32 W	60 W
Number of UV lamps	4x 8 W	4x 15 W
UV wave length	365 nm	
Timer	1 ... 600 s / 1 ... 100 min	



- The UV Exposure Box is suited for light exposure of foto sensitiv coated materials, such as foto positive coated base material, Cobritherm, front plates and films for making printed plates. Other usings are not allowed.
- The device is designed for power supply 230V (50- 60Hz) and may used only in perfect technical condition. Using the Exposure Box it's not allowed by children and people which are not instructed.
- All operations with the exposure box have to be done by professionals. Thereby they have to consider all instructions of the electronic industrie and the accident prevention.
- Don't use the device without connecting potential earth line.
- Before opening the housing (e. g. to change the lamps) the device must be free of voltage. Please disconnect the power cord from mains voltage. Please note: Not all wires inside the device, which may have contact to high voltage, are covered
- Assembly and using of the device has to be done only according the declaration of conformity.
- Ambient temperature 0 bis +40°C Storage temperature -10° bis +60°C
- The device must not exposed to high humidity, strong vibrations or explosive gas.
- Keep careful this manual and undertake every user to consider. If you don't provide this manual, loss of property, risk of injury up to loss of life may can happen.

1. How to work with

1.1 Placement

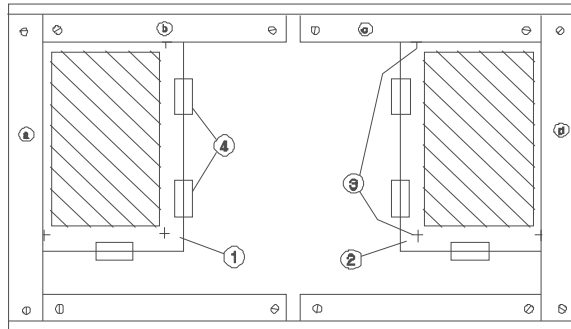
The device ought to be placed onto a horizontal, stable base (e. g. workbench, table) with the control elements pointing to the front. The room must to be darkned.

1.2 First use

Example:

Mounting of films for manufacturing two sided printed circuit boards.

- ① Film (Layout) for printed circuit board (top layer)
- ② Film (Layout) for printed circuit board (bottom layer)
- ③ Delimiter
- ④ Self-adhesive tape for fixing the film



1. Connect the device to 230V mains.
2. Attach the films (layouts) under the aluminum stripes in such a way, that the delimiters are flushed with the edge of the alu stripes (possibly you have to loosen the screws)
3. Fix films with self-adhesive tabe
4. Remove one lightprotective foil from the double-side printed circuit board and place the board (foto sensitive side down) along the aluminum strips
5. Close lid
6. Adjust exposure time and start exposure.
7. Expose the second side analogously.

1.3 Cleaning and maintenance

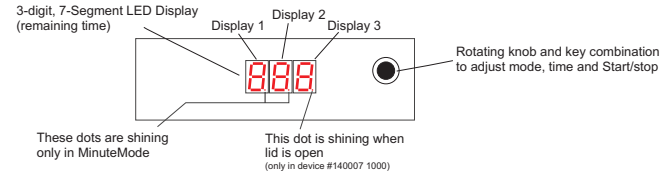
The Exposure Box is free of maintenance!
Only the lamps will loose intensity while using (about 15% in 1000 hours).

Avoid scratch and contamination (e. g. adhesive tape) on the glass plate
These may have influence to quality of exposure.

For cleaning the glass plate please use usual glass cleaner.

1.4 Operation of the timer

With the built-in-timer, you can adjust the lighting duration of the UV-lamps. Time setting is possible in SecondMode or MinuteMode. Switch on the device, the timer is in "SecondMode". Thereby the ON-time can be adjusted between 1 sec and 9 min 50 sec.



Adjustment of exposure time

After switching on the device or plug in the power cord to mains voltage, all three displays are flashing. Turning the rotating knob countercwise (cw) or counterclockwise (ccw), display 3 will change the value. If the desired value is visible, you can save them by pushing the knob. Turning the knob again the value of display 2 will be changed. By pushing the knob again, the desired value of display 2 will be saved. After you have stored the value of display 1 in the same way, the complete display is flashing. To start the count-down timer push the knob once again. While the timer decrement the time, the power relay is on and by this the lamps of the Exposure Box are shining. The display now is showing the remaining time before switching OFF the power relay.

7 segment display	Range
Display 1 - minutes	{0, 1, 2, 3, 4, 5, 6, 7, 8, 9}
Display 2 - seconds (10th value)	{0, 1, 2, 3, 4, 5}
Display 3 - Sekunden	{0, 1, 2, 3, 4, 5, 6, 7, 8, 9}

Example: Display value		
2 3 4	corresponds to	2 Minuten, 34 Sekunden
7 5 9	corresponds to	7 Minuten, 59 Sekunden
0 4 5	corresponds to	0 Minuten, 45 Sekunden

1.5 Replacement of the lamps

The UV-lamps (low pressure mercury-vapor lamp) will loose UV-A intensity while using (approx.: 15% after 1000 h).

If intensity of UV-A is to less to exposure the fotosensitive plates and films, you have to replace them. Therefore you have to remove the glass plate.

Procedure::

- Disconnect the power cord from mains voltage.
- Remove screws (M3x6mm) out of the small aluminum strips, which are used as holding-down clamp of the glass plate and fixing rail.
- Remove the glass plate carefully.
- To replace the lamps, you first have to turn them 90° (1x klick). Then you can pull them upward out of the socket .
- After replacement the lamps and mounting all components you have removed before, the device is ready for operation again.

Please decontaminate "old" lamps only in special container and consider the national rules for this!



If you press the knob while switching on the device, the right number shows the 10th digit of the seconds and the other two digits the value of the minutes. Therefore, you can enter times up to 99 minutes and 50 seconds.

Example:

- > 2.3.4 < = 23 minutes, 40 seconds
- > 7.5.5 < = 75 minutes, 50 seconds
- > 0.4.3 < = 4 minutes, 30 seconds

Only in this mode, the decimal point of the middle and the left display light up.



A start of the timer is not possible since >000< is displayed. Therefore, you have to define a preset time for the timer first.



You can interrupt the count-down at any time by pressing the rotary knob. The display flashes again and the fluorescent lamps are switched off. The remaining time remains in the display. The count-down continues if you press the rotary knob now again.



Before opening the housing to change the lamps, the device must be free of voltage. Please disconnect the power cord from mains voltage. Please note: Not all wires inside the device, which may have contact to high voltage, are covered



UV-lamps are customary in industry, without any special safety requirements. In spite of this we emphasize the following pre-caution:

Switch the UV-lamps on only when the lid is closed!