

User Manual

APM LED UV-Cube II

UV-LED-curing oven for UV curing adhesives



CE

Keep this manual for future reference!



Important!

This manual is an integral part of the curing system and must be available to the user.

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Congratulations on purchasing the APM LED UV Cube II. You have acquired a robust and efficient device for use in your assembly processes. Please transfer the serial number and assembly date of the device into the following table.

Identification of device

Manufacturer:	APM Technica AG
Product:	APM LED UV Cube II
Manufacturing date:	See identification plaque on rear of device
Serial number:	See identification plaque on rear of device

Manufacturer information

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Identification of user guide

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Every effort has been made to insure information in this manual is accurate; however, information in this manual is subject to change without notice and does not represent a commitment on the part of the authors.







Limitation of liability

We have checked the content of this manual for correctness. All the same deviations from actual hardware and / or functionality thereof may occur.



APM Technica AG reserves the right to change the content of this manual without prior notice.

1.4 Display of Safety Information

Safety information is displayed using pictograms and a warning key word. The key word indicates the gravity of the safety risk.

	Danger!	Imminent danger to life or health of humans (serious bodily harm or death).
	Warning!	Possible danger to life or health of humans (serious bodily harm) or serious material damage.
	Careful!	Possible dangerous situation (light bodily harm or material damage).
	Information!	Indicates important information .
	Important!	Special requirement for safe usage or manipulation of the device.
	Hint!	User hints or other useful information.

Specific Danger Warning

	
Follow the user manual!	Warning: UV Radiation!
Main AC power plug on APM LED UV Cube II.	Front of APM UV LED Cube II: open door.

2.2 Inappropriate Usage

Inappropriate Usage

Any usage which deviates from the „appropriate usage“ described above, constitutes inappropriate usage.

For damage caused by inappropriate usage

- the user is solely responsible,
- the manufacturer and / or supplier of the APM LED UV Cube II does not accept any responsibility.



Danger!

Inappropriate usage can cause dangerous situations! The following usage is prohibited:

- Operating in explosive environments.
- Operating the APM LED UV Cube II without reading and understanding the user manual.
- Operating the APM LED UV Cube II outside the defined operating conditions.
- Removing or tampering with the safety features.
- Removing or tampering with the warning signs on the APM LED UV Cube II.
- Modifying the APM LED UV Cube II without written consent of the manufacturer.
- Operating the APM LED UV Cube II with obvious defects or damage.
- Installing replacement parts without the written consent of the manufacturer.

Modifications

Modifying the APM LED UV Cube II voids the warranty and relieves the manufacturer of any liability.

Modifications may change the electromagnetic behaviour of the APM LED UV Cube II.

Never modify the APM LED UV Cube II without the written consent of the manufacturer.

If any of the hardware or software components are replaced, the safe operation of the APM LED UV Cube II must be retested and revalidated.

Replacement Parts and Auxiliary Components

Using replacement parts or auxiliary components from third parts manufacturers can cause dangerous situations. Only use original parts or parts from suppliers approved by the manufacturer.

The manufacturer is not liable for any damage caused by using third party replacement parts or auxiliary components.

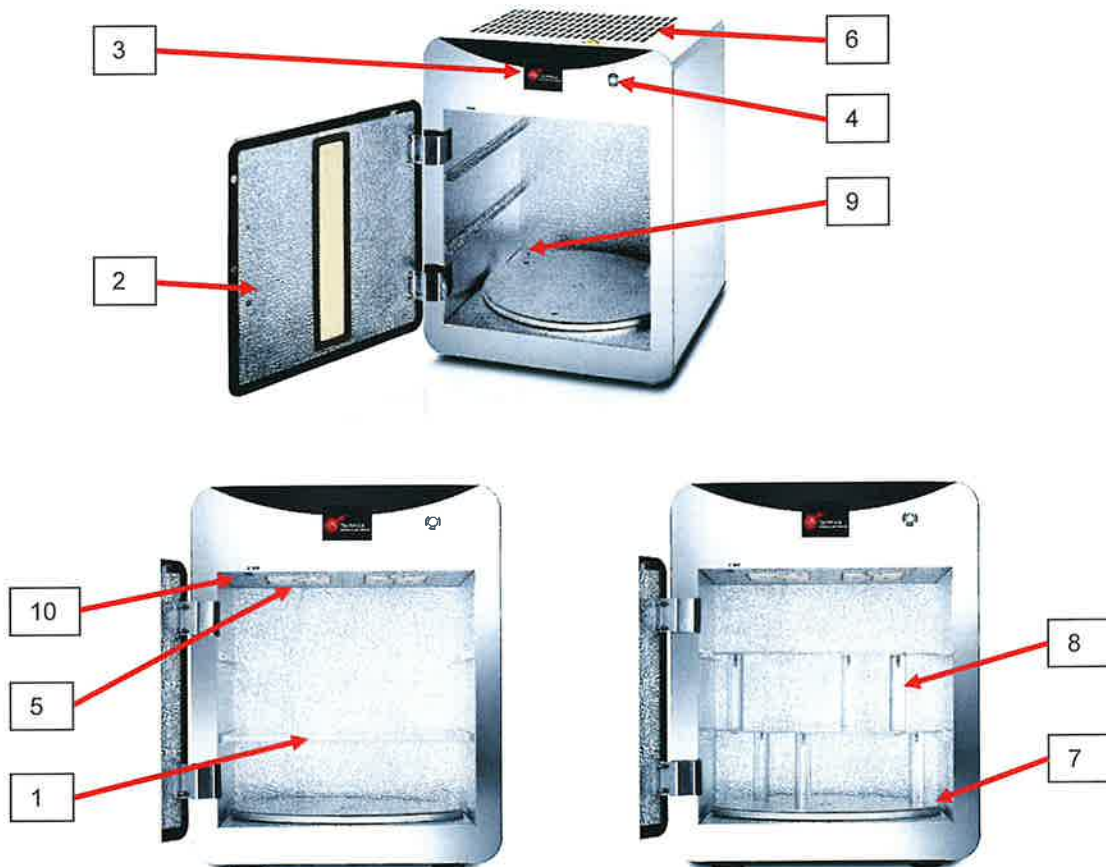
2.7 Qualifications of Personnel

<i>Personnel Procedures</i>	<i>Manufacturer or personnel authorised by manufacturer</i>	<i>Comprehensively instructed users</i>	<i>Personnel with specific skills (i.e.. supervisors, mechanical or electronic engineers, ...)</i>
Transport	Shipping company	--	Shipping company
Assembly and initial operation	Manufacturer	--	--
Setting up at work place	--	After comprehensive instruction according to the user manual	X
Operation	--	After comprehensive instruction according to the user manual	--
Maintenance	--	After comprehensive instruction according to the user manual	X
Trouble shooting and repairs	X	--	Personnel authorised by the manufacturer or specifically trained personnel
Disposal	X	--	X

Legend: X: allowed --: not allowed

2.8 User Workspace

The APM LED UV Cube II is designed to be operated by one person.



- 1 Curing volume. Objects can be placed on bottom or on trays at two different levels. Trays consist of UV transmitting material so the number of objects to be cured can be optimised.
- 2 Close door so curing process can be started.
- 3 Touch screen for setting curing parameters.
- 4 Start- / stopp-switch for curing process.
- 5 LED-modules.
- 6 Ventilation slits.

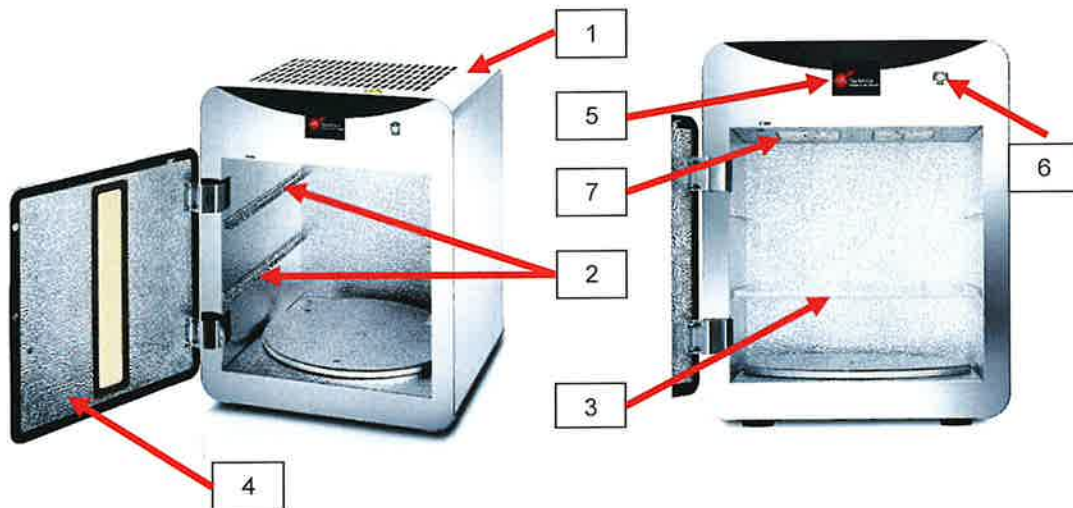
3 Description of the Device

3.1 Function

The APM LED UV Cube II is fitted with two UV LED modules radiating at 365 nm (other wavelengths optional). The APM LED UV Cube II is used for low stress curing of UV curing resins.





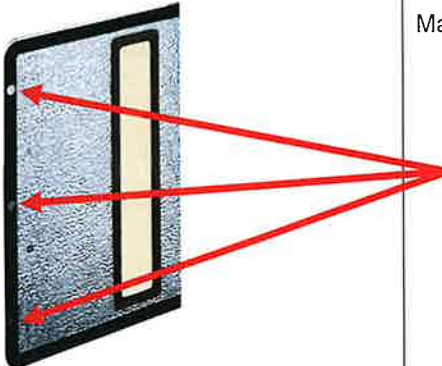
3.2 Features

The main features and their location in the APM LED UV Cube II are shown in the following image.



- 1 Stainless steel outer body.
- 2 Rails for shelving.
- 3 UV transmitting tray for positioning work piece.
- 4 Door with UV blocking view port.
- 5 Touch screen control.
- 6 On / Off switch.
- 7 LED-modules.

The APM LED UV Cube II is engineered from stainless steel with the inner walls covered in specially structured UV reflectors designed to homogenise scattered radiation. A rotation stage and a nitrogen purge duct combined with an O₂ pressure sensor, which triggers the curing cycle when a certain O₂ threshold is reached, are optional extras.

	 <p>Warning!</p> <p>Do not cover the ventilation slits! Overheating and failure of the LED modules may result. Do not cover the UV warning plaque! Do not open the outer housing! There are no user serviceable parts inside. If the curing chamber has to be cleaned or other maintenance work needs to be performed, the APM LED UV Cube II must be switched off and the AC power must be disconnected.</p>
	<p>Touch panel for programming curing parameters (duration, UV intensity). Options:</p> <ul style="list-style-type: none"> - rotation stage on/off - O₂ sensor on / off <p>Switch for curing on / off.</p>
	<p>Two micro switches that shut off UV radiation when door is opened during curing cycle.</p>
	<p>Magnets keep door shut.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 100px;">Magnets</div>

4 Transport and Installation

Only use qualified shipping companies!.

4.1 AC Power Connection

Standard IEC socket and mains switch. Current and voltage requirements, see chapter 3.4 „Technical Data“.



5.2 Operation

Precondition

→ The APM LED UV Cube II is connected to AC power and mains switch is on.

5.2.1 Normal Operation

The standard touch screen display is shown in the following image.

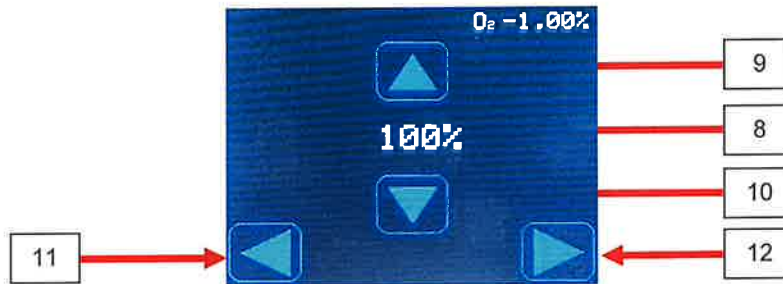


- 1 Minutes display (optional hour display)
- 2 Seconds display (optional minutes)
- 3 Increment button one minute (optional hour)
- 4 Decrement button one minute (optional hour)
- 5 Increment button one second (optional minute)
- 6 Decrement button one second (optional minute)
- 7 Go to menu „settings“

The manufacturer can change the time setting and display from mm:ss to hh:mm.
 The buttons are active when the APM LED UV Cube II is in standby mode, i.e. no curing process is running.

5.2.2 Standard Settings

The settings menu is accessed with button at the lower right of touch screen (see 5.2.1). The following image shows the standard settings screen.



- 8 LED power setting in % of full power.
- 9 Increment LED power by 5%
- 10 Decrement LED power by 5%
- 11 Go to previous menu.
- 12 Go to next menu (only when options are installed)

5.2.3 Optional settings 1

The menu „optional settings“ is only available when a rotation stage and / or a O₂ purge is installed. The following image shows the buttons in the optional settings menu 1.



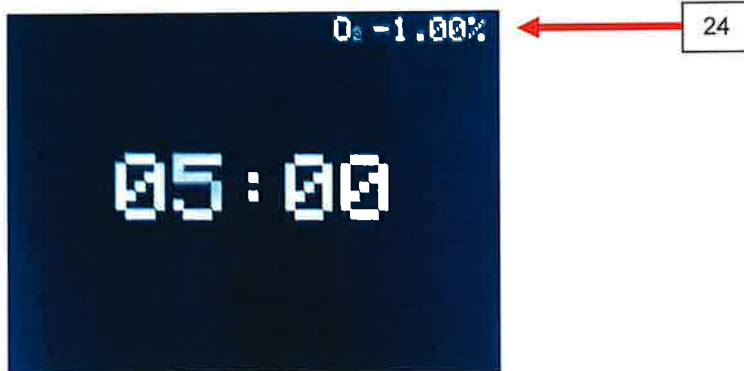
- 13 O₂ sensor active / inactive
- 14 Rotation stage on / off
- 15 Go back to previous menu.
- 16 Go to next menu (only, when O₂-Sensor is active!)



Information!

The manufacturer can set the O₂ level at which curing commences to a desired value.

When the O₂ Sensor is active and the nitrogen line is connected, the current O₂ concentration inside the curing chamber is displayed at the top right (24).



After the start button is pressed, the nitrogen valve opens and the chamber is purged. While the O₂ level is above the pre-set value (default is 4%), the start button flashes and the rotation stage and LEDs are disabled.

When the O₂ concentration drops below the pre-set value (default is 4%), the rotation stage and the LEDs are activated. The start button is lit continuously and the process time counts down.

6 Servicing

The APM LED UV Cube II has no user serviceable parts.



Danger!

Never open the outer housing of the APM LED UV Cube II.

8 Trouble Shooting

The following table lists possible malfunctions, their causes and remedial actions.

In case of a malfunction which is not covered by the following table or which cannot be corrected by the user, contact the manufacturer.

Manufacturer contact:

APM Technica AG
 Max-Schmidheiny-Str. 201
 CH – 9435 Heerbrugg
 www.apm-technica.com

Failure	Possible cause	Remedial action
No LED radiation.	Device is not switched on.	Switch on device.
	Main AC power plug not connected.	Connect power plug.
	Mains power socket has not power.	Check mains voltage or fuse.
Housing gets too hot and device switches off.	Ventilator not working (high power version).	Switch off device immediately and return to manufacturer for repair.
	Ventilation slits on top and back of device covered	Ensure free air circulation through ventilation slits.
Error message appears on screen.	Unique occurrence due to electronic interference.	Confirm message and continue normal usage.
	Repeated occurrence due to electronics failure.	Switch off device and contact manufacturer.

10 Appendix

10.1 Important Events and Changes

Use the following table to record important events or changes to the device.

Date	Description	Signature