



HashCropter User Manual

(Version 1.1)

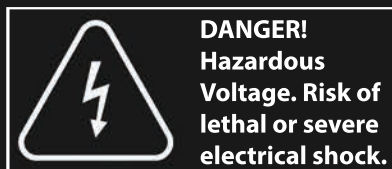
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Safety precautions

WARNING!

Carefully read the safety precautions in this section before installing, powering, operating or servicing this product.

The following symbols are used throughout this document to indicate safety-critical information:



WARNING! Risk Group 2 product in accordance with EN 62471. Do not stare at operating lamp. Do not view light output with optical instruments that may concentrate the beam.



CAUTION. This product can emit UV radiation. Exposure may result in eye or skin irritation. Use appropriate shielding. Never block fixture light output.
CAUTION. Possibly hazardous optical radiation is emitted from this product. Staring at the operating lamp may harm your eyes.
CAUTION. This product can emit NIR. Do not stare at operating lamp.



The latest version of this document is available on the HashCropter product page at <https://www.hashcropter.com>. Before installing or operating this product, check for the latest version of this document. This version can be found on the frontpage of this document.

Locally applicable laws, codes and regulations apply when installing, powering, operating or servicing the fixture.

This product presents risks of severe injury or death due to fire and burn hazards, electric shock and falls.

Please contact HashCropter customer support at support@hashcropter.com if you have any safety-related questions.



Electrical shock precautions

Do not remove any cover or panel from fixture.
Disconnect fixture from AC power before performing maintenance on fixture or moving fixture. Only move or perform maintenance on the fixture AFTER it has been disconnected from AC power.

Ensure AC power service to fixture is connected to (earth) ground.

Only use AC power sources that comply with local building and electrical codes and have both overload and ground-fault (earth-fault) protection.

Under no circumstances connect power to fixture if fixture, power inlet or power cable is wet. Before connecting power dry all components with a dry cloth and allow to air dry until liquid water has evaporated. UNDER NO CIRCUMSTANCES disconnect power from fixture if power cable or power inlet is wet.

Ensure power inlet, fixture, and power cable are dry before connecting or disconnecting power.

Ensure that the operating humidity never exceeds 90% (non-condensing).

Check that power cables are in perfect condition and free from defects before operating the fixture and make sure they are properly rated for current requirements for all equipment.

If the power cable or any seal, cover, cable or other components are damaged, defective, deformed, wet or show signs of overheating, isolate the fixture from power immediately. Do not reapply power until repairs have been completed. Do not expose fixture to rain or moisture.

Burn and fire precautions



WARNING. Fixture may cause injury or damage to objects placed near glass windows, due to high levels of visible and invisible light radiation. Under no circumstances operate fixture without at least 12" (300mm) open air clearance in front of glass window.



Exterior surfaces of fixture may become hot during operation. Use caution when handling.

Ensure free and unobstructed airflow around fixture by providing at least 200mm clearance around all vents.

Do not operate the fixture if the ambient temperature (T_a) exceeds 40° C (104° F).

Keep all combustible materials (e.g. fabric, wood, paper) at least 12" (300mm) away from the fixture.

Keep flammable materials away from the fixture.



Do not modify the fixture in any way that is not described in this manual or the Product User Guide. Do not apply filters, diffusers or other materials to glass window.

Preventing injuries to the eyes and skin



Under no circumstances look into glass window during operation as the fixture emits high levels of visible and invisible light radiation. This can adversely affect your vision. Use proper vision protection when working near fixture. Use caution in presence of children.

Under no circumstances look into glass window with concentrating optics such as binoculars, telescopes, or magnifying glasses.

Use caution near idle fixtures which can suddenly illuminate on schedule or by remote control.

Use light-blocking protective clothing when working directly below operating fixture as it emits high levels of visible and invisible light radiation that can have adverse effects on tissues, including skin, when working close to it.

Due to high levels of visible blue light radiation emitted by the fixture, use blue light filtering protective eyewear when working near operating fixtures less than four hours before normal scheduled bed time, as this can have adverse effects on the human circadian rhythm, resulting in shift work dysfunction and other circadian rhythm disorders.



Preventing fan injuries

Fixture contains high power fans, which can catch and pull hair, jewelry and other objects, causing serious injury:

- Under no circumstances insert foreign objects into fixture.
- Keep hair, jewelry, and clothing away from fan intake.
- Under no circumstances remove fan guards from fixture.
- Keep fingers away from fan guard during operation.



Safety precautions for moving and installation

Make sure fixture is fastened securely to a fixed surface or structure when in use. Once mounted, the fixture is not portable.

Before attempting to move or mount fixture, ensure that area below fixture is clear. Block access to area below fixture and warn occupants of falling equipment hazard.

Make sure that the supporting structure can hold at least 10 times the weight of all equipment suspended from it when suspending the fixture.

Do not move or adjust the position of fixture during use. Disconnect the power cord from fixture before moving it.

Under no circumstances perform maintenance on a mounted fixture. Move fixture to a flat surface before attempting to perform maintenance.

Do not drag fixture across surfaces.



Avoid shocks and impacts while moving or repositioning fixture which may result in glass breakage.

When moving or storing fixture, ensure that the unit is placed on a flat surface, and no foreign objects are touching glass.

Do not clean fixture during operation.

Unplug fixture before attempting to clean. Do not clean glass window during operation. Do not place objects on top of fixture.

Do not place foreign objects on top of fixture during operation.



Glass precautions

In the event of glass breakage, do not attempt to repair or replace glass. This may result in injury and damage to product.

Do not operate fixture with broken glass. Do not clean glass during operation.



Troubleshooting

To get detailed information about troubleshooting, please visit our website: <https://www.hashcropter.com>



Proper disposal

In accordance with Directive 2012/19/EU, waste of electrical and electronic equipment (WEEE) must be collected separately.

**Do not dispose of the HashCropter as unsorted municipal waste within the EU!
Please use the local return and collection system of your member state.**



TECHNICAL DATA

ELECTRICAL POWER

0 - 780 W¹

MAX. OUTPUT (PPF)

1,570 $\mu\text{mol/s}$

SYSTEM EFFICIENCY

up to 2.1 $\mu\text{mol/J}$ ²

SPECTRAL ADJUSTABILITY

3 channels: 0 - 100% (CC dimming)

RECOMMENDED COVERAGE AREA

25 sq. ft. (5 x 5 ft.)³

12 sq. ft. (4 x 4 ft.)⁴

AUTO VOLTAGE

140 - 240 V

MAXIMUM CURRENT

6.6 A @ 120 V (3.3 A @ 240 V)⁵

3.4 A @ 230 V

FREQUENCY

50/60 Hz

POWER FACTOR

> 0.98

HEAT OUTPUT

1,651 BTU (max. 2,751 BTU⁶)

AMBIENT TEMPERATURES

50 - 104 °F

THERMAL MANAGEMENT

active

WEIGHT

22.7 lbs.

DIMENSIONS (L x W x H)

23 x 23 x 6.5 in

LIFETIME RATING (OVERALL SYSTEM)

50,000+ hours of operation

WARRANTY

5 years

CERTIFICATIONS

CE, UL in progress

¹ at 120 V (max. 806 W)

² depending on spectral and dimmer setting;
1,95 $\mu\text{mol/J}$ @ 120 V

³ for individual suspension in grow boxes

⁴ also when using CO₂ gassing

⁵ information for the North American market only

⁶ max. heat output in the event of light output not being processed by plants

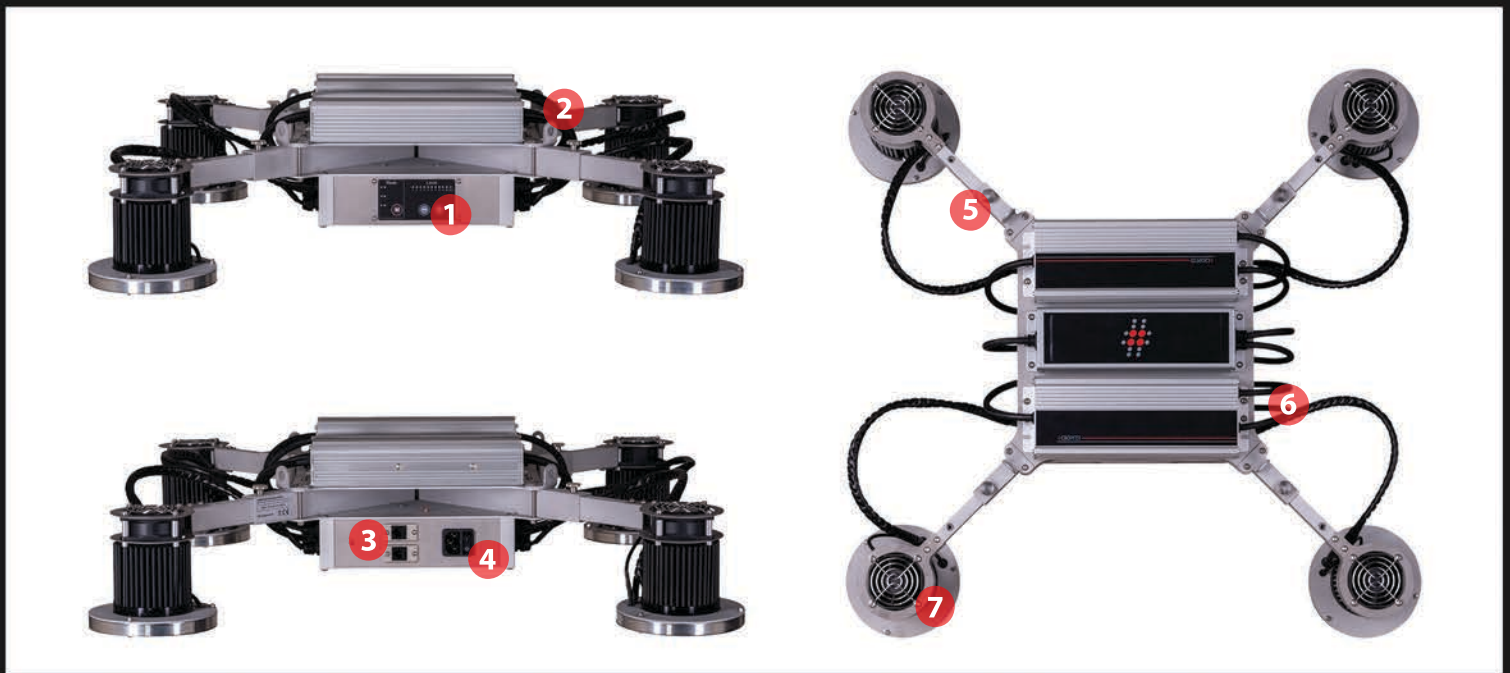
Scope of delivery

The packing list is included in each shipment. It specifies the part numbers and descriptions of all parts in your order:

HashCropter
power cord
user manual

Before continuing with installation, verify that all parts in each HashCropter package have been received. If any part is missing, please contact your customer service representative.

NOTE! When unpacking the HashCropter, make sure you have a sturdy surface to work on. Damage to the unit can occur if dropped. Also note that if a custom order was placed, the accessories in your package may be different than listed above.



HashCropter Overview

- | | |
|----------------------------------|--|
| 1 Touch panel | 5 Knurled-head screw to adjust arms |
| 2 Mounting brackets | 6 Cables (hazardous voltage) |
| 3 BUS socket | 7 Rotating fans |
| 4 Power socket and switch | |

Mounting

For proper operation the HashCropter must be mounted horizontally from a support structure. Make sure that the supporting structure can hold the weight of all equipment suspended from it. Also ensure free and unobstructed air flow around the HashCropter by providing at least 200 mm around all vents.



Connect light hangers, rope ratchets, chains etc. to the mounting brackets (see picture) as well as the support structure.

Use the light hangers, rope ratchets, chains etc. to adjust the distance between the lighting fixture and the support structure.

For information on adjusting the arms and distance between the lighting fixture and the plants, see the **Light Distribution** Section.

Check that the power cables are in perfect condition and free from defects, and make sure they are properly rated for current requirements for all equipment.

Make sure the power switch is set to 0. Then connect the power cord to the power socket.

Connect the power cord to an (earthed) grounded power outlet (specifications can be found in the **Technical Data** Section).



Connect the BUS cable to one of the BUS sockets and the Control HUB.

If you use multiple fixtures, daisy chain them together and make sure that the first one is connected to the Control HUB and that the BUS has been terminated correctly on the last one.

Operation

After the HashCropter has been properly mounted, set the power switch to 1. If the HashCropter is connected to an operating Control HUB, this will be indicated by the remote LED after a few seconds. If you do not use a Control HUB you can adjust the settings with the integrated touch panel.



Use the **M** button to switch between LED channels (B = blue, W = white, R = red) and the absolute intensity mode. The green LEDs indicate the active mode.

Use the **-** **+** buttons to adjust the intensity levels of the selected mode.

If you do not use the Control HUB to schedule lighting recipes, use a common clock timer to automatically turn the HashCropter on/off.

Dimming / Spectral Tuning

The HashCropter provides an built-in user interface to fine-tune both the spectrum and intensity. In this section you will learn how to use this interface properly.

For information on recommended lighting recipes and/or how different lighting recipes influence the development of the plant, visit our website: <https://www.hashcropter.com>



Use **M** to switch to the absolute intensity mode. This is indicated when all three mode LEDs (B, W, R) are switched on.

Use the **-** **+** buttons to adjust the intensity level to at least 1.

Use **M** to switch to the B (blue) channel and adjust the amount of blue light by using the **-** **+** buttons. Repeat this process for the W (white) and R (red) channels in order to optimize the spectral distribution of the light.

Beginners are strongly recommended to set all three channels (B, W, R) to Boost and therefore use the HashCropters pre-optimized spectrum.

After fine-tuning the spectral distribution, switch back to the absolute intensity mode to re-adjust the overall intensity level of the light.

Light distribution

A homogeneous light distribution is crucial for optimizing both yields and crop quality.

The light distribution can be varied by adjusting the position of the arms. Under no circumstances adjust the light distribution during operation. Always switch off the HashCropter first.

Remove the knurled-head screws (see HashCropter Overview).
 Select one of the four positions of the arms.
 Refasten the knurled-head screws. **Under no circumstances operate the HashCropter without the knurled-head screws tightly fastened.**



Since the optimal light distribution highly depends on your setup and objectives, we have decided to provide more detailed instructions at our website: <https://www.hashcropter.com>

Maintenance

To ensure proper operation, regularly check the condition of the HashCropter by using the following instructions:

Cleaning



Under no circumstances attempt to clean the HashCropter during operation. Make sure you unplug the HashCropter before cleaning.

In order to avoid damage to the glass, do not use alkaline or acidic cleaners.

Do not use any cloths, pads or brushes with abrading powders or particles. Wipe off the glass with a soft damp cloth. A mild detergent can be used if necessary.

In the event of extreme dust accumulation, the performance of the HashCropter may be affected.

To clean the air inlet or outlets, disconnect the HashCropter from power and carefully clean the fans and heat sinks by using compressed air or a vacuum with brush attachment.



Safety

Make sure that you examine all cables, rope hangers etc. on a regular basis to prevent damage to the HashCropter and all attached equipment. If there is any visible cable damage, immediately disconnect the HashCropter from power and contact our support team.

Warranty

COMPLED Solutions GmbH warrants that the Equipment will be free from defects in material and workmanship under normal use for a period of five (5) years from the date of receiving the Equipment.

This limited warranty shall only extend to the original user of the Product. Equipment support is defined as "Return to Factory" which means the customer is responsible for shipping the Product to the principal place for logistics of COMPLED Solutions GmbH. Within 30 days of receipt of the defective unit, COMPLED Solutions GmbH will either repair and return the original unit or provide a reconditioned unit.

Unless Equipment support occurs during the first ninety (90) days of the five (5) year warranty, in which case COMPLED Solutions GmbH shall be responsible for shipping costs associated with shipping the Product to COMPLED Solutions GmbH, the customer shall be responsible for shipping costs associated with shipping the unit to COMPLED Solutions GmbH.

COMPLED Solutions GmbH shall provide for return shipment of the equipment to the original user free of charge (excluding Tax & Duty) at any time during the five year period.

The warranty period for the Equipment starts on the date it is received by the original user of the Product.

Disclaimer

To the full extent permitted by law, COMPLED Solutions GmbH shall not be liable to the customer for any loss or damage arising from the use of the Equipment, or any defect in the Equipment, however it may arise.

COMPLED Solutions GmbH shall bear no obligation to provide support, maintenance, upgrades, modifications or new releases apart from the stated warranties.

COMPLED Solutions GmbH disclaims all liability and responsibilities pertaining to and arising under this Agreement as a result of the Customer integrating, connecting or networking the Equipment in any manner whatsoever.

If technical advice or support is given or offered in connection with the use or implementation of the Equipment, it shall be solely as an accommodation to the Customer and without charge unless otherwise agreed upon. COMPLED Solutions GmbH shall have no responsibilities or liabilities whatsoever in relation to the content or use of such advice.

Under no circumstances shall COMPLED Solutions GmbH be liable to Customer, or any other person for special, consequential, indirect or incidental loss or damage of any kind or any direct loss or damage of any kind suffered or incurred by the Customer or any other person in connection with the Equipment provided hereunder.

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The logo icon consists of a grid of 14 dots arranged in four rows. The top row has two white dots. The second row has four dots: the first, second, and fourth are light gray, and the third is white. The third row has four dots: the first, second, and fourth are light gray, and the third is white. The bottom row has two light gray dots.

cropter