X5 atom IP

Head and PSU6

Safety and User Manual

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GLP® X5 atom IP Quick Start and Safety Manual

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Safety

Key to symbols

The following symbols are used in this user documentation:

	**Warning!** Safety hazard. Risk of severe injury or death.		**Warning!** Hazardous voltage. Risk of lethal or severe electric shock.
	**Warning!** See user manual for important safety information.		**Warning!** Fire hazard.
	**Warning!** Risk of eye injury.		**Warning!** Hot surface. Risk of burn injury.

General safety information

Read this manual carefully before installing, operating or servicing a device in the GLP X5 atom IP system.

If you have any doubts or questions about how to use an X5 atom IP device safely, contact your GLP® supplier for assistance. Your GLP supplier will be happy to help.

The user documentation for X5 atom IP devices consists of:

- The X5 atom IP Safety and User Manual, supplied with X5 atom IP head and PSU6 devices and available for download from www.glp.de. This manual contains important safety information and installation instructions that the installer and user must read. It also explains features and control of X5 atom IP devices.
- The X5 atom IP DMX Channel Index, available for download from www.glp.de. The Channel Index is a separate guide to the DMX control channel layout and DMX commands available.

All documents are available for download from www.glp.de.

GLP X5 atom IP devices are intended for use by experienced professionals with the knowledge and skills to set up, operate, and maintain high-powered, remotely controlled lighting equipment safely and efficiently. These operations require expertise that may not be provided in the products' user documentation.

- Respect all warnings and directions given in the devices' user documentation and on the devices. Read the user documentation and familiarize yourself with the safety precautions it contains before installing or using the devices. GLP and

affiliated companies will take no responsibility for damage or injury resulting from disregard for the information in the products' user documentation.

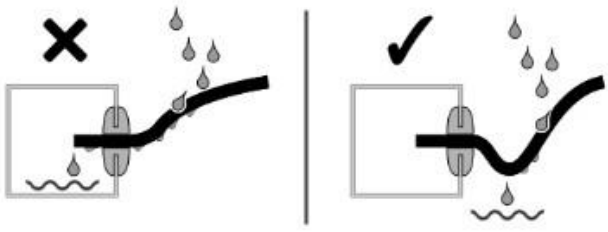
- Check the GLP website at www.glp.de and make sure that you have the latest version of this manual. Check the software version indicated on page 2 of this manual and then use the PSU6 control panel to check the version installed in the PSU6. If the versions are not the same, this manual may still cover the devices because software updates do not always affect the use of the devices. However, it is possible that this manual does not match the devices perfectly. Software release notes can help clarify this question. You can consult software release notes and download the correct version of this manual on the GLP website if necessary.
- Make all user documentation available to all installers and operators. Save user documentation for future reference, but check the GLP website periodically to make sure that you have the latest revisions of the user documentation.
- If you have any questions about the safe operation of an X5 atom IP device, please contact an authorized GLP distributor (see list of distributors at www.glp.de).
- Use X5 atom IP devices only as directed in this manual. Observe all markings in this manual and on devices.
- Refer all repairs and any service operation not described in this manual to a technician authorized by GLP.
- The LED light source in the X5 atom IP head is not user-replaceable.
- Read and follow the user documentation for all additional equipment.

Electrical safety

- The IP65 rating of X5 atom IP devices means that they are protected against water droplets, such as rain, and splashing water, but do not expose them to high-pressure water jets. Do not immerse them. Do not install them in a location that may become flooded.
- Use only a source of AC mains power that complies with local building and electrical codes and has both overload and ground-fault (earth-fault) protection.
- Ensure that the PSU6 is electrically connected to ground (earth).
- Disconnect the PSU6 from AC mains power before carrying out any installation or maintenance work, and when the system is not in use.
- Disconnect the system from power immediately if any seal, cover, cable, connector or other component is damaged, defective, deformed or showing signs of overheating. Do not reapply power until products have been repaired and made safe by a technician authorized by GLP.
- Check that all power distribution equipment, cables and connectors are rated IP65 minimum, in perfect condition, rated for the electrical requirements of all

connected devices, suitable for their application and suitable for the installation environment.

- If you link X5 atom IP PSU6 devices to AC mains power in a daisy chain by running power cable from THRU/OUT connectors to IN connectors, add together the total current draw of all the devices that you intend to connect together, including the first device, and check the current ratings of all elements (circuits, cables and connectors) in the chain. Do not exceed the current rating of any element in the chain. Respect the following limits:
  - When operating on **200-240 V** mains power, you may connect **maximum four (4)** X5 atom IP PSU6 devices to mains power together in a daisy chain.
  - When operating on **100-120 V** mains power, you may connect **maximum two (2)** X5 atom IP PSU6 devices to mains power together in a daisy chain.
- The distance between any X5 atom IP head and the X5 atom IP PSU6 must not exceed a maximum of 60 m / 196 ft.
- To ensure IP65 protection, only use connectors from the same manufacturer and of the same type as those installed on devices. This applies in particular to power input and power relay cables. If a cable connector is not in perfect condition, install a new connector on the cable following the connector manufacturer's instructions. Send old connectors for recycling.
- Connectors are equipped with tethered rubber seals. Apply the rubber seal to every connector that does not have a plug inserted in it so that unused connectors are protected from water and moisture.
- Use a power cable that is minimum 14 AWG or 1.5 mm^2, minimum 16 A-rated and temperature-rated to suit the application. In the USA and Canada the cables must be UL-listed, type SJTW or equivalent. In the EU the cables must be type H05RN-F or equivalent, or for outdoors applications cables must be type H07RN-F or equivalent.
- Make sure that cables open into dry areas or sealed junction boxes. Moisture can be drawn along cables by capillary action or pressure variations resulting from thermal expansion.
- Arrange cables so that they arrive at connectors from below. Make sure that it is impossible for water to flow down cables and accumulate at connectors. If necessary, provide extra cable slack and create 'drip loops' before connectors.



- The PSU6's main fuse is located in a fuseholder on the connections panel. Disconnect the PSU6 from power and move it to a dry area before attempting to replace the fuse. Replace fuses with ones of the same type and rating only. If you have any questions about fuse replacement, please contact GLP Service.
- Some internal components carry a high voltage while the device is connected to AC mains power. Some of these components can remain live for up to 30 minutes after the power supply has been disconnected.

Fire safety and protection from burns

- Do not operate the head or PSU6 if the ambient temperature exceeds 45° C / 115° F.
- The hottest parts of the head's surface can reach up to 60° C / 140° F during operation. Avoid contact by persons and materials. Do not install the head in a location where there is a risk of accidental contact. Allow the head to cool for at least 30 minutes before handling it.
- Keep devices well away from flammable materials.
- Do not illuminate surfaces within 1 m / 40 in. of the head. The light output from the head is powerful enough to cause burns or fire in illuminated objects at close range.
- Keep all combustible materials (e.g. fabric, wood, paper) at least 10 cm (4 in.) away from the devices.
- Ensure that there is free and unobstructed airflow around the devices. Provide a minimum clearance of 10 cm (4 in.) around fans and air vents.
- Do not place any optical components other than X5 atom IP accessories from GLP onto the front of the head.
- Do not stick filters, masks or other materials onto the head. Do not block the light output in any way. The front surface becomes hot during operation and can melt or ignite objects that are in contact with the surface. Ensure that the front surface is clean and unobstructed at all times in order to prevent a fire hazard and damage to the head.
- The head's optical components can focus the sun's rays, creating a risk of fire and damage. Do not expose the front of the head to sunlight or any other intense light source, even from an angle.

Eye safety

- The X5 atom IP is classified as a Risk Group 2 lighting product according to EN 62471. Possibly hazardous radiation emitted. Do not stare into the light output from the head. May be harmful to the eyes.
- Do not look at the head's light output with optical instruments or any device that may concentrate the light output.
- Make sure that persons near to or working on the system are not looking directly into the light output when the system lights up suddenly. This can happen when power is applied, when the system receives a DMX signal, or when certain control menu items are selected.

- Provide well-lit conditions to reduce the pupil diameter of anyone working on or near the system.

Strobe safety

- Flashing light, particularly at 5 - 30 Hz, may cause seizures in persons with photosensitive epilepsy. Do not use strobe effects for extended periods.
- Comply with local regulations on the use of strobe lighting and notify the public in advance with highly visible warning signs when strobe effects are used.
- If a seizure occurs, stop using strobe effects. Seek professional medical help. Note the time that the seizure starts and finishes. Call emergency medical help urgently if the seizure lasts more than five minutes, if it is the person's first seizure, or if the person is injured. While waiting for help to arrive, protect the affected person from injuring themselves on hard or sharp objects. If necessary, move the person to a safe place. Lay them on their side with their head supported to prevent it from hitting the floor. Loosen any tight clothing around their neck. Do not use force to hold the person or restrict their movements. Do not put anything in their mouth, including your fingers.

Installation safety and protection from personal injury

- Installation must be performed by qualified personnel only and carried out in accordance with applicable regulations such as DIN VDE 0711-217.
- atom X5 IP devices are not portable when installed.
- Ensure that the supporting structure and installation hardware used can hold at least ten times the weight of the load that they support. All rigging hardware must be approved for the weight of the devices they support.
- Fasten the devices to a structure or surface only as directed in this manual and only with hardware that is specifically designed, approved and rated for its purpose. Do not use a safety cable as the primary means of support.
- Check that installation hardware is in perfect condition. Fasteners must be steel grade 8.8 strength or better. Nuts must be self-locking type and in good condition. Rigging clamps must be half-coupler type that completely encircle the rigging truss chord.
- If a head or a PSU6 is installed in a location where it may cause injury or damage if it falls, install as directed in this manual a safety cable or similar secondary attachment that will hold the device if a primary attachment fails. The secondary attachment must be approved by an official body such as TÜV as a safety attachment for the weight that it secures, it must comply with EN 60598-2-17

Section 17.6.6, and it must be able to support a static suspended load that is ten times the weight that it secures.

- If a head or a PSU6 is installed in a location where it may be exposed to forces such as wind pressure, vibration or movement, make sure that the installation can withstand these forces. Monitor weather forecasts constantly. Take down the installation immediately if there is any risk of weather conditions that could destabilize the installation.
- Check that all covers and items of rigging hardware are secure before using the devices. Do not operate a device with missing or damaged covers, shields or any optical component.
- Restrict access below the work area and work from a stable platform whenever installing, servicing or moving a device.
- If a head or PSU6 becomes damaged, stop using it immediately and disconnect it from power. Do not attempt to use a device that is obviously damaged.
- Do not modify a device in any way not described in its user documentation.
- Install genuine GLP parts only.

Avoiding damage to X5 atom IP devices

Important! Follow the directions in this section carefully, or a device may suffer damage that is not covered by the product warranty.

General precautions

Do not drop an X5 atom IP device or expose it to mechanical stress.

Protect the PSU6's LCD display and control panel from shocks, or they may suffer damage that is not covered by the product warranty.

Do not expose a device to heat (from other lighting fixtures for example).

Clean optical components only as directed in this manual. Oils, solvents, and other chemicals commonly used for cleaning can damage the lens coatings and surfaces.

Use only original spare parts. Do not make any structural modifications to a device or you will void the product warranty.

Protection against environmental factors

The IP65 rating of X5 atom IP devices means that they are designed for temporary outdoor use only. Power and data connections are designed for flexible installation and removal, making the devices convenient to use in temporary installations. However, for this reason – among others – the devices are not suitable for permanent outdoor installation.

For permanent outdoor installation, you must provide additional protection against dust, water, low and high temperatures, UV radiation etc. and carry out regular maintenance with scheduled service intervals.

X5 atom IP devices are not suitable for permanent use in marine or coastal environments or near sources of corrosive agents (a swimming pool that can release chlorine into the atmosphere, for example). Installing a device in a harsh environment like one of these will probably result in corrosion or excessive wear to case components, moving parts, optics, cooling systems or even the interior of the device. Damage or premature wear resulting from use in this type of environment is not covered by the manufacturer's warranty.

Condensation

High humidity and strong temperature fluctuations can lead to condensation inside heads. When a head is brought from a colder to a much warmer environment, the risk of condensation is particularly high. Do not switch on the head immediately. Let it warm up to room temperature before connecting it to power.

In order to ensure that the head performs as it should, we strongly recommend that you first bring the head to operating temperature and keep it there for at least 30 minutes. This helps moisture that has accumulated internally to escape via the vent valve. The time required for residual moisture to escape completely depends heavily on the ambient conditions of the installation and must be adapted according to the situation.

Exterior maintenance

Devices used in outdoor or harsh environments need more frequent service. If the equipment is to be used outdoors or in a harsh environment for a long period, check the installation and all cable connections regularly, at least every 30 days.

- Perform an external visual inspection of the housing surfaces, all connections, and their bolts and seals.
- Look for signs of contamination or corrosion.
- Check the optics and the cooling system for contamination.

Based on the first days of operation, plan the required maintenance actions and the maintenance intervals. Bear in mind that maintenance work may have to be carried out outdoors.

Due to the increased environmental stress when a device is installed outdoors, maintenance must be carried out regardless of whether the devicehas been in operation or not.

We recommend that you apply a permanent wax to head and PSU6 housings, as this will protect against the accumulation of contaminants.

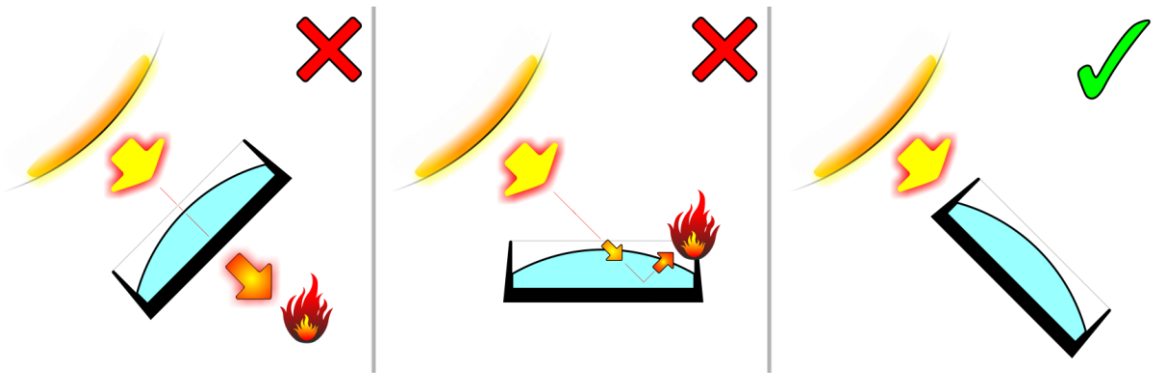
We recommend that you carry out an annual inspection of devices. To ensure water- and dust-tightness, we recommend that you replace vent valves and seals at this time.

Avoiding damage from dust and airborne particles

- Carry out regular visual inspections of the head to make sure that there is no accumulation of dirt, especially on the front glass and on air vents.
- If cleaning is necessary, follow the instructions in the ‘Service’ chapter later in this manual.

Avoiding damage from external light sources

Do not point the front of the head towards the sun or other strong light sources. Strong light can cause internal damage to the head, melting components or starting an internal fire within seconds.



Avoiding damage from light sources

Damage can occur whether the head is powered on or off.. Damage can also occur if the light hits the front of the head at an angle: the head does not need to be pointing *directly* at the sun or other light source.

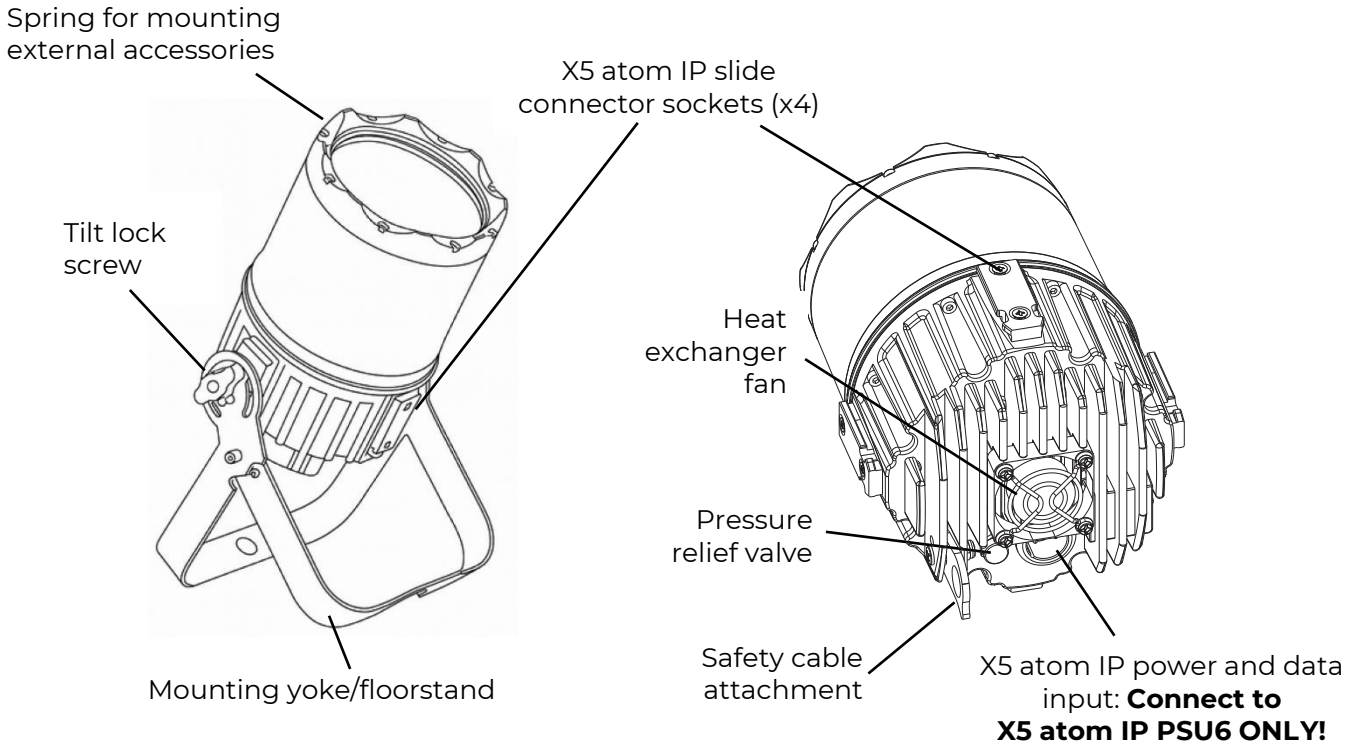
To avoid problems from strong light sources:

- Do not expose the front of the head to sunlight or any other strong light source.
- In outdoor applications during daylight, make sure that the front face of the head is shielded or points away from the sun, even when the head is not in use.
- Do not aim other high-powered beam lights directly at the head.

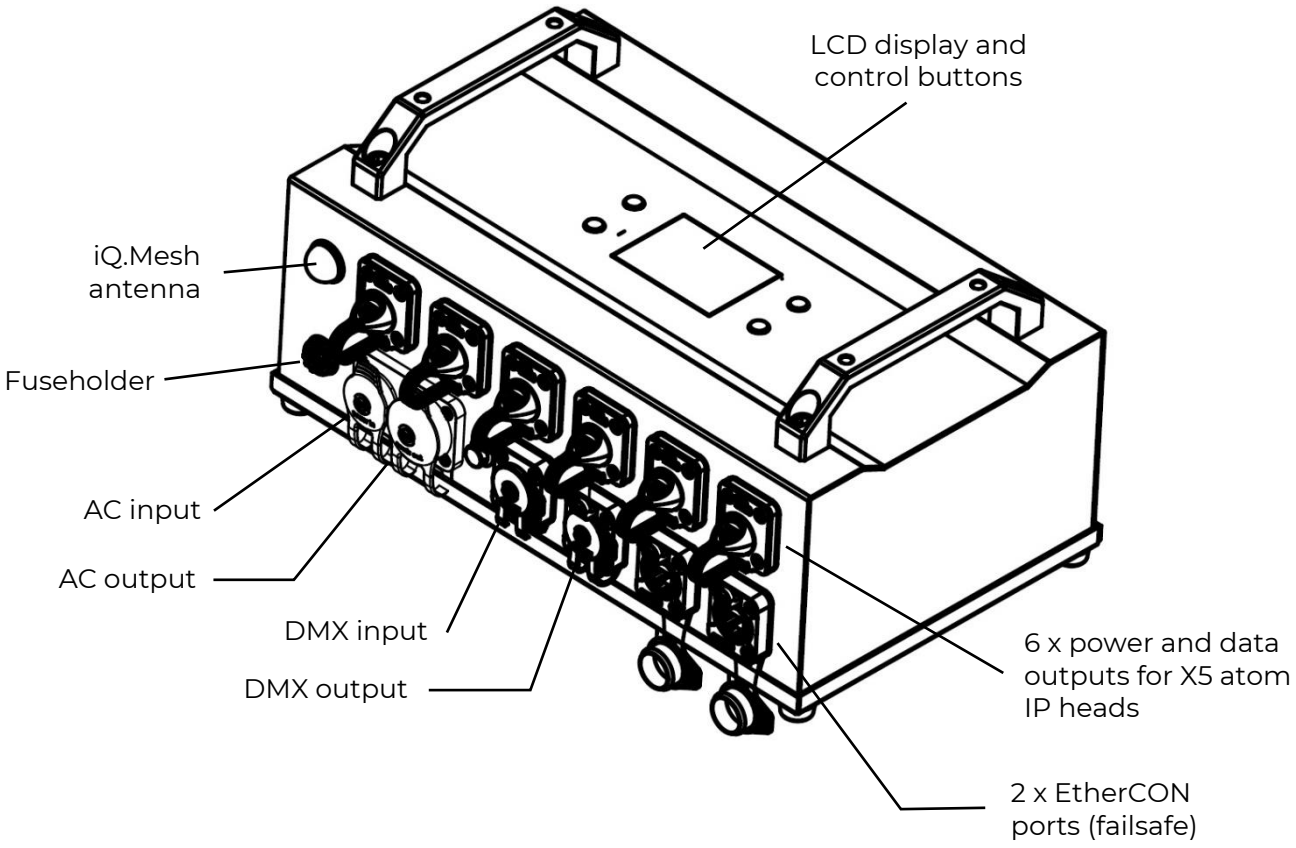
Transportation and storage

- Transport devices either in a flightcase or in their original packaging to protect them from damage caused by shocks during transportation.
- Store devices in a dry location when not in use.

X5 atom IP head overview



X5 atom IP PSU6 overview



Overview of features

The X5 atom IP is for permanent or temporary indoor use. It may be used outdoors in temporary installations if precautions are taken to prevent damage from direct sunlight. It may be placed upright on a level surface or suspended from a suitable structure as described in this manual.

The X5 atom IP is not suitable for household use, wherever unattended children have access to it, for permanent outdoor installation, or in areas where the distances from the head to illuminated surfaces or combustible materials are less than those given under ‘Technical specifications’ on page 44.

The X5 atom IP must be installed, operated, and maintained only by persons with the training, knowledge and skills to do so safely.

LED light source

The X5 atom IP head has a powerful 40 W RGBL LED light source.

Control panel and display

The PSU6’s control panel with LCD display allows you to change settings quickly and intuitively.

Rigging options

X5 atom IP head

The head has a yoke / floorstand. If you open its legs, you can use it as floorstand to place the head on a stable surface. If you close its legs, you can use it as a yoke to fly the head on a truss using a rigging clamp or bolt the head to any other suitable surface or structure.

X5 atom IP PSU6

The PSU6 has a mounting plate with camlock attachment points for an omega bracket. You can fasten rigging clamps to the omega bracket to allow fast mounting on a rigging truss, for example.

The mounting plate also has M10 threaded holes for fastening rigging clamps directly to the PSU6.

Two holes for safety cable attachment are provided in the mounting plate.

The PSU6 is supplied with the mounting plate installed on the rear of the unit, but you can remove the plate and install it on the bottom of the unit.

Preparation for use

Warning! Read 'Safety' starting on page 5 before installing the X5 atom IP system.

Included items

The X5 atom IP PSU6 is supplied with:

- PowerCON TRUE1 power cable

The X5 atom IP Head is supplied with:

- Mounting yoke/floorstand
- Power/data cable, 5 m / 16.4 ft.
- Accessory spring for mounting optical accessories on front of heads
- GLP Slide Connector.

Orientation and location

X5 atom IP devices may be rigged in any orientation following the instructions in this chapter or placed on a level surface in locations where they do not present a hazard.

Make sure that devices will be at least 0.1 m / 4 in. away from combustible materials (wood, paper, textiles, etc.) including curtains and stage scenery when installed.

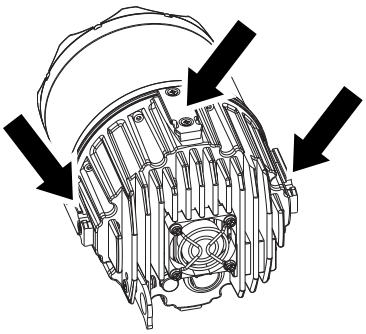
Make sure that there will be a minimum of 1 m / 3.3 ft. between the head and any surface to be illuminated.

Installing the head

If there is a risk of injury or damage if an item of mounting or rigging hardware fails, you must secure the head with a secondary attachment such as a safety cable as described in this chapter.

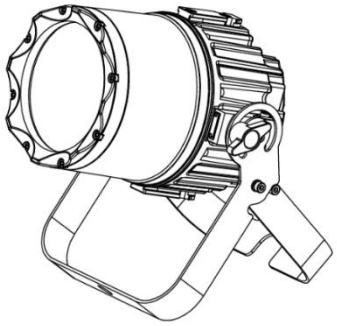
Installing an array of heads

Each X5 atom IP head has four slide-in connector points that let you join multiple heads together in flexible arrays using GLP Slide Connectors.



If you install an array of heads in a location where is a risk of injury or damage if an item of mounting or rigging hardware fails, you must secure with a secondary attachment such as a safety cable as described in this chapter any head that is fastened into the array using only one slide-in connector.

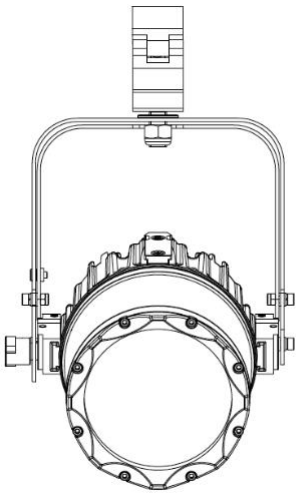
Installing upright on a horizontal surface



See illustration on right. You may use the head's floorstand to place the head standing upright on a stable horizontal surface.

Make sure that the head and cables do not present a risk of tripping or causing injury.

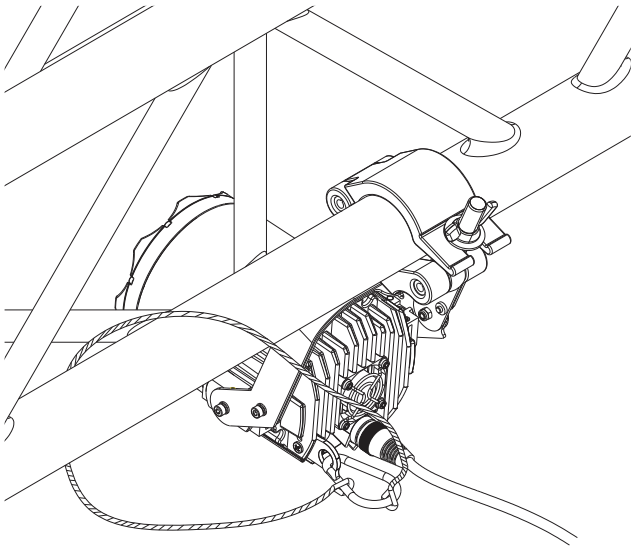
Mounting a head with a rigging clamp



To suspend the X5 atom IP head from a rigging truss or similar structure using a rigging clamp bolted to the head's mounting yoke, see illustration on right:

1. Fold the legs of the head's mounting yoke/floorstand together to form one single bracket.
2. Obtain a suitable half-coupler type rigging clamp. Pass an M10 grade 8.8 steel bolt through the clamp and through the center hole in the mounting yoke, then secure it with a washer and a self-locking nut.
3. Fasten the rigging clamp securely around a rigging truss chord or similar bar.
4. Secure the head against clamp failure as described in 'Securing the head with a safety cable' below.

Securing the head with a safety cable



If you install the head in a location where the head can cause injury or damage if it falls, secure it with a safety cable that is in perfect condition and approved as a secondary attachment for the weight of the head.

To secure the head with a safety cable:

1. See illustration on right. Pass the safety cable through the safety cable attachment point in the rear of the head. Do not use the mounting yoke/floorstand for safety cable attachment, as a yoke failure can allow the head to fall.
2. Pass the safety cable through or around a secure anchoring point such as the rigging truss or other supporting structure and take up as much slack as possible, then lock the safety cable closed.
3. Check that the safety cable will hold the head safely if a primary attachment fails.

Installing the PSU6

If there is a risk of injury or damage if an item of mounting or rigging hardware fails, you must secure the PSU6 with a secondary attachment such as a safety cable as described in this chapter.

Installing on a horizontal surface

You may place the PSU6 standing upright on a stable horizontal surface. Make sure that the PSU6 and cables do not present a risk of tripping or causing injury.

Mounting with a rigging clamp

To suspend the X5 atom IP PSU6 from a rigging truss or similar structure using rigging clamps:

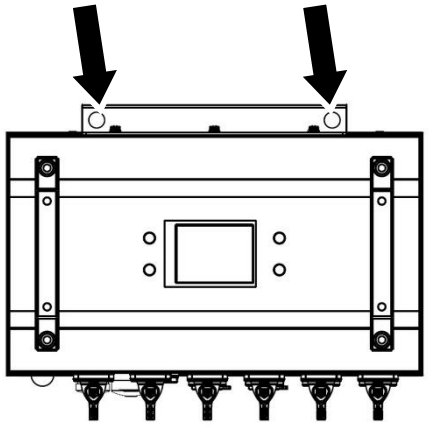
1. Either:
   - fasten two suitable rigging clamps to mounting plate using two M10 grade 8.8 steel bolts passed through the 13 mm holes in the plate and secured with washers and self-locking nuts, or
   - fasten one suitable rigging clamp directly to the mounting plate using an M10 grade 8.8 steel bolt tightened into the integrated M10 screw thread in the mounting plate, or
   - fasten a suitable rigging clamp to a standard GLP Omega Bracket using an M10 grade 8.8 steel bolt with washer and self-locking nut. Fix the Omega Bracket and rigging clamp to the mounting plate using the camlock fasteners in the mounting plate. Turn camlock fasteners a full 90° clockwise to lock them.
2. Fasten the rigging clamp(s) securely around a rigging truss chord or similar bar.
3. Secure the PSU6 against clamp failure as described in ‘Securing the PSU6 with a safety cable’ below.

Securing the PSU6 with a safety cable

If you install the PSU6 in a location where it can cause injury or damage if it falls, secure it with a safety cable that is in perfect condition and approved as a secondary attachment for the weight of the PSU6.

To secure the PSU6 with a safety cable:

1. See illustration on right. Pass the safety cable through one of the safety cable attachment points (arrowed) in the top of the mounting plate.
2. Pass the safety cable through or around a secure anchoring point such as the rigging truss or other supporting structure and take up as much slack as possible, then lock the safety cable closed.
3. Check that the safety cable will hold the PSU6 safely if a primary attachment fails.



Connections

Warning! Read ‘Safety’ starting on page 5 before connecting the X5 atom IP system to power.

AC power

The X5 atom IP PSU6 has a Neutrik powerCON TRUE1 TOP (True Outdoor Protection) socket for connection to AC mains power from a Neutrik powerCON TRUE1 TOP female cable connector. To maintain the PSU6’s IP65 rating, use only this type of cable connector.

The autosensing power supply accepts 100-240 V, 50/60 Hz AC power. Do not connect the PSU6 to AC power at any other voltage.

The AC mains power distribution circuit must include a connection to ground / protective earth. It must be protected against ground / earth leakage and overload.

Do not connect the system to a power distribution circuit that is equipped with an external dimmer.

Powering the system on and off

The PSU6 does not have a power ON/OFF switch. It is powered on as soon as power is applied to its power input cable. Before applying power, check that nobody will be looking directly at heads from close range if they light up suddenly.

To shut down power, cut power to the PSU6’s power input cable.

Connecting to power

Although powerCON TRUE1 TOP connectors support hot-plugging, it is still good practice to shut down power to power cables before connecting them to devices.

To connect the PSU6 to power:

1. Check that the connector on the power input cable is in perfect condition, paying attention to the keys on the connector. If the connector or its keys show signs of damage, replace the connector with a new item.
2. Remove the rubber connector seal from the powerCON TRUE1 TOP MAINS IN socket (see ‘PSU6 Overview’ on page 14). Line up the keys in the connector correctly with the keyways in the socket.
3. Insert the connector into the socket. Do not use force. If you feel any more than light resistance when you try to push the connector into the socket, something is wrong – you may have lined up keys and keyways incorrectly. Remove the connector and check the positions of keys and keyways before trying to insert the connector again.
4. Twist the connector fully clockwise to lock. Listen for a ‘click’ that indicates that the connector is locked.
5. Make sure that nobody is looking directly at heads from close range before switching the PSU6 on.

Installing power connectors on the input cable

It is possible to install a cord cap / mains power plug that is suitable for your local convenience receptacles / power sockets on the supplied power input cable. If you do this, check that the cord cap / plug is rated minimum 250 V, 16 A, that it has a connection to ground / earth and that it has an integral cable grip. Follow the cord cap / plug manufacturer's assembly instructions.

If you need to install a Neutrik powerCON TRUE1 TOP connector on a power cable, follow the instructions given on the Neutrik website at www.neutrik.com.

Respect the color coding used in the supplied power cable and in your local mains power wiring system. US and EU systems use the color coding shown below:

	Live or L	Neutral or N	Ground / Earth or ⏚
US system	Black	White	Green
EU system	Brown or black	Blue	Yellow/green

Connecting PSU6 devices to power in a daisy-chain

The X5 atom IP PSU6 device has a Neutrik powerCON TRUE1 TOP (True Outdoor Protection) power THRU/OUT female socket for connecting other devices to AC mains power in a daisy-chain. To maintain the device's IP65 rating, connect only a cable with a Neutrik powerCON TRUE1 TOP male cable connector to this socket.

Add together the current draw of all the devices that you intend to connect together in a daisy chain and do not exceed the current capacity of any circuit, cable or connector in the chain.

Do not exceed the maximum number of devices that you may connect to power in a daisy-chain (see 'Electrical safety' on page 6).

Connecting to control data

X5 atom IP heads can be controlled via USITT512 DMX over a standard DMX cable link or via other control protocols over an Ethernet link. The **Protocol Setup** menu in the PSU6 control panel lets you set the system's control protocol.

If you would like advice with planning and installing a suitable control link, your GLP supplier will be happy to provide assistance.

DMX link

See 'PSU6 Overview' on page 14. The PSU6 has Neutrik TOP 5-pin XLR IN and THRU sockets for connection to a DMX cable link. Connectors use standard DMX pinout:

- Pin 1 = Ground
- Pin 2 = Negative / data cold
- Pin 3 = Positive / data hot.
- Pins 4 and 5 are not used.

To link PSU6 devices in cabled DMX daisy-chains using their XLR connectors while maintaining devices' IP65 protection, use Neutrik TOP 5-pin XLR connectors only.

Use certified DMX cable only.

Ethernet link

See ‘PSU6 Overview’ on page 14. The PSU6 has two Neutrik EtherCON TOP ports for connection to an Ethernet link. To connect devices to an Ethernet link while maintaining their IP65 protection, use network cable with Neutrik EtherCON TOP RJ45 connectors only.

Connecting X5 atom IP heads to a PSU6

The X5 atom IP PSU6 has six DC power and data outputs on its connections panel. To connect the system, run a GLP power and data cable with Neutrik TOP 4-pin XLR connectors from each power/data output on the PSU6 to a power/data input on an X5 atom IP head. Suitable cables are available from GLP suppliers.

Warning! Do not exceed the maximum safe distance of 60 m / 196 ft. between any X5 atom IP head and the X5 atom IP PSU6.

Using the X5 atom IP system

Check that the software version given at the front of the user manual matches the software version installed in the PSU6.

Light source

The X5 atom IP head features a compact, powerful 40 W RGBL LED light engine.

Control options

The X5 atom IP system is compatible with DMX 512, RDM, Art-Net and sACN control protocols.

The system offers three DMX control modes:

- **Mode 1 (Combined 16-bit)** gives grouped control of all the heads that are connected to one PSU6. It gives control of all the main functions, with 16-bit RGB, RGBL or x:y color mixing control.
- **Mode 2 (Individual 8-bit)** gives individual control of all the heads that are connected to one PSU6. It gives control of all the main functions, with 8-bit RGB, RGBL or x:y color mixing control of each head.
- **Mode 3 (Individual 16-bit)** is the default DMX mode. It gives individual control of all the heads that are connected to one PSU6. It gives control of all the main functions, with 16-bit RGB, RGBL or x:y color mixing control of each head.

Zoom

The head has motorized zoom control. Control on the Zoom DMX channel moves from spot to flood as the DMX value increases.

White point

The white point is the default white that is obtained when the shutter is opened. The X5 atom IP offers a choice of fixed white points in RGB Color Mix Mode, allowing convenient use in different environments. For details of setting the white point, see ‘White point’ on page 26.

Color temperature control (CTC)

In addition to the choice of default fixed white point, the system offers Color Temperature Correction (CTC) in all three color mixing control modes (RGB, RGBL and x:y). The CTC Channel allows a temporary change of white point and offers a smooth shift between whites from 10 000 K to 2 500 K following the black body line.

Depending on the selected Color Mix Mode (RGB, RGBL or x;y), if you select a color temperature on the CTC channel, the system will no longer use the specific open color and will instead use the selected color temperature.

If you select a color temperature on the CTC channel, it is still possible to adjust the color temperature using the RGB and RGBL channels.

Note: To obtain the desired color temperature on the CTC channel, you must set all Color Mix channels to 100%. If they are not at 100%, the system will mix color relative to the selected white point of the CTC

Color Quality Control (CQC)

The CQC channel lets you modify the spectral mix of the white output in order to achieve a balance between better color rendering or higher output intensity. The following options are available:

- **High Quality (HQ)** deploys multiple LEDs to create a richer light spectrum that gives improved color rendering but also slightly lower output. Color is mixed with priority given to the best white color rendering quality. Saturated colors will have maximum saturation at DMX 000 and will smoothly become unsaturated until they reach 0% saturation (= white) at DMX value 127.
- **High Output (HO)** gives higher output intensity but reduced color rendering performance. Color is mixed with priority given to the highest output in white. Saturated colors will have maximum saturation at DMX 255 and will smoothly become unsaturated until they reach 0% saturation (= white) at DMX value 128.

While using white light, the CQC channel lets you change between white with priority on high-quality color rendering and white with priority on highest output. Additionally, the CQC channel lets you smoothly desaturate colors. If you have set a saturated color in the color mix, the CQC channel lets you smoothly desaturate the color from saturated to fully unsaturated (i.e. white).

Magenta/Green Shift (M/G Shift)

The Magenta/Green Shift channel lets you move the color coordinate of a white point, a mixed color or a selected CTC color along a vertical line on the color temperature curve in all three Color Mix modes. The corresponding white point is either shifted towards Green or Magenta.

If M/G Shift is enabled, it immediately affects all mixed colors as well as the color temperature that is selected on the CTC channel.

Tungsten simulation

The tungsten filament simulation channel allows the user to select between different tungsten options in all three Color Mix modes.

The first part of the Tungsten channel offers standard tungsten features with fixed color temperature, red shift and delayed intensity changes. The color temperature, the color shift and the inertia of the selected tungsten filament light source are fully simulated. The value set on the Tungsten channel has higher priority than the color wheel or CTC.

The second part of the Tungsten channel lets you apply one of the tungsten effects (inertia and intensity) to the currently mixed color or the currently selected color temperature on the CTC channel.

Shutter

The shutter channel offers continuous blackout, continuous open and a range of intensity effects.

The following shutter effects are available:

- **Single flash** performs exactly one single flash with each value change within this DMX value slot.

- **Pulse slow → fast** varies intensity up and down smoothly with the same fade-in and fade-out times. Speed can be adjusted from slow to fast.
- **Pulse opening** fades in and then snaps to blackout. Speed can be adjusted from slow to fast.
- **Pulse closing** fades out and then snaps to full. Speed can be adjusted from slow to fast.
- **Double flash** provides a quick double flash. Speed can be adjusted from slow to fast.
- **Lightning** simulates an electrical storm with random lightning flashes.
- **Strobe random** (only available when the system is set to a DMX mode with individual pixel control (individual head control) strobes individual pixels at random to give a sparkling effect. Speed can be adjusted from slow to fast.
- **Strobe random all** strobes all of the pixels (heads) together at random intervals, allowing a random strobe across multiple heads. Speed can be adjusted from slow to fast. *Note that the random effect across multiple heads really is random!*
- **Strobe sync** synchronizes the strobe in multiple heads so that all the heads flash at the same time. Speed can be adjusted from slow to fast.

Intensity

The electronic dimming effect provides smooth 16-bit dimming. Three dimming curves with different dimming characteristics are available. See ‘Dimming curves’ on page 27.

Special/Control DMX channel

The Special/Control DMX channel lets you change settings and perform a system reset from the control desk (a possibility that can be very useful during a show or for a specific scene). To apply a command on the Special/Control channel, you must hold the command for a certain number of seconds (see the DMX Channel Index available for download from www.glp.de).

To trigger a reset using the Special/Control channel, you must send the DMX value for this function for 3 seconds. If you want to trigger an additional reset using the Special/Control channel, you must first move away from the Reset DMX value and then return to this value. This requirement to change DMX values eliminates the risk of the system entering an unwanted Reset loop if it is patched wrongly.

Note: Most of the settings available in the PSU6’s control menus or on the Special/Control DMX channel are also available via RDM.

Fixture settings

The settings described in this chapter let you customize the X5 atom IP system. Settings can be available in the control panel on the PSU6, via DMX and/or via RDM.

Color Mix modes

The Color Mix Mode setting offers three different options for color mixing: RGB Mode, RGBL Mode and x:y Mode.

RGB Mode

RGB Mode mixes color using Red, Green and Blue channels. The Lime LED is mixed automatically using the system's internal GLP iQ.Gamut algorithm.

RGB Mode offers a clean default white light at open which is considered to be the white point (RGB at 100%).

When the **Color Mix Mode** is set to **RGB**, the different DMX Modes have the following functionality:

- Mode 1 (Combined 16-bit): 16-bit RGB control of all the heads connected to the PSU6 as one group with Lime mixed automatically. Lime Channel has no function.
- Mode 2 (Individual 8-bit): Individual 8-bit RGB control of each head connected to the PSU6 with Lime mixed automatically. Lime Channel has no function.
- Mode 3 (Individual 16-bit): Individual 16-bit RGB control of each head connected to the PSU6 with Lime mixed automatically. Lime Channel has no function.

RGBL Mode

RGBL Mode mixes color using Red, Green, Blue and Lime channels. The color gamut is calibrated to the GLP iQ.Gamut color space, but the white point (open) is not adjusted to the black body line and will show a white that is mixed using 100% RGBL.

*Note: The **HO** and **HQ** CQC options are not available in RGBL Mode.*

When the **Color Mix Mode** is set to **RGBL**, the different DMX Modes have the following functionality:

- Mode 1 (Combined 16-bit): 16-bit RGBL control of all the heads connected to the PSU6 as one group.
- Mode 2 (Individual 8-bit): Individual 8-bit RGBL control of each head connected to the PSU6.
- Mode 3 (Individual 16-bit): Individual 16-bit RGBL control of each head connected to the PSU6.

x:y Mode

x:y Mode lets you send x:y color coordinates to the system via DMX. The internal color algorithm mixes the four LED colors perfectly to match the x:y color coordinates.

In x:y Mode, white point setting is disabled. CTC channel values overwrite x:y values.

When the **Color Mix Mode** is set to **x:y**, the different DMX Modes have the following functionality:

- Mode 1 (Combined 16-bit): 16-bit x:y control of all the heads connected to the PSU6 as one group.
- Mode 2 (Individual 8-bit): Individual 8-bit x:y control of each head connected to the PSU6.
- Mode 3 (Individual 16-bit): Individual 16-bit x:y control of each head connected to the PSU6.

White point

The white point is the default white that is obtained when the shutter is opened. The X5 atom IP offers a choice of fixed white points in RGB Color Mix Mode, allowing convenient use in different environments. The following fixed white points (color temperatures) are available:

- **8000 K** (effect light)
- **6500 K** (daylight – default)
- **5600 K** (TV and studio)
- **4200 K** (CDM)
- **3200 K** (tungsten)

If a fixed white point is enabled, the system mixes colors with reference to it. GLP iQ.Gamut navigates through the color space using the preferred Color Mode color mixing method.

Note: Fixed white point settings are only valid for RGB mode using the iQ.Gamut FULL. If any of the other defined color gamuts is selected, the defined white point of the selected color gamut is applied.

iQ.Gamut

iQ.Gamut is an LED calibration technology from GLP that defines the color gamut for the color mixing channels. You can select one of a range of calibrated iQ.Gamuts for the system to work within. This feature can be useful if you want to reproduce correct colors or avoid TV camera clipping. The iQ.Gamut setting will only affect the color mix if the system is in **RGB** Color Mix Mode. In all other Color Mix modes this setting has no effect.

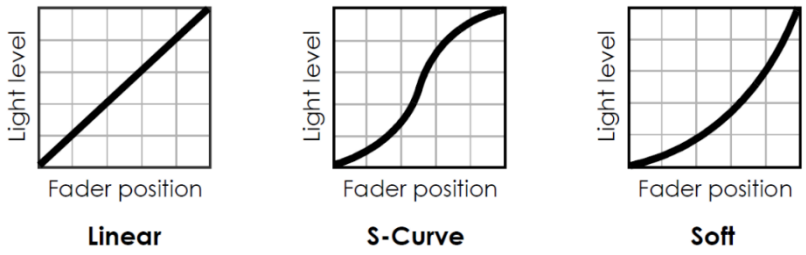
The following iQ.Gamut settings are available:

- **FULL** (default) – Color mixing is calibrated to the X5 color gamut and referenced to the selected fixed white point. This setting gives the best results with applications where deep saturated colors are needed.
- **Rec.2020** – Color mixing is matched to the defined Rec.2020 gamut including its white point. This setting gives the best results for UHD TV applications and avoids color clipping.
- **Rec.709** – Color mixing is matched to the defined Rec.709 gamut including its white point. This setting gives the best results for HD TV applications and avoids color clipping.

- **DCI P3.6** – Color mixing is matched to the defined DCI P3.6 gamut including its white
  point.

Dimming curves

The electronic dimming effect provides smooth 16-bit dimming. The following three dimming curves are available:



X5 atom IP dimming curves

- The **Linear** setting gives a dimming curve that the eye perceives as linear.
- The **S-Curve** setting gives finer control at lower light levels and at higher light levels, with coarser control at medium light levels.
- The **Soft** setting gives finer control at lower light levels, where the eye is most sensitive to changes in light intensity, and coarser control at higher light levels.

PWM frequency

This setting lets you select between different PWM frequencies for different applications and adjust LED frequencies to give the best results at different camera shutter frequencies. Changing the PWM frequency can improve dimming performance or help avoid flicker and beat frequencies in video images.

The following PWM settings are available:

- **Low** – PWM frequency is fixed at a lower level, giving best dimming results.
- **Optimum** (default) – PWM frequency is set dynamically to a level which offers a good compromise between best dimming results and avoiding flicker.
- **High1** – PWM frequency is set to a higher level.
- **High2** – PWM frequency is set to highest level.

Note: A higher PWM frequency may affect dimming performance. The PWM frequency setting is stored in the PSU6 and is not affected by cycling power off and on. However, it will be affected if you use the Factory Defaults command in the control menus. As a rule, you should set all the X5 atom IP devices in an installation to the same PWM frequency in order to ensure the same performance.

No signal settings

This setting lets you choose what the system should do if no DMX signal is present (if the system is being controlled by DMX but the DMX signal stops, or if you apply power to the system when no DMX signal is present).

The following No-Signal options are available:

- **Blackout** (default): Heads black out if no signal is present.
- **Hold**: Heads hold the last valid DMX values they received if no signal is present.
- **Houselight**: Heads go to continuous 100% white output if no signal is present.
- **Scene**: Heads replay a stored scene if no signal is present. Use a "Capture DMX Values" command to store the No-Signal Scene.

Display mode

Gives different behavior options for the display in the PSU6 control panel. This can be helpful in case of errors or during service operations. Three settings are available:

- **Auto** (default): the display automatically switches off after a few seconds if the PSU6 is receiving a valid control signal and has not detected an error. If the PSU6 is not receiving a valid control signal, the display will flash. If the PSU6 has detected an error, the display remains constantly on and shows the error.
- **On**: The display stays on constantly. This setting can be useful if you are configuring or servicing the system.
- **Off**: The display will automatically switch off after a few seconds even if the PSU6 is not receiving a valid control signal or if it has detected an error. Pressing any button turns on the display again.

Display orientation

Lets you select **Normal**, **Upside-down** or **Auto** display orientation.

If **Display Orientation** is set to **Auto**, changing the display orientation by pressing UP and DOWN at the same time will only change the display orientation until the next power cycle.

Hibernation

Lets you put the system into energy-saving mode and disables all electronic components apart from the PSU6's DMX receiving module.

You can take the system out of hibernation mode with a power off/on cycle, via RDM or using the Special / Control DMX channel. If you do this, the PSU6 will perform a system reset before returning to normal operation.

Load User Settings

Lets you load different custom system configurations or return the system to the default system settings.

*To save a custom setting preset from 1 to 3, see **Service → Advanced → Save Settings**.*

- **Load User Settings 1** to **3** loads one of three specific custom system settings. You must confirm the function for 3 seconds before the new settings are loaded (see ***Fixture Settings → Load User Settings***).
- **Save User Settings 1** to **3** saves the current system settings as a set of user settings. You must confirm the function for 2 seconds in order to save the settings

as one of the three custom settings presets (see ***Service → Advanced → Save User Settings***).

*Note: The **Load User Setting Presets** and **Load User Setting Defaults** commands will only affect settings in the **Fixture Settings** group and will not affect DMX Address, Control Mode, Protocol Type, IP Settings, etc. This helps avoid loss of communication with the controller.*

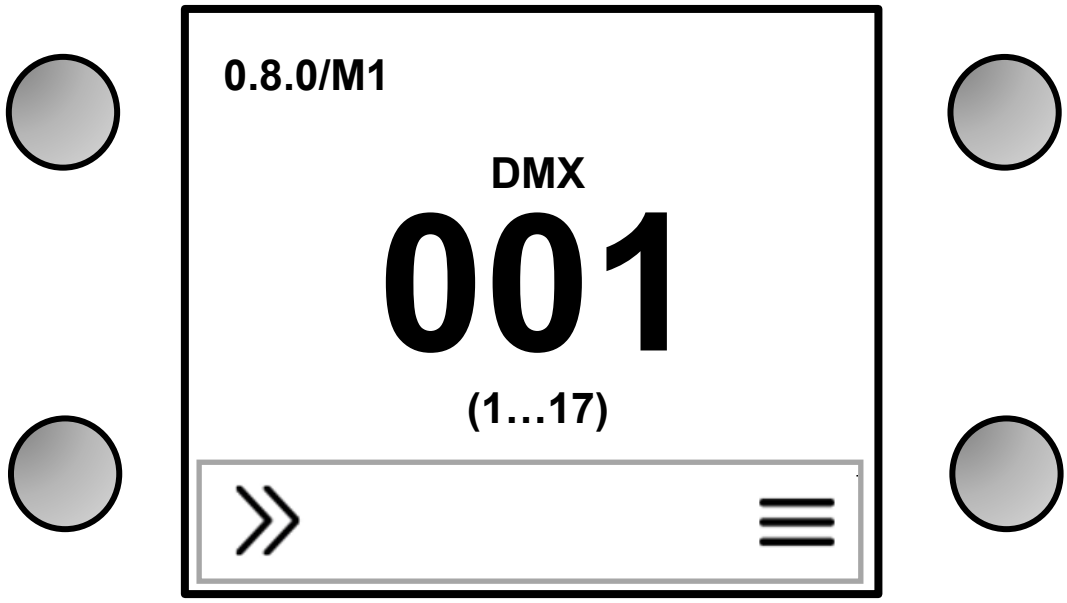
Information

The **Information** submenu provides readouts of all relevant information such as the error list if any errors have been detected, the PSU6 serial number, firmware version, device info, device hours counter, power cycles counter, DMX input monitor, signal quality etc.

Control panel

Warning! DMX control is disabled when the control menus are active. Be prepared for heads to light up as soon as you exit the control menus.

The PSU6's control panel and backlit graphic LCD display with self-charging battery allow you to change settings, view readouts and use utilities quickly and intuitively, even when the PSU6 is disconnected from power.



X5 atom IP PSU6 default information screen

Default information screen

When power is applied, the PSU6performs a system reset. After the reset has completed, the default information screen appears in the control panel display on the top of the PSU6.

At any other time, you can press any key to unlock the control panel. Doing this also calls up the default information screen in the control panel display.

See **Error! Reference source not found.**. The top line of the default information s creen consists of, from left to right:

- Main CPU firmware version
- DMX Mode

The center of the screen shows the following information:

- Signal source.
- PSU6's current DMX address in large characters. If the PSU6's self-diagnosis system detects an error, the PSU6 will flash the error code alternately with the

DMX address. This lets you see the DMX address and error code at a distance from the PSU6.

- If the PSU6 detects a valid, active network at one of the fixture's etherCON ports, the default screen will show a network icon to the left or right of the DMX address:
  - Icon on left = data at Port A (on left when facing PSU6 connections panel)
  - Icon on right = data at Port B (on right when facing PSU6 connections panel)

  The PSU6 displays network speed below the network icon.

  If the PSU6 does not detect a network at one of the ports, it displays NO LINK instead of the network icon for that port.
- Below the current DMX address, the PSU6 displays in smaller characters the DMX channels that the system is currently using.

In the example shown on the previous page:

- The PSU6 is running CPU software version 0.8.0
- The system is set to DMX Mode 1
- The system is set to receive data via DMX
- The system's DMX start address is 001
- The system is using DMX channels 1 to 17.

Note: See 'Setting up the control protocol' on page 33 for details of how to configure the fixture's network address.

Using the control panel

The four control panel buttons beside the display have the following functions.

In the main screen:

QUICK MENU – Activates the Quick Menu

UP/DOWN – Press three times to open the live diagnostic tool

MENU – Activates the control panel if it is in sleep mode, then opens the main menu

When navigating through the menus:

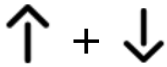
BACK – Goes back one level towards the top of the menu

UP – Scrolls up or increments a number

DOWN – Scrolls down or decreases a number

 ENTER – Confirms a setting or implements a command

At any time:

 UP and DOWN at the same time – Temporarily rotates the display 180°

Control button shortcuts

Live Diagnostics

Pressing UP or DOWN three times calls up an overview of all main system information, signal quality and settings. This can be useful if you are troubleshooting or if you are in contact with GLP Service.

Toggle Display Orientation

Pressing and releasing UP and DOWN together rotates the display through 180°.

*Note: If Display Orientation is set to **Auto**, changing the display orientation by pressing UP and DOWN at the same time will only change the display orientation until the next power cycle. To change the display orientation permanently, go to **Fixture Settings → Display Orientation** in the control panel menus.*

Error Messages

If the PSU6 detects an error, it shows an error message in the display. The message is 'sticky' and will continue to be shown in the display until the next power cycle or reset. To get details of the error message, follow the information in the display. These details are important if you talk to GLP service.

Loss of DMX signal

The display flashes if the DMX signal is lost (the system will then behave according to its No Signal setting – see 'No signal' on page 27)

Setting up the control protocol

The X5 atom IP system can be controlled using:

- USITT512 DMX over a standard DMX cable link using the PSU6's 5-pin XLR connectors
- DMX via Art-Net or sACN using one of the PSU6's two Ethernet ports
- GLP's wireless iQ.Mesh technology

This section explains how to configure the system to use one of these control data protocols.

*Note: The control protocol settings are not affected if you apply a **Fixture Settings → Load User Settings → Setting Defaults** command in the fixture's control panel, but they are returned to factory defaults if you apply a **Load Factory Defaults** command in the main menu.*

DMX

The PSU6 is set up for control via a standard DMX cable link by default.

If the control data protocol has been changed and you want to return to DMX control over a standard DMX cable link:

1. Open the menus in the PSU6 control panel.
2. In the main menu, open **DMX Address** and give the PSU6 a suitable DMX address.
3. In the **Protocol Setup → Data In** menu, set the control protocol to **DMX**.

Art-Net

To configure the PSU6 to receive DMX control data via Art-Net, open the menus in the PSU6 control panel and make the following adjustments:

1. In the first menu (root menu), give a suitable DMX address to the PSU6.
2. In the **Protocol Setup → Protocol Type** menu, set the control protocol to **Art-Net**.
3. Give all PSU6 devices their own unique IP addresses. To do this, you can either:
   - set PSU6 devices to generate their own IP addresses by choosing the ranges 2.x.x.x or 10.x.x.x (Art-Net specification),
   - set PSU6 devices to acquire IP addresses automatically by DHCP, or
   - assign IP addresses manually by entering individual IP addresses and Subnet mask.
4. Select an Art-Net port/universe from 00000 (Network 0 / Subnet 0 / Universe 0) to 32767 (Network 7 / Subnet 15 / Universe 255). Note that the first Art-Net universe is considered to be universe number 00000, not 00001.

These settings will not be affected if you apply a **Load Default Settings** command in the PSU6 control panel, but they will be returned to factory defaults if you apply a **Load Factory Backup** command in the PSU6 control panel.

Note that it is possible to transmit DMX data as broadcast or unicast packages via Art-Net. If a large number of universes (more than 30) is broadcast, data loss can

occur. If you suspect that this is happening, configure your console to unicast Art-Net DMX packages to PSU6 devices, or switch to sACN.

sACN

To configure the PSU6 to receive DMX control data via sACN, open the menus in the PSU6 control panel and make the following settings:

1. In the first menu (root menu), give a suitable DMX address to the PSU6.
2. In the **Protocol Setup → Protocol Type** menu, set the control protocol to **sACN**.
3. Give all PSU6 devices their own unique IP addresses. To do this, you can either:
   - set PSU6 devices to generate their own IP addresses by choosing the ranges 2.x.x.x or 10.x.x.x (Art-Net specification),
   - set PSU6 devices to acquire IP addresses automatically by DHCP, or
   - assign IP addresses manually by entering individual IP addresses and Subnet mask.
4. Select an sACN universe from 00001 to 63999.

These settings will not be affected if you apply a **Load Default Settings** command in the PSU6 control panel, but they will be returned to factory defaults if you apply a **Load Factory Backup** command in the PSU6 control panel.

iQ.Mesh

To set up the system for control via GLP iQ.Mesh:

1. Open the menus in the PSU6 control panel.
2. In the **Protocol Setup → Data In** menu, set the control protocol to **iQ.Mesh**.

Control menus

Quick menu

The PSU6 control panel's Quick Menu gives you quick access to the most frequently used commands. To open the Quick Menu, press the control button marked » when the display is showing the default information screen.

The Quick Menu contains the following items:

<table>
<tr><th colspan="3">Menus</th><th>Notes</th></tr>
<tr><td colspan="3">Reset All</td><td>Resets the entire system (takes a few seconds).</td></tr>
<tr><td colspan="3">Live Diagnostic</td><td>Calls up overview of all main system information, signal quality and settings.</td></tr>
<tr><td>iQ.Service Connect</td><td colspan="2">>>>Connect<<<</td><td>Enables connectivity to the GLP iQ.Service App for 5 minutes.</td></tr>
<tr><td rowspan="4">Load User Settings</td><td>User Setting Preset 1</td><td>>>>Confirm<<<</td><td rowspan="3">Loads custom user settings</td></tr>
<tr><td>User Setting Preset 2</td><td>>>>Confirm<<<</td></tr>
<tr><td>User Setting Preset 3</td><td>>>>Confirm<<<</td></tr>
<tr><td>Setting Defaults</td><td>>>>Confirm<<<</td><td>Returns PSU6 to default settings (not including DMX address, protocol type, Ethernet / CRMX configuration, user offsets, user presets and counters).</td></tr>
<tr><td>Load Factory Defaults (!)</td><td colspan="2">Displays Message: "PSU may lose connection to controller"

>>>Confirm<<<</td><td>Restores all factory default settings (including DMX address, protocol type, Ethernet / CRMX configuration, user offsets and user presets). Important! The PSU6 may lose contact with the controller!</td></tr>
</table>

Main menu

The following menus and commands are available in the PSU6 control panel.

Menus			***Notes***
DMX Address			
001-512			*Set PSU's DMX start address. Highest address possible depends on control mode.*
Control Mode			
M1 Combined 16-bit			*Set DMX control mode.*
M2 Individual 18-bit			
M3 Individual 16-bit			
Protocol Setup			
Data In	**DMX**		*Control via DMX, Art-Net or sACN Protocol, control via GLP iQ.Mesh protocol.*
	Art-Net		
	sACN		
	iQ.Mesh		
Ethernet config	Addressing mode	Auto 2.x.x.x	*Auto Addressing in the range 2.x.x.x*
		Auto 10.x.x.x	*Auto Addressing in the range 10.x.x.x*
		DHCP	*Get IP address by DHCP*
		Custom IP	*Use custom IP address*
	Custom IP address	000.000.000.000	*Enter custom IP address*
	Custom IP subnet	000.000.000.000	*Enter custom subnet IP address*
	ArtNet port	**0** ... 32768	*Enter Art-Net port*
	sACN universe	**1** ... 63999	*Enter sACN universe*
Linking options	iQ.Mesh	Unlink	*Unlink from GLP iQ.Mesh link*
Fixture Settings			
Color Mix Mode	**RGB**		*Direct RGB control in the selected color gamut. Lime added automatically. Colors are perfectly mixed by internal color algorithm referenced to the selected White point or CTC channel value. M/G shift and CQC manipulation are available.*
	RGBL		*Direct RGBL control. control of the four LED colors separately. White point at open will be 100% RGBL, not necessarily located on the black body line. CTC channel, M/G shift and CQC manipulation are available.*

Color Mix Mode (continued)	x;y		*x:y color co-ordinate control. The internal color algorithm mixes the 4 LED colors perfectly to match the color coordinates. White point setting is disabled. CTC channel, M/G shift and CQC manipulation are not possible.*
White Point	8000 K		*Set white point when RGB is at 100% (only available when in RGB color mixing mode)*
	6500 K		
	5600 K		
	4200 K		
	3200 K		
iQ.Gamut (*GLP's calibration technology – select a calibrated color gamut)*	**FULL**		*Color mixing calibrated to the X5 color gamut. Gives best results in applications where deep saturated colors are needed*
	Rec.2020		*Color space defined to Rec.2020 Gamut (RGB color mixing mode only). Gives best results with UHD TV applications.*
	Rec.709		*Color space defined to Rec.709 Gamut (RGB color mixing mode only). Gives best results with UHD TV applications.*
	DCI P3.65		*Color space defined to DCI P3.65 Gamut (RGB color mixing mode only)*
Dimmer Curve	Linear		*Linear dimming curve*
	Soft		*Soft (square law) curve*
	S-Curve		*Finer dimming control at low and high intensity*
PWM Frequency	**Optimal (0)**		*Optimum dynamic frequency for best performance*
	Low (L)		*Optimum fixed frequency for best dimming results*
	High 1 (H1)		*Fixed high frequency*
	High 2 (H2)		*Fixed highest frequency*
No Signal	No Signal Mode	Blackout	*Fixture blacks out if no DMX signal received*
		Hold	*Fixture continues to display current effect if no DMX signal received*
		Scene	*Plays the stored captured scene (see next menu item) if no DMX signal received*
	Capture DMX Values	*>>>Confirm<<<*	*Captures current scene and stores it for use in **No Signal Mode → Scene***

Display Mode	**Auto**		*Display dims after a short period of inactivity if no errors and valid DMX signal*
	On		*Display constantly on*
	Off		*Display dims even if there are errors or if there is no DMX signal*
Display Orientation	**Auto**		*Display automatically inverts to match installation position*
	Normal		*Display normal (for use when PSU6 is standing)*
	Flip		*Display inverted (for use when PSU6 is flown head-down)*
Hibernation	On		*Fixture enters energy saving mode, all electronics except DMX receiver are disabled. Cycling power off and on exits hibernation.*
Load User Settings	User Setting Preset 1	>>> Confirm<<<	*Apply a user preset to system settings*
	User Setting Preset 2	>>> Confirm<<<	
	User Setting Preset 3	>>> Confirm<<<	
	Setting Defaults	>>> Confirm<<<	*Return system to default settings (not including DMX address, protocol type, Ethernet / CRMX configuration, user offsets, user presets and counters)*
Information			
Live diagnostic			*Shows overview of system information*
Show errors			*Shows any stored errors*
Show temperatures			*Shows PSU6 temperature*
Show fan status			*Shows current cooling fan status*
Show controllers info			*Shows controllers info*
Show iQ.Mesh status			*Shows current GLP iQ.Mesh status*
Show LED calibration			*Shows LED calibration information*
Show device counters			*Shows total device hours (non-resettable), resettable device hours, total power cycles (non-resettable), resettable power cycles*
Show DMX input			*Shows DMX values being received*
Show DMX info			*Shows info about any lost DMX packages*
Manual Control			
Reset All			*Reset all effects*
Manual DMX Press **Enter**	Scroll through all effects	< 001. .**128** ..255 >	*Manually control all effects*
	...	< 001. .**128**.. 255 >	
	...	< 001. .**128**.. 255 >	
	Reset Manual Values	Confirm for 3 seconds *(press Enter)*	*Reset all manually entered DMX values to zero*

Service				
Live diagnostic				*Shows overview of system information*
iQ.Service Connect		>>> Connect <<<		*Enables connectivity to the GLP iQ.Service app.*
Tests	Test All			*Run test sequence of all effects. Stop with BACK.*
	Test LED			*Run test sequence of all LEDs. Stop with BACK.*
	Test Zoom			*Run test sequence of zoom effect in all connected heads. Stop with BACK.*
	Test Fans (Auto)			*Run fan self-test. Tries to detect fan errors, clears if successful.*
	Test Fans (Manual)			*Manually test fans one by one*
Advanced *(Press and hold for 3 secs.)*	Service Mode	**OFF**		*Normal operation*
		ON		*Disable display timeouts (exit by cycling power off and on.)*
	Reset counters	Device Hours	Confirm 2 seconds	*Reset to zero*
		Power Cycles	Confirm 2 seconds	
	Save User Settings	User Setting Preset 1	Confirm 2 seconds	*Saves current system settings as user settings preset*
		User Setting Preset 2	Confirm 2 seconds	
		User Setting Preset 3	Confirm 2 seconds	
Load factory defaults				
>>>Confirm<<<				*Reloads all factory default settings and default system configuration settings.*

*Default settings are written in **BOLD type***

Service and maintenance

Warning! There are no user-serviceable parts inside devices. Any service operation that requires removal of a cover must be performed by a professional service technician with the tools, skills, and personal protective equipment to maintain high-powered lighting equipment safely and efficiently.

Servicing a device can expose the user to safety hazards. Read the Safety Precautions section at the beginning of this manual carefully before carrying out any service or maintenance operation.

Regular maintenance and cleaning is essential to get the best performance and service lifetime from your device. Accumulations of dust and dirt will cause loss of performance and overheating that may damage devices. Damage caused by lack of maintenance, improper service or improper cleaning is not covered by the product warranty.

The user can upload firmware (device software) using iQ.Tool or GLP iQ.Service and replace the PSU6's primary fuse. All other maintenance operations must be carried out by professionals or trained and qualified personnel. Please contact your GLP dealer for this.

Optical and mechanical components are subject to normal wear and tear during the product's lifetime. This may result in physical wear and gradual changes in optical characteristics such as color. The amount of wear depends strongly on the operating and environmental conditions. It is therefore impossible to give a general indication of when changes may occur and to what extent it may be necessary to replace optical or mechanical components.

Cleaning

The buildup of dust, dirt and other airborne particles will reduce the head's light output. It will also prevent the head from cooling correctly, and this will reduce the head's lifetime. The rate of dirt buildup will vary depending on environmental factors such as airborne dust, use of smoke machines, airflow from ventilation systems, etc. The head's cooling fans will accelerate buildup, and any smoke particles that are present in the atmosphere will increase the tendency for dirt to clog.

To get the best performance and lifetime from each device, inspect it regularly and clean it as soon as you see signs of dirt buildup. Assess the operating environment each time you begin to use the system. In dusty or smoky conditions, inspect heads after a few hours and check them frequently – heads may attract dirt faster than you expect. Draw up a cleaning schedule that will make sure that dirt is removed before it can build up.

Follow these guidelines:

- Disconnect the system from power and allow it to cool completely before cleaning.
- Do not use solvents, abrasives or any other aggressive product to clean devices.

- Use a vacuum cleaner and soft brush to remove dust and loose particles from surfaces and air vents. Prevent the blades of cooling fans from turning before you aim a vacuum at them, or you may spin the fan too fast and damage it.
- Do not let optical components come into contact with oil or grease. Put on clean, dry lint-free gloves before you touch them.
- Clean glass components by wiping gently with alcohol wipes or a soft, clean, lint-free cloth moistened with a weak detergent solution. Put the solution on the cloth, not on the surface to be cleaned. Avoid rubbing glass surfaces. If particles are stuck to the glass, try to lift them off by dabbing them repeatedly with a cotton swab or moistened lint-free cloth.
- Dry heads with a soft, clean, lint-free cloth or low-pressure compressed air before reapplying power.

Seal maintenance and vacuum testing

The X5 atom IP devices are IP65-rated. They leave the factory having passed vacuum tests. Depending on how and in what conditions heads are used, seals will age over time. Seals must be considered as parts that are subject to wear and tear. They must be checked regularly and replaced if necessary. Regular vacuum testing and seal maintenance is necessary to maintain the IP65 rating of heads in the long term. A leak caused by seal aging or by not carrying out regular leak tests does not constitute grounds for a warranty claim. Please contact GLP Service for guidance with vacuum testing.

Suggested maintenance intervals

We suggest the maintenance schedule below, but bear in mind that cleaning intervals depend on the operating environment. Our suggested cleaning intervals are based on our experience with typical installations – check heads and check the PSU6 to assess the need for cleaning and adjust intervals as necessary.

Maintenance Task	Environment	Interval	How
Clean front lens, head housing. Clean fans, clean or replace air filter.	High levels of airborne contaminants (club, bar, touring, concert etc.)	After each job	Use soft, lint-free cloth moistened with weak detergent solution
	Low levels of airborne contaminants	Monthly	

Maintenance Task	Environment	Interval	How
Clean cooling fans and air vents Clean / service air filters	High levels of airborne contaminants (club, bar, touring, concert etc.)	After each job	Remove dust from air vents and fan blades with vacuum cleaner and soft brush. Hold fans still with a screwdriver while applying suction to avoid spinning them too fast and damaging them
	Low levels of airborne contaminants	Monthly	
Vacuum testing to maintain IP rating	All	Every six months	For guidance on vacuum testing, please contact GLP Service.
Moving parts	All	Yearly	Visual and functional test. If movement is noticeably difficult or slow, a GLP service partner should lubricate with a Teflon-based high-temperature grease.

Main fuse

If the system appears to be completely shut down even though power is applied, the main fuse on the front panel of the PSU6 may have blown. Disconnect the PSU6 from power before replacing the fuse. Ensure that the fuseholder is correctly reinstalled in order to maintain the PSU6's IP65 rating.

If the fuse blows repeatedly, disconnect the PSU6 from power and contact GLP for service and repair.

Guarantee and warranty

As manufacturer, GLP guarantees the specified IP certification for new products when delivered to the end customer. This is ensured through careful factory assembly and subsequent quality testing.

When a device is used correctly, as described in its operating instructions, there will be no reduction in the certified water and dust resistance after delivery.

However, all devices are subject to normal wear and tear – including aging of seals – after prolonged or repeated use, especially outdoors. This leads to a gradual decline in water and dust resistance. For this reason, leak tests must be carried out by the user at regular intervals, depending on the type of use.

Water or dust damage caused by improper use, failure to carry out regular leak tests or failure to close a device properly after service is not covered by the product warranty.

GLP Service and Support

Contact information for the nearest GLP service and support is available online at www.glp.de/en/service, by email at info@glp.de, or by telephone at the following numbers:

- GLP Germany: +49 (7248) 927 1955
- GLP N. America: +1 818 767-8899
- GLP U.K.: +44 1392 690140
- GLP Asia: +852 (3151) 7730
- GLP Nordic: +46 737 57 11 40

Technical specifications

X5 atom IP head

Light source

40 W RGBL LED

Four LED PWM frequency options:

- Low (550 Hz)
- Optimum (dynamic algorithm)
- High 1 (4 600 Hz)
- High 2 (13 000 Hz)

LED lifetime: 50 000 hours to 70% output*

**Figure obtained under manufacturer's test conditions*

Optical system

Total luminous output:

- Wide: 431 lm
- Medium: 417 lm
- Narrow: 351 lm

Minimum zoom:

- 3.5° half peak (50%)
- 4.8° field angle (10%)
- 5.5° cutoff angle (3%)

Maximum zoom:

- 22° half peak (50%)
- 32° field angle (10%)
- 34° cutoff angle (3%)

Zoom ratio: 1:9

White points: 8000 K, 6500 K (default), 5600 K, 4200 K, 3200 K

Effects

Color mixing: RGB, RGBL, x:y (all 16-bit resolution)

CTC: 10 000 K – 2 500K

CQC: High output, high quality, desaturation

Virtual shutter: Variable speed with effects, instant open and blackout

Dimming: 0 – 100% continuous with 16-bit resolution, Linear, Soft and S-Curve dimming curve options

Magenta-Green shift: +0.2 to -0.2 Duv

Tungsten simulation: 8 x options with fixed CCT, 8 x options with individual CCT

Zoom: 3.5° beam angle – 34° cutoff angle fast zoom action

Electrical

Power input: 26 VDC supplied by X5 atom IP PSU6

Current: 1.5 A per head

Power consumption: 40 W per head

Maximum cable run between head and PSU6: 60 m

Thermal

Cooling system: Sealed heat exchanger / forced air system, overheat protection, temperature-regulated cooling fan operation

Max. ambient temperature: 45° C / 115° F

Min. ambient temperature: -10° C / 14° F

Total heat dissipation at 230 V, calculated, +/-10°: 140 BTU/hr. per head

Installation

Operating position: Any

Location: Temporary and permanent indoor, temporary outdoor installation

Mounting: Standing on surface or fastened to surface/structure using integrated mounting yoke/floorstand

Safety cable attachment: On rear of head

Minimum distance to illuminated surfaces: 1 m / 40 in.

Minimum distance to combustible materials: 0.1 m / 4 in.

Connections

Mains power IN and THRU: Neutrik powerCON TOP TRUE1

DMX data IN and THRU via DMX cable: Neutrik TOP 5-pin XLR

DMX data IN and THRU via Ethernet: Neutrik TOP fail-safe EtherCON

Construction

Tilt adjustment range: 276°

Ingress protection: IP65

Standard color: Black

Housing: High-impact flame-resistant thermoplastic, aluminum, steel

GLP iQ.Mesh module with NFC sensor for GLP iQ.Mesh connectivity

Accessories supplied

Power cable with Neutrik powerCON TOP TRUE1 connector

Dimensions and weight

Height (head vertical, including unfolded floorstand): 258 mm / 10.2 in.

Height (head horizontal, including unfolded floorstand): 188 mm / 7.4 in.

Width across yoke (including tilt adjustment screw): 172 mm / 6.8 in.

Weight (head only): 2.1 kg / 4.7 lb.

Weight (including mounting yoke / floorstand): 2.5 kg / 5.6 lb.

X5 atom IP PSU6

Installation

Installation options: Standing on surface or fastened to surface/structure

Mounting:

- Mounting plate with two position options for fastening to PSU6: one pair of 1/4-turn locks, two Ø13 mm holes and one M10 threaded hole
- 2 handles, each with 2 x M6 screw threads

Orientation: Any

Location: Temporary and permanent indoor, temporary outdoor installation

Control and programming

Control protocols:

- DMX via USITT DMX512-A
- RDM (ANSI/ESTA E1.20)
- Art-Net
- sACN
- GLP iQ.Mesh

DMX control modes: 3 – Combined 16-bit (17 channels), Individual 8-bit (60 channels), Individual 16-bit (84 channels)

16-bit control: Intensity, color mixing

Standalone operation: One captured static scene

Setting and addressing: Onboard control panel with invertible backlit graphic display, DMX, RDM, GLP iQ.Service smartphone app

Display power: Self-charging buffer battery

Firmware update: DMX Link via DProg or iQ.Tool, GLP iQ.Mesh

RDM Manufacturer ID: 0x676C (GLP German Light Products GmbH)

Electrical

Power input: 100 – 240 V AC / 50 – 60 Hz

Power supply unit: Auto-ranging electronic switch-mode

Maximum power consumption: 300 W

Maximum cable run between head and PSU6: 60 m

Thermal

Operating temperature range: -10 °C / 14 °F to 45 °C / 115 °F

Total heat dissipation at 230 V, calculated, +/-10°: 1030 BTU/hr.

Construction

Housing color: Black

Housing material: High-impact flame-resistant thermoplastic / Aluminum / Steel

Ingress protection rating: IP 65

Two handles (can be used for carrying or mounting)

Mounting plate with two position options

Connections

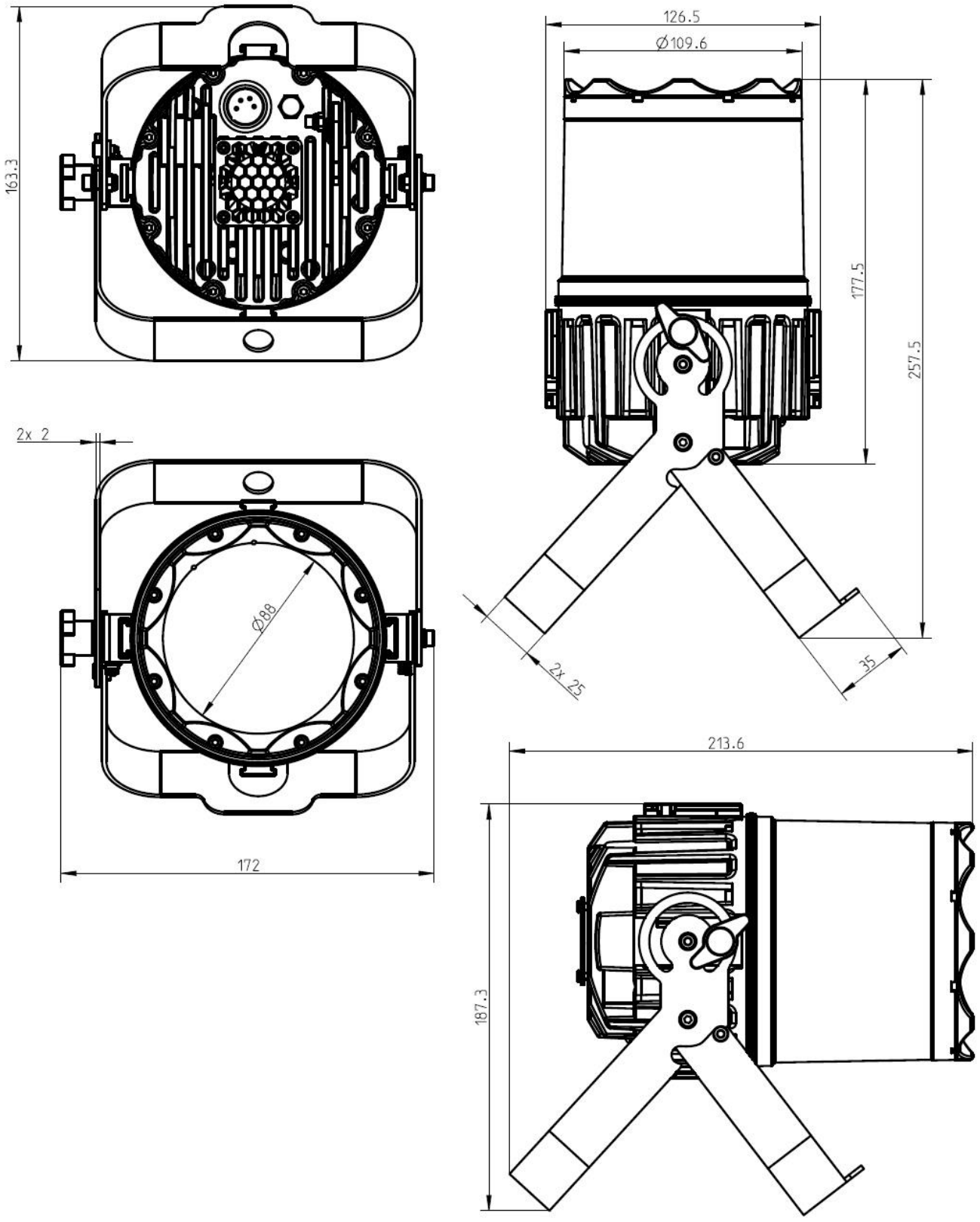
AC mains power: Neutrik powerCON TRUE1 In/Out
Data: XLR 5-pin In/Out and etherCON In/Out (fail-safe)
DC power and data output to six X5 atom IP heads: 6 x 4-pin XLR female

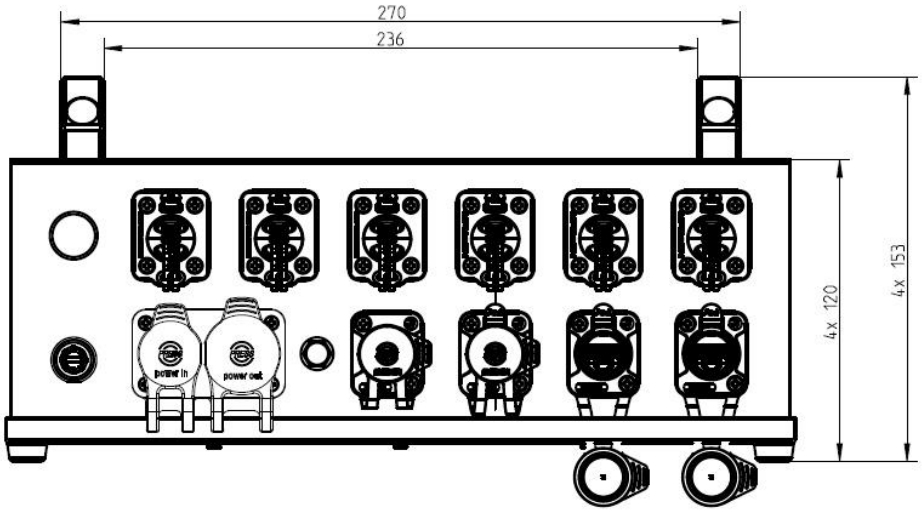
Dimensions and weight

Height: 153 mm / 6.02 in
Width: 314 mm / 12.4 in
Depth: 230 mm / 9.04 in
Weight 5.2 kg / 11.46 lb.

Dimensions

Dimensions are given in millimeters

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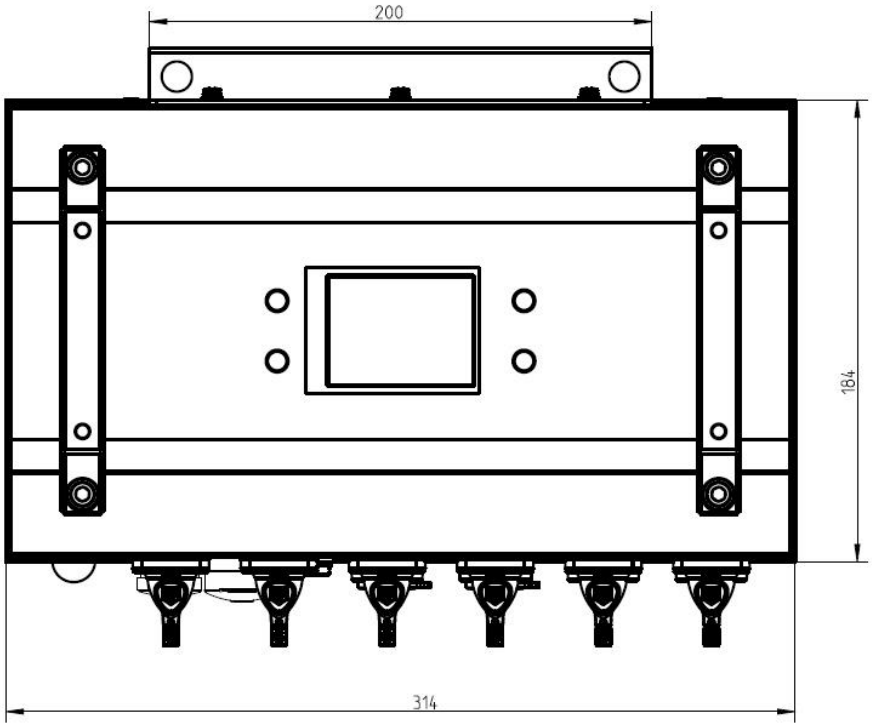
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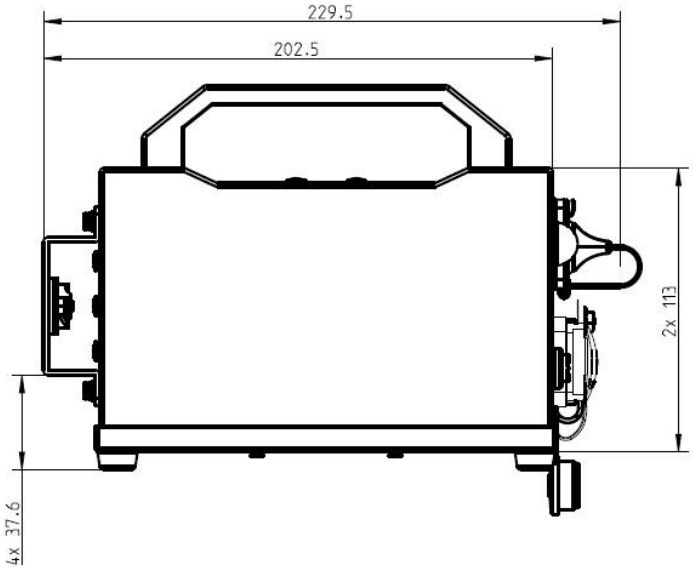
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GLP