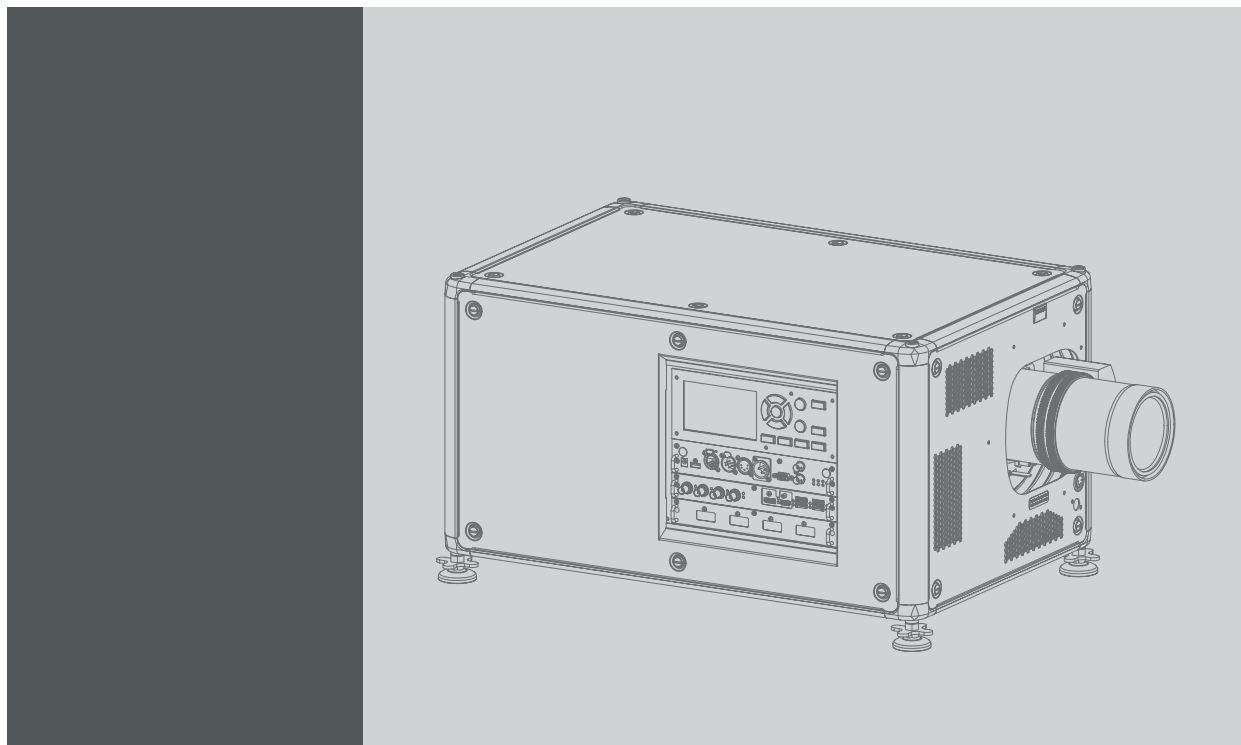


HDX 4K



User guide

Product revision

Software version: 1.3.10

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Barco provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. On receipt, the purchaser must immediately inspect all delivered goods for damage incurred during transport, as well as for material and manufacturing faults Barco must be informed immediately in writing of any complaints.

The period of guarantee begins on the date of transfer of risks, in the case of special systems and software on the date of commissioning, at latest 30 days after the transfer of risks. In the event of justified notice of complaint, Barco can repair the fault or provide a replacement at its own discretion within an appropriate period. If this measure proves to be impossible or unsuccessful, the purchaser can demand a reduction in the purchase price or cancellation of the contract. All other claims, in particular those relating to compensation for direct or indirect damage, and also damage attributed to the operation of software as well as to other services provided by Barco, being a component of the system or independent service, will be deemed invalid provided the damage is not proven to be attributed to the absence of properties guaranteed in writing or due to the intent or gross negligence or part of Barco.

If the purchaser or a third party carries out modifications or repairs on goods delivered by Barco, or if the goods are handled incorrectly, in particular if the systems are operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not included in the guarantee coverage are system failures which are attributed to programs or special electronic circuitry provided by the purchaser, e.g. interfaces. Normal wear as well as normal maintenance are not subject to the guarantee provided by Barco either.

The environmental conditions as well as the servicing and maintenance regulations specified in this manual must be complied with by the customer.

Federal Communications Commission (FCC Statement)

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference at his own expense

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

EMC statements

EN55032/CISPR32 Class A MME (MultiMedia Equipment)

Warning : This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

Class A ITE (Information Technology Equipment)

Warning : This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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1. SAFETY

About this chapter

Read this chapter attentively. It contains important information to prevent personal injury while installing and using a HDX projector. Furthermore, it includes several cautions to prevent damage to the HDX projector. Ensure that you understand and follow all safety guidelines, safety instructions and warnings mentioned in this chapter before installing the HDX projector. After this chapter, additional "warnings" and "cautions" are given depending on the installation procedure. Read and follow these "warnings" and "cautions" as well.

Clarification of the term "HDX" used in this document

When referring in this document to the term "HDX" means that the content is applicable for following Barco products:

- HDX 4K
- HDX 4K12
- HDX 4K14
- HDX 4K20 FLEX



Barco provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. Observing the specification mentioned in this chapter is critical for projector performance. Neglecting this can result in loss of warranty.

1.1 General considerations



WARNING: Ensure you understand and follow all the safety guidelines, safety instructions, warnings and cautions mentioned in this manual.



WARNING: Be aware of suspended loads.



WARNING: Wear a hard hat to reduce the risk of personal injury.



WARNING: Be careful while working with heavy loads.



WARNING: Mind your fingers while working with heavy loads.



CAUTION: High pressure lamp may explode if improperly handled.

General safety instructions

- Before operating this equipment please read this manual thoroughly and retain it for future reference.
- Installation and preliminary adjustments should be performed by qualified Barco personnel or by authorized Barco service dealers.
- All warnings on the projector and in the documentation manuals should be adhered to.
- All instructions for operating and use of this equipment must be followed precisely.
- All local installation codes should be adhered to.

Notice on safety

This equipment is built in accordance with the requirements of the international safety standards IEC60950-1, EN60950-1, UL60950-1 and CAN/CSA C22.2 No.60950-1, which are the safety standards of information technology equipment including electrical business equipment. These safety standards impose important requirements on the use of safety critical components, materials and insulation, in order to protect the user or operator against risk of electric shock and energy hazard and having access to live parts. Safety standards also impose limits to the internal and external temperature rises, radiation levels, mechanical stability and strength, enclosure construction and protection against the risk of fire. Simulated single fault condition testing ensures the safety of the equipment to the user even when the equipment's normal operation fails.

Users definition

Throughout this manual, the term SERVICE PERSONNEL refers to persons having appropriate technical training and experience necessary to be knowledgeable of potential hazards to which they are exposed (including, but not limited to HIGH VOLTAGE ELECTRIC and ELECTRONIC CIRCUITRY and HIGH BRIGHTNESS PROJECTORS) in performing a task, and of measures to minimize the potential risk to themselves or other persons. The term USER and OPERATOR refers to any person other than SERVICE PERSONNEL, AUTHORIZED to operate professional projection systems.

The HDX projector is intended "FOR PROFESSIONAL USE ONLY" by AUTHORIZED PERSONNEL familiar with potential hazards associated with high voltage, high intensity light beams, ultraviolet exposure and high temperatures generated by the lamp and associated circuits. Only qualified SERVICE PERSONNEL, knowledgeable of such risks, are allowed to perform service functions inside the product enclosure.

1.2 Important safety instructions

To prevent the risk of electrical shock

- This product should be operated from a mono phase AC power source.
- This apparatus must be grounded (earthed) via the supplied 3 conductor AC power cable. If none of the supplied power cables are the correct one, consult your dealer.
If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.
- Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord. To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- Use only the power cord supplied with your device. While appearing to be similar, other power cords have not been safety tested at the factory and may not be used to power the device. For a replacement power cord, contact your dealer.
- Do not operate the projector with a damaged cord. Replace the cord.
Do not operate the projector if the projector has been dropped or damaged - until it has been examined and approved for operation by a qualified service technician.
- Position the cord so that it will not be tripped over, pulled, or contact hot surfaces.
- If an extension cord is necessary, a cord with a current rating at least equal to that of the projector should be used. A cord rated for less amperage than the projector may overheat.
- Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock.
- Do not expose this projector to rain or moisture.
- Do not immerse or expose this projector in water or other liquids.
- Do not spill liquid of any kind on this projector.
- Should any liquid or solid object fall into the cabinet, unplug the set and have it checked by qualified service personnel before resuming operations.
- Do not disassemble this projector, always take it to an authorized trained service person when service or repair work is required.
- Do not use an accessory attachment which is not recommended by the manufacturer.
- Lightning - For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the device due to lightning and AC power-line surges.

To prevent personal injury

- Isolate electrically before replacing the lamp or lamp house. Caution: Hot lamp (house).
- Caution: High pressure lamp may explode if improperly handled. Refer servicing to qualified service personnel.
- To prevent injury and physical damage, always read this manual and all labels on the system before inserting the lamp casing, connecting to the wall outlet or adjusting the projector.
- To prevent injury, take note of the weight of the projector. Minimum 2 persons are needed to carry the projector.
- To prevent injury, ensure that the lens and all covers are correctly installed. See installation procedures.
- Warning: high intensity light beam. NEVER look into the lens ! High luminance could result in damage to the eye.
- **Warning: extremely high brightness lamps:** This projector uses extremely high brightness lamps. Never attempt to look directly into the lens or at the lamp. If the projection distance is less than 6 meter, any person needs to be at least 4 meters away from the projected image. Avoid close range reflection of the projected image on any reflecting surface (such as glass, metal, ...) . When operating the projector, we strongly recommend wearing suitable safety glasses.

- Before attempting to remove any of the projector's covers, you must turn off the projector and disconnect from the wall outlet.
- When required to switch off the projector, to access parts inside, always disconnect the power cord from the power net.
- The power input at the projector side is considered as the disconnect device. When required to switch off the projector, to access parts inside, always disconnect the power cord at the projector side. In case the power input at the projector side is not accessible (e.g. ceiling mount), the socket outlet supplying the projector shall be installed nearby the projector and be easily accessible, or a readily accessible general disconnect device shall be incorporated in the fixed wiring.
- Never stack more than 2 HDX projectors in a hanging configuration (truss) and never stack more than 3 HDX projectors in a base stand configuration (table mount).
- When using the projector in a hanging configuration, always mount 2 safety cables. See installation manual for the correct use of these cables.
- Do not place this equipment on an unstable cart, stand, or table. The product may fall, causing serious damage to it and possible injury to the user.
- It is hazardous to operate without lens or shield. Lenses, shields or ultra violet screens shall be changed if they have become visibly damaged to such an extent that their effectiveness is impaired. For example by cracks or deep scratches.
- **Warning: Protection from ultraviolet radiation:** Do not look directly in the light beam. The lamp contained in this product is an intense source of light and heat. One component of the light emitted from this lamp is ultraviolet light. Potential eye and skin hazards are present when the lamp is energized due to ultraviolet radiation. Avoid unnecessary exposure. Protect yourself and your employees by making them aware of the hazards and how to protect themselves. Protecting the skin can be accomplished by wearing tightly woven garments and gloves. Protecting the eyes from UV can be accomplished by wearing safety glasses that are designed to provide UV protection. In addition to the UV, the visible light from the lamp is intense and should also be considered when choosing protective eye wear.
- **Exposure to UV radiation:** Some medications are known to make individuals extra sensitive to UV radiation. The American Conference of Governmental Industrial Hygienists (ACGIH) recommends occupational UV exposure for an 8 hour day to be less than 0,1 micro-watts per square centimeters of effective UV radiation. An evaluation of the workplace is advised to assure employees are not exposed to cumulative radiation levels exceeding these government guidelines. The exposure of this UV radiation is allowed for only 1 hour per day for maintenance and service persons.
- **Cooling liquid circuit.** The projector contains a cooling circuit filled with Blue antifreeze diluted (1/3 ethanediol – 2/3 Demi water).
When the cooling circuit leaks, switch off the device and contact a service technician.
The liquid is not for household use. Keep out of reach of children. Harmful by oral intake. Avoid exposure to pregnant women. Avoid contact with eyes, skin and clothing. Avoid inhale of the noxious fumes.
- When the projector is mounted above persons, mount always a lens safety cable.
- In case the product malfunctions, power off the unit and contact Barco by logging an incident via the support website: www.barco.com/en/support.

To prevent fire hazard

- Do not place flammable or combustible materials near the projector!
- Barco large screen projection products are designed and manufactured to meet the most stringent safety regulations. This projector radiates heat on its external surfaces and from ventilation ducts during normal operation, which is both normal and safe. Exposing flammable or combustible materials into close proximity of this projector could result in the spontaneous ignition of that material, resulting in a fire. For this reason, it is absolutely necessary to leave an "exclusion zone" around all external surfaces of the projector whereby no flammable or combustible materials are present. The exclusion zone must be not less than 40 cm (16") for all DLP projectors. The exclusion zone on the lens side must be at least 5 m. Do not cover the projector or the lens with any material while the projector is in operation. Keep flammable and combustible materials away from the projector at all times. Mount the projector in a well ventilated area away from sources of ignition and out of direct sun light. Never expose the projector to rain or moisture. In the event of fire, use sand, CO₂ or dry powder fire extinguishers. Never use water on an electrical fire. Always have service performed on this projector by authorized Barco service personnel. Always insist on genuine Barco replacement parts. Never use non-Barco replacement parts as they may degrade the safety of this projector.
- Slots and openings in this equipment are provided for ventilation. To ensure reliable operation of the projector and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the projector too close to walls, or other similar surface. This projector should never be placed near or over a radiator or heat register. This projector should not be placed in a built-in installation or enclosure unless proper ventilation is provided.
- Projection rooms must be well ventilated or cooled in order to avoid build up of heat.
- Let the projector cool down completely before storing. Remove cord from the projector when storing.
- Heat sensitive materials should not be placed in the path of the exhausted air or on the lamp house.

To prevent projector damage

- This projector has been designed for use with a specific lamp (house) type. See installation instructions for its correct type.
- The air filters of the projector must be cleaned or replaced on regular base (a "clean" booth would be monthly-minimum). Neglecting this could result in disrupting the air flow inside the projector, causing overheating. Overheating may lead to the projector shutting down during operation.
- The projector must always be installed in a manner which ensures free flow of air into its air inlets and unimpeded evacuation of the hot air from its cooling system.
- In order to ensure that correct airflow is maintained, and that the projector complies with Electromagnetic Compatibility (EMC) requirements, it should always be operated with all of its covers in place.
- Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. The device should not be placed in a built-in installation or enclosure unless proper ventilation is provided.
- Ensure that nothing can be spilled on, or dropped inside the projector. If this does happen, switch off and unplug the mains supply immediately. Do not operate the projector again until it has been checked by qualified service personnel.
- Do not block the projector cooling fans or free air movement around the projector. Loose papers or other objects may not be nearer to the projector than 10 cm (4") on any side.
- Do not use this equipment near water.
- **Special care for Laser Beams:** Special care should be used when DLP projectors are used in the same room as high power laser equipment. Direct or indirect hitting of a laser beam on to the lens can severely damage the Digital Mirror Devices™ in which case there is a loss of warranty.
- Never place the projector in direct sun light. Sun light on the lens can severely damage the Digital Mirror Devices™ in which case there is a loss of warranty.
- Save the original shipping carton and packing material. They will come in handy if you ever have to ship your equipment. For maximum protection, repack your set as it was originally packed at the factory.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning. Never use strong solvents, such as thinner or benzine, or abrasive cleaners, since these will damage the cabinet. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution.
- To ensure the highest optical performance and resolution, the projection lenses are specially treated with an anti-reflective coating, therefore, avoid touching the lens. To remove dust on the lens, use a soft dry cloth. Do not use a damp cloth, detergent solution, or thinner.
- Rated maximum ambient temperature, $t_a = 40\text{ }^\circ\text{C}$ (104 °F).
- The lamp house shall be replaced if it has become damaged or thermally deformed.

On servicing

- Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage potentials and risk of electric shock.
- Refer all servicing to qualified service personnel.
- Attempts to alter the factory-set internal controls or to change other control settings not specially discussed in this manual can lead to permanent damage to the projector and cancellation of the warranty.
- Unplug this product from the wall outlet and refer servicing to qualified service technicians under the following conditions:
 - When the power cord or plug is damaged or frayed.
 - If liquid has been spilled into the equipment.
 - If the product has been exposed to rain or water.
 - If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of the other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
 - If the product has been dropped or the cabinet has been damaged.
 - If the product exhibits a distinct change in performance, indicating a need for service.
- Replacement parts: When replacement parts are required, be sure the service technician has used original Barco replacement parts or authorized replacement parts which have the same characteristics as the Barco original part. Unauthorized substitutions may result in degraded performance and reliability, fire, electric shock or other hazards. Unauthorized substitutions may void warranty.
- Safety check: Upon completion of any service or repairs to this projector, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- Possible explosion hazard: Always keep in mind the caution below:



CAUTION: Xenon compact arc lamps are highly pressurized. When ignited, the normal operating temperature of the bulb increases the pressure to a level at which the bulb may explode if not handled in strict accordance to the manufacturer's instructions. The bulb is stable at room temperature, but may still explode if dropped or otherwise mishandled. Whenever the lamp house, containing a xenon lamp, has to be dismantled or whenever the protective container or cloth has to be removed from the xenon lamp, authorized protective clothing MUST be worn!

To prevent battery explosion

- Danger of explosion if battery is incorrectly installed.
- Replace only with the same or equivalent type recommended by the manufacturer.
- For disposal of used batteries, always consult federal, state, local and provincial hazardous waste disposal rules and regulations to ensure proper disposal.

Safety Data Sheets for Hazardous Chemicals

For safe handling information on chemical products, consult the Safety Data Sheet (SDS). SDSs are available upon request via safetysdatasheets@barco.com.

1.3 High Brightness precautions: Hazard Distance (HD)



HD

Hazard Distance (HD) is the distance measured from the projection lens at which the intensity or the energy per surface unit becomes lower than the applicable exposure limit on the cornea or on the skin. The light beam is considered (to be) unsafe for exposure if the distance from a person to the light source is less than the HD.

Restriction Zone (RZ) based on the HD

The HD depends on the amount of lumens produced by the projector and the type of lens installed. See next chapter "HD in function of the lens Throw Ratio (TR)", page 11.

To protect untrained end users (as cinema visitors, spectators) the installation shall comply with the following installation requirements: Operators shall control access to the beam within the hazard distance or install the product at the height that will prevent spectators' eyes from being in the hazard distance. Radiation levels in excess of the limits will not be permitted at any point less than 2.0 meter (SH) above any surface upon which persons other than operators, performers, or employees are permitted to stand or less than 1.0 meter (SH) lateral separation from any place where such persons are permitted to be. In environments where unrestrained behavior is reasonably foreseeable, the minimum separation height should be greater than or equal to 3.0 meter to prevent potential exposure, for example by an individual sitting on another individual's shoulders, within the HD.

These values are minimum values and are based on the guidance provided in IEC 62471-5:2015 section 6.6.5.

The installer must understand the risk and apply protective measures based upon the hazard distance as indicated on the label and in the user information. Installation method, separation height, barriers, detection system or other applicable control measure shall prevent hazardous eye access to the radiation within the hazard distance.

For example, projectors that have a HD greater than 1 m and emit light into an uncontrolled area where persons may be present should be positioned in accordance with "the fixed projector installation" parameters, resulting in a HD that does not extend into the audience area unless the beam is at least 2.0 meter above the floor level. In environments where unrestrained behavior is reasonably foreseeable, the minimum separation height should be greater than or equal to 3.0 meter to prevent potential exposure, for example by an individual sitting on another individual's shoulders, within the HD. Sufficiently large separation height may be achieved by mounting the image projector on the ceiling or through the use of physical barriers.

For LIPs (Laser Illuminated Projectors) installed in the USA market the above limits do not apply. LIPs for installations other than in cinema theaters shall be installed at a height vertically above the floor such that the bottom plane of the Hazard Zone shall be no lower than 3 meters above the floor. Horizontal clearance to the hazard zone shall be 2.5 meters. Any human access horizontally to the Hazard Zone, if applicable, shall be restricted by barriers. If human access is possible in an unsupervised environment, the horizontal or vertical clearances shall be increased to prevent exposure to the RG3 hazard zone.

In addition for temporary installations (e.g.: rental and staging, lease, events ...) the following requirements apply:

- This product can only be installed by Barco or sold or leased only to valid laser light show variance holders. In other words our installers are required to have an approved laser light show variance. Such installers may currently hold a valid variance for production of Class IIIb and IV laser light shows and/or for incorporation of the RG3 LIPs into their shows. Dealers and distributors are also required to obtain a valid laser light show variance.
- This product shall be located in such a way that all propagating beam paths within the Restriction Zone, and the audience can be directly observed at all times.
- Effects other than front or rear screen projections shall not be performed.
- Communication shall be maintained with other personnel assisting in surveillance of the LIP projection.
- In the event of any unsafe condition, immediately terminates (or designate the termination) of LIP projection light.

Install one or more readily accessible controls to immediately terminate LIP projection light. The power input at the projector side is considered as a reliable disconnect device. When required to switch off the projector, disconnect the power cord at the projector side. In case the power input at the projector side is not accessible (e.g. truss mount), the socket outlet supplying the projector shall be installed nearby the projector and be easily accessible, or a readily accessible general disconnect device shall be incorporated in the fixed wiring.

Laser light shows can be requested via the FDA online eSubmitter portal or via FDA Form FDA Form 3147 referencing to Barco's variance approval 2016-V-0144.

1. Safety

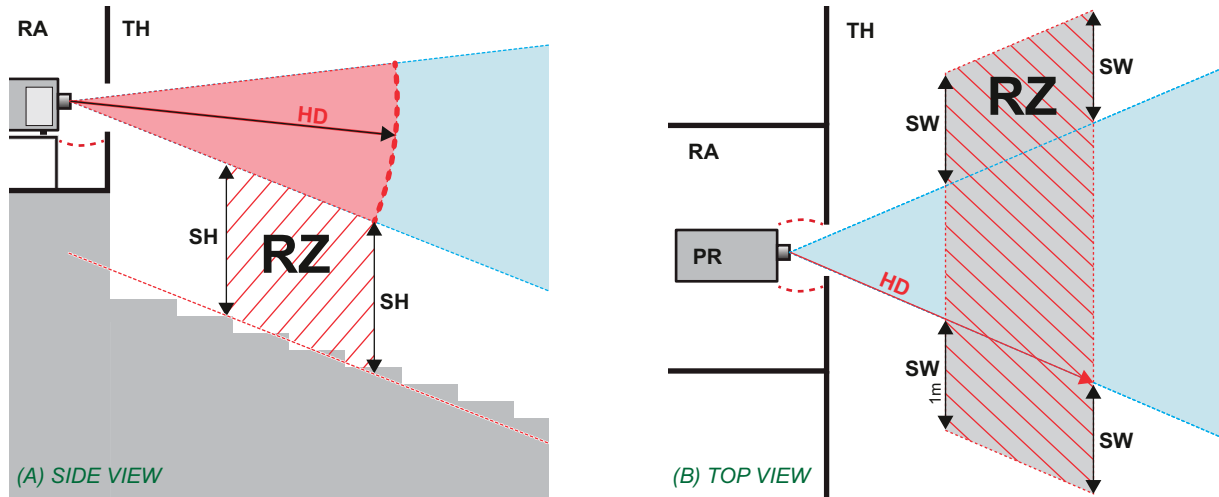


Image 1-1
 A Side view.
 B Top view.
 RA Restricted Access location (boot area of projector).
 PR Projector.
 TH Theater.
 RZ Restriction Zone in the theater.
 SH Separation Height.
 SW Separation Width.

Based on national requirements, no person is allowed to enter the projected beam within the zone between the projection lens and the related hazard distance (HD). This shall be physically impossible by creating sufficient separation height or by placing barriers. The minimum separation height takes into account the surface upon which persons other than operator, performers or employees are permitted to stand.

On image 1-2 a typical setup is displayed. It must be verified if these minimum requirements are met. If required a restricted zone (RZ) in the theater must be established. This can be done by using physical barrier, like a red rope as illustrated in image 1-2.

The restricted area sticker can be replaced by a sticker with only the symbol.

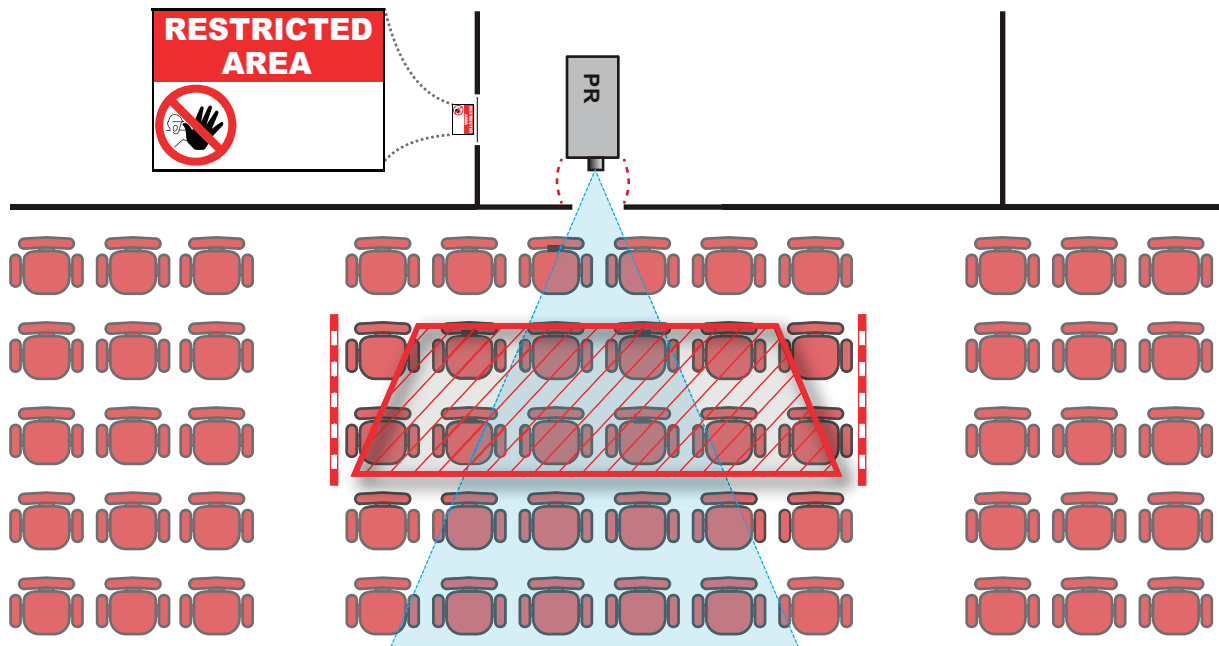


Image 1-2

1.4 HD for fully enclosed projection systems



HD

Hazard Distance (HD) is the distance measured from the projection lens at which the intensity or the energy per surface unit becomes lower than the applicable exposure limit on the cornea or on the skin. The light beam is considered (to be) unsafe for exposure if the distance from a person to the light source is less than the HD.

Restriction Zone (RZ) based on the HD

The projector is also suitable for rear projection applications; projecting a beam onto a diffuse coated projection screen. As displayed in image 1-3 two areas should be considered: the restricted enclosed projection area (RA) and the observation area (TH).

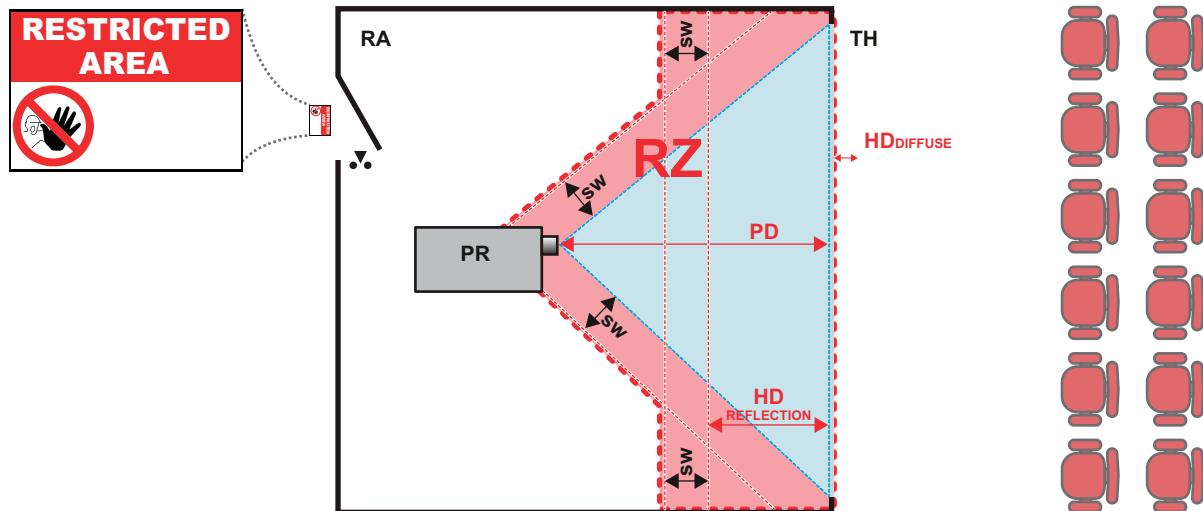


Image 1-3

RA Restricted Access location (enclosed projection area).
 PR Projector.
 TH Theater (observation area).
 RZ Restriction Zone.
 PD Projection Distance.
 SW Separation Width. Must be minimum 1 meter.

For this type of setup 3 different HD shall be considered:

- HD as discussed in "High Brightness precautions: Hazard Distance (HD)", page 9, relevant for intrabeam exposure.
- $HD_{\text{reflection}}$: the distance that has to be kept restrictive related to the reflected light from the rear projection screen.
- HD_{diffuse} : the relevant distance to be considered while observing the diffuse surface of the rear projection screen.

As described in "High Brightness precautions: Hazard Distance (HD)", page 9, it is mandatory to create a restricted zone within the beam areas closer than any NOHD. In the enclosed projection area the combination of two restricted zones are relevant: The restricted zone of the projected beam toward the screen; taking into account 1 meter Separation Width (SW) from the beam onward. Combined with the restricted zone related to the rear reflection from the screen ($HD_{\text{reflection}}$); also taking into account a 1 meter lateral separation.

The $HD_{\text{reflection}}$ distance equals 25% of the difference between the determined HD distance and the projection distance to the rear projection screen. To determine the HD distance for the used lens and projector model see graphs in chapter "HD in function of the lens Throw Ratio (TR)", page 11.

$$HD_{\text{reflection}} = 25\% (HD - PD)$$

The light emitted from the screen within the observation shall never exceed the RG2 exposure limit, determined at 10 cm. The HD_{diffuse} can be neglected if the measured light at the screen surface is below 5000 cd/m² or 15000 LUX.

1.5 HD in function of the lens Throw Ratio (TR)



TR (Throw Ratio)

The ratio of the distance to the screen (throw) to the screen width.

HDX series projector Hazard Distance

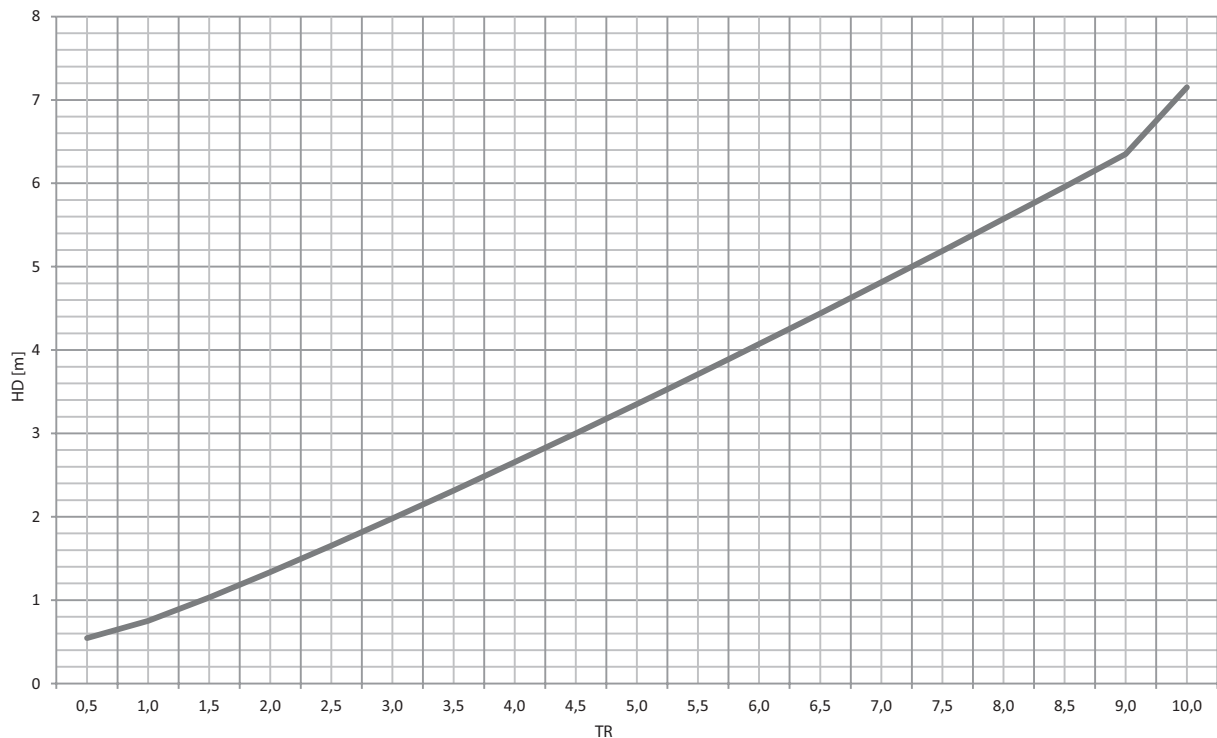


Image 1-4
HD (in meter) in function of the Throw Ratio (TR)

1.6 Important warnings concerning HDX flight cases

Important warnings concerning stacking/transporting HDX rental flight cases

- Stack maximum two (2) HDX rental flight cases high. Never higher.
- Surface on which flight case is standing must be level to ensure that the total load is evenly spread out among the four wheels. The surface must also be able to support the load safely.
- Before stacking or transporting flight cases, check the wheels and their fixation screws for wear or defects.
- Before stacking or transporting flight cases, check that the four lock handles on each flight case are in good working order and locked securely.
- When stacked, make sure the wheels of the upper flight case are precisely positioned in the stacking dishes of the flight case below.
- Stacked flight cases may not be moved. Before stacking, the lower flight case must already be in its final resting position before placing the second upon it.
- Never stack loaded flight cases in a truck or other transport medium, unless each flight case is rigidly strapped tight.
- In the event of a wheel breaking, flight cases must be rigidly strapped tight to prevent a stack collapsing.
- Use an appropriate forklift to raise flight cases and take the necessary precautions to avoid personnel injury.

2. INSTALLATION PREPARATIONS

About this chapter

Read this chapter before installing the HDX projector. It contains important information concerning installation requirements for the projector, such as minimum and maximum allowed ambient temperature, humidity conditions, required safety area around the installed projector, required power net, etc.

Furthermore, careful consideration of things such as image size, ambient light level, projector placement and type of screen to use are critical to the optimum use of the projection system.



Barco provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. Observing the specification mentioned in this chapter is critical for projector performance. Neglecting this can result in loss of warranty.

Overview

- Installation requirements
- Unpacking the projector
- Initial inspection
- HDX flight case
- Projector configurations
- Projector air inlets and outlets
- Free download of Projector Toolset

2.1 Installation requirements

Environment conditions

Table below summarizes the physical environment in which the HDX may be safely operated or stored.

Environment	Operating	Non-Operating
Ambient Temperature	10 °C (50 °F) to 40 °C (104 °F)	-15°C (5°F) to 60°C (140°F)
Humidity	0% RH to 80% RH Non-condensed	0% RH to 90% RH Non-Condensed
Altitude	-60 m (-197 Ft) to 3000 m (9843Ft)	-60 m (-197 Ft) to 10000 m (32810 Ft)



Let the projector acclimatize after unpacking. Neglecting this may result in a startup failure of the Light Processor Unit.

Cooling requirements

The projector is fan cooled and must be installed with sufficient space around the projector head, minimum 10 cm (4 inch) to ensure sufficient air flow. It should be used in an area where the ambient temperature, as measured at the projector air inlet, does not exceed +40°C (+104°F).

Clean air environment

A projector must always be mounted in a manner which ensures the free flow of clean air into the projectors ventilation inlets. For installations in environments where the projector is subject to airborne contaminants such as that produced by smoke machines or similar (these deposit a thin layer of greasy residue upon the projectors internal optics and imaging electronic surfaces, degrading performance), then it is highly advisable and desirable to have this contamination removed prior to it reaching the projectors clean air supply. Devices or structures to extract or shield contaminated air well away from the projector are a prerequisite, if this is not a feasible solution then measures to relocate the projector to a clean air environment should be considered.

Only ever use the manufacturer's recommended cleaning kit which has been specifically designed for cleaning optical parts, never use industrial strength cleaners on the projector's optics as these will degrade optical coatings and damage sensitive optoelectronics components. Failure to take suitable precautions to protect the projector from the effects of persistent and prolonged air contaminants will culminate in extensive and irreversible ingrained optical damage. At this stage cleaning of the internal optical units will be non-effective and impracticable. Damage of this nature is under no circumstances covered under the manufacturer's warranty and may deem the warranty null and void. In such a case the client shall be held solely responsible for all costs incurred during any repair. It is the clients responsibility to ensure at all times that the projector is protected from the harmful effects of hostile airborne particles in the environment of the projector. The manufacturer reserves the right to refuse repair if a projector has been subject to knowingly neglect, abandon or improper use.

2. Installation preparations

Main Power requirements

The HDX operates from a nominal mono phase power net with a separate earth ground PE.

Power requirements : 110-130V/200-240 V, 15A, 50-60Hz

The power cord required to connect the projector with the power net is delivered with the projector.

Projector weight

Do not underestimate the weight of the HDX. The projector weights about ± 50 kg (± 111 lb.) without lens. Be sure that the pedestal on which the projector has to be installed is capable of handling five (5) times the complete load of the system.

2.2 Unpacking the projector

What has to be done ?

Upon delivery, the projector is packed in a carton box upon a wooden pallet and secured with banding and fastening clips. Furthermore, to provide protection during transportation, the projector is surrounded with foam. Once the projector has arrived at the installation site, it needs to be removed from the carton box and wooden pallet in a safe manner without damaging the projector.



After unpacking let the projector acclimatize to a room temperature higher then 10°C (50°F) and lower then 40°C (104°F). Neglecting this may result in a start up failure of the Light Processor Unit.

Necessary tools

cutter knife

How to unpack

1. Remove the banding around the carton box, by releasing the fastening clips as illustrated, and open the box.

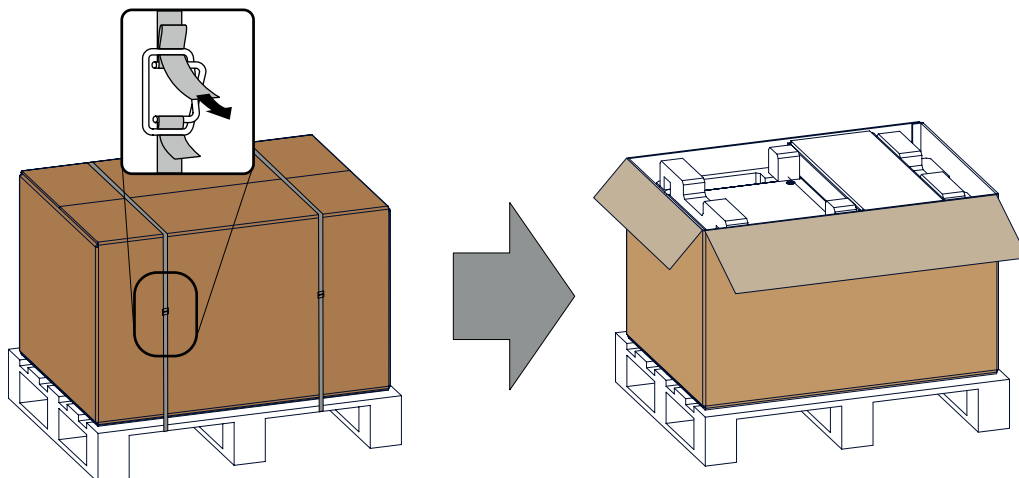


Image 2-1
Opening box

2. Remove the small box on top of the projector. This box contains the accessories such as manuals, remote control, etc.

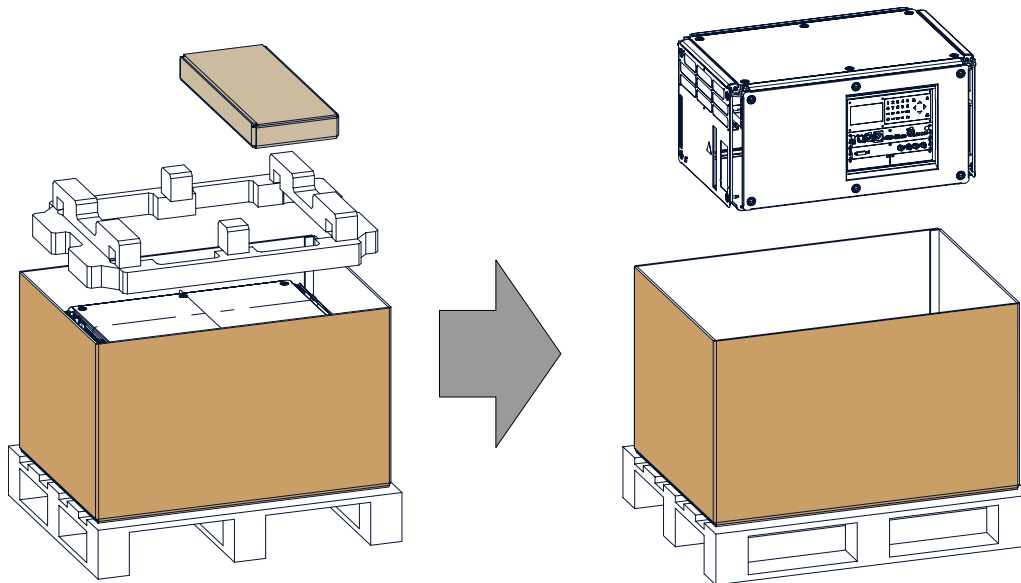


Image 2-2
Remove carton and foam rubber

3. Take out the foam rubber.
4. Take out the projector.



Save the original shipping cardboard box and packing material. They will be necessary if you ever have to ship your projector. For maximum protection, repack your projector as it was originally packed at the factory.



A rubber foam inside a plastic bag is placed into the lens opening of the projector. It's recommended to reuse this foam and plastic back each time you transport the projector. This to prevent intrusion of dust and foreign particles.



The lens is delivered in a separate box.

2.3 Initial inspection

General

Before shipment, the projector was inspected and found to be free of mechanical and electrical defects. As soon as the projector is unpacked, inspect for any damage that may have occurred in transit. Save all packing material until the inspection is completed. If damage is found, file claim with carrier immediately. The Barco Sales and Service office should be notified as soon as possible.



The packaging of the HDX is provided with a shock-watch label. If this shock-watch label was triggered (red colored at arrival) during transport, that indicates that the package was possibly roughly handled by the transport company. In this case, the instructions mentioned on the label, should be followed, which are: adding a note on the "bill of lading" and informing the transport company and the Barco sales and service office as soon as possible.

Box content

After unpacking the projector it is recommended to check if all following items where included:

2. Installation preparations

- Three power cords of 2.5 meter, one CEE (7), one NEMA L6-20P and one CH2-16P
- One Quick Start guide
- One Safety manual
- One Web site reference sheet
- One remote control unit (RCU)
- 2 batteries for the RCU.



One xenon lamp is mounted inside the lamp house at delivery. The projector lenses are not included in the package of the projector.

Mechanical check

This check should confirm that there are no broken knobs or connectors, that the cabinet and panel surfaces are free of dents and scratches, and that the operating panel is not scratched or cracked. The Barco Sales and Service office should be notified as soon as possible if this is not the case.

2.4 HDX flight case

Introduction of the HDX flight case

The HDX flight case is designed to transport the HDX in a safe and secure manner. The four caster wheels, provided with breaks, and the four handles make the HDX flight case easy to handle. The floor of the flight case wagon is equipped with two small covered compartments to store the remote control and the rigging clamps.

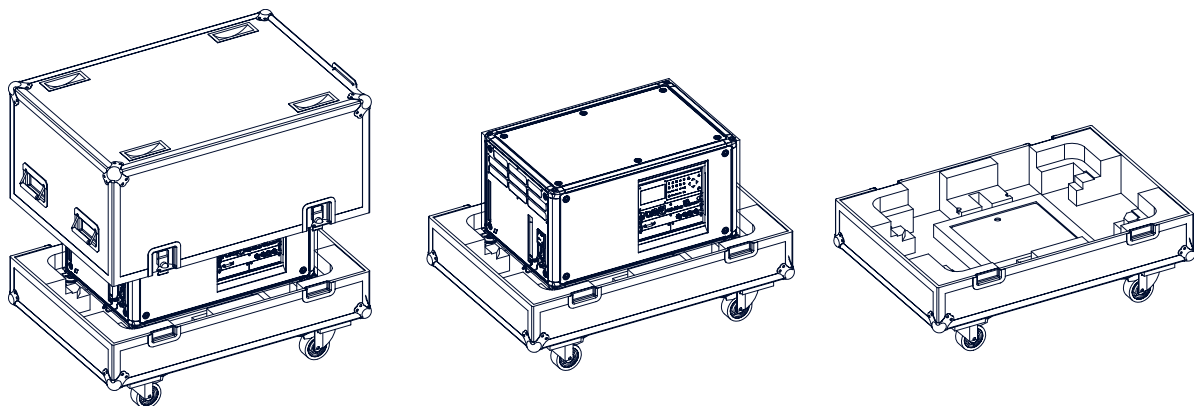


Image 2-3
HDX Flight case

Order number flight case: **R9864090**

The dimensions of the flight case are optimal for maximum utilization of the floor area of a truck. The cover of the HDX flight case has 4 stacking dishes, which allows to stack the flight cases.



WARNING: Maximum stack two (2) HDX flight cases high. Never higher.

2.5 Projector configurations

The different configurations

Depending on the installation the projector can be mounted in different ways, the different configurations are:

1. Front / Table (F/T)
2. Front / Ceiling (F/C) (upside down)
3. Front / Ceiling (F/C) (table position)
4. Rear / Table (R/T)
5. Rear / Ceiling (R/C) (upside down)
6. Rear / Ceiling (R/C) (table position)

Front projection

The projector is installed, either in a table mount or ceiling mount configuration, at the same side of the screen as the audience.

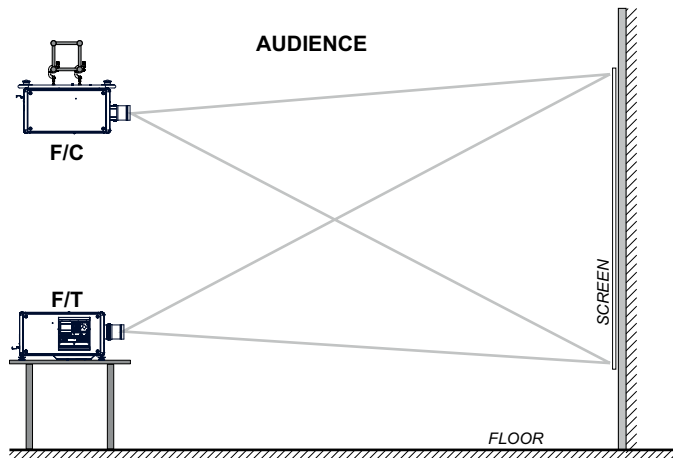


Image 2-4
Front projection

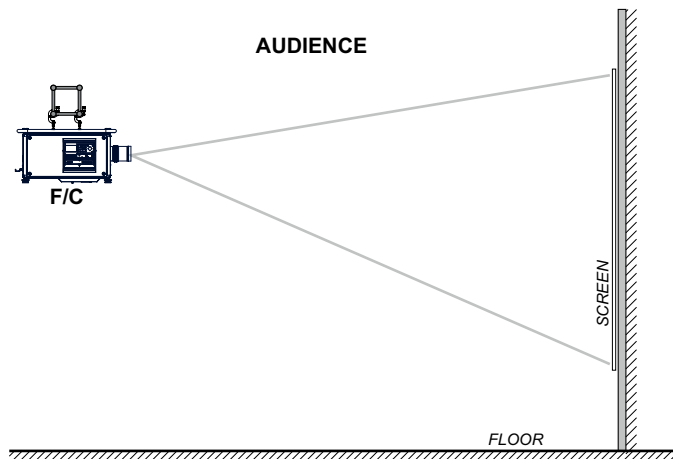


Image 2-5
Front projection, Ceiling mounted, in table position

Rear projection

The projector is installed, either in a table mount or ceiling mount configuration, at the other side of the screen opposite the audience.

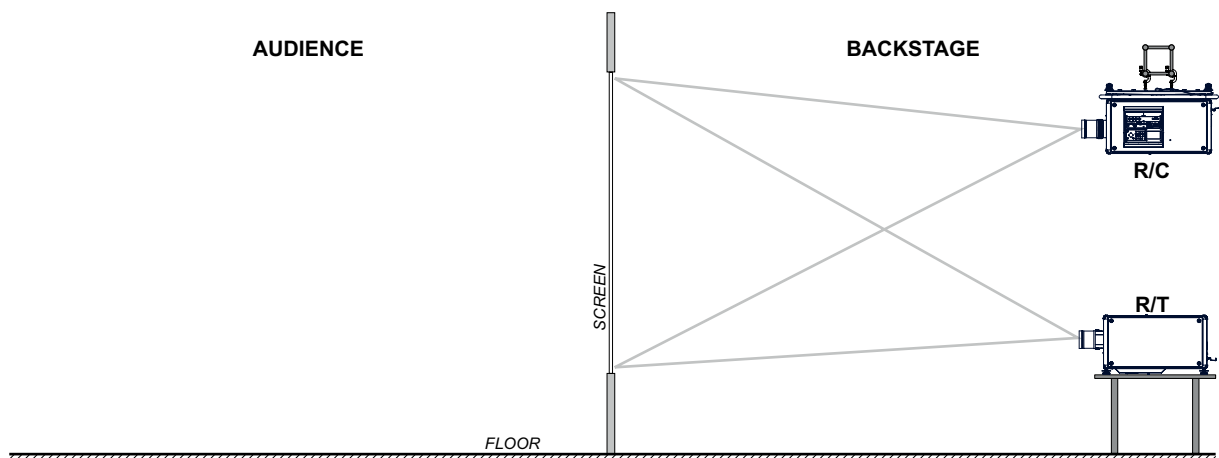


Image 2-6
Rear projection

2. Installation preparations

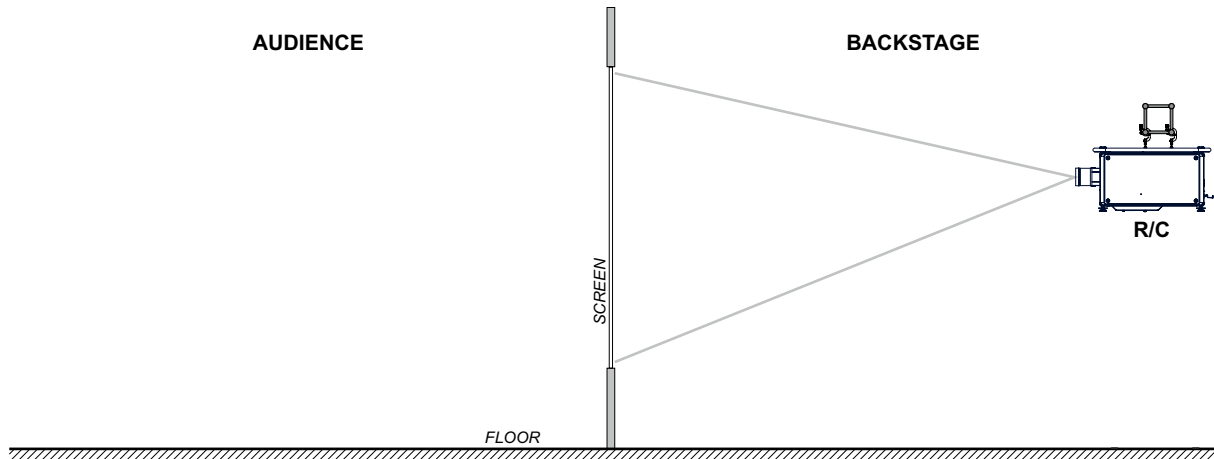


Image 2-7
Rear projection, ceiling mounted in table position

Positioning the projector

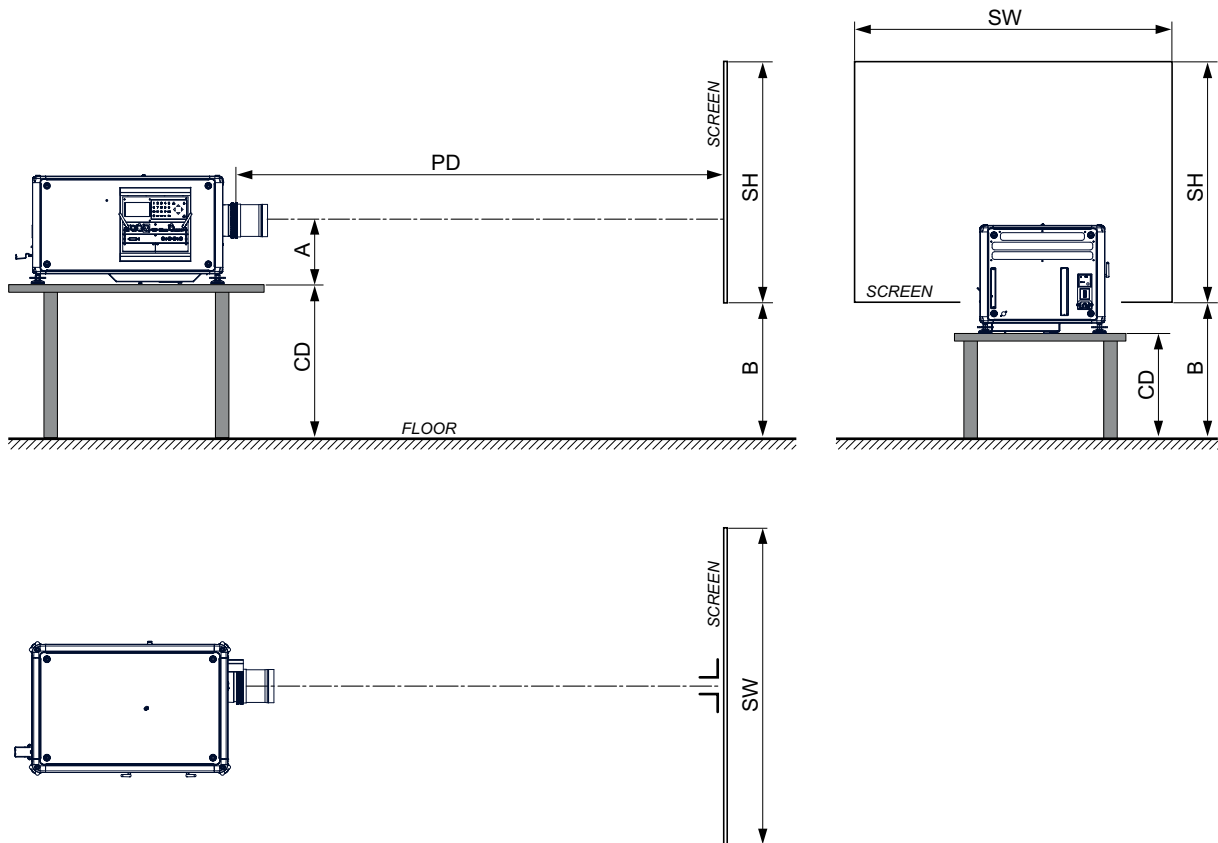


Image 2-8
Positioning projector

The projector should be installed at right angles (horizontally and vertically) to the screen at a distance PD. Note the distance (A) between lens centre and table surface is slightly variable. This distance (A) is nominal 35 cm in case all feet are turned in completely and the vertical lens shift is set to zero (0).

On axis / off axis projection

The position of the projector with reference to the screen may also be different depending on the installation. Basically the projector can be positioned in On-Axis or Off-Axis configuration. On-Axis configuration means that the projector is positioned so as to have the centre of the lens coinciding with the centre of the screen. Off-Axis projection is obtained by shifting the lens up, down, left or right. Several parameters can be calculated determining the position in any installation.

Formula to calculate the distance CD for On-Axis projection: $CD = SH/2 + B - A$

Shift range

The lens can be shifted with respect to the DMD (P) which result in a shifted image on the screen (Off-Axis). A 100% shift means that the centre point of the projected image is shifted by half the screen size. In other words, the centre point of the projected image falls together with the outline of the image in an On-Axis projection. Due to mechanical and optical limitations it's recommended to keep the shift values within the field of view (F) as illustrated below. Within these shift ranges the projector and lens perform excellently. Configuring the projector outside these shift ranges will result in a slight decline of image quality.

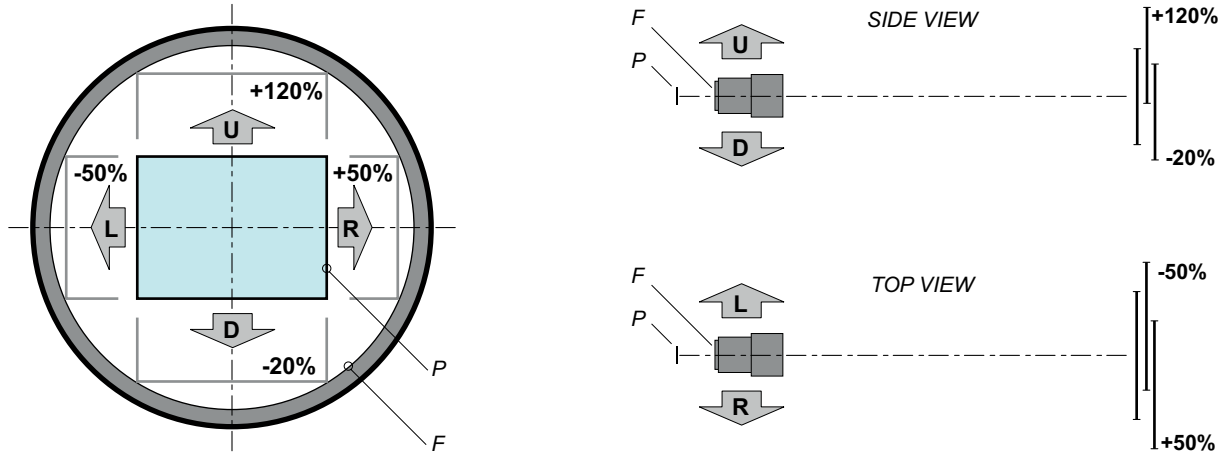


Image 2-9
Vertical and horizontal shift range

P DMD.
F Field of view.



It is mechanical possible to shift outside the recommended field of view, but it will result in a decline of image quality depending on the used lens and the zoom position of the used lens. Furthermore, shifting too much in both directions will result in a blurred image corner.



Best image quality is projected in the On-Axis configuration.

Horizontal and vertical projector tilt ranges

The projector can be rotated and mounted at any vertical angle. In other words, you can tilt the lens side of the projector as much as desired for your application.

Side to side tilt, however, must not exceed $\pm 15^\circ$. This limit ensures that the lamp in the projector operates properly and safely. More tilting within area C is allowed but lamp flicker can happen.

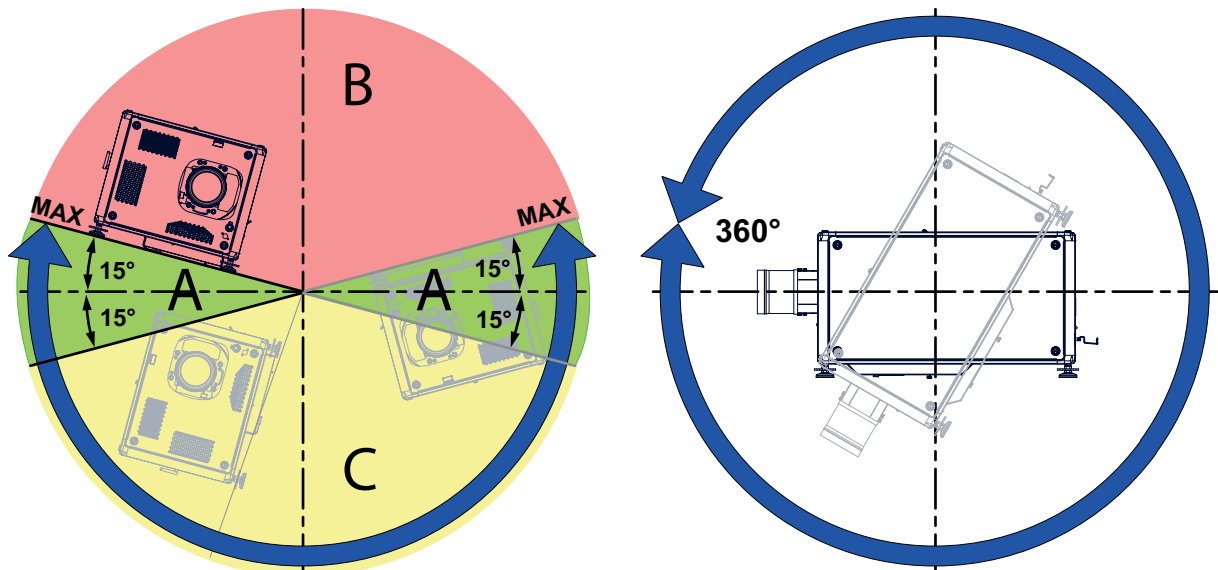


Image 2-10
A Tilting allowed without problems
B No tilting allowed in this area
C No tilting allowed in this area

2. Installation preparations

C Tilting allowed but lamp flicker possible



Projector lamp will not start up when out of tilt range due to build-in tilt sensor.

2.6 Projector air inlets and outlets

Air inlets and outlets

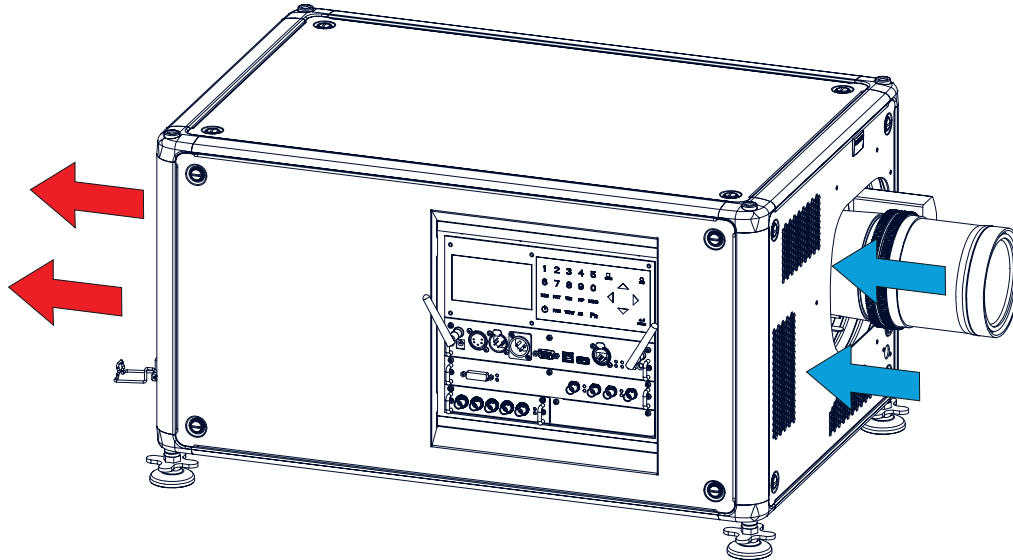


Image 2-11

The HDX has 3 air inlet channels and 3 air outlets. The air outlets are located at the rear of the projector. The air inlets are located at the front of the projector.

2.7 Free download of Projector Toolset

About Projector Toolset

Projector Toolset is a software tool to set up, configure, manage and control Barco projectors.

The concept of this Projector Toolset software is modular. The basic package can be extended with several optional device plug-in modules, now and in the future available.

The Projector Toolset software works with configurations that can be loaded. Within a configuration, different snapshots can be taken. A snapshot represents a current state of a configuration and can be reloaded to return to this typical state. These terms will be used through the complete software.

Projector Toolset is a stand-alone application that runs on a Java Virtual Machine and that does not require extra services to run.

Several configurations can be controlled simultaneously. Even when the configurations are connected via different ways.



Projector Toolset is only available in a download version, no CD can be ordered.

Where to find the download file(s)

The program and all necessary plug-ins, as well as the Reference manual can be downloaded for free from my.barco.com. Registration is necessary.

1. Go to the Barco website www.barco.com.
2. On the home page, click on **myBarco log in**.
3. On the Sign In page, enter your Email address and your password to login.
If you are not yet registered click on **New to myBarco?** and follow the instructions. With the created login and password, it is possible to enter the Partnerzone of Barco.
When your login is correct, the Partnerzone is free accessible.
4. In the search field, enter Projector Toolset and click on the search icon.
5. Select **Technical Downloads**.
6. Click on Application Software and download the Projector Toolset software package, which includes the device plug-in updates.

When downloading the complete Projector Toolset, this software contains already the latest device plug-ins. When you already have the latest core version of Projector Toolset, it is possible to download only device plug-in updates from the same web site location.

As Projector Toolset is a stand alone application, it is not necessary to install any other software. A Java virtual machine is included with this download.

To download the reference manual, select Reference Guide and download the latest version of the manual for your projector.

Installation

Download first the reference manual and follow the installation instructions as written in this manual.

3. PHYSICAL INSTALLATION

Overview

- Remote control, Battery installation
- Using the XLR connector of the RCU
- Remote control, protocol setup
- Remote control, on/off button
- Connecting the projector with the power net
- Alignment of a table mounted projector
- Mounting the bottom carry handler
- Mounting the top carry handler
- Suspension of the projector with rigging clamps
- Alignment of a ceiling mounted projector

3.1 Remote control, Battery installation

Where to find the batteries for the remote control ?

The batteries are not placed in the remote control unit to avoid control operation in its package, resulting in a shorter battery life time. At delivery the batteries can be found in a separated bag attached to the remote control unit. Before using your remote control, install the batteries first.

How to install

1. Push the battery cover tab with the fingernail a little backwards (1) and pull, at the same time, the cover upwards (2).

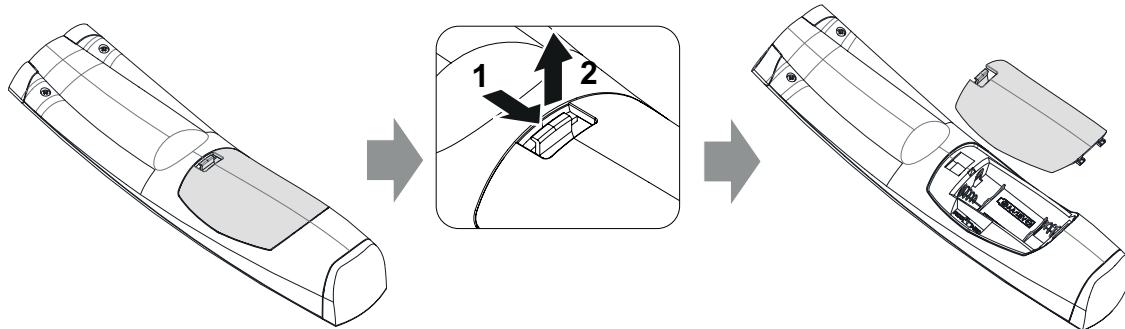


Image 3-1

2. Insert the two AA size batteries, making sure the polarities match the + and - marks inside the battery compartment.
Tip: Use alkaline batteries for optimum range and life time.

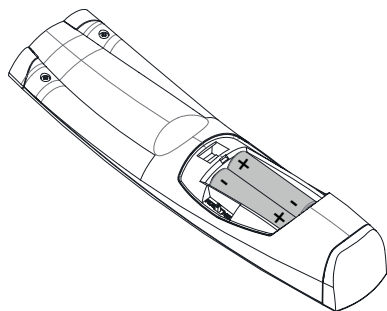


Image 3-2

3. Insert (1) both lower tabs of the battery cover in the gaps at the bottom of the remote control, and press (2) the cover until it clicks in place.

3. Physical Installation

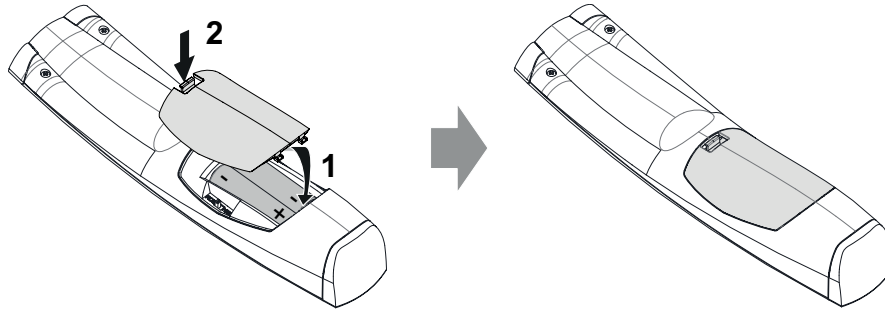


Image 3-3



When replacing batteries, the broadcast address of the RCU will be reset to its default value '0'.



CAUTION: Replace with the correct battery type. Use two AA size batteries. There is a risk of explosion if the battery is replaced with an incorrect type.



CAUTION: Replace the battery as explained above. There is a risk of explosion if the battery is incorrectly installed.

3.2 Using the XLR connector of the RCU



Connecting a cable with the XLR connector will reset the broadcast address of the RCU to its default value '0'.

How to use the XLR connector

1. Remove the XLR cover by pulling it backwards.

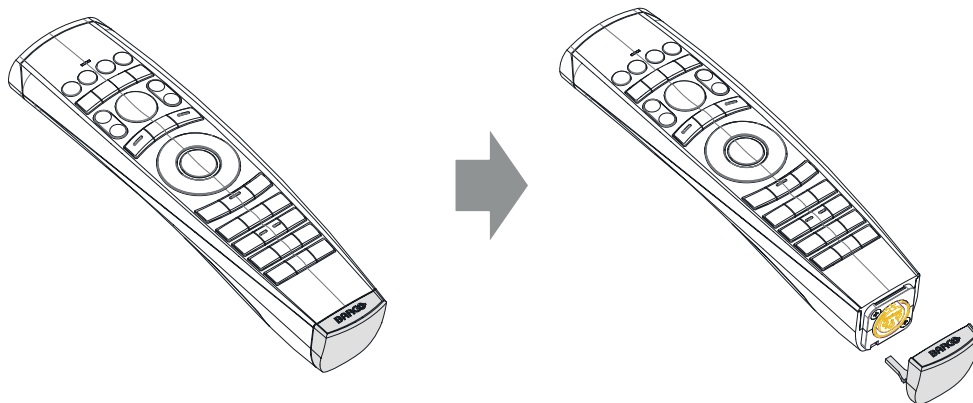


Image 3-4

2. Connect a cable with XLR plug into the XLR connector of the RCU.
3. Connect the other end of the cable with the XLR input of the projector.

3.3 Remote control, protocol setup

About the used protocol

The protocol is the code send out by the remote control when a button is pressed. Depending on this code, the projector can decode the signals. The remote control can be used with two different protocols, RC5 and NEC. Depending on the projector to control the remote control can be switched between these protocols.

Which protocol to use

- The **NEC** protocol have to be used for Barco projectors based on the Pulse platform: F70, F80, F90, HDX 4K, UDX, ...
- The **RC5** protocol have to be use all other Barco projectors: HDX W, HDF W, HDQ 2K, ...

How to set

1. Remove the cover. For more info on how to remove, see "Remote control, Battery installation", page 23.
2. Place the switch in the NEC position.

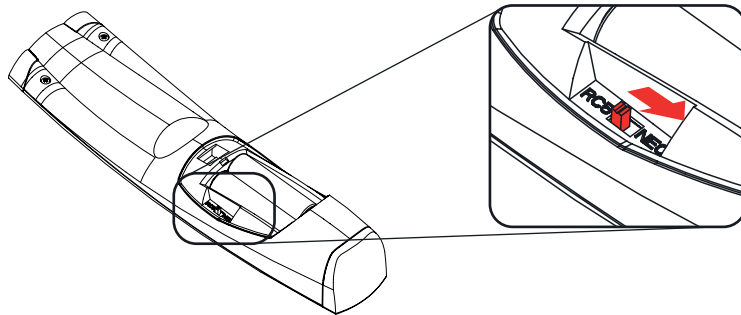


Image 3-5

Remark with RC5 protocol

Not all buttons of the Pulse RCU are one-to-one compatible with the legacy Barco RCU. Button pairs SHUTTER open/close and POWER on/off emit the same code (per pair) when in RC5 mode, because the legacy RCU's only had 1 button for Shutter and 1 button for Standby.

3.4 Remote control, on/off button

Purpose of the remote control on/off button

The Pulse remote control unit has at the front side an on/off switch (reference 1 image 3-6). Switching off the remote control prevents that unwanted commands are send due to an accidental key press. Furthermore, switching the RCU off will extend the battery life time of the remote control.

To activate the remote control press the on/off button.

To deactivate the remote control press the on/off button again.

Default when (re)placing batteries, is "ON".

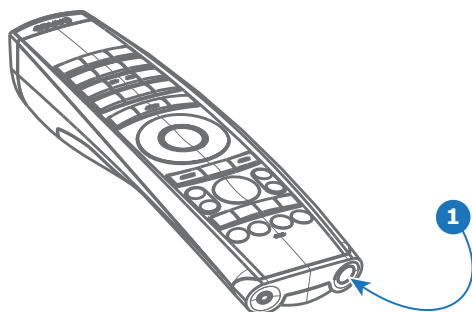


Image 3-6

3.5 Connecting the projector with the power net



CAUTION: Use only the power cord provided with the projector.

How to connect with local power net

1. Ensure that the power switch stands in the '0' (OFF) position (1).

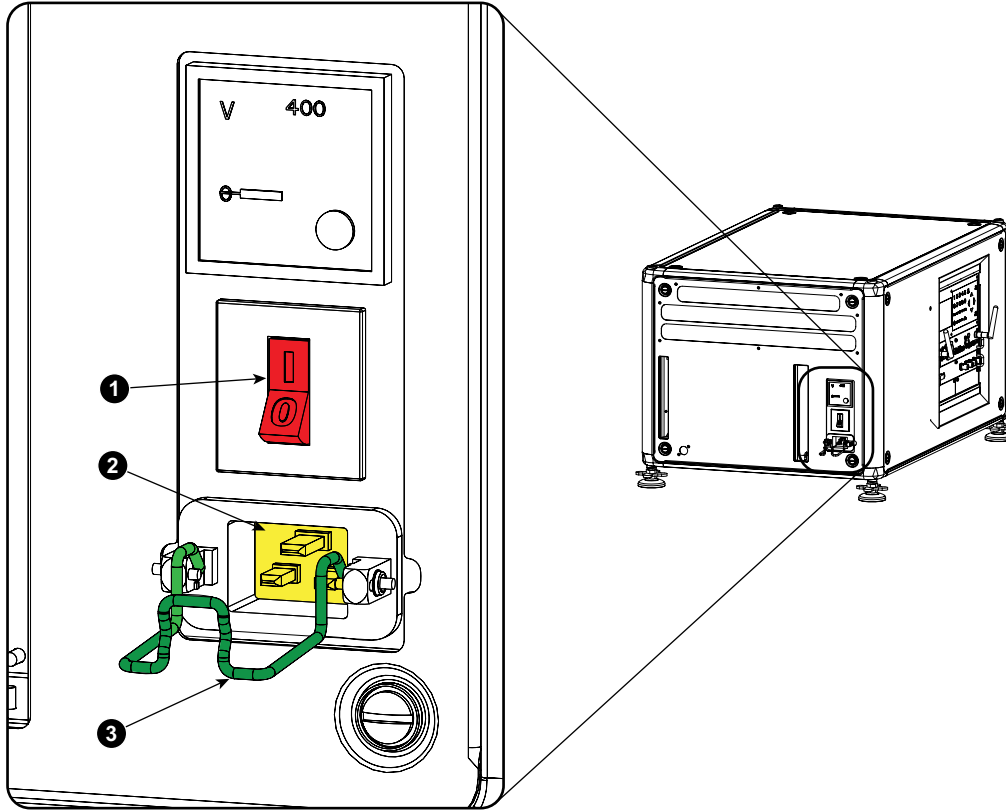


Image 3-7
Power input

2. Connect the female side of the power cord with the power input socket of the projector (2).
3. Secure the power plug by locking the plug holder clamp (3).
4. Connect the male side of the power cord to the local power net.

Caution: Ensure that the power net meets the power requirements of the projector.



WARNING: Do not attempt operation if the AC supply and cord are not within the specified voltage and power range.



CAUTION: Once the projector is switched to standby, the lamp cooling fans will continue to run for approximately five minutes to ensure that the projector and lamp have sufficiently cooled, at which point the fans will automatically decrease to standby. To avoid thermal stress that can lead to premature lamp failure, never unplug the power cord while the lamp cooling fans are running. Never unplug the power cord to power down the projector, first switch off the power switch and then unplug the power cord.

Fuses

The projector is protected with an automatic circuit breaker of 20 A which is built into the power switch.

The voltage meter is protected with a fuse (1A) which is located on the neutral bonding cable. If necessary to replace this fuse, consult a service technician.

3.6 Alignment of a table mounted projector

How to align

1. Place the projector in the desired location. Take into account the zoom range of the used lens and the size of the screen.
2. Project one of the internal hatch patterns on the screen.
3. Turn the adjustable feet in or out until the projected hatch pattern has a perfect rectangle shape and is leveled.

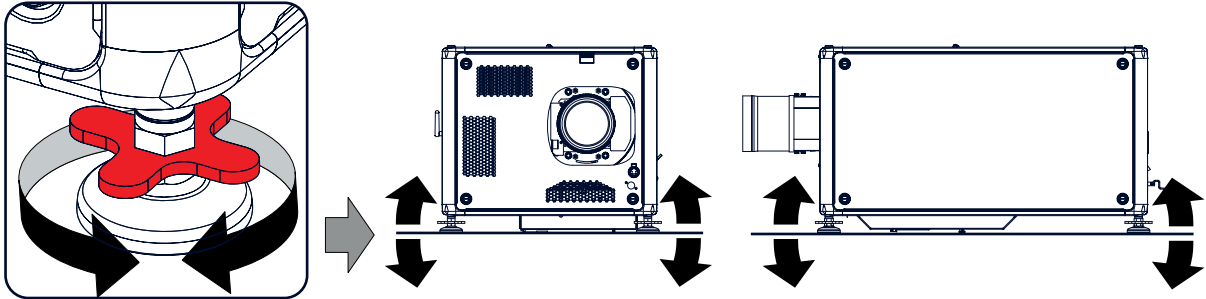


Image 3-8
Level alignment

When this is achieved, the projector is set horizontal and vertical at right angles to the screen.

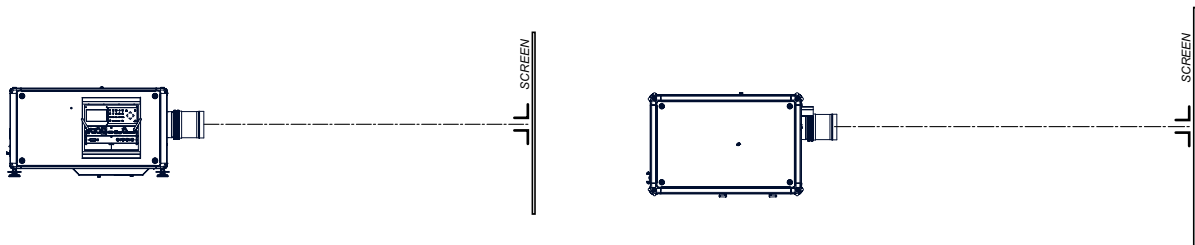


Image 3-9
Angle adjustment

3.7 Mounting the bottom carry handler

Necessary tools

Open wrench 17 mm

Necessary parts

4x bolt M10 x 16 mm

How to mount

1. Turn the projector upside down.
2. Turn out the 4 feet.

3. Physical Installation

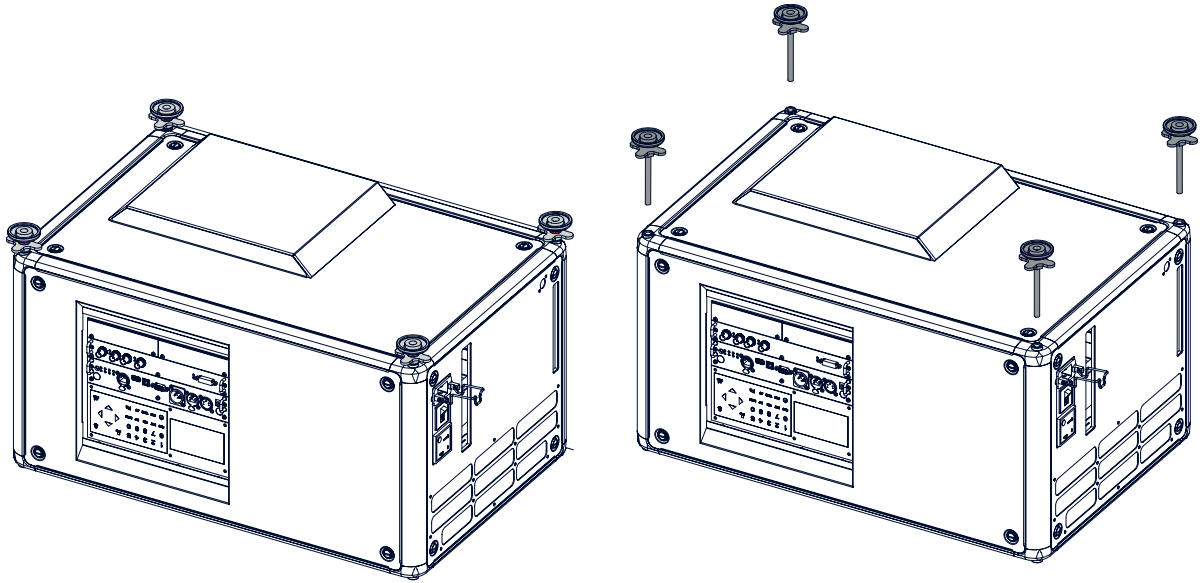


Image 3-10
Remove feet

3. Turn out the feet of the carry handle as far as possible.

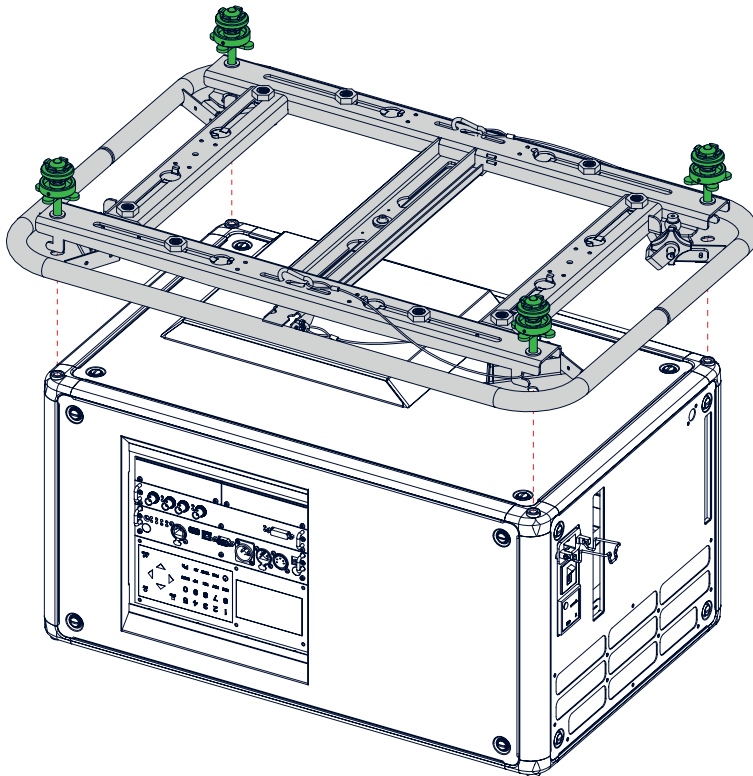


Image 3-11
Mount carry handle

4. Place the carry handle on the projector as illustrated. Adjustment knob to the back of the projector. Make sure that the mounting holes matches the holes in the projector.
5. Insert a bolt in each corner and turn in these bolts.

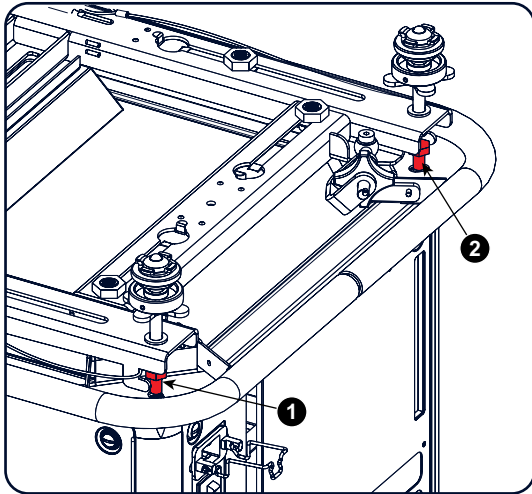


Image 3-12
Insert bolts

3.8 Mounting the top carry handler

Purpose

This carry handle can be used to transport the projector in an easy way.

Necessary tools

8 mm Allen wrench

Necessary parts

- 4x bolt M10 x 16
- 4x washer
- 1x carry handler

How to mount

1. Place the carry handle on top of the projector so that the fixation holes match the holes in the projector.

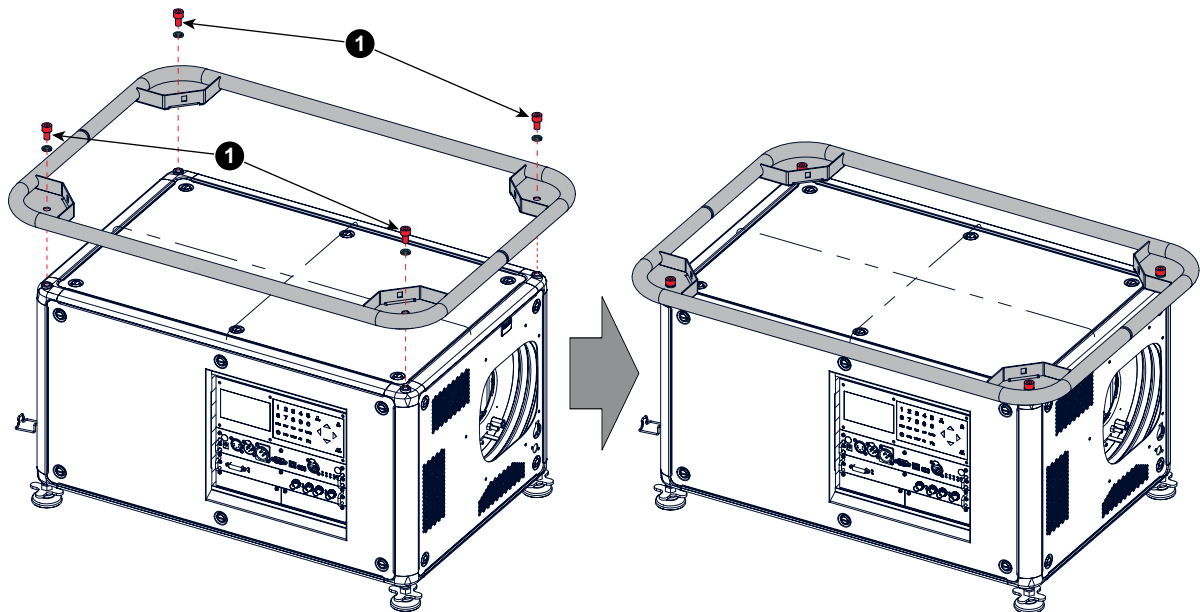


Image 3-13
top carry handle

2. Turn in the 4 fixation bolts (1). Insert a washer between the bolt and the carry handle.

3.9 Suspension of the projector with rigging clamps

Rigging points and rigging clamps

When a carrying handle is mounted at the bottom side of the projector, eight slots are available to mount rigging clamps. Four slots are longitudinally (1) oriented and four slots are transversely (2) oriented. Each slot contains a rigging point of which the position in the slot can be adjusted depending on the size of the truss installation. The rigging clamps can be attached to those rigging points, which allows an easy and fast physical setup of the projector in a hanging configuration.

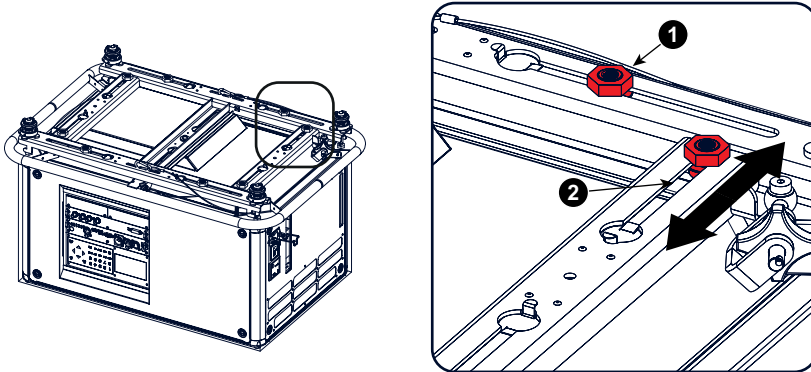


Image 3-14
Rigging points

Necessary tools

- Open end spanner 24 mm
- Open end spanner 17 mm

Necessary parts

4 rigging clamps

How to install and use the rigging clamps

1. Measure the distance, center tube as reference, between the two used support bars of the truss.

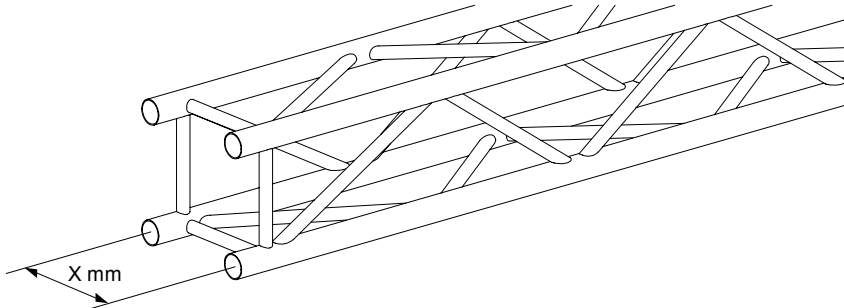


Image 3-15
Truss, example

2. Turn the projector upside down and slide the rigging points on there place in the slots, according to the measured distance and secure this position. To release the nuts of the rigging points use a 24 mm open ended spanner. Ensure that the rigging points are symmetrically lined up, so that the projector will hang in balance.

Warning: Be careful while working with heavy loads.

Warning: Always secure the rigging points after adjustment.

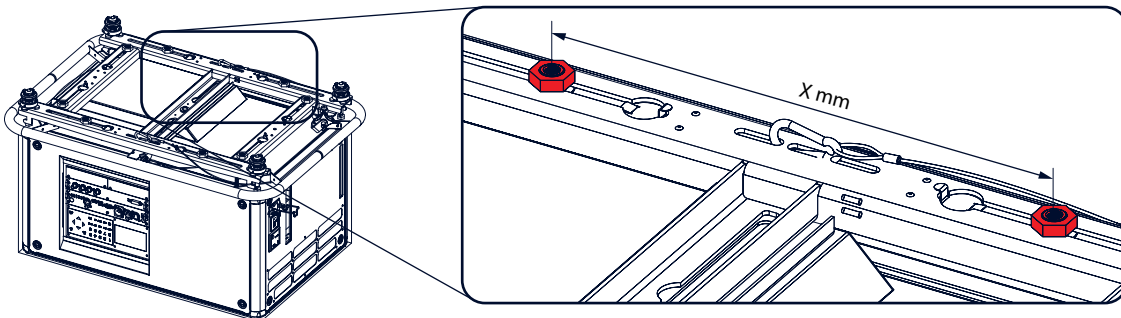


Image 3-16
Rigging points, distance

- Turn in the rigging clamps into the rigging points using a 17 mm open ended spanner and secure the rigging clamps by turning the safety nut on the rigging clamp against the rigging point using a 17 mm open ended spanner.

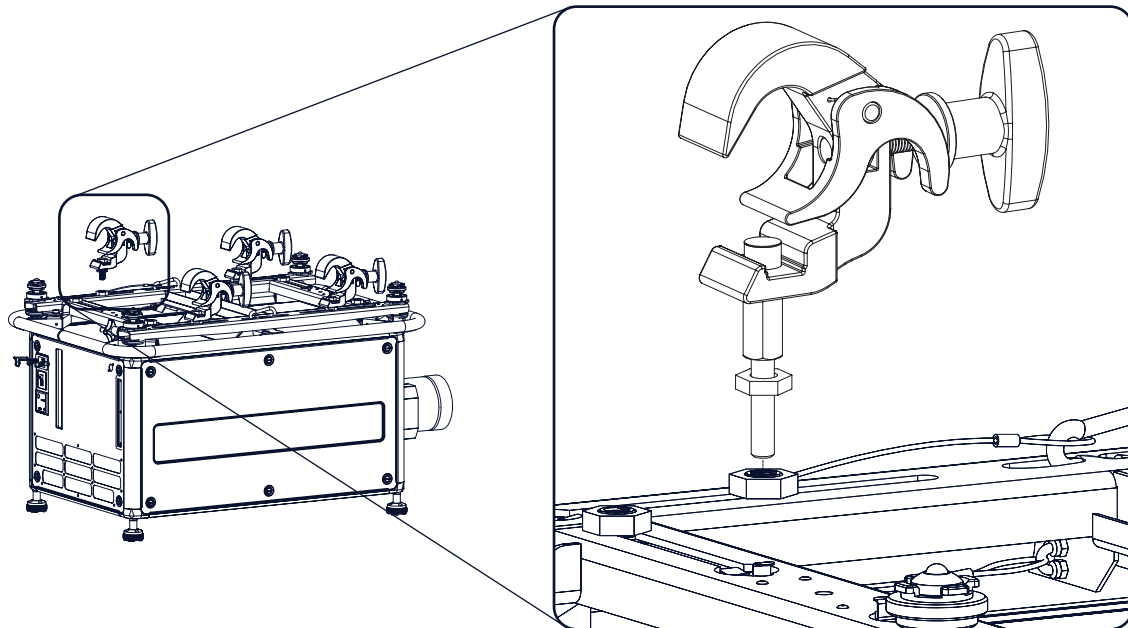


Image 3-17
Mount rigging clamps

Warning: Always use four (4) rigging points, equally spread, to suspend the projector.

- Place all four rigging clamps in open position.
- Place the projector (upside down) under the truss installation and lower the truss until the support bars of the truss are nearby the rigging clamps mounted on the projector.

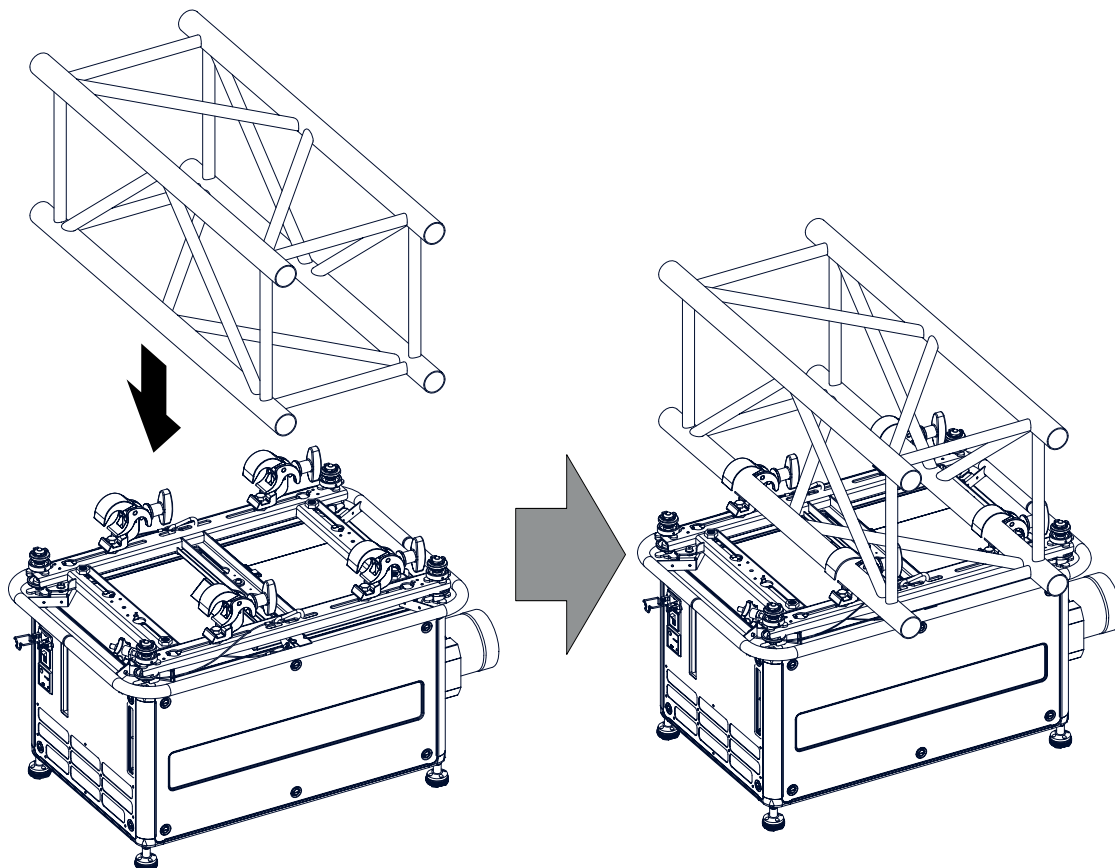


Image 3-18
Mount to truss

- Lift up the projector and hook the four rigging clamps over the support bars of the truss.

3. Physical Installation

7. Lock all four rigging clamps by turning the fixation handle clockwise.

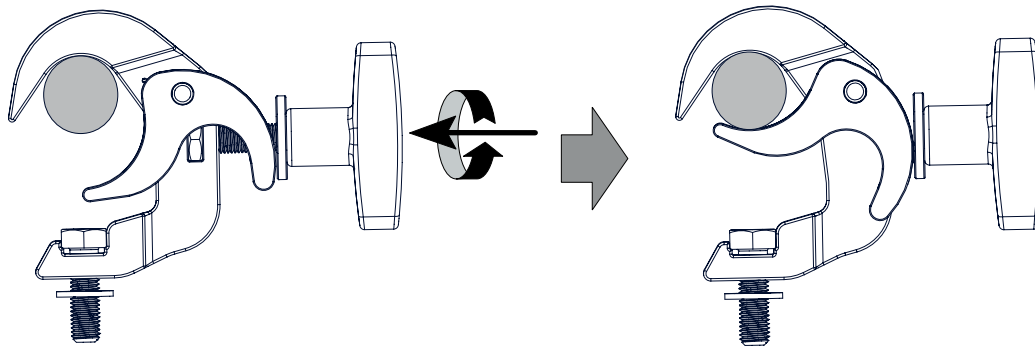


Image 3-19
Clamp fixation

8. Install the 2 safety cables, one on both sides of the carrying handle, and around the truss.
Mount the 2 safety cables around the carry handle (push the hook through the loop and then around the truss so that there is not too much play (maximum 20 cm). If necessary turn the cable a few times around the truss before clamping the safety hook around the cable.

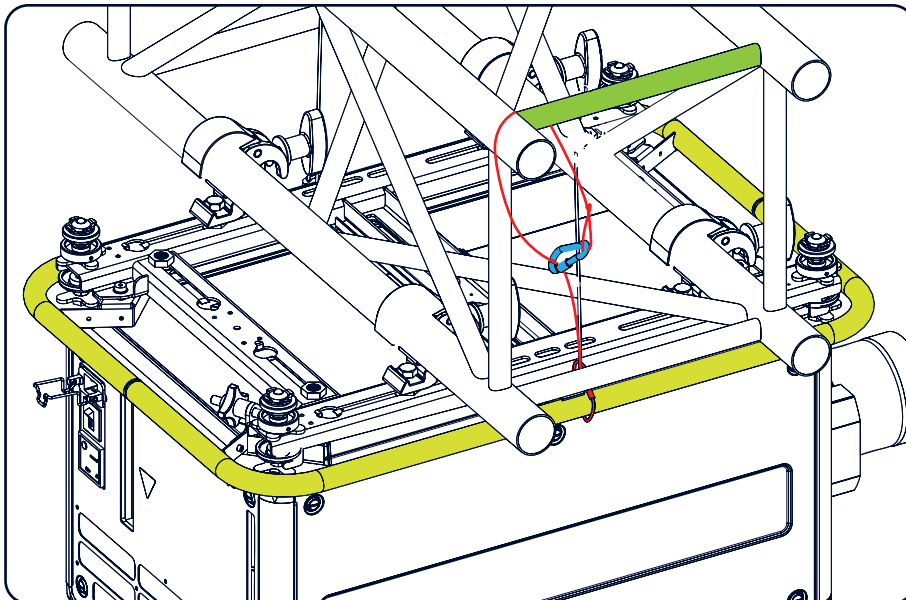


Image 3-20
Security cables

9. Lift up the truss with the attached projector to the desired height.



Mount the 2 safety cables in such a way that when something goes wrong, the projector cannot fall more than 20 cm. If necessary, turn the cables a few times around the truss to obtain this maximum distance.

3.10 Alignment of a ceiling mounted projector

Necessary tools

17 mm open spanner

Skew adjustment

1. Turn the adjustment knob on the carry handle until the projected hatch pattern is perfectly squared.

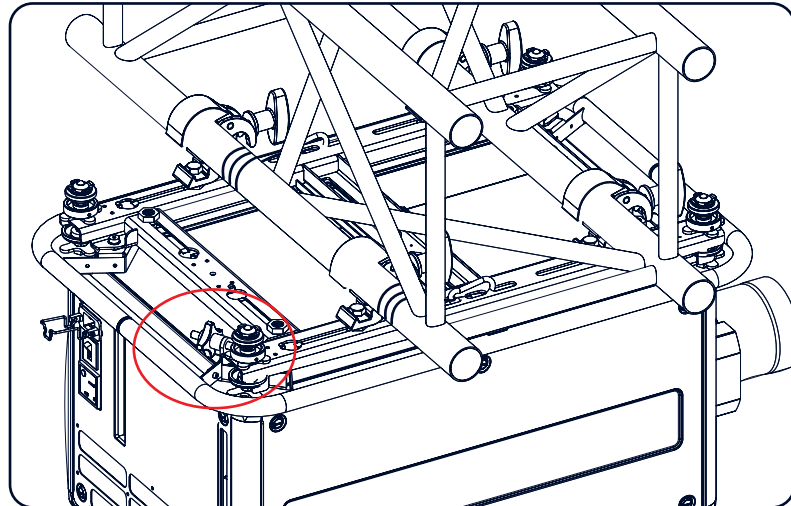
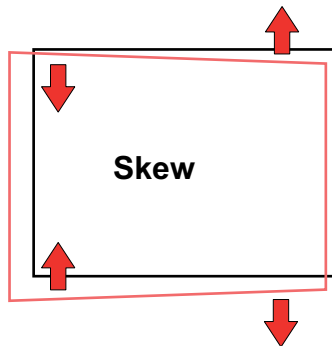


Image 3-21
Skew adjustment

Tilt adjustment with the clamps

1. Adjust both front side clamp or both back side clamps to adjust the tilting.
Always adjust by two to avoid deformation of the frame.
2. Loosen the security nut on both clamps.
3. Adjust the adjustment nuts of both clamps until the desired tilting is reached.
4. Turn the safety nut on the rigging clamp against the rigging point

4. LENSES & LENS SELECTION

Overview

- Available lenses
- Lens selection
- Lens installation
- Lens removal
- Lens safety cable
- Scheimpflug adjustment

4.1 Available lenses



WARNING: Only use TLD+ ZOOM lenses. Using other lenses can touch and damage the mechanics of the build-in Actuator! This can result in loud rattling noises and a damaged Actuator.

Limited amount of available lenses

In comparison to the regular HDX, the HDX 4k projectors have an actuator built in them to help provide a clear 4k image. This extra device means that less space is available in the projector for lenses, thus causing a more restricted amount of lenses that can be used. Using lenses other than the lenses mentioned in this chapter may damage the mechanics of the actuator, causing loud rattling noises in the process and possibly a distorted image.

Due to the similar look to the "regular" 2k HDX projector, an extra warning label has been added on the lens holder to raise awareness of this limit.



Image 4-1
Warning label

Available lenses for the HDX projector

Only the following **TLD+ ZOOM** Lenses can be used on the HDX projector. Do not use other types of lenses.



Image 4-2
R9801414: TLD+ zoom lens (0.8 - 1.16 : 1)



Image 4-3
R9862005: TLD+ zoom lens (1.16 - 1.49 : 1)



Image 4-4
R9862010: TLD+ zoom lens (1.5 - 2.0 : 1)

4. Lenses & Lens selection



Image 4-5
R9862020: TLD+ zoom lens (2.0 - 2.8 : 1)



Image 4-6
R9862030: TLD+ zoom lens (2.8 - 4.5 : 1)



Image 4-7
R9862040: TLD+ zoom lens (4.5 - 7.5 : 1)



Image 4-8
R9829997: TLD+ zoom lens (7.5 - 11.0 : 1)

4.2 Lens selection

How to select the right lens

1. Determine the required screen width (SW).
2. Determine the approximate position of the projector in the room.
3. Start up the *Lens Calculator* on the Barco website: https://www.barco.com/en/media_entertainment/LensCalculator to determine the possible lenses for your configuration.

The Lens Calculator window opens.

Barco.com | Lens Calculator

Lens calculator [reset]

Screen ratio: 16:9 5:4 16:10 2048:1080 4:3 free

Screen width: 4 m

Screen height: 2.25 m

Screen diagonal: 4.59 m

Projector distance: 1.9 m

Ambient light: 4 Lux

Screen gain: 1

Lamp life: 0 %

Stack projectors: 1 #

Horizontal shift: 0 %

Vertical shift: 0 %

Available lenses for CLM HD6

Lens	Horizontal shift	Vertical shift	Throw ratio
CWH 0.81	-10% to 10%	-10% to 10%	
CWH 1.27-1.52	-30% to 30%	-80% to 100%	
CWH 1.52-2.03	-30% to 30%	-80% to 100%	
✓ CWH 2.03-3.85	-30% to 30%	-80% to 125%	
CWH 3.85-7.32	-30% to 30%	-80% to 125%	

Screen simulation: 4 m x 2.25 m

Top view: 10 m

Side view: 10 m

Contrast advisor: Contrast on screen: 1416.3:1, Lux on screen: 666.5

Overlap advisor

Image 4-9
Lens calculator



The Lens Calculator can also be used to determine the position of the projector when the lens type and screen width is known.



Due to lens tolerances the results of calculated values may be different from measured values. These difference may vary +/- 5%.

4.3 Lens installation



WARNING: Only use TLD+ ZOOM lenses. Using other lenses can touch and damage the mechanics of the build-in Actuator! This can result in loud rattling noises and a damaged Actuator.

How to install

1. Remove the foam rubber in the opening of the lens holder if not removed yet.
2. Do **not** remove the warning sticker from the lens holder.
3. Take the lens assembly out of its packing material and remove the lens caps on both sides.
4. Place the lens holder in the “unlocked” position by moving the lens lock handle (A) towards the lens power supply socket (B) as illustrated.

4. Lenses & Lens selection

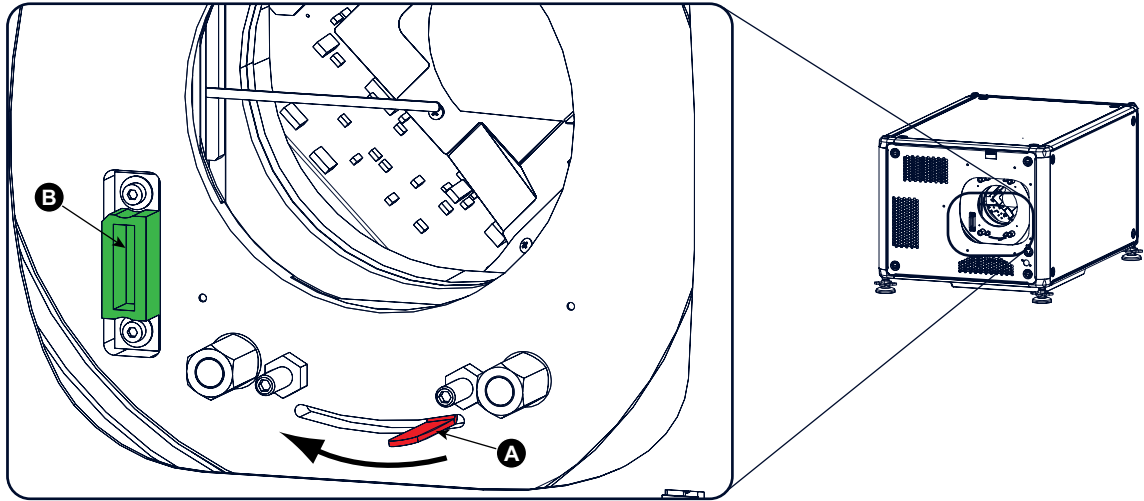


Image 4-10
Lens installation, preparation

5. Ensure that the lens holder stands in the On-Axis position (horizontal and vertical mid position).
Note: *The lens holder is placed default in the On-Axis position at factory.*
6. Gently insert the lens in such a way that the lens connector matches the socket (B).

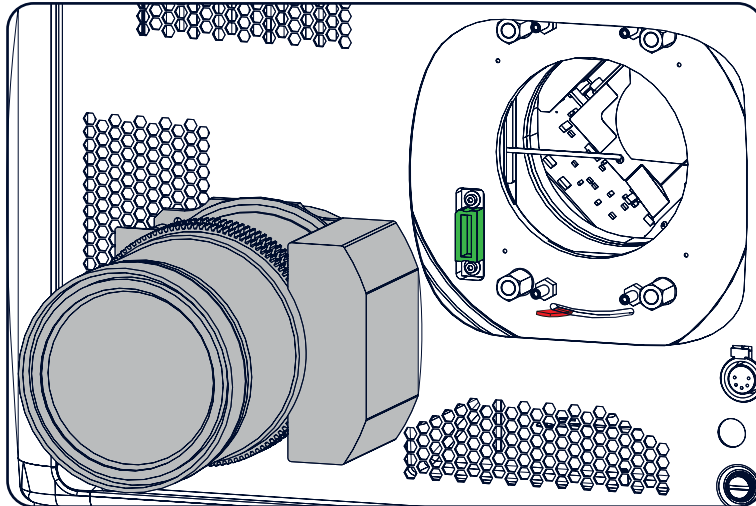


Image 4-11
Lens insertion

7. Insert the lens until the connector seats into the socket.
Warning: *Do not release the Lens yet, as the Lens may fall out of the Lens Holder.*
8. Secure the lens in the lens holder by sliding the lens lock handle into the "locked" position, which is away from the lens power supply socket. Ensure the lens touches the front plate of the lens holder.

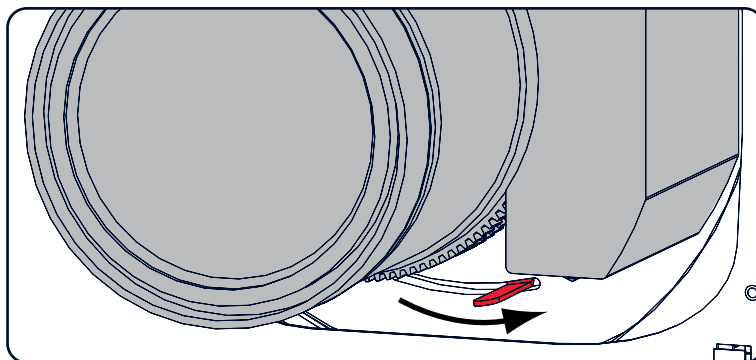


Image 4-12
Lock lens

9. Check if the lens is really secured by trying to pull the lens out of the lens holder.

4.4 Lens removal

How to remove

1. Support the lens with one hand while you unlock the lens holder by sliding the lock handle towards the "unlocked" position as illustrated.

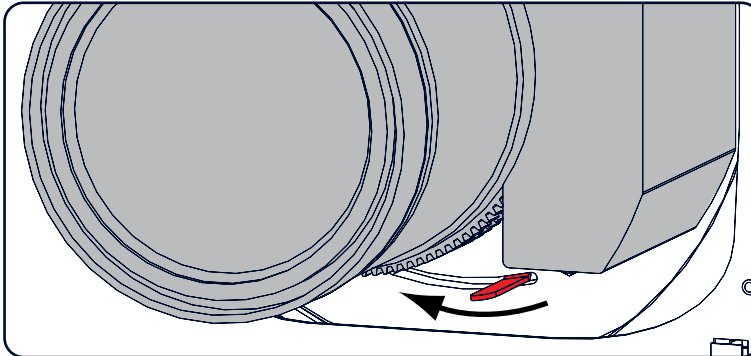


Image 4-13
Lens removal, unlock

2. Gently pull the lens out of the lens holder.

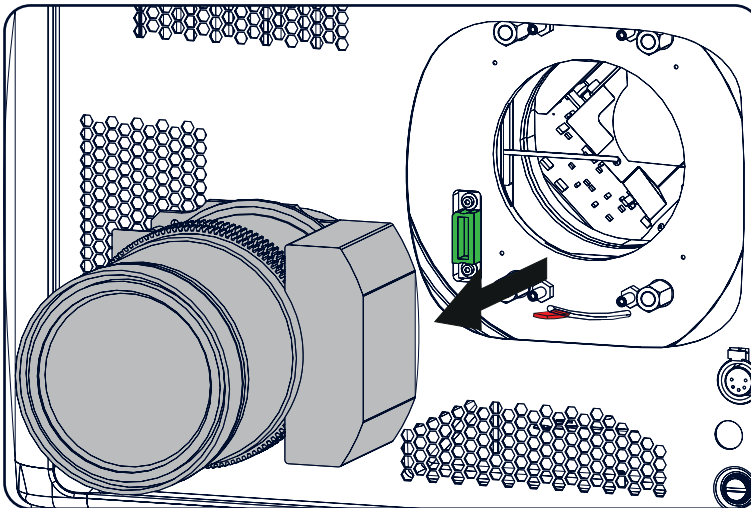


Image 4-14
Lens removal



It's recommended to place the Lens caps of the original Lens packaging, back on both sides of the removed Lens to protect the optics of the Lens.



It's recommended to place the foam rubber of the original projector packaging, back into the Lens opening to prevent intrusion of dust. Note that this foam rubber is packed in a plastic bag to prevent the dust, emitted by the foam, from entering the projector.

4.5 Lens safety cable

When using the safety cable ?

The lens safety cable must be used in any circumstances to protect a mounted lens in the lens holder when the projector is mounted above persons.

Configuration differences

There are two different configurations for the safety cable. The configuration used depends on the used carrying handle or hoisting eye.

4. Lenses & Lens selection

- Configuration A applies when connecting the projector to the bottom carrying handle.
- Configuration B applies when connecting the projector to the top carrying handle.

Necessary parts

- Safety Cable (750 mm, Ø3 mm)
- Cable clamp M4
- Shackle 7x70 mm
- 4 x Cable clip (16x16 mm, Ø4 mm)

How to mount the cable

1. Paste four cable clips on the lens as illustrated (reference 1). Orient the open side of the clips towards the front of the lens.

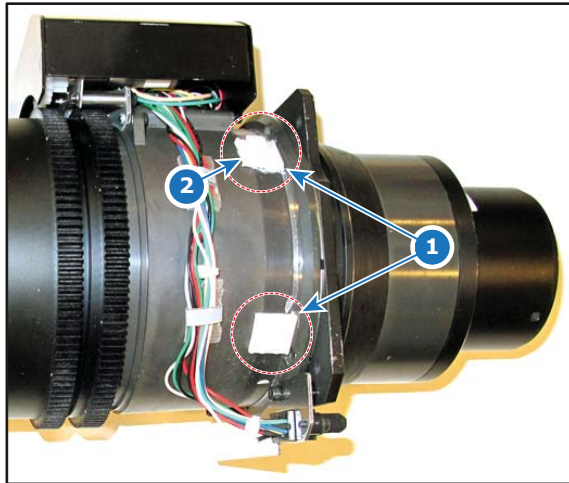


Image 4-15

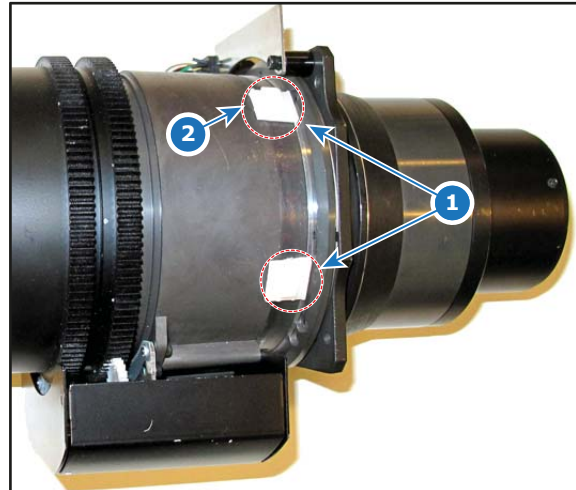


Image 4-16

2. Snap the first loop end of the safety cable into one of the following clips and let the loop end point downwards.
 - a) Configuration A: Use the upper clip on the side of the cable bundle (reference 2, image 4-15).
 - b) Configuration B: Use the upper clip on the non-wired side (reference 2, image 4-16).
3. Slide the rest of the cable around the lens counterclockwise. Click the cable into every clip it passes in this loop.
Note: Make sure the cable passes between the lens and the cable bundle.
4. Slide the cable through the loop end at the beginning of the cable.

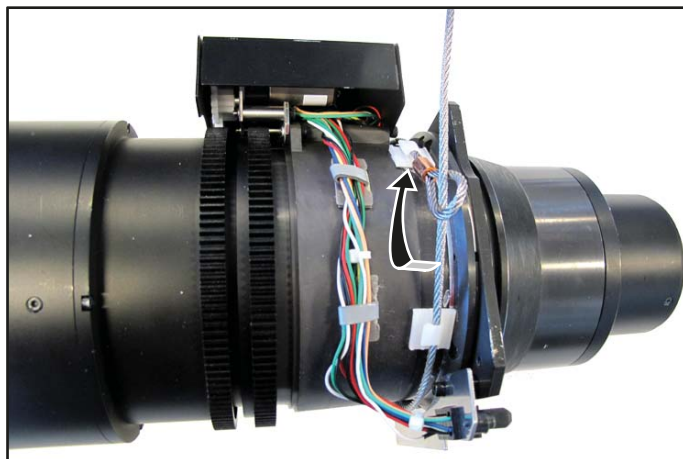


Image 4-17
Example of configuration A

5. Install a U-bolt on the lens holder, with the open ends oriented outwards (reference 3). Make sure that both a part of the loop end and the outgoing part of the safety cable are placed in the enclosure.

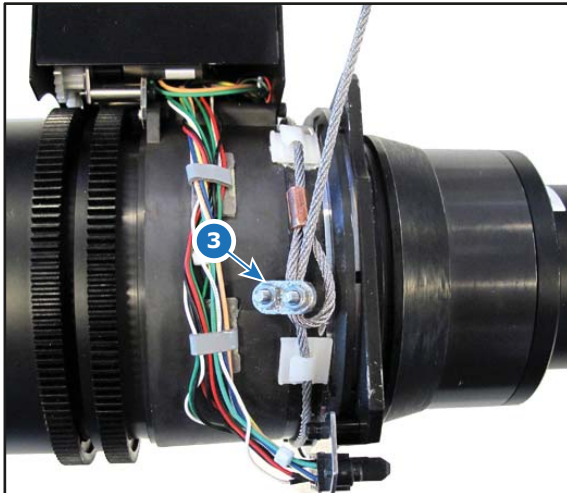


Image 4-18
Example of Configuration A



Image 4-19
Example of Configuration B

6. Close the U-bolt and tighten it.

Note: Make sure the safety cable is tightened around the lens before tightening the U-bolt nuts.

7. Place the shackle through the free loop end of the safety cable.

How to mount the cable

1. Place the lens in the lens holder, using the lens locking mechanism.

Caution: Always make sure the lens is really secured by trying to pull the lens out of the lens holder.

2. Lead the cable end with the shackle around one of the following carrying handles:

- Configuration A: Around the bottom carrying handle.
- Configuration B: Around the top carrying handle.

3. Snap the shackle to the straight part of the cable.

4. Secure the shackle by screwing the safety ring of the shackle over the open end.

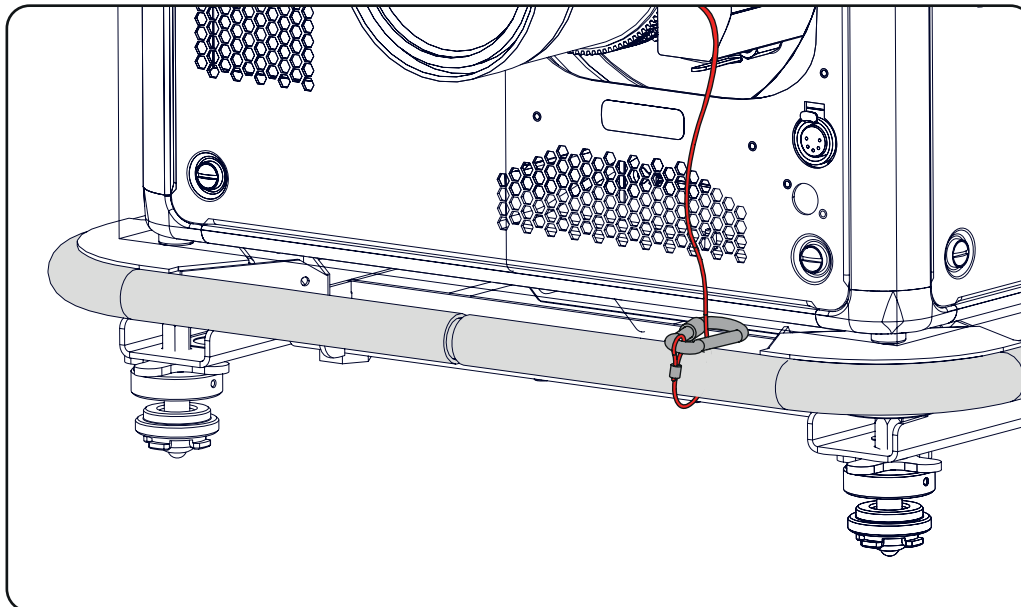


Image 4-20



Image 4-21
Example using the top carrying handle

4.6 Scheimpflug adjustment

What has to be done ?

The lens holder has to be adjusted so that the “sharp focus plane” of the projected image falls together with the plane of the screen (Fp1→Fp2). This is achieved by changing the distance between the DMD plane and the lens plane (Lp1→Lp2). The closer the lens plane comes to the DMD plane the further the sharp focus plane will be. It can sometimes happen that you won't be able to get a complete focused image on the screen due to a tilt (or swing) of the lens plane with respect to the DMD plane. This is also known as Scheimpflug's law. To solve this the lens plane must be placed parallel with the DMD plane. This can be achieved by turning the lens holder to remove the tilt (or swing) between lens plane and DMD plane (Lp3→Lp4).

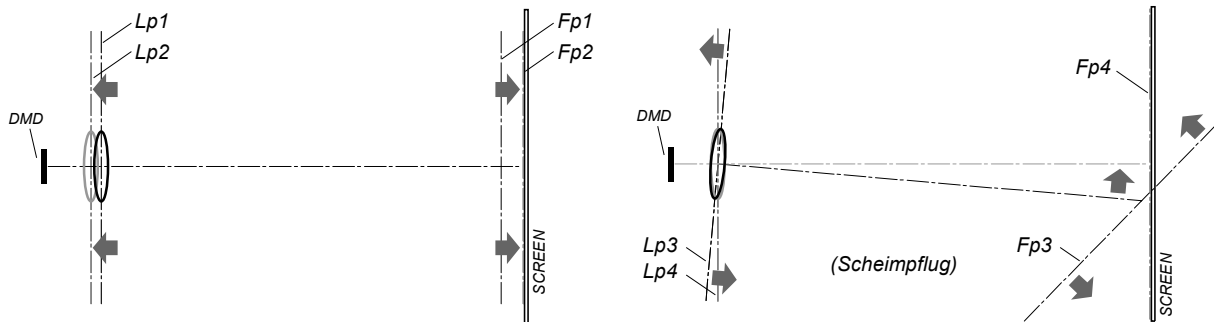


Image 4-22
Scheimpflug principle



Scheimpflug principle

The "plane of sharp focus" can be changed so that any plane can be brought into sharp focus. When the DMD plane and lens plane are parallel, the plane of sharp focus will also be parallel to these two planes. If, however, the lens plane is tilted with respect to the DMD plane, the plane of sharp focus will also be tilted according to geometrical and optical properties. The DMD plane, the principal lens plane and the sharp focus plane will intersect in a line below the projector for downward lens tilt.

Scheimpflug adjustment points

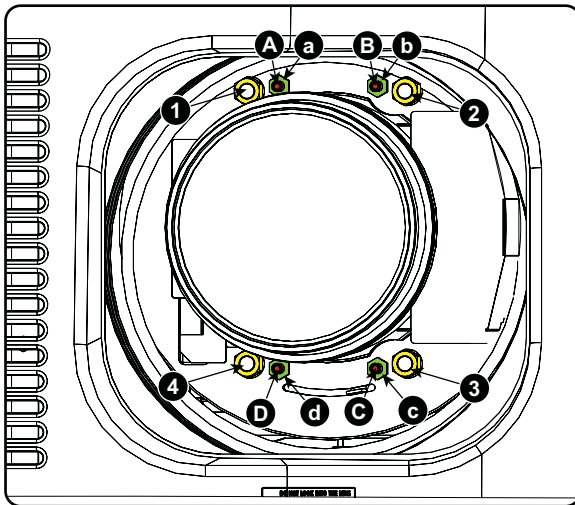


Image 4-23
Scheimpflug adjustments

Indication on drawing	Function
4	Locking nut
1, 2 and 3	Scheimpflug adjustment nuts
A, B, C and D	Set screws
a, b, c and d	lock nuts

1, 2 and 3 are adjustment points.

4 is a locking point and NOT used during Scheimpflug adjustment.



CAUTION: In the HDX 4K, the Scheimpflug mechanism is positioned close to the actuator, which helps provide the 4k UHD images. To avoid damaging the actuator during Scheimpflug adjustment, it is important to have the projector be in 4k UHD mode during the adjustment. This because the actuator will vibrate while in 4k UHD mode.

If one of the Scheimpflug nuts would touch the vibrating actuator during adjustment, you will hear a loud rattling noise. If heard, immediately turn the nut counterclockwise until you can no longer hear the noise.

Remember and mark this position, as this will be the innermost position this Scheimpflug nut will be able to achieve without damaging the actuator.

Necessary tools

- Allen key 3 mm
- Nut driver 13 mm
- Nut driver 10 mm

How to adjust

1. Project a green focus pattern in 4K UHD.

4. Lenses & Lens selection

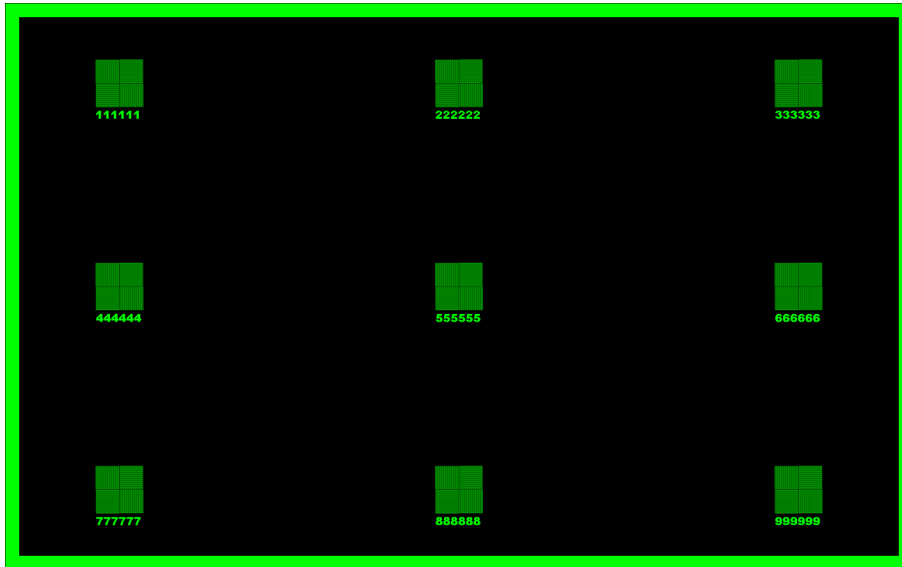


Image 4-24

2. Loosen the lock nuts (a, b, c and d). See image 4-23.
3. Loosen the 4 set screws (A, B, C and D) by 1 cm. See image 4-23.
4. Fully loosen lock nut 4. See image 4-23.
5. Optimize the focus of the projected image as follows:
 - a) Place the zoom lens in TELE position (smallest projected image) and adjust the focus using the lens focus barrel or motorized focus control.
 - b) Place the zoom lens in WIDE position (largest projected image) and adjust the focus by turning equally on nut 1, 2 and 3.
 - c) Repeat steps "a" and "b" until the projected image is as sharp as possible.

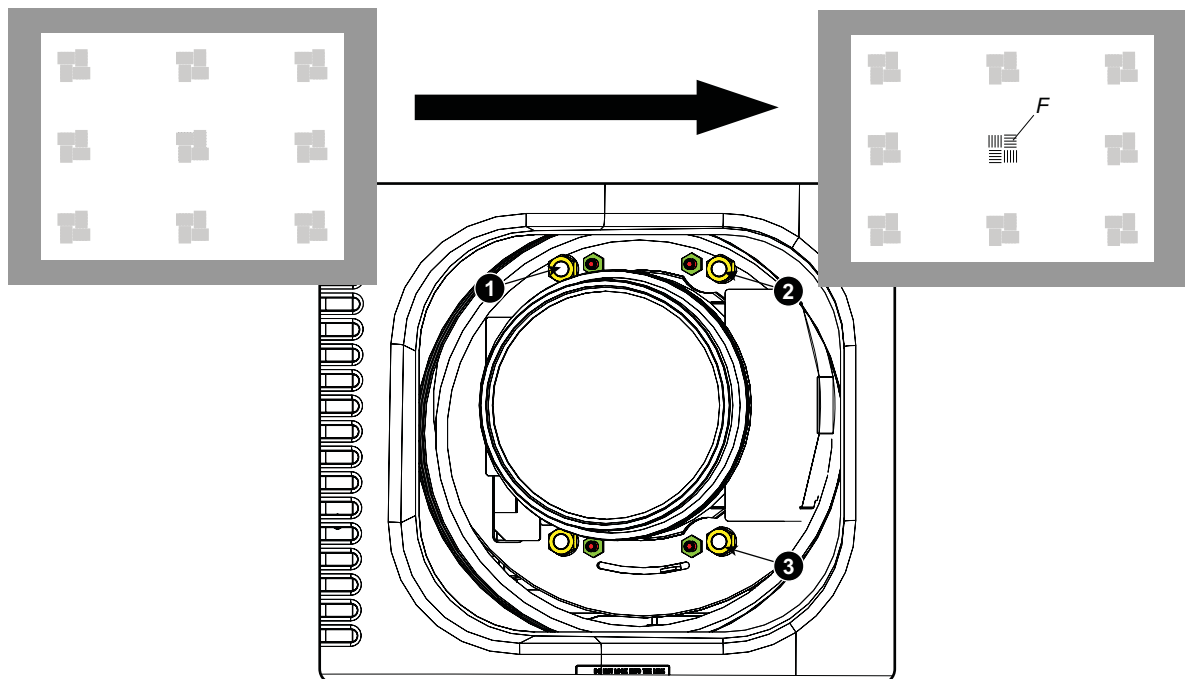


Image 4-25
Center focusing

6. Sharpen bottom left corner of the screen by adjusting nut 1.

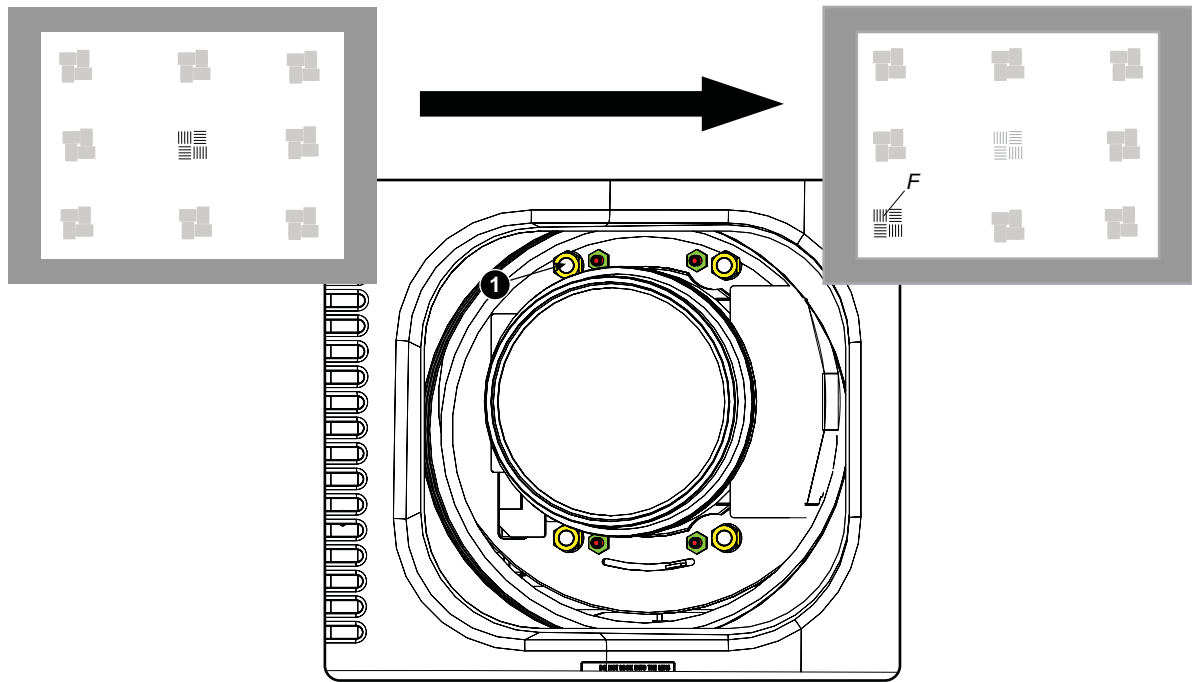


Image 4-26
Left bottom focusing

7. Sharpen bottom right corner of the screen by adjusting nut 2.

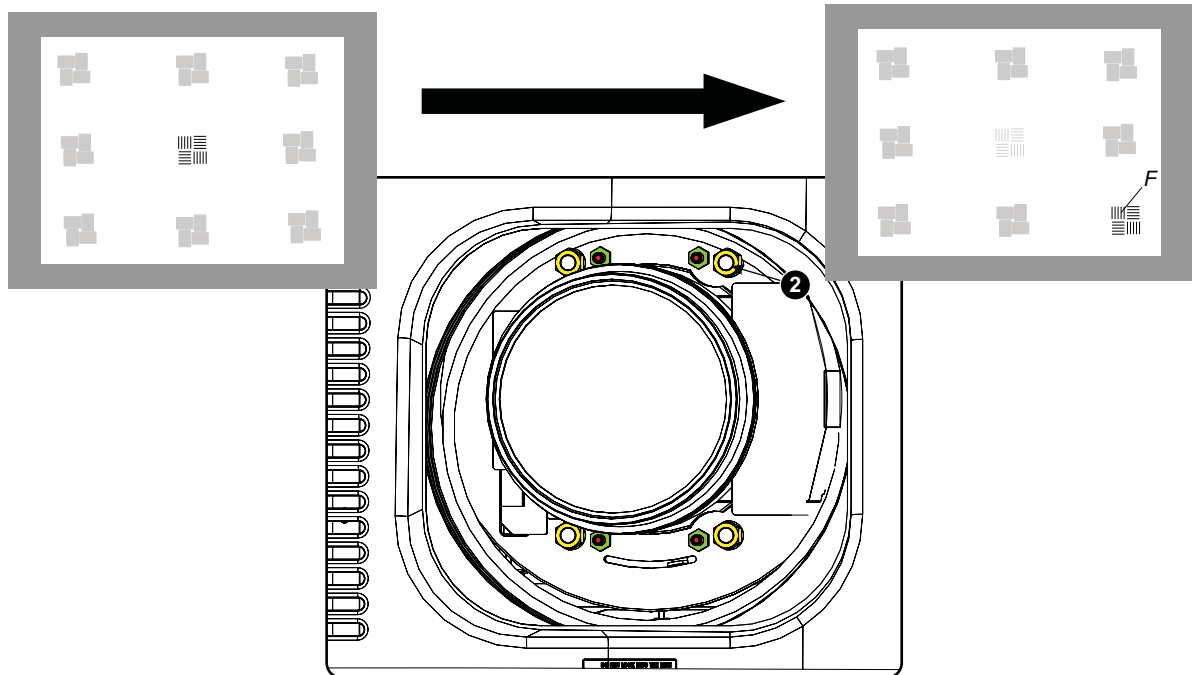


Image 4-27
Right bottom focusing

8. Sharpen top right corner of the screen by adjusting nut 3

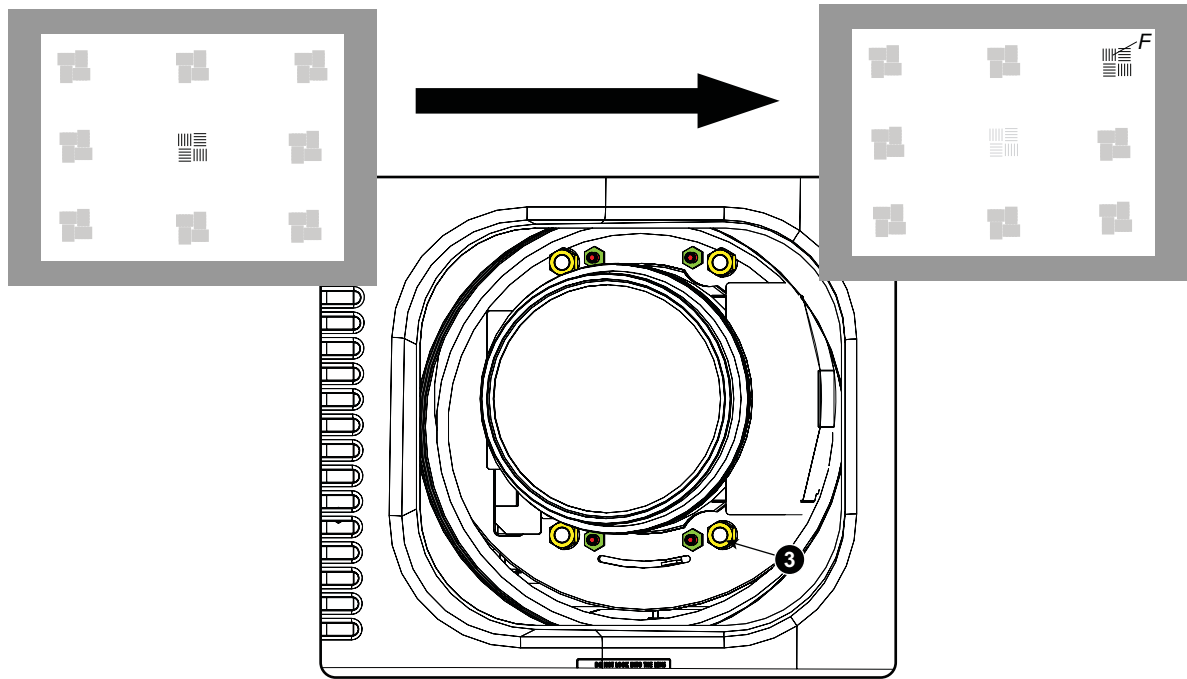


Image 4-28
Corner focusing

- Repeat from step 6 until the projected focus pattern is as sharp as possible in the center, left, right, top and bottom of the screen.

How to fix the Scheimpflug

Start the fixation as follows (steps must be followed strictly) :

- Turn in set screw A, B and C. Tighten lightly (by hand).
Tip: Any movement of the image will affect the Scheimpflug adjustment
- Fasten lock nuts a, b and c.
- Turn in set screw D lightly (by hand) allowing the image to move slightly (1/3 to 1/2 of a square).

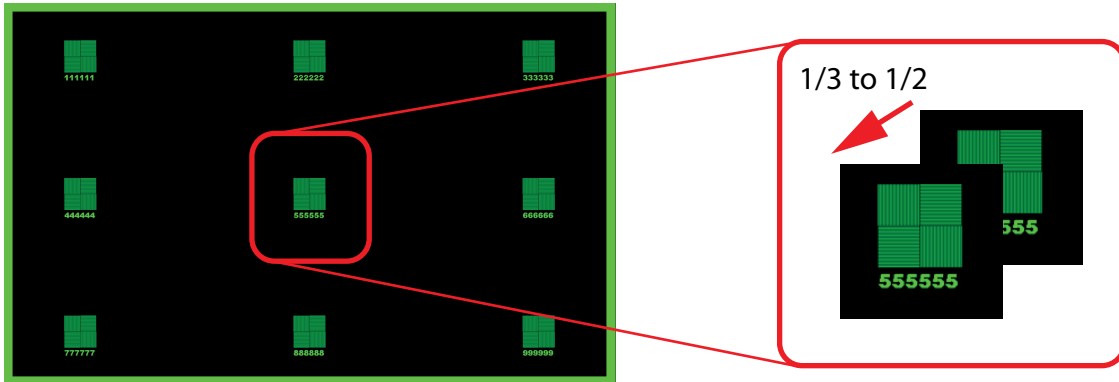


Image 4-29

- Fasten lock nut d.
- Tighten nut 4 until the offset of the image movement created in step 3 is canceled.
Tip: The amount of image movement in step 3 will determine how tight the nut in step 5 will need to be turned to return the image to its original position.

5. INPUT & COMMUNICATION

Overview

- Introduction
- Removal of an input board
- Installation of an input board or a communication board
- Input source connections – Venue & Hospitality Input (V&H)
- Input source connections – Virtual & Augmented Reality Input (V&AR) (Optional)
- Communication connections
- LED and Button indication chart
- Installation of the WiFi module
- Installation of the GSM module

5.1 Introduction

General

The Input & Communication side of the projector consists of a local keypad, a communication panel, a venues & hospitality Input (V&H) and a free input slots. The free input slot can be used for optional modules (e.g. Virtual & Augmented Reality Input (V&AR)).

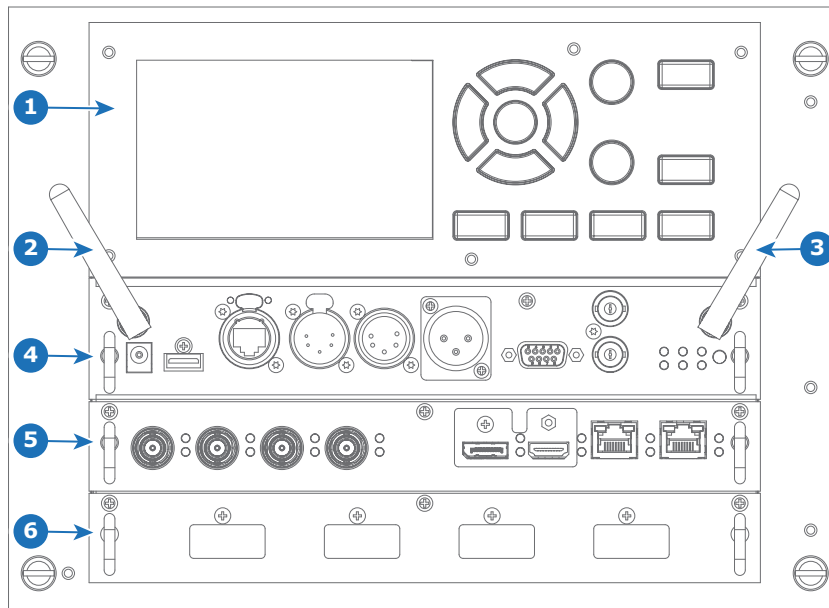


Image 5-1

- 1 Local Keypad and touch panel
- 2 Optional antenna for WiFi connection
- 3 Optional antenna for GSM
- 4 Communication Panel
- 5 Venues & Hospitality Input (V&H)
- 6 Free input slot (here filled with the V&AR module)

5.2 Removal of an input board



WARNING: The procedures below may only be performed by Barco trained and qualified technicians.



CAUTION: Always wear a wrist band which is connected to the ground while handling the electrostatic discharge (ESD) sensitive parts.



The procedure below is applicable to all the input modules of the Input & Communication Unit of the projector.

How to remove

1. Switch off the projector and unplug the power cord at the projector back side.
2. Release the 3 captive screws of the input module (4).

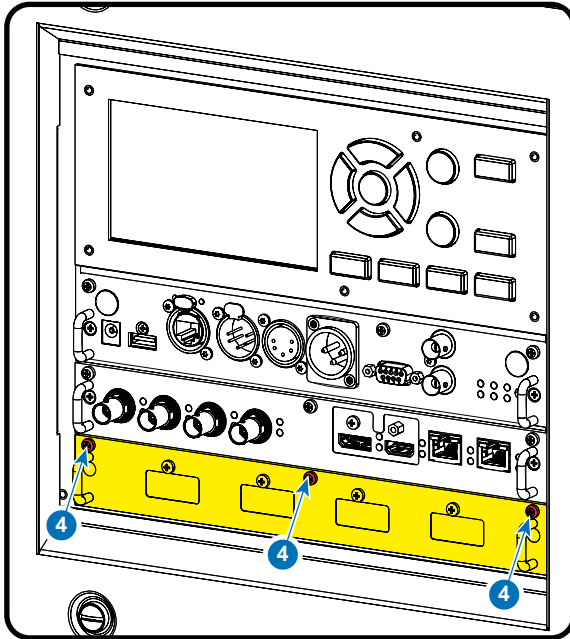


Image 5-2

3. Pull out the input module of the Input & Communication using the handles.

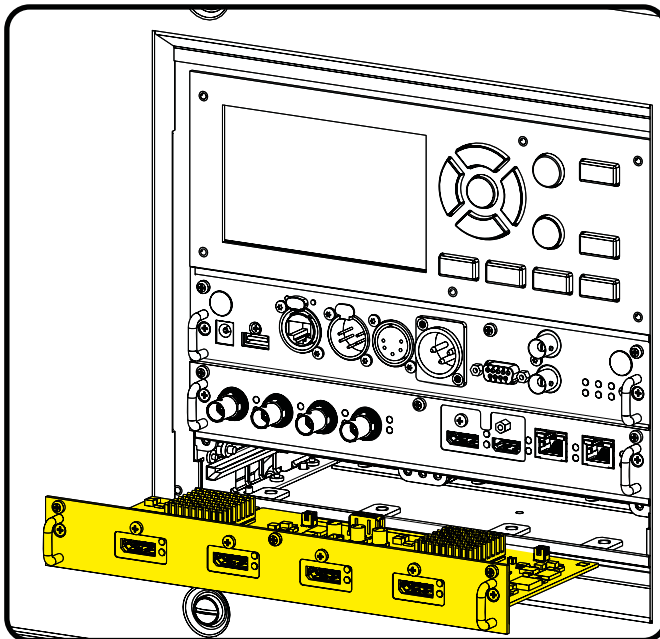


Image 5-3



CAUTION: Ensure that unused input slots of the Input & Communication Unit are always covered with a dummy front plate. After removing one of the input modules, immediately replace with an other one or install a dummy front plate on the unused input slot.

5.3 Installation of an input board or a communication board



WARNING: The procedures below may only be performed by Barco trained and qualified technicians.



CAUTION: Always wear a wrist band which is connected to the ground while handling the electrostatic discharge (ESD) sensitive parts.

Necessary tools

PH1 Phillips screwdriver



The procedure below is applicable to all the input modules of the Input & Communication Unit of the projector.

How to install

1. Switch off the projector and unplug the power cord at the projector back side.
2. Push the input module in the Input & Communication Unit using the handles. Make sure the module seats in its sliders (2). Pull in the module until the contacts (3) are fully inserted into the connectors.

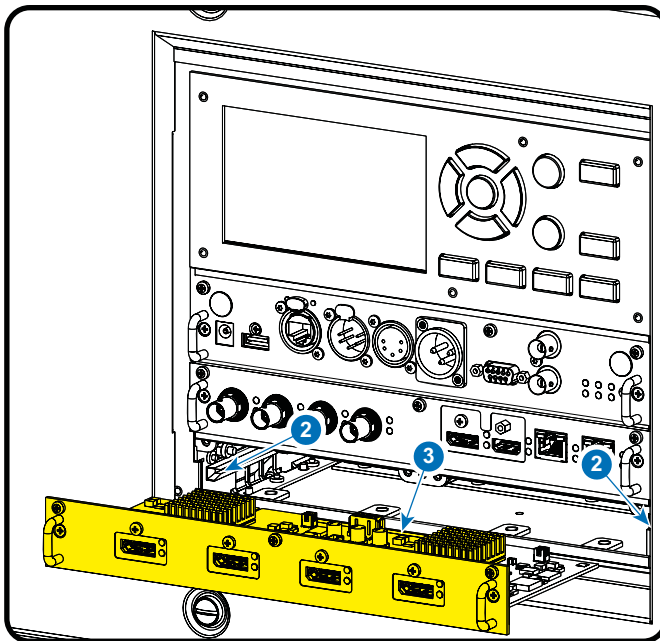


Image 5-4

3. Tighten the captive screws of the input module.

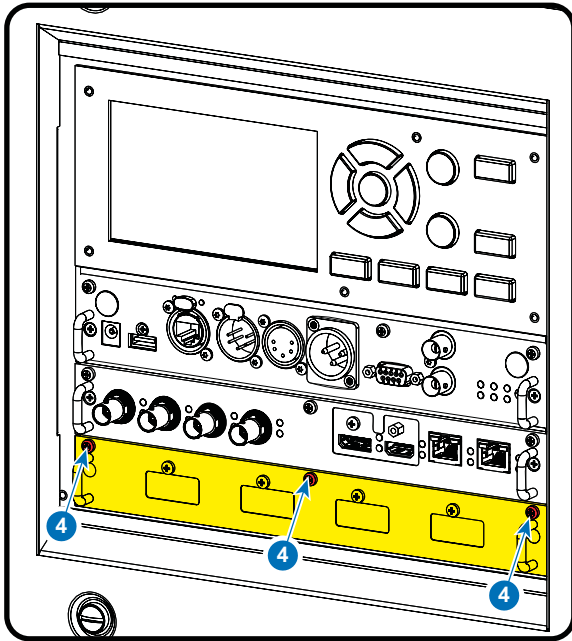


Image 5-5

4. Plug in the power cord at the projector back side.
5. **IMPORTANT LAST STEP** — Update the firmware of the installed module. Use the complete software package to install the firmware via Projector Toolset or USB stick.
Tip: When a complete new software image is placed on the projector, all programmable components will be updated with the latest version.

5.4 Input source connections – Venue & Hospitality Input (V&H)

Overview Venues & Hospitality Input (V&H)

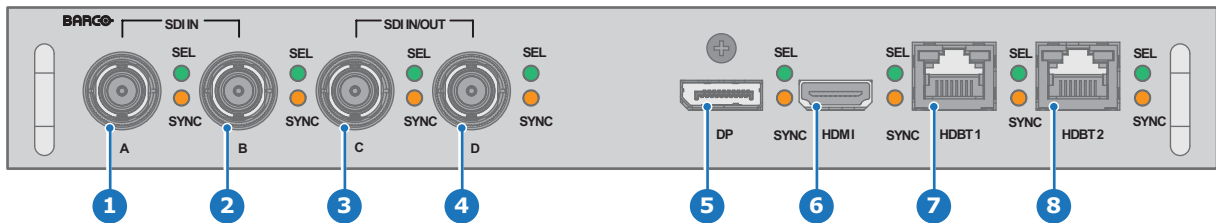


Image 5-6

- | | |
|--|---|
| <ul style="list-style-type: none"> 1 Quad 3G SDI channel A Input 2 Quad 3G SDI channel B Input 3 Quad 3G SDI channel C Input 4 Quad 3G SDI channel D Input | <ul style="list-style-type: none"> 5 DisplayPort Input 6 HDMI Input 7 HDBaseT Input 1 8 HDBaseT Input 2 |
|--|---|

The yellow LED lights up when valid input sync is detected.

The green LED lights up when the input is selected.

Input specifications – SDI Inputs



3G SDI follows the SMPTE 425M standard Level A

HD-SDI follows the SMPTE 292M standard

Color space	YCbCr
Color depth	10 bpc
Chroma sampling	4:2:2

Audio support not supported

For future release

- 3D support
- Interlaced support
- Segmented frame support
- 12G SDI support

Video timings Progressive

Type	Port type	Format
HD-SDI	Single link	Up to 1920 x 1080 @24 Hz
		Up to 1920 x 1080 @25 Hz
		Up to 1920 x 1080 @30 Hz
		Up to 1280 x 720 @50 Hz
		Up to 1280 x 720 @60 Hz
3G-SDI Level A	Single link	Up to 2048 x 1080 @50 Hz
3G-SDI "BarcoLink"	Single link	Up to 2048 x 1080 @60 Hz
		1920 x 1200 @50 Hz, @59.94 Hz and @60 Hz.

Input specifications – HDMI Input

Pixel rate 25 – 600 MHz pixel clock

HDCP support

- HDCP 1.x
- HDCP 2.2

Color Space

- YCbCr 4:2:0
- YCbCr 4:2:2
- YCbCr 4:4:4

Color depth

- 24 bpp
- 30 bpp
- 36 bpp

For future release

- 3D support
- Interlaced support

Audio

not supported

Video timings

Up to 4096 x 2160 @24 Hz
 Up to 4096 x 2160 @25 Hz
 Up to 4096 x 2160 @30 Hz
 Up to 2048 x 1080 @48 Hz
 Up to 4096 x 2160 @50 Hz
 Up to 4096 x 2160 @60 Hz



CAUTION: The HDBaseT inputs can bridge a distance of 100 m but is sensitive to radiated electromagnetic interference: radiated electromagnetic interference (e.g. from GSM or switching inductive or capacitive loads) within the limits of electromagnetic compatibility requirements of 3 V/m can cause random flashes or temporary loss of the projected image.

As such, shielded CAT-6 cables with metal RJ-45 connectors are recommended; choose cable length no longer than required and route HDBT cable optimally screened from possible sources of electromagnetic emission.

Input specifications – HDBase-T inputs

Pixel rate 25 – 297 MHz pixel clock

Color Space

- YCbCr 4:2:2
- YCbCr 4:4:4

Color depth	<ul style="list-style-type: none">• 24 bpp• 30 bpp• 36 bpp For future release <ul style="list-style-type: none">• 3D support• Interlaced support• HDCP 1.4
Audio	not supported
Video timings Progressive	Up to 4096 x 2160 @24 Hz Up to 4096 x 2460 @25 Hz Up to 4096 x 2460 @30 Hz Up to 2048 x 1080 @48 Hz Up to 2560 x 1600 @50 Hz Up to 2560 x 1600 @60 Hz



CAUTION: In order to display high resolution images (ex.: 3840X2160@60Hz) via the DP1.2 input, the quality of the cable must be adequate, in addition the length of the cable can also influence the performance. In case there is an issue with one of these criteria the automatic link-training initiated by the DP-standard may decide to switch to a lower resolution.

Input specifications – DisplayPort 1.2 input

Pixel rate	Up to 600 MHz pixel clock
Color Space	<ul style="list-style-type: none">• YCbCr 4:2:2• YCbCr 4:4:4
Color depth	<ul style="list-style-type: none">• 24 bpp• 30 bpp• 36 bpp
Datarate Support	<ul style="list-style-type: none">• 1.62 Gbps: Reduced Bit Rate (RBR)• 2.7 Gbps: High Bit Rate (HBR)• 5.4 Gbps: High Bit Rate 2 (HBR2) For future release: <ul style="list-style-type: none">• Passive 3D support• Interlaced support• HDCP 1.4
Audio	not supported
3D support	Field sequential 3D (active 3D)
Video timings progressive:	

2D / 3D	Layout Mode	Supported formats
2D	Standard layout (1x1 layout)	<ul style="list-style-type: none"> Up to 4096 x 2160 @24 Hz Up to 4096 x 2160 @30 Hz Up to 2048 x 1080 @48 Hz Up to 4096 x 2160 @50 Hz Up to 4096 x 2160 @60 Hz Up to 2048 x 1080 @120 Hz
2D	2 Column mode (2x1 layout)	<ul style="list-style-type: none"> 1920 x 2160 @60 Hz 1920 x 2160 @120 Hz 1920 x 2400 @60 Hz
2D	4 Quadrant mode (2x2 layout)	<ul style="list-style-type: none"> 1920 x 1080 @120 Hz 1920 x 1200 @120 Hz 2048 x 1080 @120 Hz
2D	4 Column mode (4x1 layout)	<ul style="list-style-type: none"> 960 x 2160 @120 Hz 960 x 2400 @120 Hz 1024 x 2160 @120 Hz
Active 3D		<ul style="list-style-type: none"> 960 x 2160 @120 Hz 960 x 2400 @120 Hz 1024 x 2160 @120 Hz 1920 x 1080 @120 Hz 1920 x 1200 @120 Hz 1920 x 2160 @120 Hz 2048 x 1080 @120 Hz

5.5 Input source connections – Virtual & Augmented Reality Input (V&AR) (Optional)

Virtual & Augmented Reality Input (V&AR) (Optional)

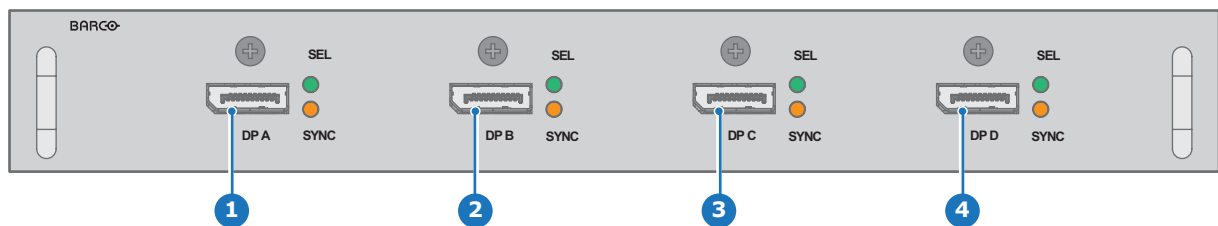


Image 5-7

1 Quad DisplayPort channel A Input

3 Quad DisplayPort channel C Input

2 Quad DisplayPort channel B Input

4 Quad DisplayPort channel D Input

The yellow LED lights up when valid input sync is detected.

The green LED lights up when the input is selected.

Input specifications – DisplayPort 1.2 inputs

Pixel rate Up to 600 MHz pixel clock

Color Space

- YCbCr 4:2:2
- YCbCr 4:4:4

5. Input & Communication

- Color depth
- 24 bpp
 - 30 bpp
 - 36 bpp

- Datarate Support
- 1.62 Gbps: Reduced Bit Rate (RBR)
 - 2.7 Gbps: High Bit Rate (HBR)
 - 5.4 Gbps: High Bit Rate 2 (HBR2)

For future release:

- Passive 3D support
- Interlaced support
- HDCP 1.4

Audio not supported

3D support Field sequential 3D (active 3D)

Video timings progressive:

2D / 3D	Layout Mode	Supported formats
2D	Standard layout (1x1 layout)	<ul style="list-style-type: none"> • Up to 4096 x 2160 @24 Hz • Up to 4096 x 2160 @30 Hz • Up to 2048 x 1080 @48 Hz • Up to 4096 x 2160 @50 Hz • Up to 4096 x 2160 @60 Hz • Up to 2048 x 1080 @120 Hz
2D	2 Column mode (2x1 layout)	<ul style="list-style-type: none"> • 1920 x 2160 @60 Hz • 1920 x 2160 @120 Hz • 1920 x 2400 @60 Hz
2D	4 Quadrant mode (2x2 layout)	<ul style="list-style-type: none"> • 1920 x 1080 @120 Hz • 1920 x 1200 @120 Hz • 2048 x 1080 @120 Hz
2D	4 Column mode (4x1 layout)	<ul style="list-style-type: none"> • 960 x 2160 @120 Hz • 960 x 2400 @120 Hz • 1024 x 2160 @120 Hz
Active 3D		<ul style="list-style-type: none"> • 960 x 2160 @120 Hz • 960 x 2400 @120 Hz • 1024 x 2160 @120 Hz • 1920 x 1080 @120 Hz • 1920 x 1200 @120 Hz • 1920 x 2160 @120 Hz • 2048 x 1080 @120 Hz

5.6 Communication connections

Communication Panel

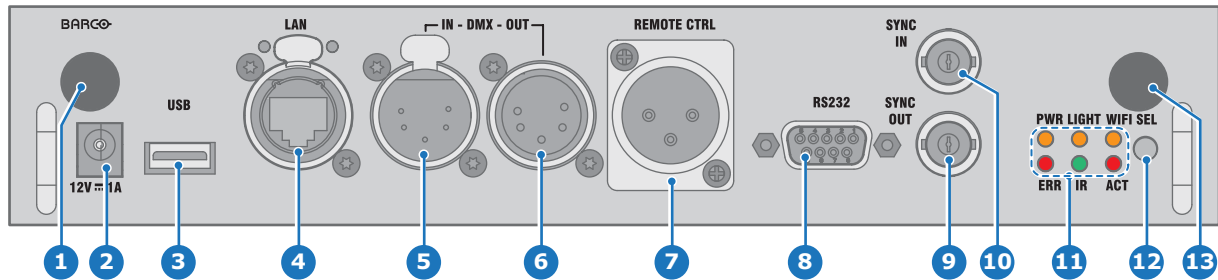


Image 5-8

- | | |
|---|---|
| 1 WIFI antenna for wireless IP (optional) | 8 RS232 for serial communication |
| 2 12V 1A output | 9 Sync Out 3D |
| 3 Firmware update / USB backup custom settings | 10 Sync In 3D |
| 4 10/100 base-T for external control over IP and Art-Net | 11 Status lights |
| 5 DMX interface input | 12 IR receive sensor |
| 6 DMX interface output | 13 GSM antenna input (optional) |
| 7 XLR input for wired projector control | |

12V output

12 V output, maximum 1A, available when projector is not in stand by.

DMX interface

DMX is used as communication bus between different devices in the light technic. Each device has an input and an output, so that the bus can be looped between the different devices. According the standard a five wire cable with XLR connector is used.

You can use the DMX input port to connect a DMX device (DMX console) to the projector. This way you can control the projector from that DMX device (console). The DMX output port can be connected with the next device in the loop.

Pin	Description
1	Earth
2	Cold
3	Hot
4	Return - (or not used)
5	Return + (or not used)



DMX

DMX-512 Lighting protocol over RS-485 interface. Carries information of 512 channels from a lighting controller to lighting devices. Standardized by USITT.

RS232/RS422 input

The communication interface of the HDX supports RS232 and RS422 serial communication on two different types of input connectors, a Sub-D connector and an USB connector acting as RS input when connected to an USB input of a PC.

You can use the RS232/RS422 input to connect a local PC to your HDX. By this way you can configure and control your HDX from your local PC.

Advantages of using RS232/RS422 serial communication:

- easy adjustment of the projector via PC (or MAC).
- allow storage of multiple projector configurations and set ups.
- wide range of control possibilities.
- address range from 0 to 255.
- sending data to the projector (update).
- copying data from the projector (backup).

RS232/422 input (Sub-D) port	
Pin	Description
1	DCD : Data Carrier Detect
2	RXD- : Receive Data
3	TXD- : Transmitted Data
4	DTR : Data Terminal Ready [RS232] TXD+ : Transmitted Data [RS422]
5	GND : Ground
6	DSR : Data Set Ready [RS232] RXD+ : Received Data [RS422]
7	— (not connected) —
8	CTS : Clear To Send
9	RI : Ring Indicator



RS232

An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either D-SUB 9 pins or D-SUB 25 pins connectors. This standard is used for relatively short-range communications and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length and type of connector to be used. The standard specifies component connection standards with regard to computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard. Logical '0' is > + 3V, Logical '1' is < - 3V. The range between -3V and +3V is the transition zone.



RS422



An EIA serial digital interface standard that specifies the electrical characteristics of balanced (differential) voltage, digital interface circuits. This standard is usable over longer distances than RS-232. This signal governs the asynchronous transmission of computer data at speeds of up to 920,000 bits per second. It is also used as the serial port standard for Macintosh computers. When the difference between the 2 lines is < - 0.2V that equals with a logical '0'. When the difference is > +0.2V that equals to a logical '1'..

USB port

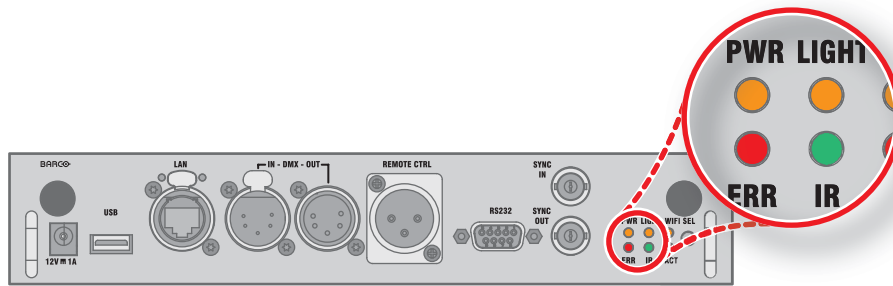
The communication interface is equipped with a master USB port, type "A" connector. This USB port will simplify the service procedures for software updates or for taking backup files from the projector without network connection. An USB-stick is plugged into the USB port and files can be transferred from or to the projector using the local or remote control unit. Note that the USB-stick has to be Linux FAT16 compatible.

5.7 LED and Button indication chart

Button Backlight Status

Button	Color status	Description
	Blinking WHITE (slow)	Projector starts up (booting)
	Blinking WHITE (fast)	Firmware upgrade
	Solid WHITE	Projector is in Standby mode
	Blinking BLUE	Projector goes to ON mode
	Solid BLUE	Projector is ON
	Blinking RED	Error condition
	Off (no color)	Projector is OFF, starts up, or is in Standby mode.
	Solid WHITE	Projector is ON, shutter is open
	Solid RED	Projector is ON, shutter is closed

LED Status



LED	Color status	Description
PWR (power LED)	Off	Projector powers up
	RED	Projector is in Standby
	ORANGE	Projector is Ready
	GREEN	Projector is on
LIGHT (Illumination LED)	Off	Lamp is off
	RED	No lamp inserted
	ORANGE	Lamp is on in ECO mode
	GREEN	Lamp is on in normal mode
	GREEN-ORANGE	Lamp is on in CLO mode
ERR (error LED)	Off	No error
	RED toggles on/off	Error
	ORANGE toggles on/off	Warning
IR	RED	IR signal received
	GREEN	IR signal acknowledged

5.8 Installation of the WiFi module



WARNING: The procedures below may only be performed by Barco trained and qualified technicians.



CAUTION: Always wear a wrist band which is connected to the ground while handling the electrostatic discharge (ESD) sensitive parts.



After the installation, the WiFi module needs to be configured.

Federal Communication Commission Interference Statement

FCC RF Radiation Exposure Statement: This device is capable of operating in 802.11a mode. For 802.11a devices operating in the frequency range of 5.15 - 5.25 GHz, they are restricted for indoor operations to reduce any potential harmful interference for Mobile Satellite Services (MSS) in the US. WiFi Access Points that are capable of allowing your device to operate in 802.11a mode (5 .15 - 5.25 GHz band) are optimized for indoor use only. If your WiFi network is capable of operating in this mode, please restrict your WiFi use indoors to not violate federal regulations to protect Mobile Satellite Services.

WiFi unit FCC ID: RYK-WUBR508N

Radio Frequency (RF) Exposure Information

The radiated output power of the Barco Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Barco Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

WiFi unit IC ID: IC: 6158A-WUBR508N

IC Antenna statement

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter 6158A-WUBR508N has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Type: Dipole

Maximum Peak Gain: 2 dBi

Impedance: 50 Ohm

Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie émise par l'appareil de sans fil Barco est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil Barco de façon à minimiser les contacts humains lors du fonctionnement normal.

IC ID module WiFi: 6158A-WUBR508N

Déclaration d'antenne d'Industrie Canada (IC)

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur radio 6158A-WUBR508N a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Type: Dipole

Gain maximum: 2 dBi

Impédance: 50 Ohm

Necessary tools

PH1 Phillips screwdriver

How to install

1. Remove the Communication board.
2. Remove the drive fastener (D) from the front side of the Communication module.

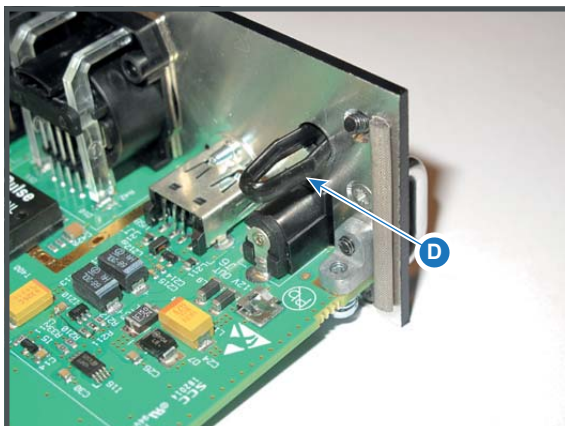


Image 5-9

3. Plug in the antenna wire connector on the WIFI module. Ensure to use bottom connection.

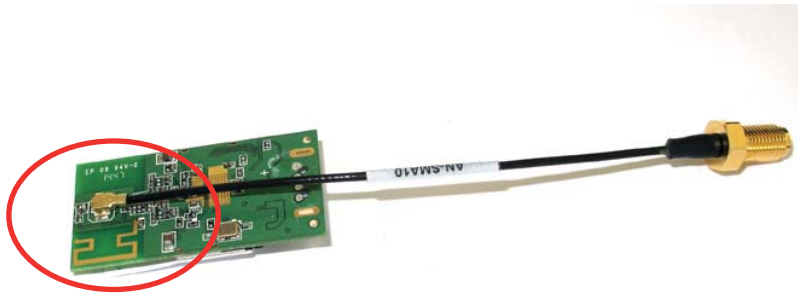


Image 5-10

4. Place the WiFi module (2) upon the plastic socket (1). Note that the plastic socket is provided with two positioning pins which fits the small holes of the WiFi module.
5. Press the plastic cover (3) upon the plastic socket containing the WiFi module as illustrated.

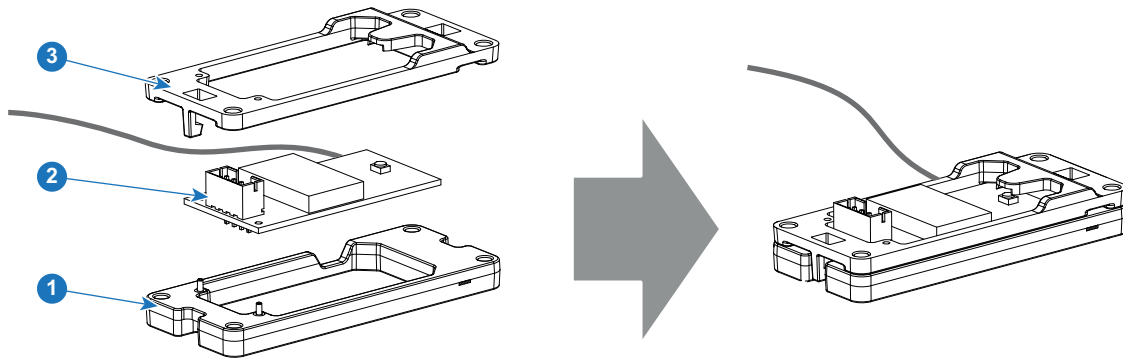


Image 5-11

6. Install the WiFi assembly on the Communication board as illustrated. Use four screws (4) and 4 nuts (5) to secure the WiFi assembly.

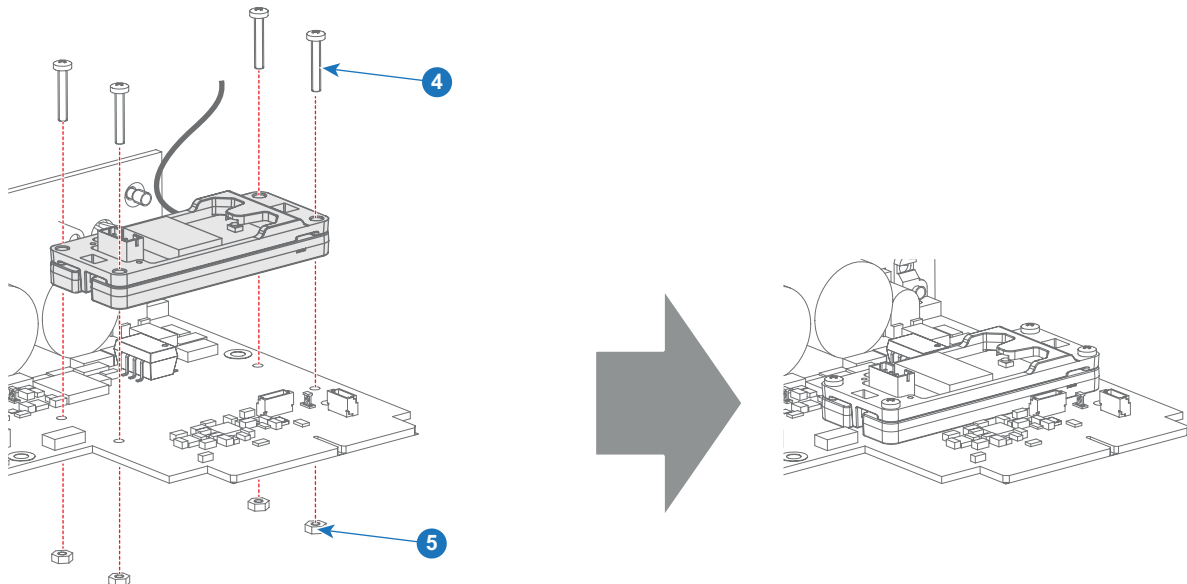


Image 5-12

7. Install the data wire by plugging in the electrical connectors (connector J327, reference 1).

5. Input & Communication

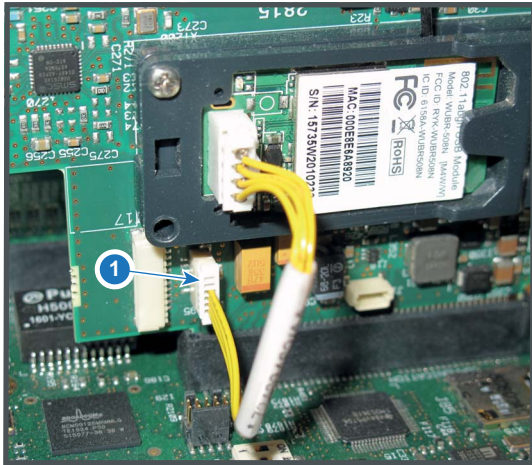


Image 5-13

8. Position the antenna (7) in the hole on the front side of the Communication module.
9. Secure the antenna wire by installing the lock washer and nut (8).

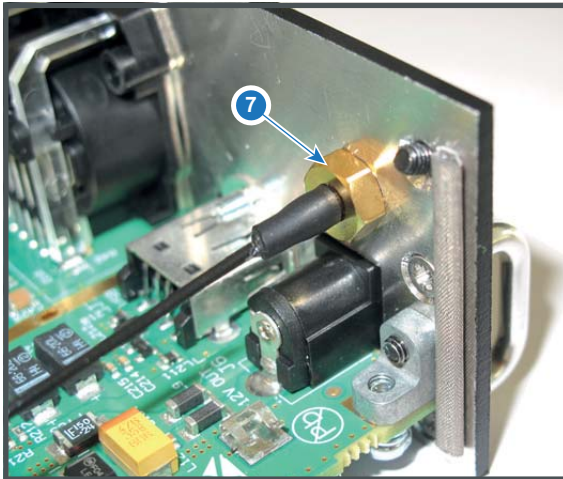


Image 5-14

10. Turn on the antenna (9).



Image 5-15

11. Stick the small white label with certification numbers on the front plate of the communication module somewhere next to the antenna.
12. Reinsert the communication board.

5.9 Installation of the GSM module



WARNING: The procedures below may only be performed by Barco trained and qualified technicians.



CAUTION: Always wear a wrist band which is connected to the ground while handling the electrostatic discharge (ESD) sensitive parts.

Necessary tools

PH1 Phillips screwdriver

Necessary parts

SIM card (not delivered)

How to install

1. Remove the Communication board.
2. Remove the drive fastener (1) from the front side of the Communication module.

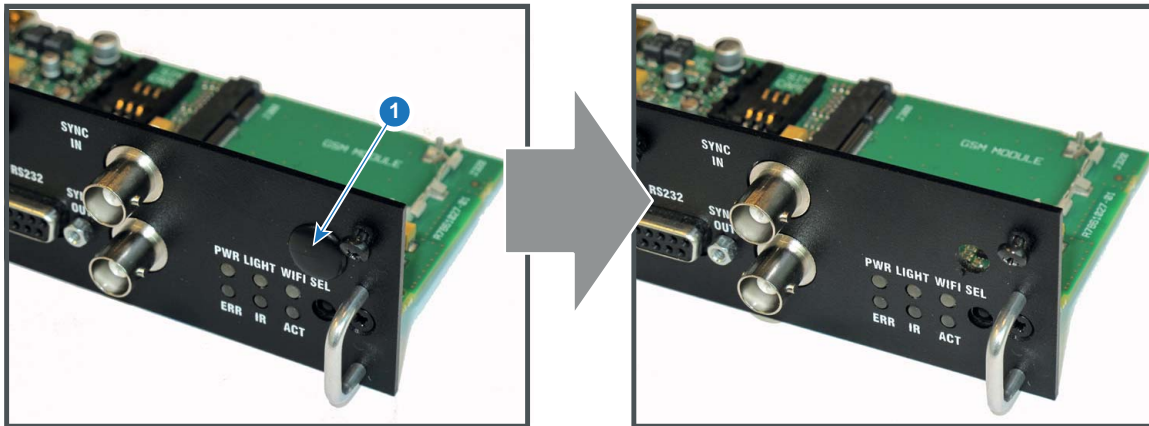


Image 5-16

3. Slide in the SIM card into the SIM card holder (2).
Ensure that the truncated corner of the SIM card is facing the edge of the module (3).

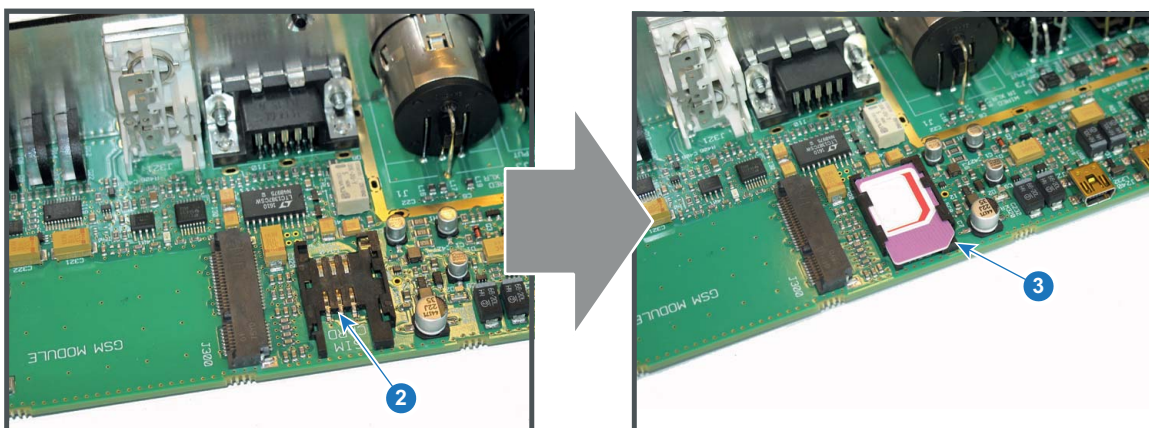


Image 5-17

4. Plug in the antenna wire connector on the front side of the GSM module (4).

5. Input & Communication

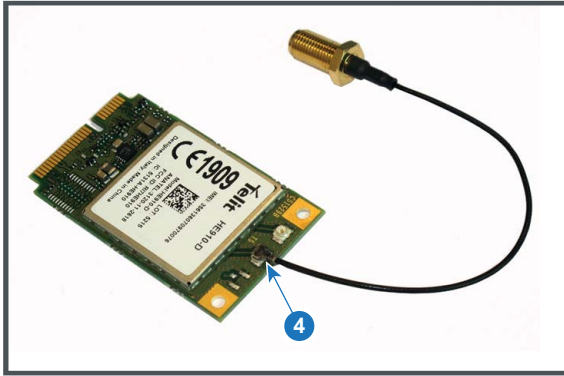


Image 5-18

5. Insert the GSM module with antenna wire into the connector (5). Push the other side of the module down until it clicks so that the module is secured (6).

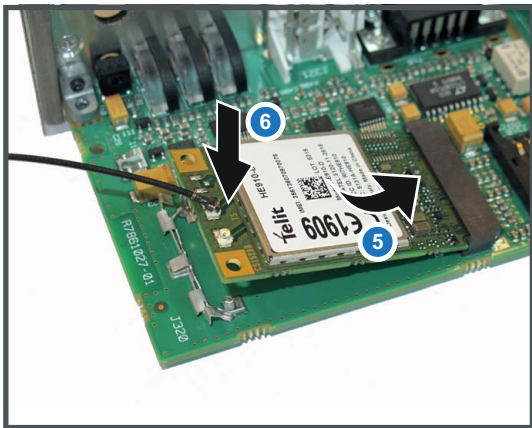


Image 5-19

6. Push the antenna connector through the hole in the front plate and secure the antenna wire by installing the lock washer and nut (7).

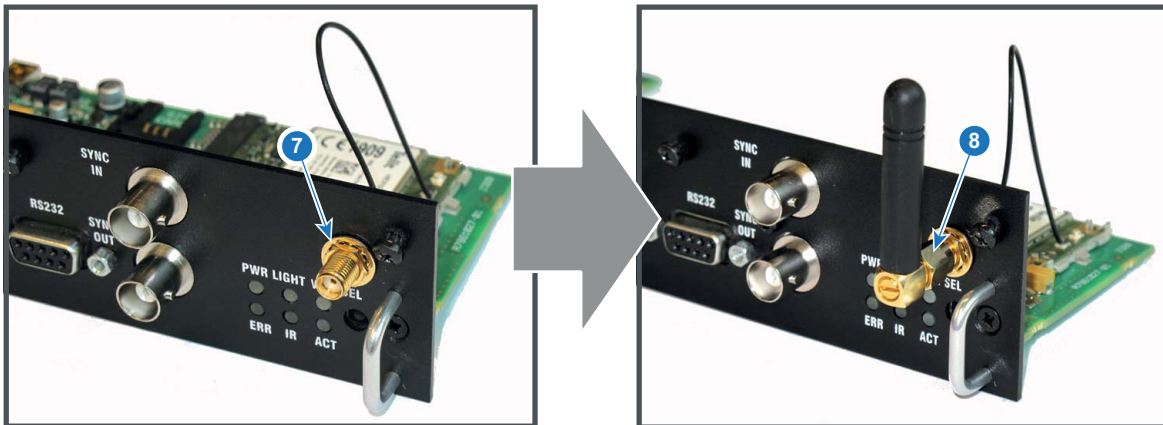


Image 5-20

7. Install the antenna by screwing it on its base (8).
8. Stick the FCC & IC label on the front panel of the Communication module near to the antenna.
9. Reinsert the communication board.

6. GETTING STARTED

How controlling the projector ?

The projector can be controlled by the local keypad, by the remote control unit or by browser application.

Location of the local keypad ?

The local keypad is located on the input side of the projector.

Remote control functions.

This remote control includes a battery powered infrared (IR) transmitter that allows the user to control the projector remotely. This remote control is used for source selection, control, adaptation and set up.

Other functions of the remote control are :

- switching between stand by and operational mode.
- switching to "pause" (blanked picture, full power for immediate restarting)
- direct access to all connected sources.

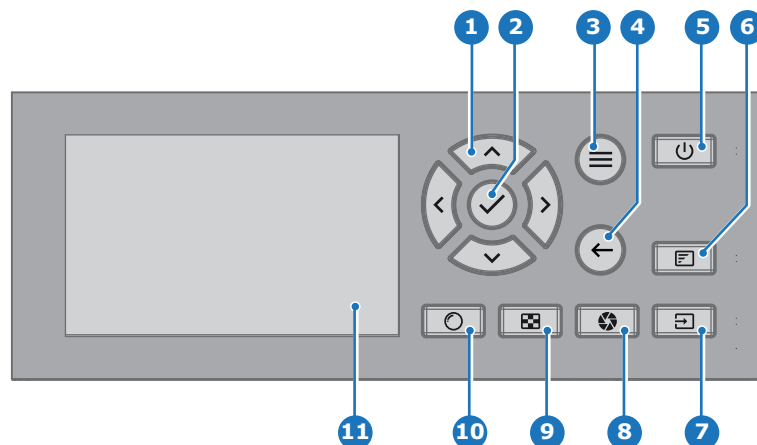
Overview

- Functionality overview
- Power on projector
- Switching to standby
- Power off projector
- Using the RCU
- Projector Address
- Quick setup via Direct access

6.1 Functionality overview

Local Keypad overview

- 1 Menu Selection.
- 2 Menu Activation, OK button
- 3 OSD On/Off.
- 4 Menu Back.
- 5 Power On/Off.
- 6 Touch Panel On/Off.
- 7 Input Selection.
- 8 Shutter Open/Close.
- 9 Test Patterns.
- 10 Lens Menu.
- 11 Touch Panel.

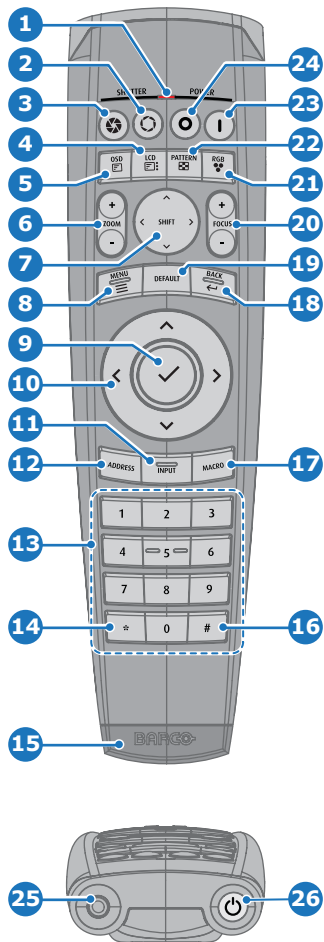


The Keypad gives direct access to several functions, in addition to access to the menu system.

The keypad has a back light that can be switched on and off manually. The light turns off automatically after a preselected time.

The keys are equipped with white and blue backlit LEDs. Power button is equipped with white, blue and red backlit. The LEDs are controlled according to the features available.

Remote Control Unit buttons



- 1 Button pressed indicator.
- 2 Shutter Open.
- 3 Shutter Close.
- 4 Touch Panel On/Off.
- 5 OSD On/Off.
- 6 Lens Zoom.
- 7 Lens Shift.
- 8 Menu Activation.
- 9 Menu Selection, OK button.
- 10 Menu Navigation.
- 11 Input Selection.
- 12 Address button.
- 13 Numeric buttons.
- 14 Backspace (while entering values)
- 15 XLR connector.
- 16 Decimal mark (while entering values)
- 17 Macro button.
- 18 Menu Back.
- 19 Default button.
- 20 Lens Focus.
- 21 Color On/Off.
- 22 Test Patterns.
- 23 Power On.
- 24 Power Off.
- 25 Stereo Jack.
- 26 RCU On/Off.

The projector remote control is a full feature wireless remote control, powered by two (2) standard AA batteries. The battery compartment is on the back side of the remote control.

The remote control is backlit for use in dark environments. It also has an XLR connector for wired connection to the projector. When the wire is connected, the IR beam is switched off.

LCD panel

The LCD panel has two main functions:

1. Showing the menus and adjustment information. and also a mirror of the OSD, (On Screen Display) described in *User Interface* when this is enabled.
2. Information regarding the status of the projector showing this data:
 - Projector status
 - Network address
 - Active source
 - Current firmware version
 - Operation Data
 - Active functions (Enabled Functions).

Toggle between the two indications by using the **Menu** button on the keypad, or on the remote control

The LCD Display will fade out 30 seconds after the last key operation.

6.2 Power on projector

How to power on.

1. Press the mains switch at the back of the projector to switch on this projector.

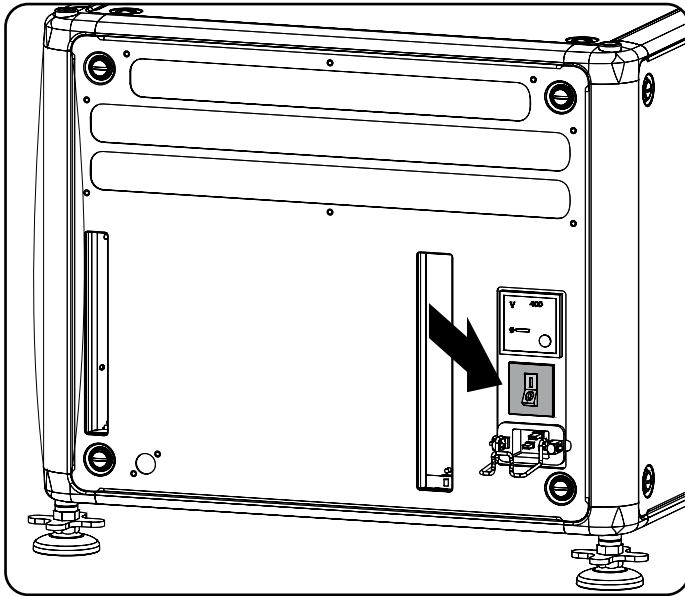


Image 6-1
Main switch

- When '0' is pressed, the projector is switched off.
- When 'I' is pressed, the projector is switched on.

The projector starts up to standby mode. The **Power on/off** button will blink until standby mode is achieved. Once in standby mode, the Power on/off button will be lit WHITE, but the display will be off.

2. Press the **Power on/off** button on the projector, or the **Power On** button on the remote control.

The projector will continue to power on mode. The **Power on/off** button will blink until the projector is ready. Once the projector is ready, the Power button will be lit BLUE.

The start up screen is displayed on the touch panel and when fully started up, it changes to the overview screen.

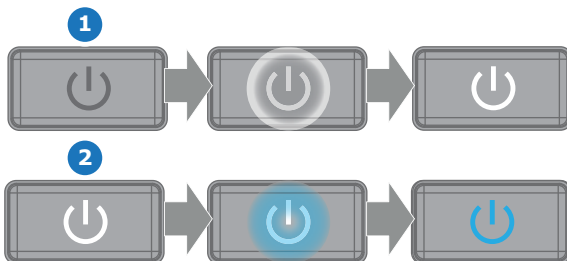


Image 6-2



The current mains input voltage is indicated on the voltmeter just above the power switch.



The background image of the startup screen and info screens can be changed with Projector Toolset with an installed Pulseplug-in.

Status overview

Once the projector is started, press **Status** to get an overview of parameters such as :

6. Getting Started

- Chosen source
- Current resolution and refresh rate
- Device serial number and article number
- Current firmware version and model name
- Current illumination (in percentage)
- Lamp runtime in hours
- Chosen communication method and IP address (if connected)
- Warp status
- Environmental temperature

Starting image projection

1. Make sure the available sources are connected to the appropriate input ports.
Tip: If properly connected, the "SYNC" LED will lit up ORANGE.
2. Press the **Input Selection** button on the keypad or on the remote control until:
 - the LED of the selected source (the "SEL" LED) lit up GREEN, and
 - the image of the selected source is projected.

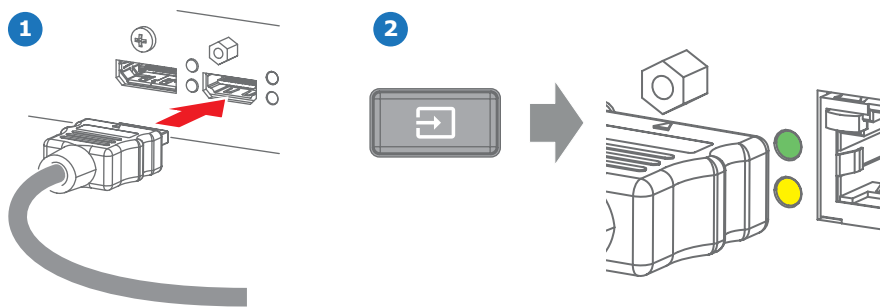


Image 6-3

6.3 Switching to standby

How to switch to standby

1. Press and hold the **Power on/off** button for 3 seconds on the local keypad, or press the **Power Off** button on the remote control.

The projector goes to standby mode. The after-cooling cycle will start (up to 300 seconds). During this period the Power on/off button will blink. Once the after-cooling cycle has ended, the projector will be in standby mode and the Power on/off button will be lit WHITE.

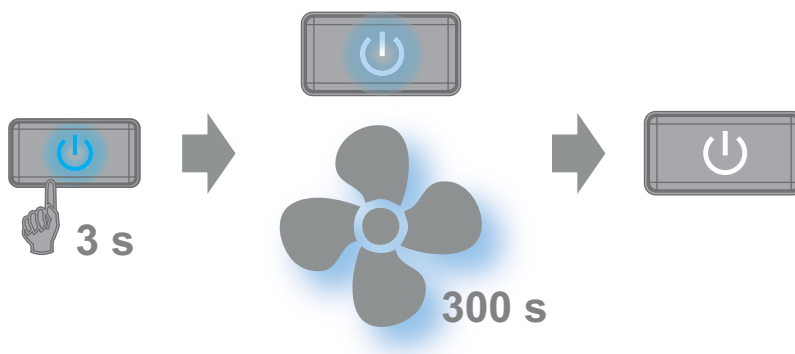


Image 6-4

6.4 Power off projector



CAUTION: This procedure assumes the projector is in standby mode.

How to power off

1. Switch off the projector with the mains switch. '0' must be pressed.

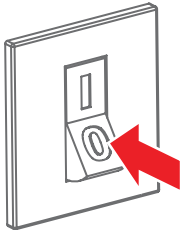


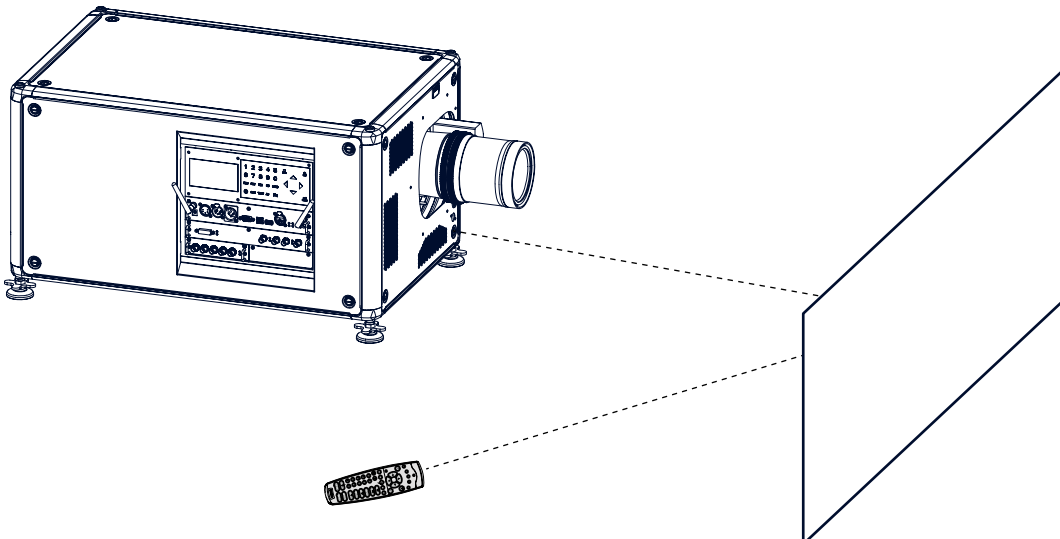
Image 6-5

2. Unplug the power cord from the projector.

6.5 Using the RCU

Pointing to the reflective screen

1. Point the front of the RCU to the reflective screen surface.

Image 6-6
IR control via reflective screen

Hardwired to the XLR input

1. Plug one end of the remote cable in the connector on the bottom of the RCU.
2. Plug the other end in the big connector on the communication interface of the projector, labelled **Remote CTRL**.

Note: *Plugging the remote control will switch the broadcast address of the remote control to the default value '0'. This is the only broadcast address that will work when hardwired. If you want to change the broadcast address after disconnecting the remote control, see "Projector Address", page 68.*

Pointing directly to the IR sensor

When using the wireless remote control, make sure you are within the effective operating distance (30 m, 100 ft in a straight line). The remote control unit will not function properly if strong light strikes the sensor window or if there are obstacles between the remote control unit and the projector IR sensor.

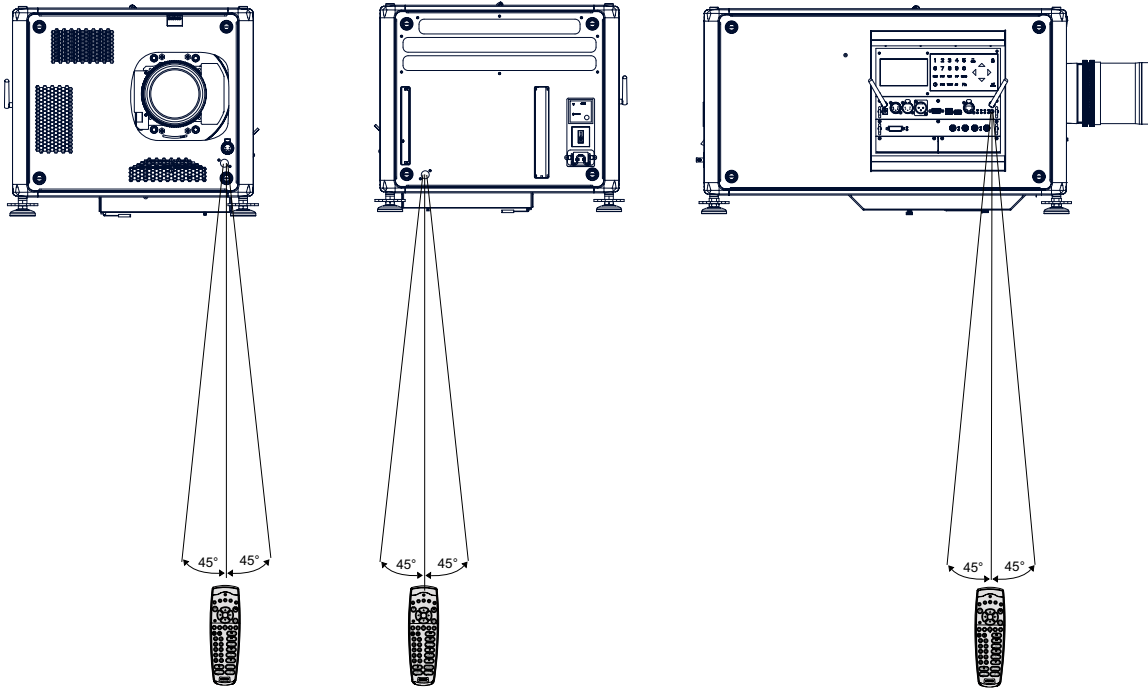


Image 6-7
RCU to one of the IR sensors

6.6 Projector Address



Projector address

Address installed in the projector to be individually controlled.



Broadcast address

Projector will always execute the command coming from a RCU programmed with that broadcast address.

6.6.1 Controlling the projector

Why a projector address?

As more than one projector can be installed in a room, each projector should be separately addressable with an RCU or computer. Therefore each projector has its own address.

Set up an individual Projector Address

The set up of a projector address can be done via the software.

Projector controlling

Every projector requires an individual address between 0 and 255.

When the address is set, the projector can be controlled now:

- with the RCU: only for addresses between 0 and 31.
- with a computer: for any address between 0 and 255.

Broadcast Address

Every projector has a broadcast (common) address '0' or '1'. The default address is '0'.

The choice between '0' and '1' can be selected in the GUI: "System Settings" → "Communication" → "IR Control".



Placing new batteries in the remote control or plugging the remote to a projector via a cable will automatically reset the address back to its default value '0'.

6.6.2 Displaying and Programming addresses into the RCU

Displaying the Projector Address on the Screen.

1. Press the **Address** button to see the projector address (proximately 2 seconds).
The projector's address is displayed on the LCD status screen.

How to Program an Address into the RCU?

1. Press the **Address** button until the *Button pressed indicator* lights up continuously (proximately 5 seconds).
2. Enter the address with the digit buttons within the time the indicator lights up (also proximately 5 seconds).

Note: That address can be any value between 0 and 31.

Tip: A few examples:

To enter address 3, press "3" digit button on the RCU to set the RCU's address to 3 and wait until the button pressed indicator is out. Alternatively, you can also press "0" and "3". This way, the button pressed indicator goes out immediately.

To enter address 31, then press "3" and "1" on the digit button on the RCU and the button pressed indicator goes out immediately.

6.7 Quick setup via Direct access

Quick source selection

1. Press the **Input** button on the remote control or local keypad.

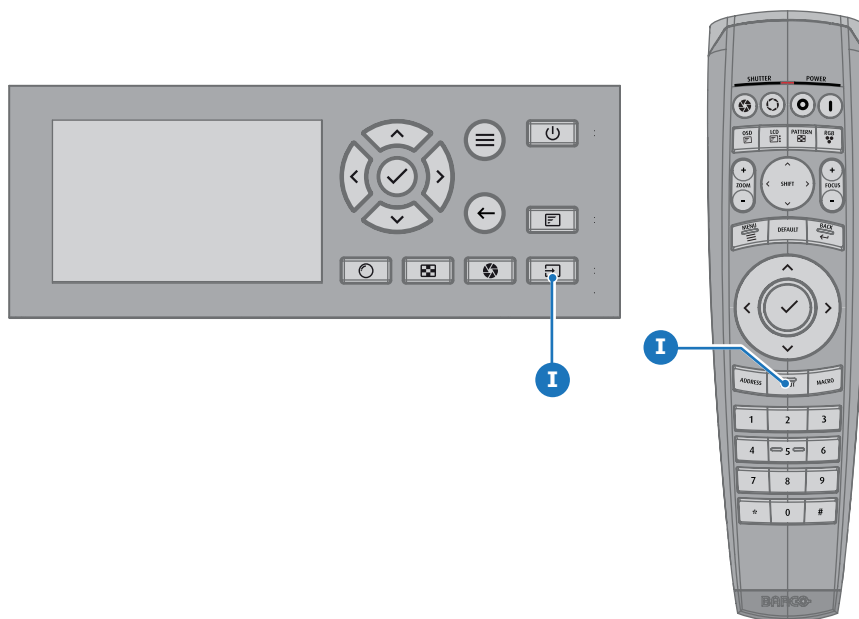


Image 6-8

The source selection menu opens.



Image 6-9
Input selection

2. Use the arrow keys to select the desired source.

Quick test pattern selection

1. Press the Test pattern button on the remote control or local keypad.

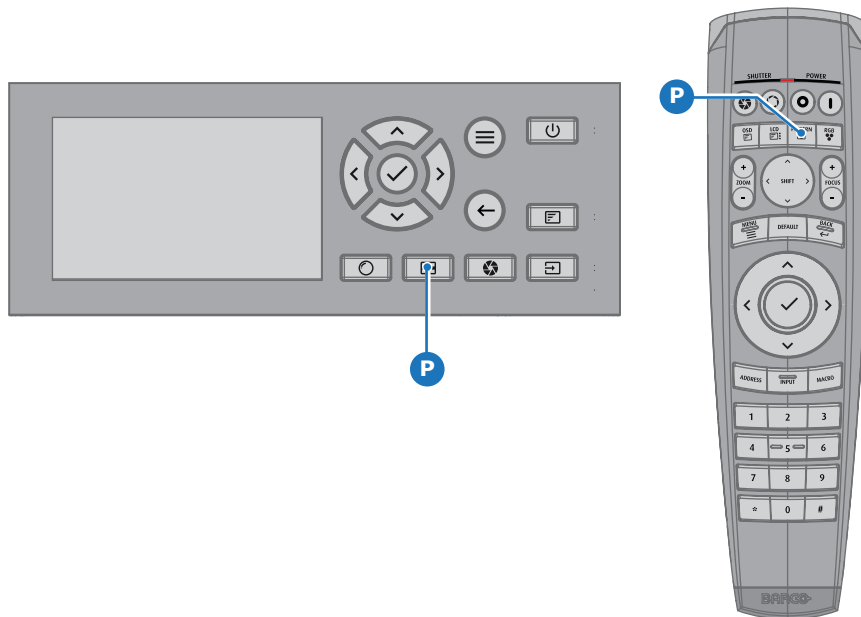


Image 6-10

- A first test pattern will be displayed.
2. Press as many times on that button until the desired pattern is displayed

7. GRAPHIC USER INTERFACE (GUI)

Overview

- Overview
- Navigation
- Test Patterns

7.1 Overview

GUI - Main Menu overview

The projector on screen display (OSD) is the primary user interface (UI). From here, you can review and adjust all projector and display settings.

The OSD interface uses tabs to display the main menu. Each main menu contains submenus.

The OSD can be disabled by pressing the OSD on/off button.

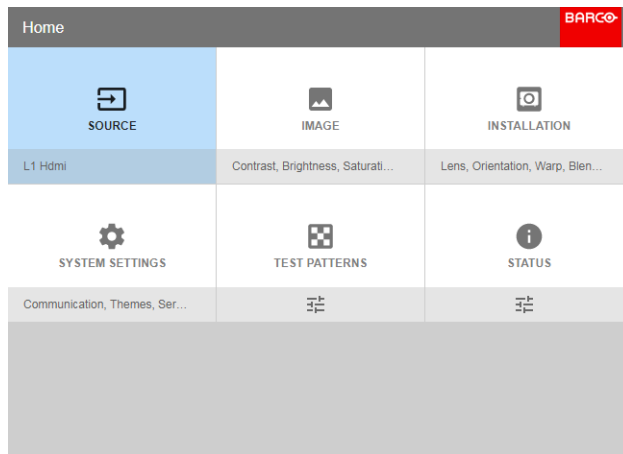


Image 7-1
Home menu

The projector's software platform uses access levels what each user can do. A standard user has access to all projector functionality. A certified service technician has also access to the service menu. This menu is password protected.

7.2 Navigation

Navigation via the RCU or local keypad

Navigating the OSD can be done using the remote control or the local keypad.

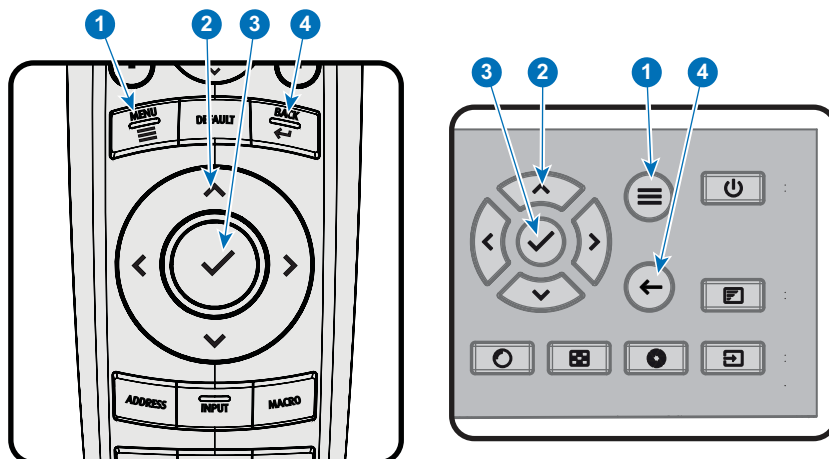


Image 7-2

7. Graphic User Interface (GUI)

To start up the menu structure, press **MENU** (1).

Use the arrow keys (**Menu Navigation** buttons) to navigate to the desired menu item (2). The background color changes to light blue.

Press the **Menu Selection** button (center key of the arrow keys), also called **OK** button, to activate that item and to jump one level deeper (3).

Use the numeral keys to enter values, or use the arrow keys to move the bar scale up or down.

Press the **Back** button to go up one level (4).

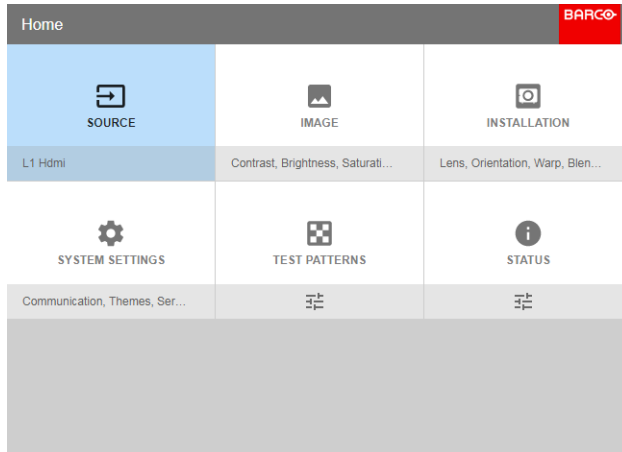


Image 7-3
Home menu

Remark: a blue slider bar on the right side of the window means that there are more items to show than those currently displayed.

Define values

Menu settings are displayed using check boxes, bar scale sliders, and drop-down lists.

To set a value:

- Press **OK** to select or deselect a checkbox (turn a function ON or OFF).
- Use the arrow keys to move the bar scale slider up or down on the value line. For a bar scale 0-9, each step will equal 10% of the total value.
- To enter the value as a direct number, press **OK**, input the digit(s), and then press **OK** again to execute and exit cursor mode e.g. OK 79 OK.
Within an input field, use the * button as backspace button to remove an entered digit. Use the # button to enter a dot (.).

Changes to values are implemented dynamically.

To enter values with the local keyboard, use the arrow keys to select the first digit, press **OK**. Select the second digit and press **OK**. Continue until all digits are entered. Close the action by selecting the **enter** (↵) button and press **OK**. Select the **backspace** button and press **OK** to remove the last entered digit.

Menu memory

The OSD menu remembers the last selected sub-item as long as the projector is running. The menu memory is reset when restarting the projector from standby.

7.3 Test Patterns

How to use test patterns

1. In the main menu, select *Test Patterns*.

Or,
Push the *Test Patterns* button on the RC or on the local keypad.

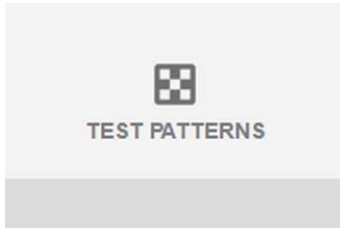


Image 7-4
Main menu, Test Patterns

2. In the Test Patterns menu, select either *Internal*, or *Output* test patterns.

3. In the chosen submenu, select the desired test pattern from the list.

You can select one of the following *Internal* test patterns:

- Color bars
- Checker board
- Blue / Green / Red / White
- Convergence
- Focus
- Aspect
- Scheimpflug White / Green
- Cross hatch
- Monoscope

You can select one of the following *Output* test patterns:

- Vertical / diagonal lines
- Step bar
- Blemish zone
- Checkerboard
- Color bars
- Convergence
- FIP
- Full screen black / white / blue / green / red / cyan / magenta / yellow
- Grid
- Vertical Ramp
- Horizontal Ramp
- MTF

4. To turn the test pattern off, return to the previous menu.

8. GUI – SOURCE

About the Source menu

This menu is used to select, review and configure sources into the projector.

Overview of features

- Source Selection
- Connector Settings

8.1 Source Selection

How to select?

1. Press **Menu** to activate the menus and select *Source*.

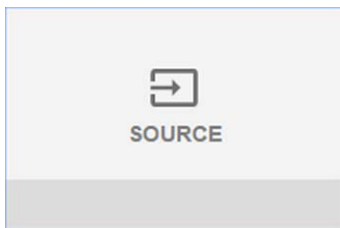


Image 8-1
Select Source

2. Press **OK**.

The *Select Source* menu is displayed with the actual available sources filled out.



Image 8-2
Input selection

3. Select the desired input.

8.2 Connector Settings

How to configure the connector

1. Press **Menu** to activate the menus and select *Source*.

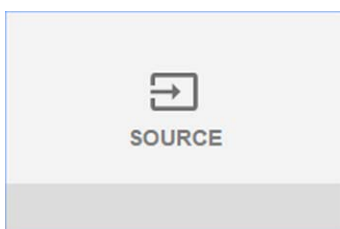


Image 8-3
Select Source

2. Press **OK**.

8. GUI – Source

The *Select Source* menu is displayed with the actual available sources filled out.

3. Scroll down to the bottom of the list and select *Connector Settings*.



Image 8-4

The available sources are displayed.



Image 8-5
Select source

4. Select the desired connector.

The **Connector Settings** menu for this connector will be displayed. All default values are **Auto**.

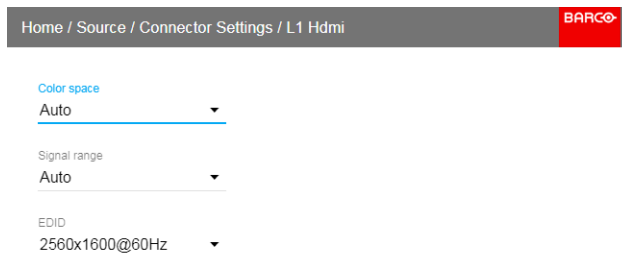


Image 8-6

5. To apply a limit on the used color space, select one of the other values in *Color space*.
6. To apply a limit on the used signal range, select one of the other ranges in *Signal Range*.

9. GUI – IMAGE

Overview of features

- Setting image levels manually
- P7 Realcolor
- Setting the output resolution
- HDR – Perceptual Quantizer (PQ)

9.1 Setting image levels manually

Purpose

Contrast: Change the contrast of the complete output signal (main and PiP window together) of the projected image.

Brightness: Change the brightness of the complete output signal (main and PiP window together) of the projected image.

Saturation: Change the saturation of the complete output signal (main and PiP window together) of the projected image.

How to set up Contrast

1. In the main menu, select *Image* → *Contrast*.

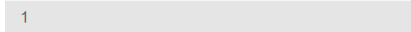


Image 9-1
Image menu — Contrast

2. Use the ◀ or ▶ key to change the contrast enhancement until the desired value is reached (adjustable between 0 and 2).

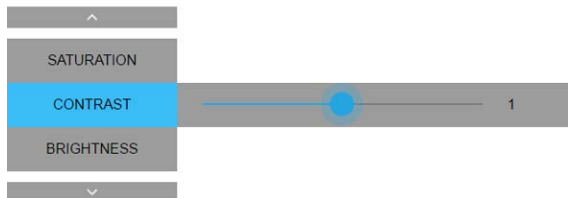


Image 9-2
Contrast slider

3. Use the ▲ or ▼ key to select *Saturation* or *Brightness*.
Or,
go to *Home - Image* and select *Saturation* or *Brightness*.

How to set up Brightness Level

1. In the main menu, select *Image* → *Brightness*.

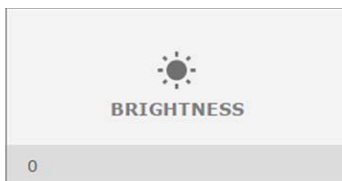


Image 9-3
Image menu — Brightness

9. GUI – Image

2. Use the ◀ or ▶ key to change the brightness until the desired value is reached (adjustable between –1 and 1).

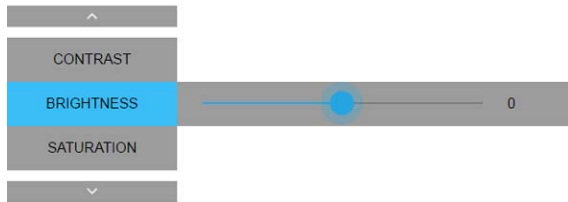


Image 9-4
Brightness slider

3. Use the ▲ or ▼ key to select *Contrast* or *Saturation*.
Or,
go to *Home - Image* and select *Contrast* or *Saturation*.

How to set up Saturation Level

1. In the main menu, select *Image* → *Saturation*.

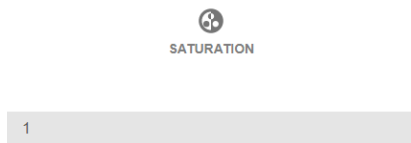


Image 9-5
Image menu — Saturation

2. Use the ◀ or ▶ key to change the saturation until the desired value is reached (adjustable between -1 and 1).

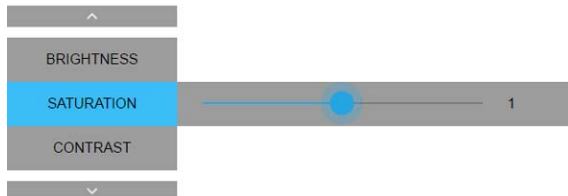


Image 9-6
Saturation slider

3. Use the ▲ or ▼ key to select *Brightness* or *Contrast*.
Or,
go to *Home - Image* and select *Brightness* or *Contrast*.

9.2 P7 Realcolor

Purpose

When blending images from multiple projectors, the measured color coordination of each projector can be altered to a desired common level. This so that the projected colors are identical over all projectors used.

How to set the P7 desired values

1. In the main menu, select *Image* → *Advanced* → *P7 Realcolor*.

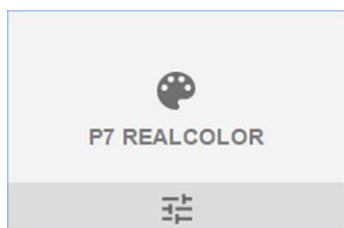


Image 9-7
Advanced menu — P7 Realcolor

The P7 menu is displayed.

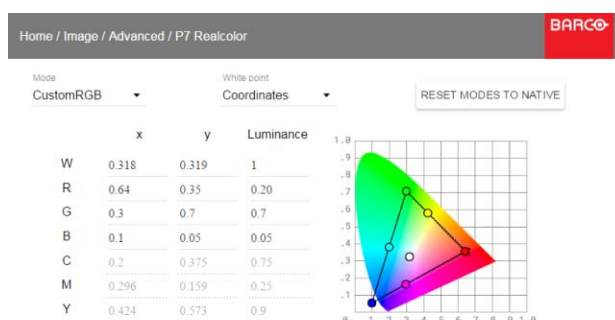


Image 9-8
P7 Realcolor menu

2. Select the desired *Mode*. Choose one of the following:
 - **Native**: Default mode, with default values. All other options in the P7 menu are disabled.
 - **Custom RGB**: 3–point color configuration. In RGB mode, the C, M and Y coordinates will be calculated automatically based on the R, G and B coordinates.
 - **Custom RGBCMY**: 6–point color configuration (both RGB and CMY). In RGBCMY mode, each color can be given a specific coordinate within the measured color triangle.
 - **Custom WHITE**: Configure only the White temperature.
3. Define the coordinates for each available color.
Click on a coordinate value and select the current value. Enter the desired value with the numeric keys.
Note: *You can only pick coordinates within the measured color triangle.*
4. For **Custom White**, click on White point and choose one of the following:
 - **Coordinates**: Configure the white point via specific coordinates. The white point is specified using an x, y coordinate in the CIE 1931 Chart.
 - **Temperature**: Configure the white point via a color temperature slider. The white point is specified on a Kelvin scale between 3200K and 13000K tracking along the black body curve.



You can reset all coordinates to the default values (to native) by selecting **Reset modes to native**. Press **OK** button to reset.

9.3 Setting the output resolution

How to choose the output resolution

1. In the main menu, select *Image* → *Advanced* → *Output resolution*.



Image 9-9
Advanced menu — Output resolution

The current active output resolution is indicated at the bottom of the selection button.

2. Select the desired output resolution.

Possible resolutions:

- 4K UHD: 4K images, using the actuator.
- WQXGA: 2K images. In this mode, the actuator is disabled.

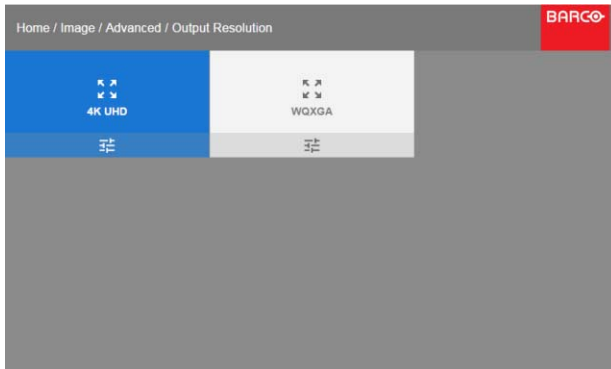


Image 9-10
Output resolution

9.4 HDR – Perceptual Quantizer (PQ)

About PQ

Perceptual Quantizer (PQ) is a, electro-optical transfer function (EOTF) that allows for the display of High Dynamic Range (HDR) content with a luminance level of up to 10 000 cd/m² and can be used with the Rec. 2020 color space.

If your provided HDR content has been mastered with Perceptual Quantizer (e.g. Dolby Vision or HDR10), you can adapt the luminance on screen to adapt to the provided content.



For optimal display of HDR content, this is just one value that will influence the projected image. When entering the desired screen luminance, take into account the distance of the projector to the screen and the quality of the screen used.

How to set the PQ?

1. In the main menu, select *Image* → *Advanced* → *PQ*.



Image 9-11

The PQ menu is displayed

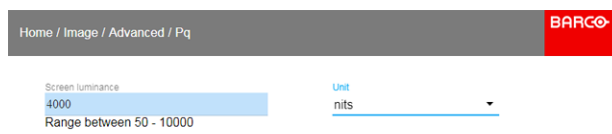


Image 9-12

2. Select the desired Unit (nits or foot-lambert).
3. Enter the Screen luminance (either in nit, or foot-lambert).

10. GUI – INSTALLATION

Overview of features

- Configuring the lens, zoom-focus
- Configuring the lens, shift
- Configuring the lens, high contrast
- Orientation
- Warping
- Blending
- Lamp illumination
- Active 3D Set up

10.1 Configuring the lens, zoom-focus

What can be done?

Once a lens has been installed in the projector, you can fine-tune the projected image.

Zoom - Focus

1. In the main menu, select *Installation* → *Lens* → *Zoom focus*.



Image 10-1
Lens menu, Focus & Zoom

2. Use the ▲ or ▼ key to zoom the lens in or out.
Use the ◀ or ▶ key to focus the lens to far or near.

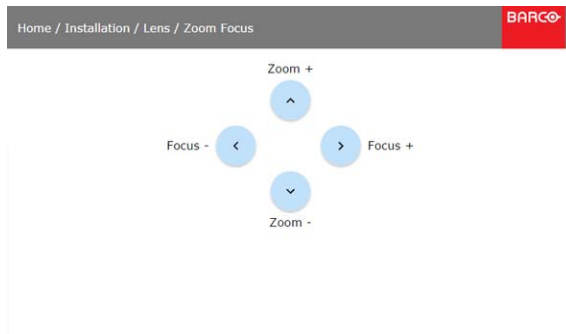


Image 10-2
Zoom and focus adjustment

10.2 Configuring the lens, shift

What can be done?

The image can be shifted by using the vertical and horizontal lens shift.



Lens shift is only possible when lens shift is calibrated. Please refer to the lens calibration section in *System Settings* → *Lens Calibration* menu.

Vertical and Horizontal Shift

1. To change the position of the projected image, select *Installation* → *Lens* → *Shift*.



Image 10-3
Lens menu, Lens shift

2. Use the ▲ or ▼ key to shift the lens (image) in vertical direction.
Use the ◀ or ▶ key to shift the lens (image) in horizontal direction.

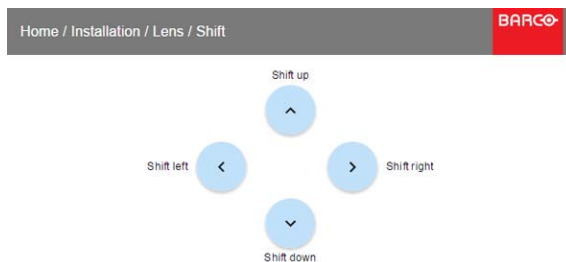


Image 10-4
Shift adjustment

10.3 Configuring the lens, high contrast

What can be done?

The high contrast mode can be activated or deactivated.

High Contrast

1. To (de)activate high contrast mode, select *Installation* → *Lens* → *High Contrast* .

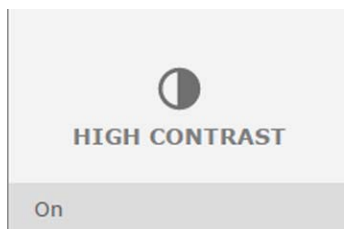


Image 10-5

The actual state is indicated on the bottom of the High Contrast button.

2. Click on or off to activate / deactivate high contrast mode.

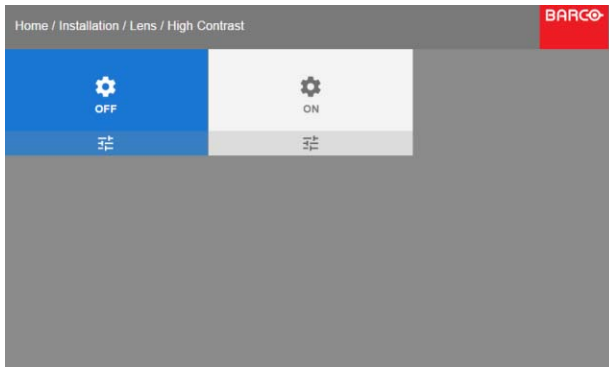


Image 10-6
High contrast ON-OFF

10.4 Orientation

What can be done?

The way of physical installation of the projector can be defined to the projector.

The following installation are possible:

- front/table
- front/ceiling
- rear/table
- rear/ceiling

How to set the correct orientation

1. In the main menu, select *Installation* → *Orientation*.



Image 10-7
Installation menu, Orientation

The Orientation menu is displayed.

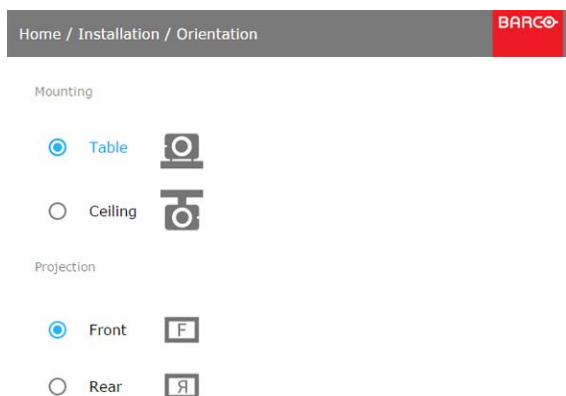


Image 10-8
Orientation menu

2. Use the ▲ or ▼ key to select the desired mounting position and press **OK** button to activate.
Use the ▲ or ▼ key to select the desired projection position and press **OK** button to activate.

10.5 Warping

10.5.1 About warping

Overview

Image warping is the process of digitally manipulating an image to compensate for the distortion of the screen. Consequently, it can also be used to generate an image with irregular shape.

While an image can be transformed in various ways, pure warping doesn't affect the colors.

10.5.2 Warping – On/Off

About warping on/off

By toggling between on and off the warping functionality can be enabled or disabled.

How to toggle

1. In the main menu, select *Installation* → *Warp*.

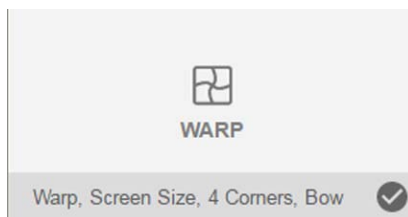


Image 10-9
Installation menu, Warp

2. In the Warp menu, click *Warp* to toggle between *On* and *Off*.



Image 10-10



Image 10-11

10.5.3 Warping – Screen Size

About (Warp) Screen Size adjustment

If the used source aspect ratio is different than the projector aspect ratio, e.g. source is 16:9 and projector is 16:10, then black bars will be projected. In the example case a black bar on top and bottom of the image will be projected. The warp area contains not only the image information but also the black bars. If we want to position e.g. the active left top corner exactly on the screen using 4 corner warp, then it is very hard to do that as we are moving the black left top corner and we do not have control over the exact position of image left top corner. By moving the outline of the warp screen size to the active image information, the corner points of the warp area are now exactly on the corner points of the active image information and makes warping much easier.



Image 10-12
Warp outline example

How to adjust the image?

1. In the main menu, select *Installation* → *Warp* → *Screen Size*.



Image 10-13
Warp Menu, Screen Size

The Screen Size menu is displayed.

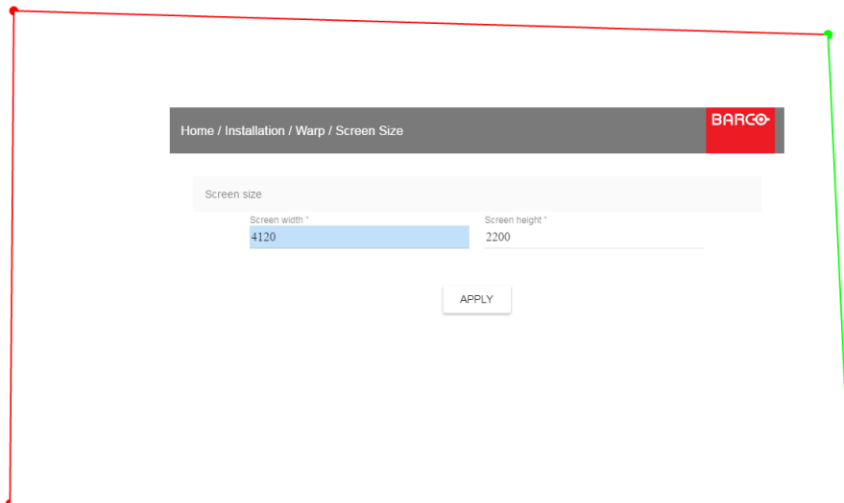


Image 10-14
Screen size

2. Select either *Screen width* or *Screen height*.
3. Set the new value to shrink either the width or height of the warp outline so that the outline is equal with the active source.
Tip: A red border will be projected along with the current image. The border is a visual tool, showing the result of the adjusted outline.
4. Click **Apply**.

10.5.4 Warping – 4 corners adjustment

About 4 Corners adjustment

4 corner adjustment is typically used when the mechanical installation of the projector prevents it from pointing perpendicularly at the screen. For example, you can overshoot the screen and use 4 corner adjustment to pull your projected image corners back into the screen.

Some examples:



Image 10-15
4 corner adjustment

How to adjust the image?

1. In the main menu, select *Installation* → *Warp* → *4 Corners*.



Image 10-16
Warp menu, 4 Corners

The 4 Corners menu is displayed.

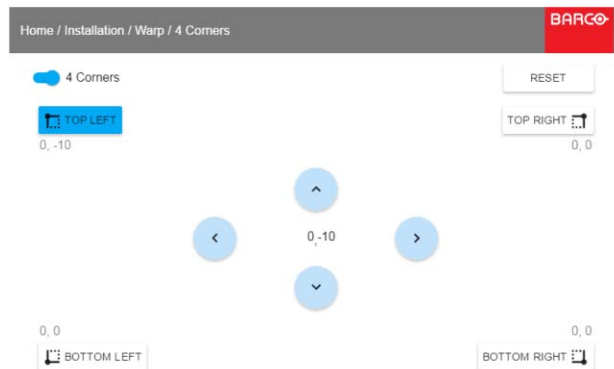


Image 10-17
4 Corners Warping

2. To enable 4 Corners warping, make sure the *4 corners* slider is set to *On*. The slider is enabled when set to the right and when it is colored blue.
3. To set warping on one or more of the four corners, select one of the four corners.
4. Set the desired X and Y coordinates for this corner, using the arrow keys.
Tip: A red border corner will be projected along with the current image. The border is a visual aid, showing the result of the warped corners.
5. Repeat from step 3 for each corner, until all corners are warped in the desired position.



To reset the 4 corner adjustments, select *Reset* and press the OK button.

10.5.5 Warping – Bow

About bow adjustment

A bow distortion can be adjusted so that a normal image is displayed. Positive adjustments introduce more outside bow distortion. Negative adjustments introduce more inside bow distortion.

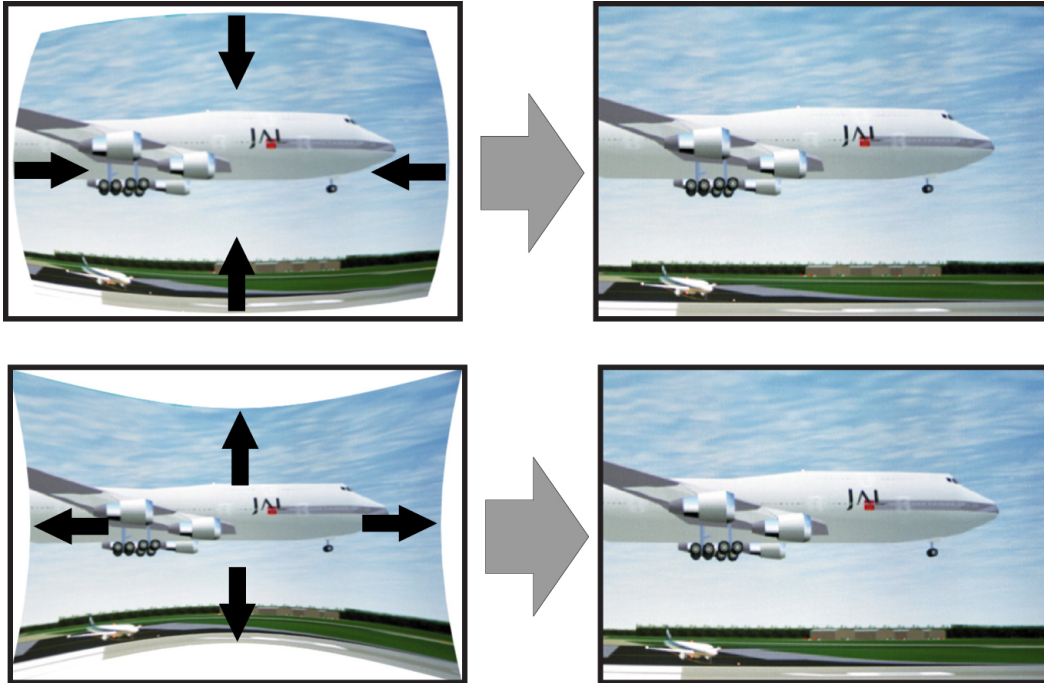


Image 10-18
Bow distortion

How to adjust

1. In the main menu, select *Installation* → *Warp*.

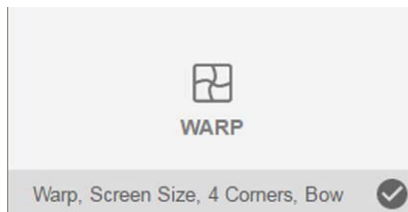


Image 10-19
Installation menu, Warp

2. In the Warp menu, select *Bow*.



Image 10-20
Warp menu, Bow

A check symbol at the bottom right corner indicates that the bow function is activated.

3. To enable Bow correction, make sure the *Bow* slider is set to *On*.
The slider is enabled when set to the right and when it is colored blue.

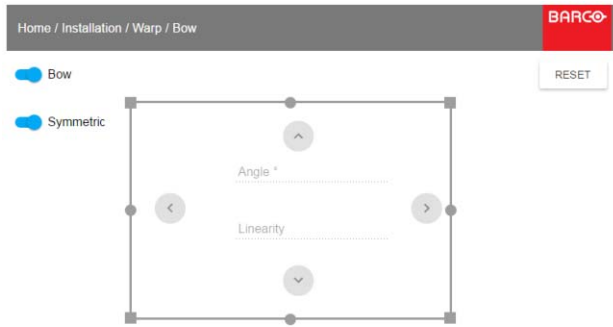


Image 10-21
Bow adjustment

4. To enable a symmetric adjustment, make sure the *Symmetric* slider is set to *On*.
The slider is enabled when set to the right and when it is colored blue.
5. Select an adjustment point and use the arrow keys to adjust.
When selecting a mid point of an edge, the bow angle can be adjusted.
When selecting a corner point, the linearity can be adjusted.



To reset the bow adjustments, select *Reset* and press the OK button.

10.5.6 Warping – Warp files

About custom Warp Files

Next to setting your specific warp configuration in the GUI, you can also upload or download a custom warp grid in xml format to/from the projector. This is a time-saving option when multiple projectors need an identical Warp configuration.

To upload or download warp files you can use Projector Toolset or upload/download the warp grid in the format of an xml file. Alternatively, you can contact the “file endpoint” directly via the curl program or some other tool that supports http upload.

For more information on uploading/downloading Warp files using the Projector Toolset, refer to the Projector Toolset user manual.

For more information on uploading/downloading Warp files using curl or other tools that supports HTTP upload, refer to the Pulse API Reference Guide.

How to activate an uploaded Warp grid?

1. In the main menu, select *Installation* → *Warp*.

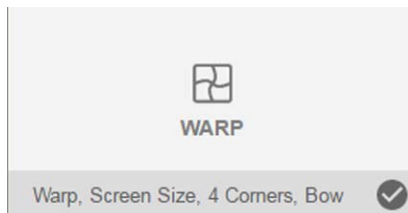


Image 10-22
Installation menu, Warp

2. In the Warp menu, select *Files*.

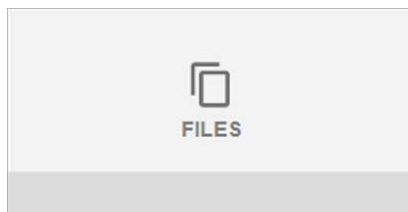


Image 10-23
Warp menu, Files

The Warp Files menu is displayed.



Image 10-24

3. If any custom Warp files are available, select the desired warp file.

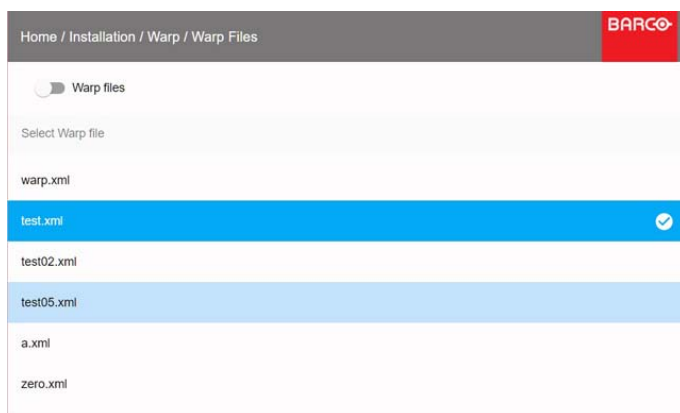


Image 10-25

4. Click on the on/off button on top to activate the selected warp file.



Image 10-26

10.6 Blending

About Blending

Blending is used in multi channel installation to have a seamless transition between the channels. Image blending gives the appearance of a single view, thus achieving realistic immersion for the majority of wide screen applications.

The principle is that the light intensity in the blend zone from each projector will be adjusted individually, so that the rendering on the screen are perceived as from one projector.

From the start (offset) position, you can blend zone size per edge (left, top, right, bottom). For each edge there will be a drop-off curve for the blend zone.

10.6.1 Blend Zones

About offset and blending width or height

Offset is used to clip the image. The larger the offset value, the more the image is masked (by black bar) at the corresponding side. E.g. Top offset of 100 will blank the top 100 lines.

Height or width is used to create a blending zone with a smooth brightness drop off. This is used to compensate for the double brightness in overlap areas. The value is the size of the blended area in pixels.

How to adjust blend zones?

1. In the main menu, select *Installation* → *Blend* → *Blend Zones*.



Image 10-27
Blend menu, Zones

The Blend zones menu is displayed

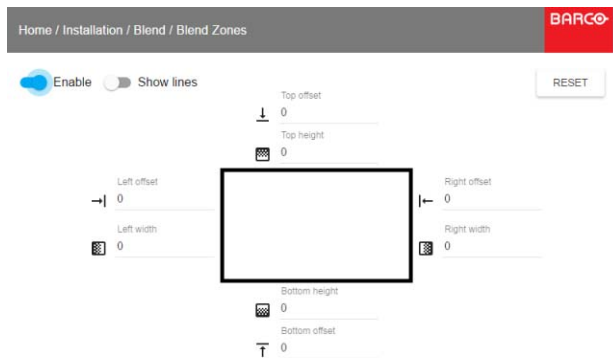


Image 10-28
Blend Zone menu

2. To enable blending, put the switch to the right. The color of the switch becomes blue when activated.
3. To show blending lines on the screen, put the switch before Show lines to the right. The color of the switch becomes blue when activated.
4. Specify the start position (offset)(1) for the blending height and width, setup an size value (2) to determine the width of the blending area.

When the blending lines are activated, you will get a visual indication of the screen of the installed blending area.

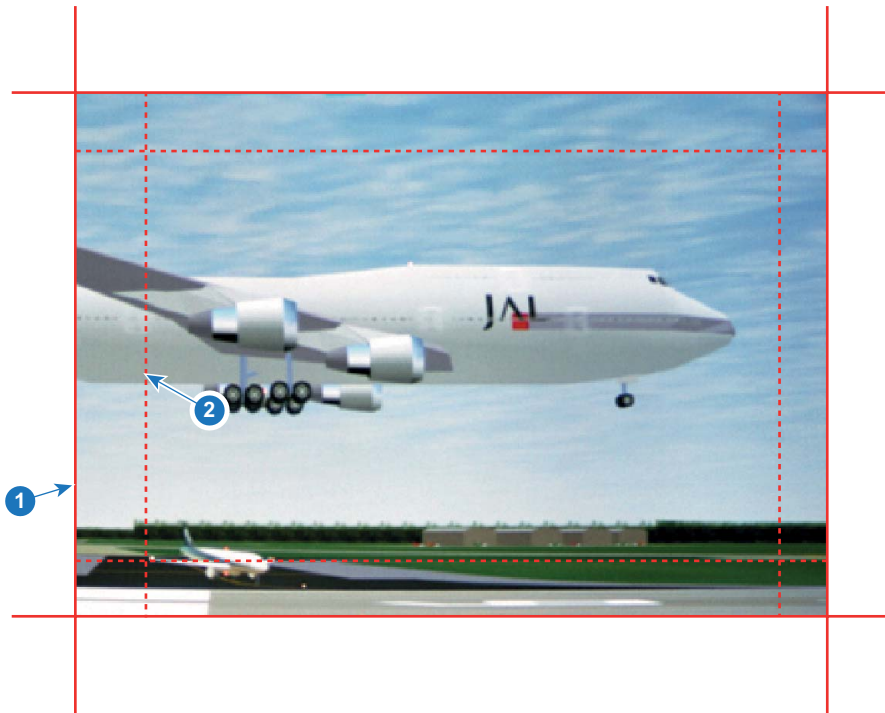


Image 10-29

- 1 Start position (offset)
- 2 Blending width

5. First select an offset and click **Menu selection** to activate the selection. Use the arrow keys to change the value (the start position of the blending) Repeat for the other edges if necessary.
6. Select the height or width and setup a size value. Repeat for the other edges if necessary. The value will range from 0 to 1.0 (linear to S-curved), with a default value of 0.5.

Example of the use of blending

When projecting an image with 2 projectors, there is always an small overlap that should be corrected by using the blending function.



In order to obtain a satisfying result for the Blend function, the overlap / Blend zone are recommended to be at least 10% of the picture width.

The basic principle is that the overlap setup in the source shall correspond with the blend width setup for the projector. That means that if the overlap zone for the source is set to 500 pixels, the width of the blend zone for the projector also must be set to 500 pixels.

First step is to align the image from the projectors as accurate as possible in a mechanical way, meaning without any optical corrections. At the same time, establish an overlap in the pictures between the two screens.

Then adjust the remaining irregularities by using the shift and warp features in the projectors to obtain the last fine tuning of the alignment.

Enable blending and activate Show lines.

First set the blending width for the right edge of the first projector. Enter a width value equal to the overlap area (width1).

Repeat for the left edge of the second projector.

Adjust the offset to cut the image on each side (masking).

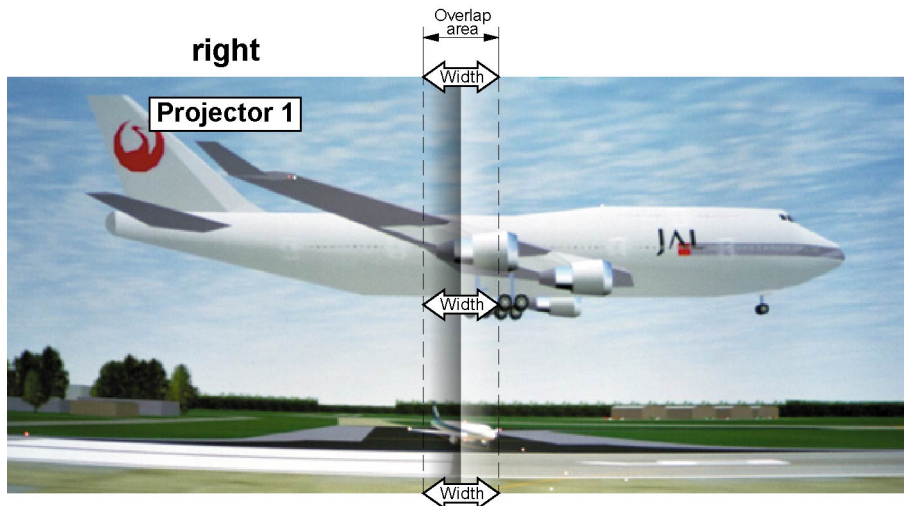


Image 10-30
Set up for projector 1

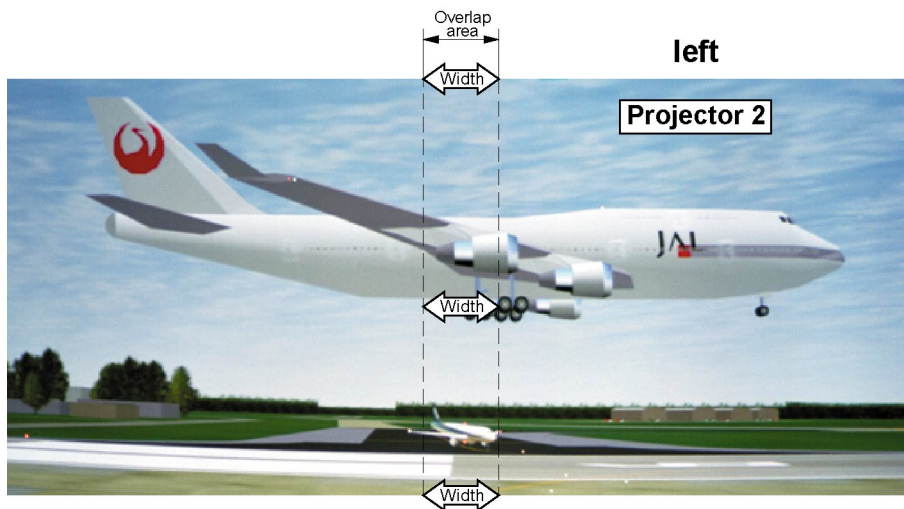


Image 10-31
Set up for projector 2

10.6.2 Black level adjustment

About adjusting the black level

The purpose of the black level adjustment is to align the black levels in the overlapped regions with the black levels in the other regions.

This is needed because the black levels will be brighter in the blend zones, since multiple projectors will project on the same screen area.

The size of the black level area is calculated automatically from the blend zones. This is done by using the start position and size of each edge of the blend and adding an additional size of 8 pixels to reduce the effect known as "sea of mirrors".

You can also specify the offsets manually by turning off the automatic calculation. The black level value is adjusted in a 8 bit resolution from 0 to 255.

How to adjust the black level manually

1. In the main menu, select *Installation* → *Blend*.

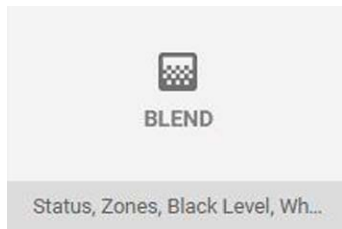


Image 10-32
Installation menu, Blend

2. In the Blend menu, select *Black Level*.

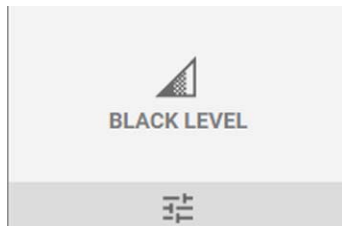


Image 10-33
Blend menu — Black level

The Black Level menu is displayed.

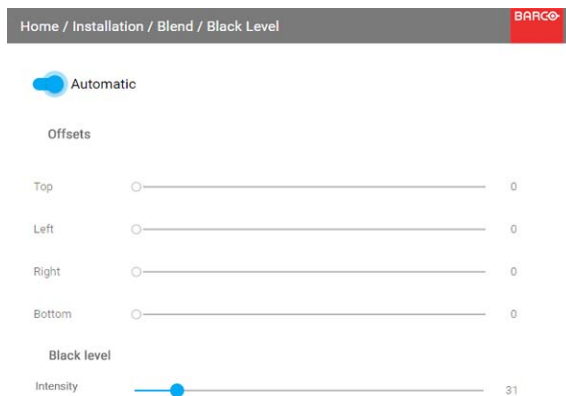


Image 10-34
Black Level menu

3. To manually change the black levels, disable the **Automatic** slider on top of the menu.
4. Slide the **Offset** sliders to the desired position. You can change the offset for top, bottom, left and right edge.
5. Slide the Intensity slider to the desired position.

10.6.3 Black Level Files

About custom Black Level Files

Next to setting your specific Black Level Adjustment in the GUI, you can also upload or download a custom Black Level adjustment file in xml format to/from the projector.

To upload or download Black Level adjustment files you can use Projector Toolset or upload/download the Black Level adjustment file in the format of an xml file. Alternatively, you can contact the “file endpoint” directly via the curl program or some other tool that supports http upload.

For more information on uploading/downloading Black Level files using the Projector Toolset, refer to the Projector Toolset user manual.

For more information on uploading/downloading Black Level files using curl or other tools that supports HTTP upload, refer to the Pulse API Reference Guide.

How to activate an uploaded Black Level adjustment file?

1. In the main menu, select *Installation* → *Blend*.

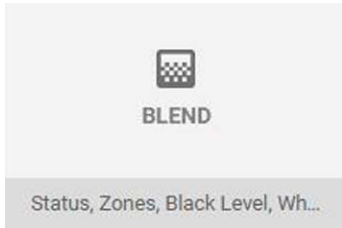


Image 10-35
Installation menu, Blend

2. In the Blend menu, select Black Level Files.

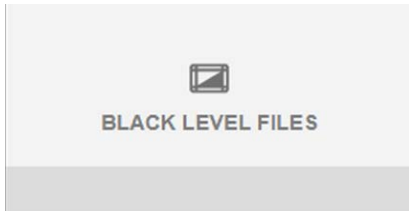


Image 10-36
Blend menu, Black Level Files

The Black Level Files menu is displayed.

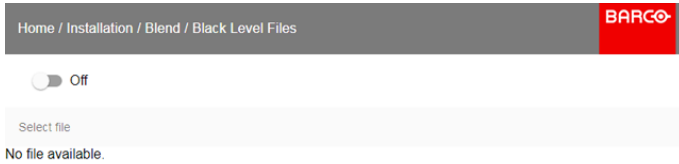


Image 10-37

3. If any custom Black Level adjustment files are available, select the desired file.

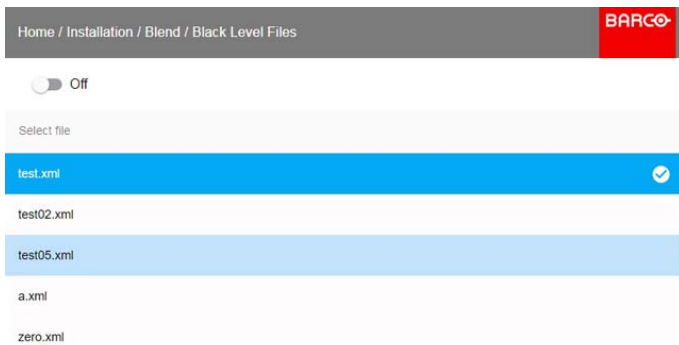


Image 10-38

4. Click on the on/off button on top to activate the selected Black Level adjustment file.

10.6.4 Blend Files

About custom Blend Files

Next to setting your specific Blending configuration in the GUI, you can also upload or download a custom Blend configuration file in xml format to/from the projector. This is a time-saving option when multiple projectors need an identical blending configuration.

To upload or download Blend configuration files you can use Projector Toolset or upload/download the Blend configuration file in the format of an xml file. Alternatively, you can contact the “file endpoint” directly via the curl program or some other tool that supports http upload.

For more information on uploading/downloading Blend files using the Projector Toolset, refer to the Projector Toolset user manual.

For more information on uploading/downloading Blend files using curl or other tools that supports HTTP upload, refer to the Pulse API Reference Guide.

How to activate an uploaded Blend configuration file?

1. In the main menu, select *Installation* → *Blend*.

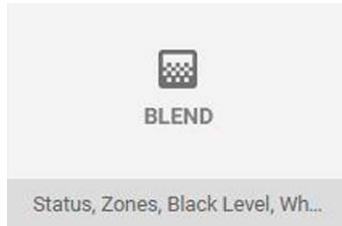


Image 10-39
Installation menu, Blend

2. In the Blend menu, select Blend Files.

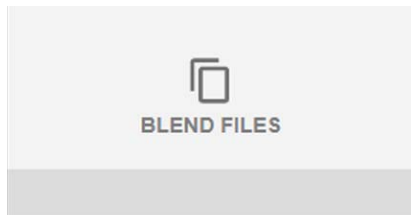


Image 10-40
Blend menu, Blend Files

The Blend Files menu is displayed.



Image 10-41

3. If any custom Blend files are available, select the desired file.

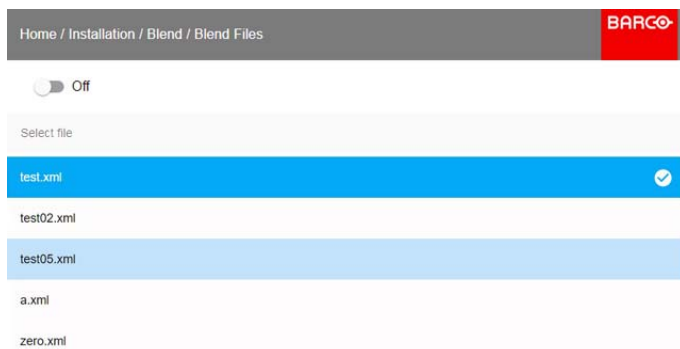


Image 10-42

4. Click on the on/off button on top to activate the selected Blend file.

10.7 Lamp illumination

What can be done?

Within a certain power mode, the light output of the lamp can be reduced by reducing the lamp power

How to reduce the power

1. In the main menu, select *Installation* → *Illumination* → *Power*.

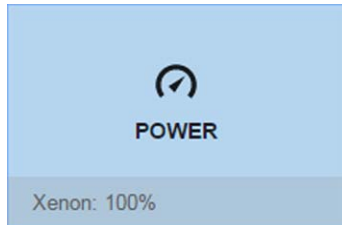


Image 10-43
Illumination menu, Power

The actual power setting is indicated at the bottom of the *Power* button.

2. Use the Slider to change the power value.

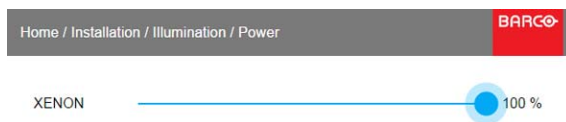


Image 10-44
Lamp Power Adjustment

10.8 Active 3D Set up

About active 3D

The projector supports active 3D, in combination with a 3D emitter and compatible battery-operated shutter glasses. The options on the projector allow you to fine-tune the 3D settings accordingly to the specifications of the 3D emitter.



If a 3D emitter is used that radiates IR beams, the IR beams may interfere with the IR communication between projector and the RCU. If such interference occurs, connect the RCU to the projector using the remote cable. It is also advised to turn the IR receivers on the projector off to avoid the 3D emitter interference. To turn off the IR receivers, see "Remote control, on/off button", page 25.

How to adjust the projector to the 3D emitter?

1. In the main menu, select *Installation* → *3D Set up*.



Image 10-45

The 3D set up menu is displayed



Image 10-46

2. Select the desired the stereo Dark Time.
3. Use the slider to set the desired stereo sync delay.
4. If necessary to invert the stereo sync, click the Swap Eye option.

11. GUI – SYSTEM SETTINGS

Overview of features

- Communication, LAN setup
- GSM configuration
- IR control
- Themes
- Service Menu
- Reset

11.1 Communication, LAN setup

About a network connection

A network connection can be made via a wired connection or via the optional wireless unit.

11.1.1 Introduction to a Network connection



DHCP

Dynamic host configuration protocol. DHCP is a communications protocol that lets network administrators manage centrally and automate the assignment of IP addresses in an organization's network. Using the Internet Protocol, each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.



IP

Internet Protocol. The network layer of TCP/IP. Required for communication with the internet.



Subnet mask

A number that is used to identify a subnetwork so that IP addresses can be shared on a local area network.



Default Gateway

A router that serves as an entry point into and exit point out of a network. For example, a local network (LAN) may need a gateway to connect it to a wide area network (WAN) or to the Internet.



MAC address

Media Access Control address. Unique hardware number, used in combination with the IP-address to connect to the network (LAN or WAN).

What should be set up for an Ethernet address?

Two ways can be used to assign an address:

- use the *Automatic* setting so that an automatic address will be assigned.
- Assign manually an IP address, Net-mask (subnet-mask), (default) gateway address.
 - Set the IP-Address field to the desired value. This must NOT be 0.0.0.0 for static IP-Address assignment. The IP address identifies a projector's location on the network in the same way a street address identifies a house on a city block. Just as a street address must identify a unique residence, an IP address must be globally unique and have a uniform format.
 - Set the Subnet-Mask as appropriate for the local subnet.
 - Set the Default-Gateway to the IP-Address of the local router (MUST be on the local subnet!) on the same network as this projector that is used to forward traffic to destinations beyond the local network. This must not be 0.0.0.0. If there is no router on the projector's local subnet then just set this field to any IP-Address on the subnet.

11.1.2 Wired IP address set up

How to automatically set up the IP address

1. In the main menu, select *System Settings* → *Communication* → *LAN*.



Image 11-1
Communication menu, LAN

The LAN menu is displayed

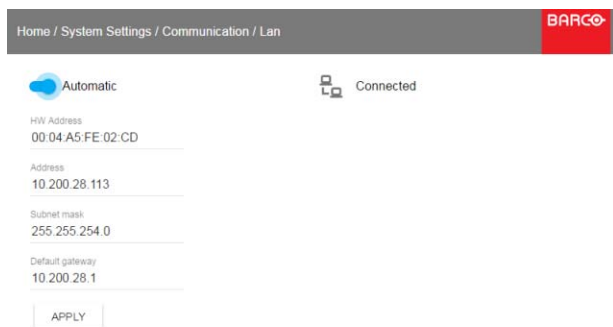


Image 11-2
LAN menu

2. To enable Automatic, put the switch to the right. The color of the switch becomes blue.
An automatic IP is assigned.
When connected, it is indicated with the connection symbol and the indication *Connected*.
3. Select **APPLY** and click **OK**.

How to manually set up the IP address

1. In the main menu, select *System Settings* → *Communication* → *LAN*.



Image 11-3
Communication menu, LAN

The LAN menu is displayed

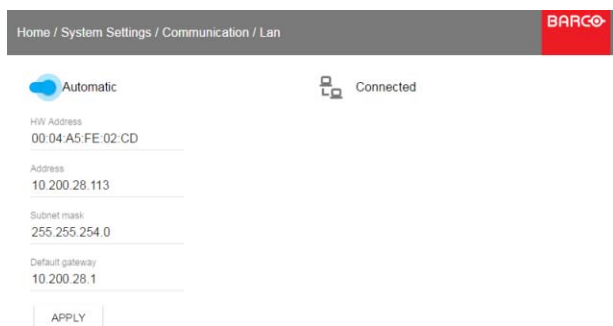


Image 11-4
LAN menu

2. Disable Automatic. Put the switch to the left. The switch becomes gray.
3. Use the ▲ or ▼ key to select *Address* and press **OK** button to activate the input box.
4. Use the ▲ or ▼ key to change the selected character.
Use the ◀ or ▶ key to select another character.
Note: *Digits can be entered with the digit keys on the remote control or the local keypad. When a digit is entered in that way, the next character will be selected automatically.*
5. Repeat steps 4 and 5 for the Subnet mask and Default Gateway.
6. Select **APPLY** and click **OK** to confirm all changes.
When the connection is established, it is indicated with the connection symbol and the indication *Connected*.

11.2 GSM configuration



Only possible when a GSM module with SIM card is installed in the projector.

What can be done ?

To configure the projector software with the installed SIM card, a correct PIN code (4digits) must be entered.



As the PIN code cannot be checked with the one on the SIM card, ensure to enter the correct PIN code.



When your SIM card is blocked, you have to remove the SIM card from the GSM module and to insert the SIM card in a mobile phone so that you can enter the PUK code to unblock the SIM card.

How to activate

1. In the main menu, select *System Settings* → *Communication* → *GSM*.



Image 11-5
Communication menu, GSM

The GSM pin code input menu is displayed. The current configured PIN code is indicated next to Pin input field. If the code is still the same, it is not necessary to enter the PIN code again. If it is a PIN code, continue with next step.



Image 11-6
Enter PIN code

2. Enter the 4 digits of the pin code and select **APPLY** and click **OK**.

11.3 IR control

Overview

- Broadcast address
- Projector address
- IR sensors

11.3.1 Broadcast address

About broadcast address

Broadcast address is a common address that can be set on the projector. That can be “0” or “1”.

Any command coming from a remote control programmed with that common address will be executed.

How to the broadcast address

1. In the main menu, select *System Settings* → *Communication* → *IR Control*.



Image 11-7
Communication menu, IR control

The IR control menu is displayed.

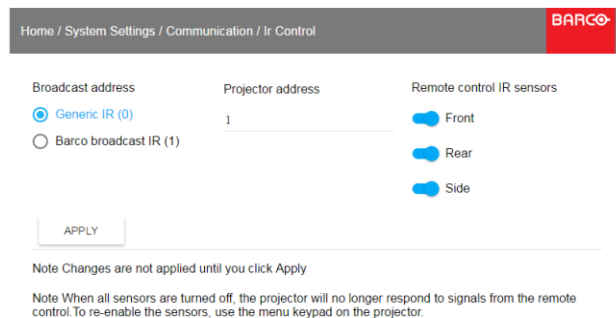


Image 11-8
IR control menu

2. To change the broadcast address select the radio button of your choice.
The following choices are possible:
 - Generic IR (address 0)
 - Barco broadcast IR (address 1)
3. Select **APPLY** and click **OK** to apply the changes.

11.3.2 Projector address

About individual projector address

Before a projector, and only this projector, can be controlled via a remote control, an individual address must be entered in the projector.

This individual projector address can then be used to control the projector via remote control.

Next to an individual projector address, each projector has also a broadcast address for group control.

How to change

1. In the main menu, select *System Settings* → *Communication* → *IR Control*.



Image 11-9
Communication menu, IR control

The IR control menu is displayed.

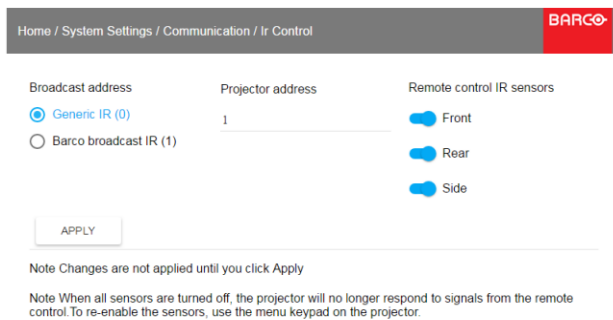


Image 11-10
IR control menu

2. Select the current projector address and enter a new address.
3. Select **APPLY** and click **OK** to apply the changes.

From now on the projector will only listen to this new address and to its broadcast address.

11.3.3 IR sensors

What can be done?

Each IR sensor can be individually disabled or enabled.

When all sensors are turned off, the projector will no longer respond to signals from the remote control. To re-enable the sensors, use the menu keypad on the projector.

How to disable

1. In the main menu, select *System Settings* → *Communication* → *IR Control*.



Image 11-11
Communication menu, IR control

The IR control menu is displayed.

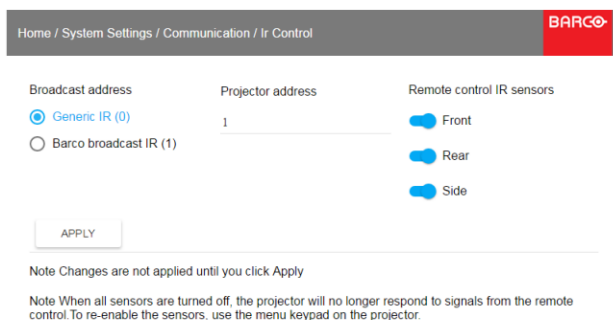


Image 11-12
IR control menu

2. To disable an IR sensor, select the slider and drag to the left.
A blue slider means an active IR sensor.
A gray slider means an inactive IR sensor.
3. Select **APPLY** and click **OK** to apply the changes.

11.4 Themes

About Themes

Themes are used to apply a predefined functionality to the OSD display. There are two options: light (default) or dark.

How to select a different interface theme

1. In the main menu, select *System Settings* → *Themes*.

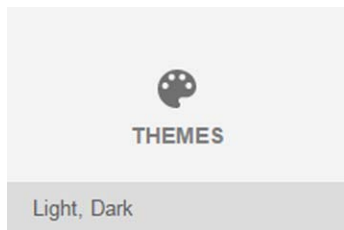


Image 11-13
System Settings Menu — Themes.

2. In the themes menu, select the desired *Theme*.
You can choose one of the following: *Light*, or *Dark*.

11.5 Service Menu

About the service menu

The service menu can only be entered with a *Service code*.

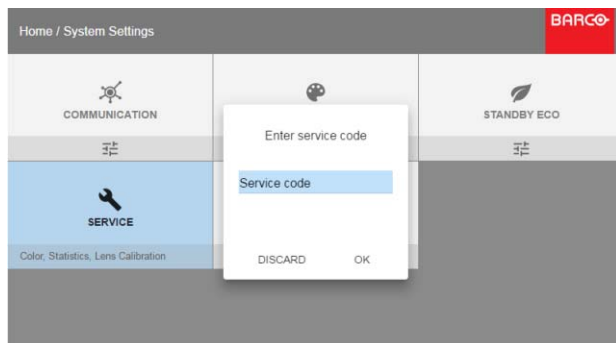


Image 11-14
Service code

If you have a service code, select *Service code* with the arrow keys and click **OK** to enter the entry mode. Enter the code with the numeric keys and select **OK** and click **OK** on to confirm. Otherwise select **DISCARD** and click **OK** to return to the *System Settings* menu.

Overview

- Service – Color
- Service – Statistics
- Lens Calibration
- Flex brightness
- Lens features

11.5.1 Service – Color



CAUTION: The native colors have been measured and set during factory production. Do not change them, unless parts of the optical path have been replaced due to servicing.

If you need to change the native colors on the device, make sure to also perform a P7 calibration, using the Projector Toolset and a chroma meter. For more info on P7 calibration, refer to the Projector Toolset Reference guide.

How to adjust the P7 native settings

1. In the main menu, *System Settings* → *Service*.

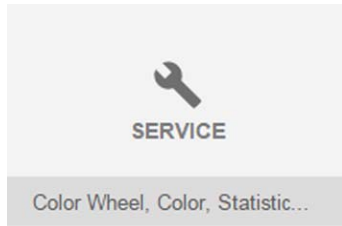


Image 11-15

2. Enter the service code.
3. In the Service menu, select *Color*.



Image 11-16

The Color menu will be displayed.



Image 11-17

4. Select the desired value to change and confirm.
5. Change the values to the desired position, taking into account the color gamut values.
6. Select **APPLY** and click **OK**.

11.5.2 Service – Statistics

What can be seen?

The statistics screen shows the general information about the projector.

The following items will be displayed:

- Lamp on runtime
- Lamp Strike
- Projector Runtime
- System time
- Current Uptime

How to display the statistics

1. In the main menu, *System Settings* → *Service*.

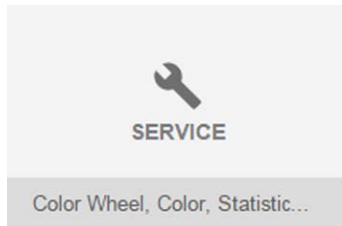


Image 11-18

2. Enter the service code.
3. In the Service menu, select *Statistics*.



Image 11-19

The Statistics will be displayed.

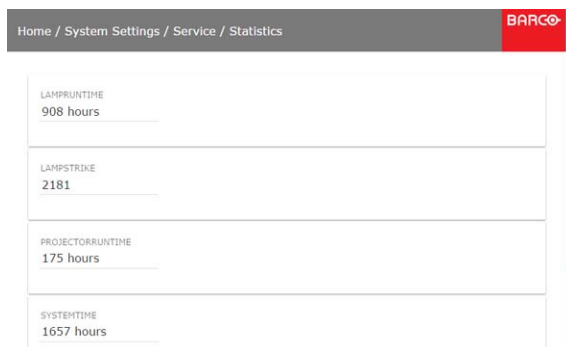


Image 11-20

11.5.3 Lens Calibration



Lens calibration is a time consuming operation.

How to calibrate

1. In the main menu, *System Settings* → *Service*.

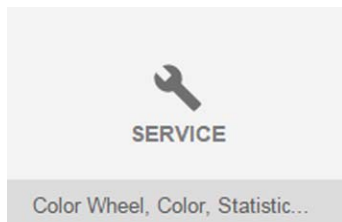


Image 11-21

2. Enter the service code.
3. In the *Service* menu, select *Lens Calibration*.

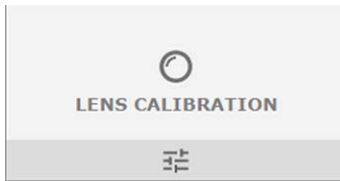


Image 11-22
System Settings menu — Lens Calibration

The Lens Calibration menu is displayed.

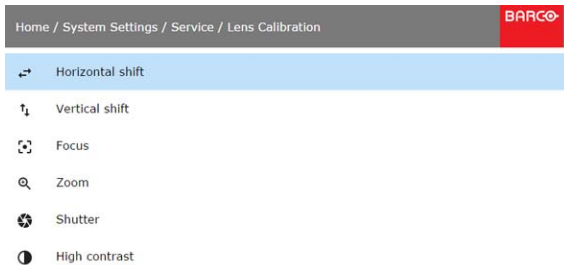


Image 11-23
Lens Calibration menu

4. In the Lens Calibration menu, select the desired calibration action and click **OK**.
You can select one of the following functions:

- Horizontal shift
- Vertical shift
- Focus
- Zoom
- Shutter
- High contrast

The text **Calibration in progress** will be displayed next to selected function until the calibration is completed.

When an error is detected, the message *Calibration Error* is displayed next to function.

11.5.4 Flex brightness

Overview

With the FLEX technology the projector owners can lock the light output to different levels. The locking can be done via 3 different ways:

- Via Projector Toolset when connected via an Ethernet connection with the projector. See Projector Toolset's user guide, chapter "FLEX, light output control".
- Via the OSD menu of the projector itself
- Via an SMS message send to a projector equipped with an optional GSM board.

To lock to a specific value a 4 digit code is necessary; These codes can be created by the projector owner using Projector Toolset.

Light output activation via OSD menu

1. In the main menu, *System Settings* → *Service*.

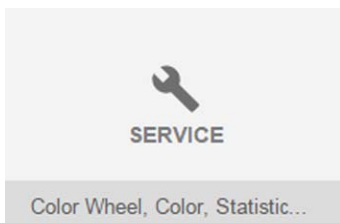


Image 11-24

2. Enter the service code.
3. In the *Service* menu, select *Flex*.



Image 11-25

The *Flex brightness* window opens.

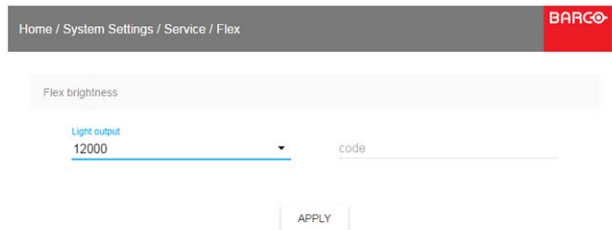


Image 11-26

4. Enter the code via the OSD menu and Select **APPLY** and click **OK**.

11.5.5 Lens features

What can be done?

Some lens features can be disabled once they are correctly aligned so that a misalignment during a show is not possible.

How to enable/disable

1. In the main menu, *System Settings* → *Service*.

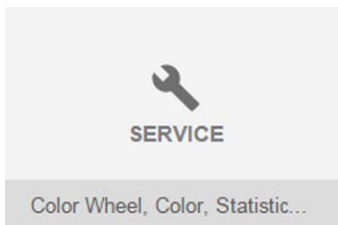


Image 11-27

2. Enter the service code.

3. In the *Service* menu, select *Lens features*.



Image 11-28

The Lens features menu is displayed.

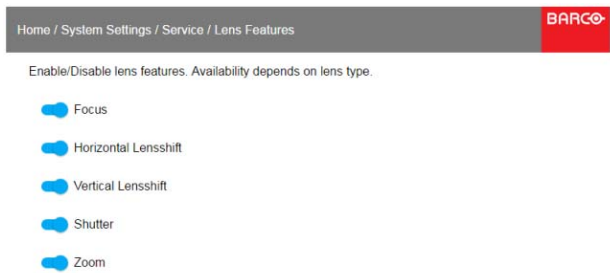


Image 11-29

Depending on the lens type, different functions are available such as:

- Focus
- Horizontal lens shift
- Vertical lens shift
- Shutter
- Zoom

4. To enable/disable a feature, click on the slider and drag it to the left to disable the feature or the right to enable the feature.

When enabled, the slider becomes blue;

When disabled, the slider is gray.

11.6 Reset

What can be done?

All settings and values on the projector can be reset to its default values. This can be done for one or more settings separately, or all settings together (factory reset).

Default settings

The following settings are default settings:

	Setting	Default value
ImageConnector	Color Space	auto
	Signal Range	auto
ImageSource	Source files	Standard
ImageFeatures	Contrast	mid value
	Brightness	mid value
	Saturation	mid value
	Cropping	Off
	Aspect Ratio	16:9
ImageRealColor	P7 Realcolor	all set to native
ImageWarp	Screen size	5120x3200 / 2560x1600
	4 corner	Warp off, no warp
ImageBlend	Blend Width	disabled, all value to zero
	offset	
ImageOrientation	Orientation	Table, Front
ImageResolution	Output Resolution	4K UHD
ImageStereo	Sync delay	0 μ s
	Swap eye	Off
	Dark time	lowest value available

	Setting	Default value
UserInterface	Theme	Light
Optics	High Contrast	Off
Illumination	Power	100%
Network	Communication	LAN, Automatic settings
Screen	Screen luminance - Unit	nits
System	Eco Mode (if applicable)	Available
	Ready Timeout	auto

How to reset all projector settings

1. In the main menu, select *System Settings* → *Reset*.
2. In the Reset menu, select *RESET ALL* and click **OK**.

How to reset one or more projector settings

1. In the main menu, select *System Settings* → *Reset*.



Image 11-30
System Settings menu, Reset

The Reset menu is displayed.

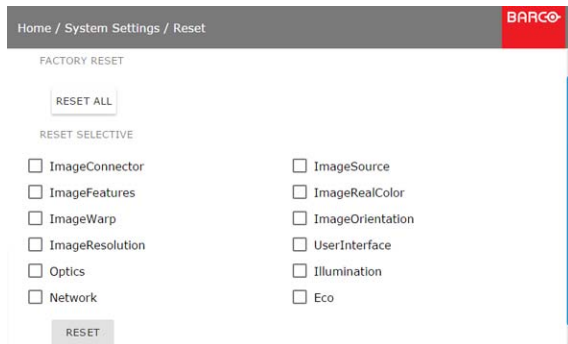


Image 11-31
Reset menu

2. Navigate to the checkbox next to the settings that need to be reset and press **OK**.
Multiple selection are possible.
3. Select **RESET** and press **OK** to reset all selected settings.

12. GUI – TEST PATTERNS

12.1 Internal test patterns

How to select

1. In the main menu, select *Test patterns* → *Internal*.

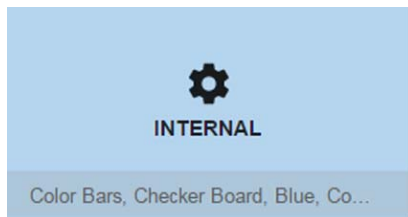


Image 12-1
Test pattern, internal

The test pattern overview page is displayed.

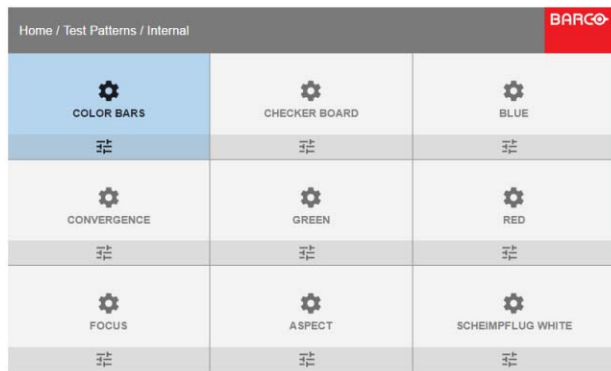


Image 12-2
Internal test patterns

2. Select the desired test pattern and click **OK**.

12.2 Output test patterns

How to select

1. In the main menu, select *Test patterns* → *Output*.

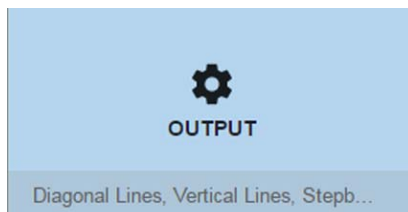


Image 12-3
Test pattern, output

The test pattern overview page is displayed.

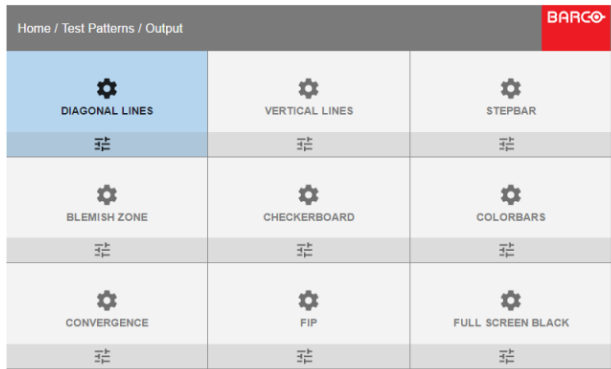


Image 12-4
Output test patterns

13. STATUS MENU



This is a status menu only. No changes can be made to settings from this menu.

Overview

- Status menu overview

13.1 Status menu overview

Status menu

While in the main menu, press Status.

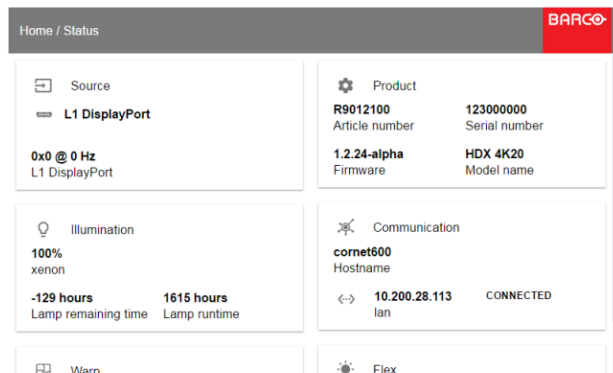


Image 13-1
Status overview

Source status

Displays active source information

Product

Displays active product information:

- Article number: Projector article / part number
- Serial number: Projector serial number
- Firmware: Projector software package version
- Model name: Projector model name

Illumination

Shows the used light source power (in %) and runtime.

Communication

Lists the projector IP address.

Warp

Displays the Warp status and type of warp used

Blend

Displays the Warp status and type of Blend used

Flex

Current light output

14. MAINTENANCE

About this chapter

This chapter contains general maintenance procedures.

Overview

- Cleaning the lens
- Cleaning the exterior of the projector

14.1 Cleaning the lens



To minimize the possibility of damage to optical coatings, or scratches to lens surfaces follow the cleaning procedure as described here precisely.

Necessary tools

- Compressed air.
- Clean Toraysee® cloth or any micro fiber lens cleaning cloth.
- Clean cotton cloth.

Necessary parts

Lens cleaner (e.g. Carl Zeiss lens cleaner or Purasol® or any water-based lens cleaner)

How to clean the lens?

1. Blow off dust with clean compressed air (or pressurized air cans¹).
2. Clean with lens cleaner together with a clean lens cleaning cloth to remove the dust and contamination. Use big wipes in one single direction.
Warning: Do not wipe back and forwards across the lens surface as this tends to grind dirt into the coating.
3. Use a dry lens cleaning cloth to remove left liquid or stripes. Polish with small circles.
4. If there are still fingerprints on the surface, wipe them off with lens cleaner together with a clean lens cleaning cloth. Polish again with a dry one.



If smears occur when cleaning lenses, replace the cloth. Smears are the first indication of a dirty cloth.

14.2 Cleaning the exterior of the projector

How to clean the exterior of the projector ?

1. Switch off the projector and unplug the projector from the mains power net.
2. Clean the housing of the projector with a damp cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution.

¹ Pressurized air cans are not efficient if there is too much dust on the surface, the pressure is too low

15. SERVICING

About this chapter

This chapter contains general servicing procedures like lamp house replacement, input unit replacement etc. These procedures may only be performed by **qualified technical service personnel**.

Overview

- Removal of the front cover
- Mounting the front cover
- Removal of the lamp cover
- Mounting the lamp cover
- Removal of the lamp house
- Installation of the lamp house
- Replacement of the high density dust filter
- Remove and clear metal front filter

Extra service information

Extra service information for qualified service technicians can be found on Barco's Partnerzone (URL:<http://www.barco.com>). Registration is necessary.

If you are not yet registered, click on Partnerzone registration and follow the instructions. With the created login and password, it is possible to enter the partnerzone where you can find extra service information about the projector.

15.1 Removal of the front cover



WARNING: Switch off the projector and unplug the power cord before starting the procedure.

Necessary tools

7 mm flat screw driver

How to remove

1. Remove the lens. See "Lens removal", page 39.
2. Remove the rubber dust ring from the lens holder.

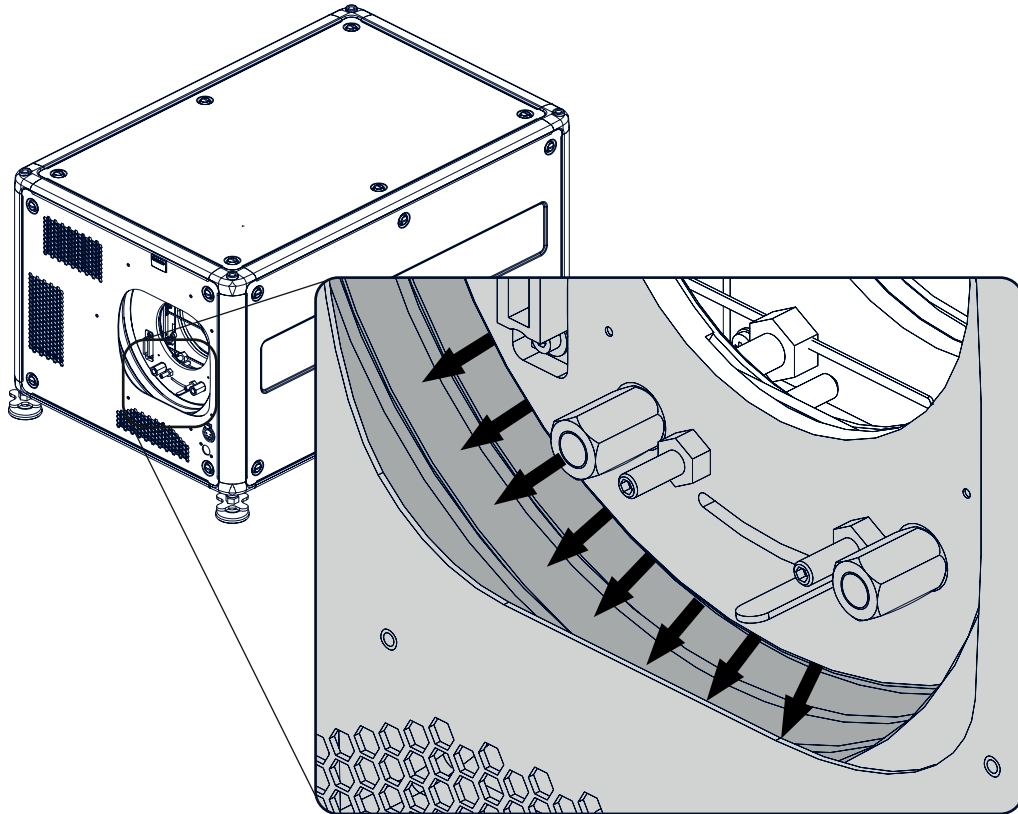


Image 15-1
Dust ring removal

3. Release the 4 captive screws (1).

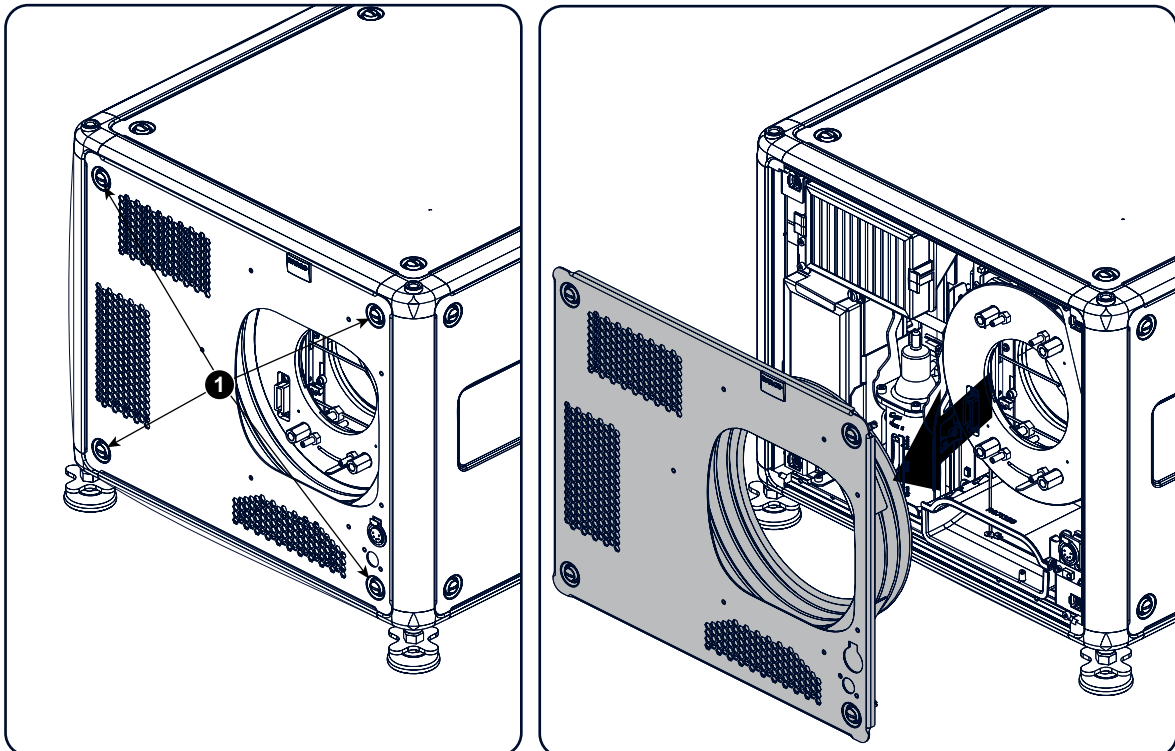


Image 15-2
Front cover removal

4. Take off the front cover.

15.2 Mounting the front cover



WARNING: Switch off the projector and unplug the power cord before starting the procedure.

Necessary tools

7 mm flat screw driver

How to mount

1. Place the front cover with the rubber dust facing the projector on its place.

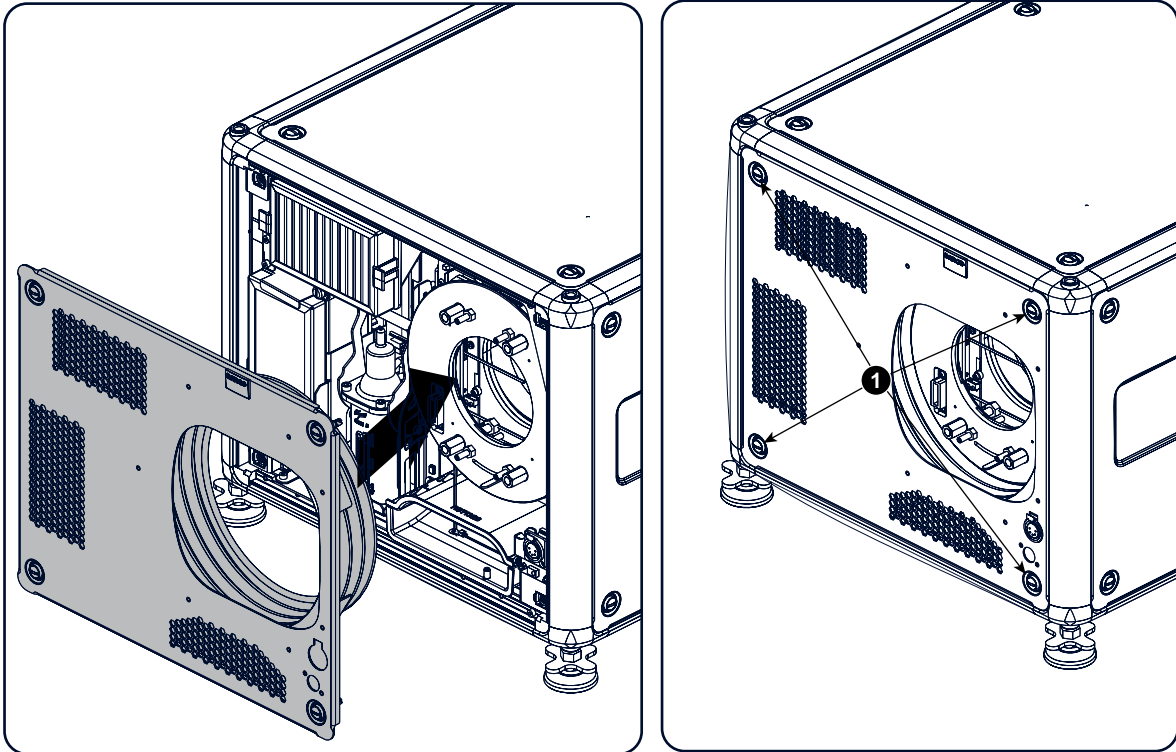


Image 15-3
Mount front cover

2. Secure the 4 captive screws (1).
3. Reinstall the rubber dust ring around the lens holder.

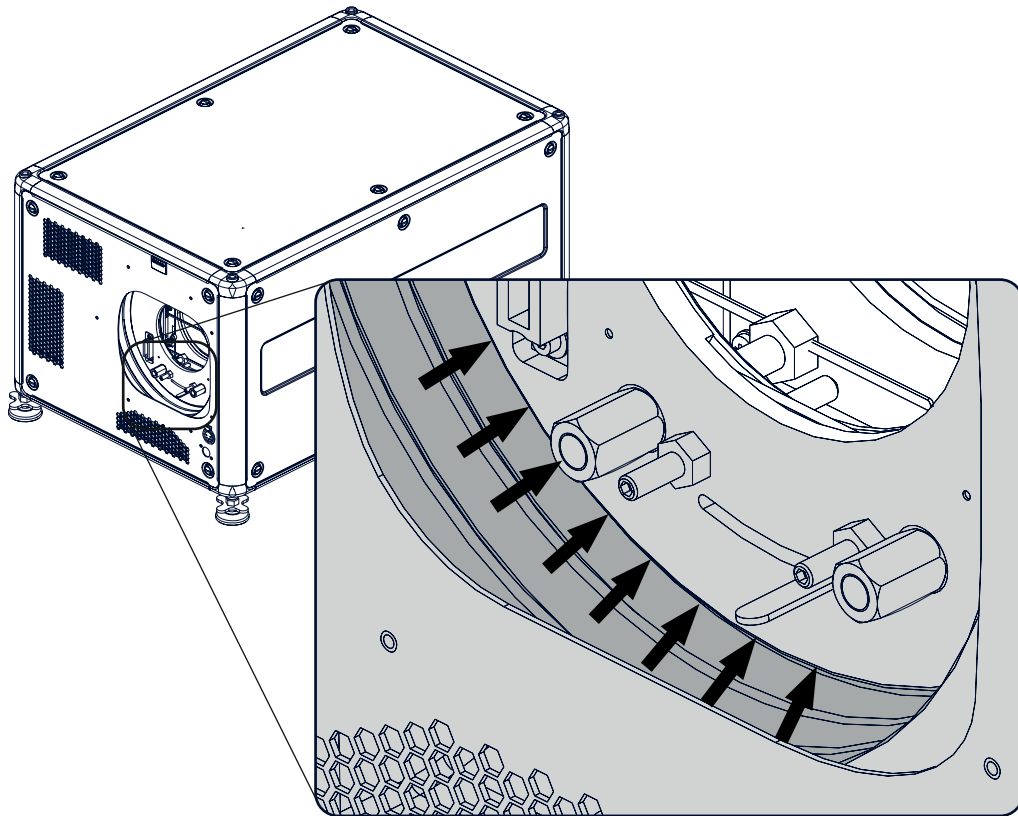


Image 15-4
Mount dust ring

4. Mount lens again.

15.3 Removal of the lamp cover



WARNING: Switch off the projector and unplug the power cord before starting the procedure.

Necessary tools

7 mm flat screw driver

How to remove

1. Release the 6 captive screws.

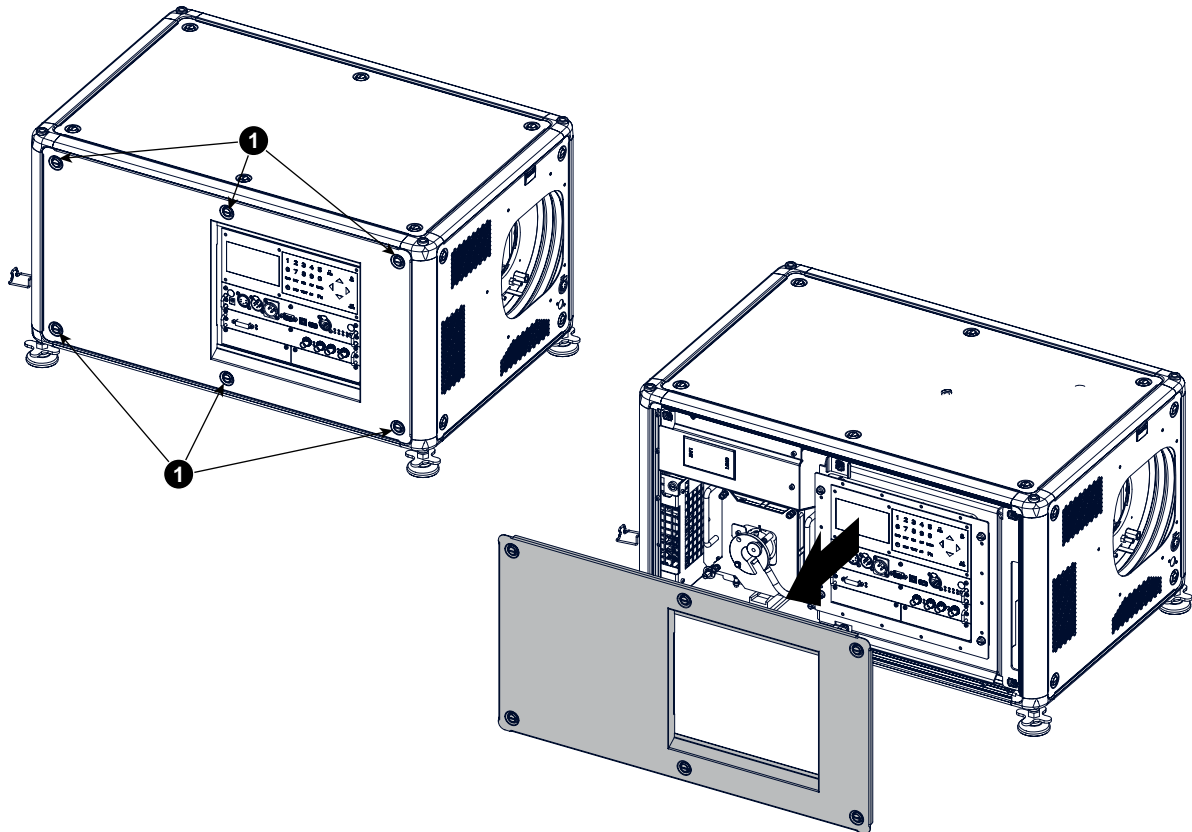


Image 15-5
Lamp side cover

2. Take off the side cover.

15.4 Mounting the lamp cover



WARNING: Switch off the projector and unplug the power cord before starting the procedure.

Necessary tools

7 mm flat screw driver

How to mount

1. Place the front cover on the is place and secure the 6 captive screws.

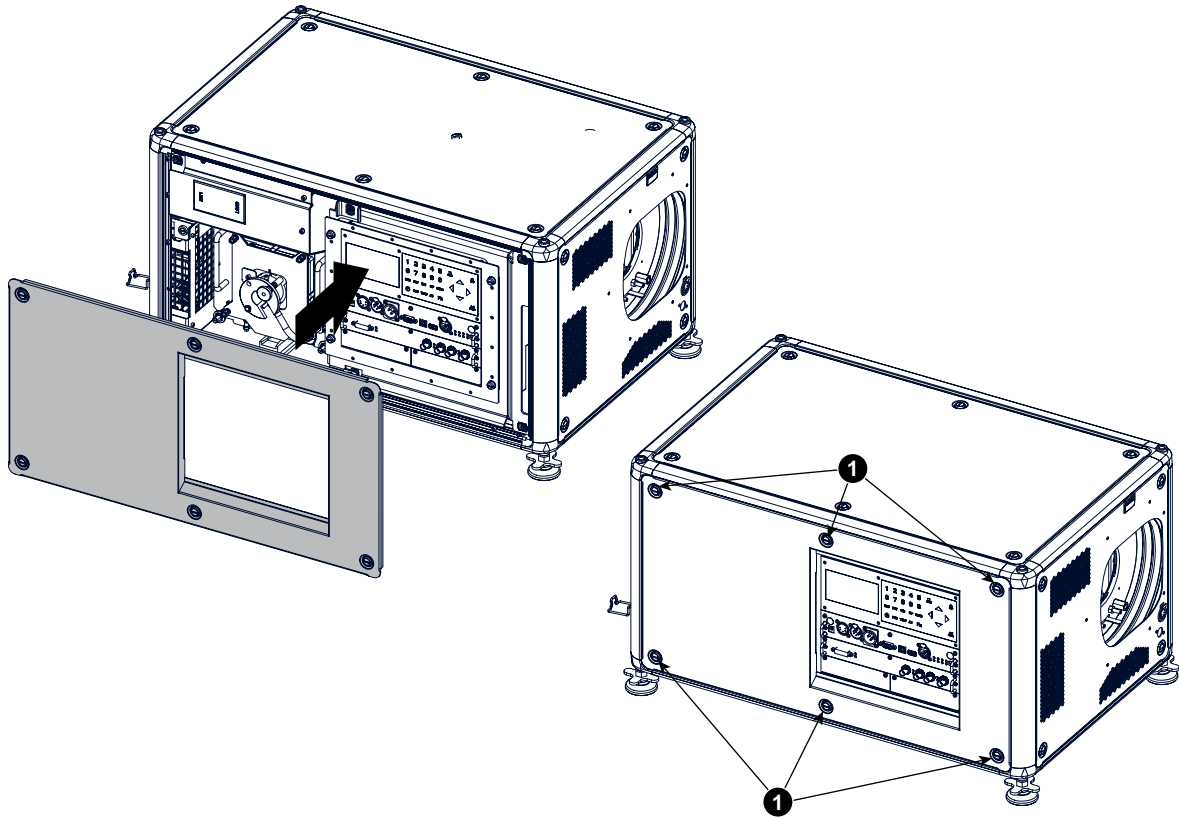


Image 15-6
Lamp side cover

15.5 Removal of the lamp house



WARNING: Switch off the projector and unplug the power cord before starting the procedure.



WARNING: The Lamp House is very hot after operation. Let the projector cool down for at least 15 minutes before proceeding to the next step. Failure to do so can cause serious injury.

Necessary tools

Flat screwdriver

How to remove

1. Remove the lamp cover on the input side, see "Removal of the lamp cover", page 122.
2. Release the 3 spring lock screws.

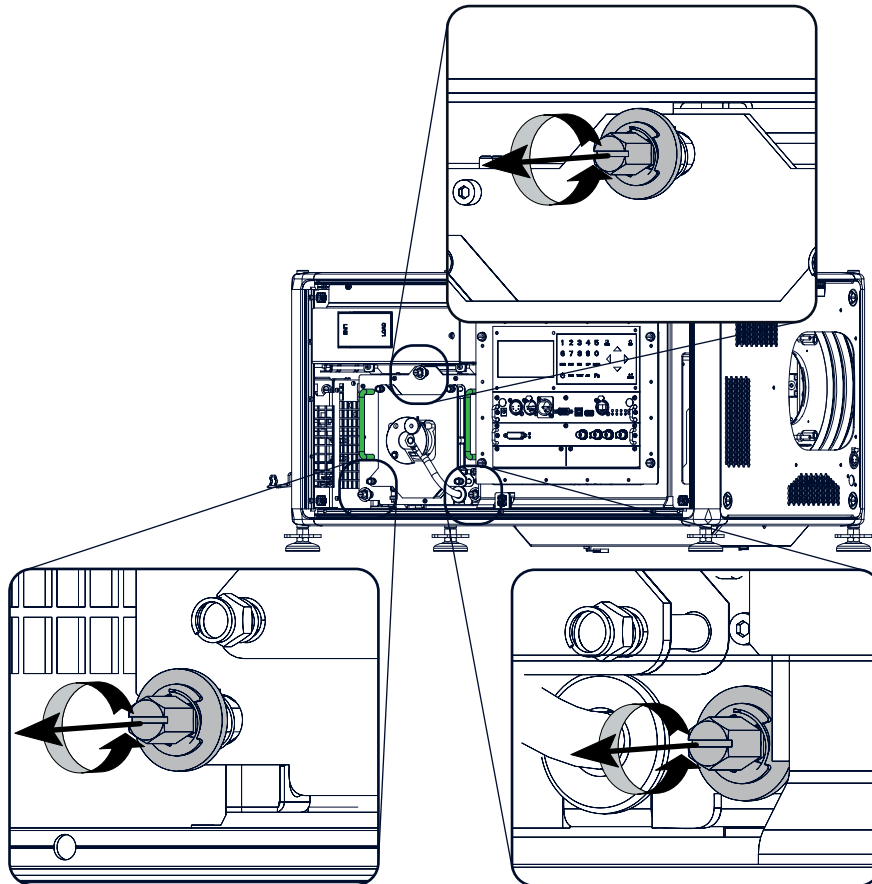


Image 15-7
Lamp house, captive screws

3. Take the lamp house by both handles and pull it out.

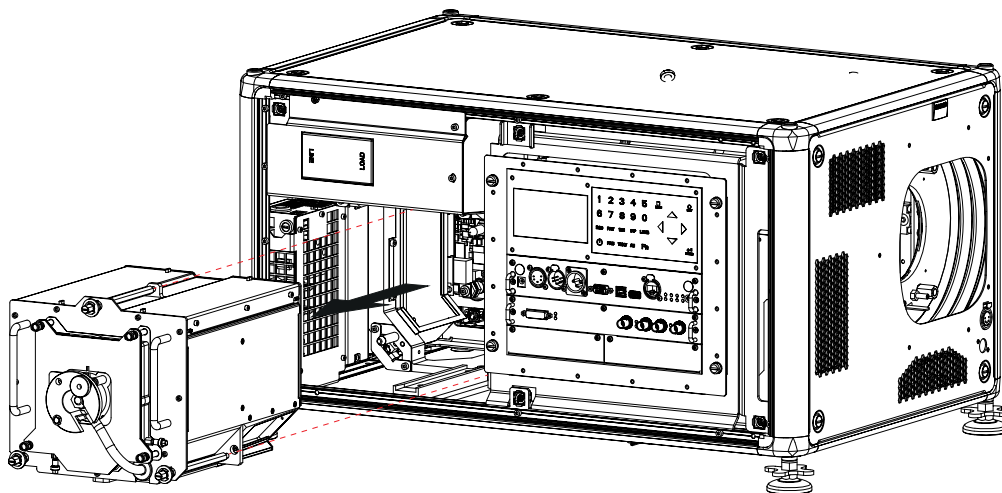


Image 15-8
Lamp house, removal

15.6 Installation of the lamp house



WARNING: Switch off the projector and unplug the power cord before starting the procedure.

Necessary tools

Flat screwdriver

How to install

1. Take the lamp house by its handles and gently slide the lamp house into its socket. Note that the compartment is provided with a guide (1) to position the lamp house correctly.

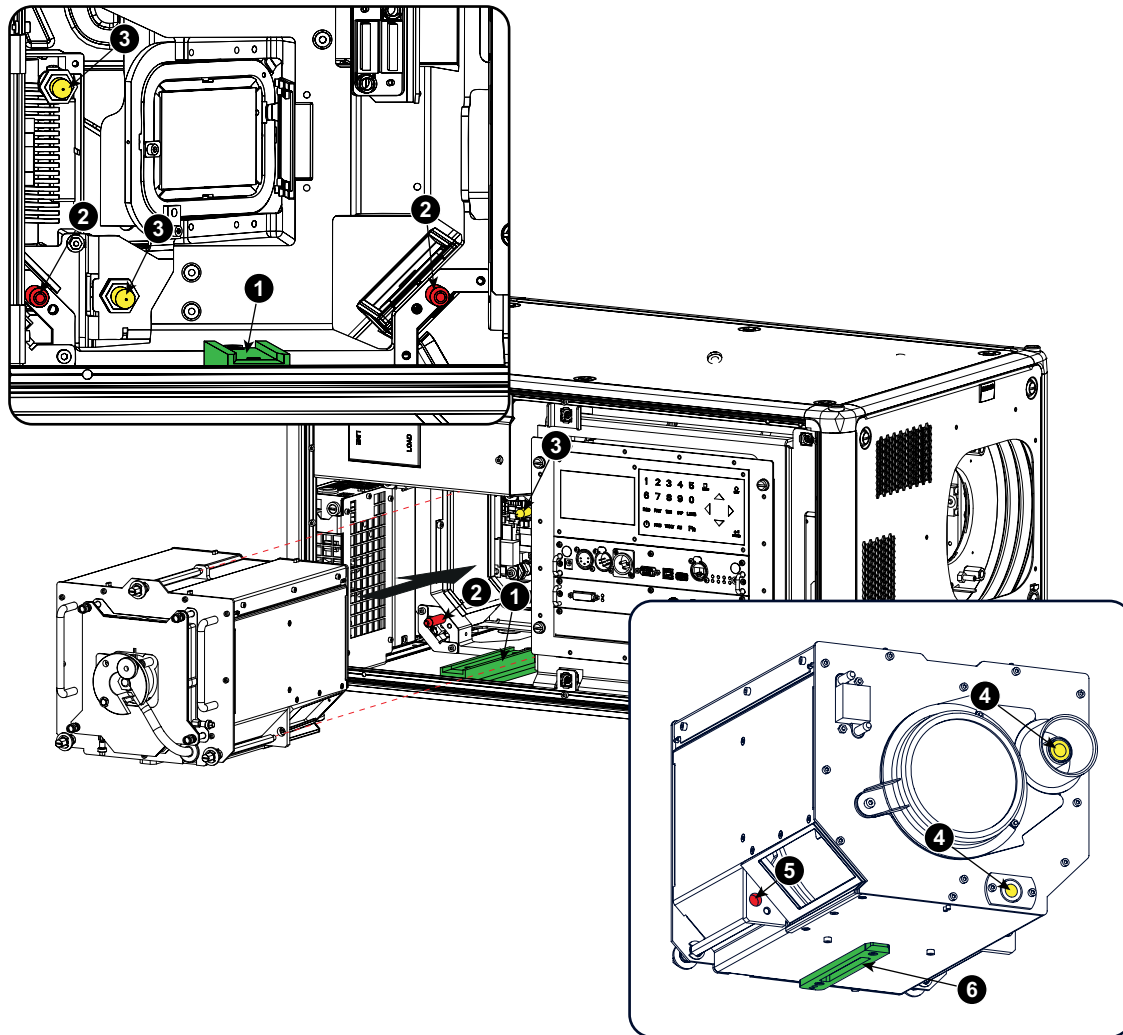


Image 15-9
Insert lamp house

2. Push the lamp house forward until it slides fully into the projector. Positioning pins (2) must match the holes (5) in the lamp house.
3. Secure this position by fastening the 3 spring lock screws.
4. Reinstall the lamp cover of the projector.



While starting up the projector, the electronics detect if a lamp is installed. If no lamp is installed, it is not possible to start up the projector.

15.7 Replacement of the high density dust filter



CAUTION: The high density filter must be replaced on a regular basis, depending on the environment conditions of the projector.



WARNING: Switch off the projector and unplug the power cord before starting the procedure.

Necessary parts

New filter (available kit : R98010085, contains 5 high density filters and one cleanable filter)

How to replace

1. Remove the front cover, see "Removal of the front cover", page 119.
2. Push both filter holders to the outside.

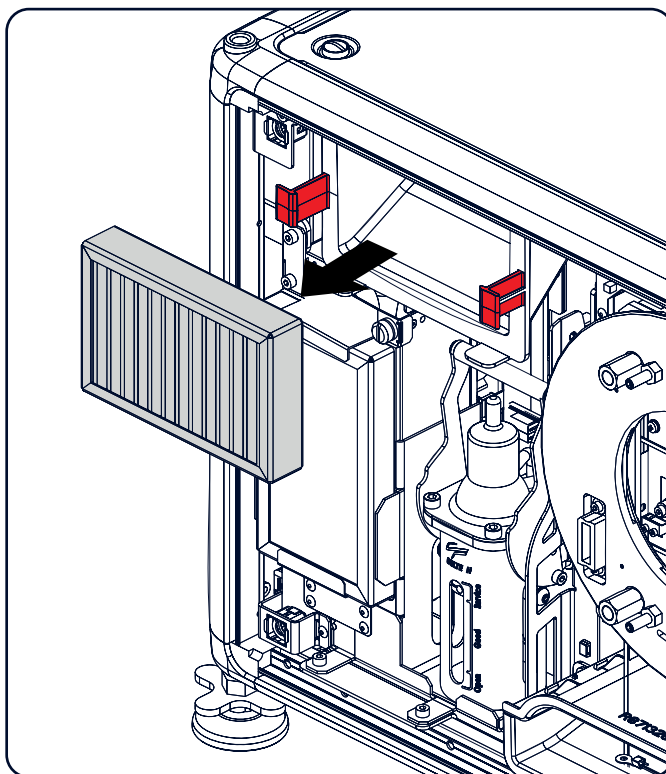
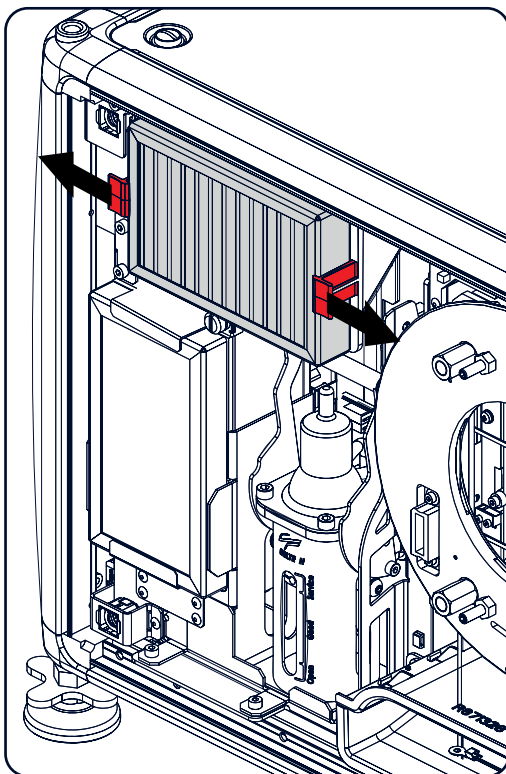


Image 15-10
Filter replacement

3. Take out the filter and insert a new one.



CAUTION: Never clean the filter. Always replace with a new one.

15.8 Remove and clear metal front filter



WARNING: Switch off the projector and unplug the power cord before starting the procedure.

Necessary parts

New filter when needed (available kit : R98010085, contains 5 HEPA filters and one cleanable filter)

How to remove

1. Remove the front cover, see "Removal of the front cover", page 119.
2. Release the thumb screw (1)

3. Pull the bottom holder to the front.

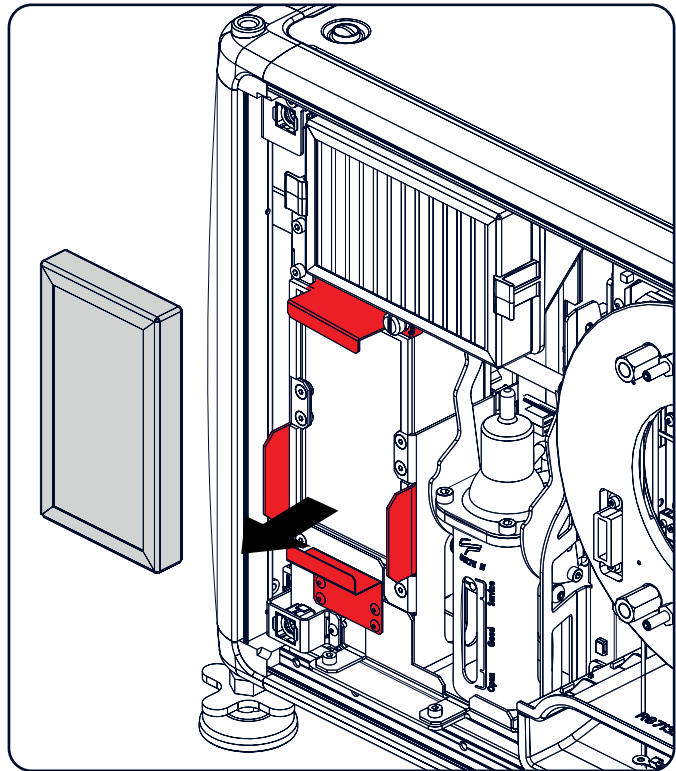
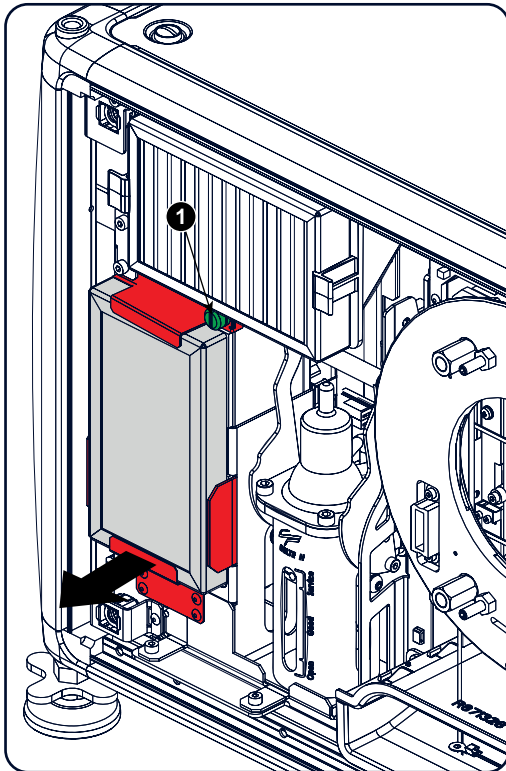


Image 15-11

4. At the same time, take out the filter.

Clean the dust filter

1. Remove most contamination with a vacuum cleaner.
2. Blow remaining dust away with compressed air in an other room or outside.



If you cannot clean the filter anymore, insert a new one.

How to install

1. Pull the bottom holder to the front and insert the filter.
2. Fasten the thumb screw (1).



CAUTION: Never use the projector with removed filters !

A. SPECIFICATIONS

About this chapter

This chapter gives an overview of the specification of the HDX projector as well as the dimensions and the center of gravity.

Overview

- Specifications of the HDX-4K12
- Specifications of the HDX-4K14
- Specifications of the HDX-4K20 FLEX
- Dimensions of a HDX
- Technical Regulations

A.1 Specifications of the HDX-4K12

Specifications

Projector type	4K UHD 3-Chip DLP digital projector
Technology	0.90" DMD x 3 with sealed DMD core
Resolution	3,840 x 2,400 (4K UHD) / 2,560 x 1,600 (WQXGA native) / 16:10 aspect ratio
Light output	11,000 (WQXGA) / 10,200 (4K UHD mode) center lumens*
Contrast ratio	1,900:1 (standard) - 2,200:1 (high contrast mode)
Brightness uniformity	90%
ScenergiX	horizontal and vertical edge blending
Lens range	TLD+ 0.37, 0.65-0.85, 0.8-1.16; 1.16-1.5:1; 1.5-2.0:1; 2.0-2.8:1; 2.8-4.5:1; 4.5-7.5:1; 7.5-11.5:1
Optical lens shift	Vertical: -30% to +120%/Horizontal: -40% to +40% on zoom lenses (memorized)
Color correction	P7
Lamps	2.5 kW Xenon / lamp lifetime: 1,000 hours typical
Transport with lamp	Yes
Lamp house, quick replace	Yes
Customer bulb replace	Yes
Lamp warranty (field replace/factory replace)	90 days, 500 hours/pro rata 750 hours
Optical dowser	Standard
Picture-in-picture	Two sources simultaneously**
Orientation	table - ceiling - side (portrait) (lamp door down/bottom) - vertical
DMX 512	Standard**
WARP	direct adjust OSD + toolset
Integrated web server	Yes
CLO (constant light output)	standard**
3D	active eyewear (optional), passive Infitec (optional), passive circular (optional), triple flash up to 200Hz**
Inputs	Single HDBaseT, HDMI 2.0, DP 1.2, Quad SDI/HDSDI/dual HDSDI/Quad 3G HDSDI/BarcoLink
Optional inputs	Quad DP1.2
Input resolutions	From VGA up to 4K (4,096 x 2,160)
Software tools	Projection Toolset + Android app** + iOS app**
Control	10/100 Base-T, RJ-45 conn, Wifi (opt), GSM (optional), XLR wired + IR , RS232, DMX 512**
AC power	110-130V/200-240V, 50-60 Hz

A. Specifications

Power consumption	2,450 W / STBY<8W
Noise level (typical at 25°C/77°F)	49 dB (A)
Operating temperature	0 ~ 40°C / 32 ~ 104°F
operation humidity no condens	0% - 80%
Dissipation BTU	Max. 5800 BTU/h @ (110-130V) / Max. 8360 BTU/h @ (200-240V)
Dimensions (WxLxH)	475 x 725 x 382 mm (18.70" x 28.54" x 14.96")
Weight	50kg (110lbs)
Shipping Dimensions	(WxLxH) 650 x 900 x 560 mm (25.59" x 35.43" x 22.04")
Standard accessories	Power cord; wireless/XLR wired rugged remote control
Certifications	Compliant with UL60950-1 and EN60950-1, complies with FCC rules & regulations, part 15 Class A and CE EN55022 Class A, RoHS
Warranty	3 years standard
*	+/- 10%
**	SW upgradable. Please contact an authorized Barco representative for details.

A.2 Specifications of the HDX-4K14

Specifications

Projector type	4K UHD 3-Chip DLP digital projector
Technology	0.90" DMD x 3 with sealed DMD core
Resolution	3,840 x 2,400 (4K UHD) / 2,560 x 1,600 (WQXGA native) / 16:10 aspect ratio
Light output	13,000 (WQXGA) / 12,000 (4K UHD mode) center lumens*
Contrast ratio	1,900:1 (standard) - 2,200:1 (high contrast mode)
Brightness uniformity	90%
ScenergiX	horizontal and vertical edge blending
Lens range	TLD+ 0.37, 0.65-0.85, 0.8-1.16; 1.16-1.5:1; 1.5-2.0:1; 2.0-2.8:1; 2.8-4.5:1; 4.5-7.5:1; 7.5-11.5:1
Optical lens shift	Vertical: -30% to +120%/Horizontal: -40% to +40% on zoom lenses (memorized)
Color correction	P7
Lamps	2.5 kW Xenon / lamp lifetime: 1,000 hours typical
Transport with lamp	Yes
Lamp house, quick replace	Yes
Customer bulb replace	Yes
Lamp warranty (field replace/ factory replace)	90 days, 500 hours/pro rata 750 hours
Optical dowser	Standard
Picture-in-picture	Two sources simultaneously**
Orientation	table - ceiling - side (portrait) (lamp door down/bottom) - vertical
DMX 512	Standard**
WARP	direct adjust OSD + toolset
Integrated web server	Yes
CLO (constant light output)	standard**
3D	active eyewear (optional), passive Infitec (optional), passive circular (optional), triple flash up to 200Hz**
Inputs	Single HDBaseT, HDMI 2.0, DP 1.2, Quad SDI/HDSDI/dual HDSDI/Quad 3G HDSDI/BarcoLink
Optional Inputs	Quad DP1.2
Input resolutions	From VGA up to 4K (4,096 x 2,160)

Software tools	Projection Toolset + Android app** + iOS app**
Control	10/100 Base-T, Rj -45 conn, Wifi (opt), GSM (optional), XLR wired + IR , RS232, DMX 512**
AC power	110-130V/200-240V, 50-60 Hz
Power consumption	2,750 W / STBY<8W
Noise level (typical at 25°C/77°F)	50 dB (A)
Operating temperature	0 ~ 40°C / 32 ~ 104°F
operation humidity no condens	0% - 80%
Dissipation BTU	Max. 5800 BTU/h @ (110-130V) / Max. 9383 BTU/h @ (200-240V)
Dimensions (WxLxH)	475 x 725 x 382 mm (18.70" x 28.54" x 14.96")
Weight	50kg (110lbs)
Shipping Dimensions	(WxLxH) 650 x 900 x 560 mm (25.59" x 35.43" x 22.04")
Standard accessories	Power cord; wireless/XLR wired rugged remote control
Certifications	Compliant with UL60950-1 and EN60950-1, complies with FCC rules & regulations, part 15 Class A and CE EN55022 Class A, RoHS
Warranty	3 years standard
*	+/- 10%
**	SW upgradable. Please contact an authorized Barco representative for details.

A.3 Specifications of the HDX-4K20 FLEX

Specifications

Projector type	4K UHD 3-Chip DLP digital projector
Technology	0.90" DMD x 3 with sealed DMD core
Resolution	3,840 x 2,400 (4K UHD) / 2,560 x 1,600 (WQXGA native) / 16:10 aspect ratio
Light output	19,000 (WQXGA) / 17,500 (4K UHD mode) center lumens
Contrast ratio	1,900:1 (standard) - 2,200:1 (high contrast mode)
Brightness uniformity	90%
ScenergiX	horizontal and vertical edge blending
Lens range	TLD+ 0.37, 0.65-0.85, 0.8-1.16; 1.16-1.5:1; 1.5-2.0:1; 2.0-2.8:1; 2.8-4.5:1; 4.5-7.5:1; 7.5-11.5:1
Optical lens shift	Vertical: -30% to +120%/Horizontal: -40% to +40% on zoom lenses (memorized)
Color correction	P7
Lamps	2.5 kW Xenon / lamp lifetime: 1,000 hours typical
Transport with lamp	Yes
Lamp house, quick replace	Yes
Customer bulb replace	Yes
Lamp warranty (field replace/ factory replace)	90 days, 500 hours/pro rata 750 hours
Optical dowser	Standard
Picture-in-picture	Two sources simultaneously*
Orientation	table - ceiling - side (portrait) (lamp door down/bottom) - vertical
DMX 512	Standard*
WARP	direct adjust OSD + toolset
Integrated web server	Yes
CLO (constant light output)	standard*
3D	active eyewear (optional), passive Infitec (optional), passive circular (optional), triple flash up to 200Hz*

A. Specifications

Inputs	Single HDBaseT, HDMI 2.0, DP 1.2, Quad SDI/HDSDI/dual HDSDI/Quad 3G HDSDI/BarcoLink
Optional Inputs	Quad DP1.2
Input resolutions	From VGA up to 4K (4,096 x 2,160)
Pixel clock	600Mhz
Software tools	Projection Toolset + Android app* + iOS app*
Control	10/100 Base-T, RJ-45 conn, Wifi (opt), GSM (optional), XLR wired + IR , RS232, DMX 512*
AC power	110-130V/200-240V, 50-60 Hz
Power consumption	3,000 W / STBY<8W
Noise level (typical at 25°C/77°F)	53 dB (A)
Operating temperature	0 ~ 40°C / 32 ~ 104°F
operation humidity no condens	0% - 80%
Dissipation BTU	Max. 5800 BTU/h @ (110-130V) / Max. 10,236 BTU/h @ (200-240V)
Dimensions (WxLxH)	475 x 725 x 382 mm (18.70" x 28.54" x 14.96")
Weight	50kg (110lbs)
Shipping Dimensions	(WxLxH) 650 x 900 x 560 mm (25.59" x 35.43" x 22.04")
Standard accessories	Power cord; wireless/XLR wired rugged remote control
Certifications	Compliant with UL60950-1 and EN60950-1, complies with FCC rules & regulations, part 15 Class A and CE EN55022 Class A, RoHS
Warranty	3 years standard
*	SW upgradable. Please contact an authorized Barco representative for details.

A.4 Dimensions of a HDX

Overview

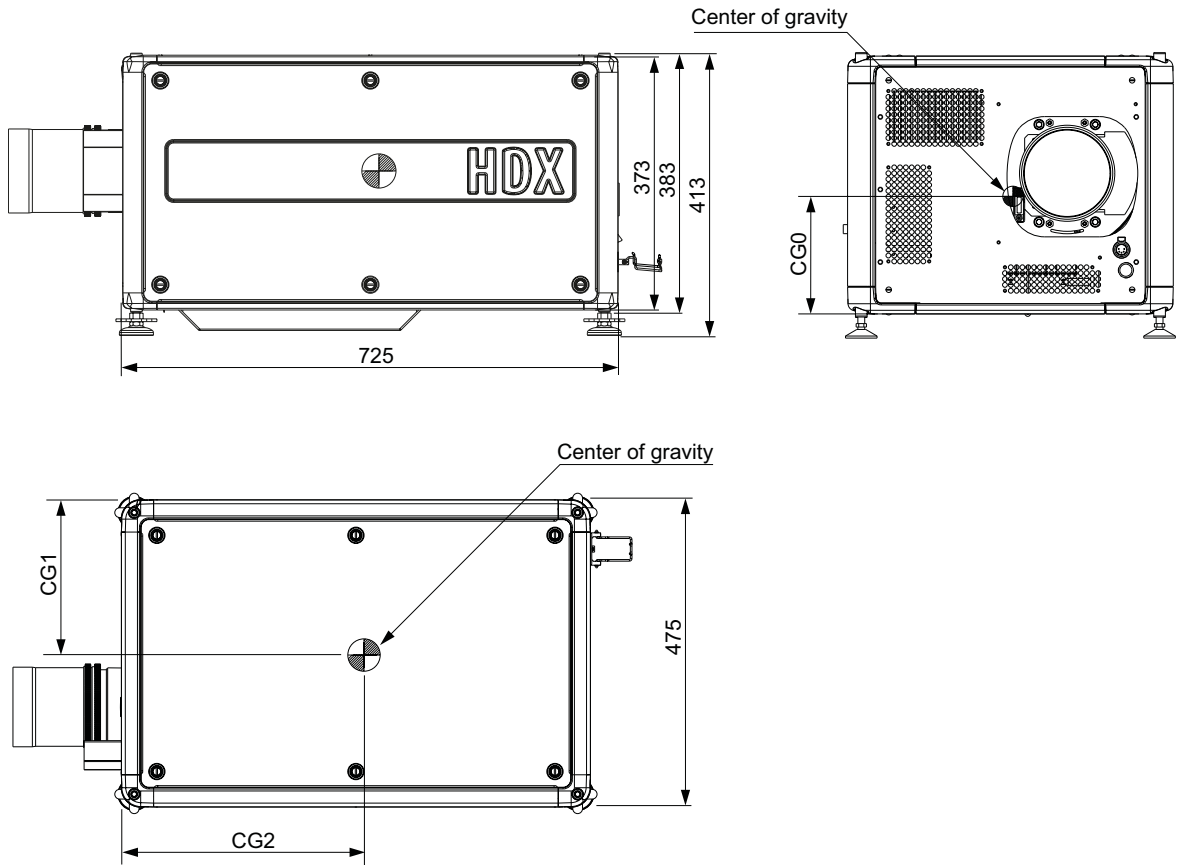


Image A-1
Dimensions, mm

	Geometrical centre	Centre without lens	Centre with lens
CG0	186.5	170.0	185.0
CG1	237.5	241.0	248.0
CG2	362.5	370.0	330.0

A.5 Technical Regulations

Certificates



Image A-2
EAC mark



Image A-3
RoHS



Image A-4
RoHS OK



Image A-5
CE mark

B. STACKING HDX PROJECTORS

Overview

- Mount stacking points
- Stacking HDX projectors
- Aligning stacked HDX projectors

B.1 Mount stacking points

Necessary tools

Allen key 8 mm

How to mount

1. Place the first stacking point on a corner.

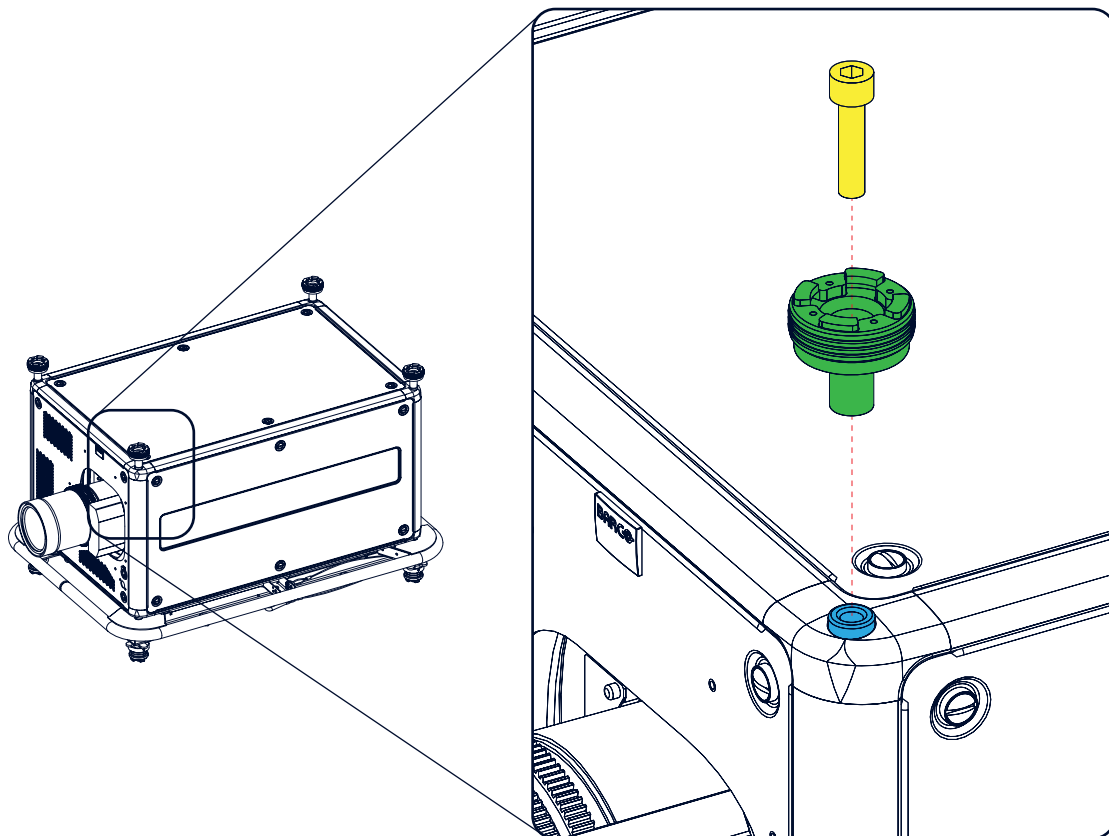


Image B-1
Stacking points, mount

2. Turn in the delivered bolt.
3. Repeat for the other 3 stacking points.

B.2 Stacking HDX projectors



CAUTION: Maximum stack three (3) projectors in a table mounted configuration.
Maximum stack two (2) projectors in a ceiling mounted configuration.

How to stack

1. Mount stacking points on lower projector. See "Mount stacking points", page 135.
2. Mount a bottom carry handle on the upper projector. See "Mounting the bottom carry handle", page 27.
3. Place the projector with carry handle on top of the projector with stacking points.
Make sure that all interlocking pins match with their corresponding interlocking sockets.

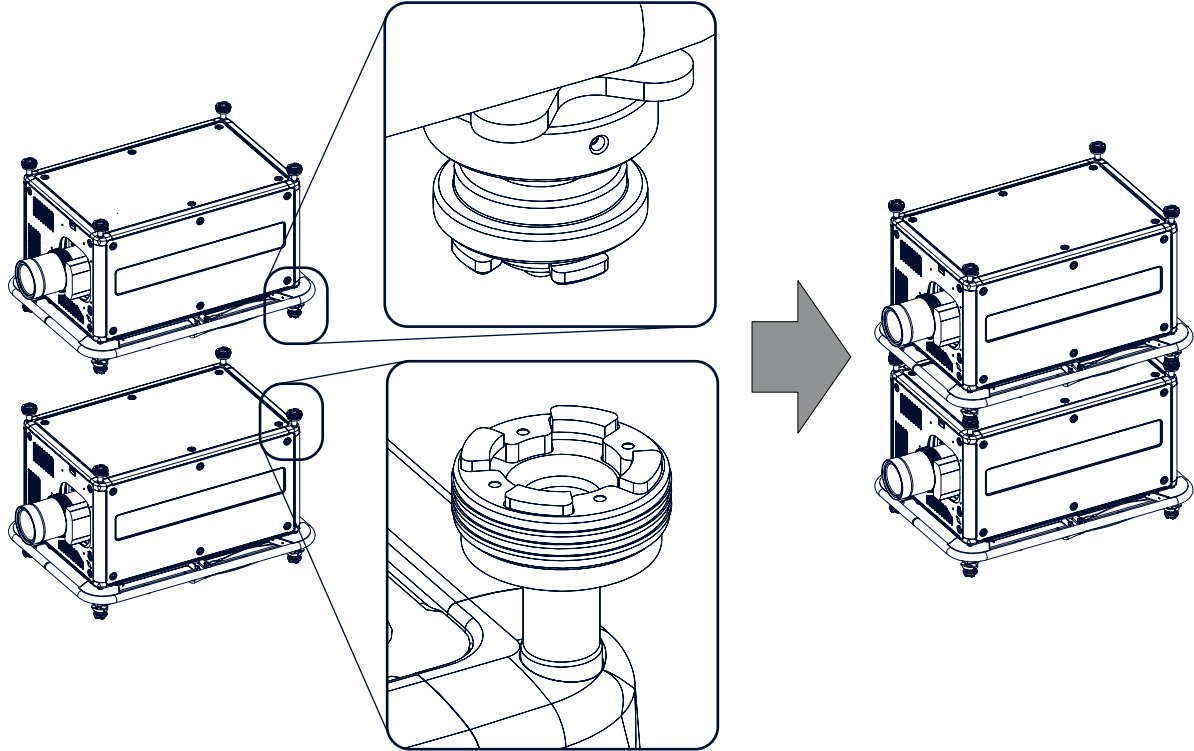


Image B-2
Dual stack

Tip: In case of stacking projectors for a ceiling mount configuration, first turn the projectors upside down before placing the projectors on top of each other.

4. Attach the two projectors together by closing all four interlocking adapters.

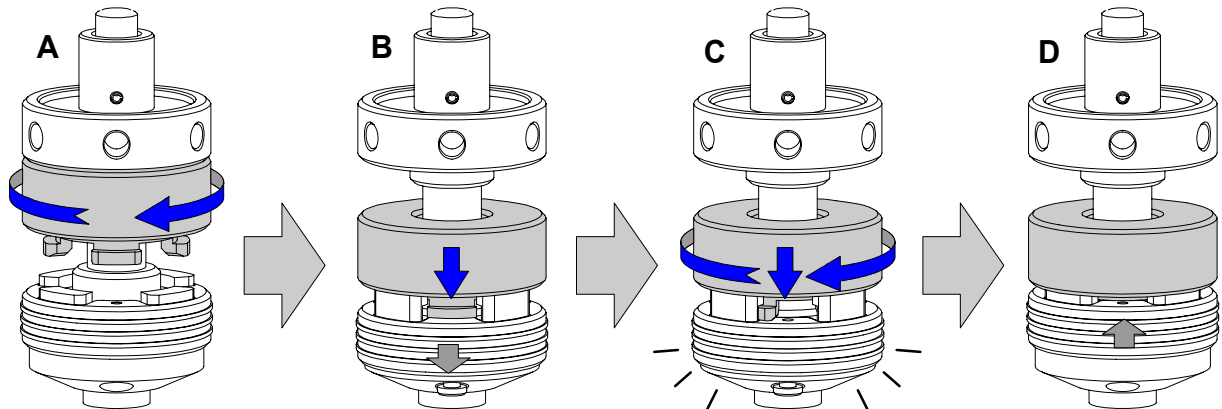


Image B-3
Interlocking, close

Extra actions for ceiling mounted stack

Two safety cables must be mounted between both projectors, one at each longitudinal side.

1. Mount the safety cable around the carrying handle of the bottom projector. Push the safety hook through the loop.

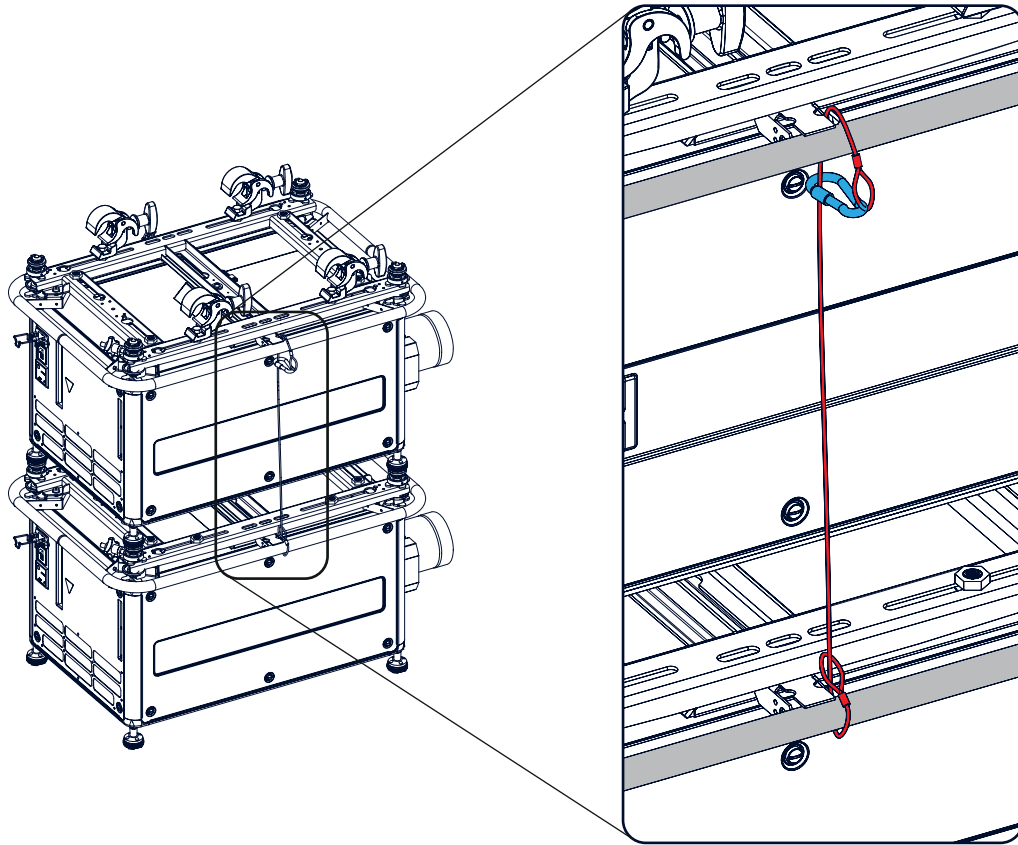


Image B-4
Security cables, mount

2. Mount the other end of the security cable around the carry handle of the top projector and clasp the safety hook round the cable as illustrated.
Make sure that the falling distance is maximum 20 cm. If necessary, before clasping the safety hook around the cable, turn the cable a few time around the carry handle.
3. Repeat this procedure for the second safety cable on the other side of the carry handle.



WARNING: Always use both safety cables of the lowest projector to secure a stacked projector in a ceiling mount configuration.

How to open an interlocking adapter

1. Open an interlocking adaptor as illustrated.

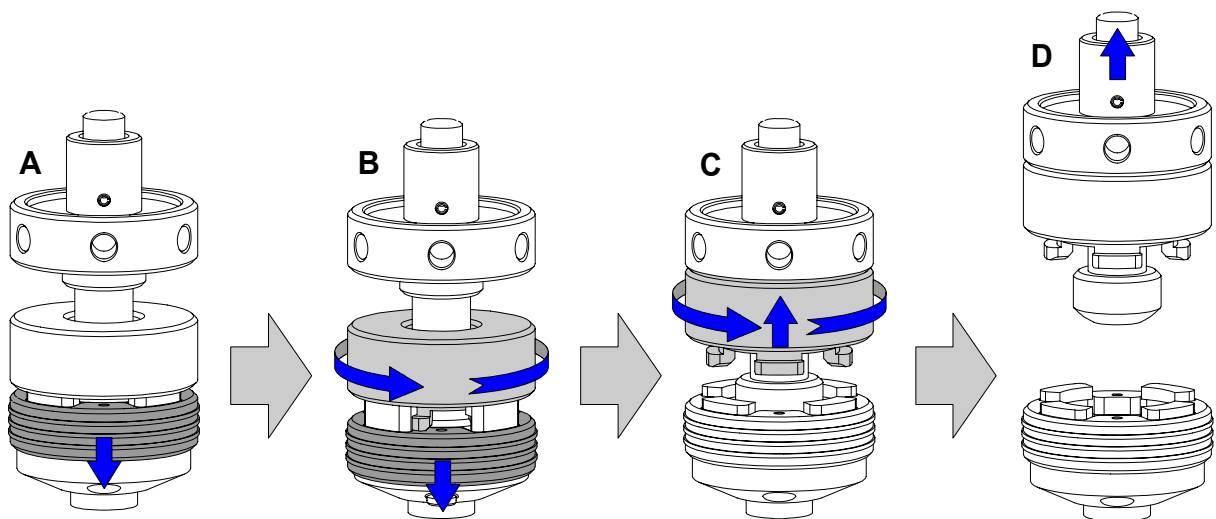


Image B-5
Interlocking, open



WARNING: Never open an interlocking adapter of a stacked projector which is still suspended. First place the stacked projectors on the floor.

B.3 Aligning stacked HDX projectors

Necessary tools

No tools.

How to align stacked projectors

1. Make sure that the internal hatch pattern projected by the reference projector is sharp and has a perfect rectangle outline. If this is not the case, readjust the reference projector before aligning the other stacked projector(s) with the reference hatch pattern.
Note: The reference projector in a stacked configuration is the lowest projector in case of table mount and the uppermost projector in case of ceiling mount.
2. Project with the stacked projector the same internal hatch pattern as the reference projector.
Tip: Use a white colored hatch pattern for the reference projector and e.g. green colored for the stacked projector. This makes it easier to see the difference between both hatch patterns projected.
3. If necessary, adjust the rotation of the stacked projector with respect to the reference projector by turning in or out the height adjustment ring of the interlocking adapters at the rear of the stacked projector. Adjust until the outline of the hatch pattern is most symmetric with the reference hatch pattern.

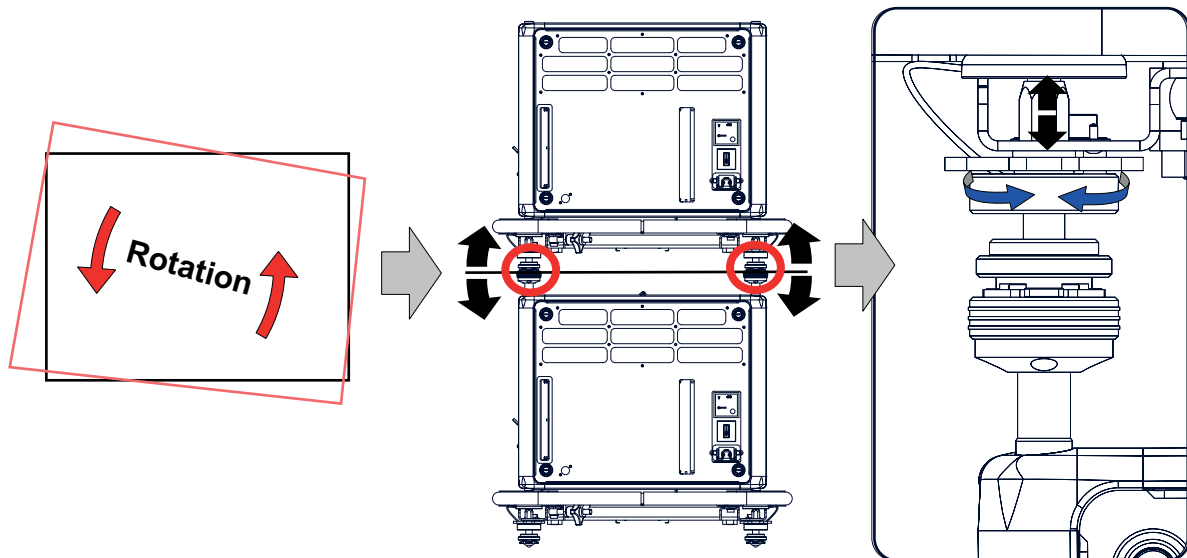


Image B-6
Stacked projectors, rotation

4. If necessary, adjust the inclination of the stacked projector with respect to the reference projector by turning the height adjustment ring of the interlocking adaptor at the front of the stacked projector in or out. Adjust until the outline of the hatch pattern is most symmetric with the reference hatch pattern.

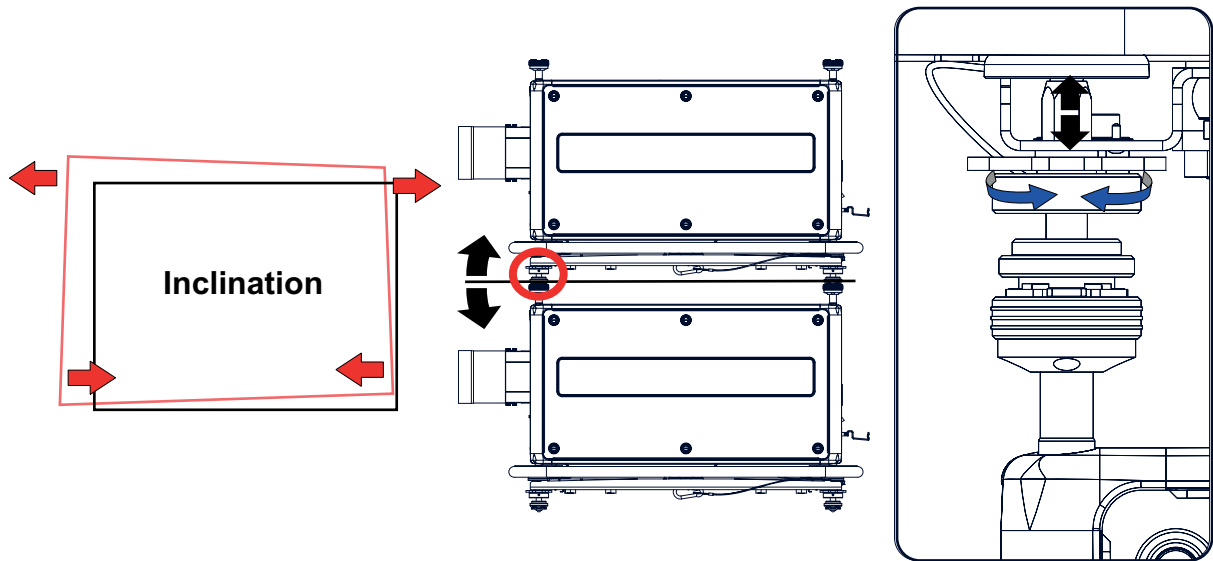


Image B-7
Stacked projectors, inclination

5. If necessary, adjust the skew of the stacked projector with respect to the reference projector by turning the Hand screw in or out. The hand screw is located at smallest side of the carrying handle (front or back). Adjust until the outline of the hatch pattern is most symmetric with the reference hatch pattern.

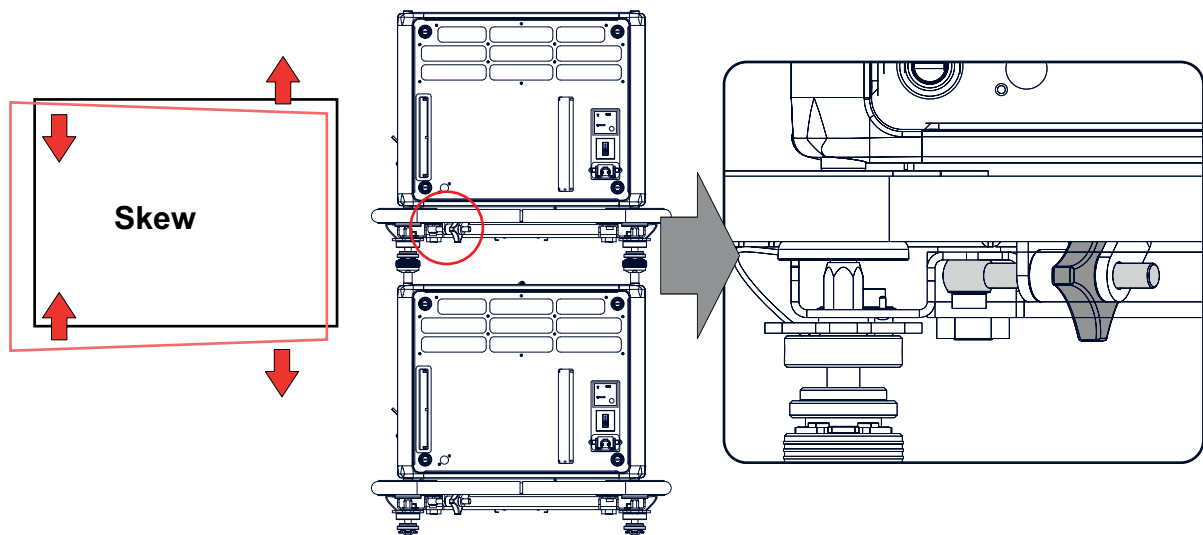


Image B-8
Stacked projectors, skew

6. Shift the hatch pattern horizontally and vertically until the outline of the hatch pattern is most symmetrically placed with respect to the reference hatch pattern.

Note: Note that the "Shift" function is motorized, which means that you have to access the projector software, via the local keypad or remote control unit, to operate the "Shift" function.

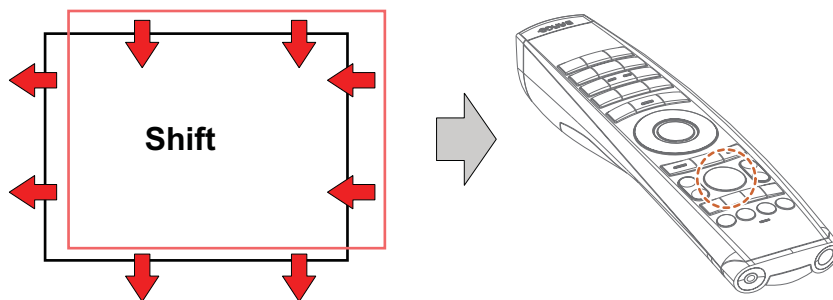


Image B-9

7. Zoom the hatch pattern in or out until the outline of the hatch pattern matches exactly the outline of the reference hatch pattern.

Note: Note that the "Zoom" function is motorized, which means that you have to access the projector software, via the local keypad or remote control unit, to operate the "Zoom" function.

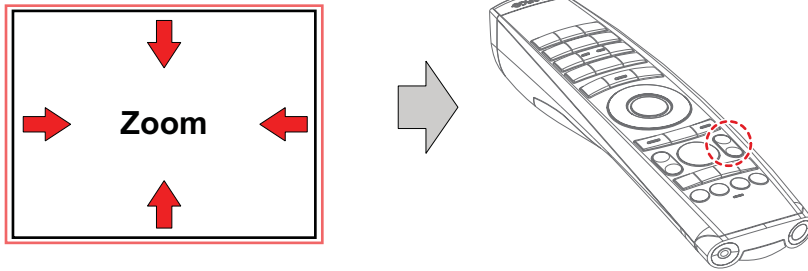


Image B-10

8. If necessary, repeat from step 2 until the hatch pattern of the stacked projector is perfectly aligned with the hatch pattern of the reference projector.



In case of a triple stacked table mount projector configuration adjust and align first the bottommost projector (reference), then the projector in the middle and finally the uppermost projector.

C. ENVIRONMENTAL INFORMATION

Overview

- Disposal information
- China RoHS compliance
- Taiwan RoHS compliance
- Turkey RoHS compliance
- Production address
- Contact information
- Download Product Manual

C.1 Disposal information

Disposal Information

Waste Electrical and Electronic Equipment



This symbol on the product indicates that, under the European Directive 2012/19/EU governing waste from electrical and electronic equipment, this product must not be disposed of with other municipal waste. Please dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

For more information about recycling of this product, please contact your local city office or your municipal waste disposal service.

For details, please visit the Barco website at: <http://www.barco.com/en/AboutBarco/weee>

Disposal of batteries in the product



This product contains batteries covered by the Directive 2006/66/EC which must be collected and disposed of separately from municipal waste.

If the battery contains more than the specified values of lead (Pb), mercury (Hg) or cadmium (Cd), these chemical symbols will appear below the crossed-out wheeled bin symbol.

By participating in separate collection of batteries, you will help to ensure proper disposal and to prevent potential negative effects on the environment and human health.

Disposal of lamp

Dispose of expired bulbs that are beyond warranty according the national regulations. See also related user manual of the lamp supplier for more guidance.

Small amounts of radioactive material (< 1000 Bq per lamp) are deliberately added to Xenon lamps for functional reasons. These lamps are manufactured under regulatory control as consumer product according to IAEA basic safety standard BSS 115. Disposal according to national regulations is required e.g. in Europe covered by WEEE regulation. See also related user manual of the lamp supplier for more guidance.

C.2 China RoHS compliance

中国大陆 RoHS (Information for China ROHS compliance)

根据中国大陆《电器电子产品有害物质限制使用管理办法》(也称为中国大陆RoHS), 以下部分列出了Barco产品中可能包含的有毒和/或有害物质的名称和含量。中国大陆RoHS指令包含在中国信息产业部MCV标准:“电子信息产品中有毒物质的限量要求”中。

According to the “Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products” (Also called RoHS of Chinese Mainland), the table below lists the names and contents of toxic and/or hazardous substances that Barco’s product may contain. The RoHS of Chinese Mainland is included in the MCV standard of the Ministry of Information Industry of China, in the section “Limit Requirements of toxic substances in Electronic Information Products”.

零件项目(名称) Component name	有毒有害物质或元素 Hazardous substances and elements					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印制电路配件 Printed Circuit Assemblies	x	o	o	o	o	o
外接电(线)缆 External Cables	x	o	o	o	o	o
内部线路 Internal wiring	x	o	o	o	o	o
光学镜头 Optical lenses	x	o	o	o	o	o
螺帽,螺钉(栓),螺旋(钉),垫圈,紧固件 Nuts, bolts, screws, washers, Fasteners	x	o	o	o	o	o
电源供应器 Power Supply Unit	x	o	o	o	o	o
风扇 Fan	x	o	o	o	o	o
灯泡支架 Lamp holder	x	o	o	o	o	o
附電池遙控器 Remote control	x	o	o	o	o	o

本表格依据SJ/T 11364的规定编制

This table is prepared in accordance with the provisions of SJ/T 11364.

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下.

O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572.

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 标准规定的限量要求.

X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572.

在中国大陆销售的相应电子信息产品(EIP)都必须遵照中国大陆《电子电气产品有害物质限制使用标识要求》标准贴上环保使用期限(EFUP)标签。Barco产品所采用的EFUP标签(请参阅实例, 徽标内部的编号用于指定产品)基于中国大陆的《电子信息产品环保使用期限通则》标准。

All Electronic Information Products (EIP) that are sold within Chinese Mainland must comply with the "Marking for the restriction of the use of hazardous substances in electrical and electronic product" of Chinese Mainland, marked with the Environmental Friendly Use Period (EFUP) logo. The number inside the EFUP logo that Barco uses (please refer to the photo) is based on the "General guidelines of environment-friendly use period of electronic information products" of Chinese Mainland.



C.3 Taiwan RoHS compliance

限用物質含有情況標示聲明書 (Declaration of the Presence Condition of the Restricted Substances Marking)

設備名稱: 投影儀, 型號(型式): HDX Equipment name: Projector, Type designation: HDX						
限用物質及其化學符號 Restricted substances and its chemical symbols						
單元	鉛	汞	鎘	六價鉻	多溴聯苯	多溴二苯醚

Unit	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr6+)	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
印製電路板配件 Printed Circuit Assemblies	—	○	○	○	○	○
外接電(線)纜 External Cables	—	○	○	○	○	○
內部線路 Internal wiring	—	○	○	○	○	○
光學鏡頭 Optical lenses	—	○	○	○	○	○
鏡頭支架 Lensholder	—	○	○	○	○	○
螺帽, 螺釘(栓), 螺旋(釘), 墊圈, 緊固件 Nuts, bolts, screws, washers, Fasteners	—	○	○	○	○	○
電源供應器 Power Supply Unit	—	○	○	○	○	○
風扇 Fan	—	○	○	○	○	○
燈支架 Lamp holder	—	○	○	○	○	○
遙控器 Remote Control	—	○	○	○	○	○
<p>備考1. “超出0.1 wt %” 及 “超出0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。 Note 1: “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.</p> <p>備考2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。 Note 2: “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.</p> <p>備考3. “-” 係指該項限用物質為排除項目。 Note 3: The “-” indicates that the restricted substance corresponds to the exemption.</p>						

C.4 Turkey RoHS compliance

Turkey RoHS compliance



■■■■ Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur.

[Republic of Turkey: In conformity with the WEEE Regulation]

C.5 Production address

Factories

Barco NV

Noordlaan 5, B-8520 Kurne (BELGIUM)

Barco Visual (Beijing) Electronics Co. Ltd.

巴可伟视(北京)电子有限公司

No.16 Changsheng Road, Changping District, 102200, Beijing, P.R.C

北京市昌平区中关村科技园区昌平园昌盛路16号 邮政编码: 102200

C.6 Contact information

Barco contact information

Registered office address: President Kennedypark 35, 8500 Kortrijk, Belgium

Contact address: Beneluxpark 21, 8500 Kortrijk, Belgium

Importers contact information

To find your local importer, contact Barco directly or one of Barco's regional offices via the contact information given on Barco's web site, www.barco.com.

Made in information

The made in country is indicated on the product ID label on the product itself.

Production date

The month and year of production is indicated on the product ID label on the product itself.

C.7 Download Product Manual

Download Product Manual

Product manuals and documentation are available online at www.barco.com/td.

Registration may be required; follow the instructions given on the website.

IMPORTANT! Read Installation Instructions before connecting equipment to the mains power supply.

GLOSSARY

Broadcast address

Projector will always execute the command coming from a RCU programmed with that broadcast address.

Default Gateway

A router that serves as an entry point into and exit point out of a network. For example, a local network (LAN) may need a gateway to connect it to a wide area network (WAN) or to the Internet.

DHCP

Dynamic host configuration protocol. DHCP is a communications protocol that lets network administrators manage centrally and automate the assignment of IP addresses in an organization's network. Using the Internet Protocol, each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DMX

DMX-512 Lighting protocol over RS-485 interface. Carries information of 512 channels from a lighting controller to lighting devices. Standardized by USITT.

HD

Hazard Distance (HD) is the distance measured from the projection lens at which the intensity or the energy per surface unit becomes lower than the applicable exposure limit on the cornea or on the skin. The light beam is considered (to be) unsafe for exposure if the distance from a person to the light source is less than the HD.

-10

IP

Internet Protocol. The network layer of TCP/IP. Required for communication with the internet.

Light processor unit

Heart of the projector, unit inside this projector which is responsible for the creation of the image to be projected on the screen. Also called 'engine'.

MAC address

Media Access Control address. Unique hardware number, used in combination with the IP-address to connect to the network (LAN or WAN).

Projector address

Address installed in the projector to be individually controlled.

RS232

An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either D-SUB 9 pins or D-SUB 25 pins connectors. This standard is used for relatively short-range communications and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length and type of connector to be used. The standard specifies component connection standards with regard to computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard. Logical '0' is $> +3V$, Logical '1' is $< -3V$. The range between $-3V$ and $+3V$ is the transition zone.

RS422

An EIA serial digital interface standard that specifies the electrical characteristics of balanced (differential) voltage, digital interface circuits. This standard is usable over longer distances than RS-232. This signal governs the asynchronous transmission of computer data at speeds of up to 920,000 bits per second. It is also used as the serial port standard for Macintosh computers. When the difference between the 2 lines is $< -0.2V$ that equals with a logical '0'. When the difference is $> +0.2V$ that equals to a logical '1'.

Scheimpflug principle

The "plane of sharp focus" can be changed so that any plane can be brought into sharp focus. When the DMD plane and lens plane are parallel, the plane of sharp focus will also be parallel to these two planes. If, however, the lens plane is tilted with respect to the DMD plane, the plane of sharp focus will also be tilted according to geometrical and optical properties. The DMD plane, the principal lens plane and the sharp focus plane will intersect in a line below the projector for downward lens tilt.

Subnet mask

A number that is used to identify a subnetwork so that IP addresses can be shared on a local area network.

TR (Throw Ratio)

The ratio of the distance to the screen (throw) to the screen width.

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