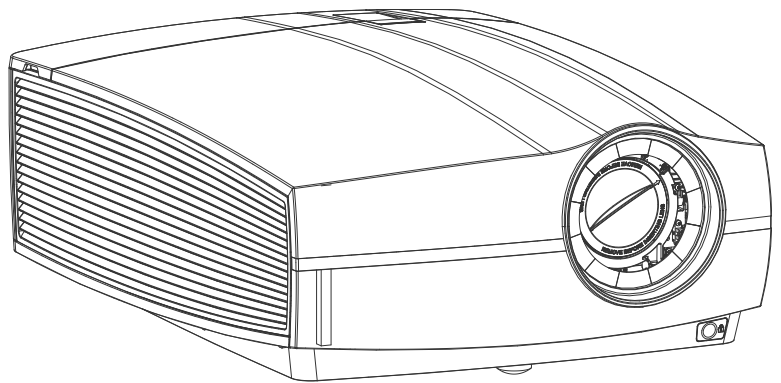


Medea series



Installation Manual

Barco Fredrikstad AS

Habornveien 53, N-1630 Gamle Fredrikstad, Norway
Support.fre@barco.com
www.barco.com

Registered address: Barco NV

President Kennedypark 35, 8500 Kortrijk, Belgium
www.barco.com/en/support
www.barco.com

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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

FCC responsible: Barco Inc.
3059 Premiere Parkway Suite 400
30097 Duluth GA, United States
Tel: +1 678 475 8000

Patent protection

Please refer to www.barco.com/about-barco/legal/patents

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.

警告使用者: 此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

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Safety

1

About this document

Read this document attentively. It contains important information to prevent personal injury while installing and using the Medea projector. Furthermore, it includes several cautions to prevent damage to the Medea projector. Ensure that you understand and follow all safety guidelines, safety instructions and warnings mentioned in this chapter before installing the Medea projector.

Clarification of the term “Medea” used in this document

When referring in this document to the term “Medea” means that the content is applicable for following Barco products:

- Medea-M

Model certification name

- GPC

Overview

- General considerations
- Important safety instructions
- Product safety labels
- Risk Group 3 Safety

1.1 General considerations



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.

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, as basis for National safety regulation world wide. The safety standard covers information technology equipment including electrical business equipment intended to operate in “normal” environments (offices and homes). This safety standard imposes 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 reduce the risk of hazards and contribute to ensure the safety of the equipment to the user even when the equipment’s normal operation fails.

Notice on optical radiation

This projector embeds extremely high brightness (radiance) lasers; this laser light is processed through the projector's optical path. Native laser light is not accessible by the end user in any use case. The light exiting the projection lens has been diffused within the optical path, representing a larger source and lower radiance value than native laser light. Nevertheless the projected light represents a significant risk for the human eye when exposed directly within the beam. This risk is not specific related to the characteristics of laser light but solely to the high thermal induced energy of the light source; which is equivalent with lamp based systems.

Thermal retinal eye injury is possible when exposed within the Hazard Distance (HD). The HD is defined from the projection lens surface towards the position of the projected beam where the irradiance equals the maximum permissible exposure as described in the chapter “Hazard Distance”.

Notice on optical radiation (addendum)

- Medea-M :
 - The projector is Class 1 laser product that conforms with IEC EN 60825-1:2014. The projector conforms with IEC 60825-1:2007, and with performance standards for laser products under 21 CFR 1040, except with respect to those characteristics authorized by Variance Number 2017-V-4837 effective September 13, 2017 Do not stare into Beam.
 - This projector is Risk Group 2 (RG2) according to IEC EN 62471-5. This projector may become Risk Group 3 (RG3) when an interchangeable lens with throw ratio greater than 3.5 is installed. For Northern America, installation requirements according to Risk group 3 (RG3) must be followed when interchangeable lens with throw ratio greater than 2.0 is installed. Refer to the manual for the lens list and throw ratio before operation. Such combination of projector and lens are intended for professional

use only, and are not intended for consumer use. Safety considerations for RG3 projectors are discussed in section “Risk Group 3 Safety”, page 13.

- This projector has one or several built-in Class 4 laser clusters. Disassembly or modification is very dangerous and should never be attempted.

Users definition

Throughout this manual, the term SERVICE PERSONNEL refers to Barco authorized 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. Only Barco authorized SERVICE PERSONNEL, knowledgeable of such risks, are allowed to perform service functions inside the product enclosure. The term USER and OPERATOR refers to any person other than SERVICE PERSONNEL. When installing an interchangeable lens with a throw ratio that make the projector become RG3, refer to chapter “Risk Group 3 Safety”, page 13. Such combination of projector and lens are intended for professional use only, and are not intended for consumer use.

FOR PROFESSIONAL USE ONLY means installation can only be carried out by Barco AUTHORIZED PERSONNEL familiar with potential hazards associated with high intensity light beams.

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. Never use 2-prong power cords, as this is dangerous and could lead to electrical shock.
- 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 qualified service personnel.
- 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.
- Make sure that no objects enter into the vents and openings of the set.
- Do not expose this projector to rain or moisture.
- The projector is designed for indoor use only. Never operate the unit outdoors.
- 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 qualified service personnel 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

- To prevent injury and physical damage, always read this manual and all labels on the system before powering the projector or adjusting the projector.

- To prevent injury, take note of the weight of the projector. Minimum 2 persons are needed to carry the projector. The projector weights about ± 26 kg (± 57 lbs) without lens and rigging frame.
- 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 projector:** This projector embeds extremely high brightness (radiance) lasers; this laser light is processed through the projectors optical path. Native laser light is not accessible by the end user in any use case. The light exiting the projection lens has been diffused within the optical path, representing a larger source and lower radiance value than native laser light. Nevertheless the projected light represents a significant risk for the human eye when exposed directly within the beam. This risk is not specific related to the characteristics of laser light but solely to the high thermal induced energy of the light source; which is comparable with lamp based systems. Thermal retinal eye injury is possible when exposed within the Hazard Distance. The Hazard Distance (HD) is defined from the projection lens surface towards the position of the projected beam where the irradiance equals the maximum permissible exposure as described in the chapter "High Brightness precautions: Hazard Distance (HD)", page 14.
- Based on international 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 optional barriers. Within the restricted area operator training is considered sufficient. The applicable separation heights are discussed in "High Brightness precautions: Hazard Distance (HD)", page 14.
- Don't put your hand in front of the beam.
- This product contains no user serviceable parts. Attempts to modify/replace mechanics or electronics inside the housing or compartments will violate any warranties and may be hazardous.
- A special device ("rigged frame") based on an external frame must be used when the projector is deployed in a hanging configuration, or when several projector must be stacked. See installation manuals for the correct use of these devices.
- 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.
- **Cooling liquid circuit.** The projector contains a cooling circuit filled with Green Ethylene glycol diluted (53% Glycol – 47% Demi water). When the cooling circuit leaks, switch off the device and contact qualified service personnel. 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.
- Never point or allow light to be directed on people or reflective objects within the HD zone.
- All operators shall have received adequate training and be aware of the potential hazards.
- In case of using an external cooling system position the hoses of the cooling system so that they will not be tripped over, pulled, or contact hot surfaces.

To prevent fire hazard

- Do not place flammable or combustible materials near the projector!
- Barco 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 in the exhaust area must be not less than 100 cm (40"). The exclusion zone on the intake area must be not less than 50 cm (20").
- Do not place any object in the projection light path at close distance to the projection lens output. The concentrated light at the projection lens output may result in damage, fire or burn injuries.
- 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.

- Ensure no misalignment can occur. Prolonged exposure of wooden walls at close distance (< 20 cm) can represent a fire risk. After alignment the projector shall be securely mounted to the pedestal.
- 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. It is necessary to vent hot exhaust air from projector and cooling system to the outside of the building.
- Let the projector cool completely before storing. Remove cord from the projector when storing.

To prevent projector damage

- Always remove lens cap before switching on the projector. If the lens cap is not removed, it may melt due to the high energy light emitted through the lens. Melting the lens cap may permanently damage the surface of the projection lens.
- The air filters of the projector must be cleaned or replaced on a regular basis. Cleaning the booth area 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.
- If more than one projector is installed in a common projection booth, the exhaust air flow requirements are valid for EACH individual projector system. Note that inadequate air extraction or cooling will result in decreased life expectancy of the projector as a whole as well as causing premature failure of the lasers.
- In order to ensure that correct airflow is maintained, and that the projector complies with Electromagnetic Compatibility (EMC) and safety 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 remove all power from the projector. 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.
- 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 sunlight. Sunlight 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 benzene, 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. For lens cleaning follow the instructions precisely as stipulated in the projector manual.
- Only connect the projector to signal sources and voltages as described in the technical specification. Connecting to unspecified signal sources or voltages may lead to malfunction and permanent damage of the unit.
- Allowed ambient temperature range: $t_a = 10^{\circ}\text{C}$ (50°F) to 40°C (104°F)
- Rated humidity = 20% to 80% Non-condensed.
- Do not operate the projector outside its temperature and humidity specifications as this may result in overheating and malfunction.

On servicing

- Do not attempt to service this product yourself. This product contains no user serviceable parts except parts describe in the User manual. Attempts to modify/replace mechanics or electronics inside the housing

or compartments will violate any warranties and may expose you to dangerous voltage potentials, risk of electric shock and retinal eye injury.


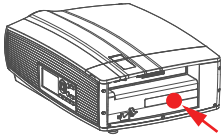

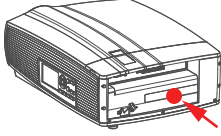

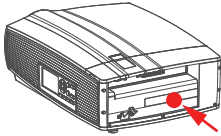
- Refer all servicing to Barco authorized repair centers.
- Attempts to alter the factory-set internal controls or to change other control settings not specially discussed in this manual can lead to permanent damage to the projector and cancellation of the warranty.
- Remove all power from the projector and refer servicing to Barco authorized repair center 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.


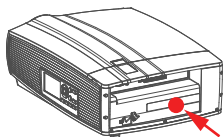
Safety Data Sheets for Hazardous Chemicals

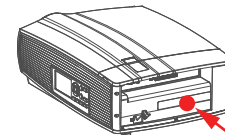
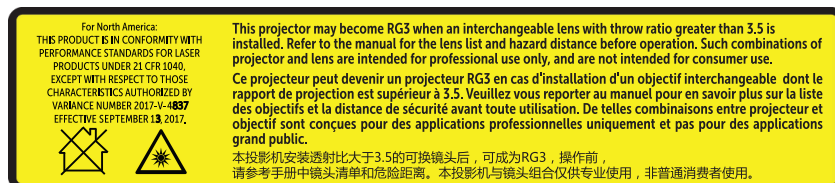
For safe handling information on chemical products, consult the Safety Data Sheet (SDS). SDSs are available upon request via safetydatasheets@barco.com.

1.3 Product safety labels

Light beam related safety labels

Label image	Label description	Label location
	Refer to user manual for further information!	
	Caution! Do not stare into beam, RG2 product.	
	Hazard RG3: not for household use symbol.	

Label image	Label description	Label location
	Hazard RG3: optical radiation warning symbol.	

Medea-M :

For North America: THIS PRODUCT IS IN CONFORMITY WITH PERFORMANCE STANDARDS FOR LASER PRODUCTS UNDER 21 CFR 1040, EXCEPT WITH RESPECT TO THOSE CHARACTERISTICS AUTHORIZED BY VARIANCE NUMBER 2017-V-4837 EFFECTIVE September 13, 2017.

This projector may become RG3 when an interchangeable lens with throw ratio greater than 3.5 is installed. Refer to the manual for the lens list and hazard distance before operation. Such combinations of projector and lens are intended for professional use only, and are not intended for consumer use.

Ce projecteur peut devenir un projecteur RG3 en cas d'installation d'un objectif interchangeable dont le rapport de projection est supérieur à 3.5. Veuillez vous reporter au manuel pour en savoir plus sur la liste des objectifs et la distance de sécurité avant toute utilisation. De telles combinaisons entre projecteur et objectif sont conçues pour des applications professionnelles uniquement et pas pour des applications grand public.

本投影机安装透射比大于3.5的可换镜头后，可成为RG3，操作前，请参考手册中镜头清单和危险距离。本投影机与镜头组合仅供专业使用，非普通消费者使用。

1.4 Risk Group 3 Safety

1.4.1 General considerations

Notice on optical radiation from Medea Projector when it becomes Risk Group 3.

- For RG3, no direct exposure to the beam shall be permitted.
For RG3, operators shall control access to the beam within the hazard distance or install the product at a height that will prevent eye exposure within the hazard distance.
- This projector has one or several built-in Class 4 laser clusters. Disassembly or modification is very dangerous and should never be attempted.
- Any operation or adjustment not specifically instructed by the user's guide creates the risk of hazardous laser radiation exposure.
- Do not open or disassemble the projector as this may cause damage by the exposure of laser radiation.

FOR PROFESSIONAL USE ONLY means installation can only be carried out by Barco AUTHORIZED PERSONNEL familiar with potential hazards associated with high intensity light beams.



WARNING: No direct exposure to the beam within the hazard distance shall be permitted, RG3 (Risk Group 3) IEC 62471-5:2015



CAUTION: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

1.4.2 Safety Training provided by the installer



Refer to document 601–0462 “Declaration of user safety training” for training tick off and signing.



WARNING: The installer is responsible that the user is instructed. The user will sign a document to confirm that the instructions have been received and understood.

Users definition

The Medea projector is intended for persons who have been instructed and trained by Barco authorized personnel to identify energy sources that may cause injury and to take precautions to avoid unintentional contact with or exposure to those energy sources.

This personnel must instruct the user about:

- High intensity light beam. The user must respect the exclusion zone, based on the light beam Hazard Distance (HD).
- Dangerous energy sources inside the projector. The user is not allowed to remove any cover from the projector.
- The installation, maintenance or service is for skilled persons only.
- The requirements for a **restricted access location** and an **exclusion zone**.

Restricted access location

To protect untrained persons and children, the projector must be installed in a **restricted access location**. The definition of a **restricted access location** is a location for equipment where both of the following paragraphs apply:

- Access can only be gained by Barco authorized personnel or persons who have been instructed and trained by a skilled person. The persons must have been instructed about the reasons for the restriction applied to the location and about the precautions that shall be taken.
- Access is only possible through the use of the tool or lock and key, or other means of security like sufficient clearance height (ref Hazard Distances chapter), and is controlled by the authority responsible for the location.

Why a restricted access location: This is a RG3 product. Based on international 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 optional barriers. Within the restricted area operator training is considered sufficient. The applicable separation heights are discussed in “High Brightness precautions: Hazard Distance (HD)”, page 14.

1.4.3 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 17.

To protect untrained end users (as cinema visitors) 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 non-cinema 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 end user 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, 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 non-cinema 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. For example, a sufficiently large separation height may be achieved by mounting the image projector on the ceiling or through the use of physical barriers.

For applications installed in the USA market the above limits for cinema like environments do not apply. The relevant minimum separation height is 2.5m (8,2 ft) by the FDA CDRH. Non cinema like environments require 2.5 meter (8.2 ft) separation height and 1.0 meter (3.3 ft) separation width for areas where restrained behavior is to be expected. All other areas require 3.0 (9.9 ft) separation height.

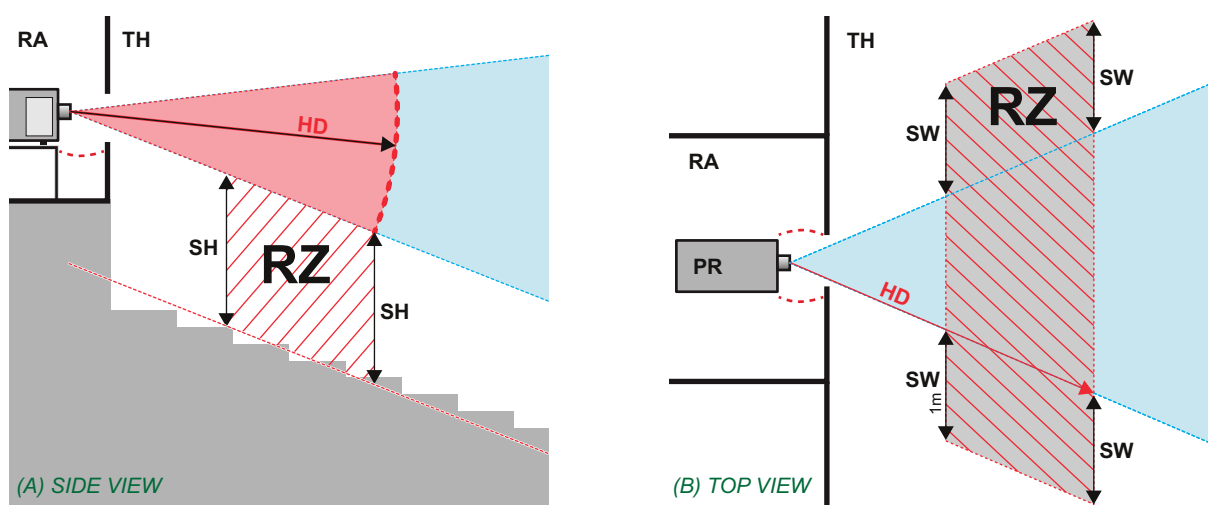


Image 1-1

- 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.

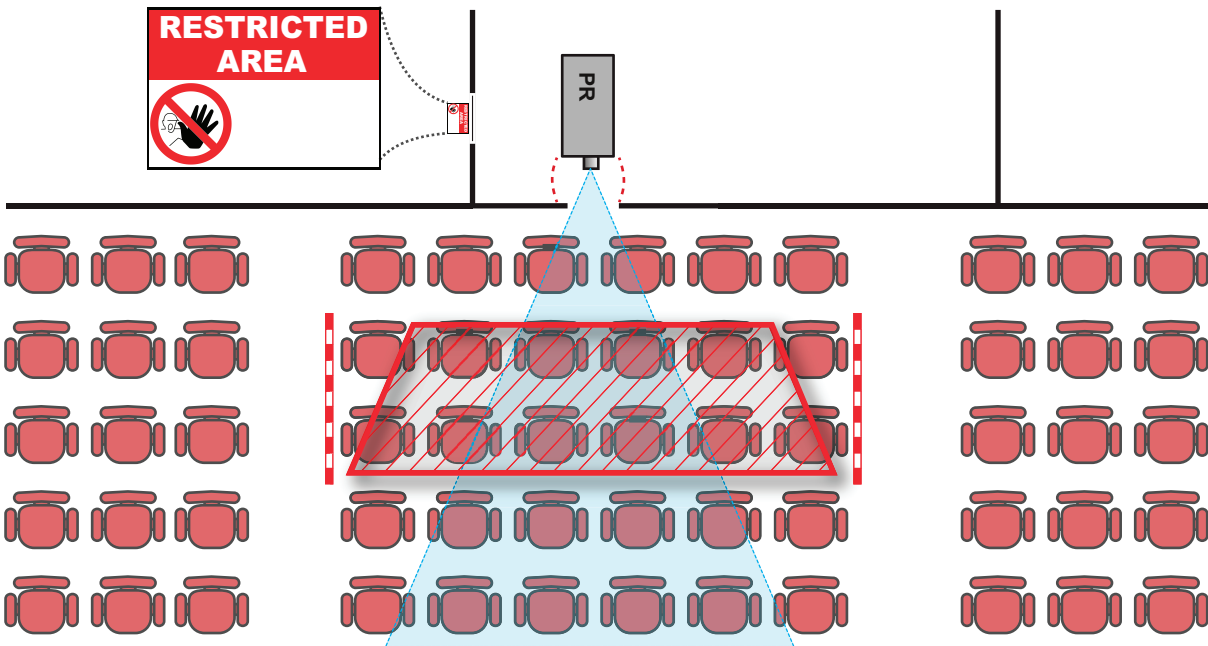


Image 1-2

1.4.4 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).

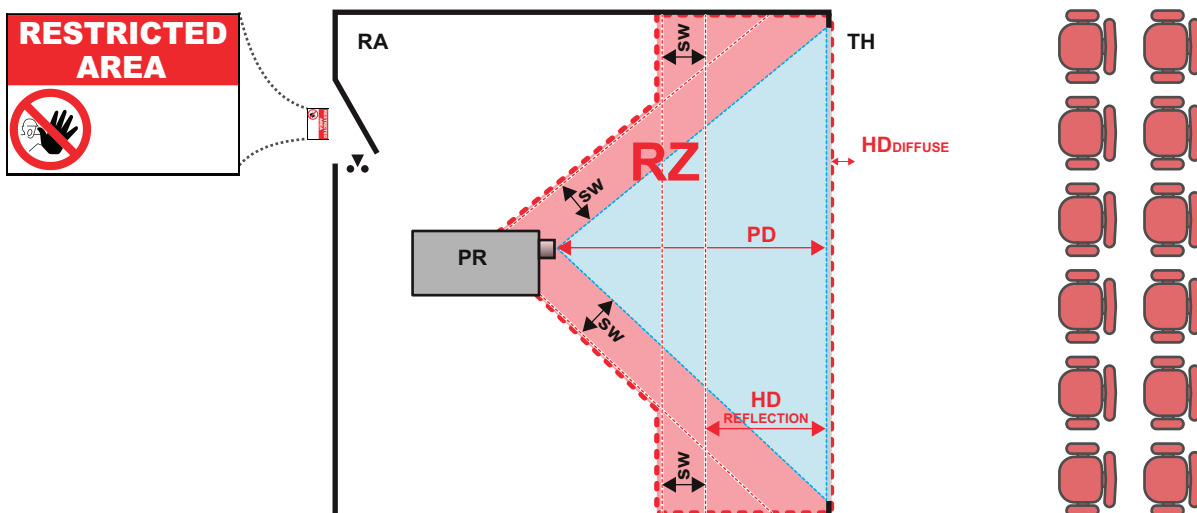


Image 1-3

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 14, 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 14, it is mandatory to create a restricted zone within the beam areas closer than any HD. 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 17.

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

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.

1.4.5 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.

HD versus Throw Ratio

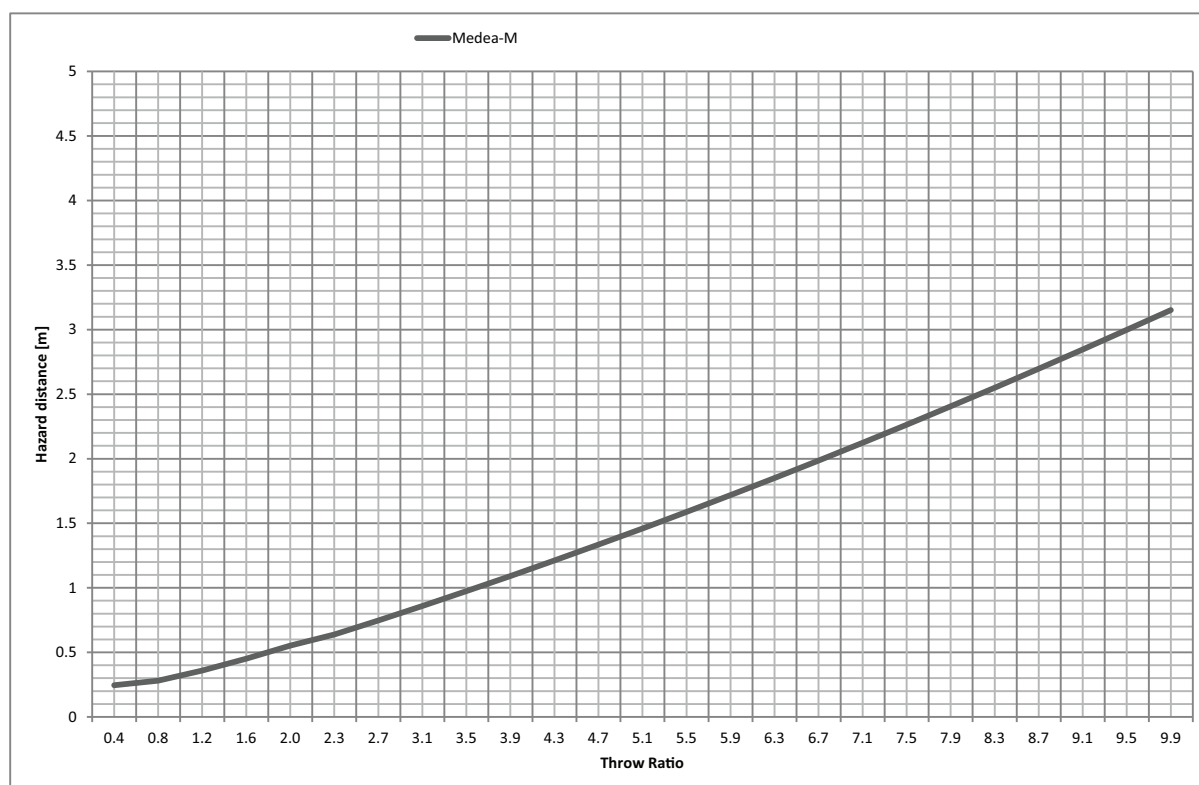


Image 1-4

Graph shows Hazard Distance in meters versus Throw ratio of the lens

About this chapter

Read this chapter before installing the Medea 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

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

2.1 Overview

Orientation

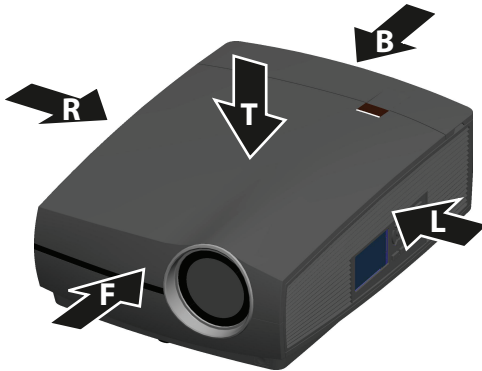


Image 2-1

- | | |
|---------------|----------------|
| L Left | R Right |
| T Top | F Front |
| B Back | |

Main components

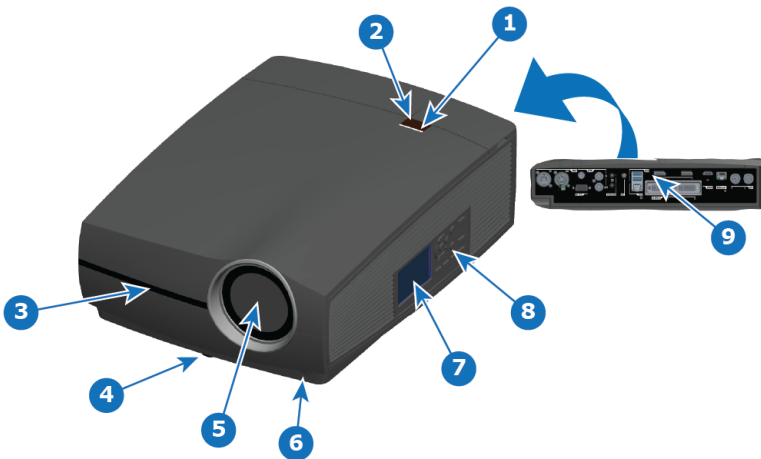


Image 2-2

- | | |
|--|--------------------------|
| 1 LED status light | 6 Lens button |
| 2 Top IR Receiver: for remote control communication | 7 LCD panel |
| 3 Front IR Receiver: for remote control communication | 8 Keypad |
| 4 Adjustable feet | 9 Connector panel |
| 5 Projector lens | |

2.2 Installation requirements

Environment conditions

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

Environment	Operating	Non-Operating
Ambient Temperature (-1500 meters)	10°C (50°F) to 40°C (104°F)	-20°C (-4°F) to 60°C (140°F)
Ambient Temperature (3000 meters)	10°C (50°F) to 35°C (95°F)	-20°C (-4°F) to 60°C (140°F)
Humidity	20% to 80% RH Non-condensed	20% to 90% RH Non-Condensed
Altitude	0m (0Ft) to 3000m (9842Ft)	-60m (-197Ft) to 10000m (32810Ft)



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 noneffective 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.

Main Power requirements

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

Power requirements : 120-180V/200-240V, 16A, 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 Medea . The projector weights about ±26 kg (±57 lbs) 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.

2.3 Unpacking the projector

What has to be done ?

The projector is delivered in a cardboard box on a foam tray (pallet) and is secured with glued plastic straps. Furthermore, to provide protection during transportation, the projector is surrounded with polymeric foam.

Once the projector has arrived at the installation site, it needs to be removed from the box and pallet in a safe manner, without damaging the projector.

Required tools

cutter knife

How to unpack

1. Use the cutter to remove the plastic straps around the cardboard box, then open the box.

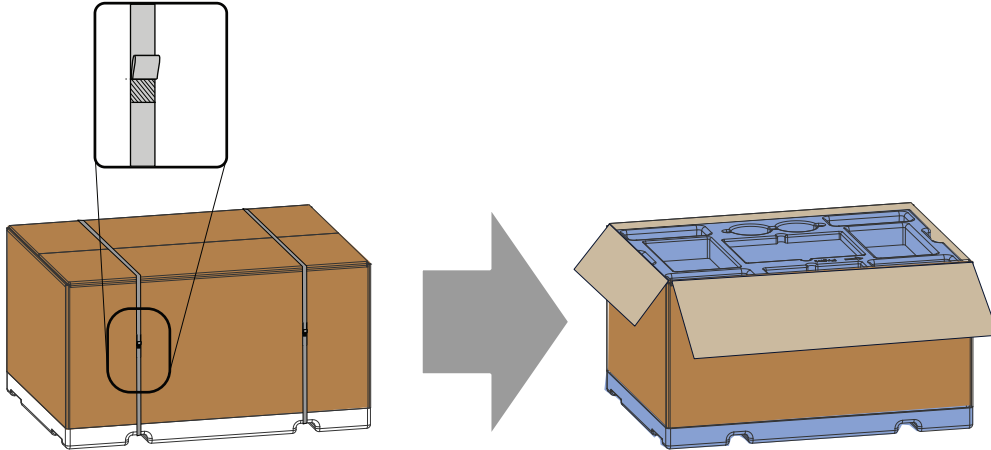


Image 2-3

2. Remove the accessories (manuals, remote control, etc.) placed on top of the projector.

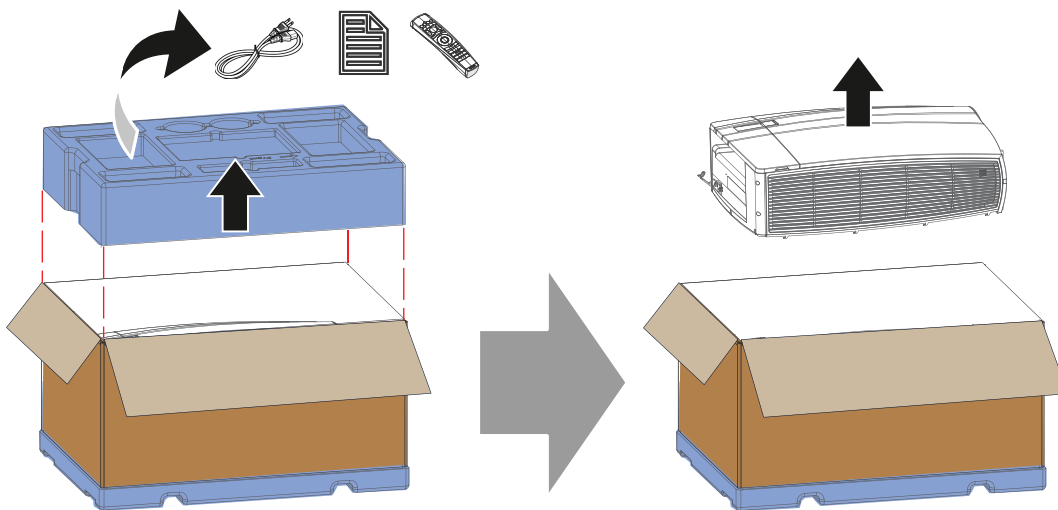


Image 2-4

3. Remove the polymeric foam.
4. Lift the projector (wrapped in a plastic bag) out of its packaging.
5. Place the projector on solid and stable surface, then remove the protected plastic bag.



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 plastic lens holder cover is placed into the lens opening of the projector. It's recommended to reuse this cover each time you transport the projector. This to prevent intrusion of dust and foreign particles.



The lens is delivered in a separate box.

2.4 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.

Box content

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

- One power cord of 2.7 m (3G10, 32A)
- One Quick Start guide
- One Safety manual
- One Web site reference sheet
- One remote control unit (RCU)
- 2 batteries for the RCU.

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.

2.5 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.

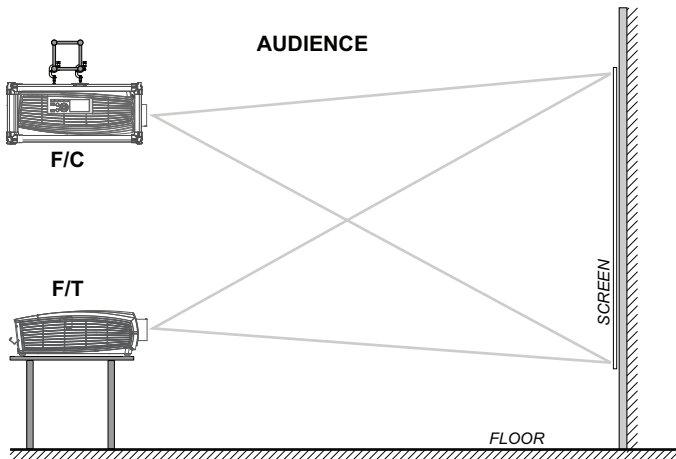


Image 2-5: Front projection

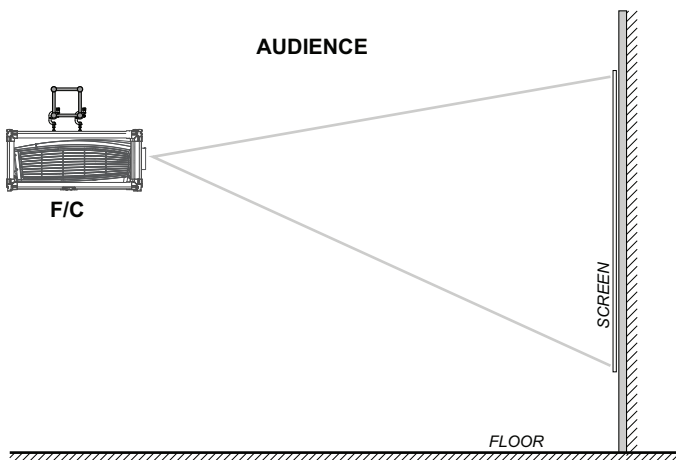


Image 2-6: Front projection, Ceiling mounted, in table position

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.

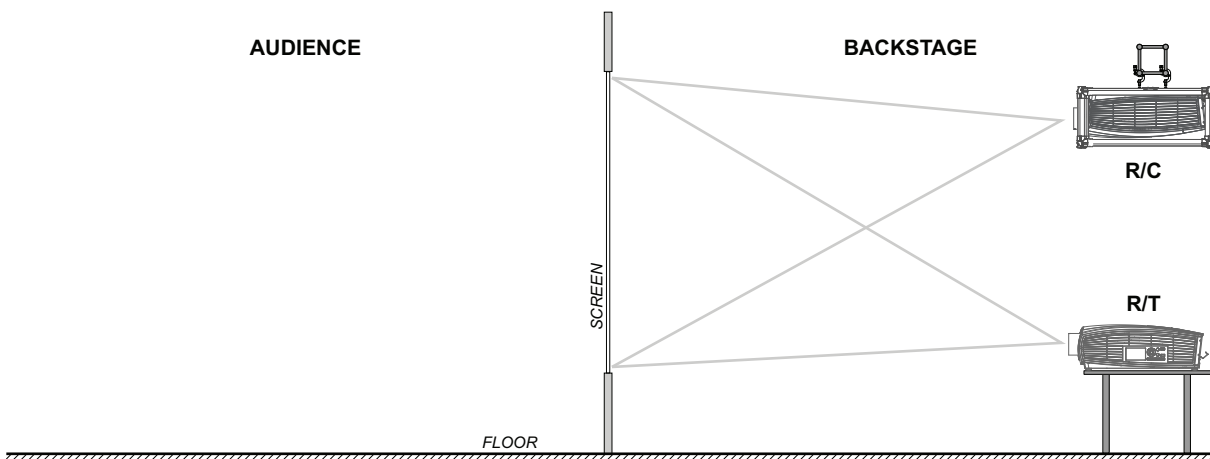


Image 2-7: Rear projection

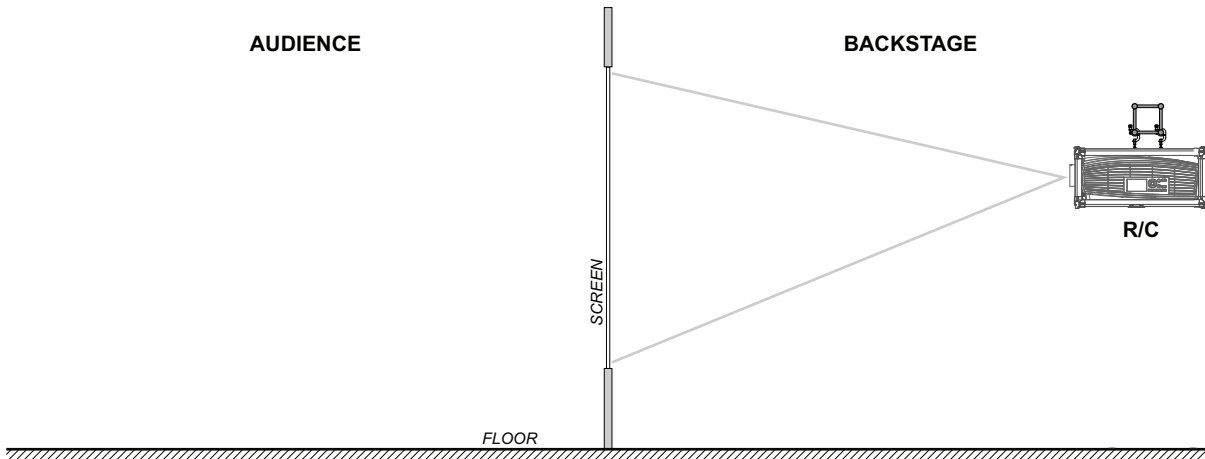


Image 2-8: Rear projection, ceiling mounted in table position

Positioning the projector

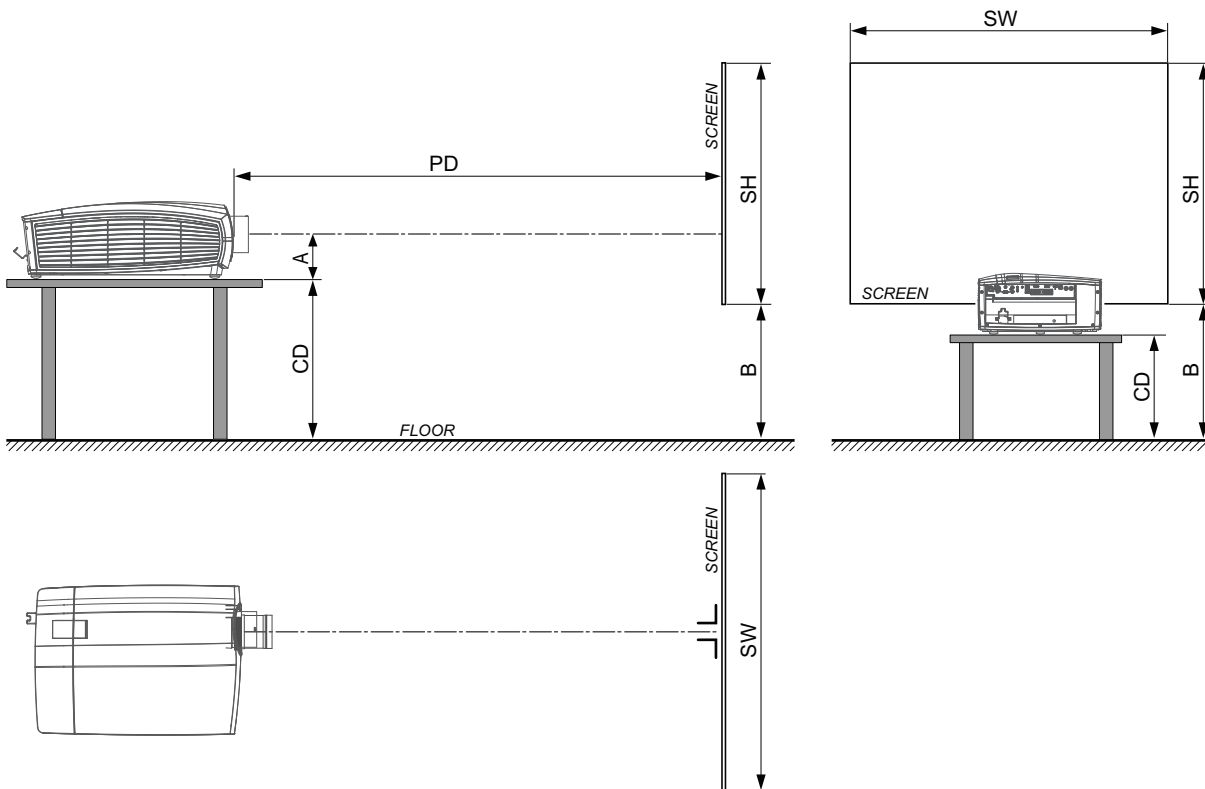


Image 2-9: Positioning the projector

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.

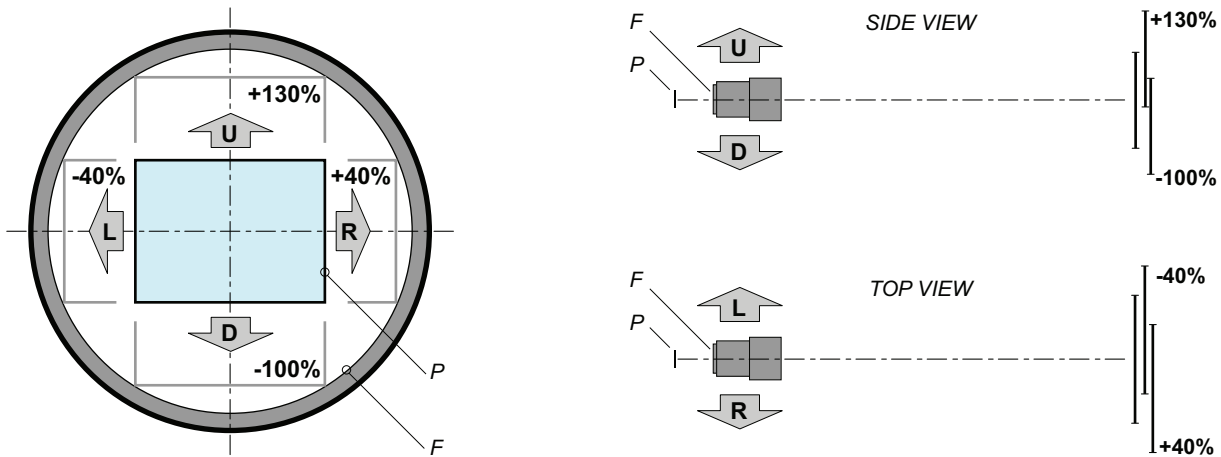


Image 2-10: Vertical and horizontal shift range

- P** DMD.
- F** Field of view.



It is mechanically 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 angle. In other words, you can tilt the projector as much as desired for your application.

In comparison to lamp-based projectors, the laser phosphor projector also has no limit on side to side tilt.

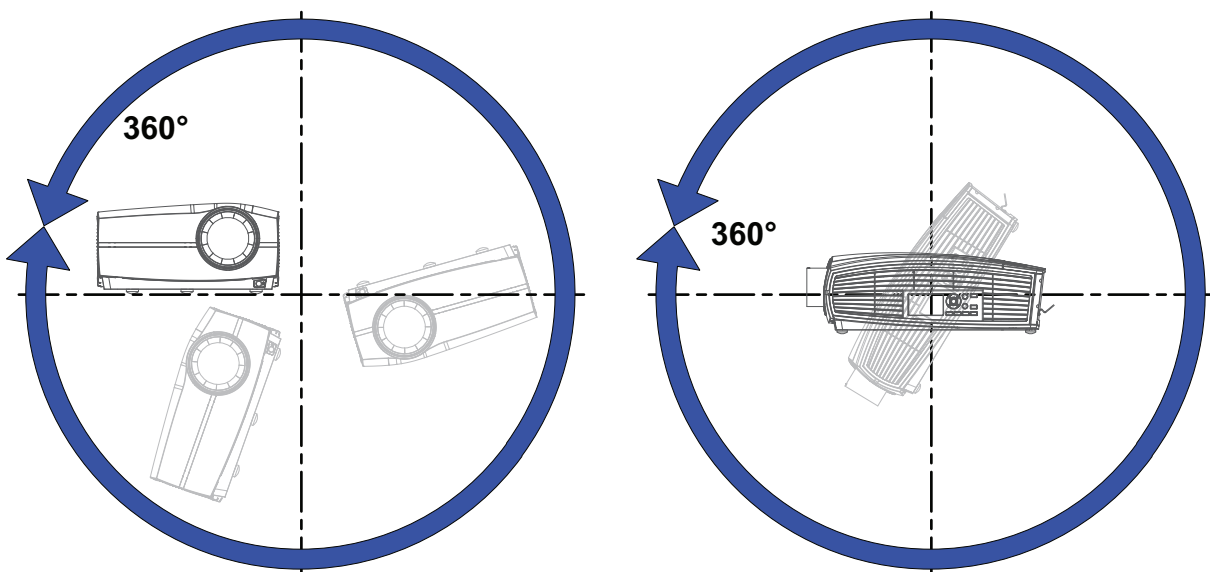


Image 2-11

2.6 Projector air inlets and outlets

Air inlets and outlets

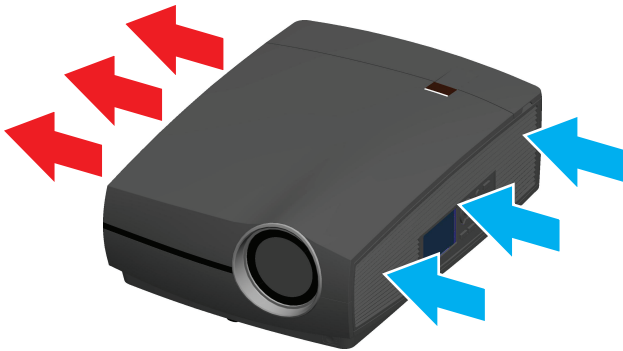


Image 2-12

The Medea has 1 air inlet channel and 1 air outlet. The air outlet is located at the right side of the projector. The air inlet is located at the left side 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 Projector Toolset software works with configurations that can be loaded. Several configurations can be controlled simultaneously. Even when the configurations are connected via different ways.

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



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 Partner zone of Barco.
When your login is correct, the Partner zone 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

Installation process

Overview

- Installation process projector

3.1 Installation process projector

Installation process from A to Z

1. **Check if all installation requirements are fulfilled** such as the environment conditions of the installation area, electrical facilities, etc. For more info see “Installation requirements”, page 20.
2. **Decide in which configuration the projector will be mounted.** For more details see “Projector configurations”, page 23.
3. Unpack the projector and confirm that all equipment is present and in good working order. See chapters “Unpacking the projector”, page 21 and “Initial inspection”, page 23.
4. **Mount the projector.** For more details see chapter “Physical Installation”, page 31.
5. **Installation of the lens.** First select a lens with appropriate throw ratio covering the screen size and the projector - screen distance. Then install the lens in the lens holder of the projector. For more information about available lenses, lens selection and lens installation see chapter “Lenses”, page 37.
6. Connect the source. For more details see chapter “Input & Communication”, page 49.
7. Power up the projector. See “Power on projector”, page 59.
8. Adjust the system and setup the image. For more information about setup see chapter “Getting Started”, page 57.



Note: Do not hesitate to refer to the user manual to obtain more information concerning the Graphical User Interface (GUI).

Physical Installation

4

Overview

- Remote control, battery installation
- Using the mini-jack connector of the RCU
- Remote control, protocol setup
- Remote control, on/off button
- Installing the power cord
- Alignment of a table mounted projector
- Medea Multifunctional Frame (Rigging frame)

4.1 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).

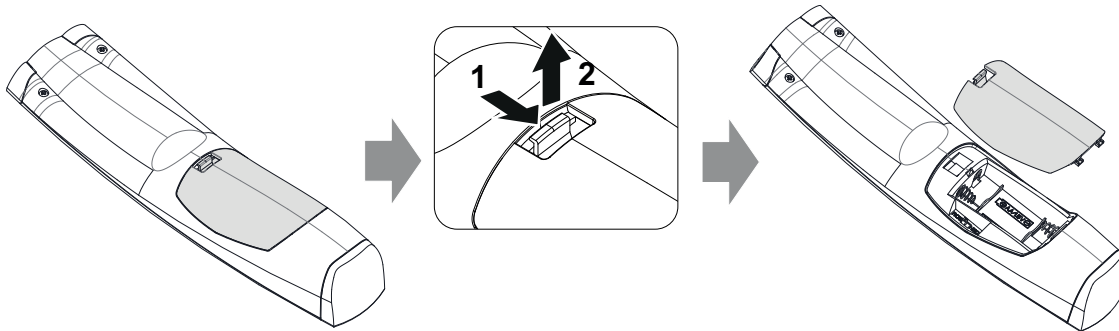


Image 4-1

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.

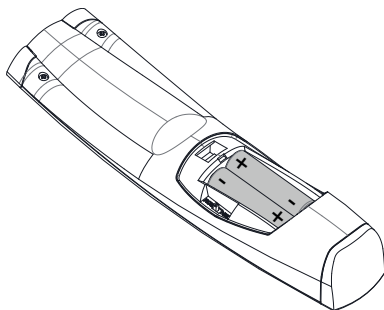


Image 4-2

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.

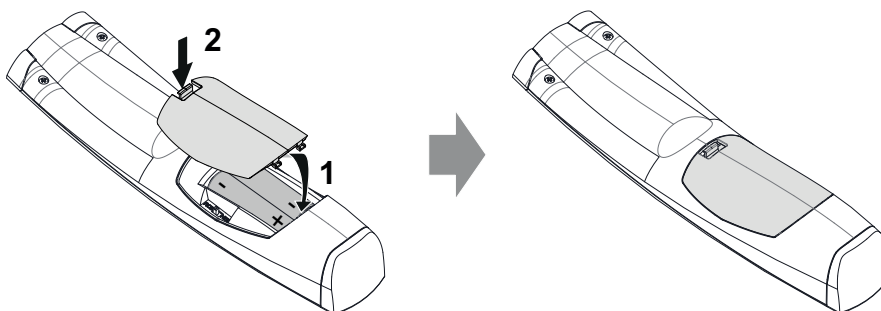


Image 4-3



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.

4.2 Using the mini-jack connector of the RCU



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

How to use the mini-jack connector

1. Connect a cable with the mini-jack connector (reference 2 Image 4-4) of the RCU.
2. Connect the other end of the cable with the mini-jack input of the projector.

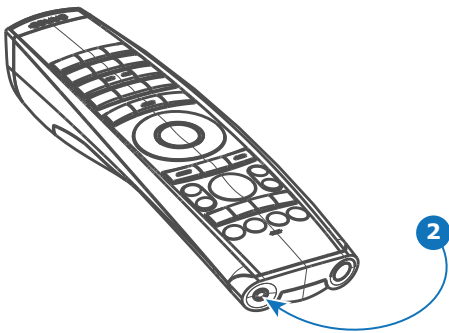


Image 4-4



Note: While the mini-jack cable is connected, the IR beam of the RCU is switched off.

4.3 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 has to be used for Barco projectors based on the Pulse platform: F70, F80, F90, HDX 4K, UDX, XDL, etc.
- The **RC5** protocol has to be used all legacy Barco projectors: HDQ 2k40, HDF, HDX W, etc.

How to set

1. Remove the cover. For more info on how to remove, see “Remote control, battery installation”, page 32.
2. Place the switch in the desired position.

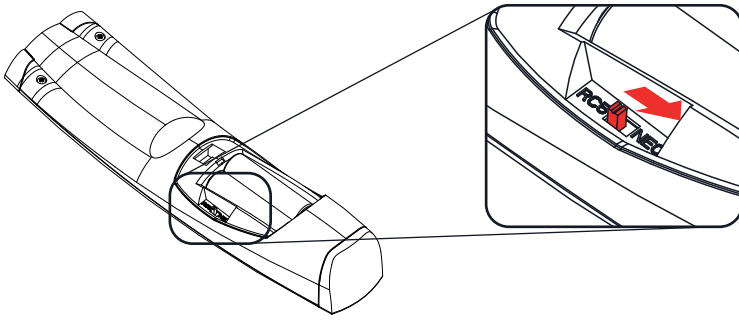


Image 4-5

Remarks when using the RC5 protocol

Due to new or updated functionality not all buttons of the Pulse RCU are one-to-one compatible with the legacy Barco RCU and projectors. Take the following limitations into account:

- Buttons **Shutter open** and **Shutter close** emit the same code when in RC5 mode. This because the legacy RCU's only had 1 button for Shutter functionality.
- Buttons **Power on** and **Power off** emit the same code when in RC5 mode. This because the legacy RCU's only had 1 button for Power functionality.
- The **RGB filter** button is not supported.
- The **Input selection** button is not supported.
- The **Default value** button is not supported.
- The **Macro** button is not supported.

4.4 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 4-6). 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".

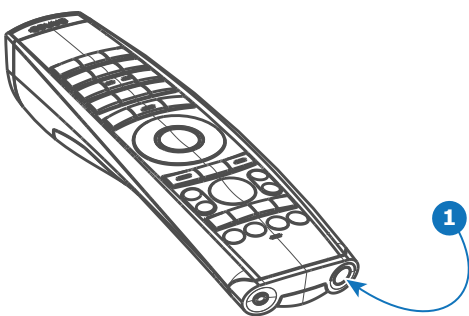


Image 4-6

4.5 Installing the power cord



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

How to installing the power cord

1. Connect the female side of the power cord with the power input socket of the projector (reference 1).

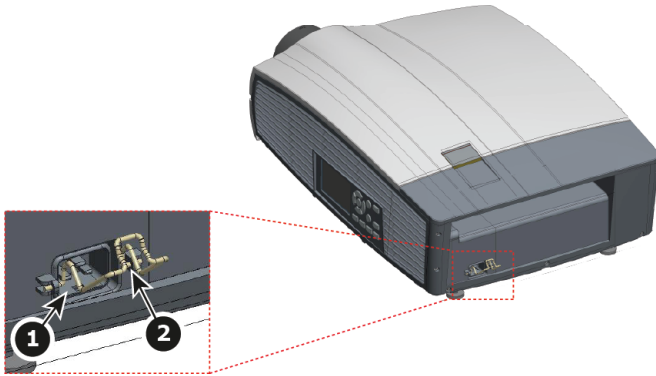


Image 4-7

2. Secure the power plug by locking the plug holder clamp (reference 2).



Please, do not connect the power cord in the AC outlet. The projector is not equipped with a main power switch. If you connect the power cord, the projector will begin warming up. The sources should always be connected before the projector is powered up.

4.6 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.

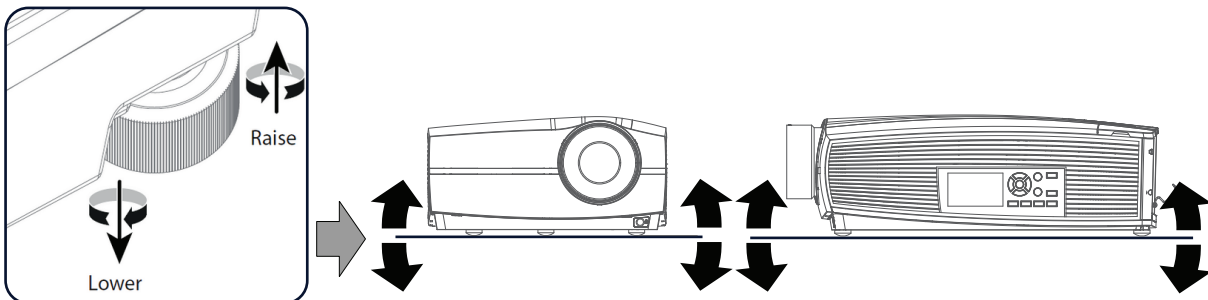


Image 4-8: Level alignment

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

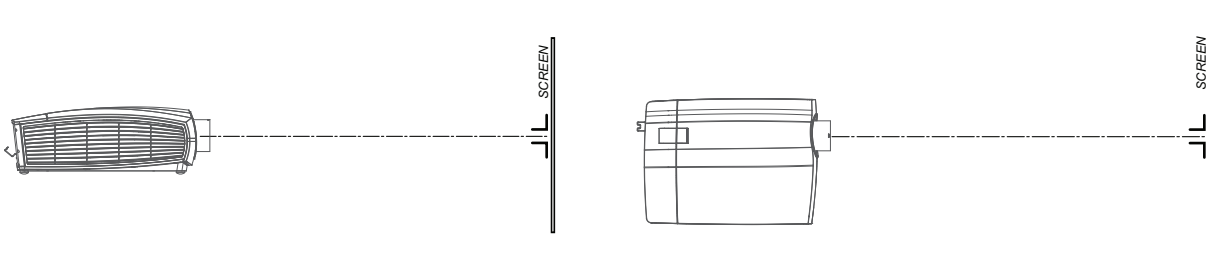


Image 4-9: Angle adjustment

4.7 Medea Multifunctional Frame (Rigging frame)

General

A Medea projector can be mounted in a multifunctional frame that makes the projector more rugged and handy. This multifunctional frame also called "Rigging frame" allows to stack multiple projectors (maximum three projectors), or can be used to suspend one projector (maximum two) from a truss (in upright or upside down position).

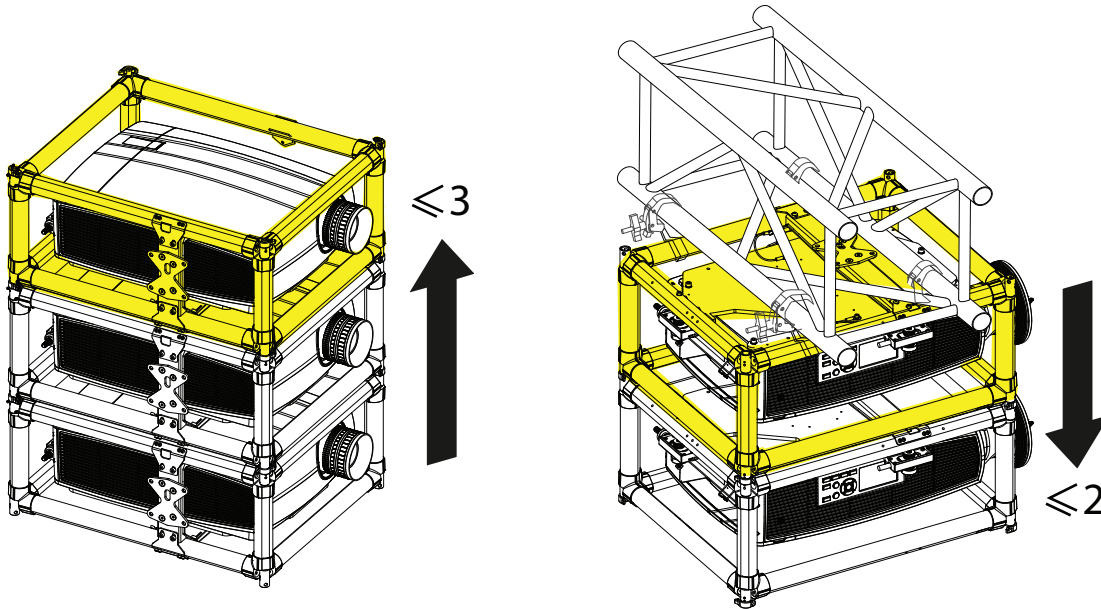


Image 4-10: Stacking or hanging multiple projectors

How to install

Installation manual of the Medea Multifunctional Frame is available online at www.barco.com/td.



CAUTION: Read the installation instructions attentively and follow all safety recommendations given in this manual before use Multifunctional Frame to handling, stacking or hanging one or multiple projectors.

Lenses

5

About this chapter

This chapter describes the lenses available for this projector, and explains how to remove and mount them safely. With some types of lens, an adaptor is mandatory. The *Lens Calculator*, available on the Barco website, allow you to determine the possible lenses for your configuration.



No Scheimpflug adjustment available on the Medea projector for user. This functionality is only foreseen during production alignment.

Overview

- Available lenses
- Lens selection
- Replace a lens
- Lens Shift Calibration
- Lens Calibration
- Scheimpflug (Boresight) adjustment
- Scheimpflug adjustment procedure

5.1 Available lenses



This projector may become Risk Group 3 (RG3) when an interchangeable lens with throw ratio greater than 3.15 is installed. For Northern America, installation requirements according to Risk group 3 (RG3) must be followed when interchangeable lens with throw ratio greater than 2.33 is installed. Refer to the section dedicated to the HD in function of the lens Throw Ratio (TR), into the Security chapter, before operation.

Available lenses

Partnumber	Description	Throw Ratio (on F80/ Medea)	Compliance
R9801724	GLD 0.85-1.06 : 1	0.85 - 1.06	approved
R9801722	GLD 1.06-1.43 : 1	1.06 - 1.43	approved
R9801719	GLD 1.43-2.12 : NON MOTORIZED	1.43 - 2.12	approved
R9801720	GLD 1.43-2.12 : 1	1.43 - 2.12	approved
R9801721	GLD 2.12-3.18 : 1	2.12 - 3.18	approved (*)

(*) Professional use only.

Available lenses with lens adapter

Partnumber	Description	Throw Ratio (on F80/ Medea)	Compliance
R9802244	FLDX - lens EN67	0.91	approved
R9802243	FLDX - lens EN66	1.12 - 1.70	approved
R9802242	FLDX - lens EN63	1.68 - 2.38	approved
R9802241	FLDX - lens EN61	2.38 - 3.51	approved
R9801295	FLD+ - lens EN47	0.91	approved (**)
R9801226	FLD+ - lens EN42	1.12	approved
R9801220	FLD+ Long Focus - lens EN45	1.12 - 1.70	approved
R9801221	FLD+ Short Focus - lens EN46	1.12 - 1.70	approved
R9801230	FLD+ - lens EN43	1.68 - 2.38	approved
R9801216	FLD+ - lens EN41	2.38 - 3.51	approved
R9801211	FLD+ - lens EN44	3.51 - 6.45	approved (*)
R9801249	FLD - lens EN16	5.70 - 9.75	approved (*)

(*) Professional use only.

(**) Need mechanical support.

5.2 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://lenscalculator.barco.com/> to determine the possible lenses for your configuration.

The Lens Calculator window opens.

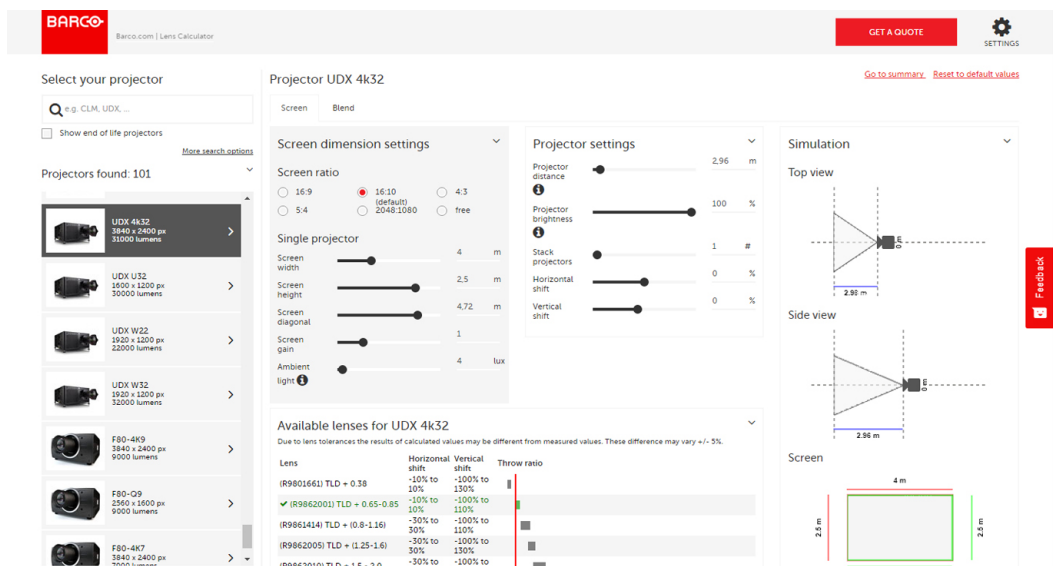


Image 5-1: Lens calculator



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%.

5.3 Replace a lens

Lens mechanism

The mechanism to hold the lens on the projector is a "turn and click" system. This double fixation of lens (without safety cable) allows to avoid lens falling out in case of single fault condition when the projector is used above an audience.

The lens mount and lens button are designed to prevent damage to the lens board while providing an easy and stable lens change procedure.

The lens button (reference 1) is located at the bottom right of the lens mount (reference 2). The button can switch between two positions:

- default position, the lens mechanism is locked.
- pressed, the lens mechanism is unlocked.

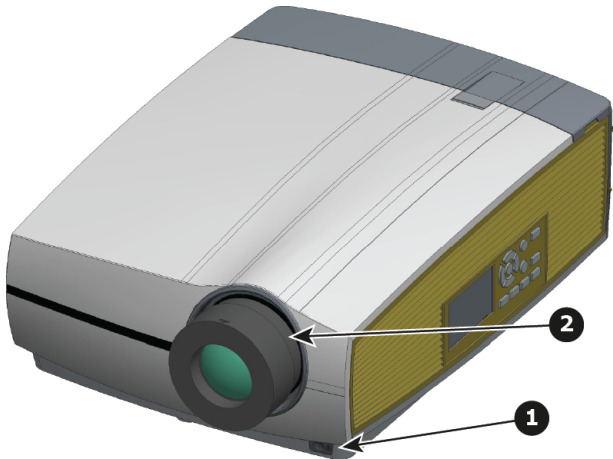


Image 5-2

- 1 Lens button.
- 2 Lens



Always activate the projector shutter before attempting to remove or install a lens. To do this, press the **shutter** button on the keypad, or shutter Close on the remote, to activate the shutter. The keypad button will illuminate red when the shutter is activated.

Press the **shutter** button again, or shutter Open on the remote, to deactivate the shutter and resume normal operation. The keypad button will illuminate white when the shutter is deactivated.

Lens adapter

An optional lens adapter is available to reuse FLD and FLD+ lenses. The lens must be first mounted on the lens adaptor then the assembly composed by the lens and the adapter could be used like a standalone lens.



Keep in mind that it is not possible to calibrate the shift while the lens adaptor is inserted. If shift-calibration is needed, please remove lens adaptor first.



It is recommended to shift the lens holder close to its nominal position (vertical + horizontal). Otherwise the internal rubber bellow of the lens holder can create some friction to the adapter outer barrel.

The "turn and click" system to hold the lens on the adapter is similar to the mechanism to hold the standalone lens on the projector. Align the lens (reference 2) with the adaptor (reference 3) and turn the lens to the right (CW) until it is locked.

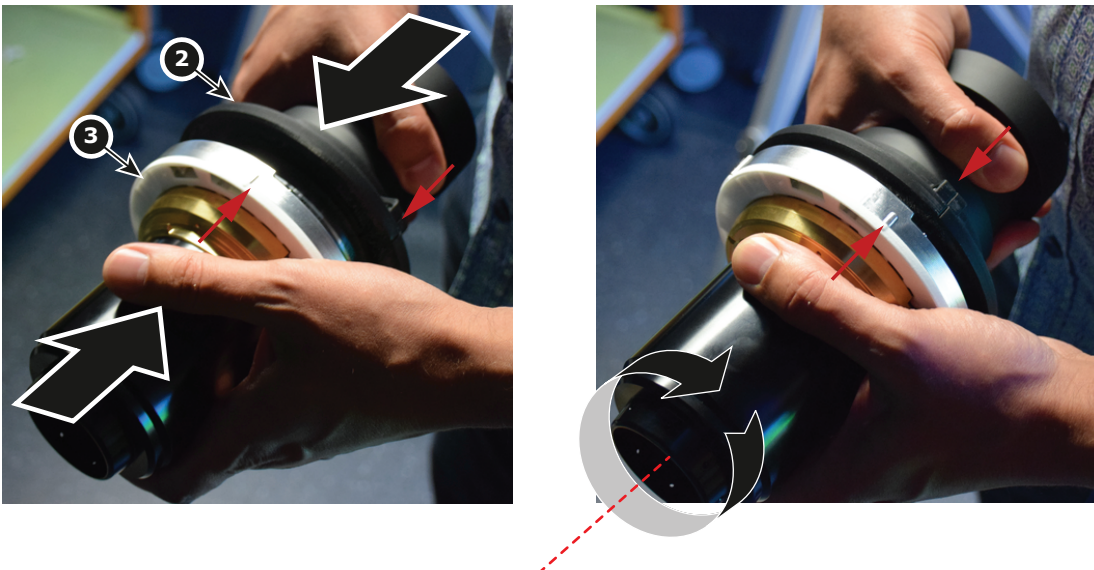


Image 5-3

To separate the lens (reference 2) from the adapter (reference 3), first push on the button (reference 4) situated on the adapter to release the lens mount mechanism, turn the lens to the left (CCW), then pull the lens straight out of the adapter.



The button (reference 4) needs to be kept pushed in until the lens has rotated about 10° with respect to the adapter.

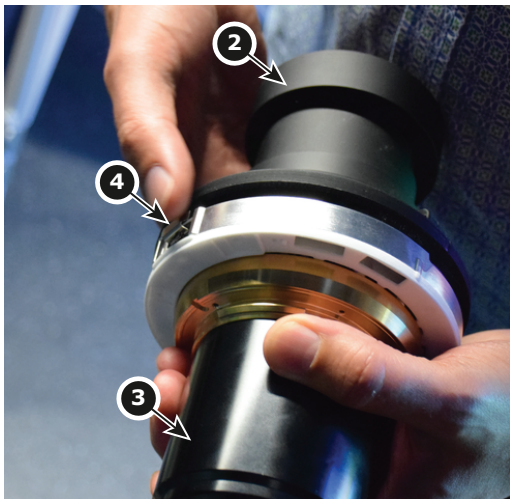


Image 5-4

The electrical connections of the lens with the projector are supplied by the two lens shift connectors (references 5) located on front of the Lens holder. Adapter behaves like pass through in term of electrical connection.

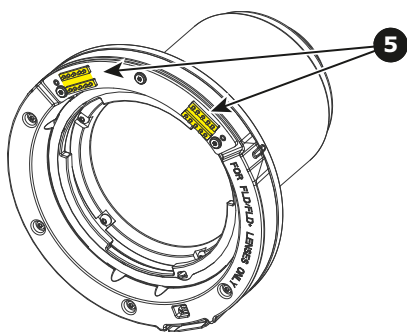


Image 5-5

Install a standalone lens

1. Verify that the projector shutter is activated (shutter is activated when the shutter icon on the projector keypad is red).
2. Make sure to remove all protective caps present on the lens and lens holder.
3. Align the lens in order to that the marking (red) on the bayonet is facing upwards, then insert the lens in the projector lens holder (Image 5-6, Action arrow 1).

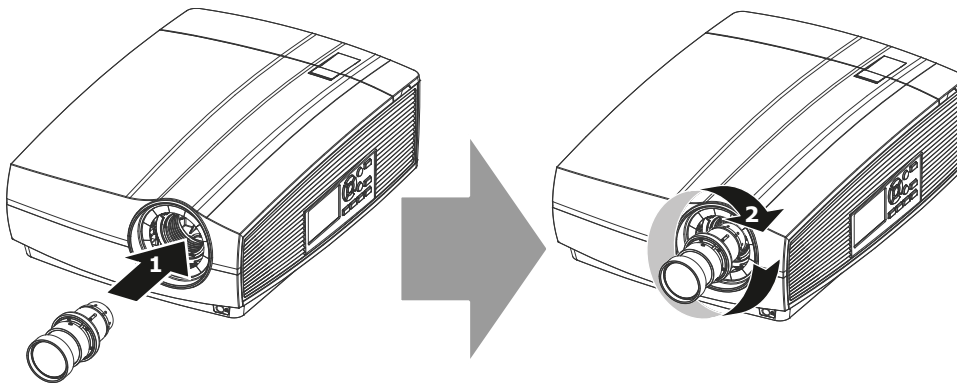


Image 5-6

4. Turn the lens to right (CW) until it is locked (Image 5-6, Action arrow 2). A click indicates that the lens mount mechanism is locked.
5. Verify that the lens is firmly in place (and the button is released) before removing your hand from the lens.

Remove a standalone lens

1. Support the lens with one hand.
2. Use the other hand to push the lens button in order to release the lens mount mechanism (Image 5-7, Action arrow 1).



Note: The lens button needs to be kept pushed in until the lens has rotated about 10° with respect to the lens holder.

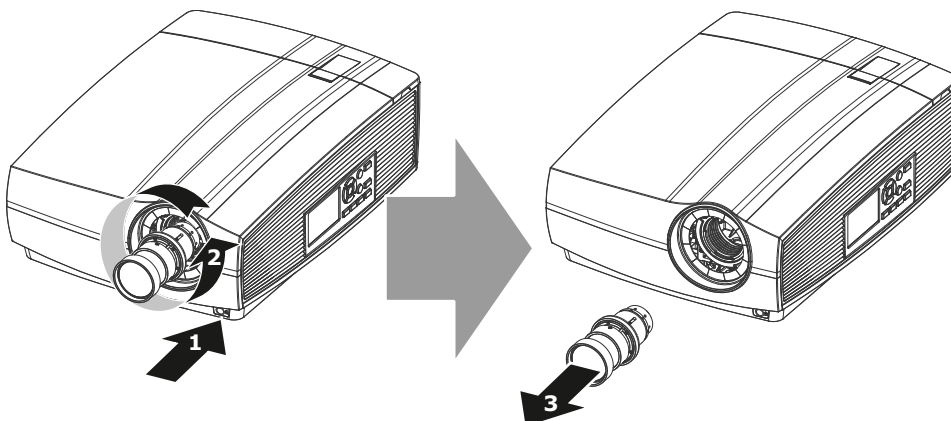


Image 5-7

3. Turn the lens to the left (CCW) (Image 5-7, Action arrow 2).
4. Pull the lens straight out of the projector lens mount (Image 5-7, Action arrow 3).
5. Replace with another lens, or install the projector lens cap.

Install a lens with adaptor

1. Verify that the projector shutter is activated (shutter is activated when the shutter icon on the projector keypad is red).
2. It is recommended to shift the lens holder close to its nominal position (vertical + horizontal). Otherwise the internal rubber bellow of the lens holder can create some friction to the adaptor outer barrel. Please refer to the section dedicated to the “lens shift” in the User manual to correct the lens holder position if it is necessary.
3. Make sure to remove all protective caps present on the lens, lens adaptor and lens holder.
4. Align the lens top marking (red) with the top marking on the lens adaptor and insert the lens (Image 5-8, Action arrow 1).

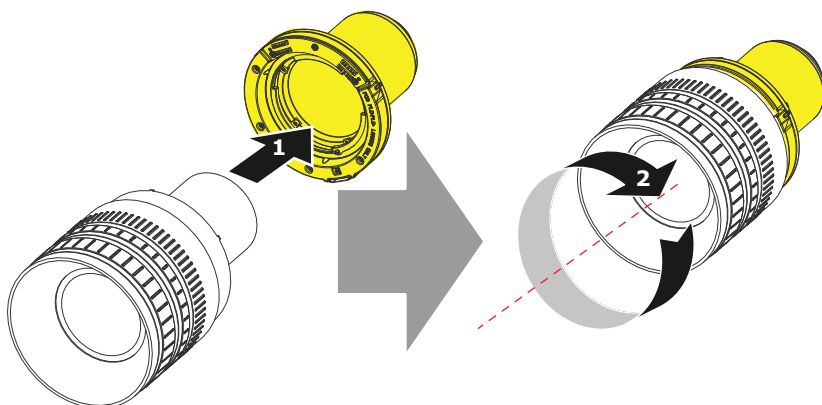


Image 5-8

5. Hold the adapter with your left hand and turn the lens to right (CW) until it is locked (Image 5-8, Action arrow 2). A click indicates that the lens mount mechanism is locked.

Lens and adapter form now an unique assembly.

6. Align the lens assembly top marking (red) with the top of the projector lens holder, then insert the lens assembly in the lens holder (Image 5-9, Action arrow 3).

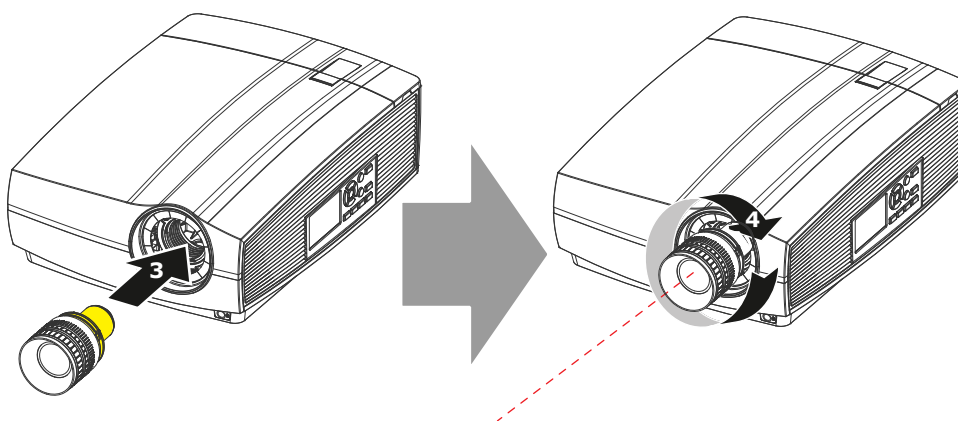


Image 5-9

7. Turn the lens assembly to right (CW) until it is locked (Image 5-9, Action arrow 4). A click indicates that the lens mount mechanism is locked.
8. Verify that the lens assembly is firmly in place (and the button is released) before removing your hand from the lens.

Remove a lens with adaptor

1. Support the lens assembly (lens + adaptor) with one hand.
2. Use the other hand to push the lens button in order to release the lens mount mechanism (Image 5-10, Action arrow 1).



Note: The lens button needs to be kept pushed in until the lens assembly has rotated about 10° with respect to the lens holder.

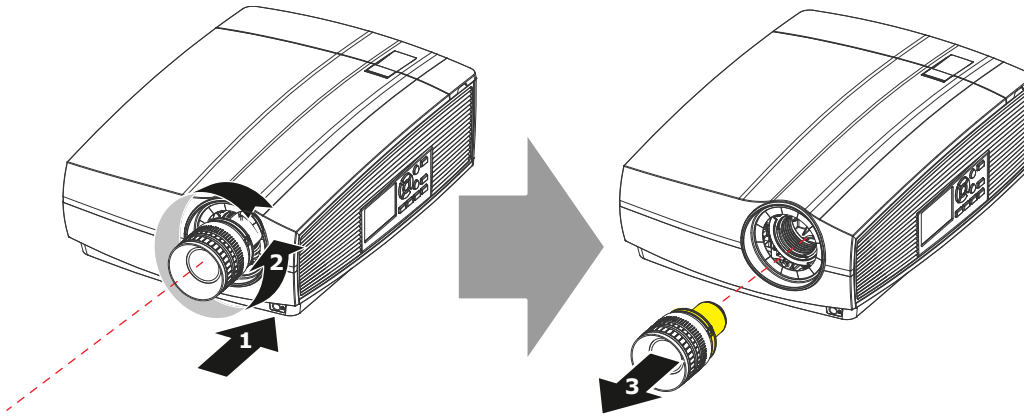


Image 5-10

3. Turn the lens assembly to the left (CCW) (Image 5-10, Action arrow 2).
4. Pull the lens assembly straight out of the projector lens mount (Image 5-10, Action arrow 3).
5. Push on the button (Image 5-11, Action arrow 4) situated on the adapter to release the lens.

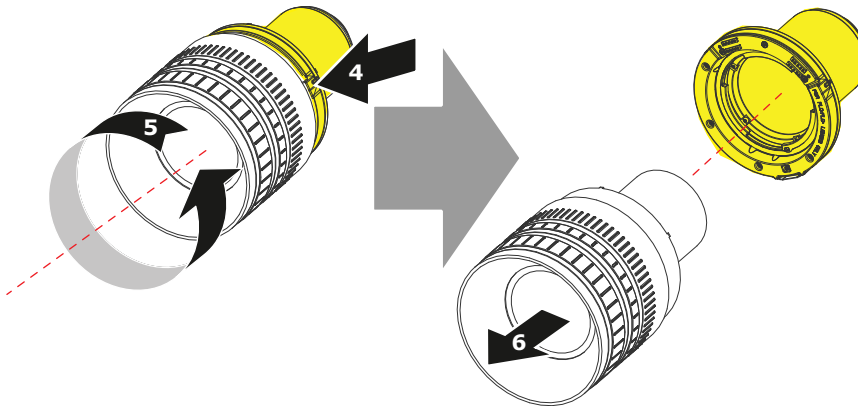


Image 5-11

6. Turn the lens to the left (CCW) (Image 5-11, Action arrow 5).
7. Pull the lens straight out of the adaptor (Image 5-11, Action arrow 6).
8. Install the protective cap on the lens bayonet end.

5.4 Lens Shift Calibration

About lens shift calibration

The lens shift calibration consists in moving the lens in a reference point then returns it to its original position. This operation allows to secure future actions on the lens shift.

Each time a lens shift is manually adjusted or a service intervention is done, it's necessary to realize lens shift calibration.



Due to mechanical limitations, it is not possible to perform lens shift calibration while a lens adaptor is inserted. If calibration is needed with lenses equipped with adapter (FLDX, FLD+,...), please remove lens, including adaptor first.

How to calibrate

First lens shift calibration is done in Production, but execute this operation at any time is possible by using the OSD interface (*System Settings* → *Maintenance* → *Lens Calibration*).

For more details concerning the calibration procedure, please refer to the section dedicated to the *Lens calibration* in the *GUI-system settings* of the user manual.

5.5 Lens Calibration

About lens calibration

The lens calibration consists of going through full range to find the limits of the adjustment. The lens then returns it to its original position. This operation allows to secure future actions on the lens like *Zoom*.

Each time a lens is manipulated e. g. removed and inserted in a projector, or a new one is inserted, it's necessary to realize lens calibration.



Lens calibration is only available with Motorized lenses.

How to calibrate

First lens shift calibration is done in Production, but execute this operation at any time is possible by using the OSD interface (*System Settings* → *Maintenance* → *Lens Calibration*).

For more details concerning the calibration procedure, please refer to the section dedicated to the *Lens calibration* in the *GUI-system settings* of the user manual.

5.6 Scheimpflug (Boresight) adjustment

What is Scheimpflug?

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 occur 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).

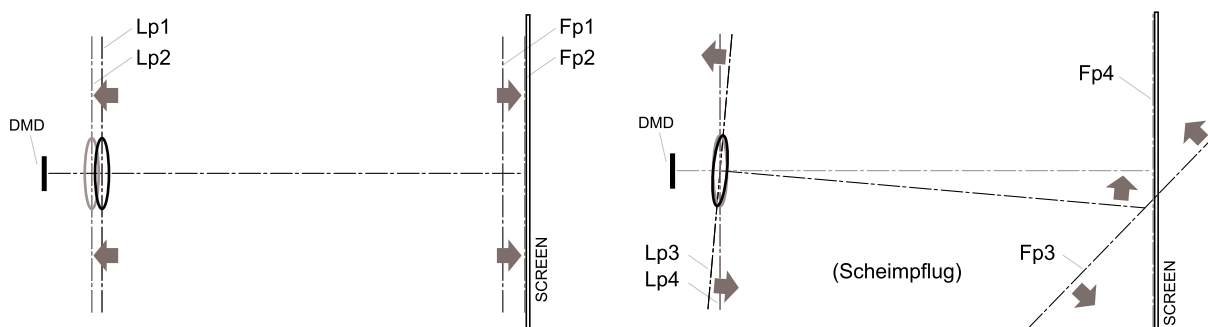


Image 5-12: Scheimpflug principle

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

Scheimpflug adjustment points are located on the lens mount. The F90 has three (3) set screws and three (3) adjustment screws.

When to apply Scheimpflug?



Scheimpflug correction procedures may only be carried out by suitably trained and experienced technicians.

A Scheimpflug correction should only be applied when the overall focus of the projected image is not equally sharp (for example, if the projector is **NOT in parallel** with the screen or as a result of a previously misaligned Scheimpflug). Be aware that the consequence of applying Scheimpflug correction upon a screen not in parallel with the projector is that the projected image differs from the rectangle shaped image. In other words “**distortion**” of the projected image occurs. **Masking** will be required to solve the distortion.

The disadvantage of Masking is loss of content. Therefore it is **strongly recommended** to place the projector **in parallel** with the projection screen and use the *SHIFT* functionality of the Lens Holder to match the projected image with the projection screen. If the SHIFT range is not sufficient then the projector can be tilted and Scheimpflug can be applied.

5.7 Scheimpflug adjustment procedure

Required tools

- Allen key, hex size 4
- Allen key, hex size 5

Preparation

1. Prepare the test area. Barco recommends a projector-screen distance of 2 metres be used for all Scheimpflug adjustments.

Verify that the throw ratio of the installed lens matches the requirements of the installation area (projection distance and screen size).

2. Check that the lens is correctly installed, and lens shift is in centre position.
3. Open the focus ring all the way up.
4. Go to Main Menu / Test Patterns / Full Screen and select to display the Focus test pattern.
5. Zoom the lens to its widest opening (maximum image size on the screen).
6. Remove the plastic lid to have access to the 3 adjustment screws.

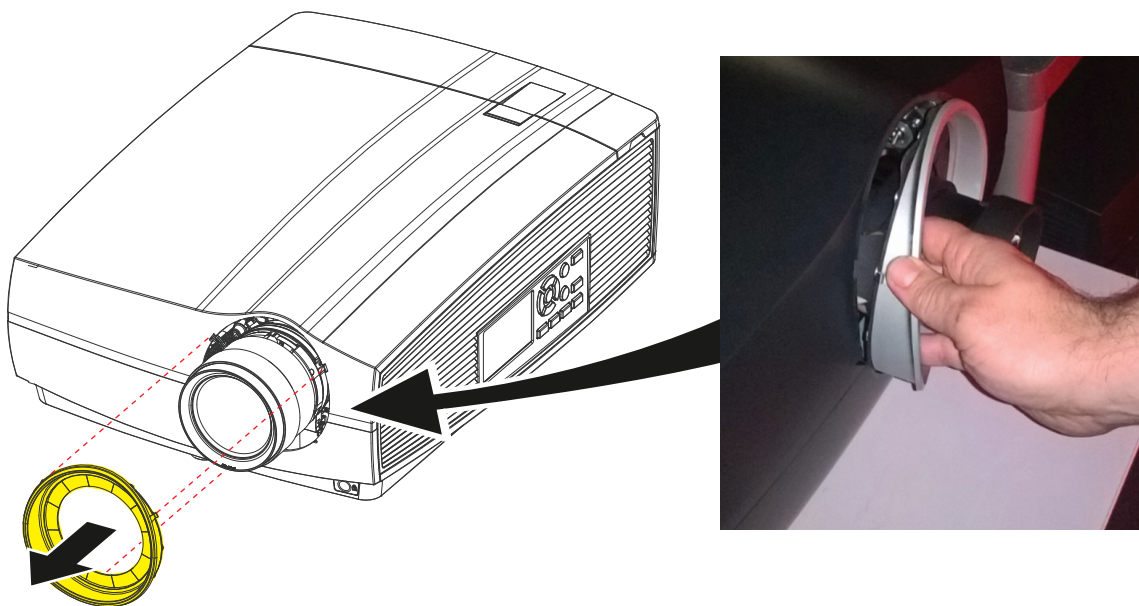


Image 5-13

Apply Scheimpflug correction

1. Loosen the three set screws (reference 1b, 2b, 3b). Use a size 5 hex key to do this.

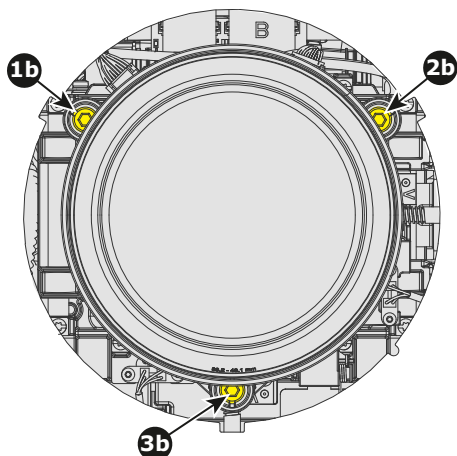



Image 5-14

2. Adjust the left side Scheimpflug adjustment screw (reference 1) until the test image in the bottom right side of the screen is in focus. Use a size 4 hex key to do this.

 **Note:** This process may cause the other areas of the image to slide out of focus. This is totally normal.

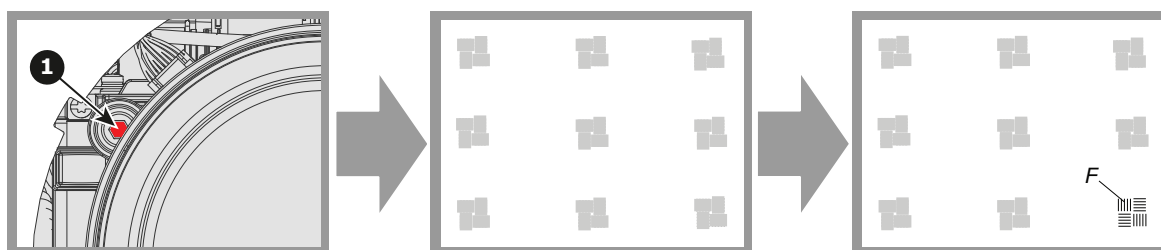



Image 5-15

3. Adjust the right side Scheimpflug adjustment screw (reference 2) until the test image in the bottom left side of the screen is in focus. Use a size 4 hex key to do this.

 **Note:** This process may cause the other areas of the image to slide out of focus. This is totally normal.

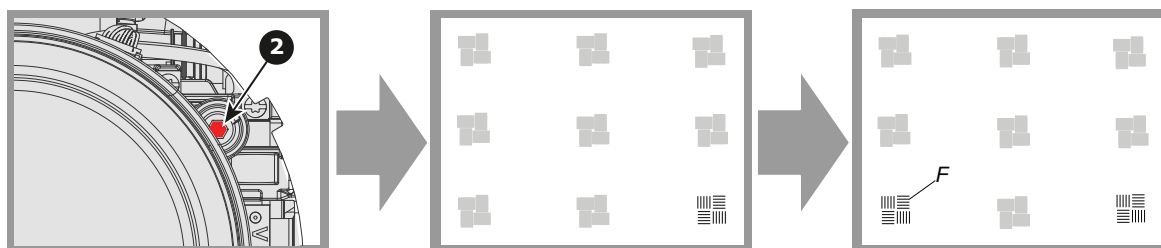



Image 5-16

4. Adjust the bottom Scheimpflug adjustment screw (reference 3) until the test image in the top half of the screen is in focus. Use a size 4 hex key to do this.

 **Note:** This process may cause the other areas of the image to slide out of focus. This is totally normal.

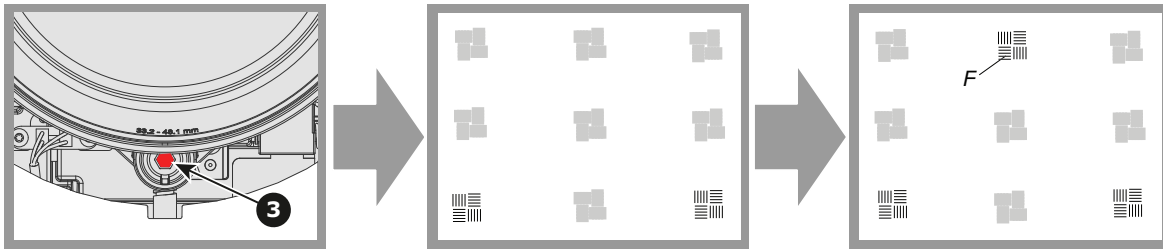


Image 5-17

5. Continue adjusting the screws one at a time until the test image is uniformly sharp across all areas of the display.
6. Test the focus by zooming out (minimum image size on screen) and then zooming in again. Verify the image is still sharp. If there are any deviations to sharpness, repeat steps 2 to 6 until the image is correct.
7. Tighten the three set screws in the following order: left (1b), right (2b) and then top (3b). Use a size 5 hex key to do this.
8. Put back in place the plastic lid removed during the preparation step.

Input & Communication

6

Overview

- Introduction
- Connection Panel
- Making connections
- Connector specifications
- Control interfaces
- LED and Button indication chart

6.1 Introduction

General

The Input & Communication features of the projector consists of a local keypad and a communication panel situated at the left side, and a connection panel (sources and control connections) located at the back side.

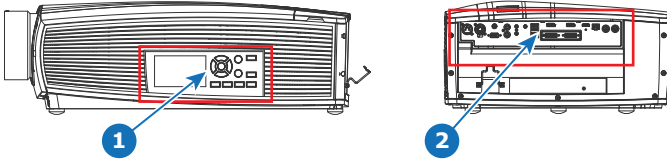


Image 6-1

- 1 local keypad and a communication panel
- 2 connection panel

6.2 Connection Panel

General

Projector sources and control connections are located at the back of the projector.

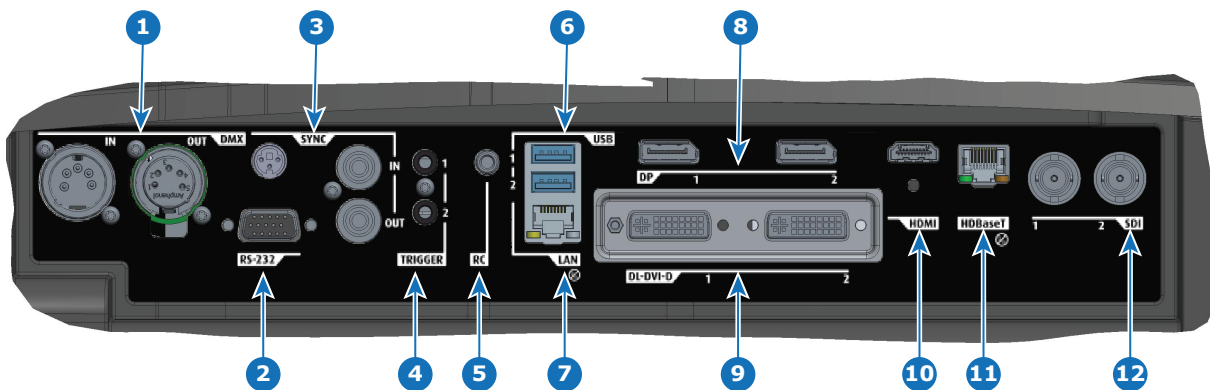


Image 6-2

Nb.	Name	Pcs	Description	Purpose
1	DMX IN/ OUT	2	DMX 512 input / DMX 512 output	For Projector Control
2	RS-232	1	9-pin DB9 connector	For Projector Control. Allows for wired remote control and monitoring of many projector functions used in installation environments
3	Sync	3	BNC Sync Port IN/OUT; Bidirectional mini-DIN (1x 3D sync Out, and 2x Sync In/Out)	For Projector Control. This is mainly used in multiple projector installations with requirement of synchronization between the units
4	Trigger	2	12VDC - 0,5A (6W)	For Controlling Peripherals, like motorized screens, curtains etc. Give 12V output when projector are switched on See also the note below.
5	RC	1	Mini jack 3,5mm connector for wired remote	For Projector Control
6	USB	2	USB 2.0 type A, 4 pin(2x Rear and 1x Front)	For Software upgrade
7	LAN	1	Standard RJ45 connector	For Projector Control

Nb.	Name	Pcs	Description	Purpose
8	DP	2	Standard display port	For Projector Input
9	DL-DVI-D	2	Dual DVI-I 1.0 (DVI_D Functionality).	For Projector Input. These connectors can also be used to form one uniform image by feeding half of the image into each connector. HDCP compliant for sources up 165 Mhz
10	HDMI	1	Standard HDMI 2.0	For Projector Input
11	HDBaseT	1	Standard RJ45 8P8C Connector	For Projector Control
12	SDI	2	SDI1 is Input, SDI 2 is pass through. (out)	For Projector Input



Regarding the Trigger Output: If these outputs are loaded too heavy, there is a risk that the projector will go in reset mode, and restart. This causes no damage to the projector, but is an undesirable response. This will also happen if the startup current for the external equipment is too high, even though the nominal power consumption is less than 0,5A.

6.3 Making connections



The source switching time is variable and could take few seconds..

Source signal connectivity

The connector panel at the back of the projector is used for all source connections.

Source signal connectivity on the projector is:

- 2x Dual Link DVI-I (DVI-D functionality)
- 2x DisplayPort 1.2
- 1x HDMI 2.0
- 1x HDBaseT
- 1x SDI input (initially designed for 3G-SDI input signals, 12G-SDI signals are now supported)

6.4 Connector specifications

Overview

- DVI-I
- Display Port 1.2
- HDMI 2.0
- SDI
- HDBase T

6.4.1 DVI-I

Specifications

Parameter	Value
Connector	DVI-I female digital RGB
Signal characteristics	DVI 1.0, Digital, TMDS
Max. cable length	25 m (24 AWG)

Parameter	Value
Max. pixel rate	330 MHz (dual link), 165 Mhz (single link)
Scan format	Progressive
Max. input data resolution	1920x1200 60Hz (Single link), 2560x1600 60Hz (Dual Link).1920x2400 @60Hz
Bit depth	8 bit
EDID	Supported
HDCP	Supported

6.4.2 Display Port 1.2

Specifications

Parameter	Value
Connector	Standard Display port
Signal characteristics	DP 1.2
Functionality	Mandatory
Max. cable length	2 m (24 AWG) - RBR; 2 m (24 AWG) – HBR1, HBR2
Supported Link Rate	RBR, HBR1, HBR2
Scan format	Progressive
Max. input data resolution	2560x1600@120Hz WQXGA / 3840x2400 @60Hz (4K) Max
Bit depth	8, 10, 12 bit
EDID	Supported

6.4.3 HDMI 2.0

Specifications



Regarding HDMI 2.0: The decryption protocol HDCP 2.2 are enabled and valid in this unit.

Parameter	Value
Connector	Standard HDMI
Signal characteristics	Digital, TMDS
Max. cable length	2 m (24 AWG)
Max. pixel rate	594MHz
Max. input data resolution	3840x2160 @60Hz
Bit depth	8, 10, 12 bits
EDID	Supported
HDCP	Supported
Ethernet	No
Audio return	No

6.4.4 SDI

Specifications

Parameter	12G-SDI	3G-SDI
Standard	SMPTE ST-2082-1 and ST-2082-10 standards	SMPTE 424M-2006 10bit level A
Connector	Samtec BNC7T-J-P-HN-RA-BH1	1x) BNC 75 ohm type IEC 60169-8, Amendment 2 1997, A
Bandwidth	12GHz	>3 GHz
Return loss	-6dB @ 12GHz	>10dB at 3GHz
Impedance	75 ohm resistive	75 ohm resistive

6.4.5 HDBase T

Specifications

Parameter	Value
Reference specification	HDBaseT 1.0 Specification, June 2010
Connector	Standard RJ-45, 8P8C
Signal characteristics	HDBaseT
Max. cable length (1080p/48b/60Hz)	100 m (Cat5e/6), Pixel Clock <=225MHz, Video Datarate <=5.3Gbps 70 m (Cat5e/6), Pixel Clock >225MHz, Video Datarate >5.3Gbps 100 m (Cat6a/7), Pixel Clock >225MHz, Video Datarate >5.3Gbps
Max TMDS Clock Frequency	270 MHz
Max video resolution supported	1920x1200 @60Hz (WUXGA 60Hz)
HDCP Pass-Through	Yes, from Source to Projector
IR Extension	Not Supported
RS-232 Extension	Not Supported
10/100Mbps Ethernet Pass-Through	Not Supported
Fallback to 100BaseTx, IEEE 802.3u	Not Supported
USB Over Centre Tap	Not Supported
Power Over Ethernet	Not Supported
Audio	Not Supported
LEDs - HD Base Status	Operation: Green, Left Link/Mode: Yellow, Right

6.5 Control interfaces

About

The following control interfaces are available on the projector:

- 1x RS-232 (for projector control)
- 1x LAN/Ethernet (for projector control)

- 3x USB-A ports

Overview

- RS-232
- LAN/Ethernet
- USB-A port

6.5.1 RS-232

Specifications

Parameter	Value
RS-232 connector	1 female DB9 connector (RS232-in) for projector control and debug

6.5.2 LAN/Ethernet

Specifications

Parameter	Value
Ethernet connector	1 RJ45 Connector for projector control (not content)
Protocols	DHCP, TCP/IP, UDP/P
Speed	10/100 Mbit/1000Mbit

6.5.3 USB-A port

Specifications

Parameter	Value
USB connector	Type A
Function	Firmware upgrade using USB sticks
Power	Power 5V, max 1,5A (out)
Standard	USB 2.0

6.6 LED and Button indication chart

Button Backlight Status

Button

Standby button



Shutter button



Color status

Blinking WHITE (slow)

Blinking WHITE (fast)

Solid WHITE

Blinking BLUE

Solid BLUE

Blinking RED

Off (no color)

Solid WHITE

Solid RED

Description

Projector starts up (booting)

Firmware upgrade

Projector is in Standby mode

Projector goes to ON mode

Projector is ON

Error condition

Projector is OFF, starts up, or is in Standby mode.

Projector is ON, shutter is open

Projector is ON, shutter is closed

LED Status

The LED status is located on the top side of the projector, near the IR receiver.

During normal operation the LED is unlit. In the event of a critical error or high temperature, the LED will display red.

By critical error, the projector cannot be restarted until the projector is disconnected from the power supply and then reconnected again. If the reason for the error persists, the projector will again go to critical error status.

By high temperature, the projector will restart when it has cooled down, and temperatures are back within the normal operating limitations.

Getting Started

7

About this chapter

This chapter describes how to power up, control and set up your projector setup when the physical installation process is complete.

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 right 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

- Local Keypad and LCD panel
- Power modes
- Power mode transitions
- Status overview
- Power off projector
- Increasing the projector life time
- Operation in 24/7 Mode
- Using the RCU
- Projector Address
- Quick setup via Direct access

7.1 Local Keypad and LCD panel

Overview

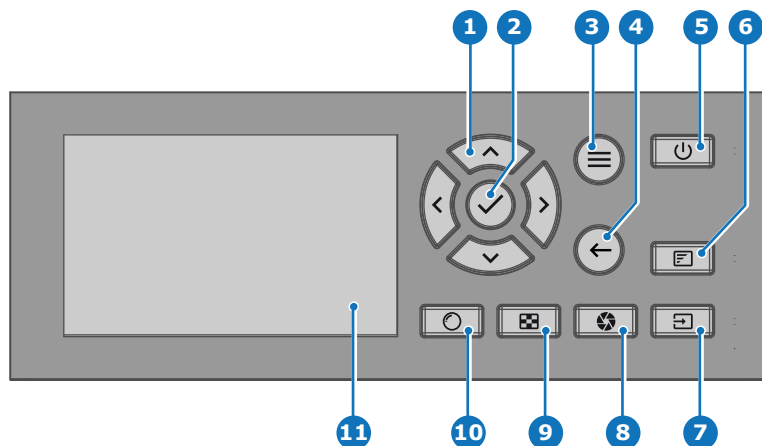


Image 7-1

- | | |
|---------------------------------------|-------------------------------|
| 1 Menu navigation | 7 Input selection |
| 2 Menu confirmation, OK button | 8 Shutter open / close |
| 3 Menu open / close | 9 Test patterns |
| 4 Menu back | 10 Lens adjustment |
| 5 Power on / off | 11 LCD panel |
| 6 Project OSD on / off | |

Local Keypad

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

The keypad has a backlight that can be switched on and off manually. By default the light turns off after 5 minutes.

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

LCD panel

The LCD panel has two main functions:

1. Showing the menus, the adjustment information and also a mirror of the OSD, (On Screen Display) described in *User Interface* when this is enabled.
- 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.


7.2 Power modes

General

The table below details the Medea power modes.

Mode	Description
ON (normal)	Projector is booted up and the light source is on
READY	Projector is booted up but the light source is off
ECO (Standby)	Light source is switched off and projector electronics are powered down

 Energy consumption is significantly lower in ECO (Standby) mode: only <math><0.5\text{W}</math> if network is not plugged in and 2W with network (Wake-on-LAN).

 In ECO (Standby) mode, remote power up (Wake-on-LAN) and local power up (button) are supported.

7.3 Power mode transitions

7.3.1 General

Transition Diagram

This diagram shows all modes available on the projector (unplug, ON, READY, ECO), and the actions necessary to change mode.

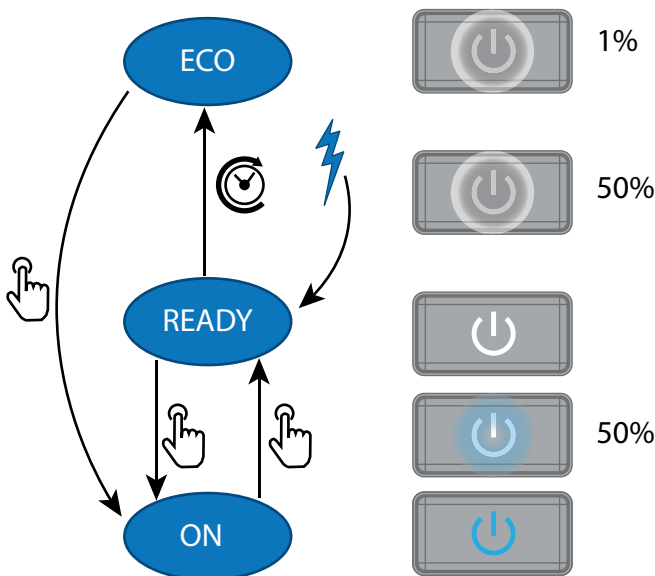






Image 7-2

-  Projector mains powered
-  Auto transition after x minutes if ECO mode enables
-  Press power On/Off button, remote On/Off button

7.3.2 Power on projector

 If not already connected, connect the female side of the power cord with the power input socket of the projector. For more details see section dedicated to the power cord installation.



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

Description

Plug the 3-prong plug of power cord into a grounded AC outlet. The projector will go to **READY** mode. During this stage the system boots and performs the internal check of the boards. The *Power On/Off button* will BLINKING WHITE until **READY** mode is achieved. Once in **READY** mode, the *Power On/Off button* will be lit WHITE.

7.3.3 Going from READY to ON

Description

Press the *Power On/Off button* on the projector, or the *Power On* button on the remote control. The projector will power **ON**. The *Power On/Off button* will BLINK BLUE during the transition from **READY** to **ON**. Once the projector is on, the *Power On/Off button* will be lit BLUE.

7.3.4 Going from ON to READY

Description

Press and hold the *Power on/off button* on the projector for 3 seconds, or press the *Power Off* button on the remote control. The projector will power down through a cool down phase. The *Power on/off button* will BLINK WHITE during the transition from **ON** to **READY**. Once the projector is in **READY**, the *Power on/off button* will be lit WHITE.

7.3.5 Going from READY to ECO standby

Description

If ECO Standby mode is enabled in the service menu (refer to the section "GUI - system settings/Standby ECO", in User Guide) the projector will automatically go to **ECO** standby mode after a time-out (default 15 minutes). All electronics (including fans, pumps,...) go down except for a very small wake up controller. The *Power on/off button* will FLASH WHITE every second.

7.3.6 Going from ECO to ON

Description

Press the *Power on/off button* on the projector or the *Power On* button on the remote control. The projector goes from **ECO** directly to **ON**. The projector will go through the same booting phase as on power plugging, then do the transition from **READY** to **ON**. Of course startup-time will be longer then from **READY** to **ON**.

7.3.7 Wake on LAN (WOL)

Description

Wake-on-LAN (WOL), the standard ethernet network command, can be used to awakened or to turn on the projector by network message.

Used alone, the WOL command allows to switch in **READY** mode. A JSON command must be performed in addition to make the projector turn in to **ON** mode:

1. Send WOL.
2. Wait for connection to façade/prospector (the unit does provide feedback when it's ready).
3. Wait for ready state.
4. Sleep 5 seconds.

- Send power on command (to switch in ON mode).

7.4 Status overview

Description

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

- 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

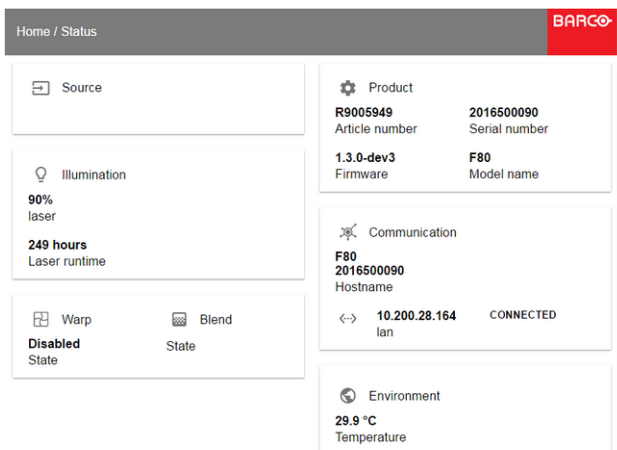


Image 7-3

7.5 Power off projector

How to Switch off the projector

- Use the *standby button*, or the *Power On* button on the remote control, to switch off the projector. The projector will switch to **READY** mode first in order to run through a cool down phase (see "Power mode transitions", page 59).
- If **ECO** Standby mode is enabled in the service menu (refer to the section "GUI - system settings/Standby ECO", in User Guide) the projector will automatically go to **ECO** standby mode after a time-out (default 15 minutes).



Some actions like apply a grey test pattern are done during the two minutes of the cool down phase in order to minimize the potential effect of burn-in and increase the projector lifetime.



CAUTION: Never switch off the projector by means of unplugging mains cord or by cut down of mains power.



Barco advises to keep the projector always powered and use the **ECO** mode for low power consumption.

How to unplug the projector

1. Follow the procedure above to Switch Off the projector.
2. Wait at least 2 minutes prior to unplug the projector by removing the power cord from the AC outlet.



CAUTION: It is very important to wait few minutes before unplug the power cord. If the cool down phase is not adhered, projector lifetime could be degraded.

7.6 Increasing the projector life time

General

Barco propose the following recommendations to increase the projector life time:

- Dimming out the laser output intensity (70%).
- Use the device in regulated temperature area.
- Apply the recommendations describe in the “Operating in 24/7 Mode” chapter if the projector is destined to be operated continuously 24 hours a day / 7 days a week.



Typical life time of the projector could be up to double if the laser output is dimmed to 75% and if the projector operate in 25°C temp condition.

7.7 Operation in 24/7 Mode

General

When the projector is destined to be operated continuously 24 hours a day / 7 days a week, Barco has a number of recommendations to increase the projector life time:

- Regularly, preferably twice a day if possible, switch off the projector during two minutes by using the standby button. The power down action will automatically and invisibly trigger a grey test pattern running within the projector.
Note: if you really don't want to shut down the projector, an alternative method is select the grey test pattern yourself within the normal “on” mode. This method is not as effective as completely shut down the projector, but may be a more workable alternative.
- Apply moving video content as much as possible, with on average a level of 50% white (long-term use of extreme black or white content could potentially cause accelerated aging).

7.8 Using the RCU

Pointing to the reflective screen

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

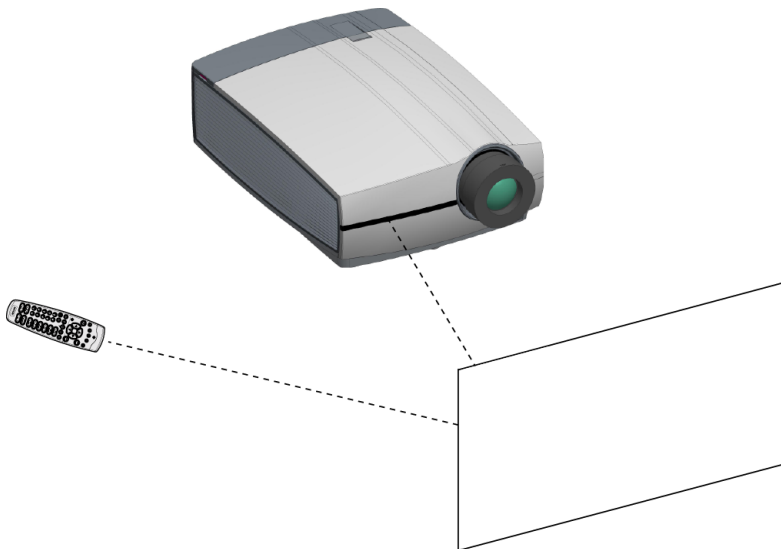


Image 7-4: IR control via reflective screen

Hardwired to the mini jack input

1. Plug one end of the remote cable in the connector on the front side (3,5mm mini jack) of the RCU.
2. Plug the other end in the connector on the communication interface of the projector, labelled '*Remote CTRL*' (reference 1, Image 7-5).

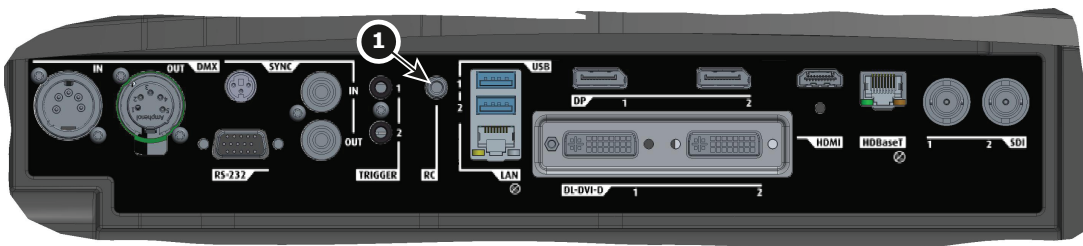


Image 7-5



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 64.

Pointing directly to the IR sensor

When using the wireless remote control, make sure you are within the effective operating distance (30m, 100ft 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.

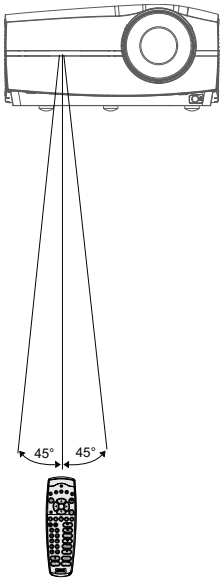


Image 7-6: RCU to one of the IR sensors

7.9 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.

7.9.1 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

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

- with the RCU: only for addresses between 1 and 31.

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'.

7.10 Quick setup via Direct access

Quick source selection

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

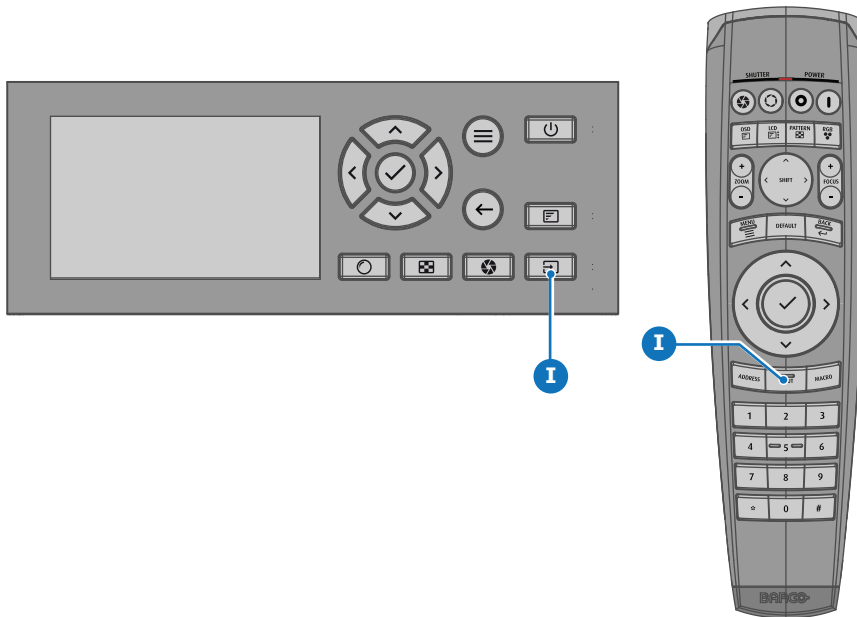


Image 7-7

The *Source selection* menu opens on the LCD display.

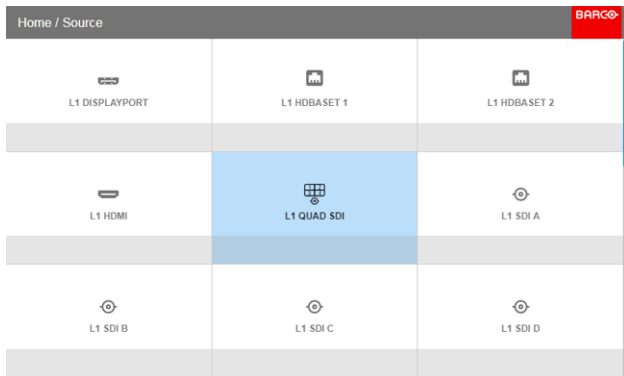


Image 7-8: Input selection

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.

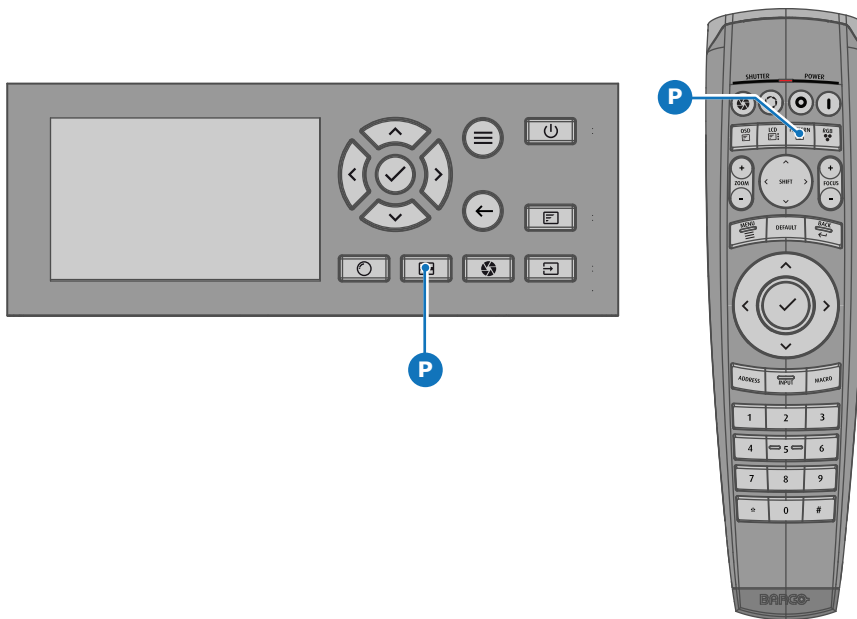


Image 7-9

The *Test pattern* menu opens on the LCD display.

2. Use the arrow keys to select the desired test pattern.

8

Maintenance

About this chapter

This chapter contains general maintenance procedures.

Overview

- Cleaning the lens
- Cleaning the exterior of the projector
- Filters

8.1 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.


Required tools

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

Required 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.

8.2 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.

8.3 Filters

General info regarding Air intake and filters.

The Medea is shipped without any filters. The air intake is just protected by a mesh. This mesh has to be vacuum cleaned occasionally when needed. There is no specific interval for this operation.

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

Specifications



Overview

- Specifications of the Medea-M
- Dimensions of a Medea
- Technical Regulations

A.1 Specifications of the Medea-M

Overview

Projector type	Single chip DLP
Technology	0.67" DMD™
Resolution	3,840 x 2,160 (4K UHD)
Aspect ratio	16:9
Light source	Laser phosphor
Light source lifetime	Up to 40,000 hours (depending on brightness mode)
Light output	Up to 5,500 ANSI lumens
CLO (constant light output)	Yes
Contrast ratio	1,300:1 Sequential 350:1 ANSI
Brightness uniformity	85%
Lens range	GLD (0.85 - 1.06:1) GLD (1.06 - 1.43:1) GLD (1.43 - 2.12:1) GLD (1.43 - 2.12:1) - Manual Zoom & Focus GLD (2.12 - 3.18:1) EN47 (0.65:1) (requires EN Series Lens Adapter) EN46 (0.80 - 1.21:1) (requires EN Series Lens Adapter) EN63 (1.20 - 1.70:1) (requires EN Series Lens Adapter) EN61 (1.70 - 2.50:1) (requires EN Series Lens Adapter) EN44 (2.50 - 4.60:1) (requires EN Series Lens Adapter)
Optical lens shift	Up to 64% vertical lens shift & up to 20% horizontal lens shift (depending on lens selection) Motorized zoom, focus, shutter and lens shift (depending on lens selection) Visit the Barco Residential Lens Calculator for further information
Optical dowser	Yes
Color correction	P7 RealColor™
Color gamut	REC.709
Image processing	Embedded warp, bow correction & blend engine
WARP	Four corner warp
Orientation	360° rotation, no restrictions
Network connection	10/100 Ethernet via RJ45 connection
Integrated web server	Yes
HDR	HDR10
3D	Active stereoscopic 3D* (requires firmware release 1.6 onwards) Additional hardware required please contact an authorized Barco representative for details
Inputs	1 x HDMI 2.0a (HDCP2.2), 1 x HDBaseT (HDCP1.4), 2 x dual link DVI-D, 2 x Display Port, 12G-SDI

	1 x RJ45 Ethernet, RS232, 3 x USB, DMX in/out*
Input resolutions	VGA up to 4K UHD (3,840 x 2,160) @ 60Hz Up to 2,560 x 1,600 @ 120Hz
Control	IR, RS232, TCP/IP, 3 x 12v Trigger* (requires firmware release 1.6 onwards) Driver modules available for: Crestron, Control4 and Savant
Power requirements	100 - 240V / 50 - 60Hz
Power consumption	950 W Nominal / 1100 W Max.
Noise level (typical at 25°C/ 77°F)	35 dB(A)
Operating temperature	10 to 45 °C (sea level)
Operating humidity	20 to 80% (relative humidity)
BTU per hour	Max. 2,900 BTU/h
Airflow requirements	Air Inlet (from Rear w/Feet Down): Left Side Exhaust (from Rear w/Feet Down): Right Side Clearance Distances (Front / Left / Right / Rear): 1cm / 50cm / 80cm / 20cm Exhaust Airflow: 221 ft ³ /min @ 22.9 °C
Dimensions (WxLxH)	480 x 680 x 227 mm / 18.9 x 26.7 x 8.9 in. (excluding lens)
Weight	25.5 kg / 56.2 lbs (excluding lens)
Shipping dimensions (WxLxH)	920 x 700 x 700 mm / 36 x 27 x 27 in. (excluding lens - packaged separately)
Shipping weight	42 kg / 92 lbs (excluding lens - packaged separately)
Storage temperature	-20 to 60 °C
Storage humidity	10 to 90% (relative humidity)
Accessories	Power cord(s), wireless remote control
Certifications	FCC Class A
Warranty	Limited 3 years parts and labor Extendable up to 5 years
*	Firmware upgradable Please contact an authorized Barco representative for details

A.2 Dimensions of a Medea

Overview

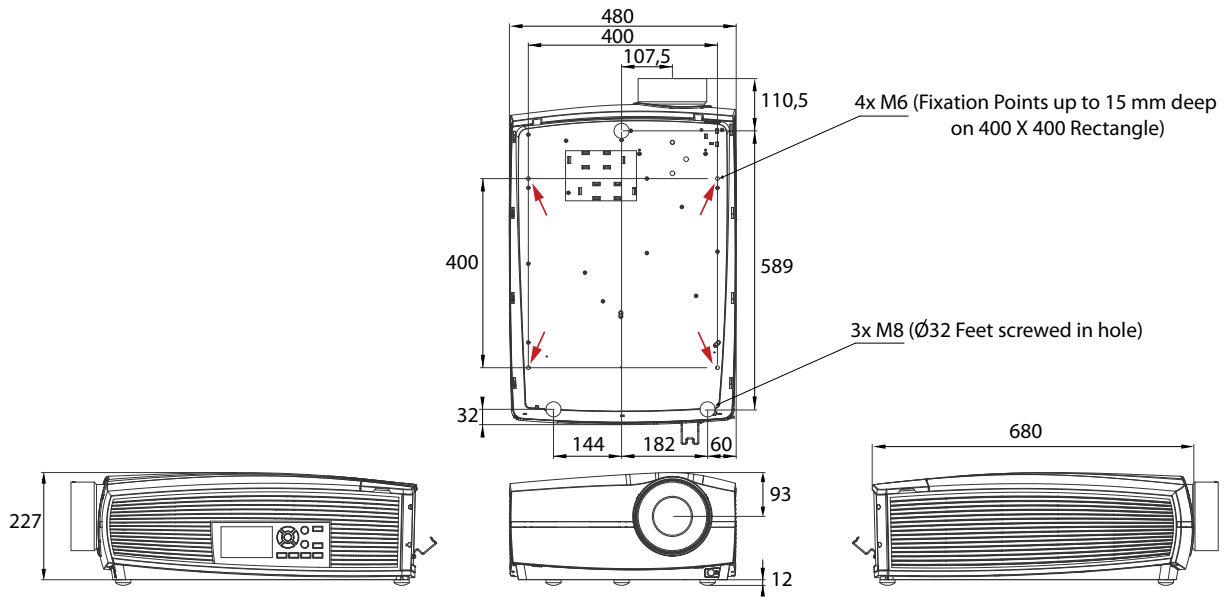


Image A-1: Dimensions, in mm



CAUTION: Take care to not exceed the maximum recommended tightening torque on the fixing screws. Use a torque of 4 Nm for the M8 screws and the M6 screws.

A.3 Technical Regulations

Certificates



Image A-2: EAC mark



Image A-3: Rohs



Image A-4: CE mark



Image A-5: Nemko mark 60950



Image A-6: CCC mark



Image A-7: FCC label



Image A-8: RCM mark

