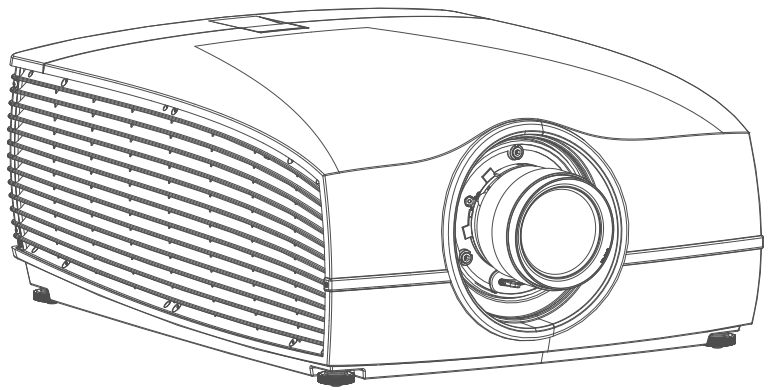


Loki



User Manual

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Turkey RoHS compliance



■ Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur.

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

Disposal Information

Waste Electrical and Electronic Equipment



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

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

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

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

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

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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.

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Safety

1

About this chapter

Read this chapter thoroughly before attempting to install or operate the projector.

To prevent personal injury to users or physical damage to the projector while installing and using your projector, ensure that you understand and follow all safety guidelines, instructions and warnings included in this chapter and this manual.

Clarification of the term 'Loki' used in this document

When referring in this manual to the the term, 'Loki', means that the content is applicable for the following products:

- Loki

Model certification name

The Loki products in general, are all products within the Barco GP6 Platform

Overview

- General considerations
- Important safety instructions
- Projector Hazard Distances
- Safety symbols
- Disposal Information
- Turkey RoHS compliance
- China RoHS compliance
- Taiwan RoHS compliance
- Contact information
- Product Info
- Statement

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.

Notice on optical radiation from Loki Projector



When installing an interchangeable lens with a throw ratio that make the projector become an RG3 unit, (See the chapter “Approved Lenses” in the installation manual), refer to chapter “Risk Group 3 Safety”, page 47 regarding precautions.

- The projector is Class 1 laser product that conforms with IEC EN 60825-1:2014. For Northern America, the projector is class 3R laser product up to throw ratio 2.33. 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 2016–V-0144 effective March 6, 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 3.15 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 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.
- 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 two (2) 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.

General safety instructions

- 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.
Do not remove/replace any parts of the projector. This shall be performed by service personnel only – Warranty void if this is violated.
- Do not stare into beam when the projector is on. The bright light may result in permanent eye damage.
- Not following the prescribed control, adjustment or operation procedure may cause damage by the exposure of laser radiation.
- Before operating this equipment please read this manual thoroughly and retain it for future reference.
- Installation and preliminary adjustments should be performed by properly trained and qualified personnel.
- All warnings on the projector and in the documentation manuals must 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.

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 an RG3 unit, (see chapter “Approved Lenses” in the installation manual), refer to chapter “Risk Group 3 Safety”, page 47 for information regarding precautions.

Refer to the Installation manual for the lens list and hazard distance before operation. Such combination of projector and lens are intended for professional use only, and are not intended for consumer use.

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 or original replacement cords. While appearing to be similar, other power cords have not been safety tested at the factory and may not be used to power the device. For a replacement power cord, contact your dealer.
- Do not operate the projector with a damaged cord. Replace the cord.
Do not operate the projector if the projector has been dropped or damaged - until it has been examined and approved for operation by a qualified service technician.
- Position the cord so that it will not be tripped over, pulled, or contact hot surfaces.
- If an extension cord is necessary, a cord with a current rating at least equal to that of the projector should be used. A cord rated for less amperage than the projector may overheat.
- Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock.
- 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 an authorized trained service person when service or repair work is required.
- Do not use an accessory attachment which is not recommended by the manufacturer.

- Lightning - For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the device due to lightning and AC power-line surges.

To prevent personal injury

- To prevent injury and physical damage, always read this manual and all labels on the system before connecting to the wall outlet or adjusting the projector.
- To prevent injury, take note of the weight of the projector.
- To prevent injury, ensure that the lens and all covers are correctly installed. See installation procedures.
- Warning: high intensity light beam. NEVER look into the lens! High luminance could result in damage to the eye.
- Warning: extremely high brightness laser: This projector uses extremely high brightness laser. Never attempt to look directly into the lens or at the laser.
- Always switch off the projector and disconnect from the mains power supply before attempting to remove any of the projector covers or access parts inside the projector.
- This product contains no user serviceable parts except the Color Wheel. Attempts to modify/replace mechanics or electronics inside the housing or compartments will violate any warranties and may be hazardous.
- Do not remove/replace any other parts than the Color Wheel. Other parts, service personnel only Warranty void if removed
- 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.
- Only place the projector on a stable surface, or mount it securely using an approved ceiling-mount.
- It is hazardous to operate without lens or lens cap. Lenses or shields shall be changed if they have become visibly damaged, for example with cracks or deep scratches, to such an extent that their effectiveness is impaired.

To prevent fire hazard

- 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.
- Do not place flammable or combustible materials near the projector!
- For the Loki projector, the exclusion zone on the lens side within the light beam must be at least 1,5m.
- Caution! Hot air is exhausted from the rear vent. Do not place objects that are sensitive to heat nearer than 100 cm (40") to the exhaust vent.
- 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. Allow for sufficient distance to walls and ceilings to avoid overheating. Minimum safety distance to the exhaust area of the unit must not be less than 100 cm (40") and to the intake area, not less than 50 cm (20").
- 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.
- 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. Always allow ample airflow through the projector.
- 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.
- Projection rooms must be well ventilated or cooled in order to avoid heat buildup.
- Let the projector cool down completely before storing. Remove cord from the projector when storing.

To prevent projector damage

- To ensure correct airflow is maintained the projector should only be operated when all of its covers in place.
- 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
- 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.
- To ensure correct airflow is maintained, it should only be operated when all of its covers are in place.
- The projector must always be installed in a manner which ensures free flow of air into its air inlets and unimpeded evacuation of the hot air from its cooling system.
- Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. The device should not be placed in a built-in installation or enclosure unless proper ventilation is provided. Ensure that nothing can be spilled on, or dropped inside the projector. If this does happen, switch off and unplug the mains supply immediately. Do not operate the projector again until it has been checked by Barco authorized service personnel.
- Do not block the projector cooling fans or free air movement around the projector. Minimum safety distance to the exhaust area of the unit must not be less than 100 cm (40") and to the intake area, not less than 50 cm (20").
- Do not use this equipment near water.
- Do not operate the projector outside its temperature and humidity specifications as this may result in overheating and malfunction.
- Never place the projector in direct sun light. Sun light on the lens can severely damage the Digital Mirror Devices™ in which case there is a loss of warranty.
- Save the original shipping carton and packing material. They will come in handy if you ever have to ship your equipment. For maximum protection, repack your set as it was originally packed at the factory.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning. Never use strong solvents, such as thinner or 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. Do not use a damp cloth, detergent solution, or thinner.

On servicing

- Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage potentials and risk of electric shock.
- Refer all servicing to 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.
- Unplug this product from the wall outlet and refer servicing to Barco authorized service personnel or technicians under the following conditions:
 - 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.
 - When the power cord or plug is damaged or frayed.
- Replacement parts: When replacement parts are required, be sure the service technician has used original Barco replacement parts. 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.

1.3 Projector Hazard Distances

WARNING. This may be a RG3 laser Product, dependent on which lens used.

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 installation manual Chapter 3 for the lens list and throw ratio before operation.

Do not look directly in to the beam from the projector lens.

No direct eye exposure to the beam is permitted.

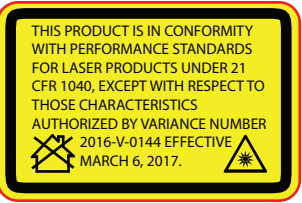

Operators shall control access to the beam within the hazard distance or install the product at a height that will prevent eye exposure within the hazard distance.

See table below for a definition of hazardous distances versus the throw ratio of the lens.

1.4 Safety symbols

Description of safety symbols used in product documentation or on product.

Image	Description
	Refer to user manual for further information!
	Caution! Do not stare into beam, RG2 product.
	No telephone! Do not connect to telephone lines.
Loki Warning Label 	Caution! For North America: With interchangeable lens with throw ratio greater than 2.33, consider hazard distance and installation requirements for RG3 product. Refer User Manual. Caution! With Interchangeable lens with throw ratio greater then 3.15, consider hazard distance and installation requirements for RG3 product. Refer User manual.

Image	Description
<p>Loki FDA Label</p> 	
<p>Loki EMC Label</p> 	

Location of Safety Label

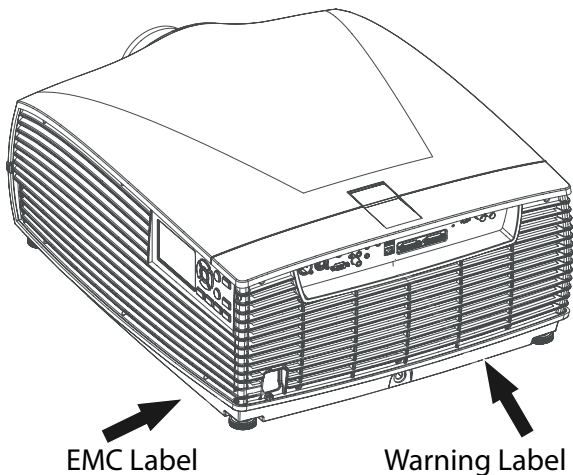



Image 1-1: Loki Projector

 **CAUTION:** This product contains chemicals, including lead, known to the State of California to cause birth defects or other reproductive harm. Recycle properly, do not dispose of in ordinary waste!

1.5 Disposal Information

Disposal Information

Waste Electrical and Electronic Equipment



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

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

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

WEEE Information

This product conforms to all requirements of the EU Directive on waste electrical and electronic equipment (WEEE). This product shall be recycled properly. It can be disassembled to facilitate proper recycling of its individual parts.

Consult your dealer or relevant public authority regarding drop-off points for collection of WEEE. For details, please visit the Barco website at: <http://www.barco.com/en/AboutBarco/weee>.

1.6 Turkey RoHS compliance

Turkey RoHS compliance



■ Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur.

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

1.7 China RoHS compliance

中国大陆 RoHS (Information for China ROHS compliance)

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

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

零件项目(名称) Component name	有毒有害物质或元素 Hazardous substances and elements					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯 醚 (PBDE)
印制电路配件 Printed Circuit Assemblies	X	○	X	○	○	○
外接电(线)缆 External Cables	X	○	○	○	○	○
内部线路 Internal wiring	X	○	○	○	○	○
镜头支架 Lensholder	X	○	○	○	○	○
螺帽,螺钉(栓),螺旋(钉),垫圈, 紧固件 Nuts, bolts, screws, washers, Fasteners	X	○	○	○	○	○
激光发生器	X	○	○	○	○	○

零件项目(名称) Component name	有毒有害物质或元素 Hazardous substances and elements					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
Laser						
电源供应器 Power Supply Unit	X	O	O	O	O	O
风扇 Fan	X	O	O	O	O	O
附電池遙控器 Remote control	X	O	O	O	O	O

本表格依据SJ/T 11364的规定编制
This table is prepared in accordance with the provisions of SJ/T 11364.

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下。
O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572.

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 标准规定的限量要求。
X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572.

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



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

1.8 Taiwan RoHS compliance

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

	限用物質及其化學符號 Restricted substances and its chemical symbols					
單元 Unit	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr6+)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
印製電路板配件 Printed Circuit Assemblies	—	O	—	O	O	O
外接電 (線) 纜 External Cables	—	O	O	O	O	O
內部線路 Internal wiring	—	O	O	O	O	O

單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr6+)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
鏡頭支架 Lensholder	—	○	○	○	○	○
螺絲組件 Nuts, bolts, screws, washers, Fasteners	—	○	○	○	○	○
雷射 Laser	—	○	○	○	○	○
電源供應器 Power Supply Unit	—	○	○	○	○	○
風扇 Fan	—	○	○	○	○	○
遙控器 Remote control	—	○	○	○	○	○
<p>備考1. “超出0.1 wt %” 及 “超出0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。 Note 1 : “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.</p> <p>備考2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。 Note 2 : “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.</p> <p>備考3. “—” 係指該項限用物質為排除項目。 Note 3 : The “—” indicates that the restricted substance corresponds to the exemption.</p>						

備註: 此RoHS表格適用於以下產品型號: GP6,GP7,GP8,GPC

Hint: This RoHS table is suitable for following models: GP6,GP7,GP8,GPC

1.9 Contact information

Barco contact information

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

Contact address: Beneluxpark 21, 8500 Kortrijk, Belgium

Contact address (for Taiwan) :

公司名稱 (Company Name) : 巴可股份有限公司

地址 (Address) : 新北市板橋區新站路16號33樓

傳真 (Fax) : 02-7715 0298

電話 (Tel) : 02-7715 0299

E-mail : service.taiwan@barco.com

Importers contact information

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

Contact information Norway factory

Barco Fredrikstad as

Habornveien 53, N1630 Gamle Fredrikstad, Norway

Phone: +476930 4550

Support:Support.fre@barco.com

1.10 Product Info

Product info

BARCO

Image 1-2

product name 產品名稱:

projector 投影機

model 型號: GP6

1.11 Statement

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。

Getting to know the projector

2

Overview

- Main components
- Service and maintenance
- LED status light
- Power on / Standby button backlight indications
- LCD panel
- LCD functionality in Ready Mode
- Local keypad
- Remote Control
- Projector Address
- Connector panel
- Color Wheels
- Color Wheel Type
- Optional accessories

2.1 Main components

Naming conventions

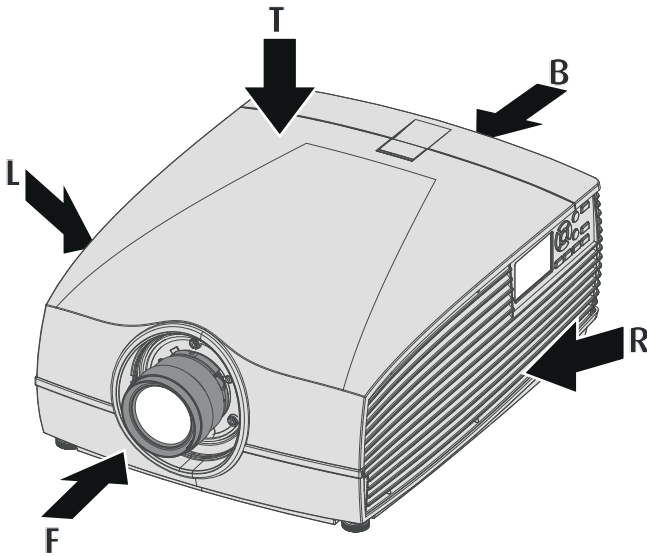


Image 2-1

- L** Left
- T** Top
- B** Back

- R** Right
- F** Front

Projector Front

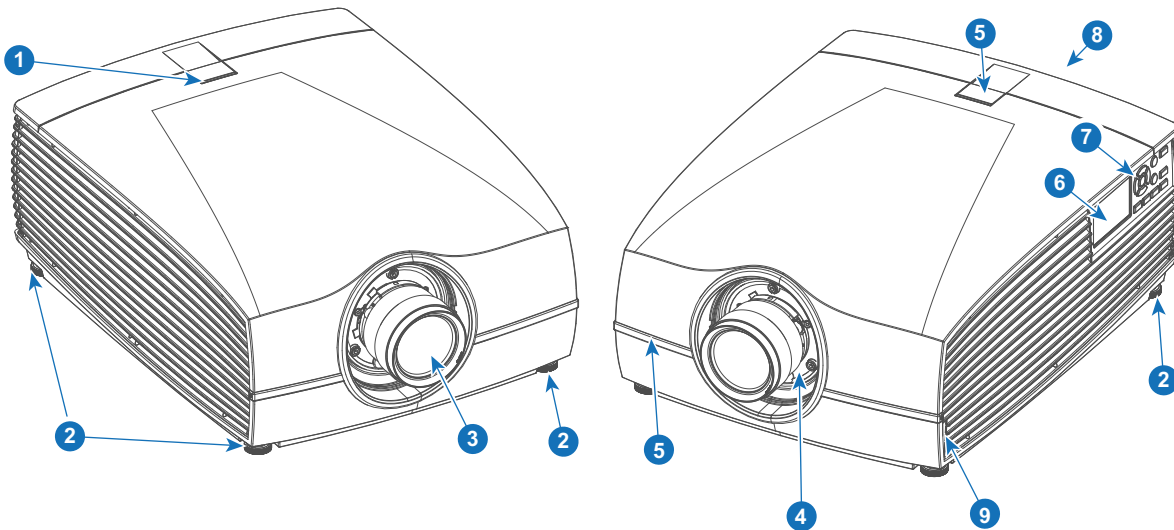


Image 2-2

- 1** LED status light
- 2** Adjustable feet
- 3** Projector lens
- 4** Lens holder
- 5** IR Receiver: for remote control communication

- 6** LCD panel
- 7** Keypad
- 8** Connector panel
- 9** Front USB and triggerboard

2.2 Service and maintenance

General

The Loki does not have any user-serviceable parts.

All service tasks must only be carried out by the manufacturer, or a Barco authorized service personnel or Barco technicians.

The projector color wheel is a designed consumable that can be replaced by users in the field. See Installation Manual for more information.

2.3 LED status light

About

The Loki status indicator is located on the top side of the projector, near the IR receiver (ref. 1, Image 2-2).

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

In event of a 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.

If the root cause of the error is high temperature, the projector will restart when it has cooled down, and temperatures are back within the normal operating limitations.

2.4 Power on / Standby button backlight indications

Indicator

In addition to the LED indicator, the projector also displays status indications in the backlight of the Power / Standby button.

The table below shows the details regarding this indications.

Operating Status	Indication Color / Behavior
On (active)	Blue
Wait on	Blue flashing
Standby (off)	White
Wait	White short flashing
Overheating	Red flashing
Configure/upgrade	White fast flashing
Standby ECO	White heartbeat

2.5 LCD panel

About

The LCD panel (See chapter 2.6, Local Keypad) is located on the right side of the projector, and has two modes of indication; Mirror of the OSD, or Information display.

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

1. When mirroring the OSD, the LCD showing the menus and adjustment information.
- 2.

When in information mode, showing this Information regarding the status of the projector:

- Projector status
- Network address and status
- Active source
- Illumination Status
- Current firmware version
- Active functions (Enabled Functions).
- Display Info, including Transport delay
- Environment Info.

Use the navigation keys (arrows) to scroll the information menu.

When in information mode, press OK (confirm selection (✓)) to see notifications and warnings.

The LCD Display will fade out 15 seconds after the last key operation.

2.6 LCD functionality in Ready Mode

When the projector is in Ready mode, it is possible to activate and navigate in the projectors menu on the LCD display, in order to set or check values and settings before the lamp is switched on.

Ready mode is enabled either when the power cable is connected (after the startup sequence), or when pressing the Power Off for 3 seconds when the projector is in On mode. See chapter 5.4 Power Mode Transitions for a graphic presentation of the ready mode.

Procedure

When in ready mode, press the Menu button either on the remote control, or the keypad to enter the menus. Navigate by using the arrow and OK keys, either on the remote control or the keypad.

2.7 Local keypad

About

The Keypad gives direct access to several functions, in addition to access to the menu system. The keypad and remote control functions are equal.

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

The Standby key is equipped with white, blue and red backlight depending on the status of the projector. See table in "Power on / Standby button backlight indications", page 21 for info regarding this.



Image 2-3

Item No.	Name	Description
1	LCD Display	Shows Projector status and navigation menu.
2	Navigation keys	Navigation arrows (up, down, left, right), confirm selection (✓)
3	Menu button	Toggle between OSD / Information menu.
4	Standby	Power on / standby
5	Back	Undo action / back to previous screen.
6	OSD ON/OFF	Deactivate the On Screen Display (OSD). Only critical warnings will be displayed.
7	Input	Shortcut to input source menu on LCD. Use navigation keys to select and enable input.
8	Shutter	Enable and disable the lens shutter function. This is not a mechanical shutter, but it toggles the laser source on and off. Backlight is red when the shutter are enabled.
9	Test Patterns	Shortcut to test pattern menu on LCD. Use navigation keys to select the desired pattern.
10	Lens	Shortcut to lens function. A test pattern displays on the OSD. LCD screen displays the navigation keys to manage and confirm actions.

2.8 Remote Control

2.8.1 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).

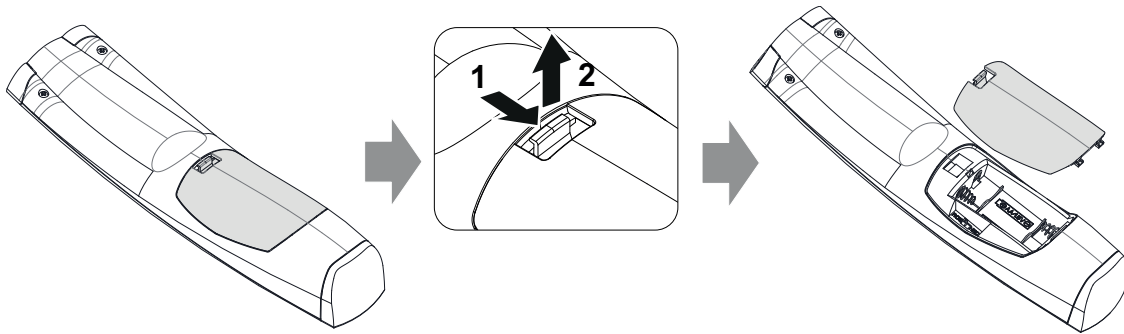



Image 2-4

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.

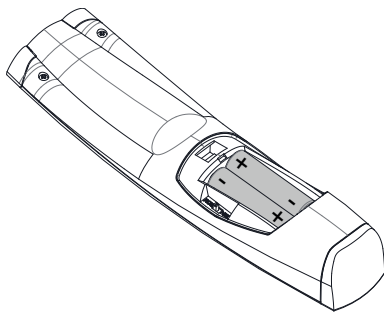


Image 2-5

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.

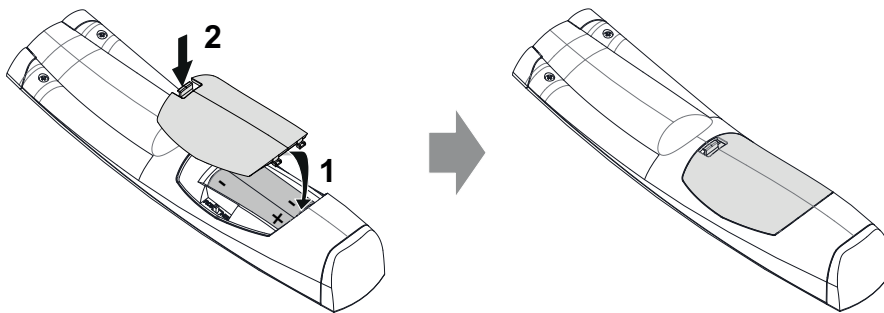


Image 2-6



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.

2.8.2 Remote control, protocol setup

About the used protocol

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

Which protocol to use

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

How to set

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

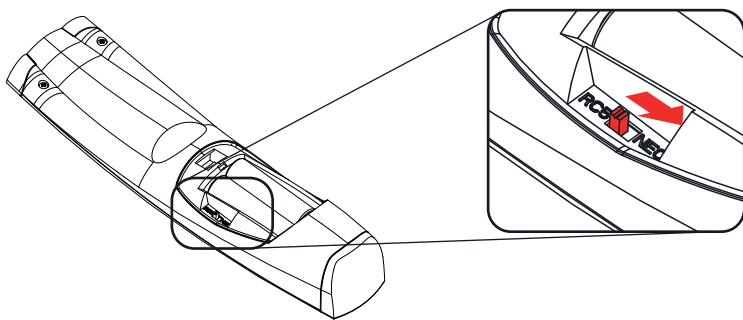


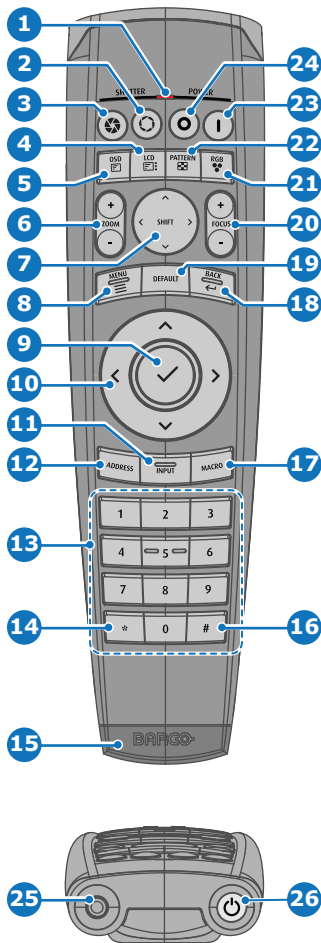
Image 2-7

Remark with RC5 protocol

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

2.8.3 Functionality overview

Remote Control Unit buttons



- 1 Button pressed indicator.
- 2 Shutter Open.
- 3 Shutter Close.
- 4 Touch Panel On/Off. (Not in use).
- 5 OSD On/Off.
- 6 Lens Zoom.
- 7 Lens Shift.
- 8 Menu Activation.
- 9 Menu Selection, OK button.
- 10 Menu Navigation.
- 11 Input Selection.
- 12 Address button.
- 13 Numeric buttons.
- 14 Backspace (while entering values)
- 15 XLR connector.
- 16 Decimal mark (while entering values)
- 17 Macro button. (Not in use)
- 18 Menu Back.
- 19 Default button. (Not in use).
- 20 Lens Focus.
- 21 RGB Button.
- 22 Test Patterns.
- 23 Power On.
- 24 Power Off.
- 25 Stereo Jack.
- 26 RCU On/Off.

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

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

2.8.4 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 2-8). 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".

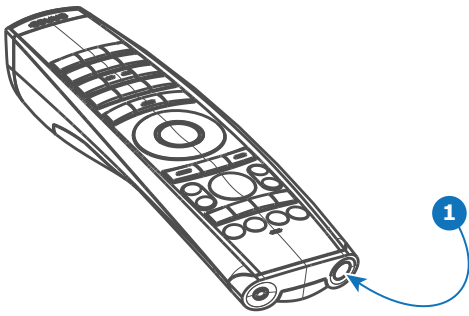


Image 2-8

2.8.5 Function of the RGB filter button

Filtering the color of the projected image

By pressing the RGB filter button on the RCU you can place a color filter on the output of the projector. This feature can be useful during the installation and configuration of a multi-projector or multi-channel setup. By having one projector project a red image and another project a green image, it is easier to spot and adjust the overlap section.

By pressing this button multiple times, you will have different active filters, in the following cycle:

- Red + Green + Blue (default)
- Red only
- Green only
- Blue only
- Red + Green
- Green + Blue
- Red + Blue
- Red + Green + Blue
- etc



After powering up, the colors will always revert back to full RGB.

2.8.6 Enable / Disable Remote Control

About

This function are for disabling the IR sensors for the remote control. Either front or rear, or both.

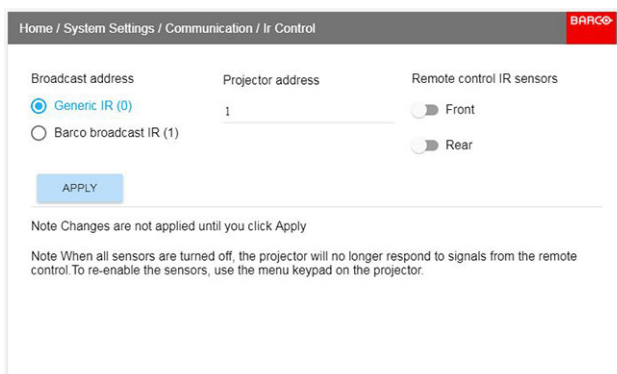


Image 2-9

- Select the menu path *Home/System Settings/Communication/IR control*
- Select which sensors to be disabled.
- Enter the Apply button to confirm the action



When all sensors are turned off, the projector will not receive any signals from the remote control. To enable the sensors again, use the keypad on the projector.

2.8.7 Wired RC connection

About

The remote control can also be directly wired to the projector from the stereo jack connector on the remote, (See “Functionality overview”, page 26), to the RC connector on the back panel of the projector. (See section “Connector Panel”)

In this mode, the projector will not be affected by signals from other non-wired remote controls.

When using wired remote control, the broadcast address must be set to “Generic ID (0)”. See the menu in “Enable / Disable Remote Control”, page 27.

It is not possible to program the remote control in wired mode. (Directly connected, no sense in programming).

2.9 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.

2.9.1 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'.

2.10 Connector panel

General

The source input panel is located at the back of the projector. For source specifications, see “Connector specifications”, page 34.

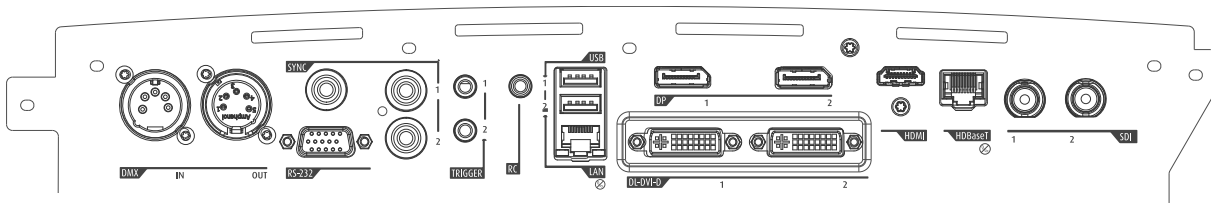


Image 2-10

Name	Pcs	Description	Purpose
DMX IN	1	DMX 512 input	For Projector Control
DMX OUT	1	DMX 512 output	For Projector Control
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
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
Trigger	3 (one in front, two on rear panel)	12VDC - 0,5A (6W)	For Controlling Peripherals, like motorized screens, curtains etc. Give 12V output when projector are switched on. NOTE Disconnect the projector power cable before connecting or removing the trigger cable
RC	1	Jack connector for wired remote	For Projector Control
USB	3	USB 2.0 type A, 4 pin(2x Rear and 1x Front)	For Software upgrade
LAN	1	Standard RJ45 connector	For Projector Control
DP	2	Standard display port	For Projector Input
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
HDMI	1	Standard HDMI 2.0	For Projector Input
HDBaseT	1	Standard RJ45 8P8C Connector	For Projector Control
SDI	2	SDI1 is Input, SDI 2 is pass through. (out)	For Projector Input

2.11 Color Wheels

Overview

- Color Wheel range
- Change the color wheel

2.11.1 Color Wheel range

About

The Loki is delivered with two (2) different color wheels: COLOR and BRIGHTNESS.

COLOR delivers great depth of color and a broad gamut.

BRIGHTNESS provides an extra boost to white segments and very good primary and secondary colors, which makes it ideal for brightness critical applications.

The Loki is designed so that users can change the color wheel quickly and easily whilst on site, without the use of special tools.

2.11.2 Change the color wheel



CAUTION: The Loki contains no user serviceable parts except the Color Wheel. Attempts to modify/replace mechanics or electronics inside the housing or compartments will violate any warranties and may be hazardous.



The system is automatically configured with the correct CW algorithms following the product ID of the CW.
The CW assembly contains no serviceable parts, and further de-assembly should not be attempted.



The bottom of the packaging container have a cut out that is intended for placing the projector in a upright position, on the right side. This is suitable as docking during change of the colorwheel.
Remove the middle longitude spacer in the container bottom in order to release this cutout.



A video illustration of the complete Colorwheel change process is available in the F90 product site on the web, under the file "Media & Assets".
<https://www.barco.com/en/Products/Projectors/Venue-projectors/11800-lumens-4K-UHD-DLP-laser-phosphor-projector.aspx#!media>
This video visualize the process described below.

How to replace the color wheel (CW)

1. Place the projector on its side (right or left) on a flat surface.
2. Release the seven (7) captive screws on the projector bottom. Remove the bottom cover carefully.
3. Release the three (3) captive screws to open CW cover.
4. Release the three (3) captive screws holding the CW in place.
5. Carefully remove the color wheel.
6. Replace with the new color wheel.
7. Reinstall the three (3) captive screws for holding the CW in place.
8. Reinstall the three (3) captive screws of the CW cover.
9. Replace the projector bottom cover, and reinstall the seven (7) captive screws.
10. Reposition the projector so that its bottom is sitting flat on a level surface.

2.12 Color Wheel Type

Identifying the installed color wheel

The installed color wheel can be identified in the *Home / Status* menu.

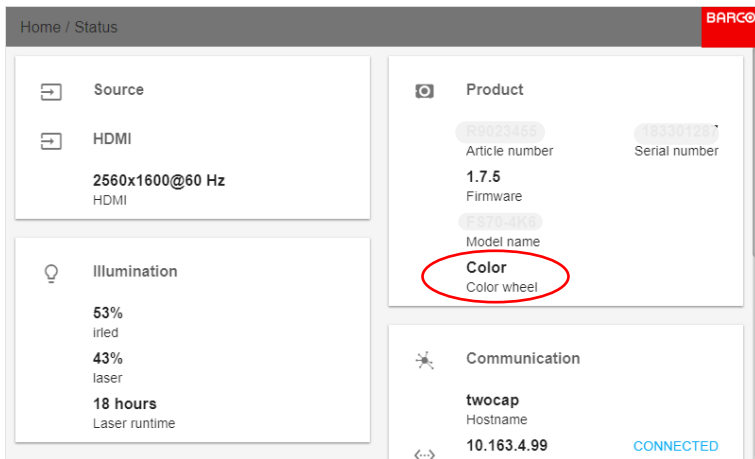


Image 2-11

2.13 Optional accessories



WARNING: Always use Rigging Frame when the projector are installed outside a flat horizontal surface, or being stacked together with several projectors.

Rigging frame

Item number

R9802224

Item description

F70 / F90 Multifunctional Frame

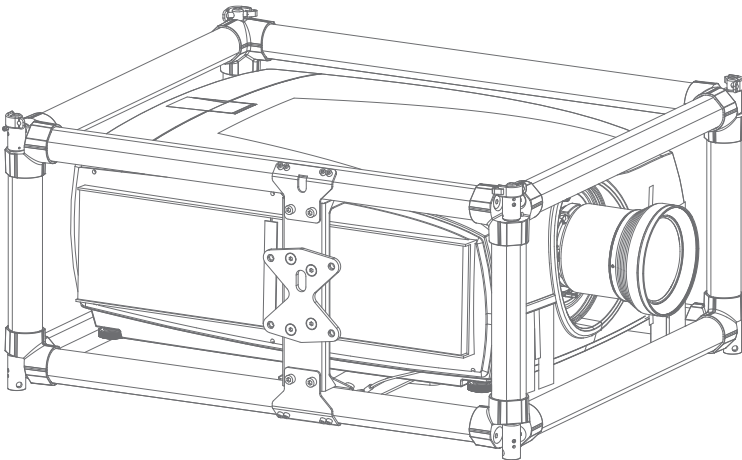


Image 2-12

The F90 rigging frame is a rugged, easy to install frame designed to streamline the process of installing one or more projectors. Since the F90 and Loki has the same mechanical layout, the frame also fits Loki.

When installed in the frame, the projector:

- can be rotated around x, y and z axis in order to obtain a seamless adjustment.
- can be installed from a truss or on pedestal
- can be easily stacked one on top of one another, for instance in dual- or multi- channel installations

Flight case

Item number

R9801195

Item description

F90 Flight Case



Image 2-13

The F90 flight case is custom-designed to ship the projector, including flight frame, signal and power cords and up to two lenses. The case is fully-lined to protect the projector and lenses during transit and storage. The Flight case fits perfectly well the Loki projector.

Getting started

3

About this chapter

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

Overview

- Projector source and control connections
- Power up the projector
- Power down the projector
- Power mode transitions
- Power modes
- Customize projector settings
- User interface

3.1 Projector source and control connections

Overview

- Making connections
- Connector specifications
- Control interfaces

3.1.1 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)

3.1.2 Connector specifications

Overview

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

3.1.2.1 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)
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

3.1.2.2 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

3.1.2.3 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

3.1.2.4 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

Parameter	12G-SDI	3G-SDI
Return loss	-6dB @ 12GHz	>10dB at 3GHz
Impedance	75 ohm resistive	75 ohm resistive

3.1.2.5 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

3.1.3 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

3.1.3.1 RS-232

Specifications

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

3.1.3.2 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

3.1.3.3 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

3.2 Power up the projector



CAUTION: Sources should always be connected before the projector is powered up



CAUTION: Use only power cords following the unit, designed for your projector model. Do not use unauthorized replacements. Do not use power cords which are damaged.

Power up the projector using the keypad or remote

1. Connect the line cord to the projector.
2. Plug the 3-pronged cord into a grounded AC outlet.
The projector will begin warming up, and the backlight of the Standby /power button are flashing white.
3. When the backlight on the standby button are constant white, the projector are in standby mode, ready to be switched on.
4. Press the standby button on the keypad or the power button on the remote to bring the projector up to on mode.
The power button backlight on the keypad will flash blue while the projector is warming up.
5. When the power button backlight is steady blue, the projector is ready for use.

3.3 Power down the projector

Power down using the keypad or remote

1. Depress and hold the power button on the keypad or remote for four (4) seconds.
The Projector is now in cooling down phase.
2. Wait 2 minutes before disconnecting the power cord. (If disconnecting is required).



WARNING:

There is a risk of reducing the expected lifetime of the projectors DMD device if the power cord is removed too early, due to the device's shutdown sequence.

3.4 Power mode transitions

3.4.1 General

Transition Diagram

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

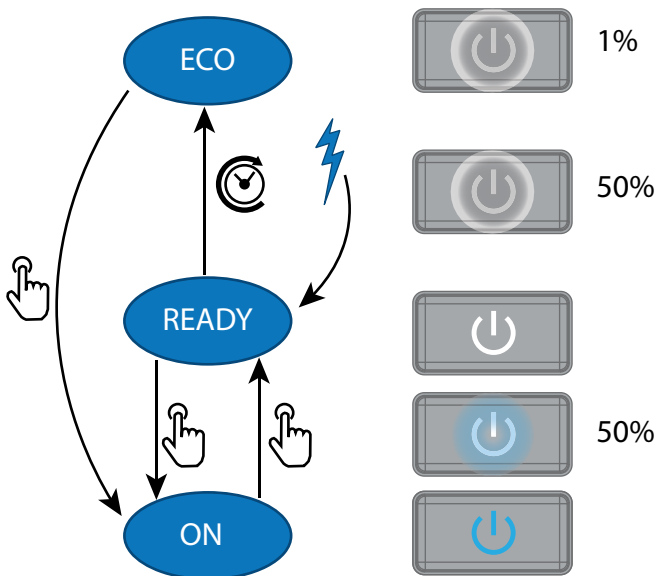


Image 3-1

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

3.4.2 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 Loki 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.

3.4.3 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.

3.4.4 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.

3.4.5 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.

3.4.6 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**.

3.4.7 Wake On LAN (WOL)

About

The projector has WOL functionality, that can be used for the projector to go from ECO mode to READY mode. Use a json command for transition from READY to ON.

The WOL is performed by sending a Magic Packet followed by the projectors MAC address. The MAC address is found in the menu *Home / System settings / Communication / LAN*. The MAC address is similar to the HW address that is shown in this menu path.

3.5 Power modes

General

The table below details the F90 power modes.

Mode	Description
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

3.6 Customize projector settings

About

The projector display, behavior and user interface can be adjusted to meet individual requirements.

Options include: *Home/System Settings/Themes*

- Adjust the OSD menu color

3.7 User interface

Overview

- On Screen Display (OSD)

3.7.1 On Screen Display (OSD)

About

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

The OSD interface uses tabs to display the main menu. Topics are then further sorted and displayed by function: main (topic) — sub (function) — sub (function).

There are six main menu tabs: Source, Image, Installation, System settings, Test pattern and Status.

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



In order to show the OSD, the OSD On/Off button must be disabled. (White backlight on the button). When the button have blue illumination, the OSD will not appear, and the display information are only visible on the LCD Display. Only Critical warnings will be displayed.

User access levels

The projector's software platform uses access levels to define what each user can do.

There are two user access levels: Standard User and Power User. In addition, there is a Service user access for certified Service personnel.

A standard user has access to all projector functionality and OSD menu items. A power user has, in addition to access to all projector functionality and OSD menu items, access to a number of advanced functions. Access to power user features is password-protected. Contact your projector supplier for more information.

Navigation

You can navigate the OSD using the local keypad or the remote control.

Press the MENU button to display the OSD. (The OSD must be enabled, press OSD button to enable.)

Use the arrow keys to navigate left, right, up and down.

Press the OK button to select a menu topic and get more options.

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

Press MENU again to exit the menu system.

Press the OSD button to deactivate the OSD on the screen. Only critical warnings will be displayed.



Some menu options are reserved for Power or Service Users; these will be grayed out and not available for selection when in standard user mode. To access these features, enter your Power or Service Code in the Service Menu or contact your support representative for more information.

Define values

Menu settings are displayed using checkboxes, barscale sliders, and drop-down lists.

To set a value:

- Press OK to select or deselect a checkbox (turn a function ON or OFF).
- Use the arrow keys to move the barscale slider up or down on the value line. For a barscale 0-9, each step will equal 10% of the total value.
- To enter the value as a direct number, press ENTER, input the digit(s), and then Press ENTER again to execute and exit cursor mode e.g. ENTER 79 ENTER.

Changes to values are implemented dynamically.

Menu memory

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

User Maintenance

4

Overview

- Update Projector Firmware

4.1 Update Projector Firmware



CAUTION: Do NOT power down or remove mains power supply when an upgrade is in progress.



Once initiated, the upgrade procedure can take up to 20 minutes to complete. The LCD display will show the progression and status of the upgrade during the process.

Update

- Go to www.barco.com and select your product. All available firmware downloads are filed under the Technical Downloads tab.
- Download the firmware. Extract and save the file to a USB stick with FAT file system. Use the eject function on your PC to safely remove the device from the computer.
- Place the projector in Ready mode (status indicator is steady White).
- Insert the USB Stick in to the rear USB port on the projector.
After a few seconds, the status indicator will flash. (rate: 3 Hz/180 FPM). This signals that the upgrade is in progress. If the upgrade file is corrupt or invalid, the status indicator will turn red and the upgrade process will stop. Note! The upgrade will not be installed in this instance, and the upgrade process must be restarted with a full and correct file. The projector may restart several times during the upgrade process
- The LCD display will show the progress of the update procedure, and also when the USB stick can be removed. The projector will return to standby mode (status indicator is steady amber) once the upgrade is completed successfully.

Cleaning the projector

5

5.1 Projector lenses

General guidelines for cleaning projector lenses

Blow off dust with clean compressed air (or pressurized air cans) .

Use lens cleaner and a clean lens cleaning cloth to remove the dust and contamination.

Wipe in broad strokes, in one direction only.

Warning: Do not wipe back and forwards across the lens surface as this tends to grind dirt into the coating.

Use a dry clean lens cleaning cloth to remove left liquid or stripes. Polish with small circles.

If there are still fingerprints on the surface, repeat with lens cleaner and a clean lens cleaning cloth, then polish again with a dry cloth.



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

5.2 Projector cabinet



WARNING: Always disconnect the projector from the mains power net before attempting to clean the projector cabinet.

General guidelines for cleaning the projector cabinet (exterior only)

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.

5.3 Filters

General info regarding Air intake and filters.

The product is shipped default without any filters and by avoiding filters, the ventilation system operates for longer periods between maintenance, since no clogging of filters means more air is allowed through the system, resulting in lower operating temperatures over time. The air intake are just protected by a mesh. This mesh has to be vacuum cleaned occasionally when needed. No specific interval for this operation, but to be performed when needed.

For more demanding surrounds both smoke and dust filters can be applied externally to the system to avoid internal fouling.

General guidelines for cleaning projector filters (external)

Remove the filter from the projector then use a vacuum to remove excess dust from the filter. Do not wet or soak the filter.



Cleaning of the projector filter should be done in a separate room to avoid dust contamination.

Risk Group 3 Safety

6

6.1 General considerations

Notice on optical radiation from Loki 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 two (2) 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.

6.2 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 Loki 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, 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", page 49

6.3 High Brightness Precautions

Restriction Zone (RZ) based on the HD (Hazard Distance).

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 8 .

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.

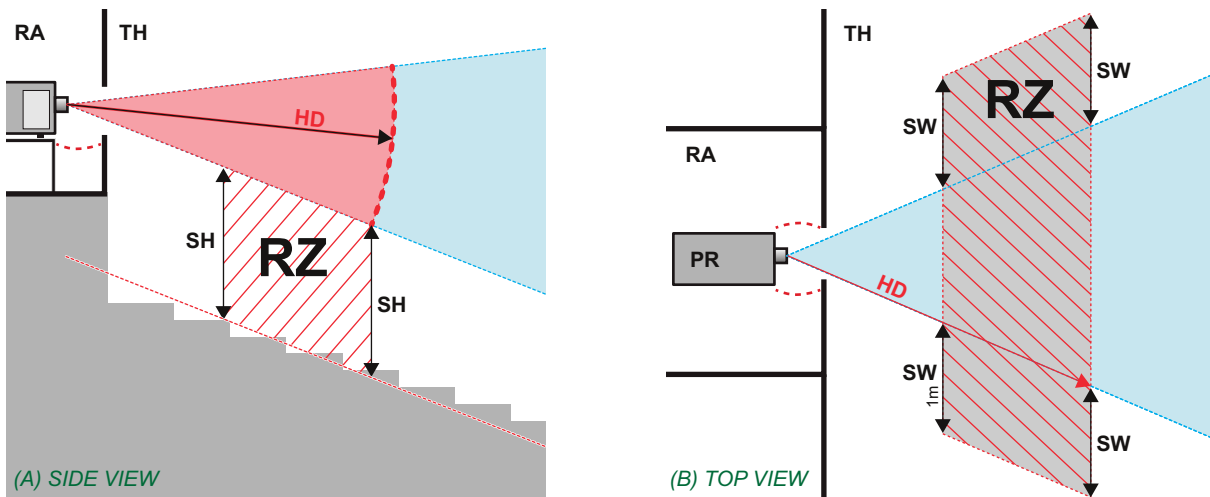


Image 6-1

- A** Side View
- B** Top View
- RA** Restricted Area
- PR** Projector

- TH** Theater
- RZ** Restriction Zone in the theater
- SH** Separation Height
- SW** Separation Width



Regarding the SH Distance: For Cinema applications, the distance must be >2m. For Concert applications, the distance must be >3m.

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.

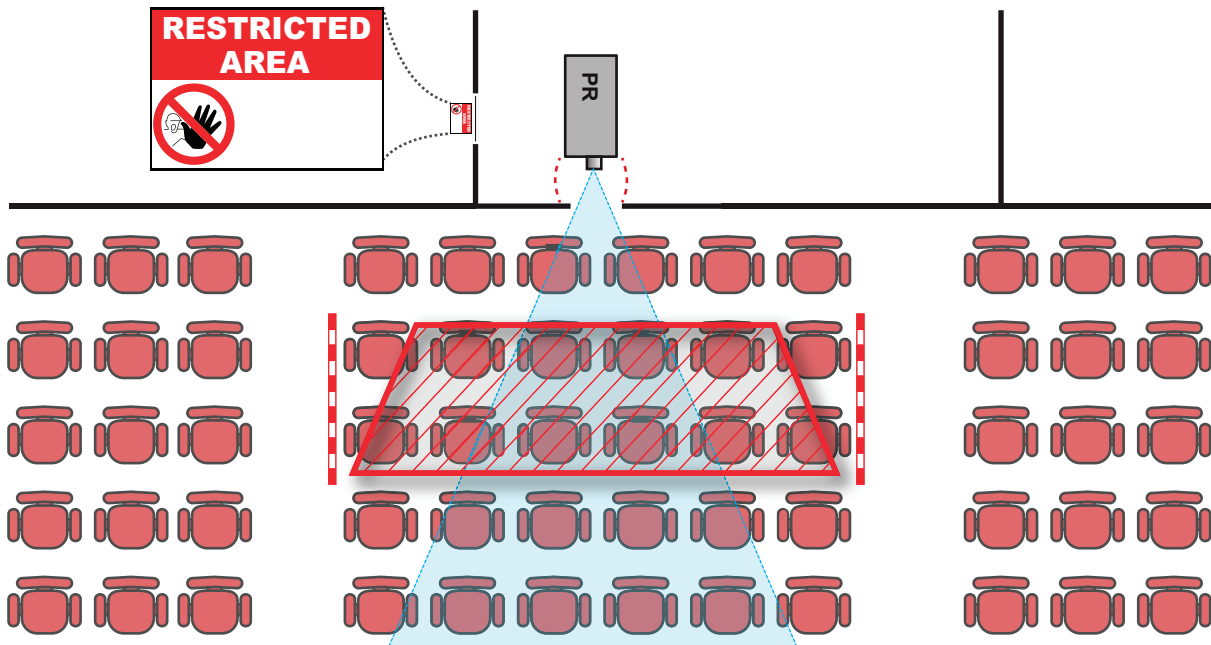


Image 6-2

USA market

For LIPs (Laser Illuminated Projectors) installed in the USA market other restriction zone conditions apply.

LIPs for installation in restrained environment (cinema theaters) shall be installed at height vertically above the floor such that the bottom plane of the hazard distance zone shall be no lower than 2.5 meters above the floor. Horizontal clearance to the hazard distance zone shall be not less than 1 meter.

LIPs for installations in unrestrained environment (large venues,..) shall be installed at a height vertically above the floor such that the bottom plane of the Hazard distance Zone shall be no lower than 3 meters above the floor. Horizontal clearance to the hazard distance zone shall be not less than 2.5 meters. Any human access horizontally to the Hazard Zone, if applicable, shall be restricted by barriers. If human access is possible in an unsupervised environment, the horizontal or vertical clearances shall be increased to prevent exposure to the hazard distance zone.

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

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

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

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

The installation checklist for laser illuminated RG3 projectors must be fully completed after the installation and sent to pvg@barco.com. This checklist can be downloaded from the Barco website. Only when the installer is a valid laser light show variance holder the checklist should not be sent to Barco.

6.4 Hazard Distance for fully closed projection system

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).

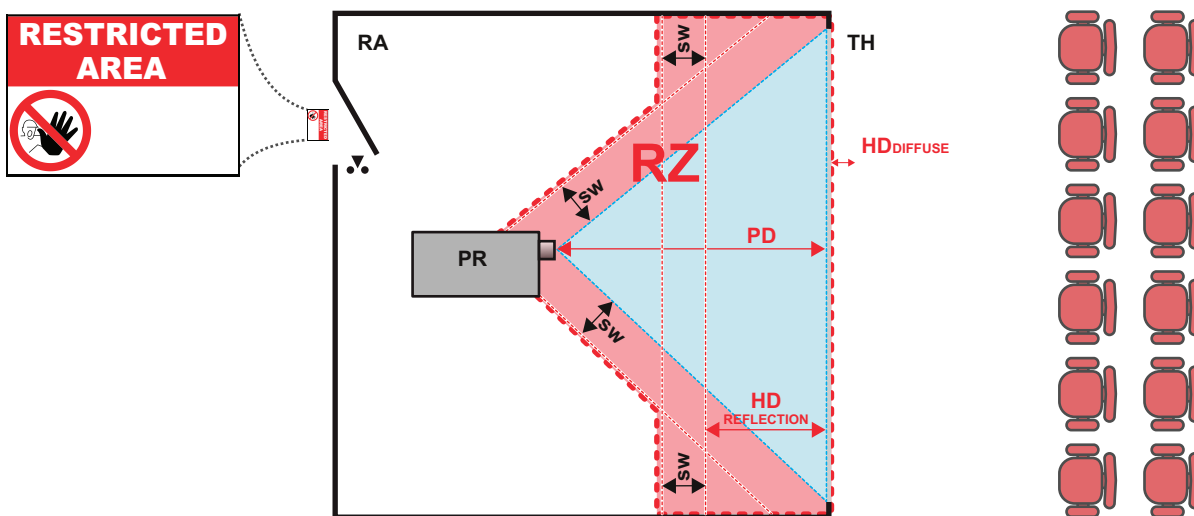


Image 6-3

RA Restricted Access location (Enclosed projection area)
PR Projector.
TH Theater (observation area).

RZ Restriction Zone
PD Projection Distan
SW Separation Width. Must be minimum 1 meter.

Restriction zone (RZ) based on the HD continued.

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

- HD as discussed in "High Brightness precautions: Hazard Distance (HD)", page 6 , relevant for intrabeam exposure.
- HDreflection : the distance that has to be kept restrictive related to the reflected light from the rear projection screen.

- HDdiffuse : the relevant distance to be considered while observing the defuse surface of the rear projection screen.

As described in "High Brightness precautions: Hazard Distance (HD)", page 6 , it is mandatory to create a restricted zone within the beam areas closer than any NOHD. In the enclosed projection area the combination of two restricted zones are relevant: The restricted zone of the projected beam toward the screen; taking into account 1 meter Separation Width (SW) from the beam onward. Combined with the restricted zone related to the rear reflection from the screen (HDreflection); also taking into account a 1 meter lateral separation.

The HDreflection 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 8 .

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

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

6.5 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

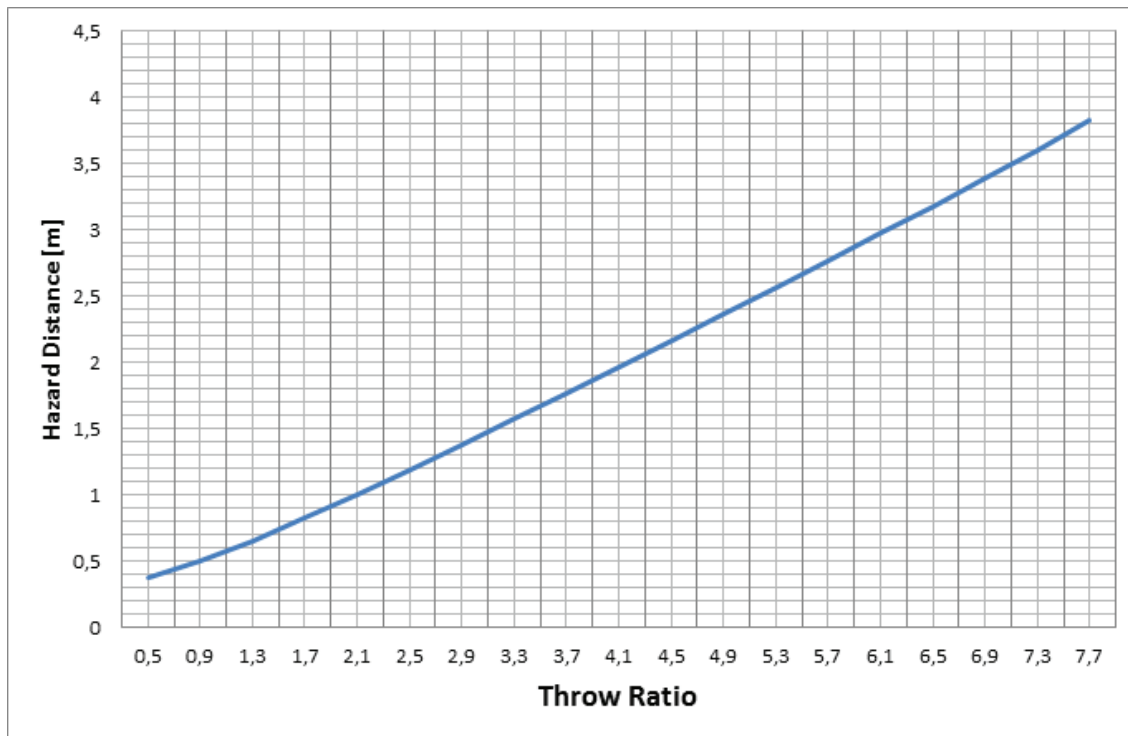


Image 6-4: Hazard Distance in meters versus Throw ratio of the lens for the Loki Projector

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

