

PFWX-51B & PFWU-51B



User manual

BARCO

Visibly yours

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Printed in China

Revision: 04

Changes

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

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1. SAFETY	1
1.1 General considerations	1
1.2 Important safety instructions	2
2. GENERAL	5
2.1 Installation requirements	5
2.2 Unpacking the projector	6
2.3 Initial inspection	7
2.4 Projector configurations	8
2.5 Projector air inlets and outlets	10
2.6 Installation process overview	11
3. PHYSICAL INSTALLATION	12
3.1 Remote control unit (RCU)	12
3.2 Lenses	14
3.3 Connecting the projector with the power net	18
3.4 Alignment of a table mounted projector	19
3.5 Mounting the Ceiling mount	21
4. PROJECTOR PARTS AND FUNCTIONS	22
4.1 Projector front view	22
4.2 Projector Rear view	22
4.3 Input and Communication	23
4.4 Status lights of LED	26
4.5 Opening the I/O cover	27
4.6 Connecting the projector to other devices	28
5. GETTING STARTED	33
5.1 RCU & Local keypad	33
5.2 Remote Control and OSD Lite on Screen	33
5.3 Power on projector	35
5.4 Power off projector	35
5.5 Range of effective remote control signal reception	35
5.6 Source selection	35

5.7 Changing OSD language	36
5.8 Adjusting the lens by horizontal and vertical lens shift	36
5.9 Introduction the OSD Lite on screen	37
6. ADVANCED OSD MENU	38
6.1 How to activate the Advanced OSD menu	38
6.2 How to navigate in the Advanced menu structure?	39
6.3 Advanced menu memory	39
7. IMAGE	40
7.1 Image menu overview	40
7.2 Display Mode	41
7.3 Brightness	41
7.4 Contrast	41
7.5 Computer	42
7.6 Auto Image	43
7.7 Advanced	44
7.8 Input Balance	45
8. SETTINGS 1	48
8.1 Settings 1 menu overview	48
8.2 Source	49
8.3 Projection	49
8.4 Aspect Ratio	50
8.5 Keystone	52
8.6 Digital Zoom	52
8.7 Advanced 1	52
8.8 Advanced 2	53
9. SETTINGS 2	54
9.1 Settings 2 menu overview	54
9.2 Auto Source	55
9.3 No Signal Power Off	56
9.4 Auto Power On	56
9.5 Lamp Mode	56

9.6 Reset All	56
9.7 Status	56
9.8 Advanced 1	57
9.9 Advanced 2	59

10. MAINTENANCE **60**

10.1 Lamp Replacement	60
10.2 Clean the dust	62
10.3 Cleaning the lens	62
10.4 Cleaning the exterior of the projector	62
10.5 Simple troubleshooting	63

11. PROJECTOR SPECIFICATION **65**

11.1 PFWU-51B Specifications	65
11.2 PFWX-51B Specifications	67
11.3 Standard Source Files	69
11.4 Dimension	72

12. ENVIRONMENTAL INFORMATION **73**

12.1 Disposal information	73
12.2 Rohs compliance	73
12.3 Production address	75

1. SAFETY

About this chapter

Read this chapter attentively. It contains important information to prevent personal injury while installing and using a PFWX-51B/PFWU-51B projector. Furthermore, it includes several cautions to prevent damage to the PFWX-51B/PFWU-51B projector. Ensure that you understand and follow all safety guidelines, safety instructions and warnings mentioned in this chapter before installing your PFWX-51B/PFWU-51B projector. After this chapter, additional "warnings" and "cautions" are given depending on the installation procedure. Read and follow these "warnings" and "cautions" as well.

1.1 General considerations

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

- PFWX-51B
- PFWU-51B



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



WARNING: Be aware of suspended loads.



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



WARNING: Be careful while working with heavy loads.



WARNING: Mind your fingers while working with heavy loads.



CAUTION: High pressure lamp may explode if improperly handled.

General safety instructions

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

Notice on safety

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

Users definition

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

A PFWX-51B/PFWU-51B projector is intended "FOR PROFESSIONAL USE ONLY" by AUTHORIZED PERSONNEL familiar with potential hazards associated with high voltage, high intensity light beams, ultraviolet exposure and high temperatures generated by the lamp and associated circuits. Only qualified SERVICE PERSONNEL, knowledgeable of such risks, are allowed to perform service functions inside the product enclosure.

1.2 Important safety instructions

To prevent the risk of electrical shock

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

To prevent personal injury

- Isolate electrically before replacing the lamp or lamp house. Caution: Hot lamp (house).
- Caution: High pressure lamp may explode if improperly handled. Refer servicing to qualified service personnel.
- To prevent injury and physical damage, always read this manual and all labels on the system before inserting the lamp casing, connecting to the wall outlet or adjusting the projector.
- To prevent injury, take note of the weight of the projector. Minimum 2 persons are needed to carry the projector.
- To prevent injury, ensure that the lens and all covers are correctly installed. See installation procedures.
- Warning: high intensity light beam. NEVER look into the lens ! High luminance could result in damage to the eye.
- **Warning: extremely high brightness lamps:** This projector uses extremely high brightness lamps. Never attempt to look directly into the lens or at the lamp. If the projection distance is less than 6 meter, any person needs to be at least 4 meters away from the projected image. Avoid close range reflection of the projected image on any reflecting surface (such as glass, metal, ...) . When operating the projector, we strongly recommend wearing suitable safety glasses.
- Before attempting to remove any of the projector's covers, you must turn off the projector and disconnect from the wall outlet.
- When required to switch off the projector, to access parts inside, always disconnect the power cord from the power net.
- The power input at the projector side is considered as the disconnect device. When required to switch off the projector, to access parts inside, always disconnect the power cord at the projector side. In case the power input at the projector side is not accessible (e.g. ceiling mount), the socket outlet supplying the projector shall be installed nearby the projector and be easily accessible, or a readily accessible general disconnect device shall be incorporated in the fixed wiring.
- Do not place this equipment on an unstable cart, stand, or table. The product may fall, causing serious damage to it and possible injury to the user.

- It is hazardous to operate without lens or shield. Lenses, shields or ultra violet screens shall be changed if they have become visibly damaged to such an extent that their effectiveness is impaired. For example by cracks or deep scratches.
- **Warning: Protection from ultraviolet radiation:** Do not look directly in the light beam. The lamp contained in this product is an intense source of light and heat. One component of the light emitted from this lamp is ultraviolet light. Potential eye and skin hazards are present when the lamp is energized due to ultraviolet radiation. Avoid unnecessary exposure. Protect yourself and your employees by making them aware of the hazards and how to protect themselves. Protecting the skin can be accomplished by wearing tightly woven garments and gloves. Protecting the eyes from UV can be accomplished by wearing safety glasses that are designed to provide UV protection. In addition to the UV, the visible light from the lamp is intense and should also be considered when choosing protective eye wear.
- **Exposure to UV radiation:** Some medications are known to make individuals extra sensitive to UV radiation. The American Conference of Governmental Industrial Hygienists (ACGIH) recommends occupational UV exposure for an 8 hour day to be less than 0,1 micro-watts per square centimeters of effective UV radiation. An evaluation of the workplace is advised to assure employees are not exposed to cumulative radiation levels exceeding these government guidelines. The exposure of this UV radiation is allowed for only 1 hour per day for maintenance and service persons.
- **Mercury Vapor Warnings:** Keep the following warnings in mind when using the projector. The lamp used in the projector contains mercury. In case of a lamp rupture, explosion there will be a mercury vapor emission. In order to minimize the potential risk of inhaling mercury vapors:
 - Ensure the projector is installed only in ventilated rooms.
 - Replace the lamp module before the end of its operational life.
 - Promptly ventilate the room after a lamp rupture, explosion has occurred, evacuate the room (particularly in case of a pregnant woman).
 - Seek medical attention if unusual health conditions occur after a lamp rupture, explosion, such as headache, fatigue, shortness of breath, chest-tightening coughing or nausea.

To prevent fire hazard

- Do not place flammable or combustible materials near the projector!
- Barco large screen projection products are designed and manufactured to meet the most stringent safety regulations. This projector radiates heat on its external surfaces and from ventilation ducts during normal operation, which is both normal and safe. Exposing flammable or combustible materials into close proximity of this projector could result in the spontaneous ignition of that material, resulting in a fire. For this reason, it is absolutely necessary to leave an "exclusion zone" around all external surfaces of the projector whereby no flammable or combustible materials are present. The exclusion zone must be not less than 50 cm (20") for all DLP projectors. The exclusion zone on the lens side must be at least 5 m. Do not cover the projector or the lens with any material while the projector is in operation. Keep flammable and combustible materials away from the projector at all times. Mount the projector in a well ventilated area away from sources of ignition and out of direct sun light. Never expose the projector to rain or moisture. In the event of fire, use sand, CO₂ or dry powder fire extinguishers. Never use water on an electrical fire. Always have service performed on this projector by authorized Barco service personnel. Always insist on genuine Barco replacement parts. Never use non-Barco replacement parts as they may degrade the safety of this projector.
- Slots and openings in this equipment are provided for ventilation. To ensure reliable operation of the projector and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the projector too close to walls, or other similar surface. This projector should never be placed near or over a radiator or heat register. This projector should not be placed in a built-in installation or enclosure unless proper ventilation is provided.
- Projection rooms must be well ventilated or cooled in order to avoid build up of heat.
- Let the projector cool down completely before storing. Remove cord from the projector when storing.
- Heat sensitive materials should not be placed in the path of the exhausted air or on the lamp house.

To prevent projector damage

- This projector has been designed for use with a specific lamp (house) type. See installation instructions for its correct type.
- The air filters of the projector must be cleaned or replaced on regular base (a "clean" booth would be monthly-minimum). Neglecting this could result in disrupting the air flow inside the projector, causing overheating. Overheating may lead to the projector shutting down during operation.
- The projector must always be installed in a manner which ensures free flow of air into its air inlets and unimpeded evacuation of the hot air from its cooling system.
- In order to ensure that correct airflow is maintained, and that the projector complies with Electromagnetic Compatibility (EMC) requirements, it should always be operated with all of its covers in place.
- Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. The device should not be placed in a built-in installation or enclosure unless proper ventilation is provided.
- Ensure that nothing can be spilled on, or dropped inside the projector. If this does happen, switch off and unplug the mains supply immediately. Do not operate the projector again until it has been checked by qualified service personnel.
- Do not block the projector cooling fans or free air movement around the projector. Loose papers or other objects may not be nearer to the projector than 30 cm (12") on any side.

- Do not use this equipment near water.
- **Special care for Laser Beams:**Special care should be used when DLP projectors are used in the same room as high power laser equipment. Direct or indirect hitting of a laser beam on to the lens can severely damage the Digital Mirror Devices™ in which case there is a loss of warranty.
- Never place the projector in direct sun light. Sun light on the lens can severely damage the Digital Mirror Devices™ in which case there is a loss of warranty.
- Save the original shipping carton and packing material. They will come in handy if you ever have to ship your equipment. For maximum protection, repack your set as it was originally packed at the factory.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning. Never use strong solvents, such as thinner or benzine, or abrasive cleaners, since these will damage the cabinet. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution.
- To ensure the highest optical performance and resolution, the projection lenses are specially treated with an anti-reflective coating, therefore, avoid touching the lens. To remove dust on the lens, use a soft dry cloth. Do not use a damp cloth, detergent solution, or thinner.
- Rated maximum ambient temperature, $t_a = 40\text{ °C}$ (104 °F).
- The lamp house shall be replaced if it has become damaged or thermally deformed.

On servicing

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



CAUTION: Do not touch a lamp during operation and right after it is turned off as it is extremely hot. Lamp contains mercury. It's brokeage might cause mercury or broken glass pieces to folow out of lamp housing. To avoid exposure the risk of mercury poisoning. Don't drop, hit, force or scratch while handing a lamp.

To prevent battery explosion

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

2. GENERAL

About this chapter

Read this chapter before installing your PFWX-51B/PFWU-51B projector. It contains important information concerning installation requirements for the PFWX-51B/PFWU-51B 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.

Overview

- Installation requirements
- Unpacking the projector
- Initial inspection
- Projector configurations
- Projector air inlets and outlets
- Installation process overview



WARNING: 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.

2.1 Installation requirements

Environment conditions

Table below summarizes the physical environment in which the PFWX-51B/PFWU-51B projector may be safely operated or stored.

Environment	Operating	Non-Operating
Ambient Temperature	5°C (41°F) to 35°C (95°F)	-10°C (14°F) to 60°C (140°F)
Humidity	10% to 85% RH Non-condensed	5% to 90% RH Non-Condensed
Altitude	-60 (-197Ft) to 3000m (9843Ft)	-60 (-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 30 cm (12 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 +35°C (+95°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 PFWX-51B/PFWU-51B projector operates from a nominal mono phase power net with a separate earth ground PE.

Projector	Power requirements
PFWX-51B	AC INPUT 100-240V 4.8A 50/60Hz
PFWU-51B	AC INPUT 100-240V 4.8A 50/60Hz

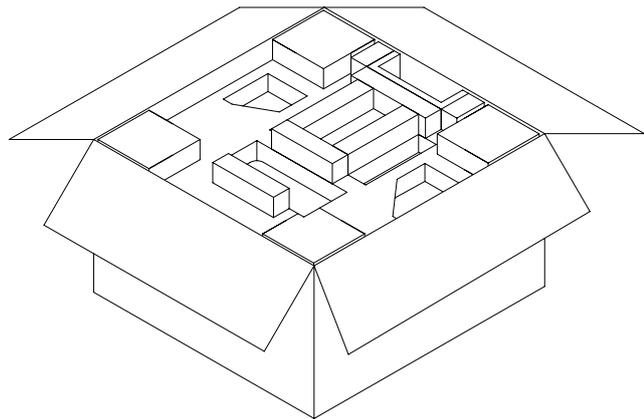
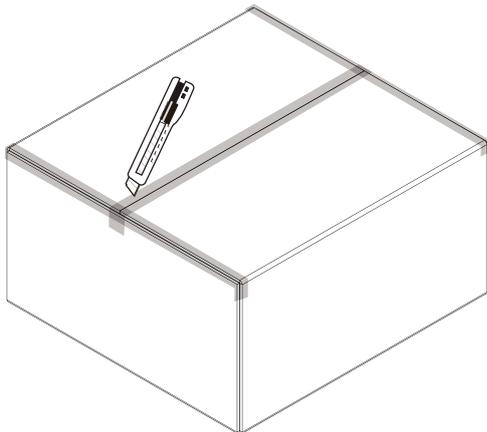
The power cord required to connect the projector with the power net is delivered with the projector.

Projector weight

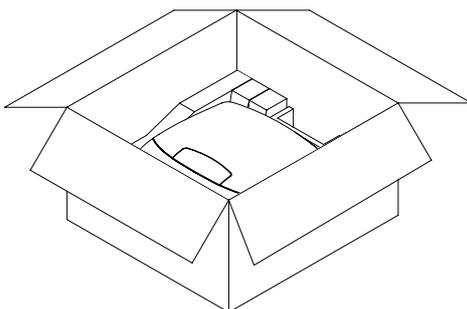
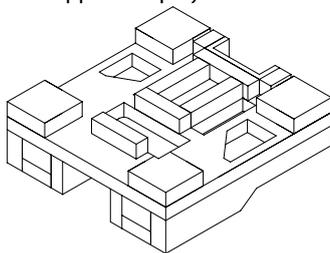
Do not underestimate the weight of the PFWX-51B/PFWU-51B projector. The projector weights about ± 12 kg (± 26.5 lb.) without lens. Be sure that the pedestal or ceiling mount on which the projector has to be installed is capable of handling five (5) times the complete load of the system.

2.2 Unpacking the projector

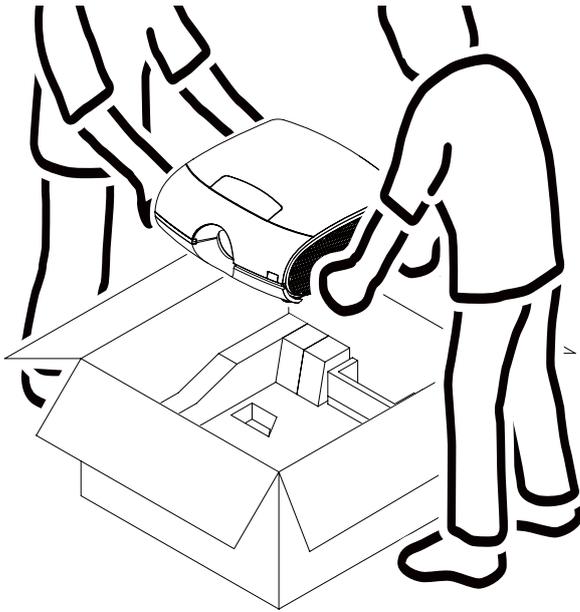
1. Remove the tape around the carton box, then open the box.



2. Take out the foam upper the projector.



3. Take out the projector.



After unpacking let the projector acclimatizes to a room temperature higher than 5°C (41°F) and lower than 35°C (95°F). Neglecting this may result in a start up failure of the Light Processor Unit.



Save the original shipping carton 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.

2.3 Initial inspection

General

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

Box content

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

- Projector with standard lens mounted.
- Three power cords
- CD (Contents has this installation manual)
- One Safety manual
- One remote control unit (RCU)
- Two AAA size batteries for the RCU. Type: size-AAA (R03). Only Carbon-Zinc or Alkaline-Manganese Dioxide type batteries should be used.



Lamp is mounted inside the lamp house at delivery.

Mechanical check

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

2.4 Projector configurations

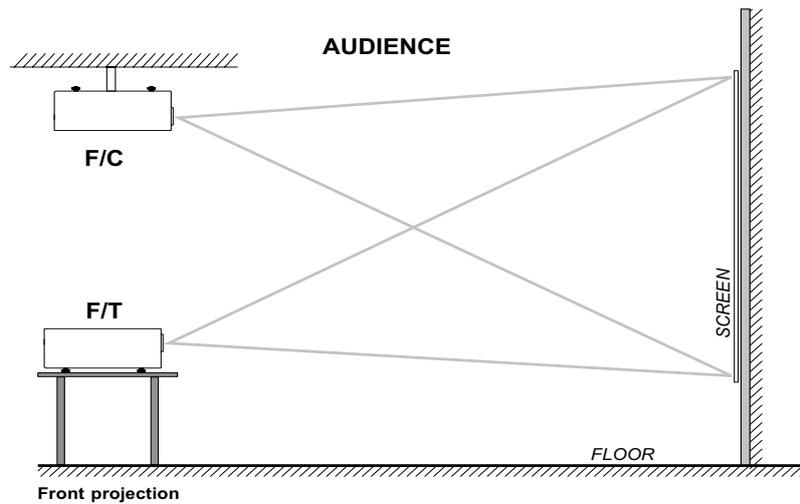
The different configurations

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. Rear / Table (R/T)
4. Rear / Ceiling (R/C) (upside down)

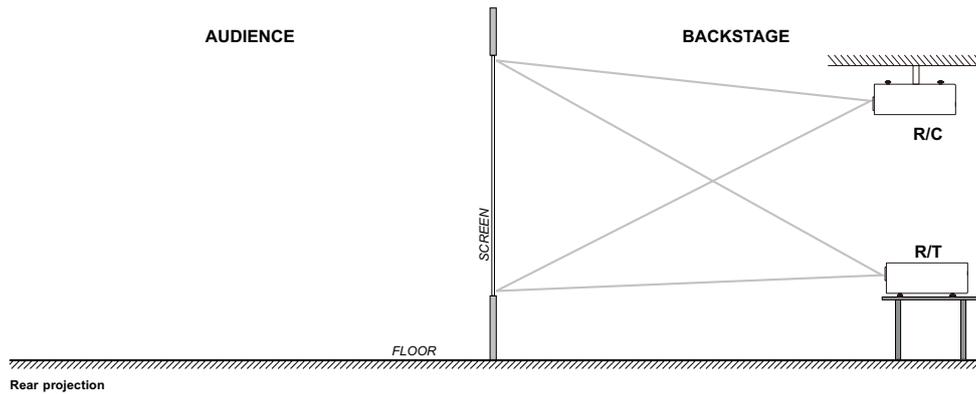
Front projection

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

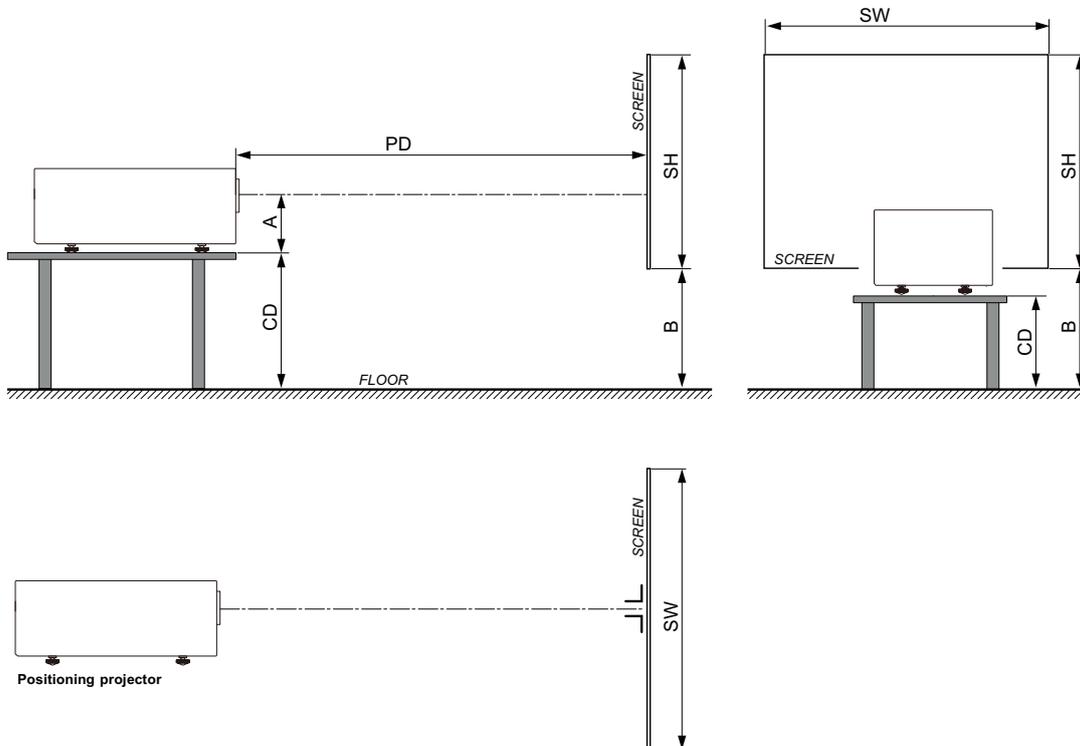


Rear projection

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



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 8.3 cm in case all feet are turned in completely and the vertical lens shift is set to zero (0).

On axis / off axis projection

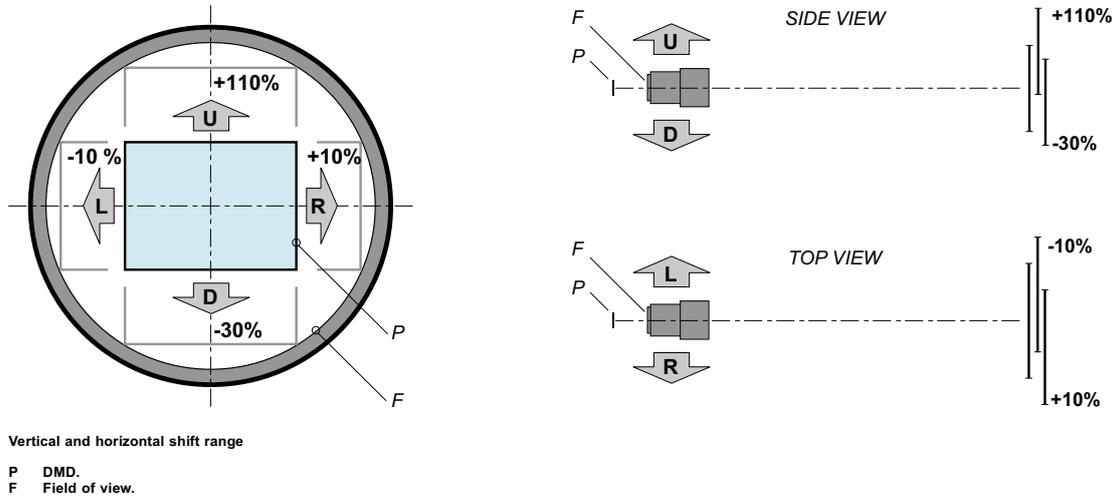
The position of the projector with reference to the screen may also be different depending on the installation. Basically the projector can be positioned in On-Axis or Off-Axis configuration. On-Axis configuration means that the projector is positioned so as to have the centre of the lens coinciding 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.

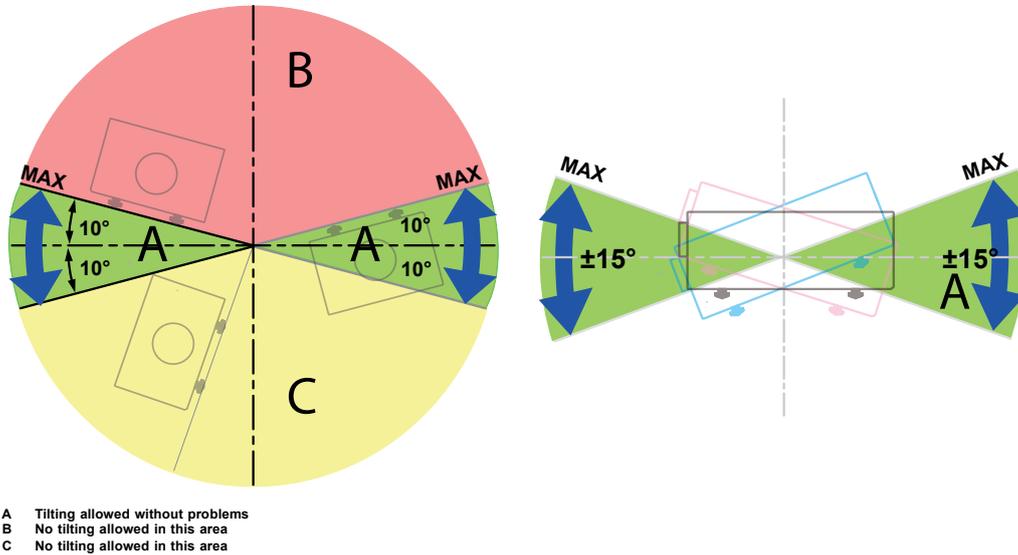


It is mechanical possible to shift outside the recommended field of view, but it will result in a decline of image quality depending on the used lens and the zoom position of the used lens. Furthermore, shifting too much in both directions will result in a blurred image corner.

Horizontal and vertical projector tilt ranges

Avoid to reduce the usage of lamp life. Suggest the projector rotated and mounted vertical angle not > ±15°.

Side to side tilt, however, must not exceed ±10°. This limit ensures that the lamp in the projector operates properly and safely.



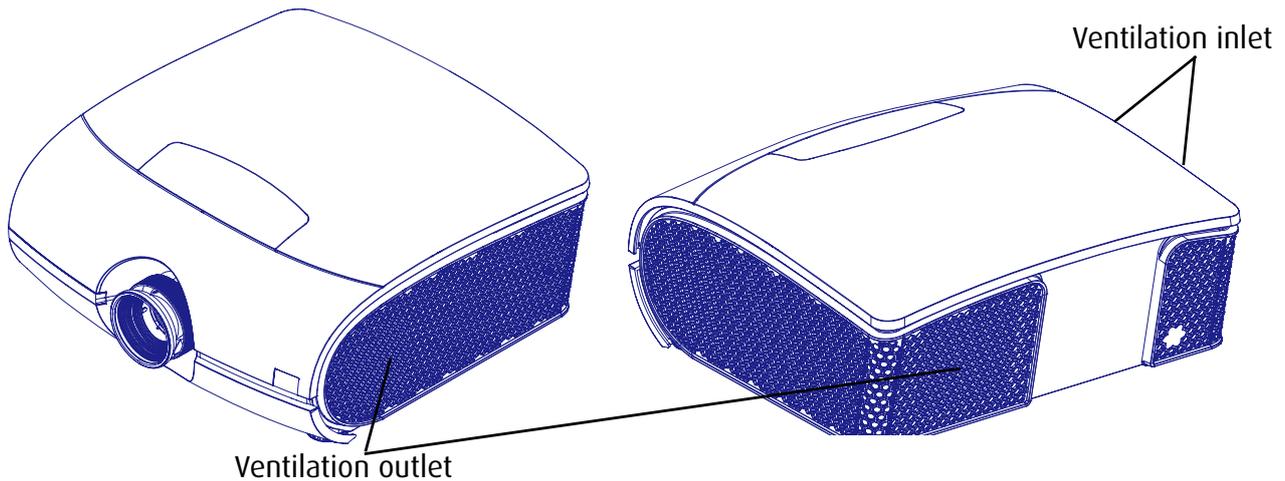
2.5 Projector air inlets and outlets

Ventilation inlet:

The internal cooling fan draws cool air from the ventilation inlet into the projector.

Ventilation outlet:

The hot air generated inside the projector is dispersed through the ventilation slot. Make sure the ventilation slot is free from obstruction.



2.6 Installation process overview

Quick setup

The following steps describe briefly how to setup your PFWX-51B/PFWU-51B projector in a table mount front projection. Note that each step refers to a corresponding procedure, which is more detailed and illustrated.

1. Install the batteries of the remote control. See [page 12: Remote control unit \(RCU\)](#).
2. Place the projector on a solid table in front of the screen at the expected throw distance. Adjust the feet to ensure that the projector is installed at right angles (horizontally and vertically) with the screen. See [page 19: Alignment of a table mounted projector](#) and [page 36: Adjusting the lens by horizontal and vertical lens shift](#).
3. Connect the projector with the local power net. See [page 18: Connecting the projector with the power net](#).
4. Select and install an appropriate lens, which covers the throw ratio (= screen size / projector screen distance). See [page 9: Positioning the projector](#).
5. Switch ON the projector. See [page 18: Connecting the projector with the power net](#).
6. Connect your source to the appropriate input module. See [page 23: Input and Communication](#).
7. Zoom and shift the lens until the image is properly projected on the screen, Do this by using the "ZOOM" and "FOCUS" ring on the lens. If necessary, level the projector from side to side by turning the adjustable feet in or out. See [page 16: Lens zoom](#). or adjust the Lens Shift manually. See [page 36: Adjusting the lens by horizontal and vertical lens shift](#)

3. PHYSICAL INSTALLATION

About this projector

This chapter describes how the mechanical set up of the projector has to be done and how to realize the electrical connections.

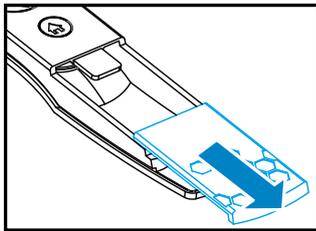
Overview

- Remote control unit (RCU)
- Lenses
- Connecting the projector with the power net
- Alignment of a table mounted projector
- Mounting the ceiling mount

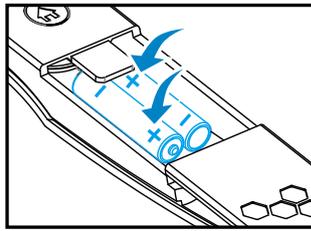
3.1 Remote control unit (RCU)

Introduction

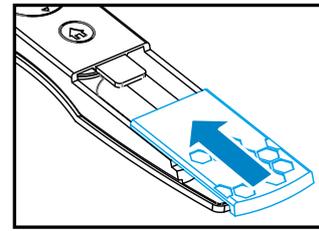
Remove the cover by sliding it in the direction indicated by the arrow.



Insert two new AAA batteries (observe the polarity).



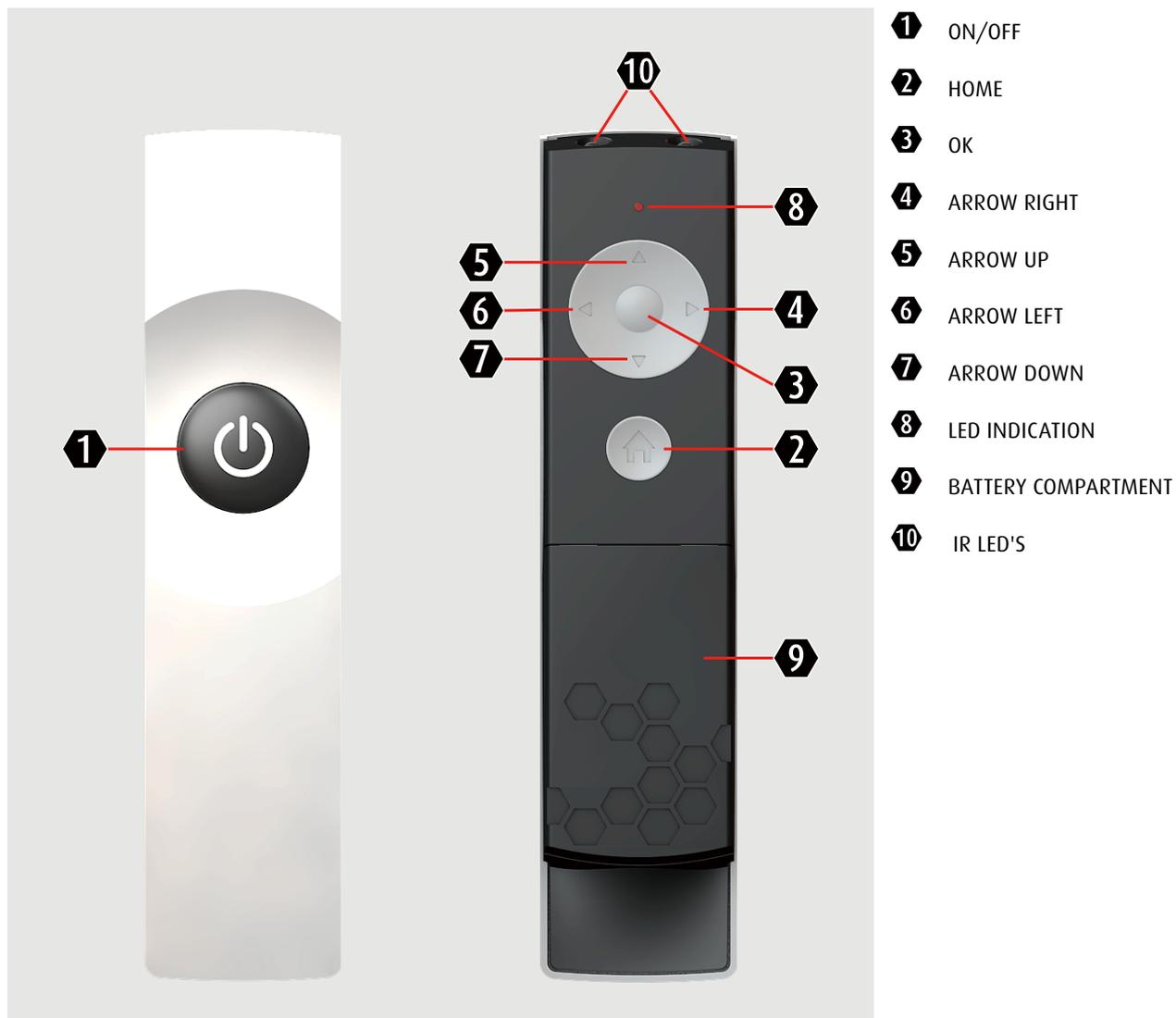
Replace the cover.



Notes for the Remote control unit

- Be sure to insert the batteries in the corresponding orientations to match the polarities.
- Do not mix new batteries with used batteries as it would shorten the life of new batteries or cause leakage.
- Only used AAA batteries as instructed; do not attempt to insert different types of batteries into the remote control.
- If the remote is going to be unused for long periods of time, be sure to remove the batteries to prevent leakage, which could damage the remote control.
- The liquid contents in the batteries is harmful to the skin; do not touch the leakage with your bare hands directly. When installing fresh batteries, be sure to clean up the leakage thoroughly.
- Under most circumstances, you only need to point the remote control towards the screen and the IR signal would be reflected off the screen and picked up by the IR sensor on the projector. But under specific circumstances, the projector may fail to receive signals from the remote control due to environmental factors. When this happens, orient the remote control at the projector and try again.
- If the range of effective remote control signal reception decreases or if the remote control stops working, replace the batteries.
- If the infrared receiver is exposed to fluorescent lamp or strong sunlight, the remote control may not operate normally.
- Refer to the regulations enforced by your local government on the disposal of used batteries; improper disposal could damage the environment.

Remote Control overview



- ❶ ON/OFF
- ❷ HOME
- ❸ OK
- ❹ ARROW RIGHT
- ❺ ARROW UP
- ❻ ARROW LEFT
- ❼ ARROW DOWN
- ❽ LED INDICATION
- ❾ BATTERY COMPARTMENT
- ❿ IR LED'S

Basic Remote Command result	RCU Lite action	
start the projector	press "ON/OFF"	❶
turn off the projector	press "ON/OFF"	❶ > ❶
show main menu on screen	press "HOME"	❷
move through menu	press "arrow keys"	❺ ❻ ❸ ❹ ❼
select button	press "OK"	❸
select and return to previous menu	press "OK"	❸
return to previous menu without selecting	press "HOME"	❷
clear OSD Lite of screen	press "HOME"	❷

3.2 Lenses

Available lenses for the PFWX-51B/PFWU-51B projector

PWFX-51B

Lens standard	Lens short throw	Lens long throw
R9832757	R9832758	R9832759
F lens (1.62-2.03:1)	F lens (0.81:1)	F lens (2.03-3.05:1)

PWFU-51B

Lens standard	Lens short throw	Lens long throw
R9832757	R9832758	R9832759
F lens (1.54-1.93:1)	F lens (0.77:1)	F lens (1.93-2.89:1)



Projection lenses are optional accessories. Please contact your local dealer to acquire the projection lens that suits your need most.

Lens Selection

Procedure:

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: <http://www.barco.com/en/tools/lenscalculator> to determine the possible lenses for your configuration. As a result the Lens Calculator window opens.

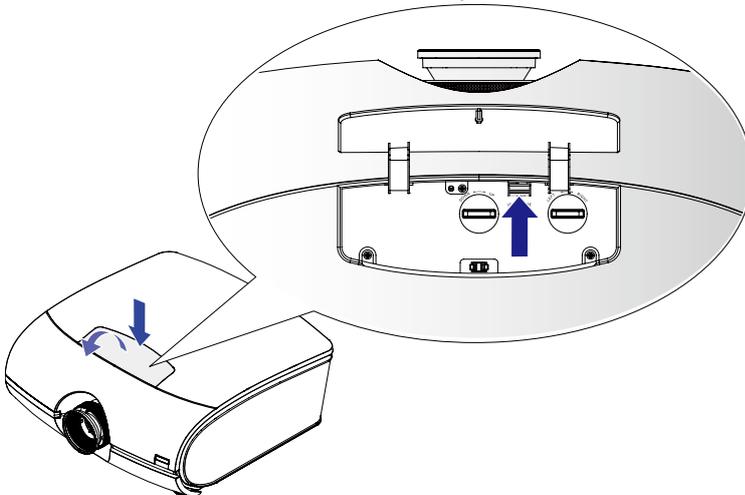


The Lens Calculator can also be used to determine the position of the projector when the lens type and screen width is known.

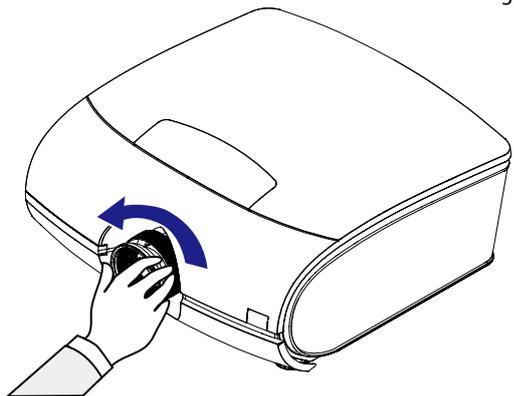
Due to lens tolerances the results of calculated values may be different from measured values. These difference may vary +/-5%

Removing the Existing Lens From the Projector

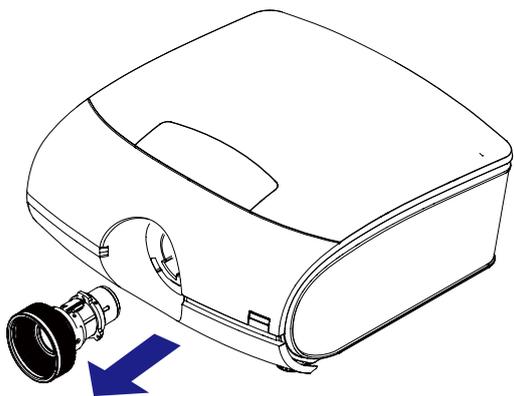
1. Push down and release the lens shift cover to open.
2. Push the LENS RELEASE button to the unlock position.



3. Grasp the lens.
4. Rotate the lens counterclockwise. The lens disengages.



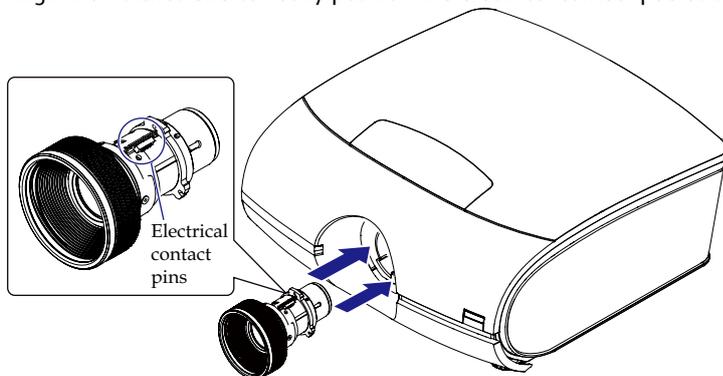
5. Carefully pull out the lens.



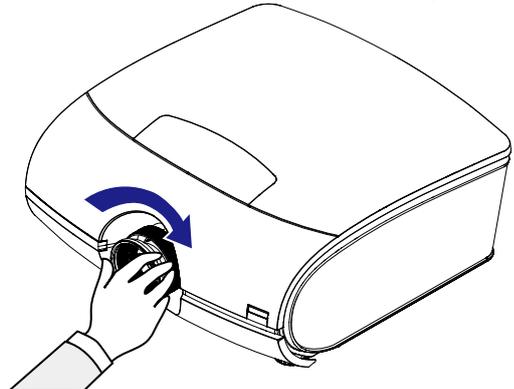
Installing a New Lens

Remove both end caps from the lens.

1. Align the notches and correctly position the electrical contact pad as shown in the picture.



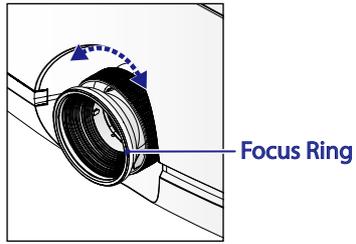
2. Rotate the lens clockwise until it clicks in place.



Electrical contact pins should be in the direction as shown in the picture.

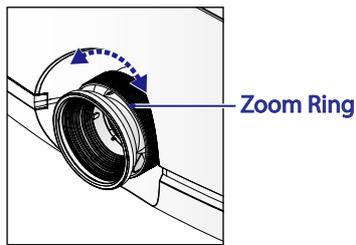
Lens focus

Sharpen the picture by rotating the focus ring.



Lens zoom

Adjust the projected picture to the size that you need using the zoom ring.



Original image size



Zoom out



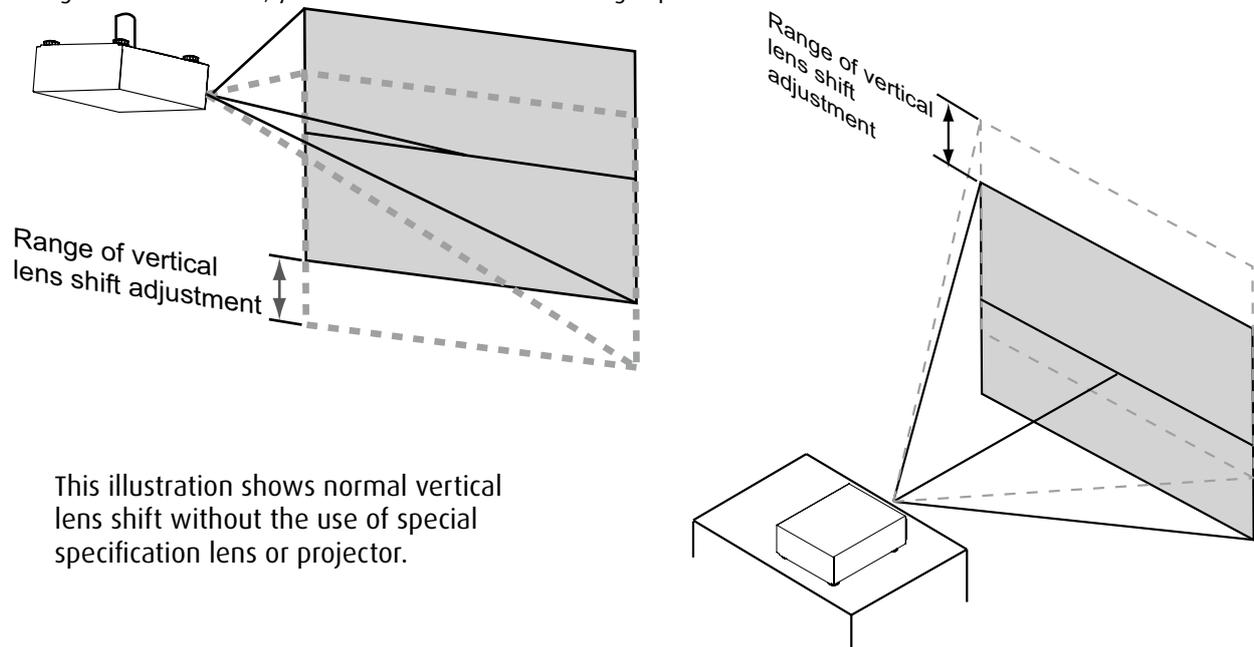
Zoom in



Lens Shift

In addition to using the adjustable feet to adjust projection angle, you can also use the Lens Shift function to adjust the projected image.

- Moving the lens vertically
The distance of vertical lens movement is +110% , -30% of half the screen height in both directions. For instance, if you are using a 80" × 50" screen, you will be able to move the image upwards no more than 27.5" or downwards no more than 7.5".

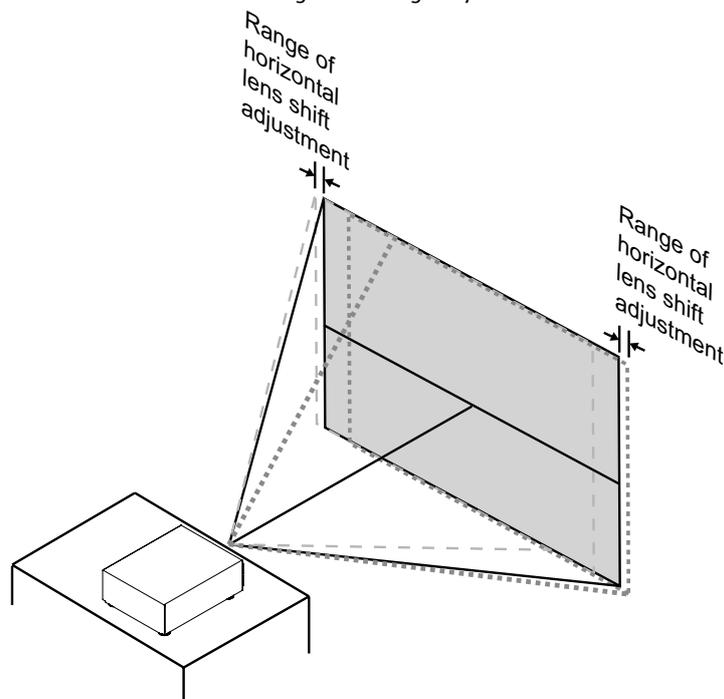


This illustration shows normal vertical lens shift without the use of special specification lens or projector.



Please make sure the center of lens is rectangular to the center of the screen.

- Moving the lens horizontally
The distance of horizontal lens movement is 10% of half the screen width in both directions. For instance, if you are using a 80" × 50" screen, you will be able to move the image left or right by no more than 4".



This illustration shows normal horizontal lens shift without the use of special specification lens or projector.

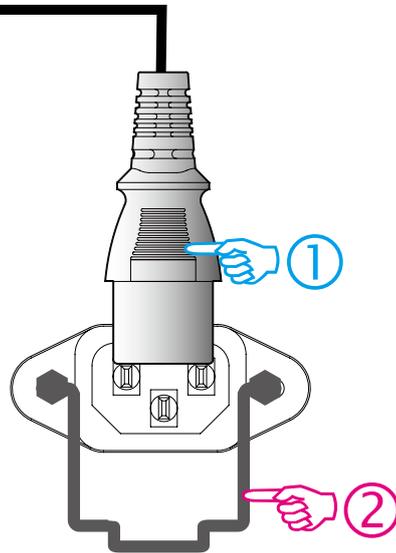
3.3 Connecting the projector with the power net



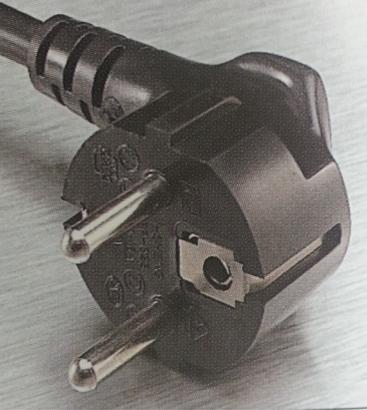
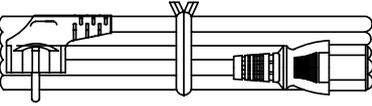
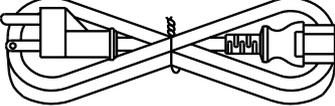
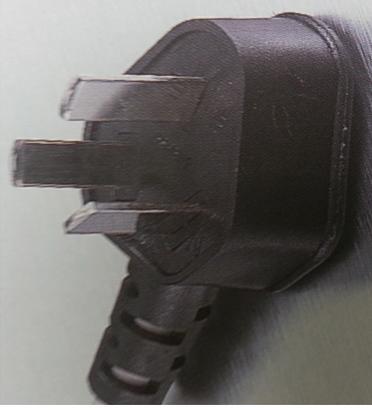
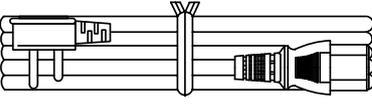
CAUTION: Use only the power cord provided with the projector.

1. Connect the female side of the power cord with the power input socket of the projector (1).
2. Secure the power plug by locking the plug holder clamp (2).

Connect to Wall plug



3. Connect the male side of the power cord to the local power net.

  <p>This power cord for Europe and Korea</p>	  <p>This power cord for USA</p>	  <p>This power cord for China</p>
---	--	--



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



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

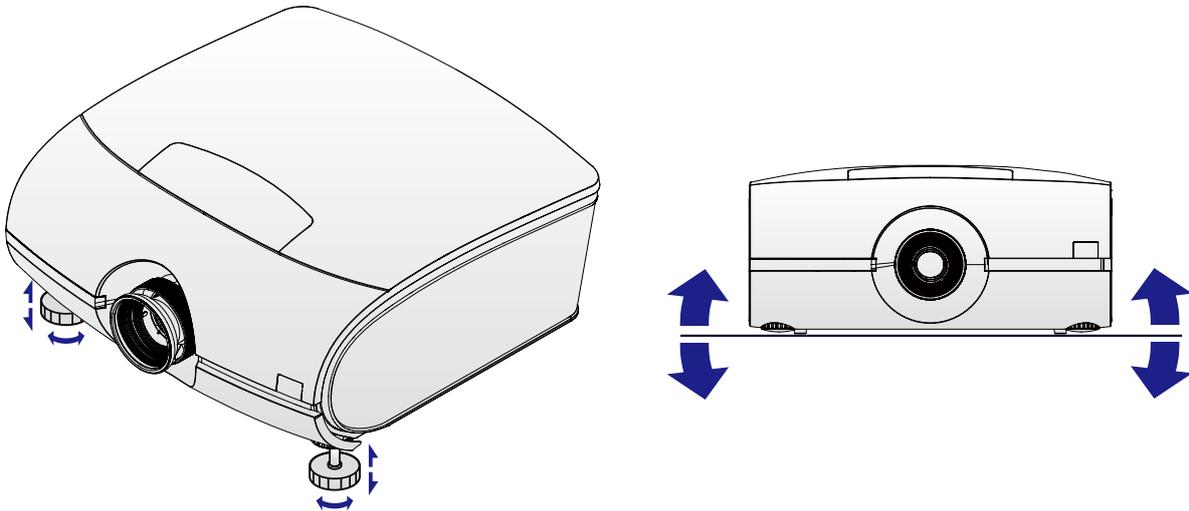


CAUTION: Once the projector is switched to standby, the lamp cooling fans will continue to run for approximately five minutes to ensure that the projector and lamp have sufficiently cooled, at which point the fans will automatically decrease to standby. To avoid thermal stress that can lead to premature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

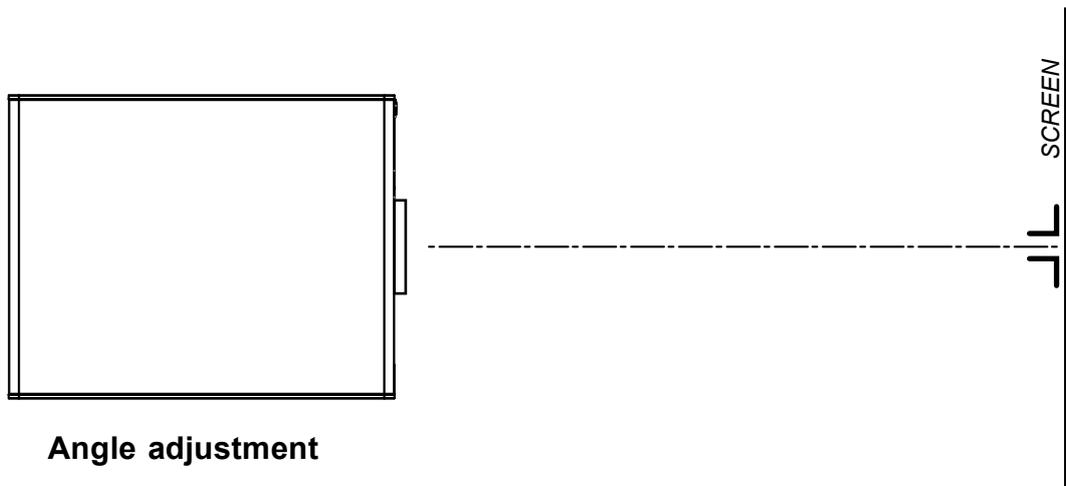
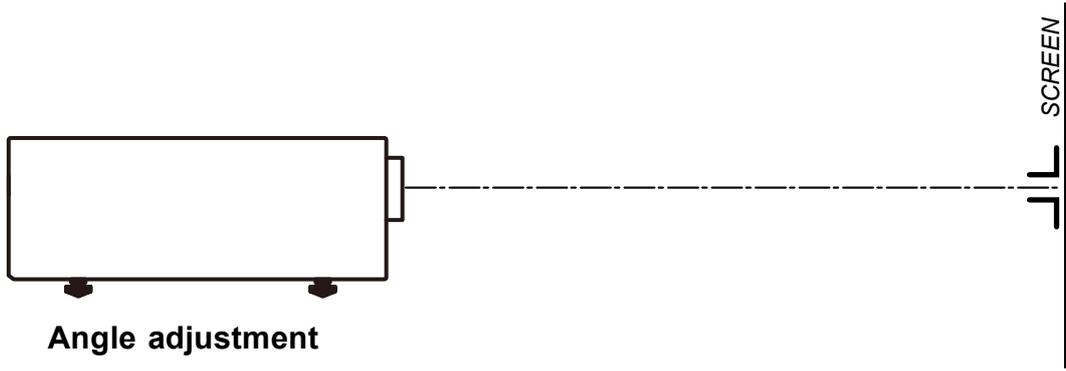
3.4 Alignment of a table mounted projector

How to align the projector

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 grid patterns on the screen.
3. Turn the adjustable feet in or out until the projected grid pattern has a perfect rectangle shape and is leveled.



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



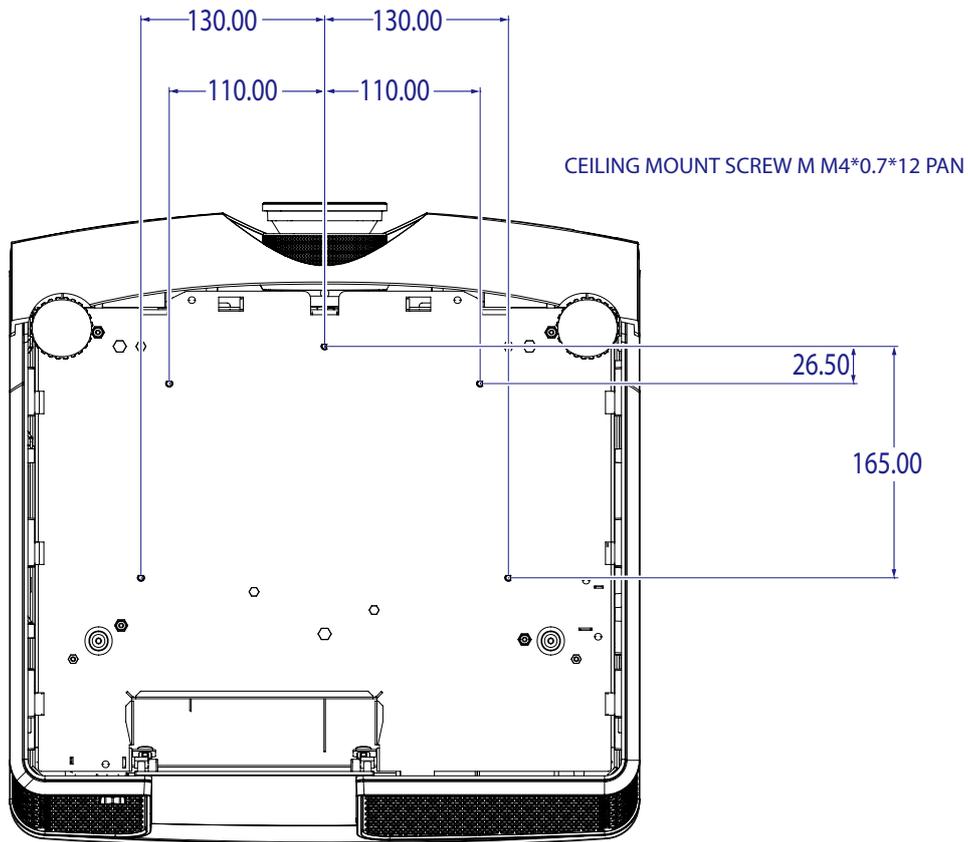
3.5 Mounting the Ceiling mount

Necessary tools

Open wrench 17 mm

How to mount

1. Turn the projector upside down.
2. Adjustment knob to the back of the projector. Make sure that the mounting holes matches the holes in the projector.
3. Insert a bolt in each corner and turn in these bolts.



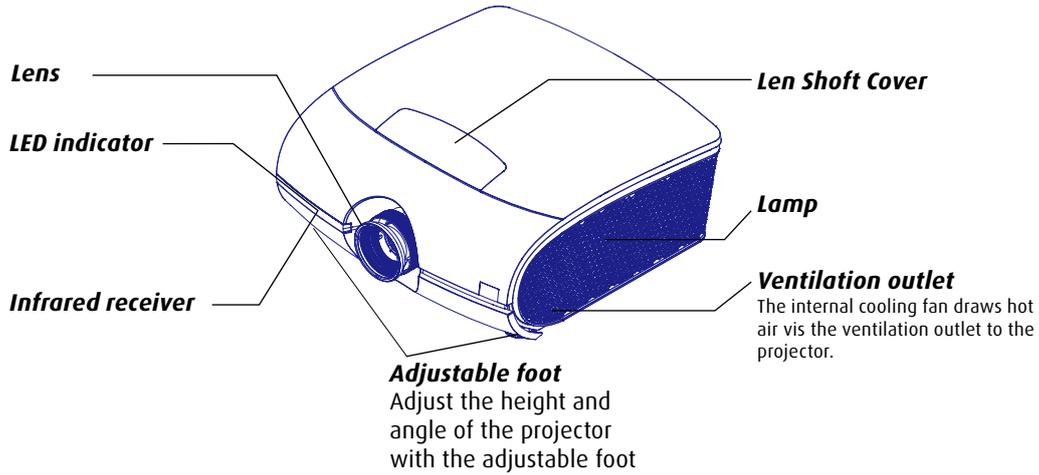
Note: Please check your support system for compatibility.

4. PROJECTOR PARTS AND FUNCTIONS

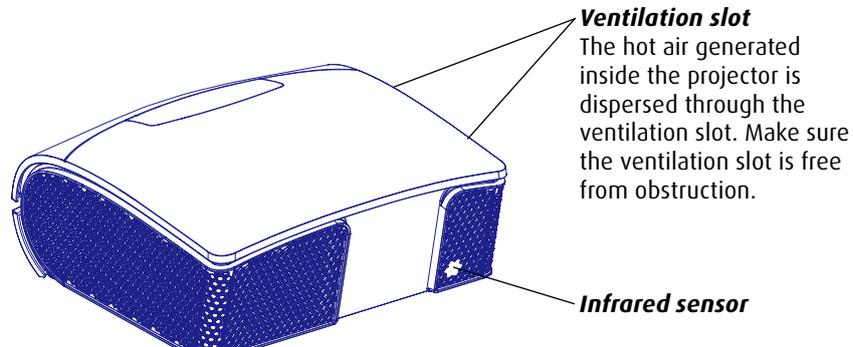
Overview

- Projector front view
- Projector Rear view
- Input and Communication
- Status lights of LED
- Connecting the projector to other devices

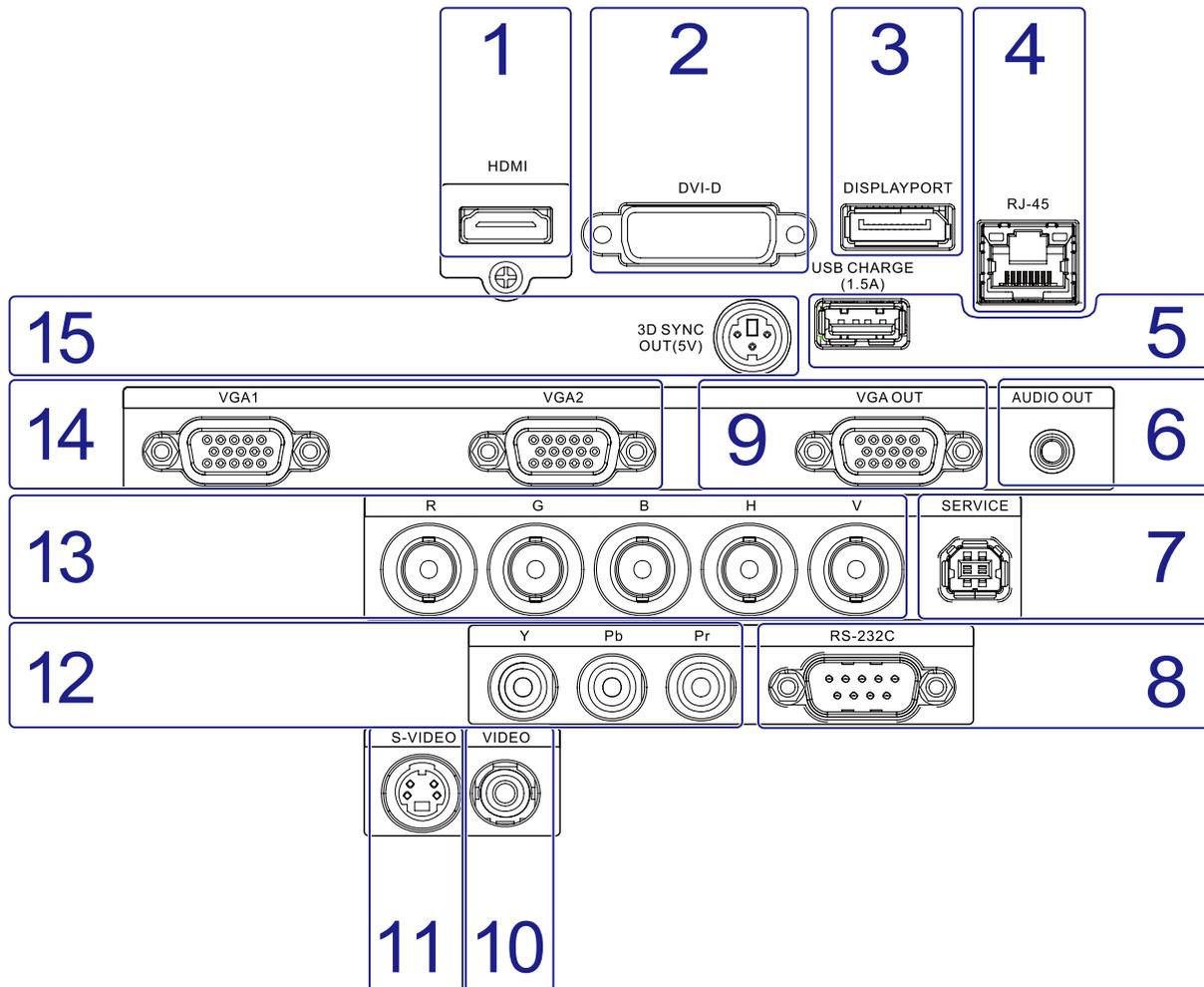
4.1 Projector front view



4.2 Projector Rear view



4.3 Input and Communication



1. HDMI

HDCP compatible digital image input; connects to sources using HDMI or DVI.

2. DVI-D

The projector can be connected to a PC or other device with a DVI-D output to the DVI-D connector.

3. DISPLAYPORT

The projector can be connected to a display device with a displayport output to the displayport connector to video, audio, USB and data.

4. RJ-45

Ethernet port

The projector can be connected to a LAN (local area network) using the Ethernet port on the communication interface. Once connected to the LAN, users are capable of accessing the projector from any location, inside or outside (if allowed) their company network using the control software: Projector Toolset. This toolset locates the projector on the network in case there is a DHCP server or the user can insert the correct IP-address of the projector to access the projector. Once accessed, it is possible to check and manipulate all the projector settings. Remote diagnostics, control and monitoring of the projector can then become a daily and very simple operation. The network connectivity permits to detect potential errors and consequently improve the time to servicing.



The connector used for the Ethernet ports (E) are of rugged Neutrik EtherCon RJ45 type, which is compatible with standard RJ45 cable connector. Straight (most common) as well as cross linked network cables can be used.

RJ45 port	
PIN	Description
1	RXD+
2	RXD-
3	-
4	-
5	-
6	-
7	TXD+
8	TXD-

5. USB CHARGE(1.5A)

The projector can be connected to mobile device through the USB connector to provide battery charging function. USB cable is not included.

6. AUDIO OUT

The projector can be connected to a device with an audio input to the audio out connector to relay an audio signal.

7. SERVICE

The projector is connected through the port for servicing.

8. RS232

RS232 input

The communication interface of the PFWX-51B/PFWU-51B projector supports RS232 serial communication.

You can use the RS232 input to connect a local PC to your PFWX-51B/PFWU-51B projector. By this way you can configure and control your PFWX-51B/PFWU-51B projector from your local PC.

Advantages of using RS232 serial communication:

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

RS232 input (Sub-D) port	
PIN	Signal
1	(No connection)
2	RD
3	TD
4	(No connection)
5	Ground
6	(No connection)
7	RTS
8	CTS
9	(No connection)

RS232

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



9. VGA OUT

Connect the RGB cable to a display (Loop thru only for VGA1).

10. VIDEO

Connects to VCR, laser disc players or other component image sources. Also connects to the composite image synchronized input from RGBS input source.

11. S-VIDEO

Standard S-Video input that connects to DVD players, satellite receiver or Super VHS (S-VHS) VCR.

12. YPbPr

Standard and high definition (480i/480p/576i/576p/720p/1080i/1080p) component input, connects to DVD/HD-DVD/BD player, HD set-top-box or other SD/HD input source.

13. RGBHV

Optional multi purpose input which can be inserted in the free slots.

Input (Sub-D) port					
Input Signal	G/Y	B/Pb	R/Pr	H	V
RGBHV	G	B	R	H	V
Component Video	Y	Pb	Pr	-	-

14. VGA

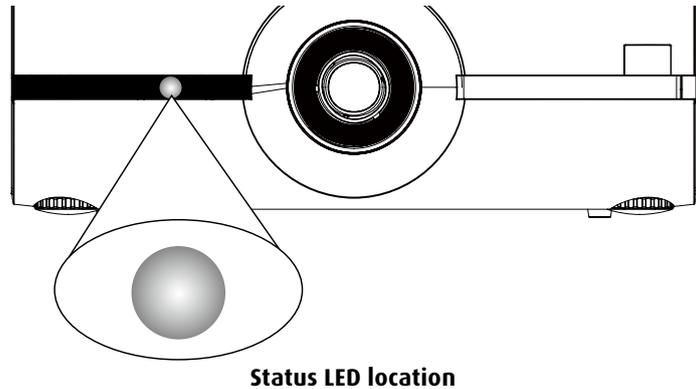
Standard 15-pin VGA connection socket to connect to RGB, high-definition component input or PC. The projector will automatically detect the resolution of the input signal.

15. 3D SYNC OUT(5V)

The projector can be connected to a 3D emitter to send an infrared signal to 3D glasses (not supplied).

Connect to a 3D IR emitter to allow for wireless synchronization with 3D glasses devices.

4.4 Status lights of LED



OFF/STAND BY

The LED indicator shows solid RED when the projector is off and at standby mode.

ON

The LED indicator is off when the projector is on.

ERROR

The LED indicator is blinking at a 0.25 second interval when there is error occurred in projector. Please contact authorized service personnel for help.

During start-up

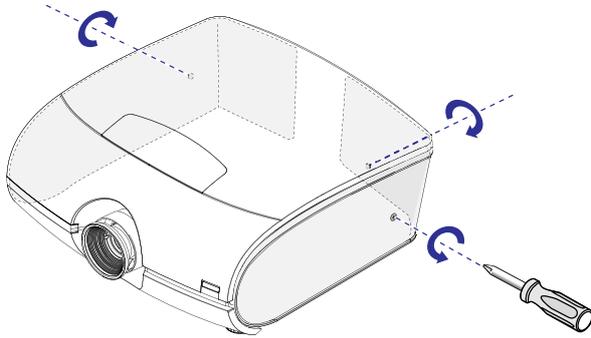
The LED indicator is blinking at a 2 seconds interval when the projector power on.

	1 sec				
OFF/Standby					
ON					
Error					
During Start-Up					

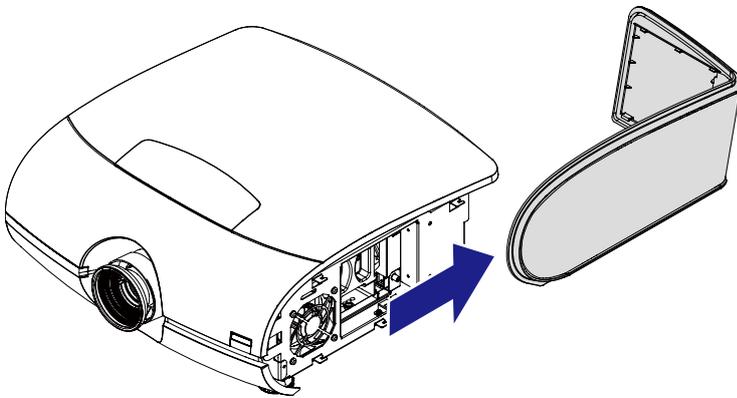
4.5 Opening the I/O cover

How to open the I/O cover

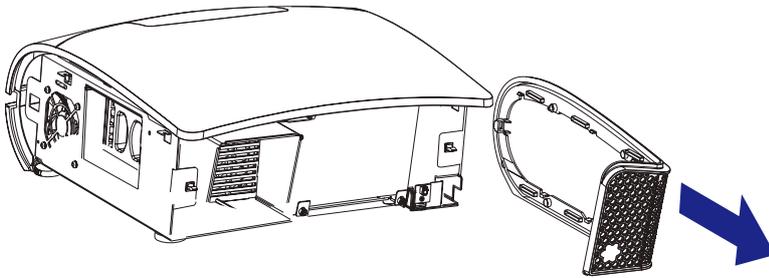
1. Loosen the 3 screws from cover.



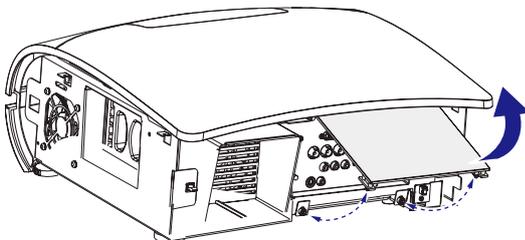
2. Pull out the right cover.



3. Push to release the left cover. And pull out the left cover.



4. Lift up the I/O cover.

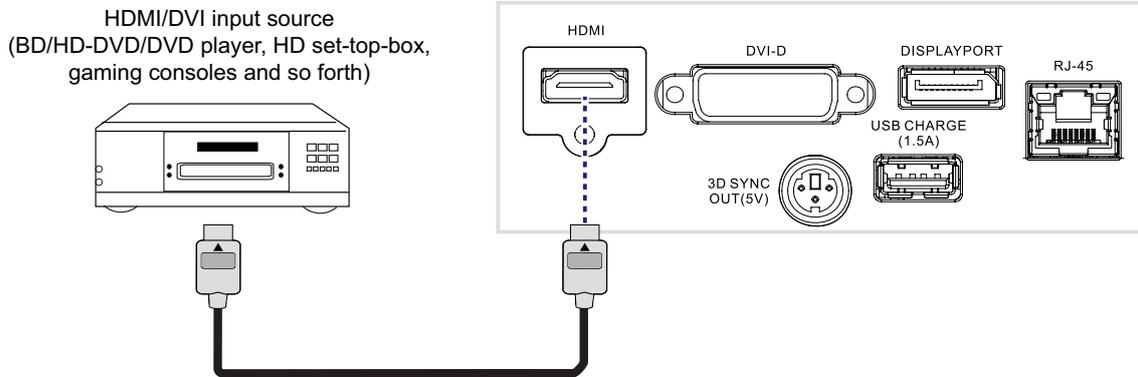


5. Connect the desired input source.
6. Install the right and left cover back and tighten 3 screws.

4.6 Connecting the projector to other devices

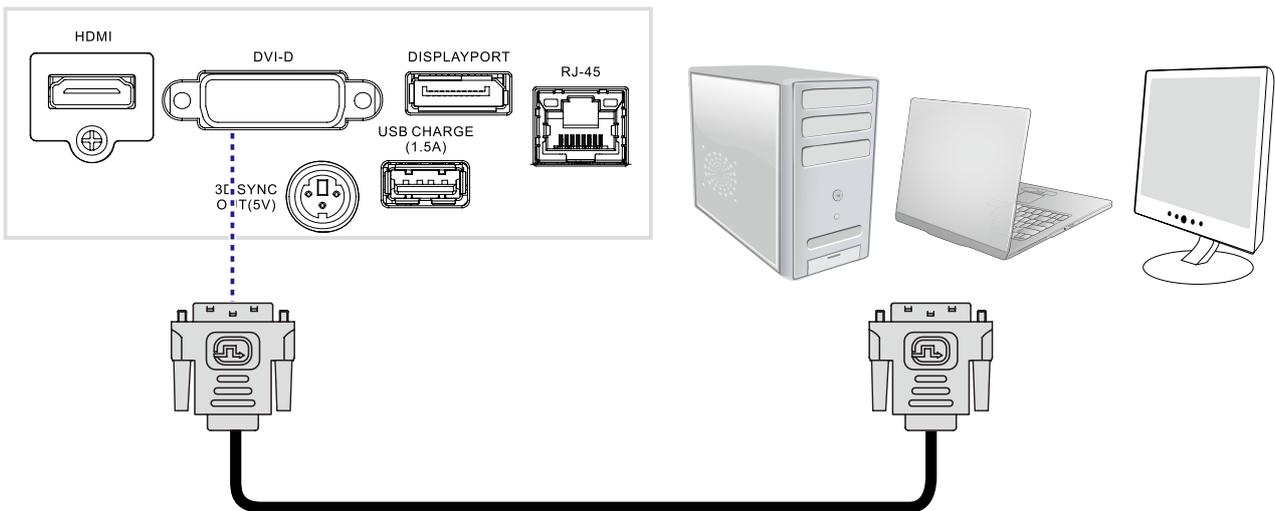
HDMI connection

Signals from image source offer the best projection image quality when sent through HDMI. Therefore, try to use input devices with HDMI output as the source of image.



DVI-D

Input devices using DVI-D output, such as: desktop, notebook, or all-in-one computers, can be connected through the DVI-D port.



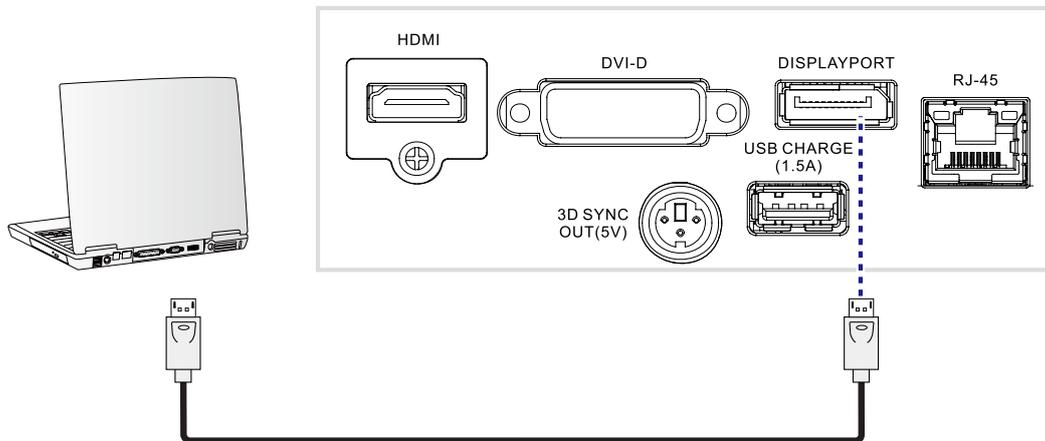
Both DVI and HDCP DVI are supported and can be connected to the DVI connector of this projector.



In case a HDCP DVI signal is connected to the DVI input, the DVI output image will not show the image of this source. A gray window will be displayed instead.

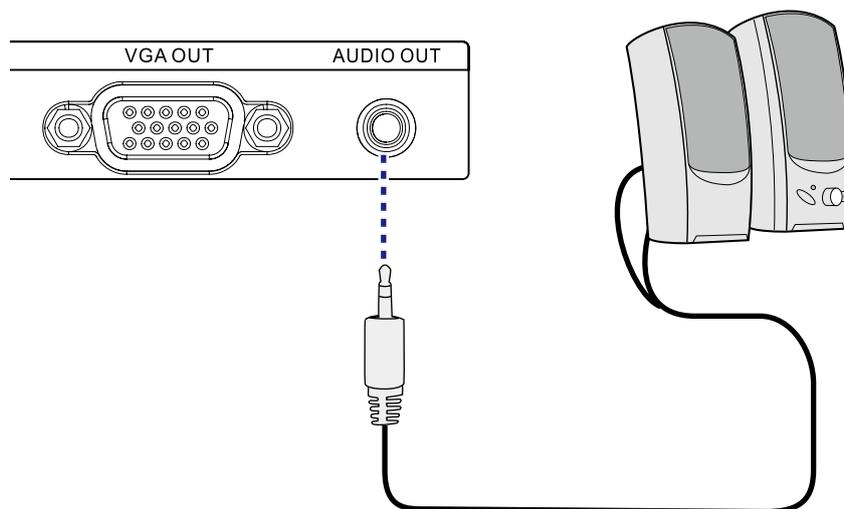
DISPLAYPORT

Connect your notebook and desktop computer or display device to the displayport connector to transmit video, audio, USB or data signals.



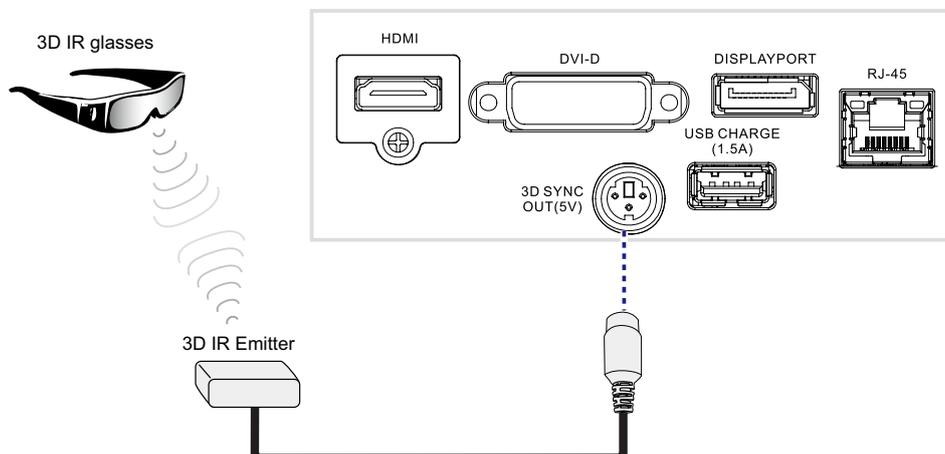
AUDIO OUT (for HDMI, DISPLAYPORT source)

Connect the projector to a device with an audio input port to relay the audio signal between the projector and the audio device.



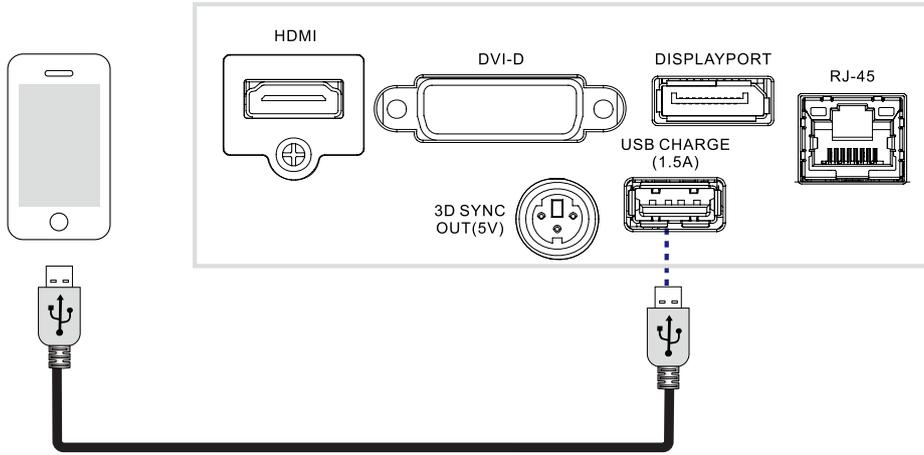
3D SYNC OUT (5V): Connect 3D IR glasses transmitter

Connect a 3D emitter device to the Displayport port to allow for the synchronization between the projector and 3D glasses.



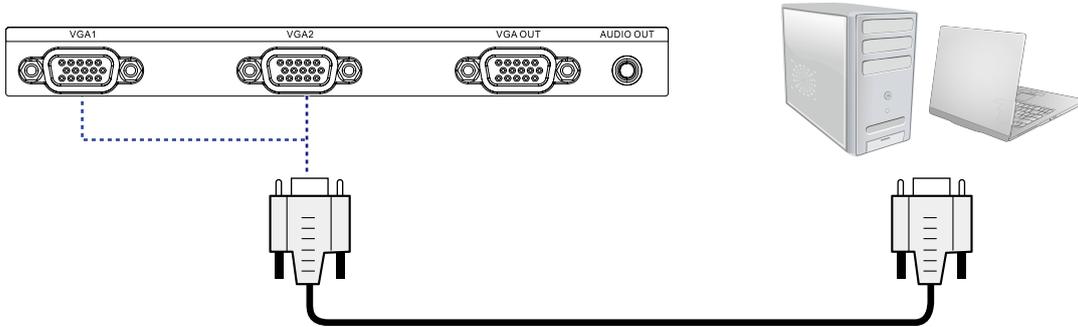
USB CHARGE (1.5A)

Connect your handheld device to the USB port to use the power charging function (1.5A). Device charging cable not included.

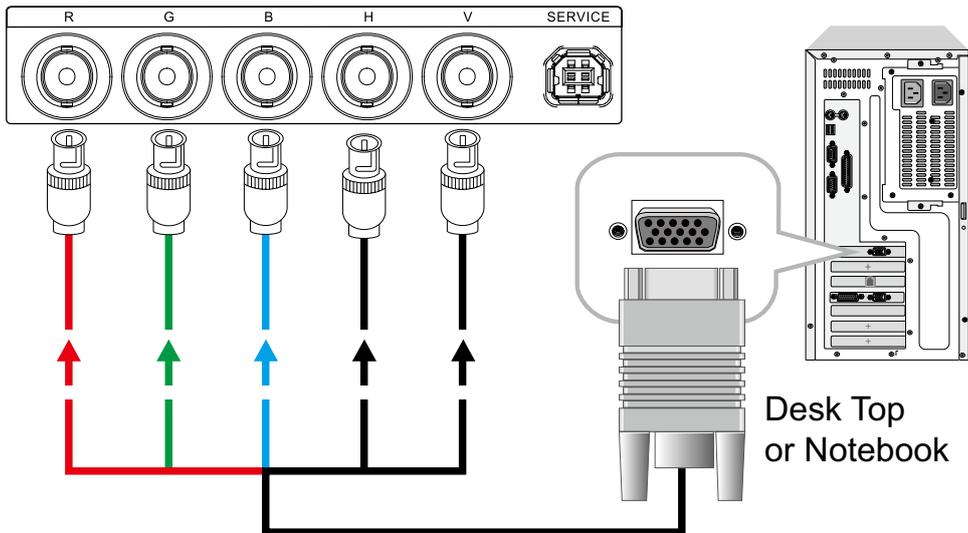


VGA connection

Connect your PC or other devices with VGA output to the VGA input connectors on the projector to be used as the source of image input.

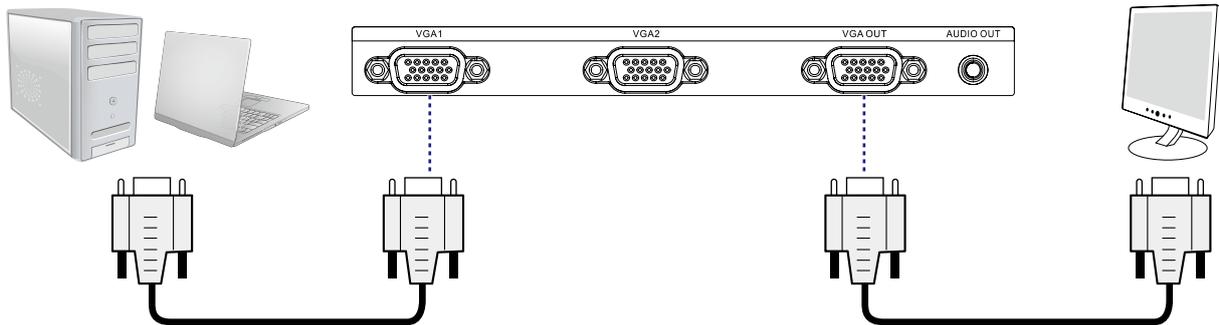


RGBHV connection



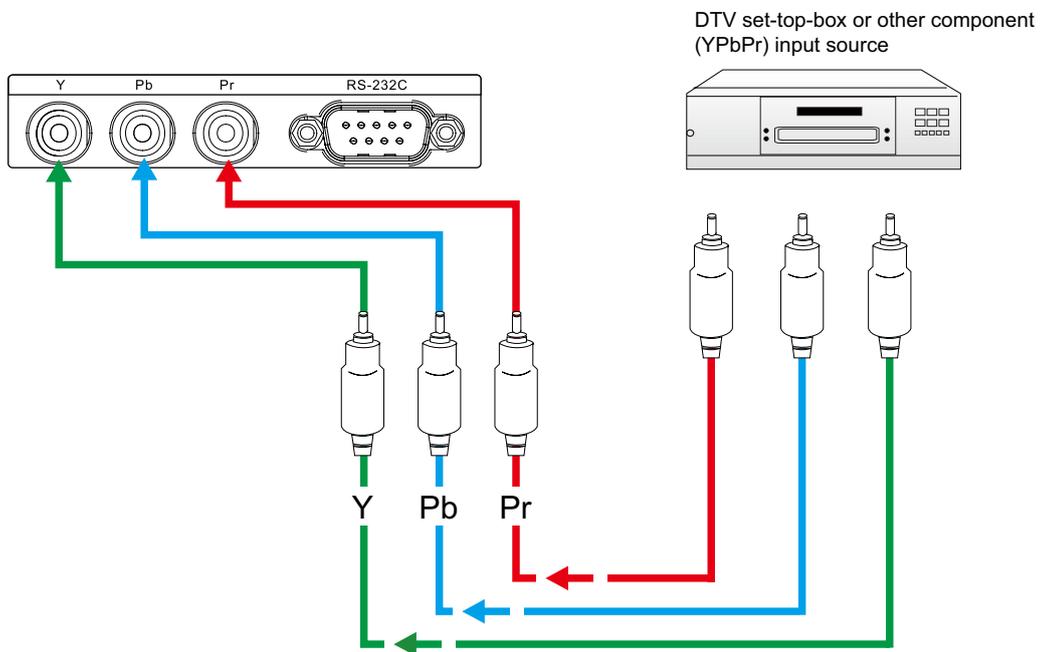
VGA OUT (Loop thru only for VGA1)

Connect the 15-pin D-sub cable and connect one end to the projector's VGA out port. Connect the other end to a monitor to use the loop-through function.



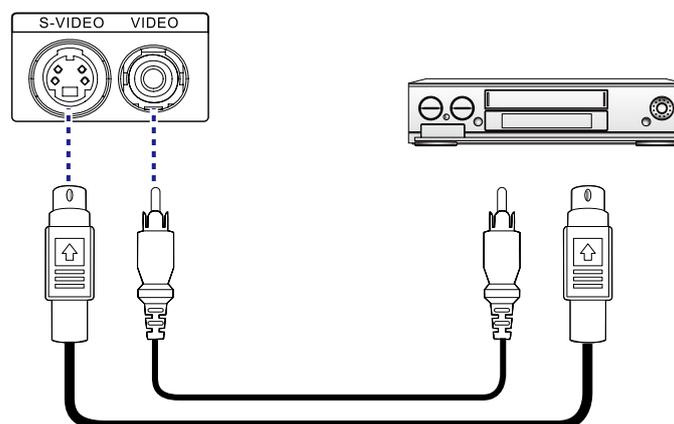
YPbPr connection

Take the 3 cabled RGB component video connectors from the source equipment to the projector's jacks.



S-VIDEO/VIDEO

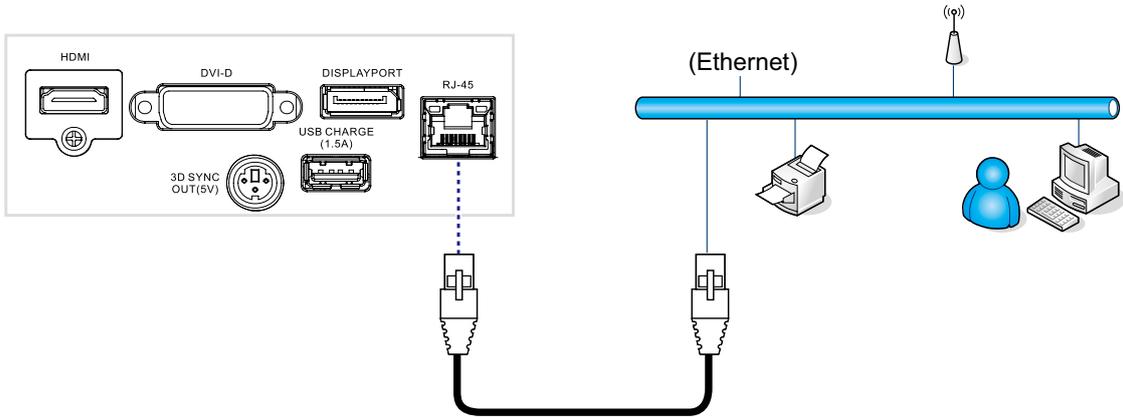
If the image input device offers both S-Video and Video connection, it is recommended that you choose S-Video to obtain better image quality. If both the S-Video and Video inputs are connected to the projector, the projector will prioritize SVideo signal input and image from the Video input will not be played.



RJ-45

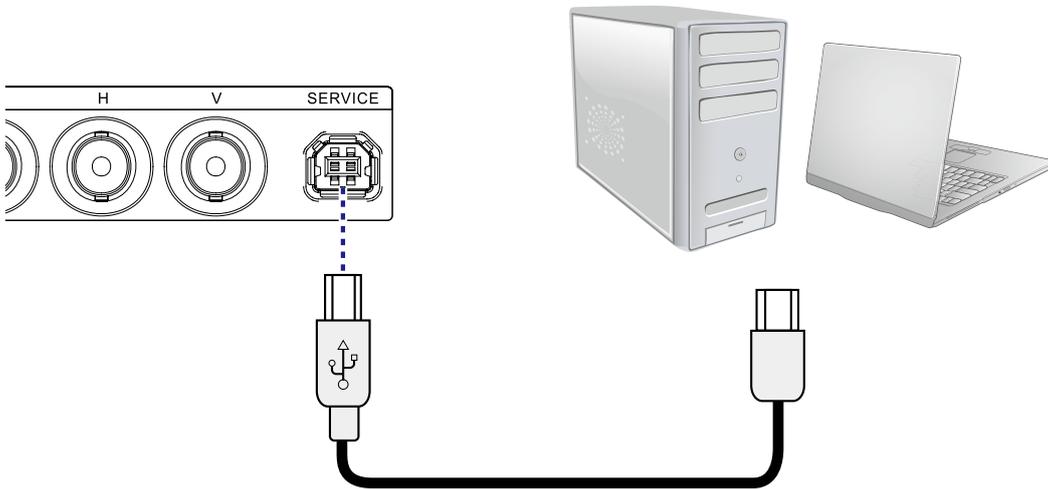
Connect the RJ45 cable from a network device to the projector's RJ45 port.

The Ethernet (RJ45) cable is not provided.



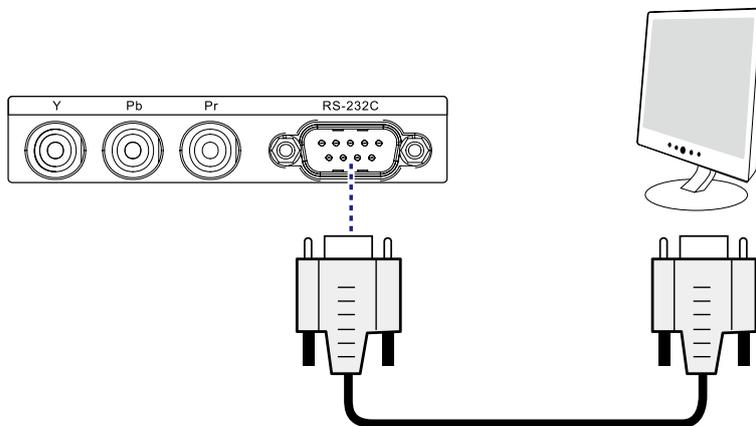
SERVICE: (Engineering use only)

Connect the projector's service port to a PC using the supplied cable to perform maintenance. The port is for service only.



RS-232C

Connect a PC or home theater control/automation system (if present) to the RS-232 port on the PFWX-51B/PFWU-51B. Use a standard, 9-pin serial cable, wired straight-through.



5. GETTING STARTED

Overview

- RCU
- Using the Remote Control and OSD Lite on Screen
- Power on projector
- Power off projector
- Range of effective remote control signal reception
- Source selection
- Changing OSD language
- Adjusting the lens by horizontal and vertical lens shift
- Introduction the OSD Lite on screen

5.1 RCU & Local keypad

How controlling the projector?

The projector can be controlled by the remote control unit.

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.

5.2 Remote Control and OSD Lite on Screen

Using Remote control and OSD Lite on Screen

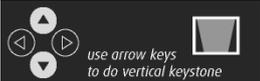


Basic OSD Lite navigation result	RCU Lite action	OSD Lite on screen
show main menu of OSD Lite on screen	press "HOME"	main menu appears in bottom right corner
To move through the OSD Lite	press "arrow keys"	button will turn red when the function is available
go to desired function	press "OK"	the menu of the desired function will appear
leave the menu or clear the screen	press "HOME"	the main menu will be displayed or when you are in the main menu the screen will be cleared

Hotkey / Short Cut Remo result	RCU Lite -> OSD Lite action -> on screen
mute picture on the projector	5 > 5
unmute picture on the projector	press any key
Picture Freeze	6 > 6

Note - Picture Freeze

	<ol style="list-style-type: none"> 1. Press 6 > 6 (only available when an active signal is displayed) 2. The picture is frozen and appear at top right screen 3. Press 6 > 6 to unfreeze the picture. 	
---	--	---

Main menu is on screen. go to button result	RCU Lite -> OSD Lite action -> on screen
select input manually	 3 > 6 4 go to input desired (default setting = auto select) > 3
make the image brighter or darker	 3  6 4 default setting= middle > 3
adapt the contrast between light/dark areas	 3  6 4 default setting= middle > 3
select color preset most fitted for your image	 3  best condition to view "computer" images (default setting=PRESENTATION or VIDEO) > 3
	3  best option to view movies > 3
	3  100% bright > 3
adjust aspect ratio	 3 > 6 5 4 go to aspect ratio desired (default setting = FILL) > 3
adjust keystone	3   5 7 > 3
select language	3 > 6 5 4 go to language desired (default setting = ENGLISH) > 3
show lamp info	 3 > 3
show lamp mode	 3 > 6 4 go to lamp mode desired (default setting = POWER) > 3
show projector info	 3 > 3
enter advanced menu	 3 > contact your service technician to enter the advanced menu > 3

5.3 Power on projector

How to power on.

Press  on the remote control.

The startup screen will display in approximately 30 seconds.



When the projector is turned off, it is required to wait for at least 90 seconds to re-start the projector to complete the cooling of lamp.

5.4 Power off projector

How to power off

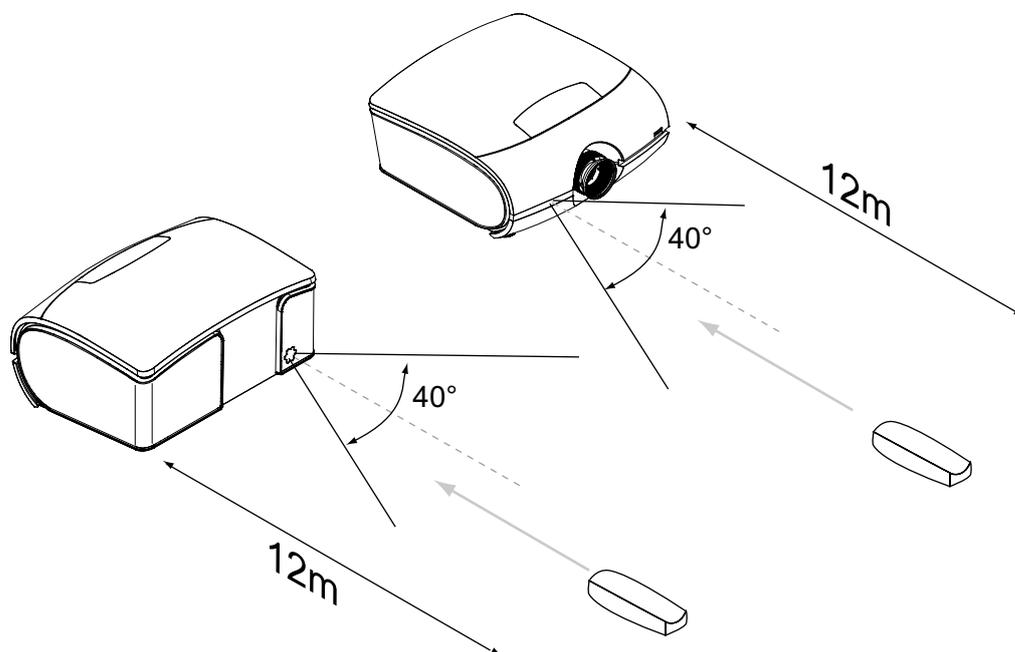
4. Press  key of the remote, a message displays on the projector's screen.
5. Press  key again to confirm, otherwise the message disappears after 5 seconds.
6. Let cool down the projector until the fan stop. At least 15 seconds for cooling cycle.
7. Disconnect the power cord from the power net.



CAUTION: Never disconnect the power cord before the fan stop.

5.5 Range of effective remote control signal reception

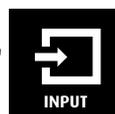
The diagram below illustrates the range of effective remote control signal reception.



Avoid placing the remote control at places of high temperature or humidity as it could cause the remote control to malfunction.

5.6 Source selection

Press HOME on the remote control to activate OSD Lite on Screen, then select "



" for the desired source.

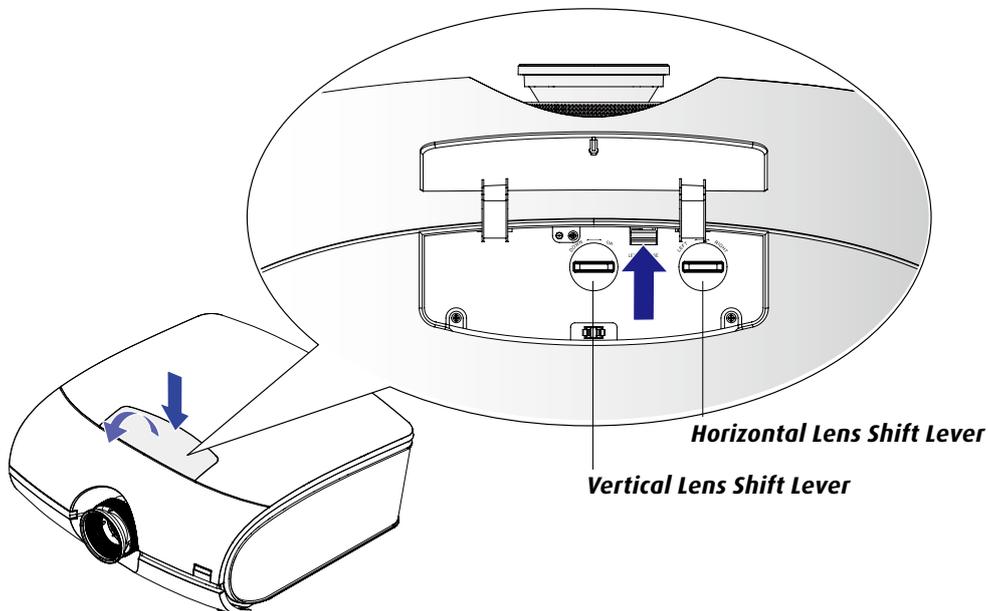
5.7 Changing OSD language

By factory default, the OSD menu of the projector is displayed in English. If you wish to switch to a different language, Press the  button on the remote control, select the language you prefer for the OSD.



5.8 Adjusting the lens by horizontal and vertical lens shift

1. Push down and release the top cover to open.
2. Turn the Horizontal and Vertical lens shift knobs to shift the lens horizontally or vertically.
3. Push the top cover down to close.



5.9 Introduction the OSD Lite on screen



Press the  button on the remote control, you can see the OSD Lite on screen as above picture.

INPUT

Use this function to select the input source. You can choose AUTO SELECT, HDMI, DVI, VGA.

BRIGHTNESS

Adjust the level of black in the image to increase or decrease image brightness. Refer to [page 41: Brightness](#).

CONTRAST

Adjust the level of white in the image to increase or decrease image contrast. Refer to [page 41: Contrast](#).

COLOR

Use this menu to select the display mode.

ASPECT RATIO

You can select different aspect via this function. Refer to [page 50: Aspect Ratio](#).

KEYSTONE

Use this function to adjust the screen from the tilt to not inclined. Refer to [page 52: Keystone](#).

LANGUAGE

Use this function to select the different language of the OSD Lite on screen. Refer to [page 52: Language](#).

INFO

Show the information of lamp.

MODE

Select ECO, Normal, POWER mode of lamp. Refer to [page 56: Lamp Mode](#).

SERVICE

Display this projector's information.

Advanced

This function is for further adjust the projector. For professional use. Refer to [page 38: Advanced OSD Menu](#).

6. ADVANCED OSD MENU

Overview

The Advanced menu is the further function to control and align the projector, the following functions can be done:

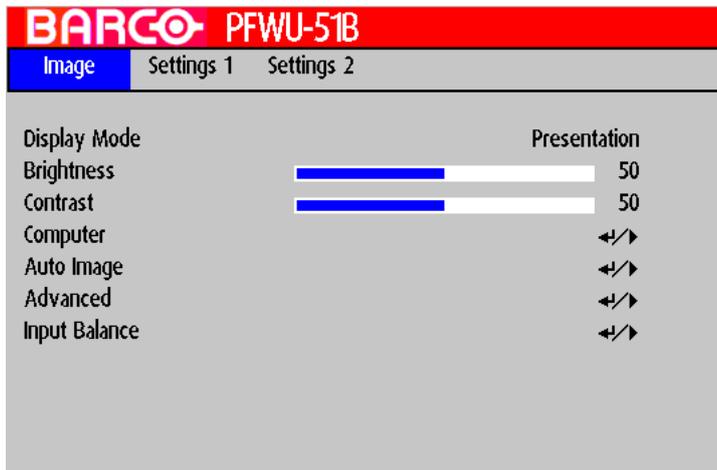
- Advanced OSD introduction.
- Image adjustment: these adjustments are organized per image source and contain the aspect ratio, timings and image settings.
- Settings 1: The Settings 1 menu allows you to save and access customized settings.
- Settings 2: The Settings 2 menu allows you to save and access customized settings.

6.1 How to activate the Advanced OSD menu

Press the  button on the remote control to call the Basic OSD Lite on screen.



Select the "ADVANCED" then the screen will show the advance OSD as below:



6.2 How to navigate in the Advanced menu structure?

Once in the Advanced menu structure, use the ▲ or ▼ key on the remote control or on the local keypad to scroll through the items in the displayed menu. The selected item will get a background color. To activate a selected submenu or function, press



on the remote.

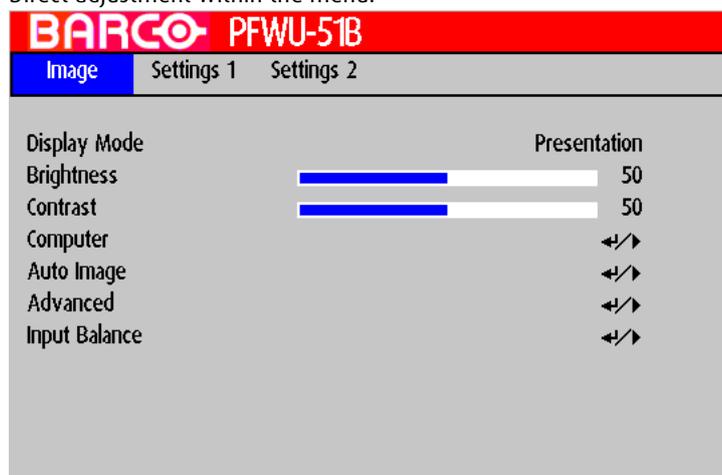
When on a submenu, to return one step to the parent menu, press HOME. To escape the menu structure when on a menu, press HOME.

How to make an OSD adjustment?

With the remote control navigate through the Advanced menu structure until the desired item is selected. Press the ▲ or ▼ key until the desired item is reached. Press to finalize the adjustment.

With the remote control, press the ◀ or ▶ key until the desired value (setup) is reached. Press EXIT to finalize the adjustment.

Direct adjustment within the menu:



Use the ◀ or ▶ key to directly adjust the current value.

or, Via bar scale adjustment :

Once an item is selected, press to open the bar scale menu.



Use the ◀ or ▶ key to adjust the current value. The bar scale will move accordingly.

Press to finalize the adjustment. or,

When the bar scale is displayed, via direct input. Press to activate the input field.

6.3 Advanced menu memory

Each menu with sub menus, remembers its last selected sub item value even when leaving the menu structure and that as long as the projector is running.

7. IMAGE

Overview

- Image menu overview
- Display Mode
- Brightness
- Contrast
- Computer
- Auto Image
- Advanced
- Input Balance

7.1 Image menu overview

Image	Display Mode	Presentation, Bright, Video, User1
	Brightness	0~100
	Contrast	0~100
	Computer	
	Auto Image	Execute
	Advanced	
	Input Balance	

Image ▶ Computer	Horizontal Position	-5~5
	Vertical Position	-5~5
	Frequency	0~31
	Tracking	-5~5

Image ▶ Advanced	Brilliant Color	-5~5
	Sharpness	-5~5
	Gamma	0~31
	Color Temperature	Warm, Normal, Cold
	Video AGC	On, Off
	Video Saturation	0~100
	Video Tint	0~100
	Input Configuration	Auto, YUV HD, YUV STD, RGB-PC, RGB-Video
	Input Balance	

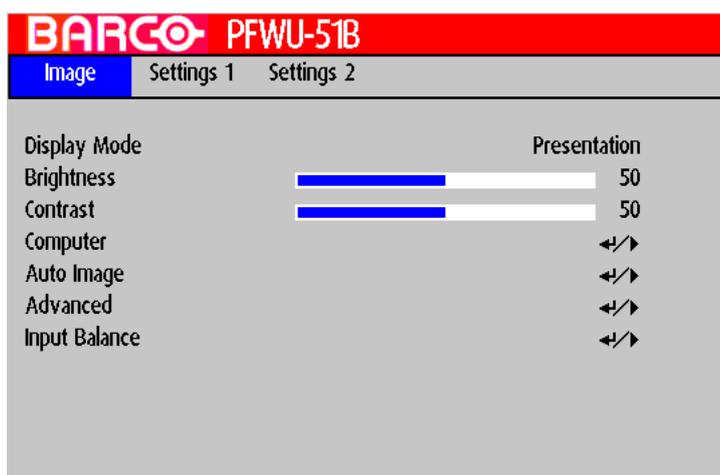
Image ▶ Input Balance	Black Balance Offset	
	White Balance	

Image ▶ Input Balance ▶ Black Balance Offset	Red Offset	-1023~1023
	Green Offset	-1023~1023
	Blue Offset	-1023~1023

Image ▶ Input Balance ▶ White Balance	Red Gain	0~200
	Green Gain	0~200
	Blue Gain	0~200



Depending on the type of the connected source, some settings are grayed out.



7.2 Display Mode

There are many factory presets optimized for various types of images.

- Presentation: Good color and brightness from PC input.
- Bright: Maximum brightness from PC input.
- Movie: For home theater.
- User 1: User's own settings.

7.3 Brightness

The brightness function is used to adjust the black level in the input picture. It adds or subtracts an offset, or bias in to the red, green and blue signals.

Brightness adjustment can be done with the Brightness key on the RCU or via the menu structure.

It is recommended that you adjust the image to the following status:

- The darkest black bar of the image should disappear into the background.
- The dark gray area should be barely visible.
- The light gray area should be clearly visible.
- The white area should appear real and mellow.
- The image should only display black, gray and white (with no other colors).

7.4 Contrast

The contrast function is used to adjust the contrast between the light and the dark areas of the displayed image. It applies a gain to the red, green and blue signals.

Contrast adjustment can be done with the Contrast key on the RCU or via the menu structure.

The following image illustrates the results of direct contrast adjustment using a random image:

◀ Lowered contrast



Original image



Enhanced contrast ▶



Contrast and Brightness are interrelated options that affect one another; when you adjust one of them, you might have to fine tune other settings to get the best projection results.

The following image illustrates the results of direct brightness adjustment using a random image:

◀ Reduced brightness



Original image



Enhanced brightness ▶



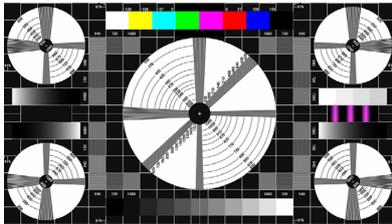
7.5 Computer

Horizontal Position

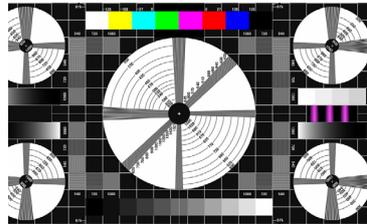
Use ◀ or ▶ to adjust the projected image's horizontal position.

If the projected image is not at the center of the screen (i.e. shifted to right or left) and ends up being cropped, use this function to adjust the image's horizontal position. The following image is an example of test image from an external signal source:

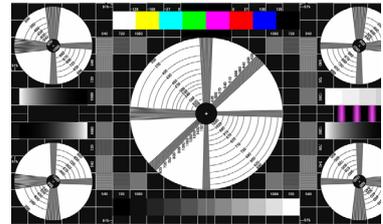
Native picture



Skewed left



Skewed right

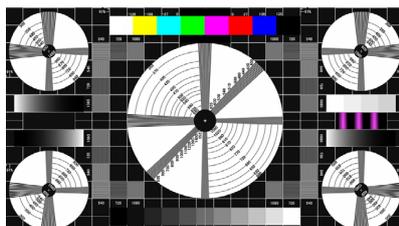


Vertical Position

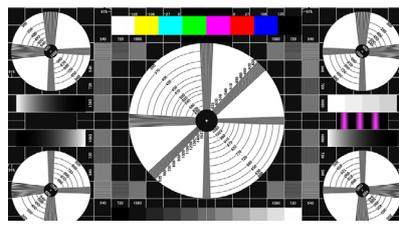
Use ◀ or ▶ to adjust the projected image's vertical position.

If the projected image is not at the center of the screen (i.e. shifted up or down) and ends up being cropped, use this function to adjust the image's vertical position. The following image is an example of test image from an external signal source:

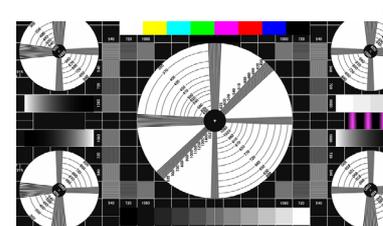
Native picture



Skewed down



Skewed Up



It is recommended that when adjusting the image, the horizontal total should be adjusted before the horizontal phase. However, if the image still flickers even after you have adjusted both, try lowering the image noise.

Frequency

Use ◀ or ▶ to adjust the projected image's phase.

Use this function to adjust the phase of pixel sampling clock (relative to input signal). Should the image still flicker or show noise (i.e. edges on texts) after optimization, adjust phase accordingly.

Tracking

Press ◀ or ▶ to adjust the horizontal total.

Use this function to adjust the clock frequency of pixel sampling (horizontal pixel frequency of the analog input source generated by the ADC). If you notice flickering or verticle lines in the image, it means that the pixel sampling frequency is insufficient. You can use this function to adjust the frequency to achieve consistent image quality.

The following image is an example of test image from an external signal source:



In order to adjust timings the pattern should be used is pixel (on/off)

For saving usage.

If user needs to clear those Signal info saving function: (Available for VGA and BNC sources.)



When a signal is locked and one of those settings(Horizontal Position/ Vertical Position/ Frequency/ Tracking) is adjusted, the current timing info and the settings will be auto stored into memory. If again, when a new timing has been locked and which is the same as one of the previously stored timings in memory, system will auto load and apply those settings for this timing which has been stored in the memory. Each source has 20 memory locations settings of current timing, please execute the Auto Image which is located at Advanced Menu->Image menu page to clear the current timing settings.

Note: An execution of Reset All will clear all of saved timing info.

7.6 Auto Image

When Auto Image was selected in the Advanced menu, press **OK** to execute the automatic image adjustment function.

By executing this function, the projector will resync the image. Use this function when the image source is unstable or when you notice deterioration in image quality and the projector will automatically adjust the image size, phase and timing. (The adjustment also applies to PIP input source).



Note: If user needs to clear Hor.Position, Ver.Position, Frequency, Tracking settings stored in memory of current timing, please execute the Auto Image which is located at Advanced Menu > Image menu page. This function will use auto locked result as setting value instead.

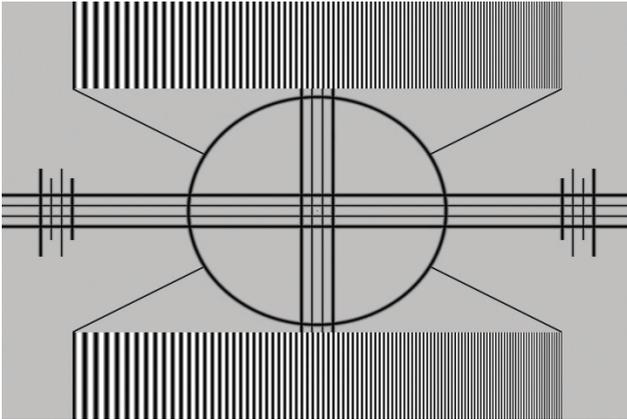
7.7 Advanced

Brilliant Color

This feature utilizes a new color processing algorithm and system level enhancements to enable higher brightness while providing truer, more vibrant colors in picture. It enable a greater than 50% brightness increase in mid-tone images, which are common in video and natural scenes, so the projector reproduces images in realistic and true colors.

Sharpness

The adjustment of sharpness primarily changes the value of high frequency detail. You can connect the projector to an external image source to display an image resembling the one shown below to adjust the image sharpness.



The following image illustrates the results of direct sharpness adjustment using a random image:

◀ Reduced sharpness

Original image

Enhanced sharpness ▶



Gamma

Different Gamma settings will affect viewers' perception of the image. Generally speaking, for images that are darker, it is recommended that Gamma be set higher to yield better image quality in darker regions by sacrificing details in brighter areas. In contrast, when projecting brighter images, you can set the Gamma lower to give up details in the darker areas to make the brighter areas (i.e. clouds) more visible.

You can choose from five different gamma settings (1.8, 2.0, 2.2, 2.4, B&W, Linear) on the projector. The projector's default gamma value is at 2.2.

Every setting has precisely defined phases to display all primary colors (red, green, blue) and secondary colors (yellow, cyan, magenta) in millions of pixels. Changing any number in the setting will change the resulting color and rearrange the color "triangle".

Color Temperature

You can choose from **Warm**, **Normal** and **Cold**.

Color temperature refers to the change in light color under different energies that is perceived by the naked eye. The change of color temperature from Warm to Cold for visible light goes from orange red → white → blue



The projector's default color temperature is set at Normal and it is suitable for most situations. As color temperature change to Cold, the image will appear to be more blue; as it change to Warm, the image will appear redder. When you choose "Native", the projector will disable the white adjustment function of the input device.

Video AGC

Video AGC refers to automatic gain correction function. When enabled, the AGC function applies gain corrections on the input necessary to display correct output colors.

Video Saturation

Press ◀ or ▶ to adjust the saturation of the projected image. If the color of the projected image seems to be overly bright and vivid, decrease the color saturation; if the color seems white and washed out, increase the color saturation.

Video Tint

Press ◀ or ▶ to adjust the tint (balance between magenta and green) of the projected image. Lowering the value will make the image appear greener; increasing the value will make the image appear redder.

Input Configuration

Press ◀ or ▶ to adjust the Input Configuration. This function adjusts the signal color space and output range level (Limit/Full range).

7.8 Input Balance

Black Balance Offset

This function involves the adjustment of the following red, green and blue offsets. The text itself is decorative.

- Red Offset
Press ◀ or ▶ to adjust the offset of red in dark scales.
- Green Offset
Press ◀ or ▶ to adjust the offset of green in dark scales.
- Blue Offset
Press ◀ or ▶ to adjust the offset of blue in dark scales.

White Balance

This function involves the adjustment of the following red, green and blue gains. The text itself is decorative.

- Red Gain
Press ◀ or ▶ to adjust the gain of red in bright scales.
- Green Gain
Press ◀ or ▶ to adjust the gain of green in bright scales.
- Blue Gain
Press ◀ or ▶ to adjust the gain of blue in bright scales.

Unbalanced color signals

When transporting signals, there is always a risk of deterioration of the information contained in the signals.

In case of information contained in the amplitude of the signals which is the case of data color signals (R, G, B), image 9-29, we are quite sure that the amplitude of these color signals is subject to alterations.

An example of alteration may be a DC component added to the signal, in the form of a DC offset repositioning the black level, since this black level ("brightness") will become crucial later on (clamping circuit) it will result in "black not being black".

Another value that is subject to alteration is the amplitude of the signal, resulting in an altered "Gain" of the signal ("white level" or contrast).

The alterations of the three color signals will happen independently i.e. the colors will end to be unbalanced, image 9-30

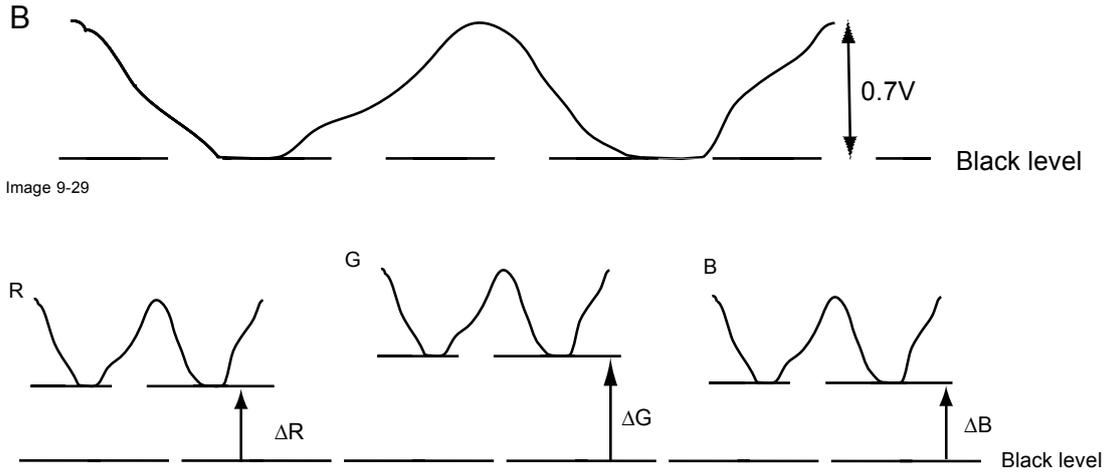


Image 9-29

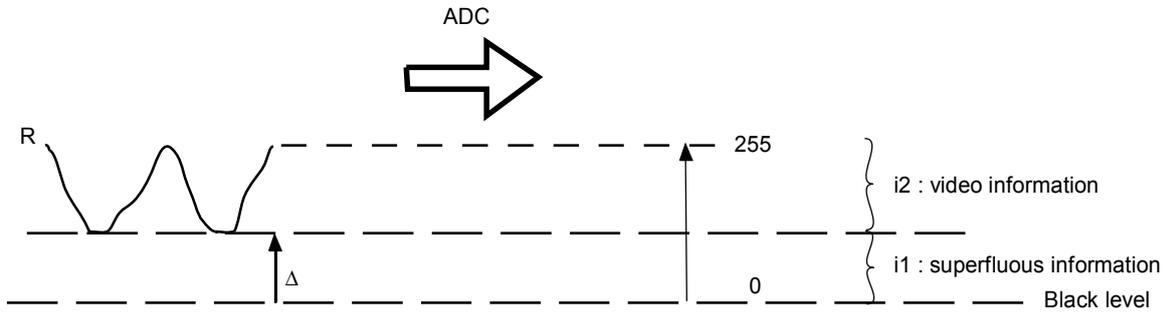


One can conclude here that a good color tracking can only be met by using three previously (input) balanced color signals

Analog Digital Conversion

The analog color signals must pass through an Analog/Digital conversion circuit prior to any digital processing in the PMP. A typical ADC transforms the analog value into an 8 bit coded digital signal.

The graphic shows that when converting a signal containing a DC offset component the range of the converter is not optimally used.



One can conclude here that a good data conversion can only be met by using three previously (input) balanced color signals

The objective of input balancing

The objective in input balancing is to “set” the same black level and the same white level for the three colors of a particular input source.



Black level setting : brightness
White level setting : contrast

The same absolute black and white level for the three colors allows the same reference for Brightness and Contrast control of the picture !

These two references also set the range in which the ADC will work for that particular source (this explains also why each input balance setting is linked to a particular source and thus saved in the image file).

Adjusting the input balance

To balance the three color signals of a particular source there are conditions; in fact we must know the black and the white level of the source i.e.:

1. The source in question must be able to generate a white signal, ideally a 100% white (background) full screen pattern
2. The source in question must be able to generate a black signal, ideally a 100% black (background) full screen pattern



White balance : In the projector, we will set the contrast for each color until we get a 100% light output picture when projecting a 100% white image (image A)

Black balance : In the projector, we will set the brightness for each color until we get a 0% light output picture when projecting a 100% black image (image B).



The changeover from min to max is indicated by the apparition of bright spots also called "digital noise"



An alternative to a full screen White/black pattern is the standard gray scale pattern, the white bar will be used for white balance and the black bar for black balance.



8. SETTINGS 1

Overview

- Settings 1 menu overview
- Source
- Projection
- Aspect Ratio
- Keystone
- Digital Zoom
- Advanced 1
- Advanced 2

8.1 Settings 1 menu overview

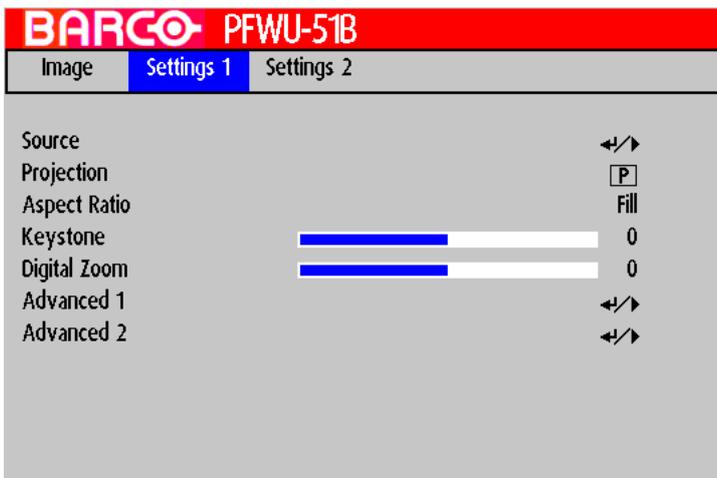
Settings 1	Source	
	Projection	Front_Floor, Rear_Floor, Front_Ceiling, Rear_Ceiling
	Aspect Ratio	Fill, 4:3, 16:9, Letter Box, Native, 2.35:1
	Keystone	-40~40
	Digital Zoom	-10~10
	Advanced 1	
	Advanced 2	

Settings 1 ► Source	Source	DVI, HDMI, Display Port, VGA1, VGA2, BNC, Component Video, S-Video, Composite Video
---------------------	--------	---

Settings 1 ► Advanced 1	Language	ENGLISH, FRENCH, SIMPLIFIED_CHINESE, JAPANESE, GERMAN, SPANISH, KOREAN, RUSSIAN TURKISH
	Security Lock	On, Off
	Blank Screen	Blank, Red, Green, Blue, White
	Splash Logo	Std., Off, User
	Closed Captioning	On, Off
	3D Setting	
	Screen Capture	

Settings 1 ► Advanced 1 ► 3D Setting	3D	Off, DLP-Link, IR
	3D Sync Invert	Off, On
	3D Format	Frame Sequential, Top/Bottom, Side-By-Side, Frame Packing (3D FramePacking HDMI source only)

Settings 1 ► Advanced 2	Test Pattern	None, Grid, White, Red, Green, Blue, Black
	H Image Shift	-50~50
	V Image Shift	-50~50



8.2 Source

Use this function to specify the source of image connected to the rear of the projector. For instance, if you have connected your PC as the video input source, you can choose RGB D-15(RGB-HV/SOG) to be the input for image projection. Options of input available on the projector include: DVI, HDMI, DisplayPort, VGA 1, VGA 2, BNC, Component Video, S-Video, Composite Video.

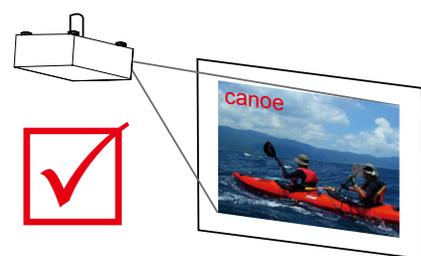
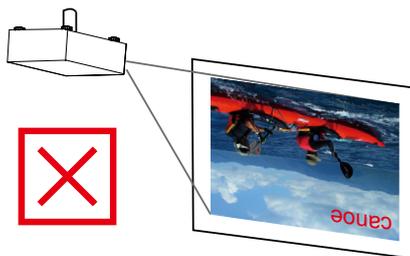
8.3 Projection

By default, the projector is configured for "frontal projection - desktop installation". If you choose to install your projector in other setups, be sure to adjust the screen orientation to achieve the correct projection mode.

Front projection - ceiling mode

Press **HOME** → OSD Lite MENU → ADVANCED → Settings 1 → Projection → **d**; the projector is now configured for "frontal projection - ceiling mode".

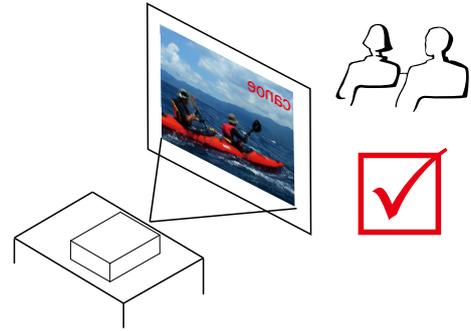
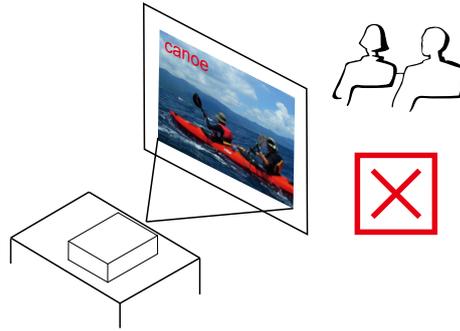
Correct Picture



Rear projection - desktop installation

Press **HOME** → OSD Lite MENU → ADVANCED → Settings 1 → Projection → **9**; the projector is now configured for "rear projection - desktop installation".

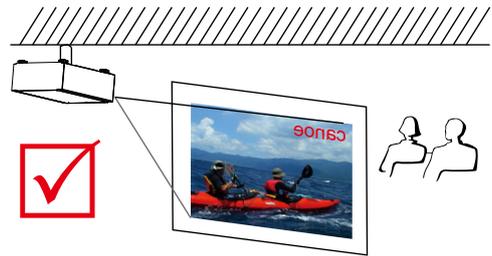
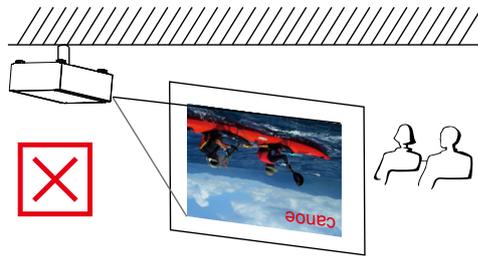
Correct Picture



Rear projection - ceiling mode

Press **HOME** → OSD Lite MENU → ADVANCED → Settings 1 → Projection → **6**; the projector is now configured for "rear projection-ceiling mode".

Correct Picture



Front projection - desktop installation

Press **HOME** → OSD Lite MENU → ADVANCED → Settings 1 → Projection → **P**; the projector is now configured for "frontal projection - desktop installation".

8.4 Aspect Ratio

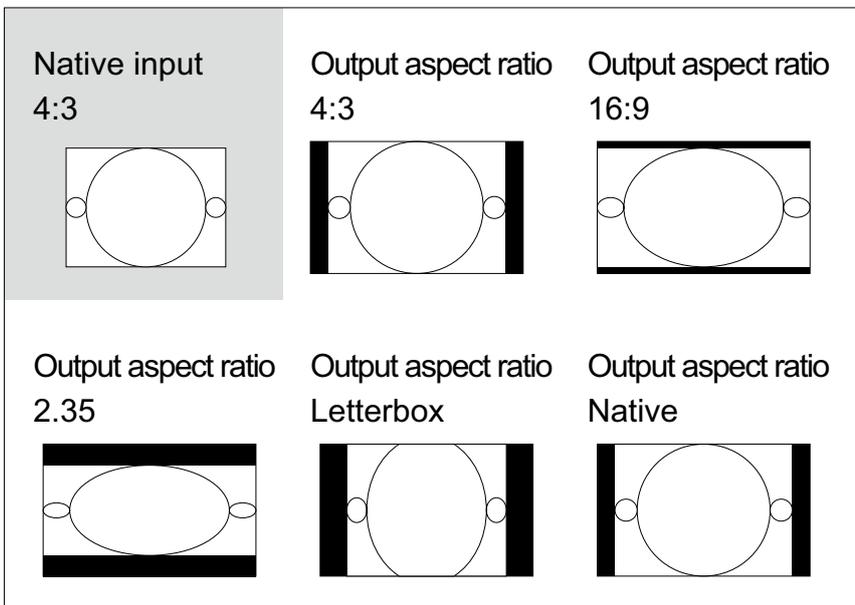
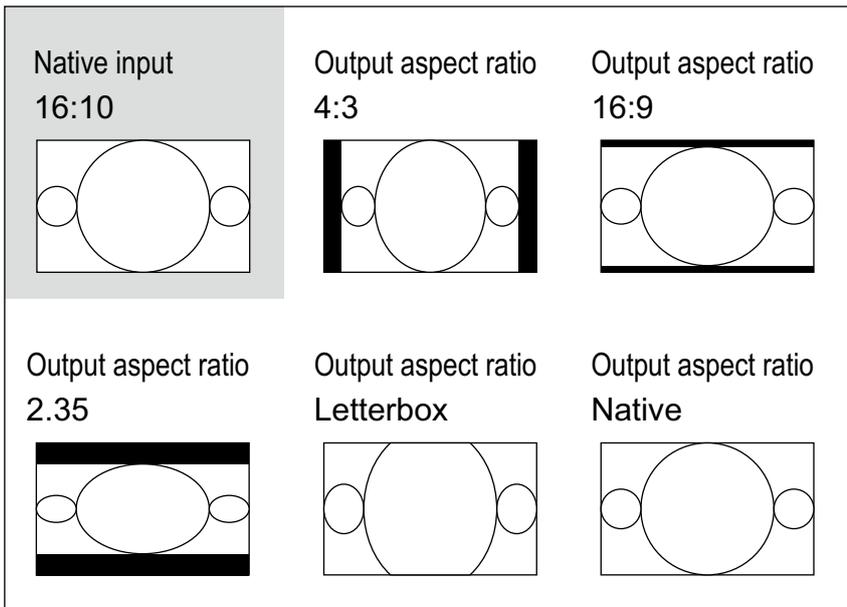


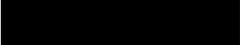
Relation between the horizontal & vertical dimension in which the window will be displayed, e.g. 4 by 3 or 16 by 9. Can also be expressed as a decimal number, such as 1.77. The larger the ratio or decimal, the wider the image (or the less the image is squared).

The aspect ratio setting forces the projector to project an image using a defined aspect ratio.

Aspect ratio	Description
Fill	Scale image to fill the screen vertically and add horizontal pillar-boxing.
4:3	Standard television format
16:9	Wide screen television format / anamorphic format
Letterbox	1.33:1
Native	Scale image to fit screen
2.35:1	Film format

The projector's full image size is 16:10 (1280x800, 1920x1200 dots). The following diagram illustrates the difference in various aspect ratio settings:



 Cropped portion of the image



That when used for commercial purposes, including: projection of image in movie theaters, hotels, cafeteria and other public venues, compression or extension of image achieved through the change of aspect ratio may constitute copyright infringement to the rightful owner of the image. Please do so at your own discretion.

8.5 Keystone

Vertical Keystone

Use this function to correct keystoneing caused by projection angle.



The summation of the absolute value vertical keystone is limited to less than or equal to 40

8.6 Digital Zoom

Press ◀ to digitally reduce the size of the image.

Press ▶ to digitally magnify the size of the image.

8.7 Advanced 1

Language

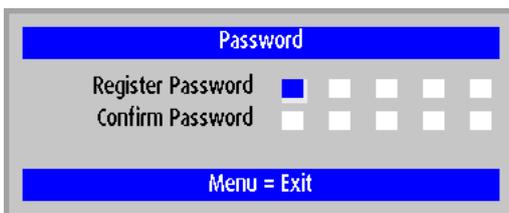
The user can change the language of the on screen menus and the local display menus to one of the available languages.

You can choose from the following nine languages: English, French, Spanish, German, Simplified Chinese, Japanese, Korean, Russian and Turkish.

Security Lock

Press ◀ or ▶ to enable or disable security lock function.

The password menu displays when Security Lock is On. Use the following keys ▲, ▼, ◀ or ▶ to setup a password.. Press HOME to cancel.



Reset password

If you need to reset password, please contact your service technician.

Blank Screen

Press ◀ or ▶ to select different color to blank the screen.

Splash Logo

You can use this function to have the projector display the Barco logo in the start up screen. Set **Std** to display the Barco logo during start up and **Off** to display a blank image. If no screen has been captured, the BARCO logo will be the start logo during start up when set to **User**.

Closed Captioning

Select the screen to display closed captioning.

3D Setting

Enter the 3D menu. Select 3D options such as 3D, 3D Sync Invert, and 3D Format.

3D

- Off: Close 3D mode.
- DLP Link: Select DLP Link to use optimized settings for DLP Link 3D Glasses.
- IR: Select IR to use optimized settings for IR-based 3D images.



When Input source is HDMI 1.4a with AVI info frame, Default Value is DLP Link. Possible value is DLP-Link/IR.

When Input source is VGA/DVI/Video/Svideo/HDMI 3D no Info frame, Default Value is Off. Possible value is Off/DLP-Link/IR.

3D Sync Invert

Press ◀ or ▶ to enable or disable the 3D Sync invert function to invert images.

3D Format

- Frame Sequential: Display 3D signal in Frame Sequential format.
- Top/Bottom: Display 3D signal in Top and Bottom format.
- Side-By-Side: Display 3D signal in Side-by-Side format.
- Frame Packing (only for 3D source): The left and right images are packed into one video frame (twice the normal bandwidth).

Screen Capture

Execute the Screen Capture function. After the screen has been successfully captured, the Splash Logo function will be set to User automatically and the logo will be replaced with this captured screen during start up.

8.8 Advanced 2

Test Patterns

The projector comes with some standard built-in patterns for testers to calibrate the equipment. These include: None, Grid, White, Red, Green, Blue, Black.

H Image Shift

Shifts the projected image position horizontally.

- Press ◀ to move the image left on the projected screen.
- Press ▶ to move the image right on the projected screen.

V Image Shift

Shifts the projected image position vertically.

- Press ◀ to move the image up on the projected screen.
- Press ▶ to move the image down on the projected screen.

9. SETTINGS 2

Overview

- Settings 2 menu overview
- Auto Source
- No Signal Power Off
- Auto Power On
- Lamp Mode
- Reset All
- Status
- Advanced 1
- Advanced 2

9.1 Settings 2 menu overview

Settings 2	Auto Source	Off, On
	No Signal Power Off	Off, On
	Auto Power On	Off, On
	Lamp Mode	ECO, Normal, POWER
	Reset All	
	Status	
	Advanced 1	
	Advanced 2	

Settings 2 ► Status	Active Source	
	Video Information	
	Lamp Hours (ECO, Normal, POWER)	
	Software Version	
	Serial Number	

Settings 2 ► Advanced 1	Menu Position	Left, Right, Center, Down, Up
	Translucent Menu	0%, 25%, 50%, 75%, 100%
	Low Power Mode	Off, Low Power
	Fan Speed	Normal, High
	Lamp Hour Reset	
	Network	

Settings 2 ► Advanced 1 ► Network	Network State	Connect, Disconnect
	DHCP	Off, On
	IP Address	0~255, 0~255, 0~255, 0~255
	Subnet Mask	0~255, 0~255, 0~255, 0~255
	Gateway	0~255, 0~255, 0~255, 0~255
	DNS	0~255, 0~255, 0~255, 0~255
	Apply	OK / Cancel

Settings 2 ► Advanced 2	Sleep Timer	0~600
	Source Filter	

Settings 2 ► Advanced 1 ► Network	DVI	Disable, Enable
	HDMI	Disable, Enable
	DisplayPort	Disable, Enable
	VGA1	Disable, Enable
	VGA2	Disable, Enable
	BNC	Disable, Enable
	Component Video	Disable, Enable
	S-Video	Disable, Enable
Composite Video	Disable, Enable	

BARCO PFWU-51B		
Image	Settings 1	Settings 2
Auto Source		Off
No Signal Power Off		Off
Auto Power On		Off
Lamp Mode		Normal
Reset All		←/→
Status		←/→
Advanced 1		←/→
Advanced 2		←/→

9.2 Auto Source

On

Default setting. By enabling this function, the projector will automatically determine the source of input every time it is turned on so that the user will not have to make the selection on the OSD Menu.

Setting the function off will require the user to specify source of image input on the OSD Menu in order for the projector to display the intended image.

9.3 No Signal Power Off

Automatically shut off when no signal. (in minutes). If switched to On, the projector will automatically shut off after 15 minutes when no signal.

9.4 Auto Power On

Automatically power on when AC power applied.

9.5 Lamp Mode

When the lamp is set to ECO mode, the lamp is running at 280W. If the ambient temperature is higher than 35 degree Celsius, lamp will operate at ECO mode. In this case, lamp mode selection is unavailable. Lamp mode selection is available once the ambient temperature drops below 35 degree Celsius.

- ECO
When set to Eco mode, the wattage of the lamp will be at 280W. If the surrounding environment is sufficiently dark or if you do not require intense brightness, you can set the lamp to Eco mode to prolong its usage life.
- Normal
When set to Normal mode, the wattage of the lamp will be at 370W. If the projection environment requires brighter image, you can set the lamp to Normal for the highest projection brightness.
- POWER
When set to Power mode, the wattage of lamp will be at 330W. you can set the lamp to Power mode to prolong its usage life.

9.6 Reset All

All settings of the projector will be set to the original factory settings. All user settings are erased with this operation.



This function will not apply to items including no signal, network, Projector control, startup Logo, language, High Altitude mode and lamp hours



When Factory Reset is executed, all source memories created by the projector (i.e. timings files) will be erased

9.7 Status

Active Source

To show which source is activated

Video Information

Showing resolution/H, V information at RGB mode. Showing color standard at Video mode.

Lamp Hours (ECO, Normal, POWER)

Lamp hour used information. ECO, Normal and POWER counter are separated.

Software Version

Showing system software version.

Serial Number

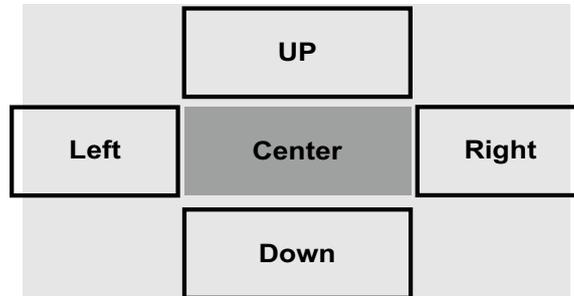
Showing serial number of this projector.

9.8 Advanced 1

Menu Position

You can use this function to designate which area on the image the OSD Menu will appear.

As you can see from the diagram below, there are five positions where you can choose to have the OSD Menu displayed. The default setting is "Center".



Translucent Menu

Press ◀ or ▶ to select OSD background translucent level.

Low Power Mode

The projector can be connected to a network via its RS232 and/or RJ45 port for remote operation with two separate boards to control the signal source from RS-232 and/or RJ45 ports.

For complete remote operation of the projector over RJ45 port, it is recommended the "Low power mode" of OSD to be "Off" option, even if the projector in "Standby" state.

By setting "Low power mode" being "Off" option, user would not be able to conserve power consumption in "Standby" state.

Fan Speed

Use this function to control the projector's cooling fan. You can set it to Normal or High. The default setting is Normal.

Under normal circumstances, the projector will operate normally with this function set to Normal. By default, the projector will detect the temperature of the surrounding environment to regulate the speed of the cooling fan. When the ambient temperature rises, fan speed will increase (generates louder noise) to make sure the heat inside the projector gets discharged and keep the projector working normally.

However, if you were to operate the projector in environment of excessive heat or in areas of high altitude, the projector may automatically shut down. When this happens, you can enable this function by setting it to High to force the cooling fan to work at a higher speed to regulate the temperature inside the projector.

- High altitude region refers to area with elevation over 1500 meters (4900 feet).
- When operating in normal altitude environments, the projector will adjust the cooling fan according to the temperature of the working environment. When the temperature rises above 30C, the projector will automatically increase fan speed.
- According to the product specification, the maximum operating altitude for the projector is at 3000m@25C. This means that you should not be operating the projector in high altitudes when the working environment is over 25C. (Due to the air thinning substantially at high altitudes, the result of cooling achieved by the cooling fan is significantly reduced compared to operation on level ground. With low atmospheric pressure and high operating temperature, the cooling fan will not be able to disperse the heat adequately)

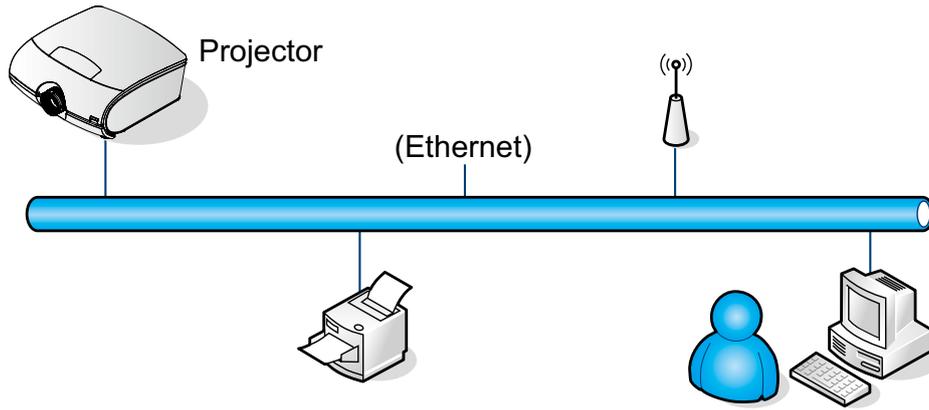
Lamp Hour Reset

Use this function to reset the hours for lamp to zero.



After replacing the lamp, remember to reset the lamp hours to ensure the accuracy of lamp hours displayed in the OSD Menu

Network



Wired LAN Terminal functionalities

Remote control and monitoring of a projector from a PC (or Laptop) via wired LAN is also possible. Compatibility with Crestron / AMX (Device Discovery) / Extron control boxes enables not only collective projector management on a network but also management from a control panel on a PC (or Laptop) browser screen.

- Crestron is a registered trademark of Crestron Electronics, Inc. of the United States.
- Barco's Projector Toolset is a registered trademark of Barco, Inc. / Barco Federal Systems, LLC.

Supported External Devices

This projector is supported by the specified commands of the Crestron Electronics controller and related software (ex, RoomView®).

<http://www.crestron.com/>

This projector is supported by Barco's Projector Toolset.

<http://www.barco.com/>

For more detail of information about the diverse types of external devices which can be connected to the LAN/RJ45 port and remote/control the projector, as well as the related control commands supporting for each external device, kindly please get contact with the Support-Service team directly.

Projector Info	
Model Name	PFWX-51B
System	
System Status	Power On
Display Source	Composite Video
Lamp Hours	2
Display Mode	Presentation
Error Status	No Error
LAN Status	
IP address	10.10.10.10
Subnet mask	255.255.255.0
Default gateway	0.0.0.0
DNS Server	0.0.0.0
MAC address	00:18:23:24:EE:5A
Version	
LAN Version	BCOXX-MHD01
F/W Version	D04t

Herewith the Web-Information of Projector status.

By factory default, the network configuration is DHCP On. As well, projector can support to change to settings, DHCP Off.

For more information, please visit <http://www.barco.com/>.

IP Address

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



Can only be used with a wireless network module installed.

Subnet mask

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



Can only be used with a wireless network module installed.



Subnet for Wired and Wifi must be different !

Gateway

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



Can only be used with a wireless network module installed.

DHCP

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



Can only be used with a wireless network module installed.

9.9 Advanced 2

Sleep Timer

Set the Sleep Timer interval. The projector powers off after the specified time period of inactivity (regardless of signal).

Source Filter

Press ▲ or ▼ to select the input source, and press ◀ or ▶ to enable or disable the automatic input searching..

10. MAINTENANCE

10.1 Lamp Replacement

The lifecycle of ordinary projection lamp typically lasts for 3500 hours before requiring replacement (different lamp configurations will affect lamp life). From the OSD Menu, you can go to "[page 57: Lamp Hour Reset](#)". To check how long a lamp has been used. You should also replace the lamp when the projected image gets noticeably darker. Contact your local dealer to purchase new certified lamps for your projector.



This procedure may only be performed by qualified technical service personnel.

How to replace the projector lamp

WARNING: Unplug the power cord before starting the procedure.



Keep all flammable items away from lamp

Never to remodel or disassembly on lamp housing

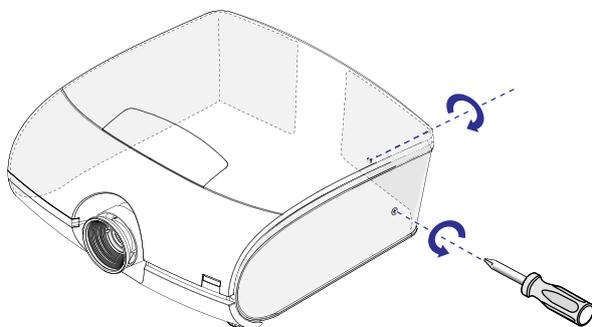
Lamp contains mercury. If lamp bursts during operation. Keep yourself in sufficiently ventilate area in order to avoid inhaling mercury.

1. Turn off the projector and unplug the power cord. Let the projector cool for approximately 60 minutes before removing the lamp module for replacement.

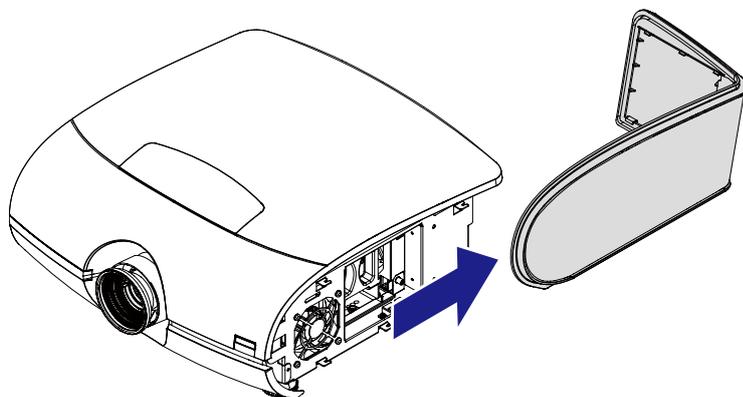


When you turn off the projector, the lamp inside the projector will still be very hot (approximately 200 ~ 300°C). If you attempt to replace the lamp without allowing the projector to cool, you could risk scalding yourself. This is why you should wait for no less than 60 minutes for the lamp to cool down in order to perform the replacement safely.

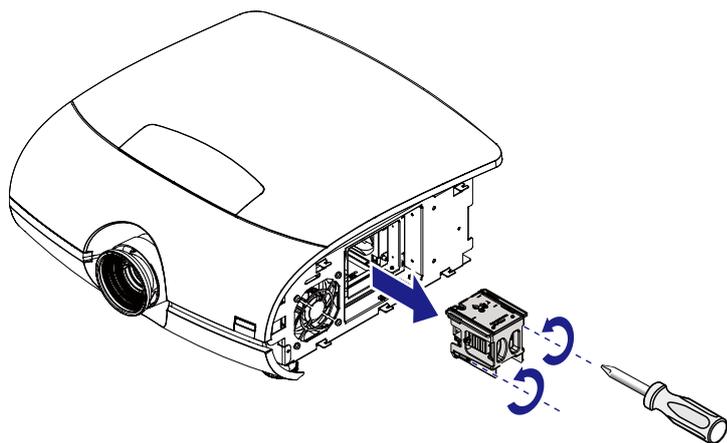
2. Loosen the screws from cover.



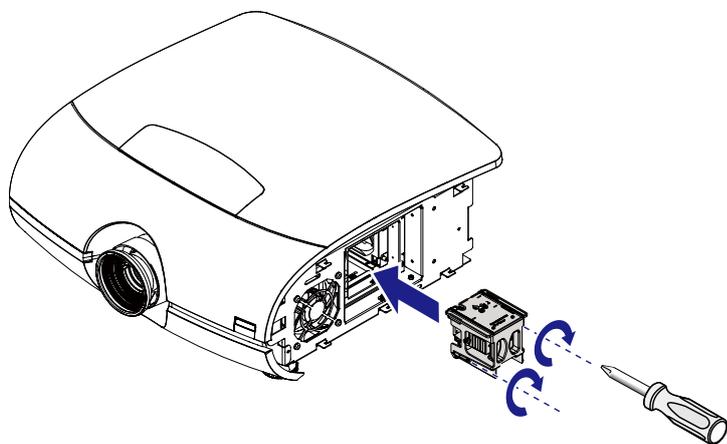
3. Pull out the right cover.



4. Use a screw driver to loosen the screws as shown in the illustration. Grasp the metal rod on the lamp cover and pull the lamp out.



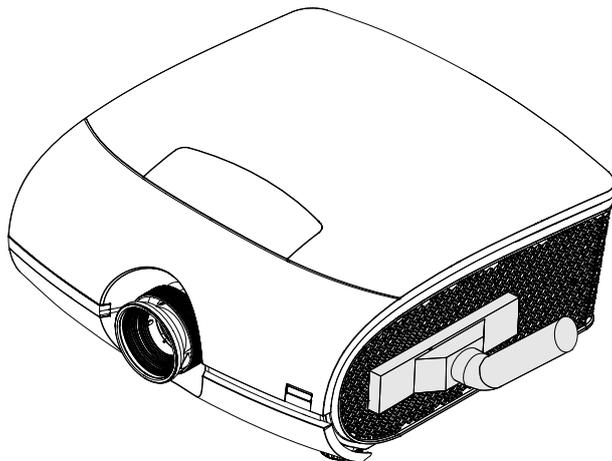
5. Insert the new lamp in the direction shown in the illustration into the lamp assembly; tighten the two screws using a screw driver and make sure the lamp is firmly secured to prevent the lamp from shaking or poor contact.



6. Replace the right cover and tighten the screw.
7. Reconnect power to the projector and reset the lamp usage timer. Refer to [page 57: Lamp Hour Reset](#).

10.2 Clean the dust

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



10.3 Cleaning the lens



To minimize the possibility of damage to optical coatings, or scratches to lens surfaces, we have developed recommendations for cleaning. **FIRST**, we recommend you try to remove any material from the lens by blowing it off with clean, dry deionized air. **DO NOT** use any liquid to clean the lenses.

Necessary tools

Toraysee™ cloth (delivered together with the lens kit). Order number: R379058.

How to clean the lens?

1. Always wipe lenses with a CLEAN Toraysee™ cloth.
2. Wipe lenses in a one single direction.
Warning: Do not wipe back and forwards across the lens surface as this tends to grind dirt into the coating.
3. Do not leave the cleaning cloth in either an open room or lab coat pocket, as doing so can contaminate the cloth.
4. If smears occur when cleaning lenses, replace the cloth. Smears are the first indication of a dirty cloth.



CAUTION: Do not use fabric softener when washing the cleaning cloth or softener sheets when drying the cloth.

Do not use liquid cleaners on the cloth as doing so will contaminate the cloth.



Other lenses can also be cleaned safely with this Toraysee™ cloth.

10.4 Cleaning the exterior of the projector

How to clean the exterior of the projector?

1. Power 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.

10.5 Simple troubleshooting

The following table offers a list of common problems with projectors and how to troubleshoot. If the recommended solutions fail to resolve your problem, contact your local dealer to arrange for servicing; do not attempt to service the projector by yourself.

Problem	Possible cause	Solution
You cannot turn on the projector	<ol style="list-style-type: none"> 1. The projector may be unplugged. 2. The AC socket may be faulty. 3. The lens cover is not replaced properly. 	<ol style="list-style-type: none"> 1. Plug the projector's power cord into a wall outlet. 2. Make sure the AC socket is working properly. 3. Make sure the lens cover has been properly replaced.
You cannot turn on the projector after turning it off	You will not be able to turn on the projector within two minutes after you have just turned it off. This feature is designed to protect the lamp.	Wait for the projector to cool down completely before starting it up again (the projector's STAND BY indicator will turn blue)
You have connected the projector to a DVD player as the input source but the image appears broken or split in halves.	The DVD player is connected to the projector through component cables and you have set it to progressive scan.	Disable the progress scanning function on the DVD player.
The picture looks dim	<ol style="list-style-type: none"> 1. The image brightness, contrast, color and tint might need proper adjustment. 2. The lamp is due for replacement. 	<ol style="list-style-type: none"> 1. Adjust the image brightness, contrast, color and tint. 2. Replace the projector lamp.
The remote control does not operate normally	<ol style="list-style-type: none"> 1. The battery might have run out. 2. You might have inserted the batteries in the wrong orientations. 3. You may be operating the remote control too far away from the projector's IR sensor or exceeded the maximum angle of signal reception ; there might be an obstacle between the projector and the remote control or there might be a source of intense light near the IR receiver. 4. The remote control's address is not consistent with the projector's address. 	<ol style="list-style-type: none"> 1. Replace new batteries. 2. Make sure the batteries are inserted in the right orientation. 3. Adjust the distance/angle between the projector and the remote control and try again; if there are obstacles between the projector and the remote or source of intense light near the IR sensor resolve these situations and try again. 4. Press the OK button on the remote control followed by the Address button until the panel of the remote control flashes once (approximately 5 seconds) and try again.
You are able to turn on the projector and access the OSD Menu but no picture appears.	<ol style="list-style-type: none"> 1. The projector may not be turned on properly or you have not selected the correct input source. 2. You might not have connected the source device correctly or the source might not be connected to the projector at all. 	<ol style="list-style-type: none"> 1. Make sure the projector is turned on properly and select the correct input source. 2. Check the connection between the projector and the input device.
The image is too bright or the bright areas are blurry	The contrast might have been set too high.	Lower contrast settings.
The image appears washed out or the dark areas appear too bright	The image brightness might have been set too high.	Lower brightness settings.
The image is blurry	<ol style="list-style-type: none"> 1. The lens may not be in focus. 2. The temperature or humidity of the projector's working environment may have changed in mid operation (i.e. going from cold to warm or dry to humid), leading to condensation of moisture inside the projector. 	<ol style="list-style-type: none"> 1. Adjust Lines focus. 2. Turn of the projector first and wait for the moisture in the projector to evaporate.

Problem	Possible cause	Solution
The color of the image looks pale.	The input signal type (RGBHV/YUV) might not have been connected properly.	Check to make sure that the connections between the projector and the input device are correct.
The image flashes occasionally.	<ol style="list-style-type: none"> 1. The cables might not have been properly connected or the input device itself may be faulty. 2. If the problem persists, it may also mean the lamp might be faulty. 	<ol style="list-style-type: none"> 1. Make sure the connector and the input device have been properly connected; check to see if the input device is in normal working order. 2. Replace the projector lamp.
The colors of the projected image are out of place (i.e. displaying red as blue).	The G/Y, R/Pr, B/Pb cables from the input might have been incorrectly connected to the input.	Please make sure the input source has been correctly connected to the projector.
The noise from the cooling fan suddenly grew louder.	The temperature inside the projector might have risen.	When the temperature inside the projector rises, the cooling fan will operate at a higher speed to discharge the internal heat more rapidly.
The LED indicator on the projector's front panel is blinking in red.	The lamp or the cooling fan could be faulty.	Refer to the definition of page 26: Status lights of LED .
<ol style="list-style-type: none"> 1. During projection, the lamp suddenly goes off and the picture disappears. 2. The lamp does not turn on even when the projector has been turned on. 	The lamp might have been damaged; check the LED indicator on the rear panel of the projector and see if it is blinking in red.	The lamp has reached the end of its service life; please replace it.

11. PROJECTOR SPECIFICATION

11.1 PFWU-51B Specifications

Description	Specifications
Projector type	Single-chip DLP projector
Technology	0.67" DMD
Color Wheel	5-segment (RGBWY)
Brightness*	4650 ANSI lumen
Brightness (eco-mode)*	3450 ANSI lumen
Resolution	WUXGA 1920 × 1200
Micro display	DLP 0.67" DMD
Contrast ratio	1800 : 1
Brightness uniformity ANSI	0.85%
Aspect Ratio	67%
Lens type	F LENS
Lamp	1 x 370W P-VIP
Lamp lifetime (ECO/Bright)	3500/1500
Transport with lamp	Yes
Orientation	table - ceiling
Integrated web server	Yes
3D	Yes
Keystone Correction	±40° Vertical
Ease of Use	Simplified OSD menu + Remote control
Input Resolutions	Up to WUXGA (1920x1200) 60Hz
Software tools	Projection Toolset
Control	IR; RS232; RJ45
Network connection	10/100 Base-T, RJ-45 connection
Projection lens - projection ratio	<ul style="list-style-type: none"> • R9832757: F lens (1.54-1.93:1, 1.25X) • R9832758: F lens (0.77:1 FIX) • R9832759: F lens (1.93-2.89:1, 1.5X)
Horizontal Lens Shift Range	-10%~+10%
Vertical Lens Shift Range	-30%~+110%
Input/Output ports	1 x HDMI 1 x DVI-D 1 x DISPLAYPORT 2 x VGA IN 1 x VGA OUT 1 x RGBHV 1 x YUV 1 x S-VIDEO 1 x VIDEO 1 x RJ-45 1 x 3D SYNC OUT
Power requirements	AC Input 100V - 240V (±10%) (auto ranging)
Power consumption in Bright mode	480W@100V/460W@240V
Power consumption in ECO mode	365W@100VAC/355W@240VAC
Power consumption in standby mode	<0.5W

Description	Specifications
Noise level Bright mode (typical at 25°C/77°F)	42dBA
Noise level ECO mode (typical at 25°C/77°F)	37dBA
Operational ambient temperature	5-35°C or 41-95°F
Operating humidity	10-85%
Dimensions (WxLxH)	460mmX446mmX209mm
Weight	±12kg (±26.5 lb.)
Shipping Dimensions	594X568X355mm
Shipping Weight from Factory	16.8kg
Certifications	CB test certificate US emc US safety CE emc and safety CCC emc and safety
Warranty	3 years standard warranty**

(*) Measurement, measuring conditions, and method of notation all comply with ISO 21118 international standards.

(**) Warranty and service conditions can differ from region to region. Contact your local sales or service representative for more details.

11.2 PFWX-51B Specifications

Description	Specifications
Projector type	Single-chip DLP projector
Technology	0.65" DMD
Color Wheel	5-segment (RGBWY)
Brightness*	4750 ANSI lumen
Brightness (eco-mode)*	3300 ANSI lumen
Resolution	WXGA 1280 x 800
Micro display	DLP 0.65" DMD
Contrast ratio	1800 : 1
Brightness uniformity ANSI	0.85
Aspect Ratio	67%
Lens type	F LENS
Lamp	1 x 370W P-VIP
Lamp lifetime (ECO/Bright)	3500/1500
Transport with lamp	Yes
Orientation	table - ceiling
Integrated web server	Yes
3D	Yes
Keystone Correction	±40° Vertical
Ease of Use	Simplified OSD menu + Remote control
Input Resolutions	Up to WUXGA (1920x1200) 60Hz
Software tools	Projection Toolset
Control	IR; RS232; RJ45
Network connection	10/100 Base-T, RJ-45 connection
Projection lens - projection ratio	<ul style="list-style-type: none"> • R9832757: F lens (1.62-2.03:1, 1.25X) • R9832758: F lens (0.81:1 FIX) • R9832759: F lens (2.02-3.03:1, 1.5X)
Horizontal Lens Shift Range	-10%~+10%
Vertical Lens Shift Range	-30%~+110%
Input/Output ports	1 x HDMI 1 x DVI-D 1 x DISPLAYPORT 2 x VGA IN 1 x VGA OUT 1 x RGBHV 1 x YUV 1 x S-VIDEO 1 x VIDEO 1 x RJ-45 1 x 3D SYNC OUT
Power requirements	AC Input 100V - 240V (±10%) (auto ranging)
Power consumption in Bright mode	480W@100V/460W@240V
Power consumption in ECO mode	365W@100VAC/355W@240VAC
Power consumption in standby mode	<0.5W
Noise level Bright mode (typical at 25°C/77°F)	42dBA

Description	Specifications
Noise level ECO mode (typical at 25°C/77°F)	37dBA
Operational ambient temperature	5-35°C or 41-95°F
Operating humidity	10-85%
Dimensions (WxLxH)	460mmX446mmX209mm
Weight	±12kg (±26.5 lb.)
Shipping Dimensions	594X568X355mm
Shipping Weight from Factory	16.8kg
Certifications	CB test certificate US emc US safety CE emc and safety CCC emc and safety
Warranty	3 years standard warranty**

(*) Measurement, measuring conditions, and method of notation all comply with ISO 21118 international standards.

(**) Warranty and service conditions can differ from region to region. Contact your local sales or service representative for

more details.

11.3 Standard Source Files

The unit automatically determines PC signals to select the appropriate resolution

Some signals may require manual adjustment.

Signal	Resolution	H-SYNC (KHz)	V-SYNC (Hz)	COMPOSITE		RGB (Analog)	DP/HDMI (Digital)
				S_VIDEO	COMPONENT		
NTSC	-	15.734	60	○	-	-	-
PAL/SECAM	-	15.625	50	○	-	-	-
PC	640 x 400	37.9	85.08	-	-	○	○
	# 720 x 400	31.5	70.1	-	-	○	○
	# 720 x 400	37.9	85.04	-	-	○	○
	640 x 480	31.5	60	-	-	○	○
	640 x 480	37.9	72.8	-	-	○	○
	640 x 480	37.5	75	-	-	○	○
	640 x 480	43.3	85	-	-	○	○
	800 x 600	35.2	56.3	-	-	○	○
	* 800 x 600	37.9	60.3	-	-	○	○
	800 x 600	46.9	75	-	-	○	○
	800 x 600	48.1	72.2	-	-	○	○
	800 x 600	53.7	85.1	-	-	○	○
	** 800 x 600	76.3	120	-	-	○	○
	1024 x 576	35.8	60	-	-	○	○
	1024 x 600	37.3	60	-	-	○	○
	1024 x 600	41.5	65	-	-	○	○
	* 1024 x 768	48.4	60	-	-	○	○
	1024 x 768	56.5	70.1	-	-	○	○
	1024 x 768	60	75	-	-	○	○
	1024 x 768	68.7	85	-	-	○	○
	** 1024 x 768	97.6	120	-	-	○	○
	1024 x 768	99	120	-	-	○	○
	1152 x 864	67.5	75	-	-	○	○
	* 1280 x 720	45	60	-	-	○	○
	* 1280 x 720	90	120	-	-	○	○
	1280 x 768	47.4	60	-	-	○	○
	* 1280 x 768	47.8	59.9	-	-	○	○
	* 1280 x 800	49.7	59.8	-	-	○	○
	1280 x 800	62.8	74.9	-	-	○	○
	1280 x 800	71.6	84.9	-	-	○	○
	** 1280 x 800	101.6	119.9	-	-	○	○
	*** 1280 x 1024	64	60	-	-	○	○
	1280 x 1024	80	75	-	-	○	○
	#1280 x 1024	91.1	85	-	-	○	○
	*** 1280 x 960	60	60	-	-	○	○
	1280 x 960	85.9	85	-	-	○	○
	*** 1360 x 768	47.7	60	-	-	○	○
	*** 1400 x 1050	65.3	60	-	-	○	○
	1440 x 900	55.5	59.9	-	-	○	○
	*** 1440 x 900	55.9	59.9	-	-	○	○
1440 x 900	70.6	75	-	-	○	○	
## 1600 x 1200	75	60	-	-	○	○	
## 1680 x 1050	64.7	59.9	-	-	○	○	
## 1680 x 1050	65.3	60	-	-	○	○	
## 1920 x 1200	74	60	-	-	○	○	
## 1920 x 1080	67.5	60	-	-	○	○	

Signal	Resolution	H-SYNC (KHz)	V-SYNC (Hz)	COMPOSITE		RGB (Analog)	DP/HDMI (Digital)
				S_VIDEO	COMPONENT		
Apple Macintosh	640 x 480	35	66.7	-	-	○	○
	832 x 624	49.7	74.5	-	-	○	○
	1024 x 768	60.2	74.9	-	-	○	○
	## 1152 x 870	68.7	75.1	-	-	○	○
SDTV	## 480i	15.734	60	-	○	-	○
	## 576i	15.625	50	-	○	-	○
EDTV	## 576p	31.3	50	-	○	-	○
	## 480p	31.5	60	-	○	-	○
HDTV	## 720p	37.5	50	-	○	-	○
	## 720p	45	60	-	○	-	○
	## 1080i	33.8	60	-	○	-	○
	## 1080i	28.1	50	-	○	-	○
	## 1080p	27	24	-	○	-	○
	## 1080p	28	25	-	○	-	○
	## 1080p	33.7	30	-	○	-	○
	## 1080p	56.3	50	-	○	-	○
	## 1080p	67.5	60	-	○	-	○

○: Supported frequency

-: Not Supported frequency

- "#" It means Displayable only. (4:3 only).
- "##" It means may have a little noise is acceptable, Because video mode sync don't auto adjustment.

*3D note:

- "" It means the timing can support non-3D and 3D signal with Frame Sequential and Top-Bottom format.
- "" It means the timing can support non-3D and 3D signal with Frame Sequential format.
- "" It means the timing can support non-3D and 3D signal with Top-Bottom format.

There 3D timing showing depend the EDID file and display card. It is possible that user cannot choose the above 3D timings on display card.

Table of Supported Frequency For 3D mode in detailed

The unit automatically determines PC signals to select the appropriate resolution.
Some signals may require manual adjustment.

Input Signal for D-SUB

Signal	Resolution	Refresh Rate (Hz)
SVGA	800 x 600	60/120
XGA	1024 x 768	60/120
HDTV (720p)	1280 x 720	60/120

Input Signal for HDMI/DVI-D

Signal	Resolution	Refresh Rate (Hz)
SVGA	800 x 600	60/120
XGA	1024 x 768	60/120
WSVGA (1024 x 600)	1024 x 600	60
HDTV (720p)	1280 x 720	60/120

True 3D Video Compatibility table

Input Resolutions	Input timing		
HDMI 1.4a 3D Input	1280 x 720P @ 50Hz	Top - and - Bottom	
	1280 x 720P @ 60Hz	Top - and - Bottom	
	1280 x 720P @ 50Hz	Frame packing	
	1280 x 720P @ 60Hz	Frame packing	
	1920 x 1080i @50 Hz	Side- by-Side (Half)	
	1920 x 1080i @60 Hz	Side- by-Side (Half)	
	1920 x 1080P @24 Hz	Top - and - Bottom	
	1920 x 1080P @24 Hz	Frame packing	
HDMI 1.3	1920 x 1080i @ 50Hz	Side-by-Side(Half)	SBS mode is on
	1920 x1080i @ 60Hz		
	1280 x 720P @50Hz		
	1280 x 720P @60Hz		
	1920 x 1080i @ 50Hz	Top-and-Bottom	TAB mode is on
	1920 x1080i @ 60Hz		
	1280 x 720P @50Hz		
	1280 x 720P @60Hz		
480i	HQFS	3D format is Frame sequential	

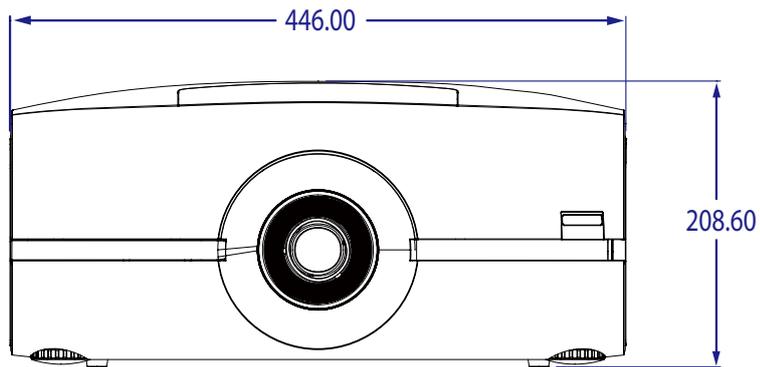
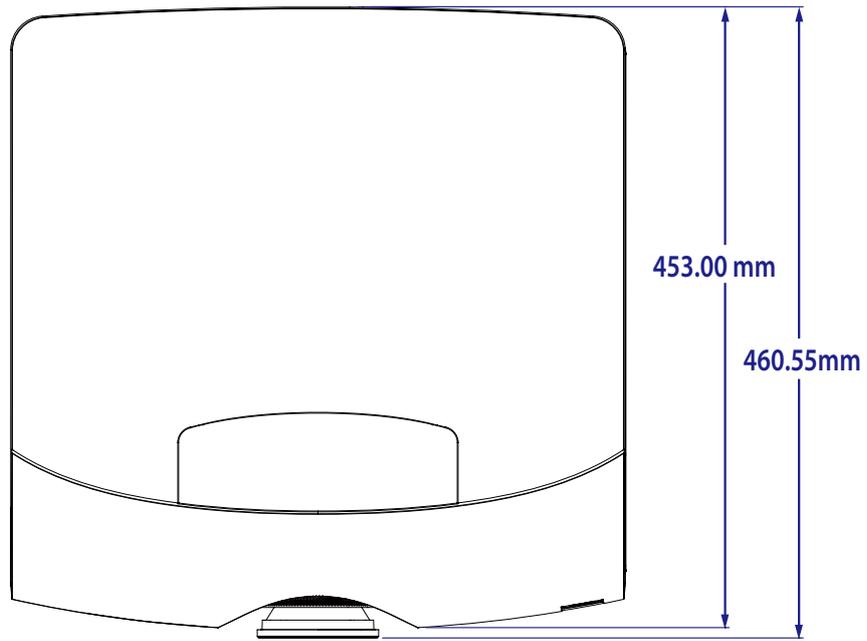
*Please make sure your 3D glasses has 144hz function.

*The native resolution of the panel is 1280 x 800 (for WXGA)/1920 x 1200(for WUXGA).

Resolution others than native resolution may be display with uneven size of text or line.

*HDTV timing main check tool is DVD player, VG828 is secondary.

11.4 Dimension



12. ENVIRONMENTAL INFORMATION

12.1 Disposal information

Disposal Information

Waste Electrical and Electronic Equipment



This symbol on the product indicates that, under the European Directive 2002/96/EC governing waste from electrical and electronic equipment, this product must not be disposed of with other municipal waste. Please dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

For more information about recycling of this product, please contact your local city office or your municipal waste disposal service. For details, please visit the Barco website at: <http://www.barco.com/en/AboutBarco/weee>

Disposal of batteries in the product



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

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

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

Mercury Notice



This Barco product consists of materials that may contain mercury, which must be recycled or disposed of in accordance with local, state, or country laws:

- Within this system, the lamp in the projector contains mercury.

12.2 Rohs compliance

Turkey RoHS compliance



Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur.

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

中国大陆 RoHS (Information for China ROHS compliance)

根据中国大陆《电子信息产品污染控制管理办法》(也称为中国大陆 RoHS) · 以下部份列出了本产品中可能包含的有毒有害物质或元素的名称和含量。



Table of toxic and hazardous substances/elements and their content, as required by China's management methods for controlling pollution by electronic information products.

本产品中包含的有毒有害物质/成分的名称和含量。

产品中有害有毒物质或元素的名称及含量列表

依据中国政府针对“电子信息产品污染控制管理办法”为控制和减少电子信息产品废弃后对环境造成的污染，促进生产和销售低污染电子信息产品，保护环境和人体健康，仅提供有关本产品可能含有有毒及有害物质如后：

部件名称	有害有毒物质或元素						
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)	
光机引擎(铝或铝镁合金)	X	○	○	○	○	○	
镜头	X	○	○	○	○	○	
灯泡	X	X	○	○	○	○	
点灯器	X	○	○	○	○	○	
弹片(快削磷铜)	X	○	○	○	○	○	
风扇组件	X	○	○	○	○	○	
灯泡盖保护开关	○	○	X	○	○	○	
温度开关	○	○	X	○	○	○	
基板组件	X	○	○	○	○	○	
缆线,线材	X	○	○	○	○	○	
电源线	X	○	○	○	○	○	
电源插座组件	X	○	○	○	○	○	
金属件(快削磷铜,铜钉等)	X	○	○	○	○	○	
遥控器	X	○	○	○	○	○	

○：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SJ/T11363-2006标准规定的限量要求以下。

×：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SJ/T11363-2006标准规定的限量要求。

备注：鉴于欧盟与中国对于RoHS的不同规定，本投影机产品符合欧盟RoHS指令(电气、电子设备中限制使用某些有害物质指令)，本表中标有“X”的所有部件均为欧盟ROHS指令所允许例外的部件。

12.3 Production address

Factories

Barco nv Entertainment Division

Noordlaan 5, B-8520 Kurne

Phone: +32 56.36.82.11

Fax: +32 56.36.883.86

Support: www.barco.com/esupport

Visit us at the web: www.barco.com

