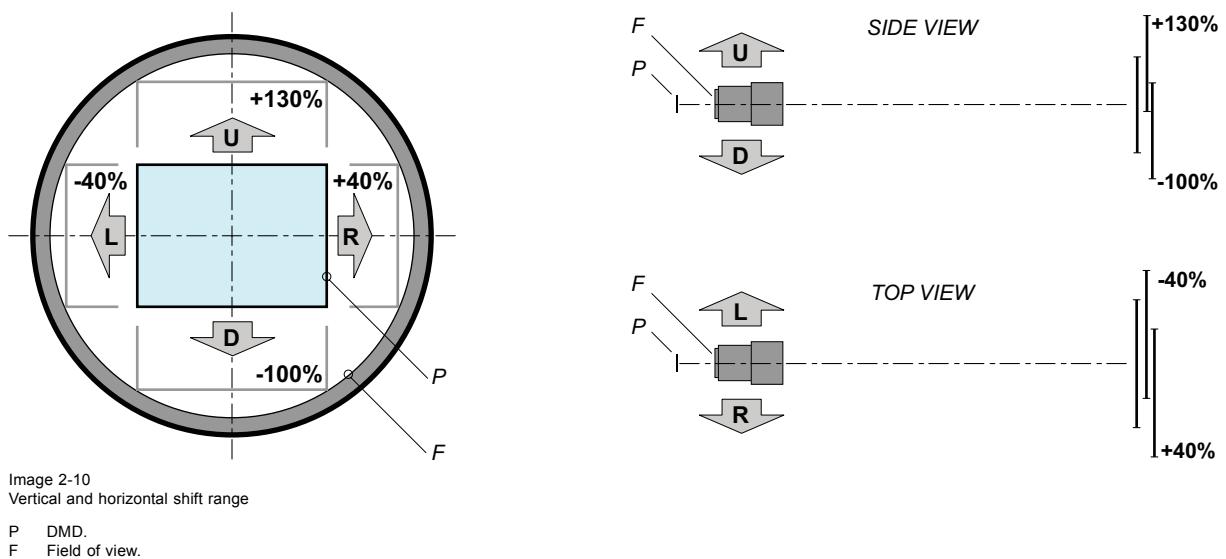


2. Installation preparations



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



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

Horizontal and vertical projector tilt ranges

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

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

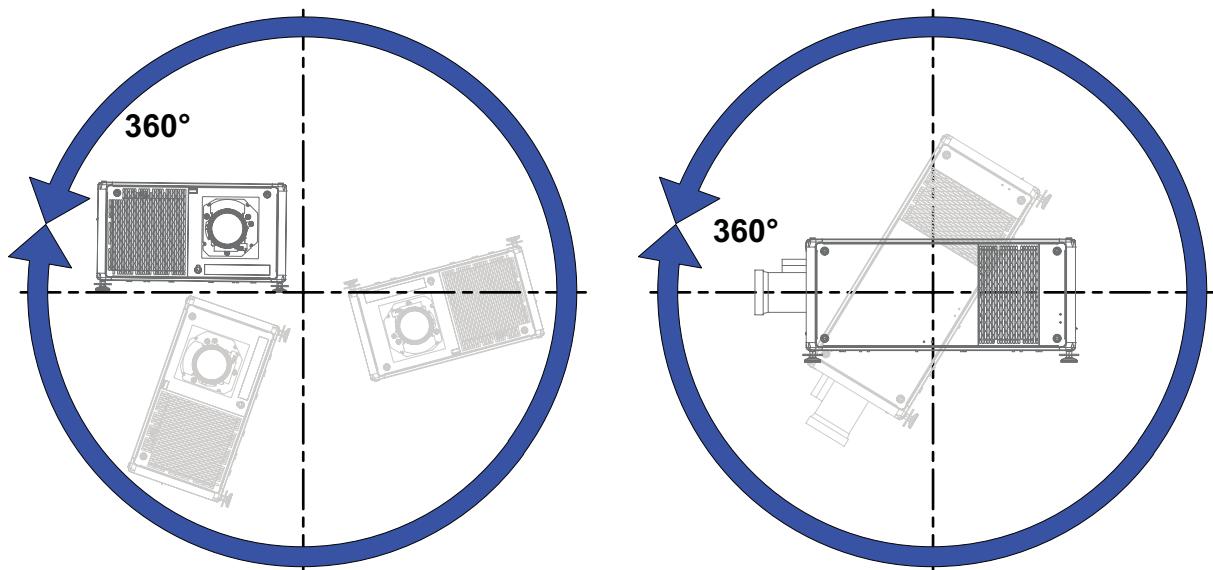


Image 2-11

2.6 Projector air inlets and outlets

Air inlets and outlets

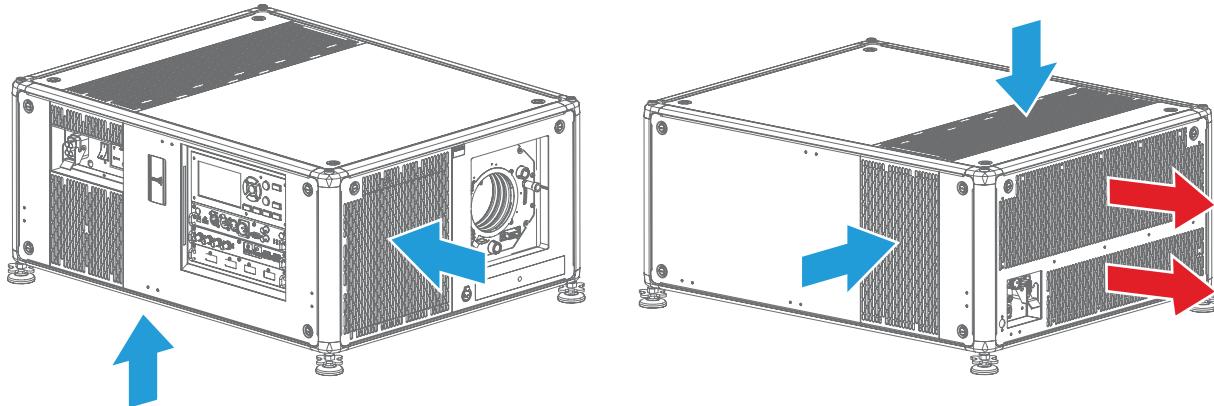


Image 2-12

The UDX has 4 air inlet channels and 2 air outlets. The air outlets are located at the rear of the projector. The air inlets are located at the top, bottom and right side of the projector.

2.7 Free download of Projector Toolset

About Projector Toolset

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

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

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

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

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



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

Where to find the download file(s)

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

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

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

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

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

Installation

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

3. PULSE REMOTE CONTROL UNIT

3.1 Remote control, Battery installation

Where to find the batteries for the remote control ?

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

How to install

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

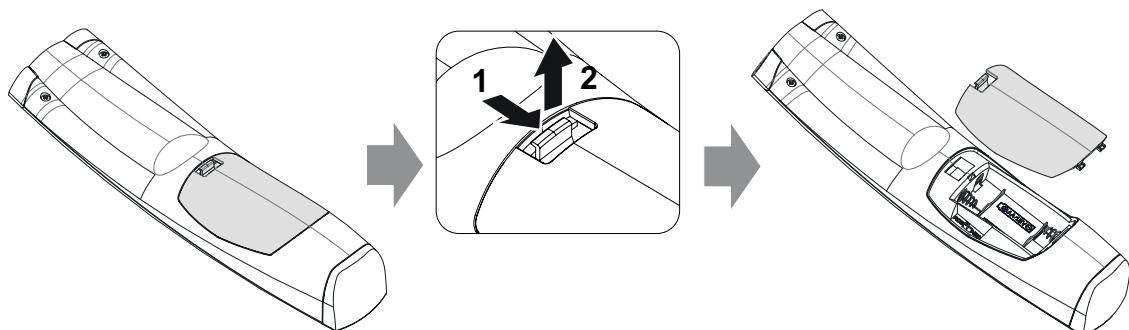


Image 3-1

2. Insert the two AA size batteries, making sure the polarities match the + and - marks inside the battery compartment.

Tip: Use alkaline batteries for optimum range and life time.

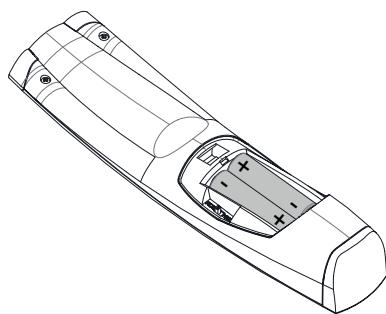


Image 3-2

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

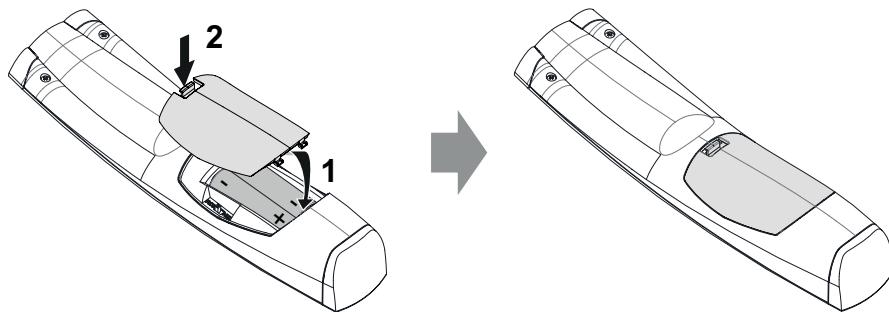


Image 3-3

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





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



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

3.2 Remote control, protocol setup

About the used protocol

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

Which protocol to use

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

How to set

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

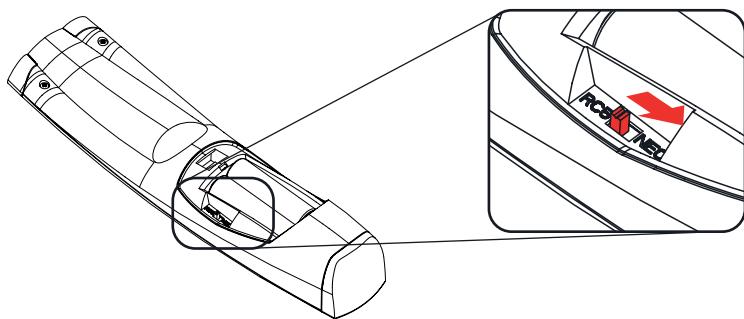


Image 3-4

Remark with RC5 protocol

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

3.3 Remote control, on/off button

Purpose of the remote control on/off button

The Pulse remote control unit has at the front side an on/off switch (reference 1 image 3-5). Switching off the remote control prevents that unwanted commands are send due to an accidental key press. Furthermore, switching the RCU off will extend the battery life time of the remote control.

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

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

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

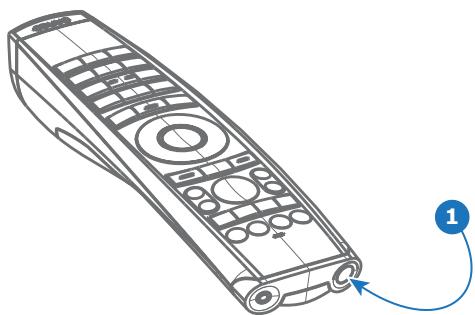


Image 3-5

3.4 Functions of the “button pressed indicator”

Functions button pressed indicator

- Rapidly flashes when commands are sent, this is the normal “button pressed” indication.
- 1 Short flash when remote control is switched ON by means of the on/off button.
- Continuously lit (up to 5 seconds) when address digits are expected after pressing the ADDR button.
- Slowly flashes (2 times a second) when the battery level is becoming low; typically when more than 85% of the useful life is past.

3.5 Displaying and Programming addresses into the RCU

Displaying the Projector Address on the Screen.

1. If the projector is on, press the menu key and navigate to the Status page. The projector address and the broadcast address can be seen under the Communication heading.

The projector's address is displayed on the LCD status screen and / or the OSD.

How to Program an Address into the RCU?

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

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

Tip: *A few examples:*

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

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

3.6 Using the XLR connector of the RCU



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

How to use the XLR connector

1. Remove the XLR cover by pulling it backwards.

3. Pulse Remote Control Unit

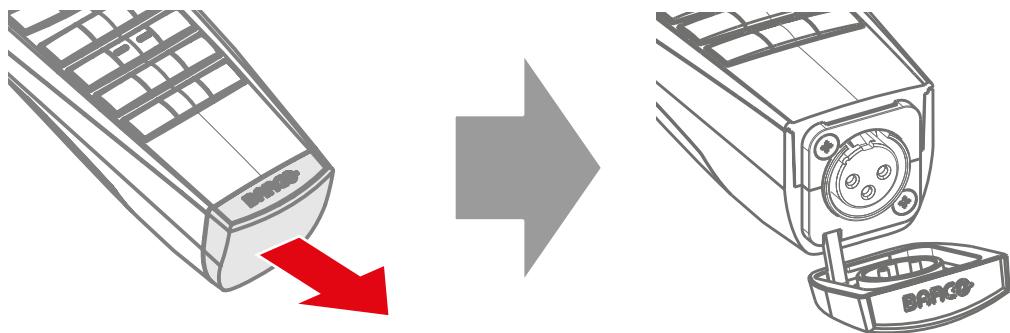


Image 3-6

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

3.7 Using the mini-jack connector of the RCU



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

How to use the mini-jack connector

1. Connect a cable with the mini-jack connector (reference 2 image 3-7) of the RCU.
2. Connect the other end of the cable with the mini-jack input of the projector.

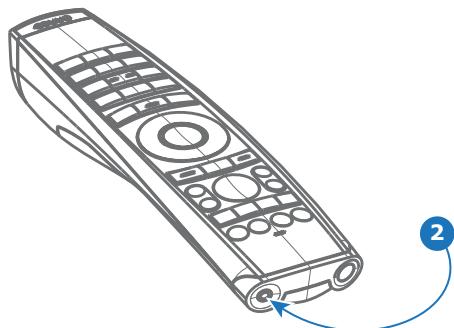


Image 3-7

3.8 Silicone protection sleeve for the RCU (optional)

Introduction

Barco offers a silicone form fitting protection sleeve for the Pulse RCU. The silicone material keeps it comfortably, non slip and soft touch. All buttons and holes remain accessible. The sleeve is quick and easy installed. For ordering information see Barco website.

How to install

1. Pull off the rubber XLR-lid from the RCU.



Image 3-8

2. Place back side (XLR side) of the RCU into the sleeve and pull the other side of the sleeve over the front side of the RCU.

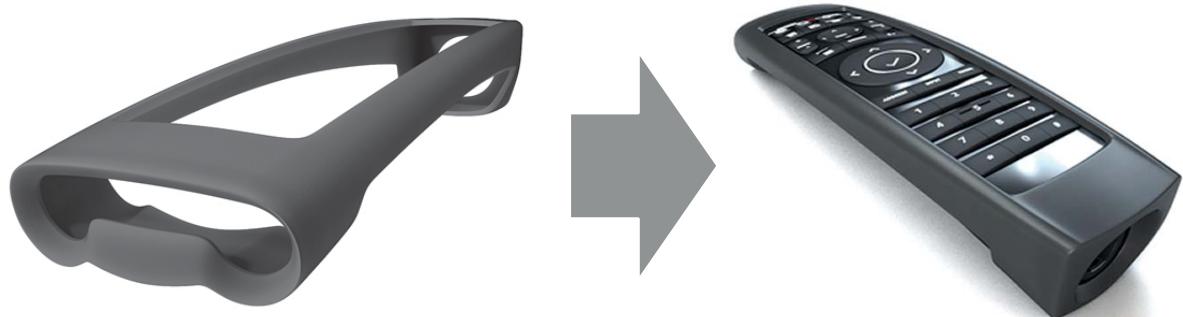


Image 3-9

4. PHYSICAL INSTALLATION

Overview

- Connecting the projector with the power net
- Alignment of a table mounted projector

4.1 Connecting the projector with the power net



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

How to connect with local power net

1. Ensure that the power switch stands in the '0' (OFF) position (reference 1 image 4-1).

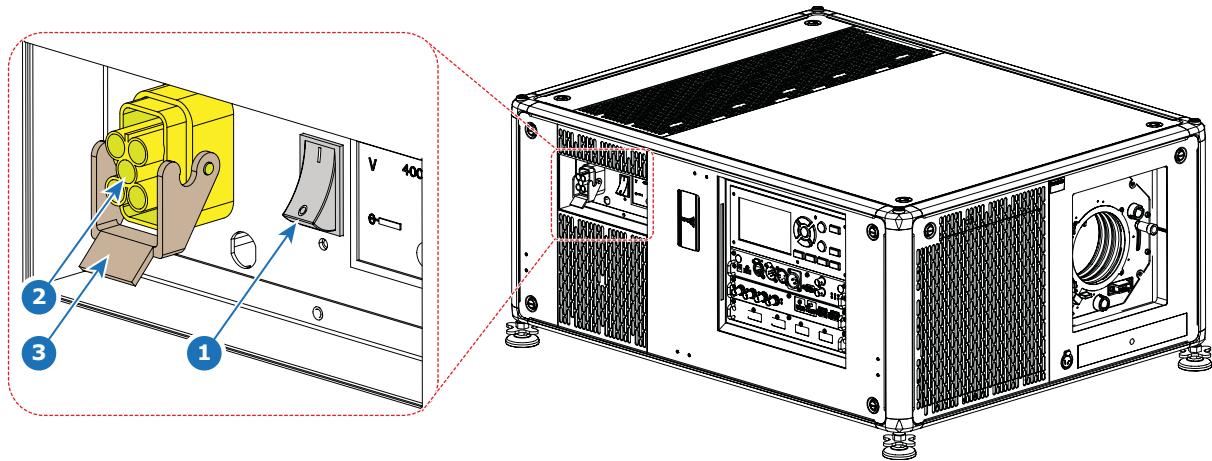


Image 4-1
Power input

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

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



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



CAUTION: Once the projector is switched to standby, the cooling fans will continue to run for approximately 30 seconds to ensure that the projector and light source have sufficiently cooled, at which point the fans will automatically decrease to standby. To avoid thermal stress that can lead to premature light source failure, never unplug the power cord while the cooling fans are running. Never unplug the power cord to power down the projector, first switch off the power switch and then unplug the power cord.

Fuses

The projector is protected with an automatic circuit breaker of 25 A which is built into the power switch.

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

4.2 Alignment of a table mounted projector

How to align

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

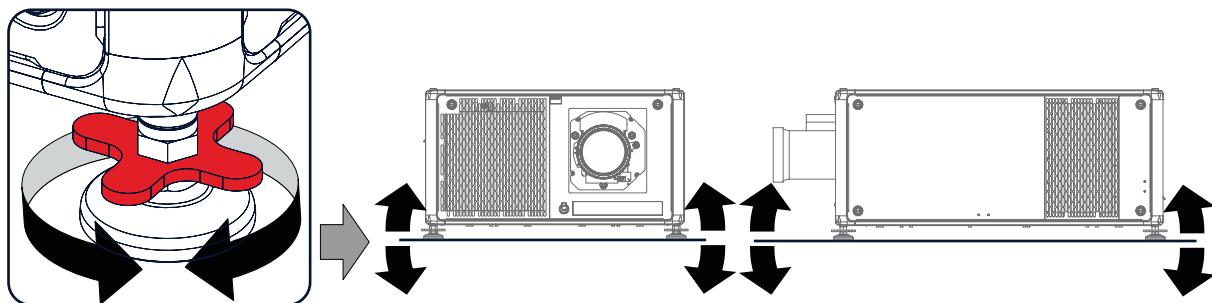


Image 4-2
Level alignment

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

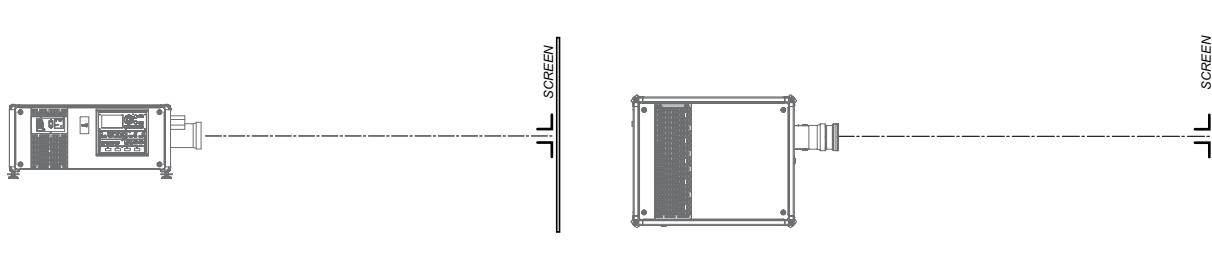


Image 4-3
Angle adjustment

5. LENSES & LENS SELECTION

Overview

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

5.1 Available lenses



WARNING: Only use TLD+ ZOOM lenses on the 4k variants of the UDX projectors. Using other lenses can touch and damage the mechanics of the build-in Actuator! This can result in loud rattling noises and a damaged Actuator.

Limited amount of available lenses

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

An extra warning label has been added on the lens holder of the 4k projectors to raise awareness of this limit.



Available lenses for the UDX projector

Only the following **TLD+ ZOOM** Lenses can be used on the 4k UDX projector. Do not use other types of lenses.



Image 5-2
R9801414: TLD+ zoom lens (0.8 - 1.16 : 1)



Image 5-3
R9862005: TLD+ zoom lens (1.16 - 1.49 : 1)



Image 5-4
R9862010: TLD+ zoom lens (1.5 - 2.0 : 1)



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



Image 5-6
R9862030: TLD+ zoom lens (2.8 - 4.5 : 1)



Image 5-7
R9862040: TLD+ zoom lens (4.5 - 7.5 : 1)



Image 5-8
R9829997: TLD+ zoom lens (7.5 - 11.2 : 1)

5.2 Lens selection

How to select the right lens

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

The Lens Calculator window opens.

The screenshot shows the Barco Lens Calculator interface for the UDX 4k32 projector. The 'Projector UDX 4k32' section is selected. In the 'Projector settings' area, the projector distance is set to 2.96 m, and the projector brightness is at 100%. The 'Screen dimension settings' area shows a screen ratio of 16:9 (selected), a screen width of 4 m, a screen height of 2.5 m, a screen diagonal of 4.72 m, a screen gain of 1, and an ambient light level of 4 lux. The 'Available lenses for UDX 4k32' section lists several lenses with their respective throw ratios and lens codes. The 'Simulation' section provides top, side, and screen views of the projector setup. A 'Feedback' button is visible on the right.

Image 5-9
Lens calculator



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



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

5.3 Lens installation



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

How to install

1. Place the lens holder in the “unlocked” position. Do this by pulling the lens lock handle (reference 1, image 5-10) outward and then towards the lens power supply socket (reference 2) as illustrated.

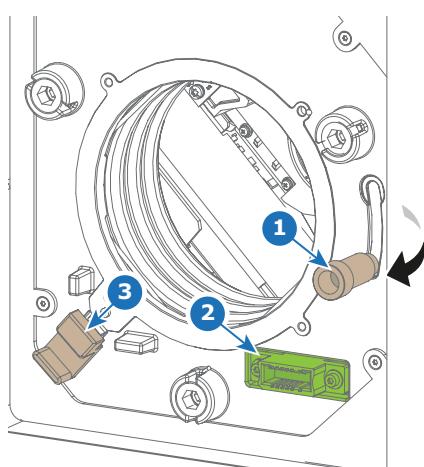


Image 5-10
Lens installation, preparation

2. Remove the dust cover from the lens opening.

5. Lenses & Lens selection

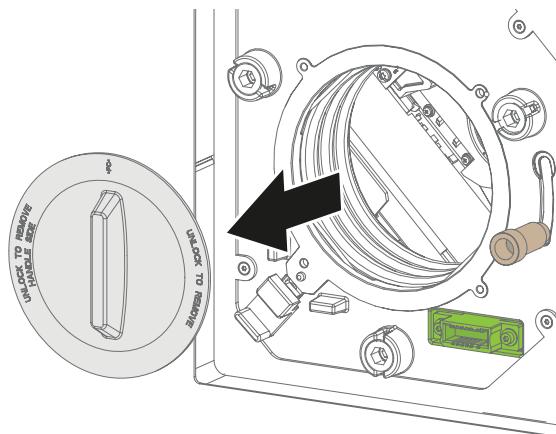


Image 5-11

Tip: While not placed in the projector, place the dust cover in a lockable plastic bag to prevent dust from gathering on the cover.

3. Check if the secondary lens lock stands in the unlocked position (reference 3). If not, pull it slightly outwards until you hear an audible clicking sound.
4. Take the lens assembly out of its packing material and remove the lens caps on both sides.
5. Gently insert the lens in such a way that the lens connector matches the socket (reference 2).

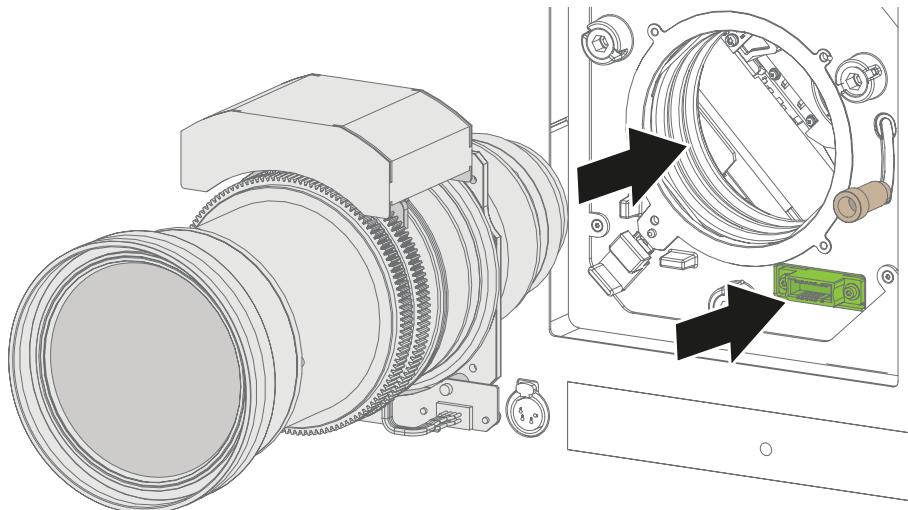


Image 5-12
Lens installation

6. Insert the lens until the connector seats into the socket and the secondary lock (reference 3) makes an audible clicking sound.

Warning: Do not release the Lens yet, as the Lens may fall out of the Lens Holder.

7. Secure the lens in the lens holder by sliding the primary lens lock handle into the "locked" position (to the top of the projector). Ensure the lens touches the front plate of the lens holder.

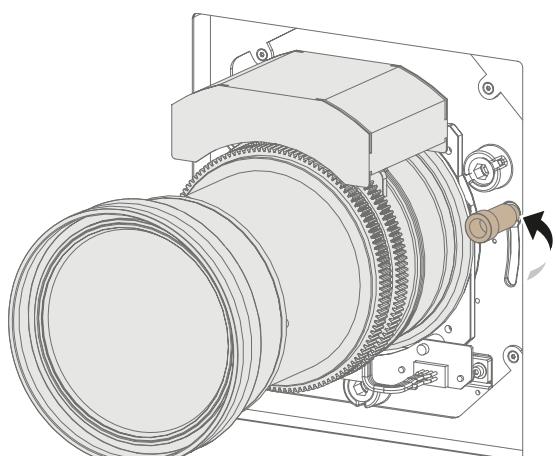


Image 5-13
Lock lens

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

5.4 Lens removal

How to remove

1. Support the lens with one hand while you unlock the lens holder by sliding the primary lock handle outwards and then towards the "unlocked" position as illustrated (image 5-14).

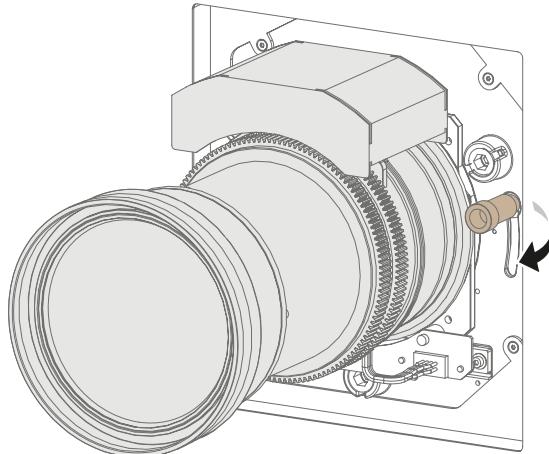


Image 5-14
Unlock the lens

2. Pull down the secondary lock on the lower left side of the lens holder as illustrated (image 5-15).
3. Gently pull the lens out of the lens holder.

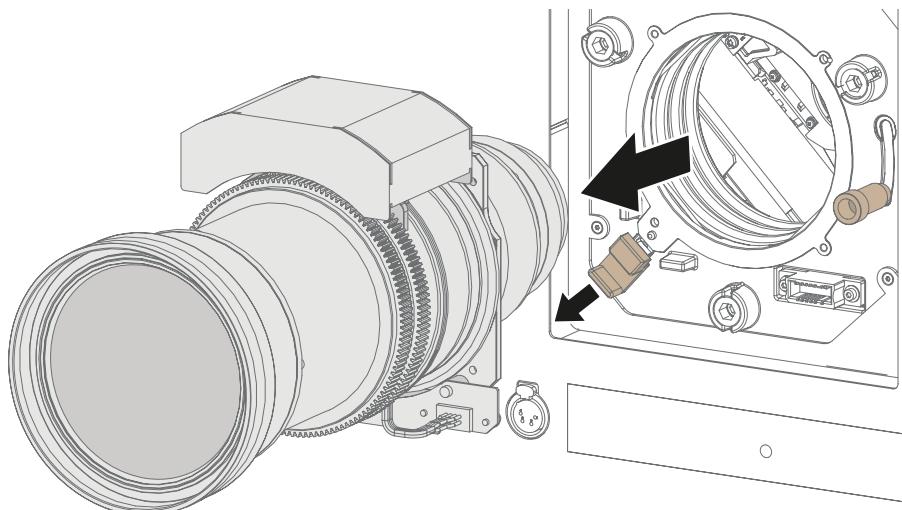


Image 5-15
Lens removal



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



It's recommended to place the dust cover of the original projector packaging back into the lens opening to prevent intrusion of dust.

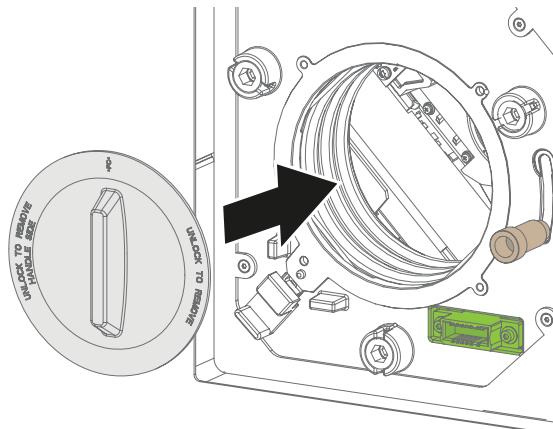


Image 5-16

5.5 Scheimpflug adjustment

What is Scheimpflug?

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

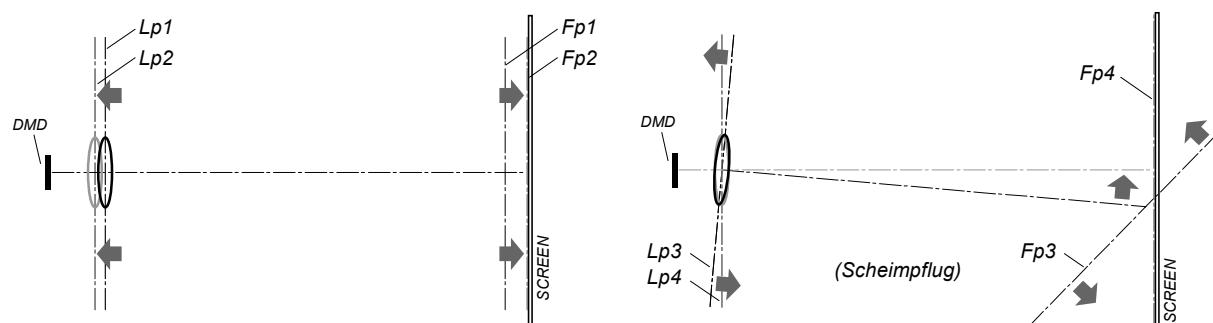


Image 5-17
Scheimpflug principle



Scheimpflug principle

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