

BLACK WING MK 2019



v1.2

User manual
R599900

Changes

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1.0 SAFETY INSTRUCTIONS

1.1 Important Information

Lead-free regulation

This product has a High Intensity Discharge (HID) lamp that contains a small amount of mercury. It also contains lead in some components. Disposal of these materials may be regulated in your community due to environmental considerations. For disposal or recycling information please contact your local authorities, or the Electronics Industries Alliance: <http://www.eiae.org>. Call 1-800-252-5722(For USA) or 1-800-964-2650(For Canada)

Information for Users on Disposal of Old Equipment



This symbol indicates that the electrical and electronic equipment should not be disposed as general household waste at its end of life. Instead, the product should be handed over to the applicable collection point for the recycling of electrical and electronic equipment for proper treatment, recovery and recycling in accordance with your national legislation.

For more information about collection point and recycling of this product, please contact your local municipal office, your household waste disposal service or the shop where you purchased the product. Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

1.2 Regional Specific Information

CE mark and Directive 2011/65/EU - ROHS 2 (Europe only) In accordance with Article 7 and the adoption into national law by 2nd January 2013, this product has been designed and manufactured in accordance with Article 4. The technical documentation and the written declaration of conformity that assesses the product conformity can be provided to the competent National Authority upon an email request to: rohs2@cineversum.com

Other Countries outside the European Union:

If you wish to dispose of this product, please do so in accordance with applicable national legislation or other rules in your country for the treatment of old electrical and electronic equipment.

FCC Information (USA only)

Changes or modification not approved by Cineversum could void the user's authority to operate the equipment. Note: This equipment has been tested and found to comply with the limits for Class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

CAN ICES-3 (A) / NMB-3 (A)



To reduce the risk of electric shock, do not remove cover. Refer servicing to qualified service personnel. This projector is equipped with a 3-blade grounding type plug to satisfy FCC rule. If you are unable to insert the plug into the outlet, contact your electrician.

1.3 Important Safeguards

Electrical energy can perform many useful functions. This unit has been engineered and manufactured to assure your personal safety. **IMPROPER USE CAN RESULT IN POTENTIAL ELECTRICAL SHOCK OR FIRE HAZARD.** In order not to defeat the safeguards incorporated into this product, observe the following basic rules for its installation, use and service.



The power input is auto-ranging from 100 to 240 VAC.

Do not install the projector in a place that cannot support its weight securely. If the installation place is not sturdy enough, the projector could fall or overturn, possibly causing personal injury.

SAFETY INSTRUCTIONS

Please read these Important Safeguards carefully before use.

- All the safety and operating instructions should be read before the product is operated.
- All warnings on the product and in the operating instructions should be adhered to.
- All operating instructions should be followed.
- Place the projector near a wall outlet where the plug can be easily unplugged.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Do not use attachments not recommended by the product manufacturer as they may be hazardous.
- Do not use this product near water. Do not use immediately after moving from a low temperature to high temperature, as this causes condensation, which may result in fire, electric shock, or other hazards.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. The product should be mounted according to the manufacturer's instructions, and should use a mount recommended by the manufacturer.
- When the product is used on a cart, care should be taken to avoid quick stops, excessive force, and uneven surfaces which may cause the product and cart to overturn, damaging equipment or causing possible injury to the operator.



Slots and openings are provided for ventilation must not be blocked or covered. Do not place this unit on a bed, sofa, rug or other similar surface.

- This product should be operated only with the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company.
- This product is equipped with a three-wire plug. This plug will fit only into a grounded power outlet. If you are unable to insert the plug into the outlet, contact your electrician to install the proper outlet. Do not defeat the safety purpose of the grounded plug.
- Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at doors, plugs, receptacles, and the point where they exit from the product.
- For added protection of this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the product due to lightning and power line surges.
- Do not overload wall outlets, extension cords, or convenience receptacles on other equipment as this can result in a risk of fire or electric shock.
- Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
- Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltages and other hazards. Refer all service to qualified service personnel.
- Unplug this product from the wall outlet and refer service to qualified service personnel under the following conditions:
 - a) When the power supply cord or plug is damaged.
 - b) If liquid has been spilled, or objects have fallen on the product.
 - c) If the product has been exposed to rain or water.
 - d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the Operation Manual, as an improper adjustment of controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
 - e) If the product has been dropped or damaged in any way.
 - f) When the product exhibits a distinct change in performance - this indicates a need for service.
- When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or with same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- The product should be placed more than one foot away from heat sources such as radiators, heat registers, stoves, and other products (including amplifiers) that produce heat.
- When connecting other products such as VCR's, and personal computers, you should turn off the power of this product for protection against electric shock.
- Do not place combustible behind the cooling fan. For example, cloth, paper, matches, aerosol cans or gas lighters that present special hazards when over heated.



Do not look into the inside of this unit through vents (ventilation holes). Do not stare into the beam. The light is so powerful that your eyesight can be impaired. **RG2** from the IEC 62471-5:2015 classification.

- Do not drop, hit or damage the light-source lamp (lamp unit) in any way. It may cause the light source lamp to break and lead to injuries. Do not use a damaged light source lamp. If the light source lamp is broken, ask your dealer to repair it. Fragments from a broken light-source lamp may cause injuries.
- The light-source lamp used in this projector is a high pressure mercury lamp. Be careful when disposing of the light source lamp. If anything is unclear, please consult your dealer.
- Do not ceiling-mount the projector to a place which tends to vibrate; otherwise, the attaching fixture of the projector could be broken by the vibration, possibly causing it to fall or overturn, which could lead to personal injury.
- The power supply rating of this product is AC100V – AC240V, the power cord attached conforms to the following power supply voltage. Use only the power cord designated by our dealer to ensure Safety and EMC.
- When it is used by other power supply voltage, power cable must be changed. Ensure that the power cable used for the projector is the correct type for the AC outlet in your country. Consult your product dealer.
- Caution: Do not allow any unqualified person to install the unit. Be sure to ask your dealer to install the unit (e.g. attaching it to the ceiling) since special technical knowledge and skills are required for installation. If installation is performed by an unqualified person, it may cause personal injury or electrical shock.

1.4 Image projector classification



IEC62471-5 labels located at the top front of this unit.



As with any bright light source, do not stare into the beam when this unit is operating. This unit is rated **RG2** from the IEC 62471-5 classification.

2.0 INSTALLATION GUIDELINES

2.1 Introduction

The Blackwing Series projectors are equipped with a three-chip LCoS light engine capable of projecting a picture resolution of 4096 x 2160 pixels (true 4K). The highest model of the Blackwing Series is the Blackwing Elite that can display pictures up to 8192 x 4320 pixels resolution thanks to the new 8K Interpolation engine. 8K resolution is more than 17 times Full-HD resolution.

Supported 2D signals and pixel depth

480p, 576p, 720p@50/60Hz, 1080i@50/60Hz, 1080p@24/50/60Hz

4Kp@24/25/30Hz and UHD: 3840x2160@24/25/30Hz (up to RGB and YCbCr 4:4:4 12 bits pixel depth)

4Kp@50/60Hz and UHD: 3840x2160@50/60Hz (YCbCr 4:2:2 up to 12 bits pixel depth or up to 8 bits for RGB and YCbCr 4:4:4). Note that the native resolution of this projector is 17:9 ratio, 4096x2160 pixels, 16:9 signals such as 3840x2160@24/25/50/60Hz or Full-HD are supported and will need to be masked on left and right to eliminate light leaking on the sides of the screen.

Supported 3D signals

This unit is compatible with 3D playback. The source can be connected using one of the two available HDMI inputs and will be up-scaled to 4K resolution. The inputs are compatible with the following 3D formats:

- 1080p @ 23.98/24 Hz - Frame Packing, Top & Bottom and Side-by-Side
- 720p @ 50 or 59.94/60 Hz - Frame Packing, Top & Bottom and Side-by-Side
- 1080i/p @ 50/60 Hz - Side-by-Side

2.2 THX 4K Display Certification (Blackwing Elite model only)



The THX 4K Display certification proves that the Blackwing Elite has undergone over 400 individual tests to ensure color, tone and images reproduce the director's intentions accurately in 4k: Amongst the important points, the THX labs have verified upscaling, motion processing, correct gamma and color accuracy, overscan and scaling. The 4K Display label ensures that the Blackwing Elite is capable of performing the best images and pristine video performances, sharper pictures and finest Ultra-HD experiences.

2.3 Environment of Use

Do not install in this following conditions

This unit is a precision device. Please refrain from installing or using it at the following locations. Otherwise, it may cause fire or malfunction.

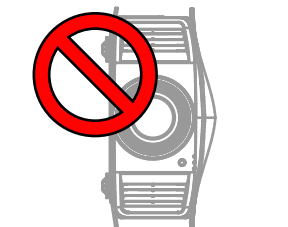
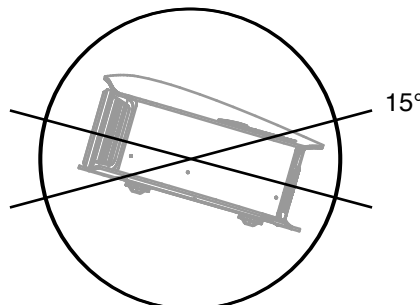
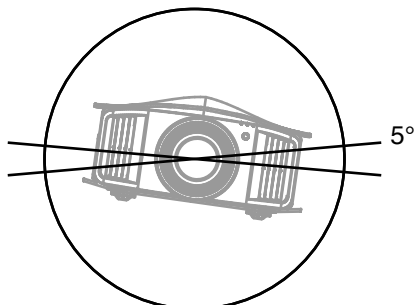
- Projection with the unit laid on sides.
- Dusty, wet and humid places
- Places subject to oily smoke or cigarette smoke
- On top of a carpet or bedding, or other soft surfaces
- Places exposed to direct sunlight
- Do not install this unit in a room that is oily or subject to cigarette smoke. Even a small quantity of smoke or oiliness can have a long-term impact on this unit.
- Projection at a place exposed to air blasts from an air conditioner.



This unit produces a great amount of heat, and is designed to take in cool air to cool its optical components. Using the unit at the above locations may cause dirt to attach to the light path, thereby resulting in dark images or dull colors. Dirt that sticks to the optical components cannot be removed.

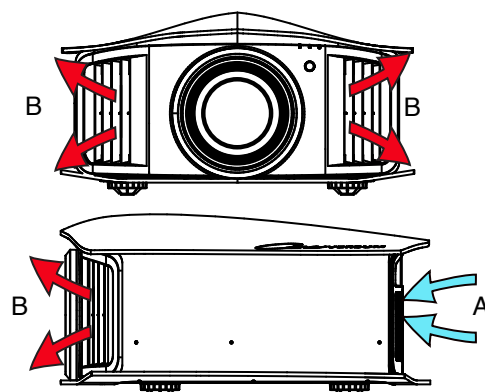
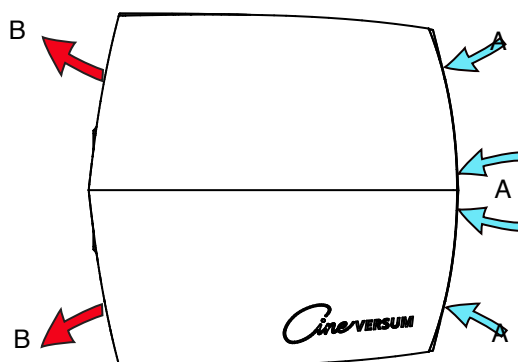
Allowed Inclination during operation

Due to the lamp position and operating angle, this unit is not allowed to operate with more than 5° angle horizontally and 15° angle vertically. This unit cannot be operated on the side.



2.4 Air-Flow and Space Requirements

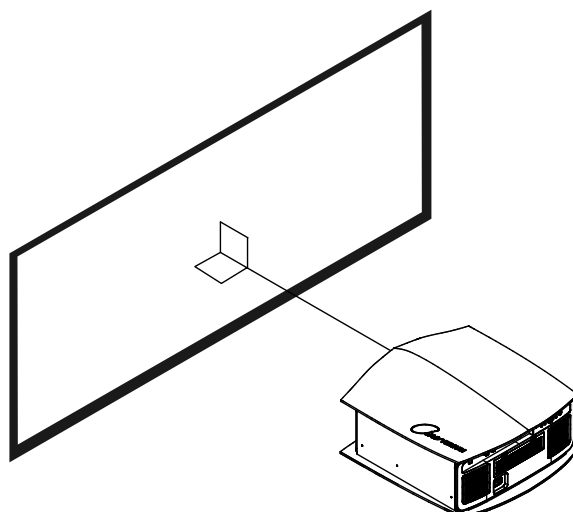
This unit can be installed in table, ceiling, rear table or rear ceiling position. Make sure that the unit is installed within the space requirements described below (A: air inlets, B: air outlets). This unit needs at least 30 cm of non-obstructed space on each sides and 15 cm on top to allow sufficient air flow.



Air flow.

2.5 Installing the projection screen

Install the projection screen and this unit such that they are perpendicular to each other as showed in the picture below.



Place this unit perpendicular to the screen.



Use the electronic shift and zoom to correct the picture size and position as needed. You can also use the feet to adjust the projected picture level.

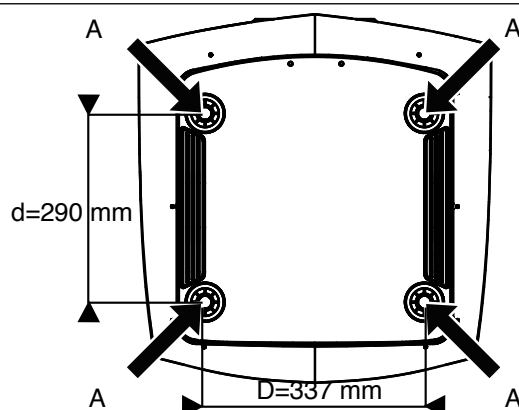
Screen material suitable for 4K/8K projection.

To optimize the sharpness and detailing of the picture, please choose a screen material optimized for ultra High resolution (UHD 4K) or 8K if you are installing a Blackwing Elite. Avoid any material with uniform patterns as checks that may cause interference artefacts to occur. If this is the case, you can try to slightly change the size of the projected image to make the interference patterns less noticeable.

2.6 When to use the High Altitude mode

When using this unit at a location that is higher than 900 meters or 3000 feet above sea level and making the air pressure low enough to decrease its efficacy cooling this unit, set the "High Altitude Mode" to "On".

2.7 Ceiling Mounting the Unit



When mounting of this unit is required, make use of the 4 screw holes (M5x20 screws) at the bottom of this unit indicated by the letter A. You can remove the feet to insert the ceiling mount screws. Allow sufficient space around the air inlets to avoid blocking them.

Precautions for Ceiling-mount

- To ceiling-mount this unit, special expertise and techniques are necessary. Be sure to ask your dealer or specialist to perform mounting.
- Do not mount at places that may be subjected to vibration and shock.
- Depth of the screw holes (A) is 23 mm. Use at least 13 mm long screws but not longer than 23 mm as you may damage inside the projector.
- Install at a safe place in case this unit or a part of it may drop. If the light-source lamp is broken, small pieces

of glass from the mesh of the filter may appear outside the unit.

- Regardless whether the unit is still under guarantee, Cineversum is not liable for any product damage caused by mounting the unit with third party ceiling mount or when the environment is not suitable for ceiling-mount.

Dimensions

- Distances between left and right holes is $D = 337 \text{ mm}$.
- Distances between front and back holes is $d = 290 \text{ mm}$.

2.8 Projection Distance

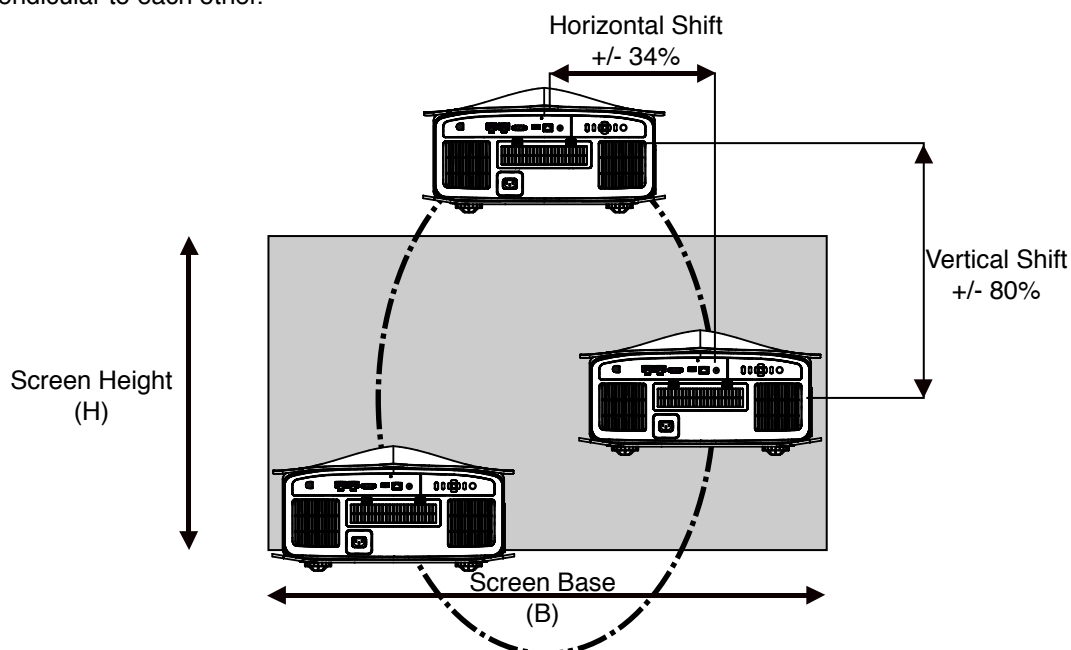
Projection Screen Diagonal Size (Aspect Ratio 16:9)	Projection Screen Base Size (Aspect Ratio 16:9)	Projection Screen Height (Aspect Ratio 16:9)	Blackwing Series Projection Distance
60" (152 cm)	52.3" (133 cm)	29.4" (747 cm)	178 cm - 366 cm
70" (178 cm)	61.0" (155 cm)	34.3" (872 cm)	209 cm - 428 cm
83" (211 cm)	72.3" (184 cm)	40.7" (103 cm)	251 cm - 507 cm
110" (279 cm)	95.9" (244 cm)	53.9" (137 cm)	331 cm - 675 cm
138" (350 cm)	120.3" (306 cm)	67.7" (172 cm)	418 cm - 843 cm
150" (350 cm)	130.7" (332 cm)	73.5" (187 cm)	453 cm - 860 cm
180" (457 cm)	156.9" (306 cm)	88.2" (224 cm)	545 cm - 1107 cm
200" (508 cm)	174.3" (443 cm)	98.1" (249 cm)	606 cm - 1230 cm
230" (584 cm)	200.5" (509 cm)	112.8" (286 cm)	694 cm - 1405 cm
250" (635 cm)	217.9" (553 cm)	122.6" (311 cm)	755 cm - 1528 cm
280" (711 cm)	244.0" (620 cm)	137.3" (349 cm)	846 cm - 1713 cm

- The projection screen sizes and projecting distances in the table above are provided only as a guide. Please use them as reference during installation.
- 230" up to 280" diagonal screens available with Blackwing Elite models only.

2.9 Setting the Lens and using Lens Memories

Adjust the picture position

The optimum image can be obtained when the centre of this projector's lens and the screen are placed perpendicular to each other.



This unit comes with a vertical and horizontal shift to suit most installations. Make sure that your installation does not exceed 80% vertical offset and 34% horizontal offset to avoid trapezoidal correction.

This unit comes with a optical shift that features vertical and horizontal adjustment of the projection screen

position.

Adjust the picture to your screen.

- The Vertical Shift level is between -80% and 80% of the Screen Height (0.80 x H).
- The Horizontal Shift level is between -34% and 34% of the Screen Base (0.34 x B).
- If the projector is not installed perpendicularly to the screen, use keystone correction to fulfill your screen. Note that using keystone correction, may be disabled by 3D projection. If you want the best possible 3D pictures, It is not recommended to use trapezoidal correction.
- If you plan to use the vertical and horizontal shifts without keystone correction, make sure to not exceed the values contained in the tab below for the Blackwing One and Blackwing Two:

Left / Right shift	0%	10%	20%	25%	30%	34%
max. up / down shift	80%	66%	47%	34%	18%	0%

- The Blackwing Elite has an extended shift range as follow:

Left / Right shift	0%	10%	20%	25%	30%	35%	43%
max. up / down shift	100%	87%	72%	58%	45%	22%	0%

• Adjust the picture position

The projector has motorized vertical and horizontal shifts. Browse into the Menu to the [Lens Control] setting into the Installation menu, select the shift adjustment. Or use the direct access button on the Remote Control Unit [Lens Control] to make the lens adjustment. You can use self-generated test pattern of the projector or an external pattern, from a calibration DVD by example, by setting the Adjust pattern option to Off.

• Adjust the picture Zoom

Into the [Lens Control] menu, press the [Ok] button to access the Zoom adjustment. Use the up and down buttons to adjust the picture size until the screen is completely filled.

• Adjust the Picture Focus

From the [Lens Control] menu, press the [Ok] button to access the Focus adjustment. Use the up and down buttons to adjust the picture focus

Using Installation Modes

You can save the current picture position, zoom and focus into one of the 10 Installation Modes. Each Installation Mode uses a memory that stores the current position, zoom, focus of the lens. Additionally, you can set a custom name of 10 characters or less.

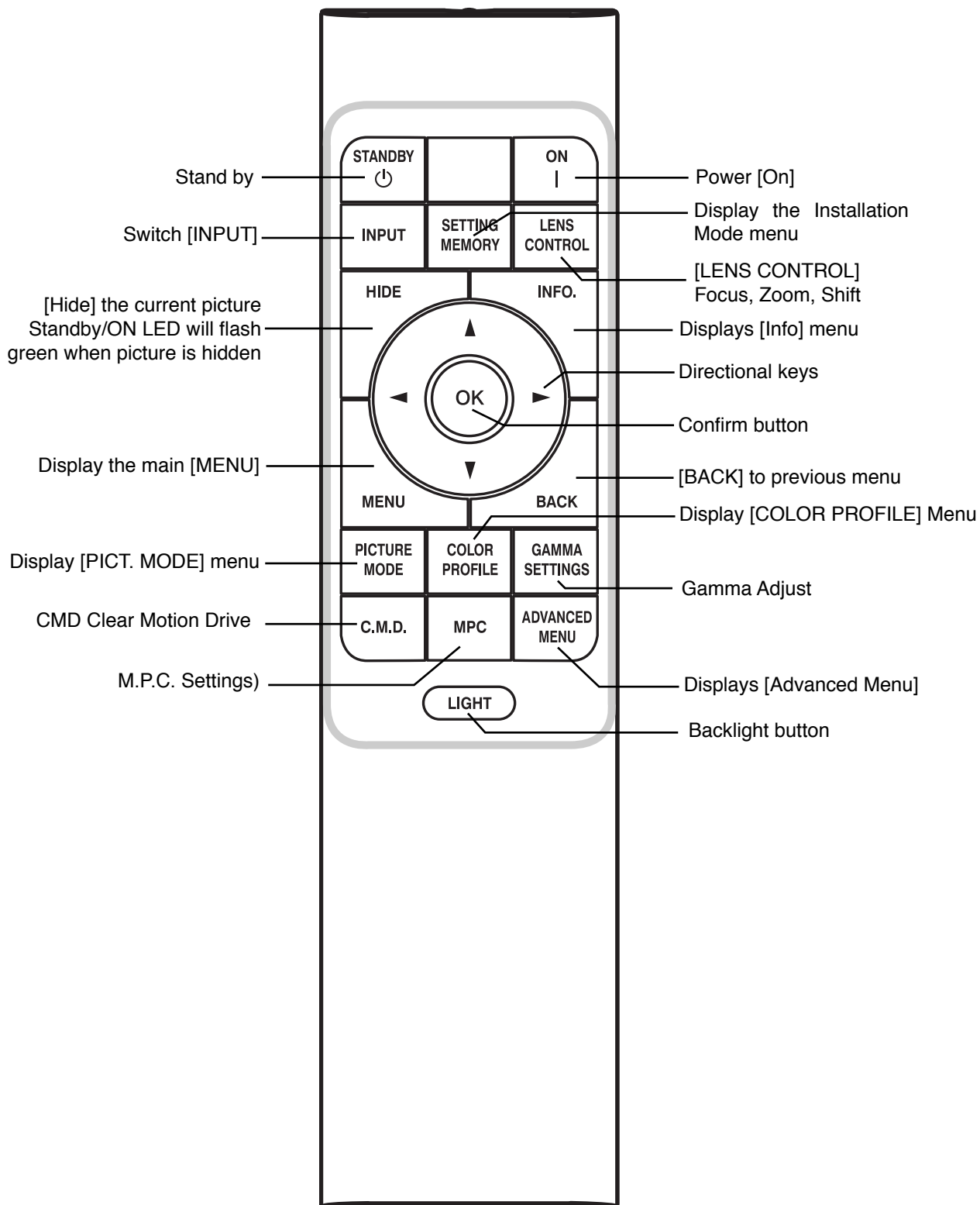
• Current lens setup

All the lens settings will be stored by default into the Installation Mode 1. You can also copy a Mode into another using the Mode Copy function. Menu > Installation > Installation Mode > Mode Copy. Then you can call back anytime later the current lens setup using the direct access button [Mode 1] up to [Mode 3] on the RCU.

• Limitations of use

Each memory can store a different picture size and position, but there are limitations on the possible pictures sizes and positions because of the projector being at a fixed location. In order to calculate the best position of the projector toward the screen, the installer has to make sure that among the different desired pictures, the smaller one with the smaller zoom, is within the offset limits (horizontal and vertical shifts) of the projector. Once the position of the projector is determined by the smallest possible picture, double check that the larger one does not exceed the zoom capacity.

3.0 REMOTE CONTROL UNIT (RCU)



The remote control unit can be used by having the signal reflected off a screen, as the effect of signals reflected differs with the type of screen used, operable distance may decrease.

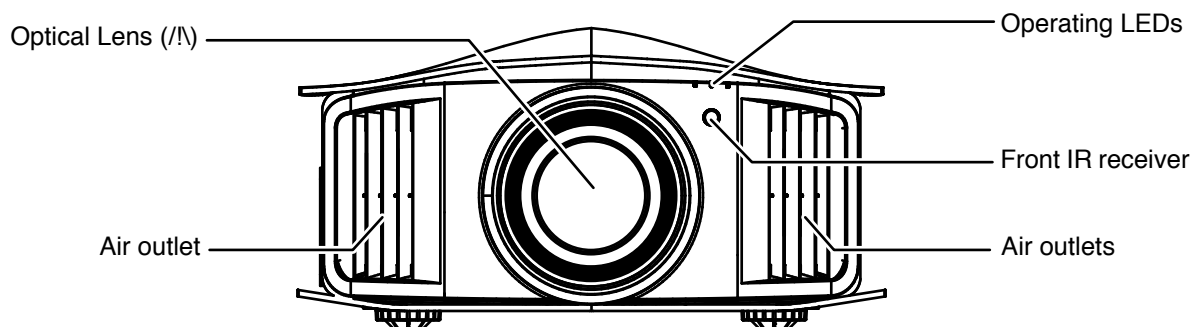


If the remote control has to be brought closer to the projector to operate, it means that the batteries are wearing out. When this happens, replace the batteries. Always insert the batteries according to the + and - marks.

4.0 GETTING STARTED

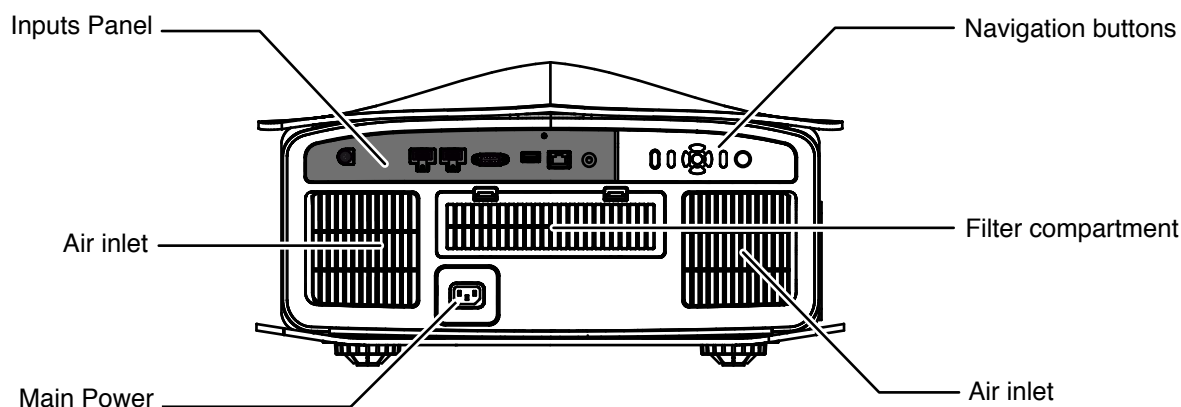
4.1 General View

Front side



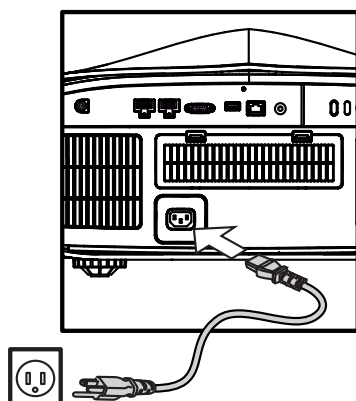
(!/!)Optical Lens: This unit comes with a lens plastic cover that is used to protect the lens during transport. Please remove the lens before first operation.

Rear side



- Input Panel: connect your video source to the correct input.
- Main Power: connect the power cord as shown below.

4.2 Connecting the Power Cord

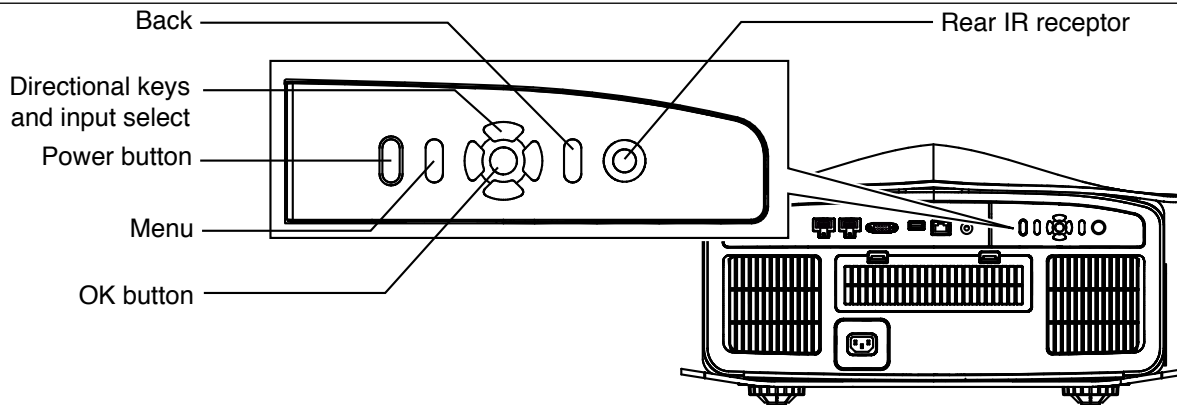


- Before plugging in the Power Cord, ensure that all devices have been connected to their respective inputs of this unit.
- Connect the power cord to the power input terminal of the projector.



When in Cool Down mode, do not pull out the plug from the outlet. Also, do not block the air inlets or exhaust vents by standing the projector on its end or laying it on its side.

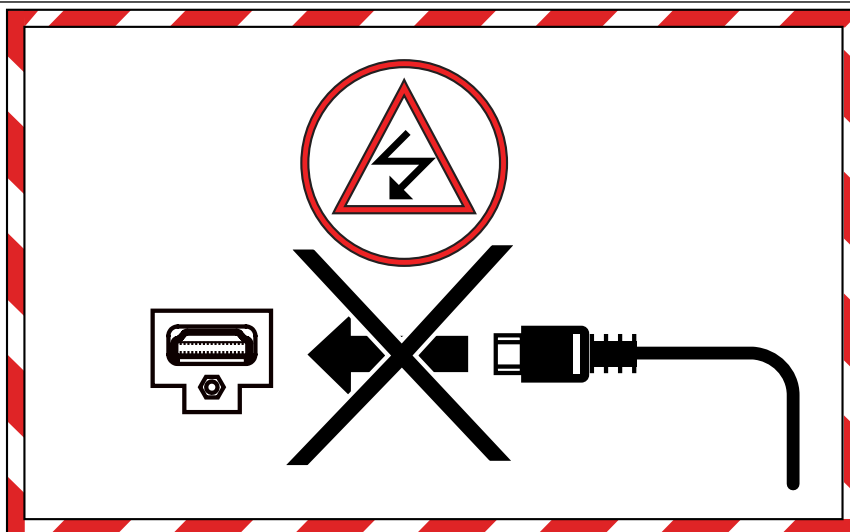
4.3 Operating and Navigation Buttons



Button	Description
Back	To return to previous menu or cancel action.
Directional keys and input select	Use the Navigation Keys to navigate into the On Screen Display (OSD) Menu. Up and Down keys may be used to switch Inputs between HDMI1 and HDMI2 when no OSD menu is shown.
Power button	To display the On Screen Display (OSD) Menu.
Menu	To display the On Screen Display (OSD) Menu.
OK button	To select or to confirm action.

5.0 CONNECTIONS

5.1 Caution when connecting a Device to HDMI Input

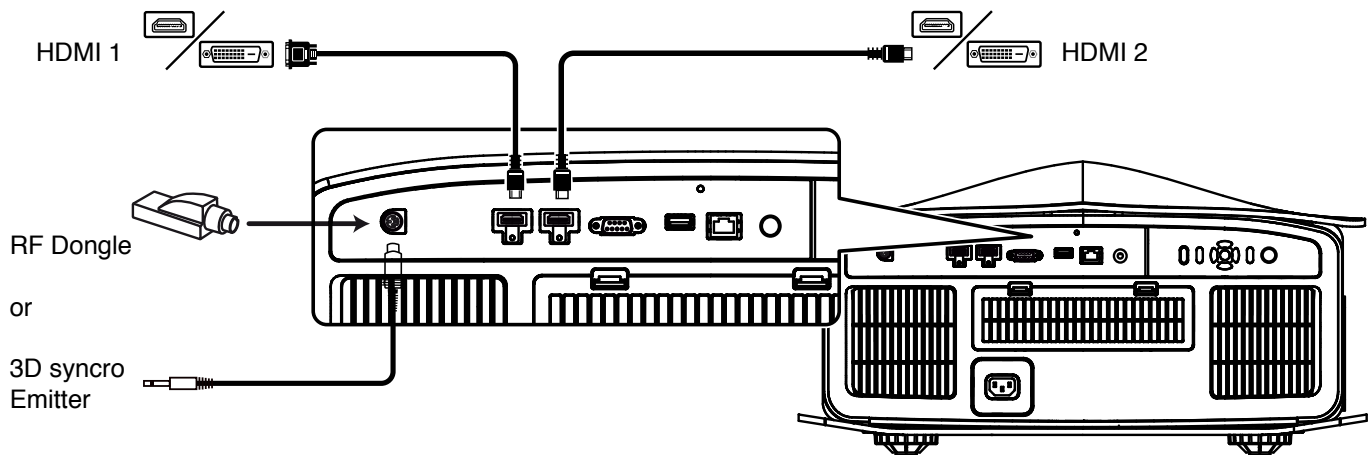


Prior to connecting any device to this unit, switch the projector in standby mode. Never connect a HDMI source to this unit when the projector is in operate mode. The HDMI termination is a self-powered connection and can cause electric discharges.



The HDMI 2.0 inputs are compatible with HDCP 2.2 and supports video signals up to 18 Gbps. It is strongly recommended to use exclusively cables rated for 18 Gbps bandwidth to watch 4K contents, otherwise this unit will suffer from handshake issues and video freezes.

5.2 Connecting a Video Source to the Projector

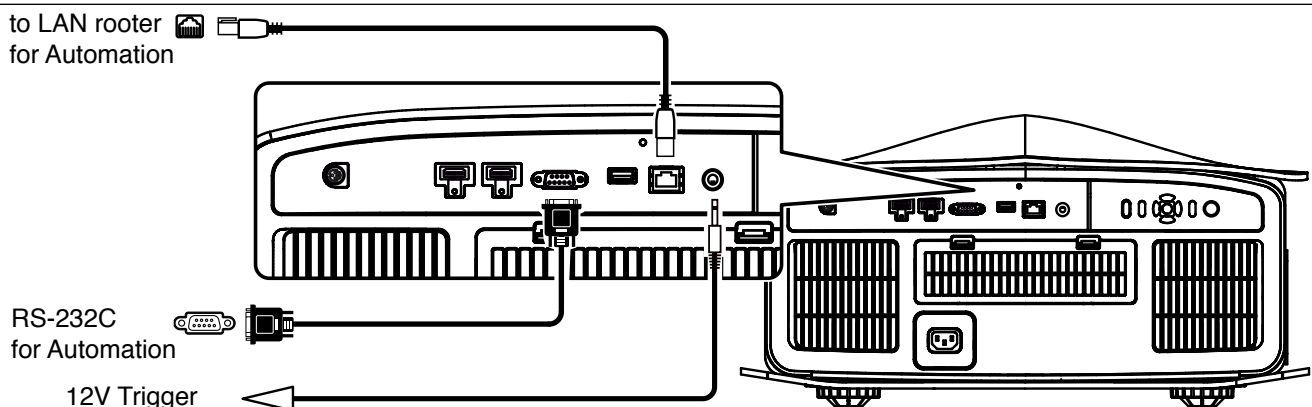


Audio/Video Connection	Device to connect
HDMI 1, HDMI 2 (DVI compatible)	HDMI or DVI-D sources: Blu-ray Disc player, DVD-player equipped with an HDMI output, Game Console, Computer with DVI-D output.
RF Dongle or 3D Synchro Emitter	Connect the RF Dongle emitter to control the active 3D shutter glasses or any other 3D Synchro apparel. 3-PIN mini-DIN interface, 12V.



This unit supports up to 4Kp60 inputs, make sure to use high quality HDMI cables rated for at least 4K HDMI 2.0 standards (18 Gbps).

5.3 Connecting an Automation or Control device



Connection	Device to connect
RS-232 C	Automation Device, Control Device or Computer with RS-232 capability.
12V Trigger	DC power supply output 12V@100mA to control either a screen or an anamorphic lens motorization.
LAN	Automation Device, Control Device or Computer with RJ-45.



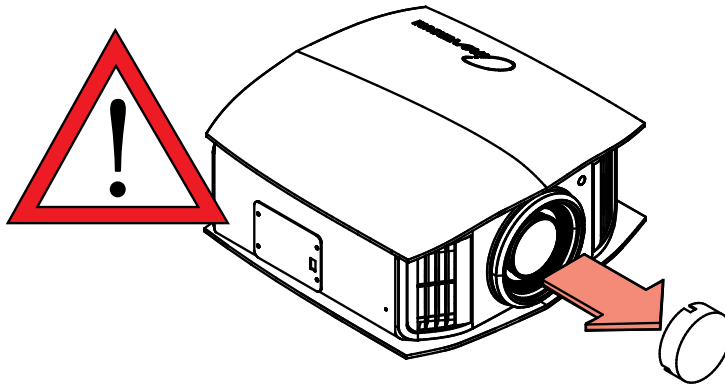
CONNECTING AN AUTOMATION/CONTROL DEVICE

This unit can control or be controlled by using several input/output terminals. Each terminal is ruled by specific protocols. Please refer to Appendix for more information.



ECO Mode turn to On prevents this unit to receive and to respond to automation commands when it is in standby. Turn Off ECO mode if you plan to take full control of this unit with an automation system.

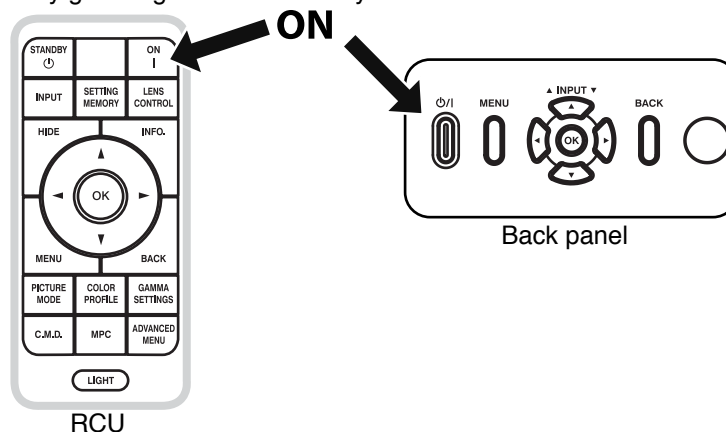
6.0 FIRST START UP



Always remove the lens cover or lens protection before powering up this unit. To power up this unit, make sure that the power cord is connected to the power input terminal.

6.1 Turn the power ON

You can turn ON this unit with the remote control unit (RCU) or directly pressing the power button located on the back panel. During startup procedure, this unit Standby/Power LED will blink green. Wait until complete power ON indicated by a steady green light on the Standby/Power LED.



If "Eco mode" is On, the standby led will not be light up red during Standby mode.

Select the correct Input

Once this unit is powered ON, please select the correct Input by pressing the corresponding button on the Remote Control Unit or the O/I button on the back panel of this unit.

6.2 Turn the Power Off

You can turn OFF this unit by using either the RCU or the Power button on the rear control button panel.

Press the Standby button and a message appears on the screen to ask to confirm the command. You can cancel the command by pressing the "Back" button or turn off the device by pressing the "Standby" button again.

The Standby LED will switch from steady green to blinking red light and the fans will run for about 10 seconds to finish the shutdown procedure. During this Cool-down sequence, do not disconnect the power cord. The cool-down procedure is finished when the "Standby/On" LED indicator stops blinking red and switches to a solid red.



The power cannot be turned off within approximately 80 seconds after it has been turned on. The power cannot be turned On again until the Cool-down sequence (10 seconds) is complete.



It is recommended to disconnect the power plug when the unit is not to be used for a prolonged period of time (superior to one week) to avoid any electrical hazards.

7.0 MENU STRUCTURE

MAIN MENU	SUBMENU	AVAILABLE OPTIONS	
Picture Adjust	Picture Modes (4+6 User)	(Video and drama programs) (Vivid colors suitable for all movies) (HDR10 movies, auto tone mapping) (HDR movies using Hybrid Log) (Movie films N.A. with Blackwing One) (Blackwing Elite only)	Natural Cinema HDR10 HLG Film THX User 1 - 6
		Expert Picture Modes (*) require individual calibration	THX bright(*) THX dark(*)
	Advanced Picture Mode (press OK to enter this menu)	Lamp Power	Low, High
		Aperture	Auto 1 Auto 2 Manual: -15 +0
	Color Profiles the list varies upon the selected Picture Mode	User Name Edit (if f User 1 - 6 selected) Edit name	10 char. max
		(HDTV REC-709) (Movies REC 2020) (Cinema DCI-P3) (Drama or Live events) (Animations) (Movies with enhanced colors) (HDR contents) (Eastman Kodak movies) (Fujifilm movies) (Blackwing Elite only)	BT.709 BT.2020 DCI Video Anime Cinema HDR Film1 Film2 THX
	(*) require individual adjustment and/or calibration		Off Custom 1 - 6(*)
	Advanced Color Profile	Color Management:	Off / On
		Color selection Axis Position Hue Saturation Reset	-30 +30 -30 +30 -30 +30 Confirm
	Color Temp	Xenon Modes (Film projector) (DCI projector)	Xenon 1 Xenon 2
		Preset value: 5500K, 6500K, 7500K, 9300K, High Bright, HDR10, HLG, Custom 1-2	
	Advanced Color Temp	If Custom 1-2, choose Correction Value	
		Gain and Offset Reset	settings Confirm
	Gamma	If Color Profile is Film1 or 2 (Blackwing Two & Blackwing Elite only) (standard) (more contrasted)	Film1 Film2 Custom1 to 3
		If Color Profile is THX (Blackwing Elite) If Color Profile is not Film nor THX	THX Normal, 2.2, 2.4, 2.6, Cinema 1, Cinema 2 HDR (PQ), HDR (HLG) Custom 1, Custom 2

MENU STRUCTURE

Picture Adjust	Advanced Gamma	If Custom 1 or 2, Gamma Corr. Value	
		1.8 - 2.6 (within 0.1 steps)	
		Cinema 1, Cinema 2	
		HDR (PQ), HDR (HLG)	
		Import	
		Auto Tone Mapping	On, Off
		Mapping Level	-7 +7
		Color Selection	White / Red / Green / Blue
		Picture Tone	-16 +16
		Dark Level	-7 +7
		Bright Level	-7 +7
		Reset	Confirm
	MPC Level / MPC e-shift	8K e-shift (Blackwing Elite only, NA with 3D)	
		On(8K), Off(4K)	
		Graphic Mode	Standard, High-Res (4K)
		Enhance	0 - 10
		Smoothing	0 - 10
		Noise Reduction	0 - 10
		Reset	Confirm
	Motion Control	Low Latency (NA with 3D and if CMD is On)	
		On, Off	
		Clear Motion Drive (NA if Low Latency is On)	
		Off, Low, High, Inv. telecine	
		Motion Enhance (NA with 3D)	Off, Low, High
	Contrast		-50 +50
	Brightness		-50 +50
	Color		-50 +50
	Tint (reddish to greenish)		-50 +50
	Reset Profile settings		Confirm
Input Signal	Input level	Auto	
		16 - 235 (Video)	
		0 - 255 (PC)	
		16 - 255 (S. White)	
	Color Space	Auto,	
		YCbCr444	
		YCbCr422	
		RGB	
	3D Setting	3D format	
		Auto / Side-by-Side / Top & Bottom / 2D	
		Parallax	-15 +15
		Crosstalk Cancel	-8 +8
	HDR Settings	HDR10 Auto Select	HDR10, User 1 to 6, Off
		HLG Auto Select	HLG, User 1 to 6, Off
	HDMI2 EDID (HDMI2 only)		A, B
Installation	Installation Mode	Mode Select	Mode 1 - Mode 10
		Name Edit	10 char. max
		Mode Copy	Select Mode and Confirm
	Lens Control	Focus	
		Zoom	
		Shift	
		Image Pattern	On, Off
		Lock	On, Off
		Lens Center	Confirm
	Pixel Adjust	Adjust	On, Off
		Adjust Area	Whole, Zone
		Adjust Color	Red, Blue
		Adjust Pattern	On, Off
		Adjust Pattern Color	White - Cyan/Yellow

Installation	Pixel Adjust	Adjust (Pixel) Adjust (Fine) Reset	Confirm
	Mask	On, Off Top, Bottom, Left, Right	0 - 220
	Anamorphic		Off, A, B, C
	Screen Adjust (Color Profile must be On)	Screen No.	000 - 255 On, Off
	Installation Style	Front, Ceiling Mount, Rear, Ceiling Mount (Rear)	
	Keystone (vertical)	(N.A. if Pincushion is On)	-16 +16
	Pincushion	(N.A. if Keystone On)	0 - 16
	Aspect		Zoom Auto Native
Display Setup	Back Color (when no signal)		Blue, Black
	Menu Position		select position
	Signal Display (active input)		On, Off
	Logo		On, Off
	Language	select between 13 languages	
Function	Trigger		Off Power Anamo Inst. Mode 1 - Inst. Mode 10
	Off Timer (in hours)		1H, 2H, 3H, 4H, Off
	ECO Mode		On, Off
	Network	DHCP Client	On, Off
		IP Address	192.168.0.2
		Subnet Mask	255.255.255.0
		Default Gateway	192.168.0.254
		Mac Address	Display MAC
		Set	Confirm
	Remote Code	Press [Menu] + [Back]	A, B
	High Altitude Mode	(900m or higher)	On / Off
	Lamp Reset		
	Factory Reset		
	Software Update		
Information	Display Information menu		

8.0 PICTURE ADJUST

8.1 Picture Modes and Color Profiles

The preset Picture Modes are available and they can be applied to any input. A picture mode retains the picture adjustments. When adjusting the Picture Mode, you can also select pre-configured Color Profiles.

Type of source	Movie or HDTV	Dramas or Videos	HDR sources	Film	THX
Picture mode	Cinema	Natural	HDR10 / HLG	Film	THX
Color Profiles	BT.709	BT.709	BT.709	Film 1	THX
	BT.2020	BT.2020	BT.2020	Film 2	
	DCI	DCI	DCI		
	Video	Anime	HDR		
	HDR	HDR			

There is a total of 6 Picture Mode presets for Blackwing One, 6 for Blackwing Two models and 5 User. For each profile, you may choose one of the available Color Profile presets:

- Film 1 available with Film Picture Profile, uses the Xenon filter and adjusted to Eastman Kodak film tone
- Film 2 available with Film Picture Profile, uses the Xenon filter and adjusted to Fujifilm film tone.
- Film 3 available with Film Picture Profile, uses the Xenon filter and adjusted to Technicolor film tone.
- Standard will bring rich and saturated colors found in HDTV, using REC 709 color space.
- Cinema 1 available with Cinema Picture Profile and adjusted to movie sources with bright, saturated colors.
- Cinema 2 available with Cinema Picture Profile and adjusted to DCI-P3 color space.
- Animation/Anime 1 best suited to Hollywood animations.
- Anime 2 best suited to Japanese animations.
- HDR10 that is best suitable for HDR movies in general.
- BT.2020 that is optimized for HDR movies encoded with REC 2020 color space.
- Video color profile is best suited to TV and Sport programs.
- Reference color profile is used to reproduce faithfully the source colors.
- THX color profile is reserved for the THX picture modes.

8.2 Advanced Picture Mode

Lamp Power

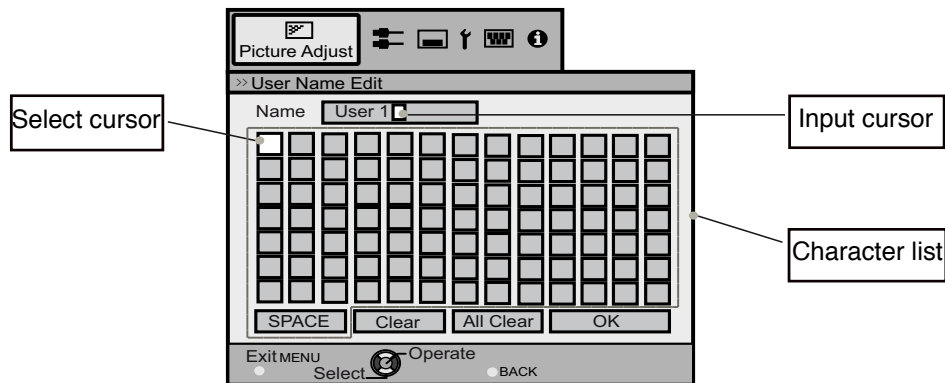
Set the lamp power used by the current Picture Profile. For standard viewing conditions, the lamp power is set to Low. To obtain a brighter image, set it to High but this setting may cause the lamp to darken faster.

Aperture and High Contrast Images

The lens is equipped with a variable electronic aperture. This function is used with a real time analysis of the video picture projected that optically adjusts the light output depending on the viewing conditions by controlling the aperture dynamically. Thanks to sensitive and perfectly controlled adjustments, the contrast image is drastically boosted. When set to Auto 1, this setting makes the iris to automatically set to the optimal opening to enhance the picture contrast. The Auto 2 setting, the result obtained is altered so that the gradation is more visible. The Manual setting sets the iris to a fixed position, adjust the aperture from partially closed (-15) to fully opened (0).

User Name Edit

You can edit the picture modes names User 1 to User 6 using a maximum length of 10 characters. You can use alphabet letters, numbers and symbols:



- Select the user name you want to edit from User 1 to User 5. Press [OK] to enter the edit mode.
- The input cursor displays the place where the new character will be insert. It moves automatically as a character is selected. Use [UP], [DOWN], [LEFT] or [RIGHT] to select a character and press [OK] to insert.
- Press [BACK] to exit edit mode.

Clear: To delete a character: Move the cursor to the desired location and press [OK] to delete the specific character. All Clear: To delete all characters. OK: To save the current name, a save confirmation will appear.

8.3 Advanced Color Profile

Expert Calibration is accessed only by using a programmable IR-RCU, RS-232C or LAN control. Two additional sets of Picture Modes can be activated. Each set designated as THX and ISF profiles have to be calibrated. Once done, these profiles are stored and displayed in the picture mode menu list but will not be modifiable. Additionally the Calibrator can certify his action by setting in the Information Menu his name or company name.

Color Management (TSL adjustments)

The Color Management gives the installer an unique calibration ease with the integrated Color Adjustment menu: each primary, secondary colors can be independently calibrated to obtain a precise color balance in a snap. Adjust the Red, Green, Blue, Yellow, Cyan, Magenta. Tints, their saturations and luminances and store them into Custom profiles.

8.4 Color Temperature

Color temperature stands for the spectral properties of a light source. Low color temperature implies warmer ambiance (more yellow/red) while high color temperature implies a colder light (more blue). Depending on the Picture Profile selected, this setting can be set to:

- Preset from warm colors 5500K, 6500K, 7500K up to 9300K, colder colors.
- Xenon 1 uses the Xenon filter and color compensation to reproduce a film projector
- Xenon 2 uses the Xenon filter and color compensation to reproduce a digital cinema projector
- HDR10 Color temperature is suitable for viewing HDR10 content and the default setting is 6500K.
- HLG is suitable for viewing HDR with Hybrid Log contents and the default setting is 6500K.
- High Bright used for maximum brightness output.
- Custom 1 to 2 that can be used to adjust color temperature to specific environment.

A Custom setting allows a fine adjustment of a Color Temperature by selecting it in the Correction Value menu. Adjust the Gain values (bright part) and Offset values (dark part) for each color Red, Green and Blue.



Accurate color temperature may require professional tools such as dedicated software and color-meter. Wait at least 15 minutes after startup for the colors to stabilise before modifying the picture settings.



Picture modes Xenon 1 and Xenon 2 are exclusive to Blackwing Two and Blackwing Elite models only.

8.5 Advanced Color Temperature

When selecting a Color temperature, you can manually set the Gains and Offsets of each primary color: red, green and blue to finely adjust the color balance.

8.6 Gamma

Gamma is the relationship between the color values of the data and the color values displayed. The Gamma coefficient makes it possible to adjust the brightness of the mid tones only without affecting the very bright and very dark areas. If gamma is set too high, middle tones appear too dark. If it's set too low, middle tones appear too light. Depending on the current active Picture mode, the Gamma setting can be set to:

- Numeric value of 2.2, 2.4 or 2.6
- Film1: standard gamma
- Film2: slightly more contrasted gamma
- Cinema 1: emphasis on gradations
- Cinema 2: emphasis on contrast
- HDR(PQ): suited for HDR contents that uses with a Perceptual EOTF Gamma (HDR10)
- HDR(HLG): Suited for viewing broadcast HDR contents such as ones by BBC or NHK
- Normal: Standard setting for normal viewing.
- THX: video gamma of THX standard (exclusively on Blackwing Elite model)
- Custom 1 to Custom 3: fine tune the gamma setting according to the user's preference.

Picture mode	Natural	Cinema	Film	HDR	THX
Gamma.	2.2, 2.4, 2.6	2.2, 2.4, 2.6	Film 1	2.2, 2.4, 2.6	THX
	Cinema 1 or 2	Cinema 1 or 2	Film 2	Cinema 1 or 2	
	HDR(ST.2086)	HDR(ST.2086)		HDR(ST.2086)	
	HDR(Hybrid Log)	HDR(Hybrid Log)		HDR(Hybrid Log)	

8.7 Advanced Gamma

Correction Value

The Custom data can be set to a correction value: a numeric value that will act as a gamma coefficient between 1.8 and 2.6, Normal, A, B, C, HDR(Hybrid Log), HDR(ST.2084) or Import.

Color Selection

Select the color to which the Picture Tone, Dark / Bright Level settings would apply. Choose between White, Red, Green and Blue.

Picture Tone

It allows a fine adjustment steps of the global picture brightness while maintaining the correct contrast level to keep good black and bright levels. Sets the overall exposure from -16 (under-exposed, darker) up to +16 (over-exposed, brighter)

Dark / Bright Level

This setting modifies the gamma curve locally in the dark and bright areas.

- Dark Level adjust gamma curve between 0 IRE and 15 IRE, each color can be adjusted from -7 to +7.
- Bright Level adjust gamma curve between 85 IRE and 100 IRE, each color can be adjusted from -7 to +7.

Reset Gamma

Prompt a confirmation to reset the current Gamma settings to default.

8.8 Multiple Pixel Control Level (MPC Level)

The MPC Level control gives control over the video processing parameters in order to fine tune the global picture sharpness and quality.

8K E-shift (N.A. with 3D)

- On: sets this unit to upscale the content in 8K resolution.
- Off: sets this unit to display the video content in 4K resolution. Off with 3D input.

Graphic Mode

Select whether the content needs a high precision (strong sharpness) or if it is a graphic. Preferably sets this setting to Standard when watching Blu-Ray movies and set to High-res when viewing UHD movies or "Mastered in 4K" contents.

Enhance

Enhance: enhances the sharpness of foreground objects detected in the picture.

Smoothing

Smoothing: enhances the blurriness of backgrounds for increased the global sense of depth.

Noise Reduction

Noise Reduction: reduces the digital noise of the video picture.

8.9 Motion Control

Low Latency

To drop the latency drastically to the cost of picture enhancement process. Set to On when playing video games or when installed for real-time simulators. High bandwidth signals such as 4K 10-bit and 12-bit signals can be processed without being converted. This allows a video to be shown without losing its original quality, thereby enabling the enjoyment of contents such as movies and concerts at higher quality. When set to On, Clear Motion Drive will be disabled.



Low Latency cannot be used with 3D inputs or with Clear Motion Drive being On.

Clear Motion Drive

The Clear Motion function uses up to 400Hz video processing to render a smooth motion for movies shot at 24Hz or HD movies at 60Hz. Clear Motion Drive is disable if Low Latency is On. Set the correct level between:

- Off: Frame interpolation is disable.
- Low: light frame interpolation with reduced artifacts equivalent to a 200Hz processing rate.
- High: strong interpolation up to 400Hz processing rate.
- Inverse Telecine: dedicated interpolation for 60i and 60p sources originally shot in 24p. N.A. for 24Hz input.

Motion Enhance (N.A. with 3D)

This setting enhances the responsiveness of each video frame by reducing the image blurring.

- Off: correction is disable. Automatically set Off with 3D inputs.
- Low: this setting reduces image blurring.
- High: stronger reduction of image blurring.

This setting enhances the responsiveness of each video frame by reducing the image blurring.

8.10 Contrast

The contrast function is used to adjust the contrast between the light and dark areas of the displayed image. A correct contrast setting is important for good image reproduction. Adjust the Contrast value between -50 and 50.

8.11 Brightness

The brightness function is used to adjust the overall light output. Adjust the Brightness value between -50 and 50.

8.12 Color

The Color function is used to adjust the saturation levels. Adjust the Color value between -50 and 50.

8.13 Tint

The hue function is used to adjust the color tint to obtain true color reproduction. Adjust the Tint value between -50 (more red) and 50 (more green).

9.0 4K INPUTS

9.1 Choosing the correct Input level

Because the Input level of 4K sources are generally “(0-255) Enhanced” input levels, and at the contrary, classic Blu-Ray discs and HDTV programs use “(16-235) Standard” Input levels. It is important to clearly identify and to select the correct input level to achieve perfect blacks.



To identify the correct level, you can for example select a dark scene from your movie and switch between Standard and Enhanced Input levels. The correct Input level would be “Enhanced” if this setting gives the deepest blacks. If both settings give the same result, then your source uses “Standard” levels.



Generally UHD sources use Enhanced levels: You may try to configure your UHD player to output Standard levels to be consistent settings with Bluray playback.

Menu => Input Signal => Input level => (0-255) Enhanced

9.2 High Dynamic Range sources

Identifying HDR sources.

HDR sources are almost exclusively from the latest UHD discs or TV/internet streaming video that come with a HDR logo. If your player supports this format, this unit should automatically detect the HDR format thanks to the HDMI 2.0 handshake and the projector should apply automatically the correct Color Profile “HDR”. Make sur that the correct Gamma is selected depending on your source: Hybrid Log, ST.2084 or Standard.

It is important to determine which color profile it uses between REC-709, DCI-P3 and BT-2020. Choosing the correct gamma and color profile is very important to obtain the best performances from your source and to have a perfect colorimetry with a greater sense of depth.

Correct Gamma settings



If the source is clearly identified to be using High Dynamic Range, the projector should display “HDR: YES” in the Menu > Information Menu and the Picture Mode “HDR” should be applied automatically.

If your HDR image seems dull and without depth, check in the Menu > Information and check if the correct Color Profile has been applied, and that the Colorimetry is HDR. If this is the case, you can also switch the Color Profile from HDR to BT.2020.

Menu => Picture Mode => HDR10

Menu => Picture Adjust => Color Profile => HDR (slightly brighter than BT.2020) or BT.2020

HDR10 Auto Tone Mapping

Depending of the movie and its director, picture grading varies diversely between each movie. Some content being made brighter and others darker. Enabling the “Auto Tone Mapping” function, allows the projector to adjust the HDR gamma automatically by reading and applying the optimal brightness based on the mastering information (Max CLL/Max FALL) contained in the HDR10 content. You can manually

HDR10 Mapping Level

Mapping Level is an independant adjustment that determines the picture brightness base level. Raise or lower the Mapping Level to obtain the best overall brightness fitting your screen size and material gain. By default the middle setting (“0”) will be adapted to a screen diagonal of 100” (2m20 wide) and a gain of 1.0. Increase this value

to raise the global brightness or lower its value if the picture is too bright.

Tone Mapping or manual HDR10 Gamma Adjustment

Depending on the source or the content, this information may be wrong and manual setting is needed to obtain a perfect picture

Tweaking for 1000 nits MaxCLL (UHD Bluray standards)

- Picture Tone: -7
- Dark Level: 0
- Bright Level: +7

Tweaking for 400 nits MaxCLL

- Picture Tone: +5
- Dark Level: 0
- Bright Level: +7

Tweaking for 2000 nits MaxCLL (UHD Bluray standards)

- Picture Tone: -9
- Dark Level: 0
- Bright Level: +7

Tweaking for 4000 nits MaxCLL (UHD Bluray standards)

- Picture Tone: -13
- Dark Level: 0
- Bright Level: +7

If the HDR picture seems a little dull or too dark

If the MaxCLL/MaxFALL values do not correspond, the picture will look a little dull or too dark, you can change the adjustments as described below:

- Picture Tone adjustment: this adjustment changes the overall brightness of the picture. decrease the value to obtain a brighter picture, recommended for larger screens or if the actual MaxCLL is lower than 1000 nits.
- Dark Level: rise this level if the blacks are still too deep
- Bright Level: There are several HDR encoding with different maximum brightness. Rise this level if the white portions of the picture are not totally light up.

9.3 4K contents and their Color Profiles

How to identify BT-2020 sources

Most UHD discs and 4K sources would use BT-2020 colors. Eventually, that means that they can use REC-709 or DCI-P3 colors encapsulated into the BT.2020 color space instead of a true native BT-2020 color profile. Since this unit can only detect the color profile and not the encoding, in a few cases, it is better to use a standard color profile such as Cinema for DCI-P3 colors or Standard for REC-709 colors.

- **Standard HDTV (REC-709) colors:**

Menu > Picture Adjust > Color Profile > BT.709

- **Movies encoded with richer colors:**

Menu > Picture Adjust > Color Profile > Cinema or DCI

- **REC-2020 colors:**

Menu > Picture Adjust > Color Profile > HDR or BT.2020



If the colors seem wrong with BT-2020 Color Profile, you can switch to a any existing Color Profile that would be more suitable such as Cinema for DCI colors or even BT.709 colors.

10.0 INPUT SIGNAL

10.1 Input Level

Sets the dynamic range of the video input:

- Auto: The input dynamic range is automatically detected and configured.
- Standard: Force dynamic range to 16-235.
- Enhance: Force dynamic range to 0-255.
- Super White: Force dynamic range to 16-255.

10.2 Color Space

Sets the color space of the input signal.

- Auto: The source color space is automatically detected and configured.
- YCbCr(4:4:4): Set color space to YCbCr 4:4:4.
- YCbCr(4:2:2): Set color space to YCbCr 4:2:2.
- RGB: Set color space to RGB 4:4:4.

Use preferably a video source of 4K if available to obtain higher resolution and richer colors.

10.3 HDR Setting

HDR10 Auto Select

This projector can detect HDR10 video contents. This setting configures the projector behavior when such packets are detected so it can automatically switches the "Picture Mode" to either "HDR10" or any other configurable "User 1 to 6" Picture Mode when the active input is detected as HDR 10 content.

- Set it to HDR10 to automatically switches "Picture Mode" to "HDR10" when receiving HDR10 packets.
- Set it to User 1 up User 6 to automatically switches "Picture Mode" to desired User Mode when receiving HDR10 packets.
- Set to Off to prevent this unit to switch Picture Mode when receiving HDR10 packets

HLG Auto Select

This projector can detect Hybrid Log video contents. This setting configures the projector behavior when such packets are detected so it can automatically switches the "Picture Mode" to either "HDR10" or any other configurable "User 1 to 6" Picture Mode when the active input is detected as HDR 10 content.

- Set it to HLG to automatically switches "Picture Mode" to "HLG" when receiving Hybrid Log packets.
- Set it to User 1 up User 6 to automatically switches "Picture Mode" to desired User Mode when receiving HLG packets.
- Set to Off to prevent this unit to switch Picture Mode when receiving HLG packets

10.4 HDMI2 EDID

This setting changes the EDID information for HDMI 2 only to make it compatible with older HDMI sources. If this unit is not able to display 1920 x 1080 or lower resolutions pictures, connect this source to HDMI 2 terminal and change this setting to value B.

11.0 3D CONTENT AND 3D PROJECTION

11.1 General Information about 3D playback

Comfort and Caution with 3D Content

The closer one looks at stereoscopic images, the greater the binocular disparity, which means greater perception of outward projection. At the same time, the spectator must focus on these outward objects on the screen. The projecting image and the real focus distance cause a great contradiction, this strain contributes to fatigue and discomfort.



Please stop watching if you do not feel well and consult a physician if necessary. People who already have a kind of photosensitivity, sufferers from heart disease, and people in poor physical condition should not watch 3D stereoscopic images. It is also recommended that you take a break periodically.

Prevent child under 5 years old to watch 3D

The comprehensive brain function to judge stereoscopic vision which includes the feeling for real distances, develops while growing up by touching and seeing real objects, but in early childhood, it is still in an underdeveloped state. Even though there are individual differences, children under 5 are still developing. Letting them frequently watch stereoscopic 3D images can be an obstacle for the development of a comprehensive three-dimensional feel. Additionally, younger children may suddenly become sick, because they continue watching without realizing symptoms like 3D sickness or deterioration of health. Please accompany your child while it watches 3D programs.

11.2 3D Settings

3D Formats

Use this function to choose the correct 3D input format. Some input signals may contain 3D data such as 1080p Side-by-Side but encoded as if they were in 2D. This unit may treat them as standard 2D signals and will not project correctly. In such cases, configure the signal manually between Side-by-Side, Top & Bottom and 2D. In other cases, you may select Auto setting.

Parallax

Use this function to adjust the amount of misalignment of the left and right 3D video images. Adjust settings according to your preference between -15 and +15.



Parallax is an important parameter for 3D movies that directly affects comfort during 3D projection. Because the parallax value changes with the screen size, it is important to set this parameter to a value with which everyone feels comfortable with the 3D effect. In general, women and children will feel better with a smaller parallax value. Do not hesitate to alter this settings if you feel eye-strains or headaches.

Due to the large screens used in home theaters compared to flat screen TVs, we recommend a negative value of -6 for computer sources and video games in native 3D with large parallax. This setting is best at 0 for Bluray movies aimed for Digital-Cinema audience.

Crosstalk Cancel

Can be adjust with a 3D signal input. This function lessens the residual cross-talk found between 3D left and right images. Adjust the Parallax value and then the Cross-talk settings in order to cancel the residual cross-talk without losing picture quality. Adjustments: -8 +8



Negative values reduce visible Crosstalk, positive values bring a brighter 3D picture at the cost of more Crosstalk.

Connecting the 3D synchro emitter

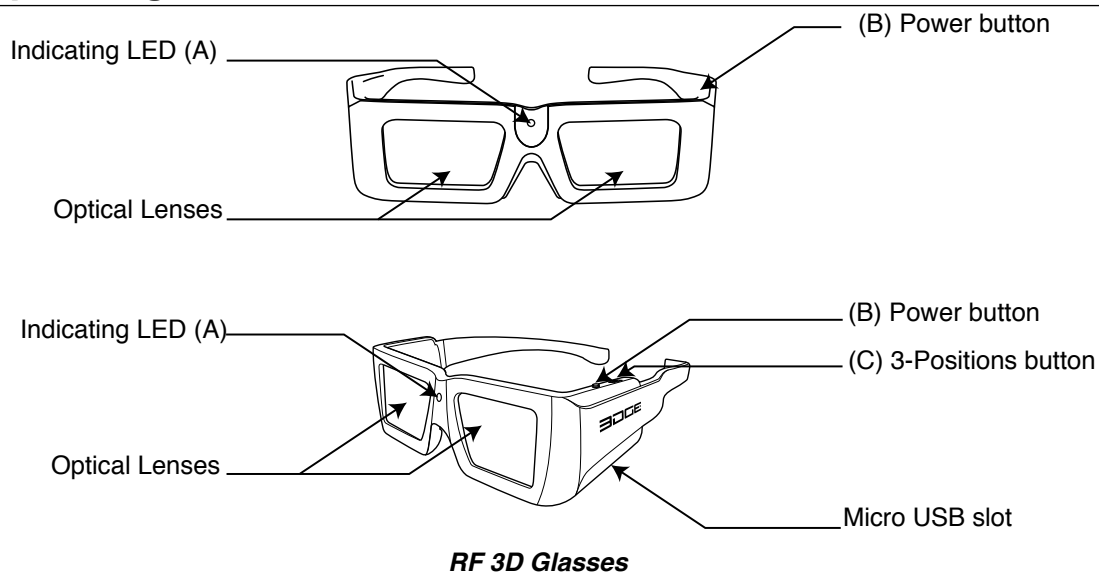
Make sure that the RF dongle or IR Emitter is correctly connected to the "3D synchro" output located at the rear panel of this unit.

3D video inputs limitations

When a 3D Signal is input, the following settings are automatically disabled:

- Menu => Picture Adjust => MPC e-shift => 8K e-shift interpolation is turn Off (Blackwing Elite only)
- Menu => Picture Adjust => Motion Control => Motion Enhance is turn Off

11.3 Operating the 3D Glasses



Charging the 3D Glasses

The 3D Glasses come with a USB rechargeable battery that is charged using the USB to micro USB cable. Connect the cable to the micro USB slot. The indicating LED (A) will light On red continuously during the charge. The glasses are fully charged when the indicating LED (A) switches Off.

Turning On your 3D Glasses

- Press the Power Button (B) once.
- The indicating LED (A) will light On and the Optical Lenses will blink alternately left and right to indicate that they are ready to synchronize with the 3D synchro emitter.



Due to software limitations, the 3-Positions button (C) is inactive.

Turning Off your 3D Glasses

To turn Off the glasses, press and hold the Power button (B) for 3 seconds until the indicating LED (A) switches Off. The glasses will also automatically switch Off after 5 minutes that the 3D synchro signal has stopped.

3D Glasses battery level

The battery allows up to 75 hours of continuous power. A low power level, below 30%, is indicated by a single flash of the Indicating LED (A) at the 3D glasses switch On. Power level between 30% and 90% is indicated by 2 flashes. 3 flashes indicates that the power is above 90%

Auto Power Off

The 3D Glasses are programmed to automatically stop functioning after 5 minutes of immobilization or 10 minutes without a 3D synchro signal. To turn them back On, just press the Power Button (B) once.

12.0 INSTALLATION

12.1 Installation Modes

An Installation Mode is a memory slot that collectively manages the setting values of "Lens Control", "Pixel Adjust", "Mask", "Anamorphic", "Screen Adjust", "Installation Style", "Keystone", "Pincushion" and "Aspect". There are a total of 10 Installation Modes.

Mode Select

Selects a specific memory amongst the 10 available. Setting values can be set from Installation Mode 1 up to Installation Mode 10.

Name Edit

Each Installation Mode can be renamed using "Name Edit". You can use up to 10 characters that can be alphabets (upper or lower case), numeric characters and/or symbols.

Mode Copy

The Mode Copy can be used to easily duplicate a selected Mode into the current Mode. Select the mode to copy to and press the [OK] button to confirm.

12.2 Lens Control

Focus / Zoom / Shift

Adjust the lens focus / Zoom or Shift to obtain a clear picture.

Image Pattern

If set to On, an internal pattern will be generated to adjust the current setting. If you want to use an external generator, turn this option to Off.

Lock

Once the Lens is correctly set, you may lock this setting menu by turning the Lens control Lock to On. Any attempt to access the Lens control menu will lead to the display of a warning message.

Lens Center

Reset the lens position to the original, central position.

12.3 Pixel Adjust

The pixel adjustment is extremely fine: each color can be adjust within 1/16 pixel steps on 121 individual adjustment zones.

Adjust

Enable the pixel adjustment on Memory 1, Memory 2 or Off.

Adjust Area

Whole: the entire screen is selected for adjustment.

Zone: the screen is divided into 121 adjustment zones.

Adjust Color

Select the color to adjust: Red or Blue.

Adjust Pattern Color

Select a pattern to help the pixel alignment. Settings: White or Green+adjusting Color. Yellow for red, Cyan for blue.

Adjust (Pixel)

This function is enable when the Adjust Area is set to Zone only. You can adjust the selected color position

horizontally and vertically by 1-pixel steps.

- H settings: -2 +2
- V settings: -2 +2.

Adjust (Fine)

Use this function to move the selected color within smaller steps.

- H settings: -31 +31
- V settings: -31 +31

Reset

Reset all pixel adjustments to default factory settings.



RCU SHORTCUTS DURING PIXEL ADJUSTMENT:

[GAMMA] button on the RCU switches adjust color parameter between Red and Blue.

[PIC. ADJ.] button on the RCU switches the adjust area parameter between whole and zone. At the same time, the zone cursor will appear on the adjust pattern.

[COLOR SPACE] button on the RCU changes the adjust pattern from white to green+adjust color.

Use the [COLOR TEMP] button on the remote control to change adjustment method from Pixel to Fine tune and switch to the fine tune window.

[BACK] button will exit the Pixel Adjust mode.

12.4 Mask

This setting turns off the active pixels on the screen borders. Default value is Off.

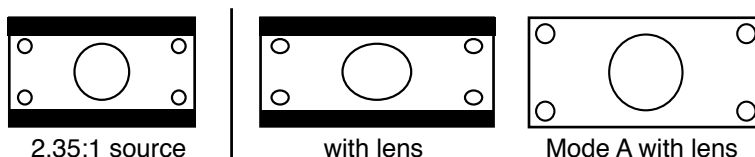
Turn it On to hide specified ranges on Top, Bottom, Left and Right borders from 0 up to 220 pixels.



To adjust the 17:9 native format of the D-ILA panels to 16:9 screens, you can set the left and right masks to 64 pixels.

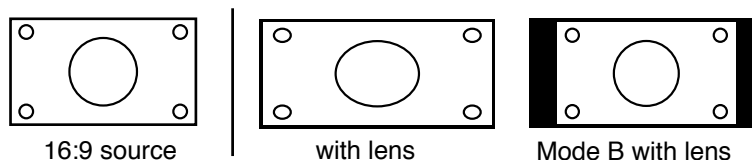
12.5 Anamorphic

- Anamorphic Modes
- Off: No modification to original picture.
- Mode A: The picture is vertically stretched to fit an installation with anamorphic lens. A cinemascope picture is stretched to completely fill the panel height, using 3840 pixels width.



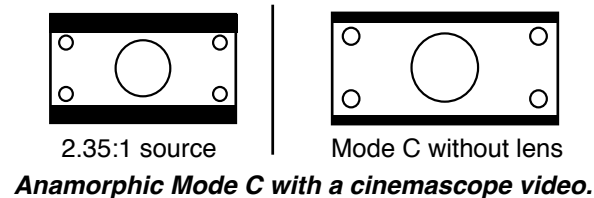
Anamorphic Mode A with a cinemascope video.

- Mode B: This setting squeezes horizontally the picture to fit a 16:9 image into a cinemascope screen. This setting is to be used with an anamorphic installation where the lens is permanently fixed in front of the unit and to watch 16:9 content in its original format.



Anamorphic Mode B with a HD video.

- Mode C: This setting enlarges proportionally the picture until it occupies the full width of the panels. This setting is to be used to display a cinemascope picture without an anamorphic lens but using the full width capacity (4096 pixels) of the panel's resolution. Optimal use when combining this setting with lens zoom memories.



12.6 Screen Adjust and Screen No.

This setting corrects the color balance derived from the reflective characteristics of the screen without altering the global picture settings. You may select the best template available in the Screen No.

- 001 - 009: select a profile between 001 and 009 when watching 3D content with 3D shutter glasses. Profile 001 is recommended when using Cineversum's active 3D glasses.
- 010 to 255: select the best compensation profile depending on your screen and environment.

12.7 Installation Style

Flip the image to the left or right, up or down according to the projection state of the projector:
Front, Ceiling Mount (F), Rear or Rear Ceiling mount (R)

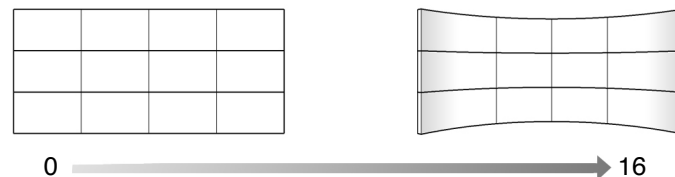
12.8 Keystone

Compensate for trapezoidal distortion caused by installation. Independently to the screen orientation, make sure that the projector is not tilt more than 5% up/down. This setting cannot be used if "Pincushion" is set.

- Vertical Keystone from -16 to +16.

12.9 Pincushion

Corrects the geometric distortion that occurs when projecting on a curved screen. Pincushion can be set to from 0 up to 16 (more correction). This function cannot be used if "Keystone" is set



12.10 Aspect

When watching a movie or video program, you can manually set the desired aspect ratio to fill your screen. Select the correct aspect ratio depending on your source:

- Zoom: Magnifies the input image until it fills the screen horizontally. Part of the image may be outside of the screen and not displayed.
- Auto: Magnifies the input image and maintaining its aspect ratio until it fills the screen horizontally or vertically whichever comes first.
- Native: Displays the image at 4 times its original resolution at the center of the screen. Any source with resolution above 1080p (1920x1080p and 2048x1080p excluded) will be shown without any scaling.

13.0 DISPLAY SETUP

Back Color

Configures the screen color displayed when there is no active input. Set to Blue or Black.

Menu Position

Upper left, Upper right, Center, Lower right, Lower left.

Signal Display

On: Display the source of the input signals after input selection. Off: Don't display.

Logo

On: Display D-ILA logo during startup for 5 seconds. Off: Don't display.

Language

Choose the OSD language between: English, Japanese, German, Spanish, Italian, French, Portuguese, Dutch, Swedish, Norwegian, Russian, Chinese or traditional Chinese.

14.0 FUNCTION

14.1 Trigger

The 12V trigger output can be used to control any compatible devices such as motorized screens or anamorphic kits: The 12V trigger output is 12Vcc, 100mA. Select the trigger output behavior:

- Off: 12V trigger voltage state is always low.
- Power: 12V trigger state is high when the projector is powered ON. To be used with motorized screens.
- Anamo.: 12V trigger is high only when Anamorphic Mode A, B or C is engaged. To be used with motorized anamorphic kits.
- Inst. Mode 1 up to 10: 12V trigger state is high when the selected Installation Mode is the same as the Mode number configured.

14.2 Off-Timer

You can configure this automatic power Off function that will switch off the projector when there is no operation or after a determined timer. Choose the duration of the timer between: Off, 1 hour, 2 hours, 3 hours and 4 hours.

14.3 ECO Mode

This setting when set to On will minimize the power consumption in the Standby Mode. Additionally, it will automatically switch Off this unit whenever the input signal is interrupted for 20 minutes.



If you plan to control this unit using RS232 or LAN protocols, set the ECO Mode to Off.

14.4 Network

When the Communication Terminal selected is LAN, this unit will be visible on the local Network and the following parameters need to be configured. Refer to section "18.2 LAN protocol", page 41 for more details.

Control 4 Simple Device Discovery Protocol (SDDP)

Set to "On" to allow Control 4 SDDP to detect this unit. When this unit is not connected to a Control 4 environment you can leave this setting to "Off".

14.5 Remote Code A or B

Select in the projector menu the code A or B according to the code selected on the RCU. You can change the code used by the RCU to communicate with the projector from A to B. To do so, press and hold for 3 sec

simultaneously [MENU]+[BACK] buttons on the RCU. All the buttons on the RCU will blink.

- Two blinks indicate that the RCU uses code B.
- Three blinks indicate that the RCU uses code A.



If the Remote Control Unit (RCU) code differs from the projector remote code setting, then the Standby / On LED indicator will blink green when receiving the remote control orders.

14.6 High Altitude Mode

Set High Altitude Mode to “On” when using this unit at a place with a low atmospheric pressure or located at an altitude of 900 meters (3,000 ft) above sea level or higher. This will improve the fan efficiency and help in preventing the projector to overheat.

14.7 Lamp Reset

Resets the lamp use time to “0” during the lamp replacement procedure. See Section “Resetting Lamp Time”, page 37 for more details.

14.8 Factory Reset

Confirm to reset all this unit settings to default settings at once except the settings stored in memory below:

- Gamma Data saved into Gamma => Correction Value => Import
- Color Profile Data saved into Color Profile => Custom 1 up to Custom 6

14.9 Software Update

Confirm to start the update procedure. Make sure that a valid software file must be loaded on an USB stick and that this stick is fully inserted in the USB/Update input located at the rear of this unit.

15.0 INFORMATION MENU

Input Terminal and Input Source

Displays the active video input and the type of the current video input signal.

Resolution and H. and V. Frequency

If the active input is PC input, its resolution, Horizontal and Vertical frequencies are displayed.

Color Depth / Color Space

Displays the color bit depth of the input video signal. N.A. with YCbCr (4:2:2) input.

Colorimetry

Displays the color space and color depth of the input signal. Also detects HDR color encoding like BT.2020.

HDR

Displays the EOTF information when HDR packet is received.

MaxCLL and MaxFALL

When explicitly present in the source meta data container, it displays the levels in nits of the brightest pixel of the stream (MaxCLL) and the level of the brightest frame of the stream, MaxFALL.

Lamp Time

Displays the accumulated hours of usage of the lamp.

Soft Version

Displays the current software version.

Calibrator

Stores up to 18 ASCII characters set by the Calibrator. Shown only if set during ISF profile adjustment.

16.0 CINEMASCOPE SETUPS

The Blackwing Series centralizes the controls and automation commands for a unique, versatile and unexpectedly simple to operate 2.35:1 theatre experience using Lens Zoom or the Static Cinemascope kit.

- Up to 10 lens position memories
- Integrated Constant Image Width (CIW) scaling algorithm with anamorphic mode A and mode B.
- New scaling mode that is optimized for the full native 4096 x 2160 (17 x 9) resolution of the LCoS panels.
- Dedicated commands to control the picture sizes and aspect ratios on a 2.35:1 screen.

16.1 Cinemascope setup with Lens Zoom

Select “Menu => Installation => Lens Memory 1”

Zoom in, until the left and right borders of the picture fits the 2.35:1 screen borders. Save the lens position in the lens memory 1. You can also edit the memory 1 name to “Cinemascope”.

Select “Menu => Installation => Lens memory 2”

Make sure to project a 16:9 picture, zoom out until the picture top and bottom fit the top and bottom of the screen. Adjust the focus and offset if required, then save this position into the memory 2. You can additionally edit the memory name to “Standard AR”.

Switch format using the Remote Control Unit.

You can now switch between Cinemascope and standard formats easily by using the Setting Memory buttons on the RCU and selecting the correct lens memory according to the source format.



Because of the nature of the lens motorization, the precision overtime is not enough to perpetually maintain the correct zoom / focus / position after several zoom in and out. It is required to periodically alter the lens setting.

16.2 Installing a 2.35:1 screen with the Static Cinemascope kit

At first, you must install the screen and the anamorphic lens according to their respective installation instructions.

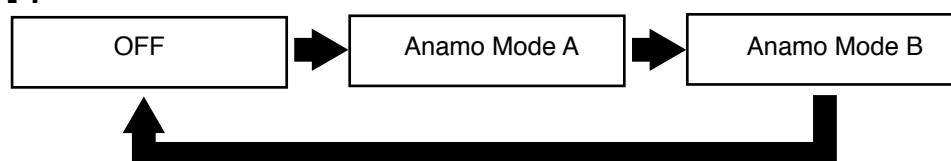
Video source is 16:9: set [Anamo]rphic to Mode B

When you select a 16:9 input and that you must see all the details on the picture, in particular the top and bottom parts of the image, then you should choose the anamorphic Mode B. This aspect compress the picture vertically so it can be fully displayed in a 2.35:1 screen.

“Menu => Installation => Anamorphic => Mode B”

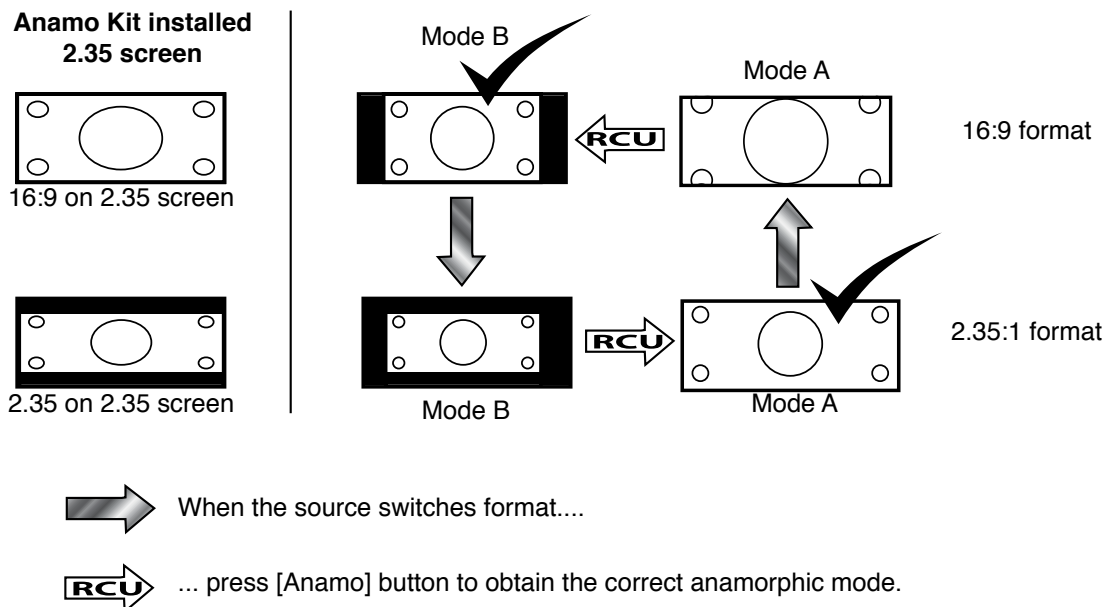
Video source is Cinemascope: set [Anamo]rphic to Mode A

To obtain a Cinemascope picture into a 2.35:1 screen you must select anamorphic Mode A. Select Anamorphic mode A for this input in the “Menu => Installation => Anamorphic => Mode A”.

[Anamo]rphic modes

When you press sequentially the [Anamo]rphic button, you change the mode from OFF, Mode A and Mode B.

- Mode A is intended to be used with an anamorphic lens to watch 2.35:1 content on a 2.35:1 screen.
- Mode B is intended to be used to watch 16:9 content on a 2.35:1 screen with the Static Cinemascope kit.



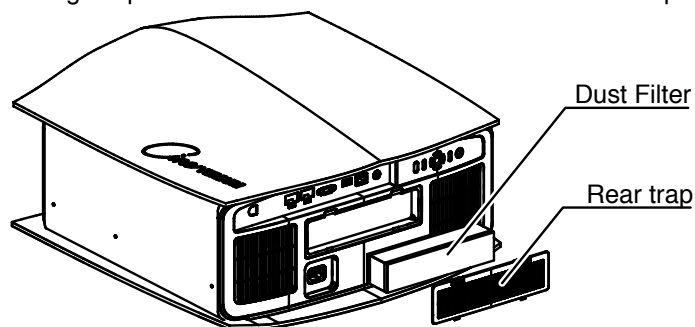
17.0 MAINTENANCE

17.1 Cleaning and Replacing the Dust Filter

The filter must be cleaned regularly to allow an efficient air intake. Otherwise, dirt may enter the unit and appear on the screen, preventing you from enjoying the video fully. If dirt has entered the unit or if you need information about the filter, please consult your authorized dealer. A filter cleaning warning appears every 500 hours.

Cleaning procedure

- Pull out the power plug from the outlet while the projector is in standby mode.
- Push down and pull the claws located on the rear trap that protect the dust filter, pull out the trap.
- Pull out the sponge dust filter
- Clean the filter with a vacuum cleaner
- Then Insert it back in its original position and make sure that the claws of the trap are firmly inserted.



17.2 Dirt on the Lens

The lens shall be cleaned using commercial blowers or lens cleaning papers (for cleaning glasses and cameras). Do not use fluid-type cleaning agents. This may lead to peeling of the surface coating film. The lens surface is fragile. Avoid rubbing it hard or knocking.

17.3 Replacing the Lamp

Light-source Lamp and Lamp Usage Time

The life of light-source lamps used for this unit is about 4500 hours when running this unit in low lamp power mode.

- When the lamp power is set to Low, the lamp life is approximately 4500 hours. This average lamp life is not guaranteed and may not reach 4500 hours depending on the operating conditions. Get ready or replace with a new lamp when the accumulated usage time exceeds 4500 hours. Depending on the operating conditions, the lamp may have to be exchanged earlier. If the image is dark or if the color tone is abnormal, replace the lamp as soon as possible.
- When the lamp life time exceeds 2900 hours, a warning message is displayed, press the [BACK] button to clear it and replace the lamp before the lifetime reaches 4500 hours.



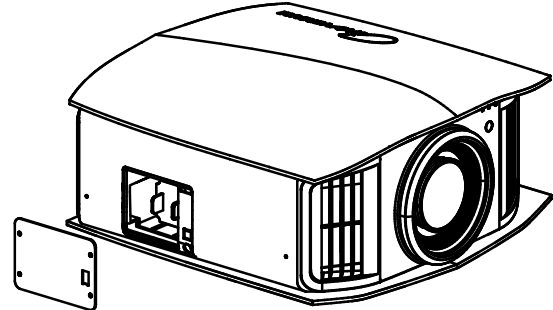
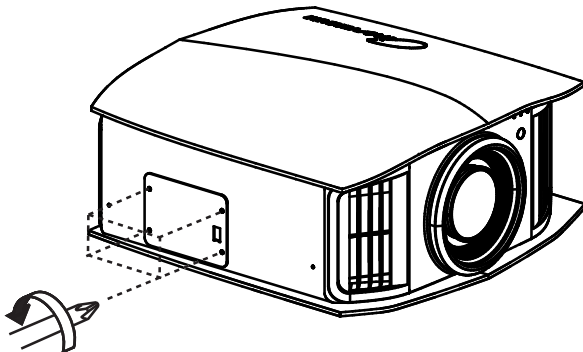
ABOUT LAMP REPLACEMENT

If this unit is installed in a constricted place, attempting to replace the lamp in that place may cause injury. Use only genuine replacement parts for the lamp unit. Otherwise, malfunction may occur. Do not replace the lamp immediately after this unit has been used. The temperature of the lamp is still high and this may cause a burn. Allow a cooling period of 1 hour or more before replacement. Before replacing the lamp unit, pull out the power plug from the outlet and wait until the STANDBY/ON led is still light red.

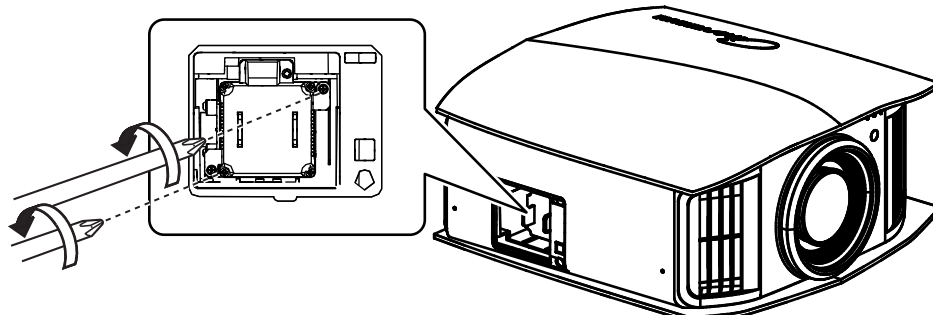
Procedure for Lamp Replacement

During the lamp replacement process, you may have access to sensitive parts of the projector.

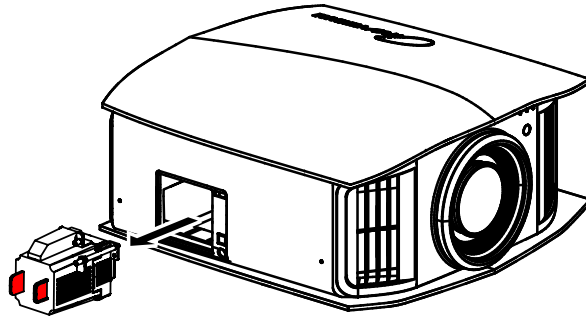
- Loosen the screw on the lamp trap at the rear of this unit.



- Open the lamp Trap/ Cover by loosening the screw



- Loosen the 2 screws on the lamp unit to release it.



- Pull out the lamp unit using the handles.
- Insert the new lamp unit until it is firmly in place.
- Tighten the screws of the lamp unit.
- Attach the lamp cover and fasten the lamp trap screw.

Resetting Lamp Time

• Resetting the Lamp Time during playback

After installing a new lamp, reset the lamp time using the OSD menu

- a) Turn On the unit.
- b) Browse into the menu Function => Lamp Reset => Confirm.
- c) Confirm time reset.

• Resetting the lamp during Standby Mode with the remote control

After installing a new lamp, make sure that this unit is in standby mode.

- a) Press 1 second sequentially the buttons [BACK], [OK], [HIDE]
- b) Press 2 seconds the arrow button [DOWN]

The procedure is successful if the Light and Standby/On indicator LEDs blink alternately for three seconds.

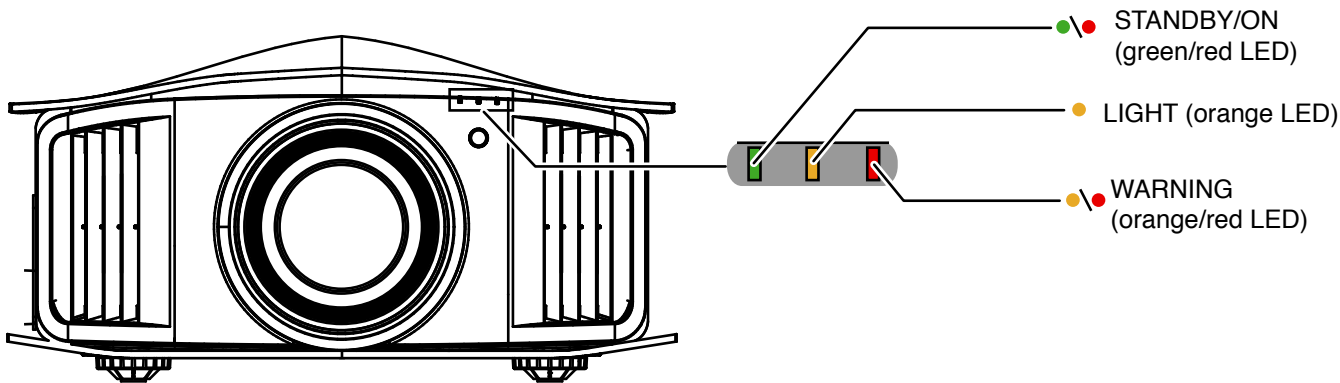


CAUTION FOR THE LAMP RESET PROCEDURE

Reset the lamp time only when you have replaced the lamp.

Never reset it when the lamp is still in use. Otherwise, the approximate standard for gauging replacement time may be inaccurate, lamp performance may deteriorate and lamp blowout may occur.

17.4 Blinking LEDs and Troubleshooting



When the projector is running for more than 1 minute, the Standby/ON LED will automatically switch OFF.

Operating LED			Description
WARNING (orange/red)	LIGHT (orange)	STANDBY/ON (green or red)	
-	-	red	Unit is in standby mode.
-	-	green	Unit is in operate mode.
-	-	blinking green	Unit is in operate mode but HIDE is ON. Press again the HIDE button to obtain a picture.
-	-	blinking red	Unit is in cool down mode (switching off).
-	orange	-	Lamp time has reached 2900 hours, prepare to replace the lamp soon. If used in low power mode, replace the lamp before 4500 hours.
continuous red	blinking orange	-	blinks 1 time: The lamp failed to ignite, restart the projector blinks 2 times: Lamp has shut down during projection. blinks 3 times: Lamp cover is open. Check that cover is closed..
blinking orange	-	-	blinks 2 times: Cooling fans stop. blinks 3 times: Internal temp is too high. blinks 4 times: External temperature is too high.
blinking red	blinking orange	-	blinks 1 time: DD board circuit failed. blinks 2 times: Motor board circuit failed. blinks 3 times: CPU board circuit failed. blinks 4 times: Power board failed.



CAUTION: When in Cool Down mode, do not pull out the plug from the outlet. Also, do not block the air inlets/exhaust vents by standing the projector on its end or laying it on its side.

18.0 MISCELLANEOUS

18.1 RS-232C protocol

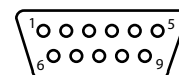
Serial communication specifications

Control of this unit is possible using a computer or automation device connected with a RS-232 cross cable (female - female D-sub 9 pins cable) or LAN/ RJ-45 cable. Communication specifications for this unit are as follows:

Baud Rate	19200 bps
Data Format	Binary
Mode	Asynchronous
Parity	None
Start Bit	1 bit set to high
Stop Bit	1 bit set to low
X on/off	None
Flow Control	None

RS-232C pin assignation

Pin	Signal	Function	Signal Direction
2	RxD	receive data	PC -> Projector
3	TxD	transmit data	Projector -> PC
5	GND	ground	-
1, 4, 6-9	NC	-	-



Command Format

Header	Command	Command Data	End of Data
21h 89h 01h	2 - 4 bytes	variable	0Ah

Header : 21h 89h 01h for operating commands or 3Fh 89h 01h for reference command.

Command: from 2 to 4 bytes length

Command Data: variable length

End of Data fixed to 0Ah

Operating commands

Here is a non exhaustive operating commands list.

Function	Command	Command Data	Description
Connection check	00h 00h	none	Check the connection in standby mode
Power	50h 57h	30h / 31h	Switch Off (Standby mode) / On.
Inputs	49h 50h	36h / 37h	Switch active input to HDMI1 / HDMI2
Power /w confirm	52h 43h	37h 33h 30h 35h	Switch this unit On.
		37h 33h 30h 36h	Switch this unit Off. (send twice)
Switch input	52h 43h	37h 33h 30h 38h	Switch to next input
		37h 33h 37h 30h	Switch input to HDMI1
		37h 33h 37h 31h	Switch input to HDMI2
Keypad	52h 43h	37h 33h 30h 31h	UP
		37h 33h 30h 32h	DOWN
		37h 33h 30h 33h	BACK
		37h 33h 32h 45h	MENU
		37h 33h 32h 46h	OK
		37h 33h 33h 34h	RIGHT
		37h 33h 33h 36h	LEFT

Function	Command	Command Data	Description
Hide Display	52h 43h	37h 33h 31h 44h	Toggle Hide On/Off
		37h 33h 44h 30h	Switch Hide to On
		37h 33h 44h 31h	Switch Hide to Off
Picture Modes	52h 43h	37h 33h 36h 38h	Cinema Mode
		37h 33h 36h 39h	Film Mode
		37h 33h 36h 41h	Natural Mode
		37h 33h 45h 44h	HDR10 Mode
		37h 33h 45h 45h	HLG Mode
		37h 33h 36h 43h	USER 1 Mode
		37h 33h 36h 44h	USER 2 Mode
		37h 33h 36h 45h	USER 3 Mode
		37h 33h 36h 46h	THX Mode
		37h 33h 43h 41h	USER 4 Mode
		37h 33h 43h 42h	USER 5 Mode
		37h 33h 43h 43h	USER 6 Mode
		37h 33h 45h 34h	Toggle picture mode
Low Latency	52h 43h	37h 33h 46h 38h	Toggle Latency Mode value
Installation Memory	52h 43h	37h 33h 44h 38h	Installation Memory 1
		37h 33h 44h 39h	Installation Memory 2
		37h 33h 44h 41h	Installation Memory 3
		37h 33h 45h 35h	Installation Memory 4
		37h 33h 45h 36h	Installation Memory 5
		37h 33h 45h 37h	Installation Memory 6
		37h 33h 45h 38h	Installation Memory 7
		37h 33h 45h 39h	Installation Memory 8
		37h 33h 45h 41h	Installation Memory 9
		37h 33h 45h 42h	Installation Memory 10
Expert Calibration (ISF)	52h 43h	37h 33h 35h 38h	ISF - On and Adjust
		37h 33h 35h 41h	ISF - Off
		37h 33h 35h 42h	ISF - On locked
		37h 33h 36h 34h	Switch Picture Mode to ISF - Day
		37h 33h 36h 35h	Switch Picture Mode to ISF - Night
Expert Calibration (THX)	52h 43h	37h 33h 43h 36h	THX plus - On and Adjust
		37h 33h 43h 37h	THX plus - Off
		37h 33h 43h 38h	THX plus - On locked
		37h 33h 38h 35h	Switch Picture Mode to THX - Bright
		37h 33h 38h 36h	Switch Picture Mode to THX - Dark
Anamo	52h 43h	37h 33h 43h 35h	Toggles the Anamorphic mode
		37h 33h 32h 33h	Switch Anamorphic mode to A
		37h 33h 32h 34h	Switch Anamorphic mode to Off
		37h 33h 32h 42h	Switch Anamorphic mode to B
		37h 33h 32h 43h	Switch Anamorphic mode to C
Lens Control menu	52h 43h	37h 33h 33h 30h	Toggle the lens control menu
MPC menu	52h 43h	37h 33h 45h 30h	Toggle the MPC menu
CMD menu	52h 43h	37h 33h 38h 41h	Toggle the CMD menu

Examples

You want to...	Command to send
Switch this unit On	send: 21h 89h 01h 50h 57h 31h 0Ah receive: 06h 89h 01h 50h 57h 0Ah
Switch this unit Off	send: 21h 89h 01h 50h 57h 30h 0Ah receive: 06h 89h 01h 50h 57h 0Ah
Change active Input PJACK to HDMI2.	send: 21h 89h 01h 52h 43h 37h 33h 37h 31h 0Ah receive: 06h 89h 01h 52h 43h 0Ah
Change Picture Mode to match HDR	send: 21h 89h 01h 52h 43h 37h 33h 45h 44h 0Ah receive: 06h 89h 01h 52h 43h 0Ah

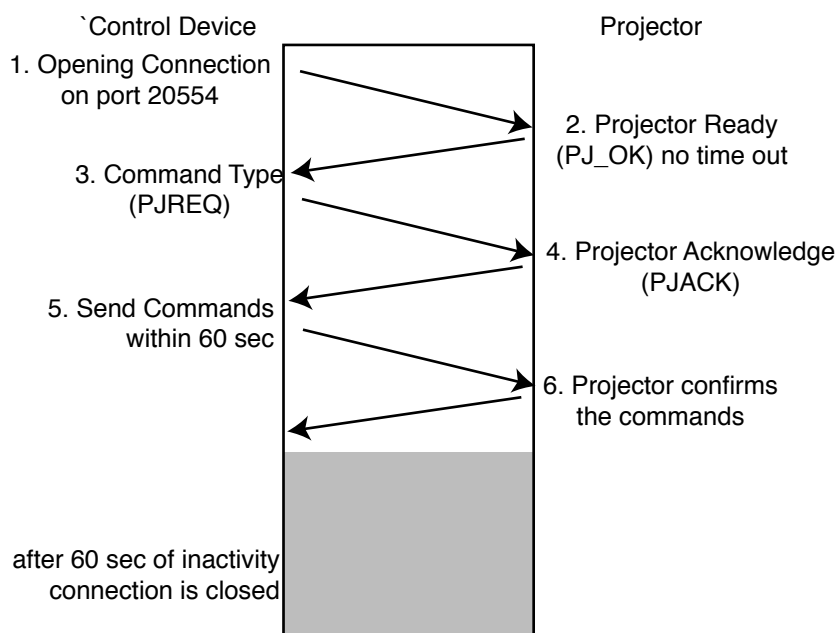
18.2 LAN protocol

Sending a LAN Control Command

In order to send a Remote Control compatible command to this unit, you must open a TCP connection on port 20554. The com port will stay opened until a PJREQ command is sent. This unit will confirm with PJACK, then send immediately the commands because the connection will be dropped after 60 sec of inactivity. If for any reason you have to change the TCP connection port, you may use the following RS-232c/LAN command.

[4Ch 53 50h 54h] + 4 ASCII chars as new port address in hexa

You want to set TCP port to 10000	Command to send
Send 10000 as new TCP port value: 10000 is 2710h in hexa, converted in ASCII characters: 32h 37h 31h 30h	send: 21h 89h 01h 4Ch 53h 50h 54h 32h 37h 31h 30h 0Ah receive: 06h 89h 01h 4Ch 53h 0Ah
Then, reboot Network module	send: 21h 89h 01h 4Ch 53h 52h 53h 0Ah receive: 06h 89h 01h 4Ch 53h 0Ah



LAN communication protocol and timed out

Examples

You want to...	Command to send
Switch this unit On	1. open TCP connection 2. receive PJ_OK: 50h 4Ah 5Fh 4Fh 4Bh 3. send PJREQ: 50h 4Ah 52h 45h 51h 4. receive PJACK: 50h 4Ah 41h 43h 4Bh 5. send Power On cmd: 21h 89h 01h 50h 57h 31h 0Ah 6. receive confirmation: 06h 89h 01h 50h 57h 0Ah after 60 sec, TCP connection is closed.
Switch Anamorphic to mode A	1. open TCP connection 2. receive PJ_OK: 50h 4Ah 5Fh 4Fh 4Bh 3. send PJREQ: 50h 4Ah 52h 45h 51h 4. receive PJACK: 50h 4Ah 41h 43h 4Bh 5. send Anamorphic A: 21h 89h 01h 52h 43h 37h 33h 32h 33h 0Ah 6. receive confirmation: 06h 89h 01h 52h 43h 0Ah after 60 sec, TCP connection is closed.

18.3 Infra Red, long hex-pronto compatible RCU

The infrared command must be sent using NEC 5 protocol in ASCII format.

In the following example, Power ON command is 37h 33h 30h 35h, this command has to be converted as ASCII, it becomes 73 05.

To send this command using long hex Pronto compatible, convert the ASCII code as two hexadecimal numbers as follow:

Code A: 73h = 115 (for code B: 63h = 99, replace 115 by 99)

$$05h = 5$$

Then program the Pronto RCU using the Device number 115 and Function 5:

Device Code: 115 (0x73) Function: 5 (0x05):

```
0000 006D 0001 0011 0141 00A0 0014 003C 0014 003C 0014 0014 0014 0014 003C 0014 003C 0014
003C 0014 0014 0014 003C 0014 0014 0014 003C 0014 0014 0014 0014 0014 0014 0014 0014 0014
0014 0336
```

A complete device/function chart with their corresponding long hex commands is available, ask your dealer if required.

18.4 Specifications

The Blackwing Series uses the latest 4K panels developed to provide the most exciting video-projection experience ever.

Model	Blackwing One and Blackwing Two	Blackwing Elite
Emission method	LCoS (Reflective Active Matrix Principle)	
Display panel size	0.69" LCoS 4K panels	
Display Resolution	4096 x 2160 pixels (D-Cinema 4K format)	8192 x 4320 pixels
Contrast ratio	40,000:1 for Blackwing One 80,000:1 Blackwing Two	100,000:1 for Blackwing Elite
High Contrast ratio	400,000:1 and 800,000:1	1,000,000:1
Projection lens	65 mm diameter Std Quality Lens Throw ratio 1.4:1 - 2.8:1 with 2x Zoom Electronic zoom, focus and shift: 80% vertically and 34% horizontally	100 mm diameter High Quality Lens Throw ratio 1.4:1 - 2.8:1 with 2x Zoom Electronic zoom, focus and shift: 100% vertically and 43% horizontally.
Installation Memories	10 slots lens zoom/focus/position/aspect ratios/convergence and masking	
Brightness	1800 , 1900 ANSI Lumens	2200 ANSI Lumens
Screen size	60" to 200" (Aspect ratio 16:9)	60" to 280" (Aspect ratio 16:9)
Distance range	from 1,5 m to 12 m	
Inputs:		
HDMI 1 input	HDMI 2.0b with HDCP2.2 - Ultra HD BluRay compatible with 4K and HDR	
HDMI 2 input	HDMI 2.0b with HDCP2.2 - Ultra HD BluRay compatible with 4K and HDR	
LAN	RJ-45 for Control	
RS-232	D-Sub 9-pin (male) Serial Com port for Control	
USB Type A	Firmware updates and service only.	
12V Trigger	DC power Jack 3.5 mm. 12V @ 100 mA	
Color Gamuts	REC.709 gamut for Blackwing One and beyond DCI-P3 gamut for other models	
Video Processing	Auto Tone Mapping for HDR10 contents. HDR Picture modes with Perceptual Quantization (PQ) EOTF and Hybrid Log gamma. HDR colorimetry and MaxCLL / MaxFALL meta-data auto-detect. High quality Low Latency processing optimized for real time simulations and gaming. Advanced blur reduction and enhanced 400 Hz Crystal Motion®.	
Light source lamp	265W NSH - up to 4 500 hours with lamp used in low mode	
Power Requirements	100V - 240V AC 50Hz/60Hz	
Power Consumption	<400W (0.3W in standby and eco mode)	
Unit size (W x H x D)	54 x 26 x 57 cm - 21.3" x 10.1" x 22.3" (Height 28 cm with feet)	
Net Weight	26 kg - 57.3 lbs	
Box size (L x W x H)	66 x 65 x 44 cm - 26.0" x 25.6" x 17.3"	
Gross Weight	30 kg - 66.1 lbs	
Operation Environment	Temperature: 5°C to 35°C (Storage Temperature: -10°C to 60°C) Humidity: 20% to 80% without condensation	

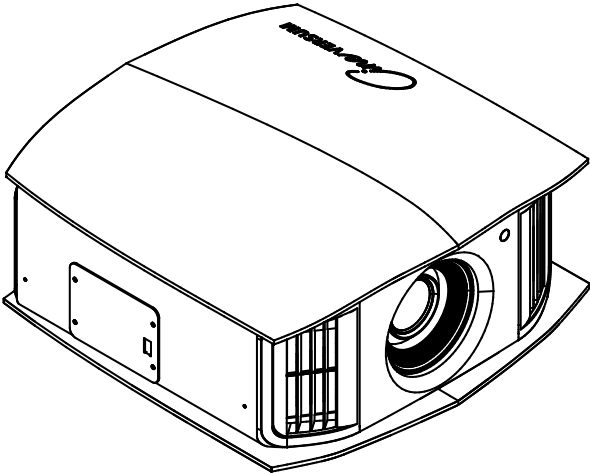
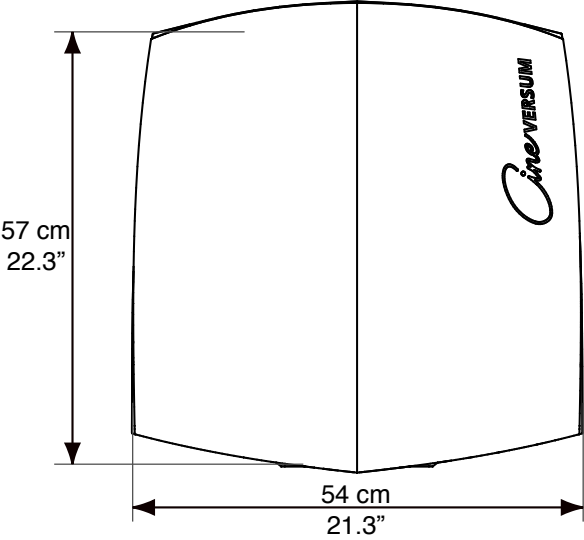
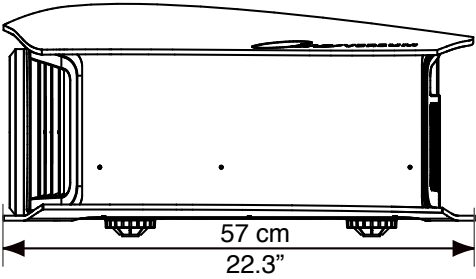
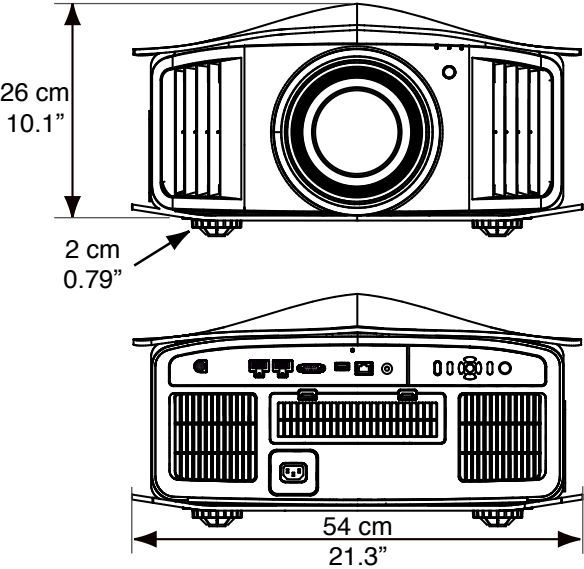
- Design and specifications are subject to change without prior notice.
- Please note that some of the pictures and illustrations may have been abridged, enlarged or contextualized in order to aid comprehension. Images may differ from the actual product.



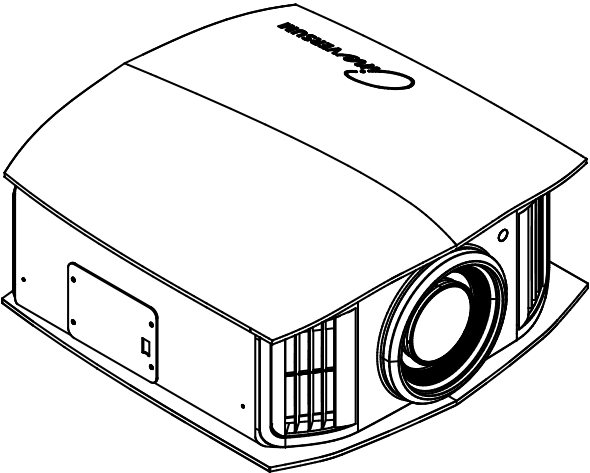
3-CHIP LCOS SYSTEM

LCoS is the abbreviation of Liquid Crystal on Silicon. The 3-Chip LCoS systems feature dedicated panels for each color channel and render seamless color graduations without any flickering or rainbow effect artifacts

18.5 Dimensions



Blackwing One & Blackwing Two



Blackwing Elite

