CRYSTAL4 UHD HDR

User Guide

Contents

• Important information

About this User Guide

This User Guide describes how to set up and operate the following projectors:

- CRYSTAL4

Except where otherwise indicated, the information in this guide applies to all the projectors listed above, that will be referred to as “CRYSTAL4”.
Information contained in this User Guide may be updated from time to time due to product improvements and customer feedback. Visit www.sim2.com to find the latest version of this document.

Safety

To reduce the risk of electrocution, disconnect the power cord on the rear panel before removing the glass cover or side panels of the projector. For technical service refer to trained personnel authorized by the manufacturer.

Read this manual
Read all chapters of this manual carefully before switching on the projector. This manual provides basic instructions for operating the CRYSTAL4 projector. Installation, preliminary adjustments and procedures that necessitate the removal of the glass cover and the contact with electrical components, must be performed by authorized trained technicians. To ensure safe operation and long term reliability use only the power cord supplied by the manufacturer. Observe all warnings and precautions. Keep the manual for future consultation.

Do not touch internal parts of the projector
Inside the housing there are electrical parts carrying dangerously high voltages and parts operating at high temperature. Never open the housing. Entrust all servicing and repair work to a SIM2 Authorized Service Center. Opening the housing voids the warranty.

Disconnect the projector from the power supply
The device that disconnects the projector from the electrical outlet, is the power plug. Ensure that the power cord plugs and the electrical outlets are easily accessible during installation operations. Pull the plug, not the cord, to disconnect the projector from the electrical outlet. Use only the specified power supply. Connect the projector to the electrical supply with rated voltage of between 100-240 V AC, 50/60 Hz and equipped

with a protective earth connection. If you are not sure of your domestic electrical outlet, contact an electrician. Take care to avoid overloading the power socket and any extension leads.

Switching the projector off

Pay attention to the switch off procedure for the projector. The projector must always be brought back to the standby state to allow the projector to carry out the cooling procedure. Should this not happen, for example due to a power cut, the projector may enter a state of protection that leads to switch-on being blocked. This block will last until the internal components of the projector have completely cooled down. Allow 90 seconds for the projector to cool down.

Be careful with cables

Make sure cables are routed so that people are not impeded or become a trip hazard. Keep all cables away from children. Install the projector as close to the wall socket as possible. Avoid stepping on power cords, make certain they do not become tangled, and never jerk or tug them; do not expose them to sources of heat, and make sure they do not become knotted or crimped. If the power cords become damaged, stop using the projector and request the assistance of an authorized technician.

Disconnect the projector from the electrical outlet during storms and when not in use

To prevent damage from lightning strikes in the vicinity, disconnect the projector during storms or when the projector is going to be left unused for a long time.

Avoid contact with liquids and exposure to damp

Do not use the projector near water (sinks, tubs and so on); do not place objects containing liquids on or near the projector and do not expose it to rain, humidity, drops of water or sprays; do not use water or liquid detergent to clean it.

Place the projector on a stable surface

Place the projector on a stable surface or use a suitable ceiling mounting bracket. Never place the projector on its side or rear, on the lens or top panel or rear.

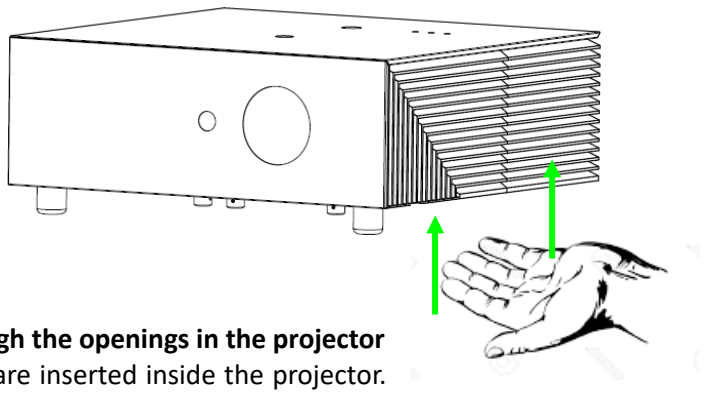
Do not allow the projector to overheat

To prevent overheating, allow a free space of at least 0.20 m (5 in) on the rear, on the top, and on the right and left sides of the projector. Do not obstruct the ventilation slots. Do not place the projector near heat sources such as heaters, radiators or other devices (including amplifiers) that generate heat. Do not place the projector in an area where there is insufficient space (shelving units, bookshelves and so on) and in general avoid placing it in poorly ventilated areas as this may prevent sufficient cooling and significantly reduce lamp life.

Take special care regarding movement of the lens

Do not place objects in the slots on the side of the lens and also ensure that vertical lens movements are not impeded by external objects.
Do not hold the projector by its lens.

CRYSTAL4 handling and transportation



Do not insert objects through the openings in the projector
Make sure that no objects are inserted inside the projector.
If this should occur, disconnect the projector from the power supply immediately and call an authorized technician.

Power saving
We advise disconnecting the projector from the power supply when not in use. In this way you will achieve considerable power savings while at the same time protecting internal electrical parts from wear.

Do not use under the following conditions:

- In extremely hot, cold or humid environments
  - Ensure that the ambient room temperature is within 5°C ~ 35°C
  - Relative humidity is 10% ~ 85%
- In areas susceptible to excessive dust and dirt.
- Near any equipment generating a strong magnetic field.
- In direct sunlight.

Environment

This product contains materials derived from natural resources during its manufacture. It may contain materials that constitute a health and environmental hazard. To prevent harmful materials from being released into the environment and to promote the use of natural materials, SIM2 provides the following information regarding the disposal and recycling of the product.

Waste electrical and electronic materials (WEEE) should never be disposed of in normal urban waste disposal facilities.

The label on the product, shown here, indicating a canceled garbage can, is intended to remind you that the product requires special handling at the end of its service life. Materials such as glass, plastic and some chemical compounds are recoverable and can be recycled for reuse.

Observe the following instructions:

- When you no longer wish to use your electrical and electronic equipment, take it to your local waste disposal facility for recycling.
- You may return your old equipment to your SIM2 Authorized Dealer free of charge when you buy a new product that is equivalent or has the same functions as the old one. Contact SIM2 to find your local dealer.
- If you need more information regarding recycling, reuse and product exchanges, contact SIM2 customer service.

Lastly we suggest further measures to safeguard the environment, such as recycling of internal and external packaging (including that used for shipping) in which the product was delivered. With your help, we can reduce the amount of environmental resources required to make electric and electronic equipment, reduce the use of waste tips for used equipment and, in general, improve our quality of life by making sure that hazardous materials are correctly scrapped. Incorrect treatment of the product at the end of its service life and failure to follow the above disposal instructions are punishable under local legislation.

Notice

The projector has been subjected to exhaustive operating tests by SIM2 to guarantee the highest quality. The projector light source life should thus initially be around 30-60 hours. In addition to the customary checks, the Quality Control department also runs additional statistical tests before shipment. In such cases, the packaging may show signs of having been opened, and the hours of light source operation may prove to be higher than those normally shown when only standard tests are performed.

As the optical system of the CRYSTAL4 is extremely compact and has the purpose of developing very high brightness and contrast, it is possible that a small quantity of light is visible outside of the projection area and will vary depending the zoom and shift setup. This characteristic of the optical system is to be deemed as normal. In order to reduce this effect SIM2 recommends that the area surrounding the projection screen is as dark as possible.

As with any bright light source, do not stare into the beam, RG2 IEC 62471-5:2015.

• Introduction

The SIM2 CRYSTAL 4 UHD HDR projector achieves excellent picture quality through the partnership of the latest 4K UHD 0.67" DLP® chipset from Texas Instruments and SIM2's advanced video processing technology for a crisp, natural, and colorful viewing experience in UHD HDR format.
A high-power 300W lamp enables SIM2 CRYSTAL 4 UHD HDR to provide up to 2.200 ANSI-lumens on-screen.
The SIM2 CRYSTAL 4 UHD HDR is the best solution for mid-size Home and Media Rooms. The SIM2 CRYSTAL 4 UHD HDR features a stylish 'made-in-Italy' design:
a distinctive, contemporary cabinet enriched by a luxurious crystal finish by designer Giorgio Revoldini. Available in Black Crystal glass.

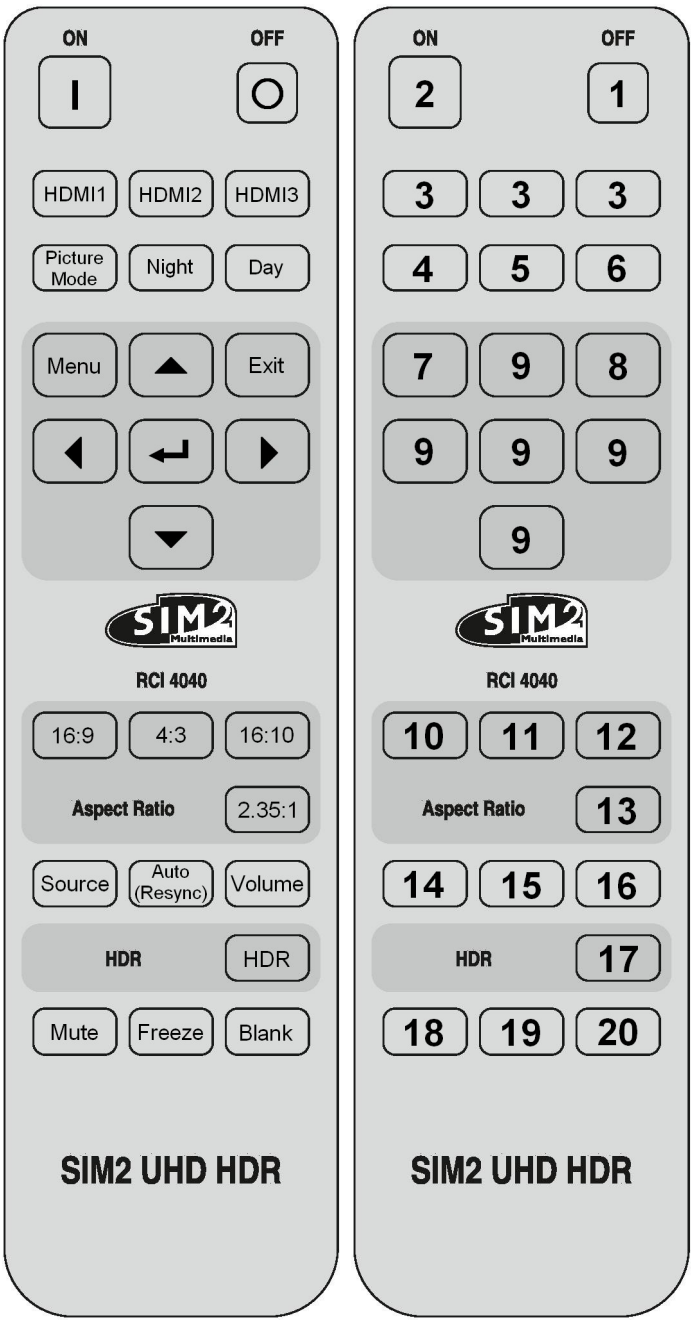
System Components

Your CRYSTAL4 projector ships with the following items:

- 1 x backlit remote control unit (with two AAA/LR03 batteries)
- 1 x AC power cord - 2 m (6.6 ft.) long
- 1 x User Guide (this document)
- 1 x HDMI cable

• Overview

Remote Control



1	**Power Off**
2	**Power On**
3	**HDMI 1,2,3**
4	**Picture Mode**
5	**Night**
6	**Day**
7	**Menu**
8	**EXIT**
9	↵ ▲ ▼ ◀ ▶
10	**16 : 9**
11	**4 : 3**
12	**16 : 10**
13	**2.35 : 1**
14	**Source**
15	**Auto (Resync)**
16	**Volume**
17	**HDR**
18	**Mute**
19	**Freeze**
20	**Blank**

1	**Power Off**	Turn Off the projector
2	**Power On**	Turn On the projector
3	**HDMI 1,2,3**	Choose source from HDMI 1, 2 or 3 connector number
4	**Picture Mode**	Select a picture mode for optimized settings for different applications
5	**Night**	Switch the picture mode to Night mode
6	**Day**	Switch the picture mode to Day mode.
7	**Menu**	Display or exit the on-screen display menus for projector
8	**EXIT**	Goes back to previous OSD menu, exits and saves menu settings.
9		Four directional select keys – use these menu arrows to select items or make adjustments to your selection
10	**16 : 9**	Displays 16 : 9 aspect ratio.
11	**4 : 3**	Displays 4 : 3 aspect ratio.
12	**16 : 10**	Displays 16 : 10 aspect ratio.
13	**2.35 : 1**	Displays 2.35 :1 aspect ratio.
14	**Source**	Displays the source selection menu.
15	**Auto (Resync)**	Automatically synchronizes the projector to the input source.
16	**Volume**	Displays the volume setting menu.
17	**HDR**	Activate the HDR function
18	**Mute**	Toggles the audio from on and off in the built-in speaker
19	**Freeze**	Toggles the freeze and unfreeze function in the displayed image
20	**Blank**	Toggles the blank function in the displayed image

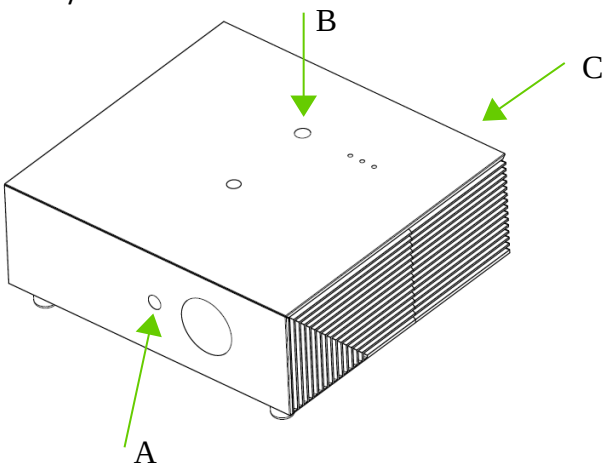
Custom Remotes

You can use your own IR remote control to control your CRYSTAL4 projector.

- If you are using a remote control with learning capabilities, use the projector remote control to teach the commands to your remote.
- If you are using a programmable remote control, the setup software probably allows importing Hex codes. See "*SIM2 CRYSTAL4 IR Control" document,* for a list of all the projector codes.

Operation

The CRYSTAL4 projector has 3 IR receivers: one (A) on the front of the unit, one (B) on the top and one (C) on inputs panel. The operative range of the remote control is approximately 10 m (33 ft.) and ±15°. Make sure that there is nothing obstructing the infrared beam between the remote control and the IR receiver you are pointing to. You can point the remote control towards the screen, as the IR beam is reflected by the screen towards front IR receiver of the projector. In this case the effective range of the remote control may be smaller than declared.



Item	*Description*
A	Front IR receiver
B	Top IR receiver
C	Input panel IR receiver

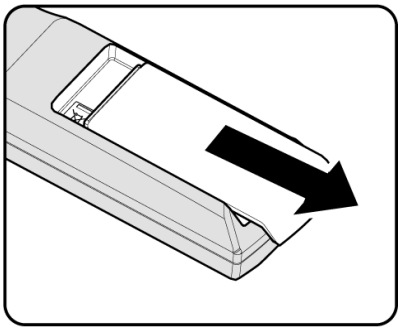
Batteries

To install batteries in the remote control:

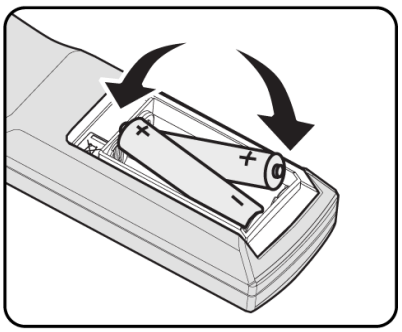
- Open the battery cover.
- Insert two AAA (LR03) batteries making sure the polarities match the **+** marks inside the battery compartment.
- Reinsert the cover.

Replace the batteries with new ones when the operating range of the remote control decreases. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to local regulations. Make sure you do not mix old and new batteries or different types of batteries.

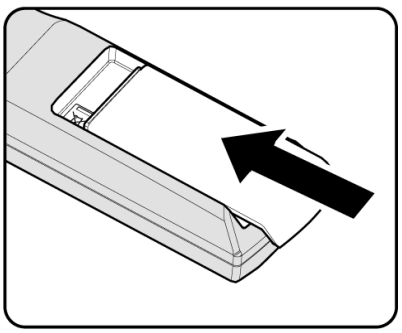
Remove the battery compartment cover by sliding the cover in the direction of the arrow.



Insert the batteries paying attention to the positive pole.

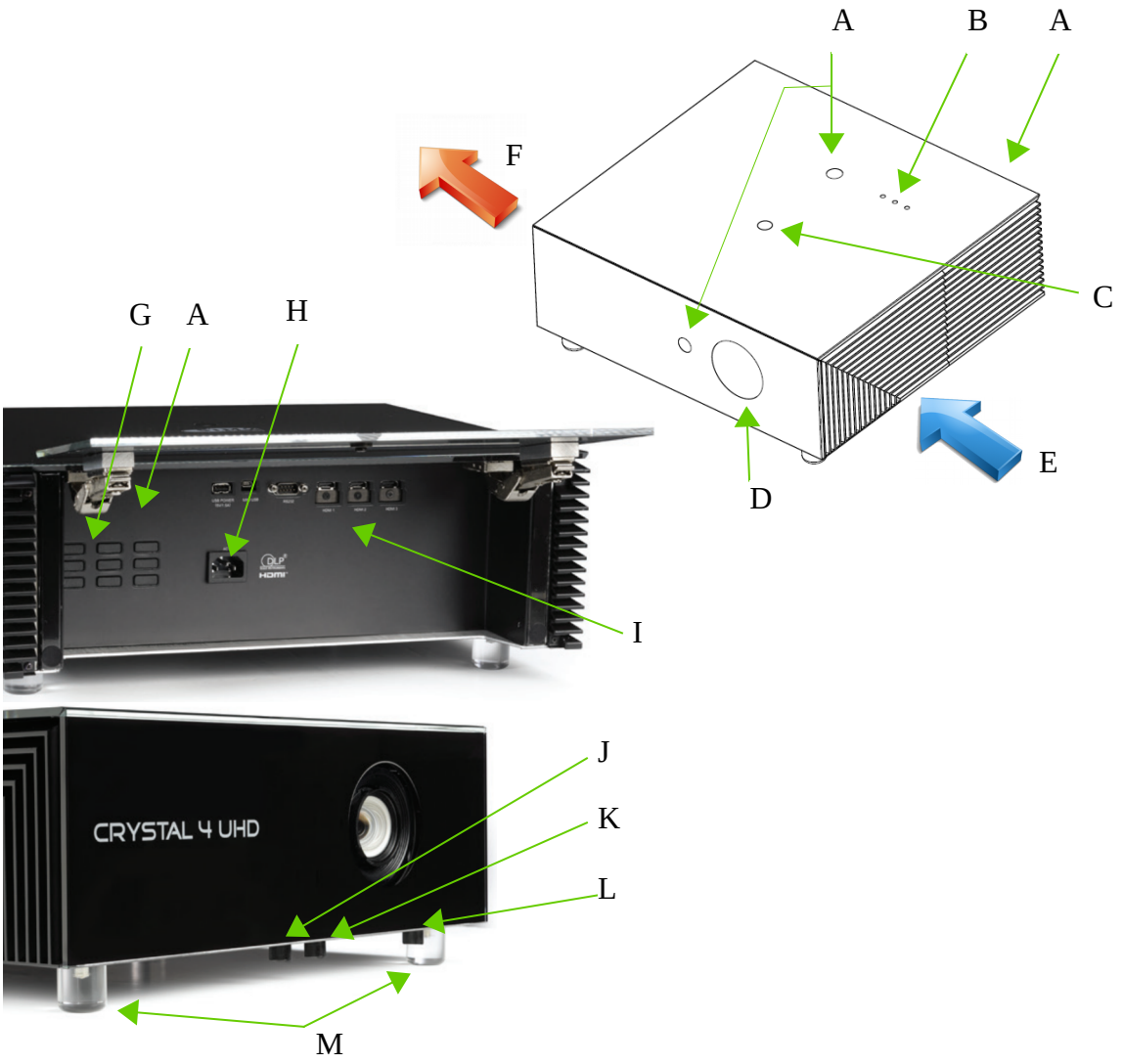


Reinsert the compartment cover by sliding the cover in the direction of the arrow.



Warning: If you will not use the remote control for a long time, remove the batteries to avoid battery leakage. When you dispose of the battery, you must obey the law in the relative area or country.

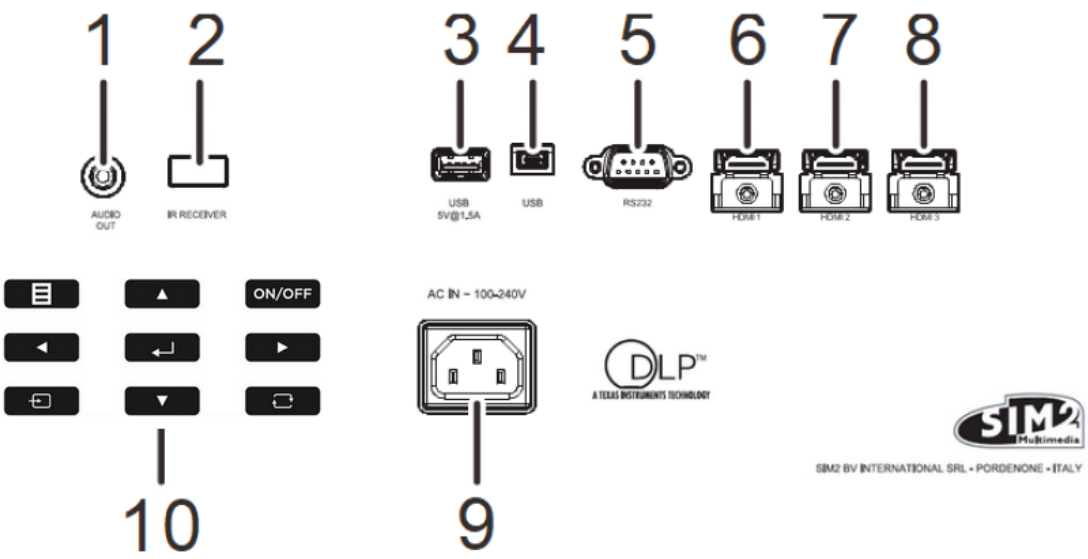
Product overview



A	IR Receiver
B	LED Status Indicators
C	Glass safety screw
D	Lens
E	Ventilation Inlet
F	Ventilation Outlet
G	Keypad

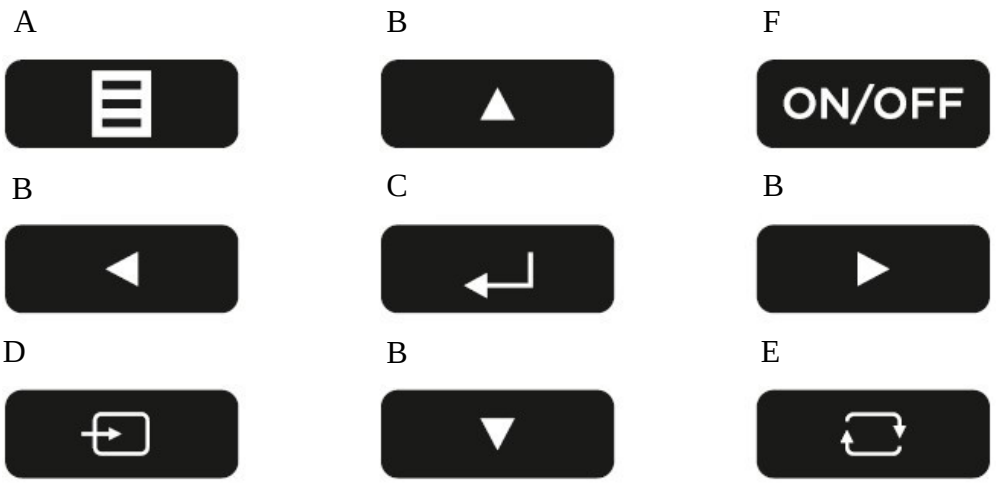
H	Power Socket
I	Input / Output
J	Optical Lens Vertical Shift
K	Optical Lens Zoom
L	Optical Lens Focus
M	Tilt-Adjustment Feet

Connections



Inputs	6	HDMI 1	v2.0a, HDCP 2.2 UHD
	7	HDMI 2	v2.0a, HDCP 2.2 UHD
	8	HDMI 3	v2.0a, HDCP 2.2 MHL UHD
Control/ Service	2	IR receiver	Receive IR signal from remote control.
	3	USB	USB-A (Power out 5V-1,5A) for firmware upgrade.
	4	USB	Mini USB-B for firmware upgrade.
	5	RS-232	RS232 port: projector control from serial commands
	10	Keypad	Function keys for projector's control and OSD operations
Outputs	1	AUDIO	For a connection to an audio amplifier.
Power In	9	AC in	Connect the Power cable

Keypad



A	Menu - opens and exits from the OSD menus
B	Left, Up, Right and Down, for Directional Select Keys in the OSD
C	Select or Enter in the OSD item
D	Source selection
E	Auto (Resync) - automatically synchronizes the projector to the input source.
F	Turn On or turn Off the projector

• Installation

This section provides instructions for the installation of the CRYSTAL4 projector.
Important: Installation procedures should be performed by a qualified AV system specialist.

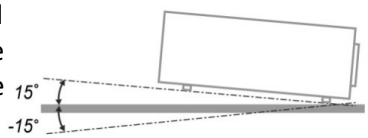
Location

When installing the CRYSTAL4 projector, take the following considerations into account.

Installation Type
Select the installation type that best suits your needs:

- front or rear projection
- floor or ceiling mount

The tilt angle of the projector should not exceed 15 degrees, nor should the projector be installed in any way other than the desktop and ceiling mount, otherwise lamp life could decrease dramatically, and may lead to other unpredictable damages.



Distances

Allow at least 50 cm (19,69 inch) clearance around the exhaust vent.

Cooling

Make sure that the planned location for the projector has adequate ventilation. Check that room temperature is below 35° C and that the projector is away from heating vents. Ensure a minimum 0.20 m (5 inch) clearance on the left, right and rear sides of the projector.

Power Outlets

Verify that the powers outlets are grounded and preferably shielded from power surges and fluctuations. A UPS is optional. CRYSTAL4 power supply operates on any nominal line voltage between 100-240 V AC, 50-60 Hz.

Cables

Check planned cable lengths for video and control cables and make sure these lengths do not exceed specifications.

Ambient Light

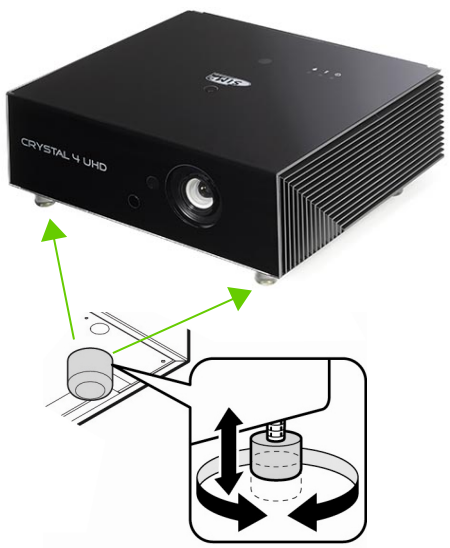
Avoid or minimize light sources directed at the screen to preserve the quality of the projected image.

Mounting

The projector can be Floor mounted (upright) or Ceiling mounted (inverted). Choose the method that best suits your installation.
The CRYSTAL4 projector has been designed to comply with the EN60950/UL950 Safety Norms (glass cabinet).
To further guarantee a safe installation in ceiling-mouning applications, SIM2 has equipped the projector with a glass safety screw that blends perfectly with the cabinet design (see C at page 12).
To determine where to position the projector, consider the size and shape of your screen, the location of your power outlets, and the distance between the projector and the rest of your equipment.

Important: The projection lens is not centered to the chassis, see the chapter 12, at page 44. Make sure the center-line of the lens is centered horizontally to the center of the screen.

Floor Mounting
Place the projector on a secure and flat surface (such as a table or a shelf). Adjust the two elevator feet at the bottom of the projector until the projector is level on all sides. Rotate the adjustable feet counter clockwise to raise the projector or clockwise to lower it. Repeat with the remaining feet as needed.



Ceiling Mounting
Invert the projector and suspend it from the ceiling using a specific Universal bracket with or without its the extension Tube.

Orientation

By default, the CRYSTAL4 is configured for a Front installation (projector installed upright and in front of the screen). If the projector is installed behind the screen or inverted, you can use the image orientation function of the projector.

Vertical Lens Shift

Ideally, the projector should be positioned at a right angle to the screen and in such a way that:

- the lens center and screen center are aligned with each other
- the projected image fills the screen perfectly

Keystone

If the projector is ceiling-mounted and the screen is lower than the projector, you may need to tilt the projector by adjusting the ceiling mount. If you do so:

- the top and bottom borders of the image will be unequal in length
- the sides of the image will be inclined

Location

Verify if the voltage is stable, grounded properly and there is no electricity leakage.

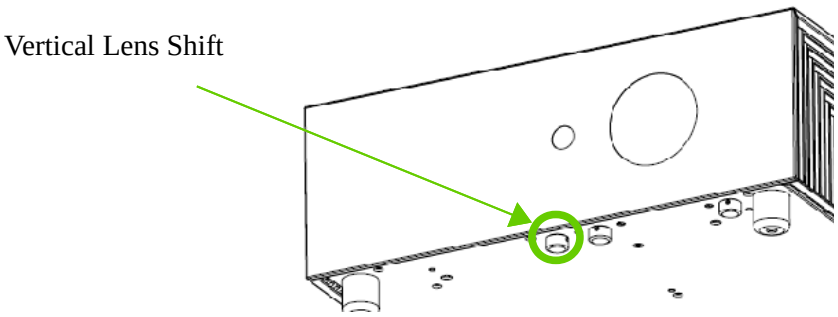
- Turn on Altitude Mode when located in high altitude areas.
- The projector can only be installed upright or inverted.
- Avoid installing near air conditioner duct or subwoofer.

Cooling

- Make sure the air outlet is 50cm clear of any obstruction to ensure proper cooling.
- Air outlet location should not be in front of the lens of other projector to avoid causing illusions.
- Keep the outlet at least 100cm away from the inlets of other projectors.
- Make sure there is no object blocking air input within 30 cm.
- Keep the inlet away from other heat sources

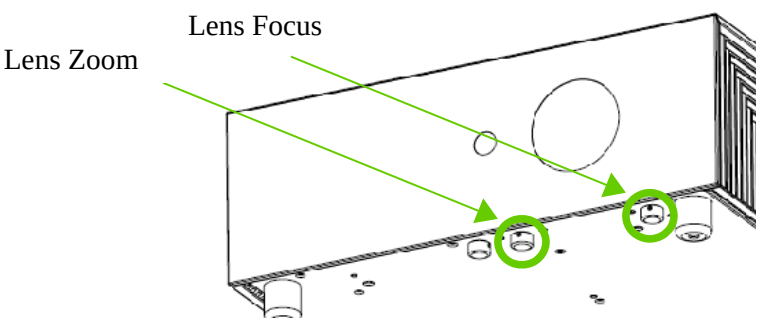
Mechanical Lens Shift

The CRYSTAL4 provides manual Vertical Shift control to change the display position with an offset up to +15% and -10% from the lens center point.



Mechanical Lens Zoom and Focus

The projector provides manual Zoom and Focus regulations.



Connections

Proceed as follows to connect the CRYSTAL4 to video sources, control devices and AC power.

When connecting your equipment:

- turn off all equipment before making any connections
- use the correct signal cables for each source
- make sure cables are routed so that people are not impeded or become a trip hazard
- ensure that the cables are securely connected (tighten the thumbscrews on connectors that have them)

HDMI The major benefits of this signal type are:

- best image quality, because the signal is carried in the digital domain throughout the entire signal path
- highest available resolution, because video sources can deliver full resolution content via HDMI only
- optimization of several image parameters (color space, aspect, signal range, over scan), thanks to auxiliary information (AVI info frame) sent by the source device together with the signal.

If your source has dual HDMI outputs, we would recommend direct connection to the projector from one of the HDMI connections and the second HDMI output to the input of an appropriate AV receiver/processor for audio.

Sources with a DVI-D output can be connected to the HDMI input of the projector using a suitable DVI-D to HDMI cable. In this case no auxiliary information is sent from the source to the projector.

Note: HDMI uses a code known as HDCP (High-bandwidth Digital Copy Protection), which protects the recorded supports from being copied illegally. The connection between the source and display requires that the two devices perform a handshake and exchange code keys before being able to display an image. The InstaPort technology allows a simultaneous pre-authentication of every attached device at the same it is connected, reducing drastically the time required for HDMI source switching. For this reason you may note a slight delay before the image appears on the screen, but it is perfectly normal.

Control

You can connect the CRYSTAL4 projector to a Personal Computer or a control system through one of the following methods:

- RS-232 port, using a standard 9-pin straight serial cable
- RS-232 port, using a USB to serial converter cable. In this case, installation of a device driver provided by the cable manufacturer may be required.

Note: RS-232 communications are limited to max 15 m (50 ft.), VGA communication are limited to max 20 m (65 ft.), HDMI communication are limited to max 20 m (65 ft.).

USB

USB-A for 5V, 1.5A for service functions.

Mini USB

USB-B for service functions.

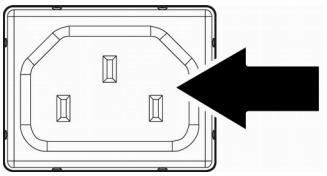
AC Power

Plug the female end of the power cord to the AC receptacle located on the left hand side of the projector (100-240 V AC, 50-60 Hz) and the other end into a grounded AC outlet. An high-quality surge protector is recommended while a UPS is optional.

Switching On and Off

Switching On

I. Securely connect the power cord supplied and the signal cable. When connected, the Power LED will turn red.



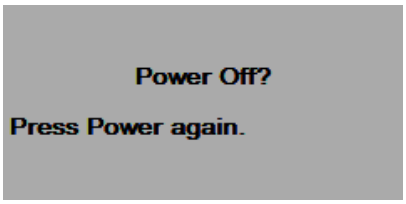
II. Turn on the projector by pressing ⏻ button either on the back panel of the projector or the " | " button on remote control. The power LED will now turn blue. The startup screen will display in approximately 20 seconds.

III. Turn on and connect the source that you want to display on the screen (computer, notebook, video player, etc). The projector will detect the source automatically. If not, read the following note.

Note: if you connect multiple sources at the same time, press the "SOURCE" button on the back panel or the direct source keys on the remote control to switch between inputs.

Switching Off

I. Press the ⏻ button on the remote control or ⏻ button on the back panel of the projector one time. The following message will be displayed on the screen.



Press the button on the remote control, or the ⏻ on the back panel again to confirm, otherwise the message will disappear after 15 seconds. When you press the ⏻ button for the second time, the projector will shut down (the interval between pressing has to be around one second to turn off the projector).

II. The cooling fans continue to operate for about 10 seconds for cooling cycle and the Power LED will flash blue. When the Power LED lights solid red, the projector has entered in standby mode. If you wish to turn the projector back on, you must wait until the projector has completed the cooling cycle and has entered standby mode. Once in standby mode, simply press the ⏻ button on the back panel or the " | " on the remote control to restart the projector.

III. Disconnect the power cord from the electrical outlet and the projector.

Warning: Do not turn on the projector immediately following a power off procedure.

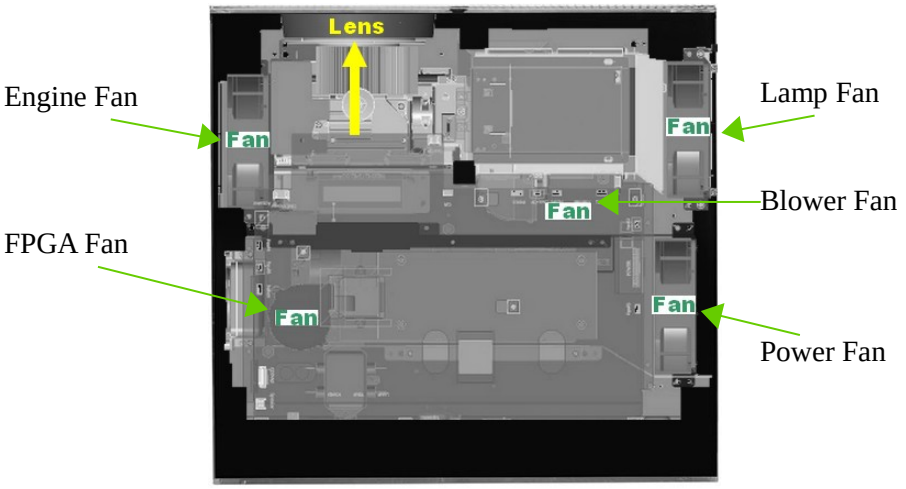
LED indicators

Usual projector status

MESSAGE	POWER LED *(green)*	Temp LED *(Red)*	LAMP LED (Red)
Standby State (Input power cord)	On	Off	Off
Power On (Warming)	Flashing		
Power On and Lamp Lighting	Steady Light		
Power Off (Cooling)	Flashing		

Error projector status

MESSAGE	Detail	POWER LED *(green)*	Temp LED *(Red)*	LAMP LED (Red)
Temperature	Over temperature	Off	On	Off
	Ballast T1 Over temp.			Flashing – 1 blinks
	Generic Ballast over t.	Flashing – 5 blinks	Off	Flashing – 1 blinks
	Thermal Break Sensor	Flashing – 4 blinks		Off
Lamp	Power On Lamp fail	Flashing – 5 blinks	Off	Off
	Lamp fail while working			Flashing – 5 blinks
	Lamp voltage too low			Flashing – 7 blinks
Fans	Fan blower locked	Flashing – 5 blinks	Off	Flashing – 6 blinks
	Fan blower error	Flashing – 6 blinks		Flashing – 1 blinks
	Lamp fan error			Flashing – 2 blinks
	Power fan error			Flashing – 3 blinks
	Engine fan error			Flashing – 4 blinks
	FPGA fan error			Flashing – 5 blinks



Error projector status - continue

MESSAGE	Detail	POWER LED *(green)*	Temp LED *(Red)*	LAMP LED (Red)
Open	Glass cabinet removed	Flashing – 7 blinks	Off	Off
Devices	DMD error	Flashing – 8 blinks	Off	Off
	ASIC error	Flashing – 8 blinks		Flashing – 1 blinks
	Color Wheel error	Flashing – 9 blinks		Off
	Ballast error #1	Flashing – 5 blinks		Flashing – 8 blinks
	Ballast error #2	Flashing – 5 blinks		Flashing – 10 blinks
	Main-controller error	Flashing – 2 blinks		Off

In the event of an error, please disconnect the AC power cord and wait for one (1) minute before restarting the projector. If the Power or Lamp LEDs are still blinking or any other situation that isn't listed in the chart above, please contact your service center.

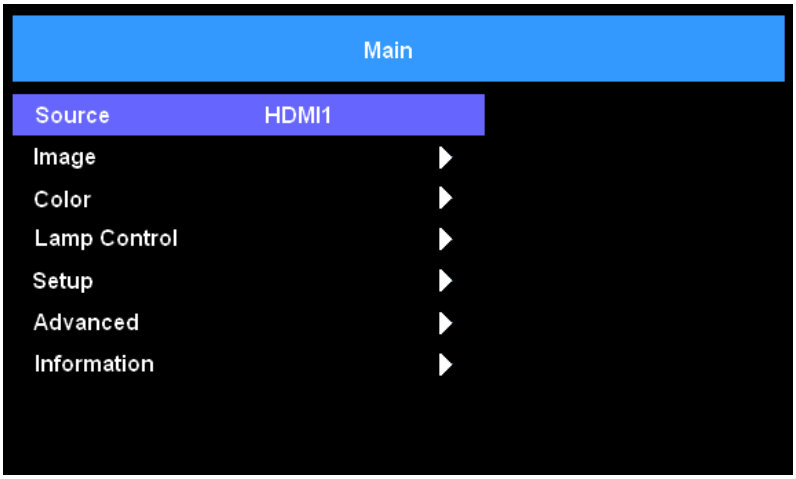
• Operation

Main Menu

The main menu gives access to all projector adjustments. It is divided in seven main sections:

Source	Displays the source selection sub-menu.
Image	This menu section provides access to common image quality adjustments.
Color	Configure the color settings.
Lamp Control	Configure Lamp features
Setup	This menu section provides access to installation adjustments.
Advanced	Setup the HDR features
Information	This menu section provides access to some projector and source information.

with various item and sub-menus in each of them.



To enter the main menu and select the desired section press “Menu” on the remote control. To enter a sub-menu (when available) press ↵ on the remote control.
Use ▲ or ▼ to select an item on a list either in the main menu and the sub-menu.
To return to the previous menu when in a sub-menu press “Menu” on the remote control.

To select menu items press ◄ ► on the remote control. To turn off the main menu press “Menu” on the remote control. Use ◄, ► to change settings on a selected item.

Note: Depending on the selected input source and signal characteristics, some adjustments may not be available.

Image and **Setup** menu sections provide access to most commonly-used projector adjustments. Note that, in **Image** menu:

- you can enter these sections only when an image is displayed;
- the controls in these sections only operate on the active input;
- when you select another input all the settings in these sections are automatically saved;
- each time you select an input the previously saved settings for that input or mode CRYSTAL4 will be automatically recalled;

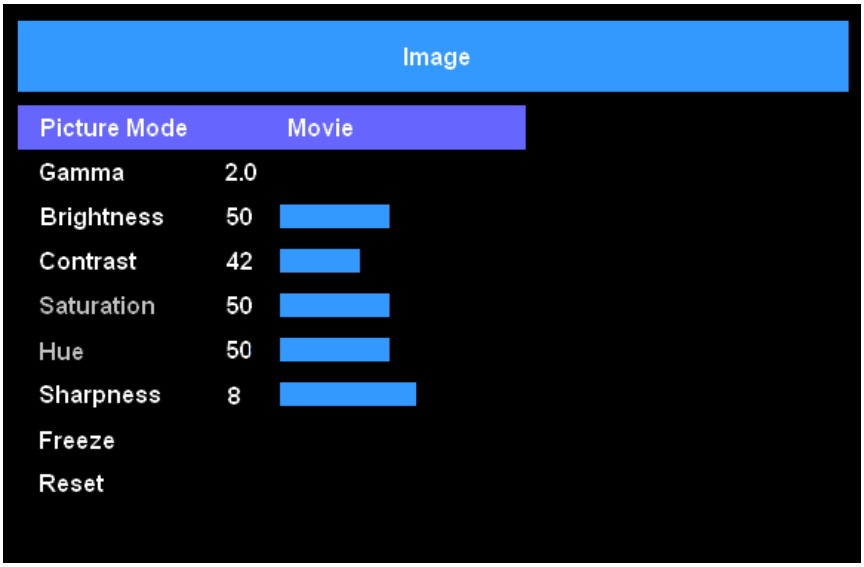
Setup section provide access to installation and OSD adjustments. The settings in these sections are global (for all inputs and modes, not just the active one).

Source

This menu section allows to select the input source from one of tree available HDMI inputs.

HDMI1	v2.0a, HDCP 2.2 UHD
HDMI2	v2.0a, HDCP 2.2 UHD
HDMI3	v2.0a, HDCP 2.2 MHL UHD

Image



Picture Mode

There are many factory presets optimized for various types of images:
Movie: default settings for home theater.
Presentation: this mode is suitable for showing PowerPoint presentations when the projector is connected to the PC.
Day: Optimizes picture and color settings for a room with a normal daylight.
Night: Optimizes picture and color settings for a room with dim lighting.
User: user's settings.

Note: When the projector recognize an HDR content, in the signal, it will switched to the HDR mode. If this will not happens, the user can force the HDR view, pressing the "HDR" button in the Remote Control.

Gamma

Determines the projector response to the gray scale, emphasizing or attenuating the different grades of brightness (blacks, dark, medium and light grays, whites) in the projected image. Choose the setting that is appropriate to the type of video source, the ambient lighting and your subjective preferences.
This allow you to set up gamma curve type. After the initial setup and fine tuning is completed, utilize the Gamma adjustment steps to optimize you image output.
The available settings are:

- **2.2:** for standardized setting
- **2.4:** for video or TV source
- **2.0/1.8:** for specific PC/Photo source
- **S-curve:** increase the contrast and the saturation

Brightness

Adjust the brightness of the image.
Use this control to adjust the darker areas of the picture (black level), without affecting bright areas. Increasing the value will give more detail in darker parts of the picture. For correct adjustment it may prove useful to display a gray scale test pattern with at least twenty bands. Now try to reduce the brightness of the black band as much as possible while ensuring that it can still be distinguished from the adjacent band with brightness slightly higher than black. Alternatively use a scene composed of black objects alongside other dark colored objects and try to ensure that all the objects can be separately identified.
Press ◄ to darken the image
Press ► to lighten the image
Range [0 .. 100]

Contrast

The contrast controls the degree of difference between the lightest and darkest parts of the picture. Use this control to adjust the image's white level without affecting its dark areas. For correct adjustment it may prove useful to display a gray scale test pattern with at least twenty bands. Now try to increase the brightness of the white band as much as possible while ensuring that it can still be distinguished from the adjacent band with brightness slightly less than white. Alternatively use a scene composed of well-lit white objects surrounded by light objects with lower level lighting, and try to ensure that all the objects can be separately identified.
Press ◄ to decrease the contrast
Press ► to increase the contrast
Range [0 .. 100]

Saturation

Adjust a video image from black and white to fully saturated color.
This control (also called Saturation) increases or decreases the picture color intensity. When set to zero, color images are shown in black and white. Increase the value until the colors appear natural: suitable references include skin tones and the green in grass in landscape shots.
Press ◄ to decrease the color saturation in the image
Press ► to increase the color saturation in the image
Range [0 .. 100]
Note: Color is only supported for composite and component sources.

Hue

Adjust the color balance of red and green

This adjustment controls the purity of colors. Basically it determines the red-green ratio of the picture. Decreasing the value increases the red content of the image, increasing it increases the green content. For this adjustment use skin tones or a test card image with color bars as a reference. This adjustment is primarily used for NTSC sourced material.

Press ◄ to increase the amount of green in the image

Press ► to increase the amount of red in the image

Range [0 .. 100]

Note: Tint is only supported for composite and component sources.

Sharpness

Adjust the sharpness of the image.

This adjustment increases or decreases the level of picture detail. When the sharpness value is reduced the image details appear less pronounced, while increasing the value raises image definition, making the outline of objects sharper. Note that an excessively large value may result in a noisy picture and the outline of images will have a high amount of edge enhancement.

Press ◄ to decrease the sharpness

Press ► to increase the sharpness

Range [0 .. 10]

Freeze

Display the quick menu to enable or disable the Freeze function.

Reset

Press the button ↵to overwrite, with default values, the current picture mode setup.

Color

This menu give the possibility to adjust the projector color settings, as the selection of Color temperature and the single setup for any primaries and secondaries colors.
Press the ↵to enter the menu and then use ▲ or ▼ to select item.

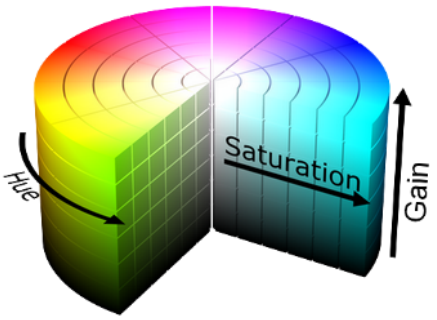
Color Temperature

Select a color temperature from “Warm”, “Normal”, “Cold”.

- **Warm** is a white point D65
- **Normal** is a white point D75
- **Cold** is a white point D83

HSG

This function allows to customize the Color Gamut by the user, adjusting each color by its Hue, Saturation, and Gain.
Hue is the primary characteristic of color that allows us to distinguish one color from another. A color's hue is represented on the CIE chart by its angle to the white point. When a color's hue is off, its appearance will seem contaminated by other colors. For example, red that is too yellowish will begin to seem orange. Blue that is too reddish will begin to appear purplish.
Saturation is the colorfulness of the color independent of its luminance. A color's saturation displays on the CIE chart as the distance from the white point. Add saturation to a color and it will appear deeper and richer-red becomes crimson. Under saturate a color and it will appear less colorful, but at the same level of intensity: red becomes pink.
Gain is the intensity of color.



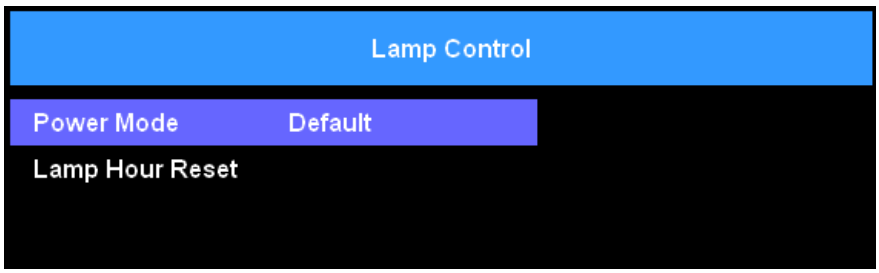
Press the ↵to enter the menu and then use ▲ or ▼ to select item.
Select one of the colors (Red/Green/Blue/Cyan/Magenta/Yellow/White) to adjust its Hue, Saturation and Gain.
Press ◄ to decrease the value
Press ► to increase the value
Range [0 .. 199]

Reset

Press the button ↵to overwrite, with default values, all the hue, saturation and gain values, for any colors.

Lamp Control

This menu change the Lamp Power Mode setup and allows to reset the lamp hours. This last setup becomes useful when the user perform a lamp replacement.



Power Mode

Press the button ↵to enter the menu and then use ▲ or ▼ to select item.
This function allows you to choose Boost or Default values; it is intentionally disabled during the lamp warm up (about 2 minutes).

- **Boost**
  The displayed image is in higher brightness mode.
- **Default**
  The displayed image is in lower brightness mode. This save the lamp life.

Lamp Hour Reset

Press the button ↵to execute the reset operation.
This function is normally used after replacing the lamp.

Setup

This menu section provides access to installation adjustments.

Aspect Ratio

This adjustment changes the dimensions and aspect ratio (relationship between width and height) of the displayed image. There are six default aspects available. You can select a different aspect for each source: the selected aspect ratio will be automatically applied the next time the relative source is displayed.

The following aspects are available:

- **Fill:** this format is the default value which stretches the image to fit the content box, regardless of its aspect-ratio.
- **4:3:** this format is for 4x3 input sources.
- **16:9:** this format is for 16x9 input sources, like HDTV and DVD enhanced for widescreen TV.
- **16:10:** this format is for 16x9 input sources, like some widescreen PC resolution.
- **Native:** this format displays the original image without scaling.
- **2.35:1:** this format is for some letterbox aspect format DVDs or anamorphic DVDs and HDTV source. Use it with anamorphic lens and 2.35:1 screen format.

High Altitude

when “On” is selected, the fans will spin faster. This feature is useful in high altitude areas where the air is thin.

Orientation

Selects the orientation of the projected image.

Press ↵ to select one the four preset orientation. Use arrow buttons to switch between the four presets.

- **Front-Table:** this is the default selection. The image is projected straight on the screen.
- **Rear-Table:** when selected, the image will appear reversed
- **Front-Ceiling:** when selected, the image will turn upside down
- **Rear-Ceiling:** when selected, the image will appear reversed in upside down position

Note: Rear-Table and Rear-Ceiling are to be used with a translucent screen.

Auto Power Off

Selects to activate the Auto Power Off timer. The countdown timer will start when there is no signal being sent to the projector. The projector will automatically power off when the countdown has finished.

Auto Power On

Choose “On” to activate the Auto Power On mode. The projector will automatically power on when AC power is supplied, without pressing the “Power” key on the projector keypad or on the remote control.

Startup Logo

Use this function to set the desired startup screen. If changes are made, they will take effect the next time the projector is powered on. Select “On” for the SIM2 startup screen or “Off” to do not have the logo displayed on startup screen. Selects to view the start-up logo, displayed on the screen, when the projector is in warm-up status.

Blank Screen

Use this function to display a Black, Purple, Blue or White color when no signal is available.

Auto Source

Select to enable or disable the automatic source detection.

Menu Settings

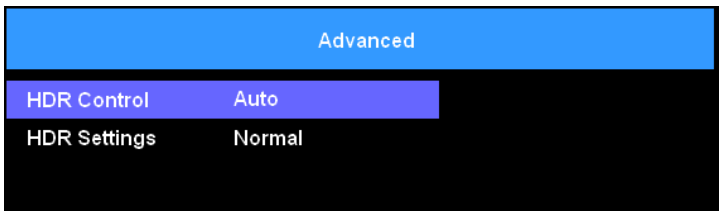
This menu give the possibility to change some OSD menu proprieties.

- **Language:** selects the desired OSD language. It can display the menus in Multilanguage. Use ▲ or ▼ to select your preferred language. Press ↵to finalize the selection. Select a language between English, French, Spanish, German, Portuguese, Italian, Chinese simplified, Chinese Traditional, Japanese, and Korean.
- **Menu position:** adjust the zoom in the projected image. Its possible values are Top Left, Top Right, Bottom Left, Bottom Right and Center.
- **Time out:** set the duration where the OSD menu stay visible on the screen.

Select “Always” to keep the OSD menu, until you change the OSD status, pressing a button in the remote control or keypad. Select 10, 30 seconds and 60 seconds to insert a countdown timer.

Advanced

In this menu there are some HDR customizations.



HDR Control

Choose “Auto” to activate the automatically recognition of HDR mode and apply the HDR image processing function, if the signal content have an HDR image type. Select “Off” to view always the input source in SDR mode (Standard Dynamic Range).

HDR Settings

Choose an HDR mode preset, from three possible solutions, “Normal”, “Details” and “User”. In “User” it is possible to customize all the image parameters; in “Normal” and “Details” modes some adjustments (i.e. Brightness, Contrast etc.) are disabled.

HDR Note:

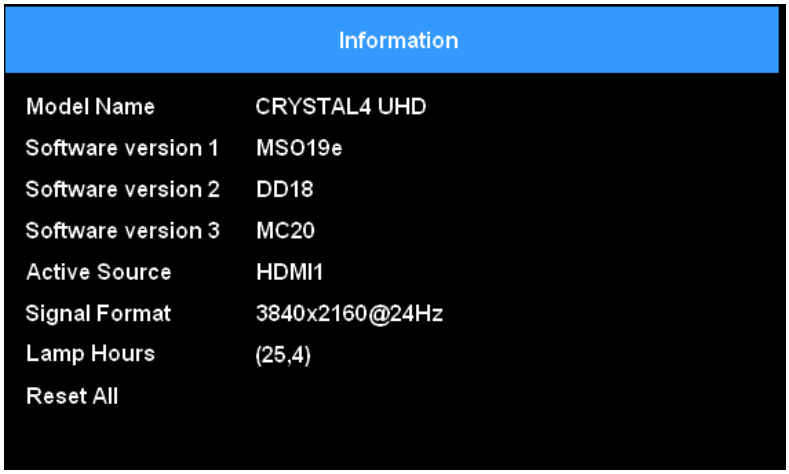
HDR stand for "High Dynamic Range." HDR is a technology that improves the range of color and contrast in a digital image.

In order to display HDR video correctly, the projector must also support HDR.

This projector reach the standard HDR10 media profile: UHD resolution, HDMI 2.0a with HDCP 2.2, and at least a bit depth of 10-bits.

Info

This menu section provides access to some projector information.



- **Model Name**: projector model name.
- **Software version 1**: is the (scaler) Main processor's software version.
- **Software version 2**: is the DLP's software version.
- **Software version 3**: is the MCU processor's software version. This is the stand-by microprocessor.
- **Active source:** is the input source selected.
- **Signal Format**: it displays signal resolution and frequency and reports in case of HDR content HDR label.
- **Lamp Hours**: it shows the number of hours the lamp has been in use.

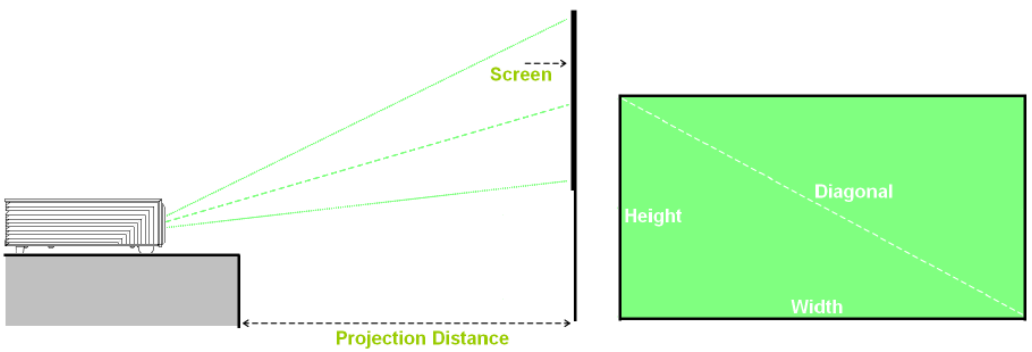
Reset All

Press the ↵to return the factory default settings for any menus parameter.

7 Image size and projection distance

Diagonal Size (inch)	Screen Size W x H				Projection Distance (D)			
	meter		inch		meter		inch	
	Width	Height	Width	Height	Wide	Tele	Wide	Tele
60	132.8	74.7	52.3	29.4	184.6	277.6	72.7	109.3
70	155.0	87.2	61.0	34.3	215.4	323.9	84.8	127.5
72	159.4	89.7	62.8	35.3	221.5	333.1	87.2	131.1
80	177.1	99.6	69.7	39.2	246.2	370.1	96.9	145.7
84	186.0	104.6	73.2	41.2	258.5	388.6	101.8	153.0
90	199.2	112.1	78.4	44.1	276.9	416.4	109.0	163.9
96	212.5	119.6	83.7	47.1	295.4	444.2	116.3	174.9
100	221.4	124.5	87.2	49.0	307.7	462.7	121.1	182.2
120	265.6	149.5	104.6	58.8	369.2	555.2	145.4	218.6
135	298.9	168.1	117.7	66.2	415.4	624.6	163.5	245.9
150	332.1	186.8	130.7	73.5	461.6	694.0	181.7	273.2
200	442.7	249.1	174.3	98.1	615.4	925.3	242.3	364.3

Note: Diagonal size is relative to a 16:9 screen dimension. 12-degree device



Focal Lenght (f) (mm)	19.975(Wide) ~ 39.811 @ 2.98m
F Number	2.42 ÷ 2.97
Zoom Range (ratio); *Lens Shift*	1.5x; Horizontal, Vertical +/- 15%
Throw Ratio	1.42 ÷ 2.09:1 (+/- 5%)
Throw Distance	1,2m ÷ 10m (3,9ft ÷ 32,8ft) for focus range

8 Compatibility Modes

Computer/Video/HDMI/Mac Compatibility

Signal	Resolution	Refresh Rate (Hz)	RGB	YUV
NTSC	720 x 480	60	✓	-
PAL/SECAM	720 x 576	50	✓	-
SDTV 576p	720 x 576	50	✓	-
SDTV 480p	720 x 480	60	✓	-
SDTV	1440 x 480i	60	✓	✓
	1440 x 576i	50	✓	✓
VGA	640 x 480	59.94/ 74.99/ 85	✓	-
MAC	640 x 480	66.59	✓	-
SVGA	800 x 600	60.3/ 75/ 85.06	✓	-
MAC	832 x 624	74.54	✓	-
XGA	1024 x 768	60/ 75/ 85	✓	-
HDTV (720p)	1280 x 720	47.95	✓	-
	1280 x 768	60	✓	-
	1280 x 720	50/ 59.94/ 60	✓	✓
WXGA	1280 x 800	60	✓	-
	1280 x 960	60	✓	-
	1366 x 768	60	✓	-
WXGA+	1440 x 900	60	✓	-
SXGA	1280 x 1024	60/ 75/ 85	✓	-
SXGA+	1400 x 1050	60	✓	-
WSXGA+	1680 x 1050	59.94	✓	-
UXGA	1600 x 1200	60	✓	-
HDTV (1080p)	1920 x 1080	47.95	✓	-
	1920 x 1080	23.98/ 24/ 25	✓	✓
	1920 x 1080	29.97/ 30	✓	✓
	1920 x 1080	50/ 59.94/ 60	✓	✓
HDTV (1080i)	1920 x 1080	50/ 59.94/ 60	✓	✓
WUXGA	1920 x 1200	50/ 60[1]	✓	-
2K	2048 x 1080	24/ 25/ 30/ 50/ 60	✓	✓
UHD	3840 x 2160	24/ 25/ 30	✓	✓
	3840 x 2160	50/ 60	8 bits	8 bit/ 10 bit (4:2:2)/ 12 bit (4:2:2)
4K	4096 x 2160	24/ 25 /30	✓	✓
	4096 x 2160	50/ 60	8 bits	8 bit/ 10 bit (4:2:2)/ 12 bit (4:2:2)

[1]: 1920 X 1200 @ 60 Hz only support RB (reduced blanking).

9 Replacing the lamp

This menu section provides the instruction to replace the projector lamp.

Warning

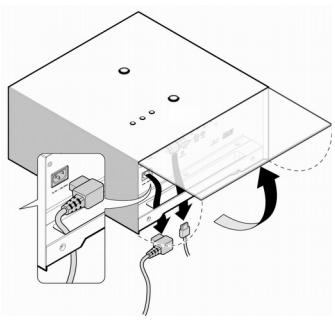
If ceiling mounted, please use caution when opening the lamp access panel. It is recommended to wear safety glasses if changing the lamp while ceiling mounted. Caution must be used to prevent any loose parts from falling out of projector.

Lamp compartment is hot! Allow it to cool down before changing lamp!

To reduce the risk of personal injury, do not drop or touch the lamp module. It may shatter and cause injury if it is dropped.

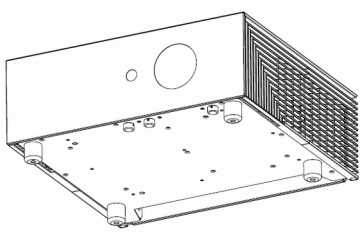
Procedure:

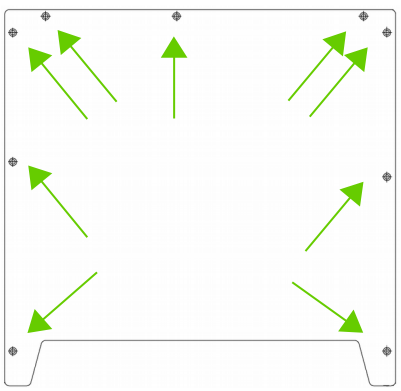
1. Switch off the power to the projector by pressing the " ⏻ " button on the remote control or the projector keypad.
2. Allow the projector to cool down for at least 10 minutes.
3. Disconnect the power cord.



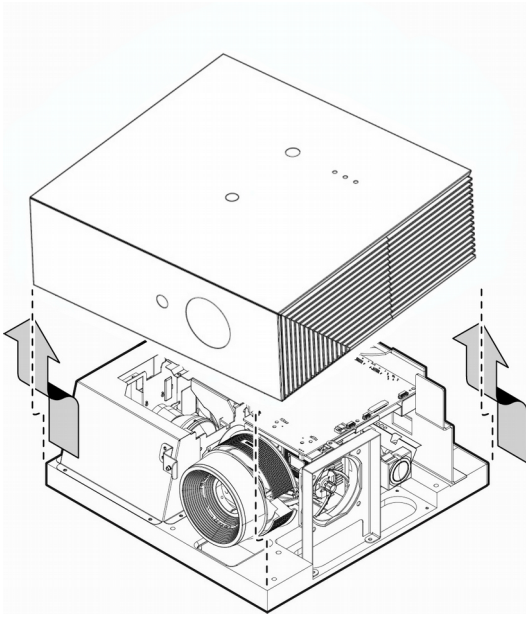
4. Remove the 4 screws on the left and right sides, inside the inputs compartment.

5. Turn upside down the projector; remove the nine M4 screws on the bottom of the projector.





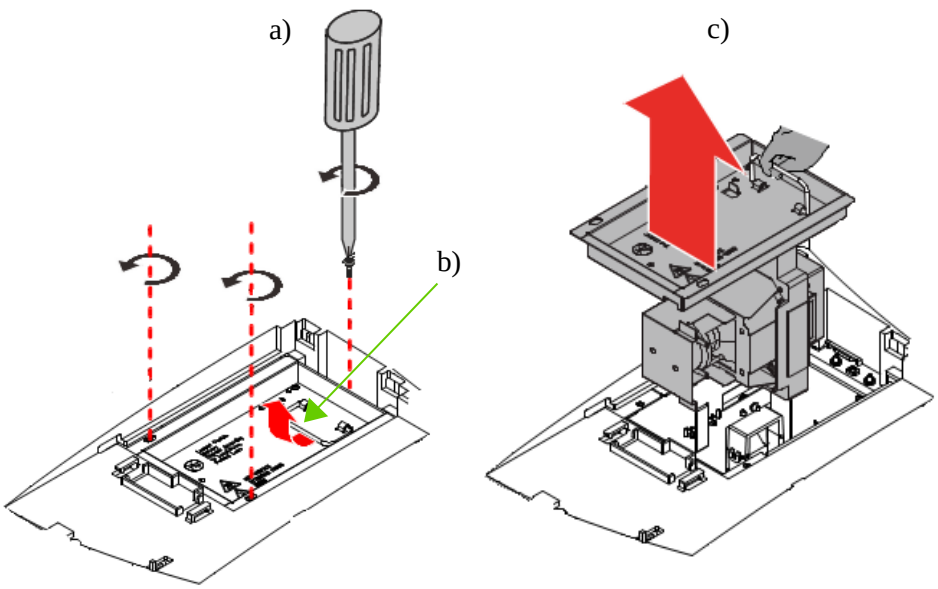
6. Turn the projector in the up right position and remove the glass cabinet



7. Unscrew the 3 screws on the lamp module (a).

8. Lift the module handle up (b).

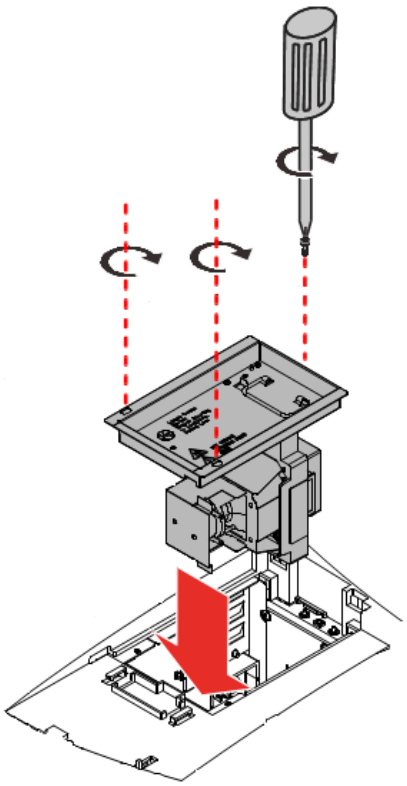
9. Pull firmly on the module handle to remove the lamp module (c).



10. Turn Reverse steps 4 to 7 to install the new lamp module.
    While installing, align the lamp module with the connector and ensure it is level to avoid damage.

11. After replacing the lamp, you should reset the lamp hour counter to zero: press the menu button to open the OSD menu; enter in Lamp Control and execute the “lamp Hour Reset” function.

Note: the lamp module must sit securely in place and the lamp connector must be connected properly before tightening the screws.



Note: the screw on the lamp cover and the lamp cannot be removed.

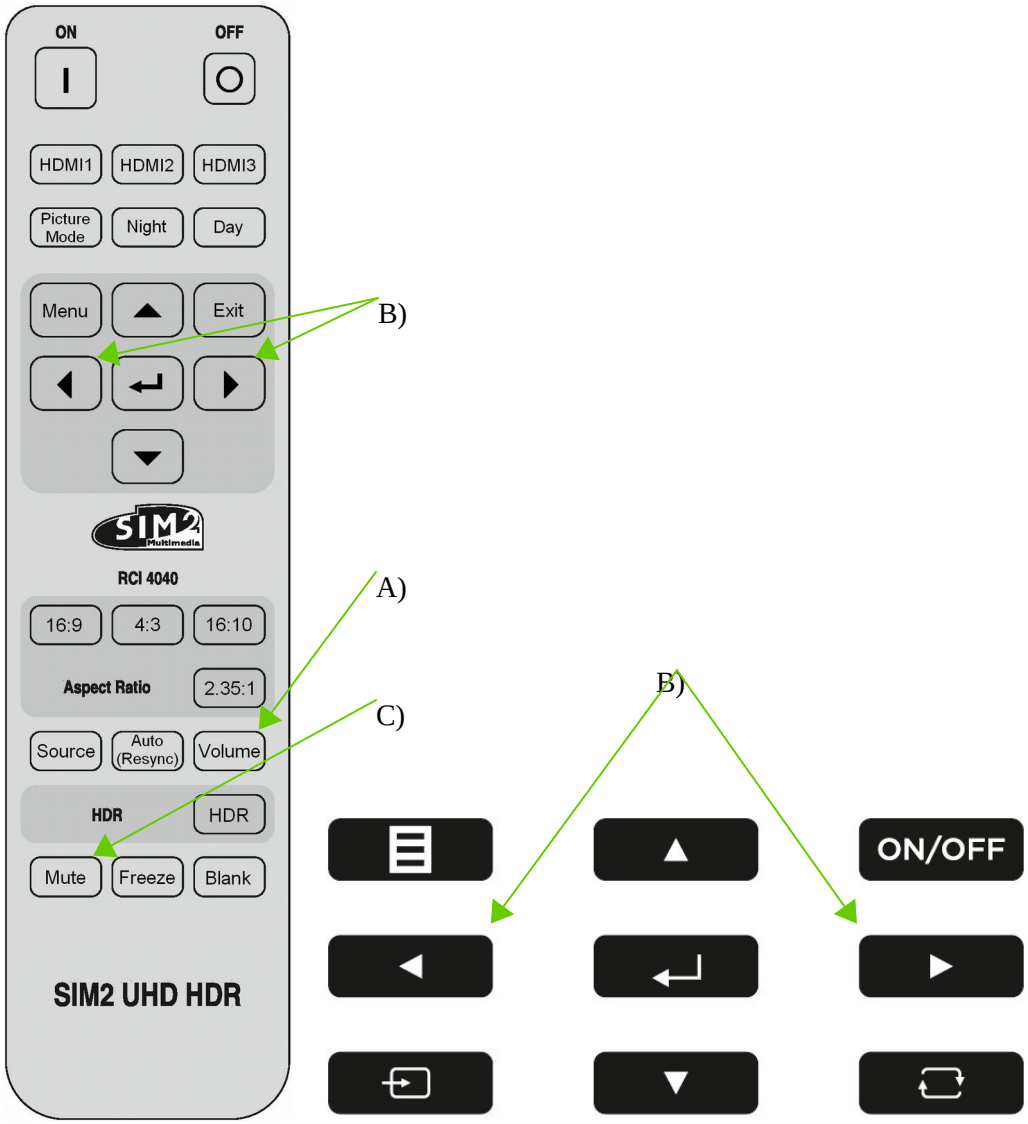
Note: the projector cannot be turned on if the lamp cover has not been placed back on the projector.

Note: do not touch the glass area of the lamp. Hand oil can cause the lamp shatter. Use a dry cloth to clean the lamp module if it was accidentally touched.

10 Adjusting the volume

The volume control appears on the display when is pressed the button “Volume” (A).

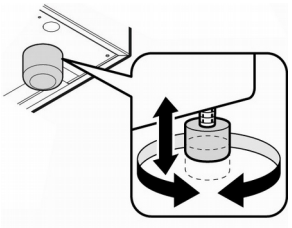
Press the ◄► buttons on the keypad or remote control to adjust Volume +/-.
Press the MUTE button to turn off the volume. (This feature is available only on the remote).



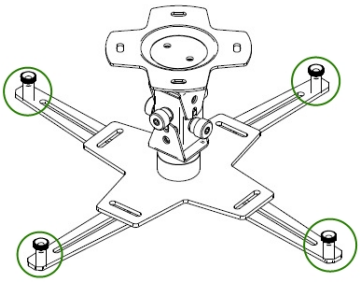
11 How to install a ceiling bracket with Crystal4

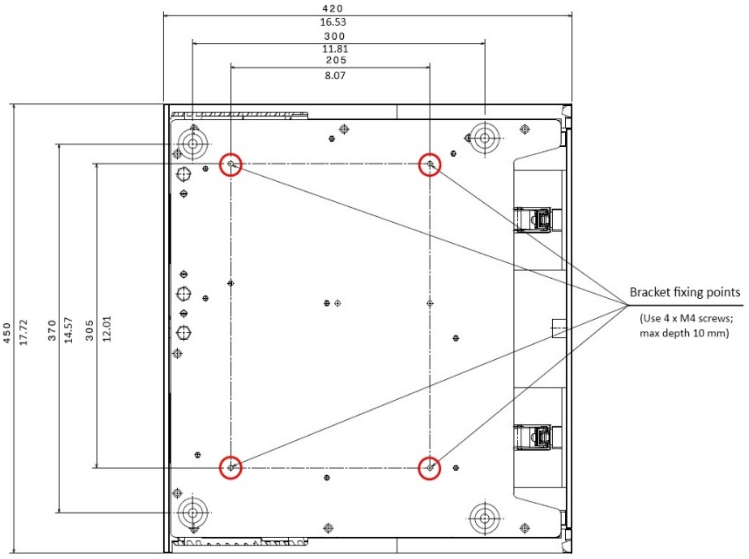
This quick guide explains how to install a ceiling bracket to the CRYSTAL4 projector.

• Even if it is not strictly necessary, you can remove the 4 feet (only for aesthetics matter).



• To install the bracket remove the 4 screws underneath the projector, indicated by the red circles.





• Attach bracket by using 4 x M4 screws and referring to the user guide of bracket; consider that the max depth of the holes for the fixing is 10 mm.

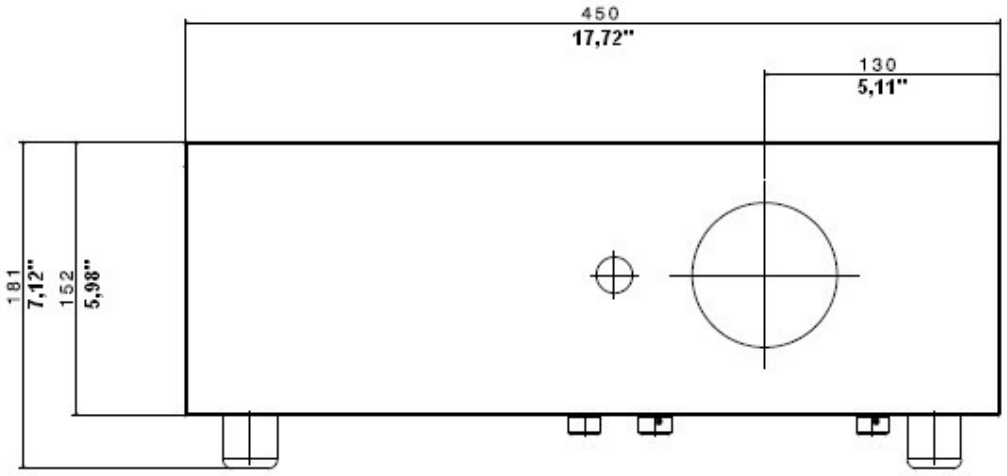
For ceiling mounting use only SIM2-approved ceiling brackets and adhere to the installation instructions and safety guidelines provided with the bracket. Do not over-tighten the screws.

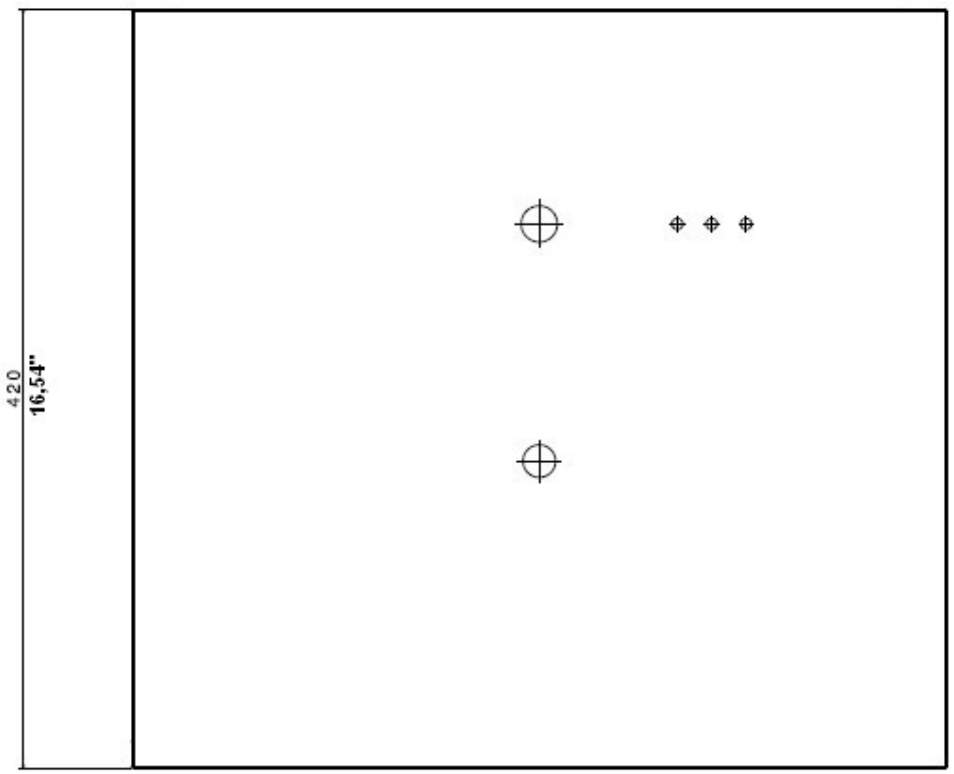
12 Specifications

Projection Type	Digital Light Processing (DLP TRP Type 0.67 in.) 1-chip 3840x2160
Projection Lens	High-quality glass 1.42 ÷ 2.09 ± 5% Throw Distance 1,2m ÷ 10m (3,9ft ÷ 32,8ft) for focus range Screen size 0,6 ÷ 8,3m (26" ÷ 324,9")
Image Resolution	4K UHD (support to 3840x2160@60Hz, 4096x2160@60Hz)
Dynamic Range	HDR compliant, with dedicated presets.
Color Wheel	Six segments RGBRGB
Lens Vertical shift, Zoom and Focus	12-degree device, with manual regulations Vertical shift ± 15% (based on 12-degree) 1,5x zoom
Light Source	300W lamp – up to 2.200 Ansi Lumens
Inputs/Outputs	▪ 2 x HDMI v.2.0a - HDCP2.2, UHD: HDMI1, HDMI2 ▪ 1 x MHL/HDMI v.2.0a - HDCP2.2, UHD: HDMI3 ▪ 1 x RS232 (D-sub 9 pin) for control communications ▪ 3 x IR receivers ▪ 1 x Audio IN (Mini-jack) ▪ 1 x Audio OUT (minijack) ▪ 1 x USB type A for Fw upgrade ▪ 1 x mini USB type B for Fw upgrade
Controls	▪ IR remote control ▪ Keypad on rear panel ▪ RS-232 Serial commands
Size and Weight	▪ Depth: 450 mm ▪ Width: 420 mm ▪ Height: 181 mm (lever feet included) ▪ Weight: 17 kg approx.
Operating Temperatures	5 ~ 35 °C
Humidity Operating	10% ~ 85%, non-condensing
Environmental Storage Condition	-10 ~ 60°C, 5% ~ 95%, non-condensing
Audio Speaker	1 x 7W (10W peak)
Power	▪ Requirement: 100~240 V AC ±10% @ 50-60 Hz ▪ Power Consumption 450W (Normal), ▪ Standby Consumption: < 0.5 W @110/220VAC
Safety Certifications	CE, FCC, CCC

13 Dimensions

CRYSTAL4 dimensions in millimeters and inches.





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